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# Introduction: Higher Education—A Moveable Feast?

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**D**espite our multibillion-dollar place-bound campuses, in spite of our nearly religious devotion to the discipline of the academic calendar, and even in the face of the modern-day linkage of academic success and "time in seat," education is a moveable feast. Close study of Raphael's incomparable painting *The School of Athens* is a study in fluidity. Plato, Aristotle, and other great philosophers engage in inquiry not in orderly rows of chairs facing the sage, but in clumps of discussants in various states of motion. In the Middle Ages, European centers of learning such as Paris, Orleans, and Chartres were familiar with what were known as *vagantes*, "wandering scholars," who had a unique role in transmitting knowledge and developing culture from the 10th century to the end of the 13th. Throughout early modern Europe, roving bands of scholars, dissolute students, minstrels, clerics, and other so-called *ribaldi* (rascals) roamed the countryside in search of *tuition*—a sum of money paid for instruction, inspiration, or entertainment.

The needs of both the Roman Catholic Church and the evolving nation states of Europe for educated men, combined with the increasing immobility of the tools of scholarship, conspired both to suppress the *vagantes* and to nurture the emergence of great universities at Oxford, Salamanca, Pisa, Bologna, Paris, and elsewhere. Early universities amassed and housed great collections, built expensive surgical theaters, and provided safe, dry spaces for the conduct of classes. The medieval lecture theater and seminar rooms are recapitulated in today's modern university, and indeed some medieval lecture halls continue in use today.

Learning has thus become relatively fixed in place. One enrolls at a college or university where one is supposed to engage in formal learning in fixed places and at fixed times. In the American—and increasingly global— form of higher education, "time on task" is the surrogate for academic intensity and depth. Seat time and course credits are linked. Student time in the classroom—believed to be correlated with homework levels—is similarly understood to be one proxy of academic attainment. These careful linkages were not and are not either crazy or unreasoned. Indeed, they reflect the increasing attempts to render the craft of teaching, which is bedeviled with great variability of effort and outcome, into a standardized, industrialized product designed to accelerate the production of literate churchmen and statesmen—and later engineers, military officers, and technocrats. Immobility is efficient, albeit neither fun nor uniformly effective for all learning styles. More important, the tools of our time—until

very recently—left us no practical choice. To a very great extent, the textbook is the first technology to liberate some modern students in institutional settings from the implacable fixity of the classroom. For most of us, with or without the textbook, academic success meant attending class and participating verbally in class as well as succeeding in assessments, writing assignments, experiments, and other course activities. Because we are well socialized to the textbook, we find it easy to forget that both textbooks and graded assessments are only 200 years old, having originated at the U.S. Military Academy at West Point and at Yale University.[1]

## Does Learning Happen Only in a Fixed Place?

The question posed at the heart of this ECAR study is whether the emergence of computers and the network, and the proliferation of easy-to-find and easy-to-use web-based information resources, alters the student's relationship to the familiar physical trappings of a higher education. The answer seems unquestionably to be yes when the discussion is limited to the so-called nontraditional student who can be, nearly by definition, only loosely and inconveniently attached to the physical infrastructure of the academy. The accent on this question becomes more striking as new tools emerge that make it possible for us to enjoy the benefits of network connectivity without requiring a physical connection to the campus and its network. These tools, which are breathtakingly good, are communicating devices, computing platforms, e-book readers, GPS devices, and more.

Among other things, this ECAR study takes a closer look at emerging technologies related to so-called mobility and to their socialization (or not) by today's students. ECAR asks the first question: Are you equipping yourselves for a mobile learning possibility? At a deeper level, of course, we are interested in the continuum: Do you own handheld equipment that links you to people and other academic and social resources? Are you using this equipment? Are you using this for academic purposes? If so, is your new tool or new medium changing your experience as a student and as a learner? Are new tools and media simply making what a student does more convenient, or are they changing how and when students engage with the institution as a place?

Even though we are stewards of globally recognized institutional brands and in some cases of very valuable real estate, we need to be aware that the success we have enjoyed in higher education's current form does not assure us of success in the forms that colleges and universities may assume in the future. The art of handwriting—cultivated over centuries—is becoming an artifact of another age. Newspapers—beloved by many for centuries—are being transmogrified or snuffed out. We wonder—as we crawl, walk, run, or race to integrate new technologies *into the classroom*—whether students are organizing these and other technologies to *replace the classroom*. This is no different from the thoughts of some newspaper executives who might have worried that while they were exploring ways to standardize, economize, and globalize print on paper, readers, bloggers, and others were rejecting and replacing newspapers with new and more current and malleable media.

