

Technology Innovation: Thriving at Breakneck Speed

From: The Governor of New York
To: The President of the United States

Dear Mr. President:

The canal system of this country is being threatened by the spread of a new form of transportation known as "railroads." The federal government must preserve the canals for the following reasons:

One. If canal boats are supplanted by "railroads" serious unemployment will result. Captains, cooks, drivers, hostlers, repairmen and lock tenders will be left without means of livelihood, not to mention the numerous farmers now employed in growing hay for horses.

Two. Boat builders would suffer and tow-line, whip and harness makers would be left destitute.

Three. Canal boats are absolutely essential to the defence [sic] of the United States. In the event of the expected trouble with England, the Erie Canal would be the only means by which we could ever move the supplies so vital to waging modern war.

For the above-mentioned reasons the government should create an Interstate Commerce Commission to protect the American people from the evils of "railroads" and to preserve the canals for posterity.

As you may well know, Mr. President, "railroad" carriages are pulled at the enormous speed of 15 miles per hour by "engines" which, in addition to endangering life and limb of passengers, roar and snort their way through the countryside, setting fire to crops, scaring the livestock and frightening women and children. The Almighty certainly never intended that people should travel at such breakneck speed.

*Respectfully yours,
Martin Van Buren
Governor of New York
January 31, 1829¹*

As we know today, many of Van Buren's dire predictions were correct: hostlers, barge repairmen, lock tenders, and others soon had to look for new employment as canals gave way to railroads. Yet the country continued to flourish and the economy continued to grow. As a nation, we became stronger by adopting new technologies and by discovering new goals made possible by those technologies.

Technological innovation has always been a fundamental aspect of our culture. The current growth of information technology follows a tradition of radical transformations brought about by railroads, electric power, petrochemicals, automobiles, telecommunications, television, nuclear power, genetic engineering, and countless other innovations. Nevertheless, each generation nostalgically turns to the past, believing somehow that life used to be simpler and more predictable. Today's generation is no different, with many believing that our headlong rush into computerization is somehow a departure from the path we've traveled for more than two centuries. It isn't. Technological change has always played a critical role in our society. The only substantive difference today, if there is one, is the *pace of change*. No longer do we have decades to contemplate innovation. Increasingly, we encounter technologies that have the power to alter the way we live and work in a matter of months. It is neither innovation nor technology per se that is disruptive: it is simply their velocity.

So the question we must ask is this: How can colleges and universities, well

known for their ponderous, contemplative, committee-laden, and risk-averse manner of dealing with change, address challenges that require nimbleness and agility?

Accepting Our Biases about Technology

The first and perhaps most important thing we must do is lower the temperature in our discussions of technology. The assessment of the value of technology in higher education is all too often a debate between extremists—both pro and con. Faculty technophiles, administrative technocrats, student cyber-geeks, and donor techno-lobbyists are prone to slap the label of "*Luddite*" on anyone who dares to question the manifest destiny of our technological future. At the other extreme lies an equally vocal group for whom the rampant growth of IT represents the death knell of humanism, personal interaction, privacy, and civilization as we know it.

We must recognize that accurate assessments of the real worth of new technologies require open-mindedness about both costs and benefits. We cannot afford to rush headlong into every online e-service, nor can we afford to ignore electronic resources that have the power to enhance or expand learning opportunities for our students. We must acknowledge our biases about technology, cut through the avalanche of media hype, resist peer pressure, and identify technological changes that are genuinely worth pursuing. By so doing, we can reduce the number of innovations adopted and thereby slow the pace of transformation to a more sustainable rate.

Focusing on Objectives, Not on Technology

In dealing with the rapid evolution of technology, decision-makers at many colleges and universities look at their central technology organizations, their computing facilities, and their overall investments. They ask: How much are we putting into technology? How many dollars, how many people, how many labs, how many network access points are we using? But these are precisely the *wrong* questions. These are the measures of consumer rating surveys and they do nothing but distract us from the concerns that are of real importance.