## Is the Demise of Place So Far-Fetched?

Between 2004 and 2006, the Oxford University Conference of Colleges, an all-university body in the United Kingdom, debated the concept and the language of contracts that would bind students to attend lectures and tutorials. The measure, had it passed, would have required students to sign a legally enforceable contract stating that the student shall "undertake to pursue such

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studies as are required of you by any tutor…or other qualified person assigned by the college to teach you." According to one student reporter, this set of requirements implied "carrying out practicals, the completion of written work, attending tutorials, classes and lectures, and sitting [for] university and college exams."[2]

The issue at Oxford University and elsewhere is one of higher education's dirty little secrets: Lectures, tutorials, and seminars are frequently poorly attended. Enrollment in blended, distance, and other e-learning classes is rising. The empty classroom could become the unintended and ironic icon of the academic institution in the Information Age. Students appear to be using information and communication technologies not only to facilitate their instructor-mediated experiences but also in some cases to replace face-to-face mediation of instruction with other means. In one telling sign, Twitter, a microblogging offering that provides its users the ability to post messages of up to 140 characters, was reported as having won more than 6 million unique monthly visitors as of February 2009. In another, *USA Today* on September 9, 2009, devoted three-quarters of a page to report the story of an "English major, 24, [who] rambunctiously recaps the classics in 60-second Web videos."[3] It seems clear that the nature of discourse, including academic discourse, is changing, perhaps confirming Marshall McLuhan's prediction that "the future of the book is the blurb."

The ECAR data in this 2009 study of students and information technology strongly suggest that significant numbers of students are using a wide variety of technologies in sophisticated ways. They are finding that tools such as the web, course management systems, and others are valuable resources in making their lives convenient, giving them control over broad tracts of their social lives, their work, and their learning experience, and in facilitating their learning. Already a broad base of students have followed the market in their preference for laptop computers. Nearly 9 of 10 (88.3%) students today at the 39 institutions that have participated continually in the ECAR study since 2006 own a laptop computer. Only 65.4% of their predecessors owned such devices. On average, they spend between 19 and 25 hours per week online. More than 4 respondents in 10 (44.8%) contribute content to video websites such as YouTube, and more than 1 in 3 (37.3%) say that they contribute to blogs.

## What about Mobility?

Simple observation informs us, as John Horrigan argues, that "mobile access to the Internet is taking root in our society."[4] Starbucks, Borders, Barnes & Noble, and other book and coffee outlets—along with other businesses—have organized to make the retail shop a campus adjunct. Colleges and universities are fighting latte for latte. Many institutions are building so-called "information commons" to keep students on campus. "At the University of Texas at Austin, for example, most of the 90,000 volumes formerly in the undergraduate library were replaced by a coffee shop, public computers, comfortable chairs, and 24-hour technical help."[5]

And what of handheld devices? ECAR studies, the *Student Monitor*, and other resources have long established that young people in many ways have led a mobility revolution in voice communications and mobile music. The Apple iPod has become the iconic symbol of the 21st-century collegiate learner, and creating audio recordings of academic lectures has become accepted and widespread within U.S. higher education. Apple's iTunes U by September 2009 claimed that more than 200,000 educational audio and video recordings were available via their service.[6] The introduction of the iPhone in 2007 and the iPhone 3G in July 2008 have only accelerated a market rush to mobility. Now all of us, including students, have access to handheld

platforms that can perform computationally sophisticated work, carry telephone traffic, play music, make music, and so much more. On September 17, 2009, Apple approved a record 1,394 computer applications for the iPhone platform—in a single day![7]

Beyond our general observations, the literature suggests that students are riding the wave of mobility. E.marketer.com, for example, reported that more than 80% of iPhone users accessed news or information via a browser on their iPhone. That firm also reported that 27% of mobile searchers ages 18–24 were likely to use mobile search frequently or occasionally in the three-month period from October 31, 2008, to January 31, 2009. At the same time, when the University of New Hampshire School of Business students were asked how they used their mobile devices, the dominant uses reported were talking (90%), text messaging (86%), and as an alarm clock (80%).

## Chickens and Eggs

The mobility story in higher education, like nearly every story of academic technology adoption, is a story of chickens and eggs. To date, we may infer the following from observation, anecdote, secondary literature, and the ECAR data:

- Converged or "intelligent" mobile devices are being consumed or coveted on a widespread basis both within society at large and among students in higher education.
- Use of a converged mobile device is still immature. The March 2009 Pew study *The Mobile Difference*[8] uncovers 10 distinct segments of adults—including digital collaborators (8%), ambivalent networkers (7%), media movers (7%), roving nodes (9%), mobile newbies (8%), desktop veterans (13%), drifting surfers (14%), information encumbered (10%), the tech indifferent (10%), and those who are "off the network" (14%).

- The "uptake" of mobile technologies likely will be paced by six factors:
  - *Natural segmentation.* The existence of natural segments distinguishes users of technology along a technology diffusion curve.
  - *The economics of mobile computing.* Current high charges for data roaming and other "value-added" services will contain growth, especially among students of limited means. Indeed, to the extent that mobility becomes a core facet of an institution's offering, a new aspect of the digital divide will need to be reconciled.
  - *The dearth of institutional learning, research, and administrative applications.* Although hundreds of thousands of applications have been written for the iPhone already, higher education academics and administrators need to discover, stockpile, and provide access to applications that are built to students' academic purposes.
  - *Training.* Once again, a new set of platforms with three operating systems is being introduced. Faculty need (again) to become conversant with these technologies and also to rethink how fixity and mobility can be rearranged in support of learning and research. Similarly, instructional technologists need to add mobility solutions to their arsenals of instructional support for the faculty. Finally, the enterprise IT staff need to devise a strategy, a funding base, and the competency to deploy enterprise application functionality on mobile platforms.

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❖ *Student preparedness.* Although the popular literature is quick to tout the virtues of the so-called Net Generation, ECAR studies—and others—suggest that students are a more nuanced and segmented population. Many students will struggle with mobility technologies as they have struggled with earlier technologies. Some will reject these technologies categorically. In any case, we must be mindful of the heterogeneous nature of the student population with regard to IT skill, predisposition, interest, and capability as we make plans to integrate mobility into our courses and academic programs.

❖ *Support and standards.* College and university enterprise IT organizations will need to organize, staff, and resource around support for mobile hardware and software, as well as explore and implement standards. Included in this factor is the need for IT organizations to implement security, e-discovery, risk management, and other forms of policy and operational support for mobility.

The mobility market, perhaps more than others, will mature rapidly, and its maturation will be paced by developments in the broad consumer economy.

The infrastructure, applications, usability, and economic gaps between mobility offerings in the consumer market and in higher education may become problematic. If mobile learning (m-learning) takes root with students and with others outside the traditional colleges and universities, the mobile difference may be one that places our traditional institutions at another competitive disadvantage.

## From E-Learning to M-Learning

Networking giant Cisco maintains a variety of indexes to help it forecast trends in network usage. One such index—the Visual Networking Index Mobile Forecast for 2008–2013—predicts that global mobile data traffic will increase 66-fold between 2008 and 2013, with a compound annual growth rate of 131% during that same period.[9] This growth will be driven in part by the deployment of fourth-generation (4G) mobile Internet standards that will increase our capacity to use video mobile, including mobile teleconferencing. These capabilities will once again change how all users, including members of the higher education community, experience the Internet and its services and resources. Combined with ongoing improvements in e-learning tools, the increasing interoperability of so-called open resources, improvements in hardware price performance and in relevant mobile applications, and the evolution of virtual environments purpose-built for learning and collaboration, this progress suggests that the future of much higher education will be mobile, virtual, and accessible as services over networks.

A major driver of the rapid adoption of mobility technologies will be convenience. Mobile technologies enable users to exploit idle time. Sitting on trains, waiting for buses or subways, or lingering over morning coffee, one can read the news, catch up on e-mail, organize calendars, plan travel routes, make reservations, and contact colleagues. Putting the temporal interstices of our lives to good use means that we can recapture time, which is the scarcest resource of all in the Information Age. Additionally, mobile technologies liberate us from factual ignorance. How many of us have sat in a meeting or a classroom where a factual question of consequence is raised, only to be answered in seconds by a person with a smartphone?