Decision-makers should instead be asking: What do we want to accomplish in undergraduate instruction, student recruitment, institutional advancement, campus communications, and so forth? How will new technologies help us to achieve these goals? What software, hardware, and staff support do we need to take advantage of these technologies? How much will this cost? Comparative evaluations of colleges and universities based on the number of available computers or network connections are fundamentally meaningless. Making decisions about which technological innovations to adopt, and at what rate of speed, and at what cost, by focusing on technologies rather than on institutional objectives is pointless. Yet year after year, this is exactly what is done. Why?

The unfortunate answer is that many key decision-makers don't know how else to deal with technology. For example, understanding the details of how visualization software is used in molecular biology or how statistical modeling software is used in recruitment or financial packaging is often viewed as being outside the required expertise of institutional leaders. And perhaps rightly so. We do not and should not expect institutional leaders to understand how every tool is used in every discipline or every administrative activity. Yet without a better understanding of the fundamental costs and benefits of these technologies, decision-makers are often forced to rely on opaque arguments from technocrats, superficial analyses in the media, or word-of-mouth wisdom from peers who, unfortunately, may be

as much in the dark as they. Today's leaders cannot afford the luxury of technological naiveté.

To find the right technological innovations and adopt them at a sensible pace, decision-makers must accept technology as an institutional concern and must learn as much about technology as they do about student recruitment, capital campaigns, financial aid, and building projects. Without such understanding, technological innovation will continue to be a mystery, alternately embraced and ignored, ultimately to the detriment of the institution.

Expediting Transitions

Institutions that have been the most successful in dealing with the rapid transitions brought about by the evolution of IT seem to share several characteristics:

- *Fiscal realism.* Recognizing that the best use of resources requires timely decision-making, these institutions give IT departments more flexibility in allocating and reallocating funds. They encourage IT departments to be creative and opportunistic. At many institutions, special funds are set aside to deal specifically with the exploration of new technologies and the retraining of IT staff.
- *Staffing agility.* In light of increasing pressures from the labor market, these institutions allow IT departments to be flexible with compensation packages, to hire more contractors and other temporary staff, and to spend more to retrain existing staff. The assertion "we will not compete with the private sector" ignores the reality: whether we like it or not, we *are* competing with the private sector. We must acknowledge, rather than shrink from, this competition and pursue ways to be successful.
- *Executive awareness.* These institutions have leaders who make cost-benefit decisions by learning about the relevance of technologies to academic and administrative objectives. In a survey conducted in 1998 of chief technology officers at more than two

hundred colleges and universities, only 29 percent felt that senior officers understood and were aggressive in dealing with IT-related problems.² Without high-level support, those problems will only get worse.

- *Collaboration.* Inter-institutional collaboration is increasingly important as a means of constraining costs, minimizing risk, maximizing staff expertise, and achieving unprecedented economies of scale. Efforts such as the WISP alliance³—formed by Reed, Swarthmore, Vassar, and Occidental Colleges to co-develop and share Web utilities, training techniques, and technical support models—are needed to meet the challenge of rapid technology transitions.

Will higher education meet this challenge? Absolutely—though some hostlers and lock tenders may need to be retrained as Web-masters and programmers. To paraphrase Charles Darwin, it is not the strongest of the species that survive, nor even the most intelligent. The survivors are those that are the most responsive to change.⁴ Institutions of higher education may not, at first, appear to be very changeable. Yet some of the oldest and most enduring corporations in the United States are colleges and universities. That should tell us something...

Notes

1. Van Buren's letter to President Andrew Jackson can be found at <<http://woodrow.mpls.frb.fed.us/pubs/region/reg939a.html>> (accessed July 22, 2000).
2. M. Ringle, "The IT Staffing Crisis: Roadblocks and Remedies," survey results presented at the CAUSE conference, Seattle, Washington, December 1998.
3. WISP stands for Web Integration and Sustainability Project. See <<http://web.reed.edu/wisp/>> for information about the project.
4. I am indebted to Diana Oblinger, Vice President for Information Resources and CIO, University of North Carolina System, for this most apropos reference.

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