A world where convenience and time management mean everything and where mobile access to information and resources makes us all capable of self-organizing and self-servicing suggests an opportunity for us to rethink teaching, learning, and discovery. It suggests a rethinking, in fact, of the very nature of *place* in the educational experience. An important question for members of the college and university community then is whether or not our approaches to mobility will follow the same path as many of our past initiatives—waiting for a critical mass of faculty early adopters or student adopters to wrench slow and grudging investments from the enterprise. The underlying question here is whether higher education is approaching a tipping point. Are the developments in mobility, cloud computing, open access, assessment, and elsewhere substantial enough to create a significant competitive benefit to newcomers who are less inclined by their institutions' governance and history to constrain and condition their approach to the changing environment? Just as high-energy physicists no longer need to be connected to CERN to study data from the Large Hadron Collider, will our students soon be able to take advantage of highly mobile, network-dependent educational offerings?

## Conclusion

The technologies and practices lumped together under the broad heading "mobility" are potentially disruptive technologies, especially to institutions for which "place" has special meaning. Higher education, of course, is one such institution. Educators and technologists must begin a dialogue that views place as one important element in a broader educational strategy. Just as many institutions have socialized the concept of study abroad within their academic program offering, so must we now reexamine our deep notions about time-on-task, seat time, residency, and other place-bound notions. Mobile technolo-

gies can only for a short time be pushed and bent to fit the forms of our historical delivery approaches. Oxford University is not the only institution stirred—or perhaps haunted—by the specter of empty lecture halls. Marshall McLuhan reminds us that the past dissolves before the future resolves. So now we can imagine students who are empowered with a battery of dazzling technologies to uncover facts, ascertain relationships, test hypotheses, and vertically integrate much of the scholarship that was offered to many of us as fragments. It is possible, within such a vision, to imagine the obsolescence of the academic mentorship, or the inconvenience of the campus. In a world that is being reconfigured by clouds, by mobility, and by the 24-hour-a-day availability of unprecedented news, data, textual resources, services, and videos, our task is one of integration.

For the information technologist, we must create views of the institution and services of the institution that follow the student. If the student is peripatetic, then our IT infrastructure, applications, and services must be mobile. We must continue to improve our ability to express our institutions' uniqueness and character in their online spaces. Although in the future more and more of our students will not need to be "on" the institutional campus, our virtual environments must reinforce those students' sense of affiliation with us. We must work with our instructors to devise new means of making academic mentoring services available 24 hours a day *without* making faculty jobs infeasible. Faculty must deconstruct, debate, and then reconstruct long-cherished beliefs about the nature of scholarship. We must reexamine the meaning of plagiarism in a world of cocreation and ask ourselves what is authorship or "an original contribution" in the digital context. Although a great historian or archaeologist could verify a source's authenticity by touch, sight, or even smell (or by carbon dating or chemical analysis!), the digital presentation of primary information devalues these skills and

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calls for the development and enculturation of new ones. Concepts such as reliability, authenticity, provenance—the building blocks of critical thinking—are subject to change and require new conceptualizations in the digital context.

Finally, although mobility and convenience are appropriately and inextricably linked, and although mobile access to data, services, and the like makes it possible to render the dead spots of our lives usable, we need to explore the fundamental price we are paying for admission to the Digital Age. We can accelerate learning, we can make it convenient, and we can arguably improve learning outcomes with a variety of information technologies. Are we improving erudition and the process of scholarship? Are we creating room for reflection, an activity long held to be essential to deep learning and to scholarly preparedness?

The challenges and opportunities posed by mobile technologies are great. We can learn anywhere and anytime, and this is liberating. It is also socially satisfying, since it suggests that learning will also be accessible in new forms to those who have been denied access for a variety of reasons. But the road to acculturating mobile technologies is littered with challenges—organizational, financial, technical, and pedagogical. And although the data suggest that this new revolution is not quite upon us, we clearly do not have a great deal of time to prepare the ground. In addressing these challenges, we must remain aware that whatever technologies we deploy, they must be friendly and unobtrusive elements of the background. For many years now, undergraduate first-year and fourth-year students have told ECAR that they prefer a moderate amount of technology in their academic experience. They want technologies that are not in the way, and they clearly value direct and face-to-face interactions with one another and with the faculty. We need to be mindful that the student body is not monolithic, and therefore place will occupy a different niche in each student's hierarchy of needs.

Educational entrepreneurs likely will run with these new technologies. They will eschew the multimillion- (or billion-) dollar investments we have made in physical infrastructure (place) and instead will focus on student convenience. For those of us who resonate to the background sound of a campus creek as we discuss the Great Books with our classmates and mentors, the call of the newcomers will be tinny and scratchy. For those of us with jobs, husbands, wives, kids, and no time, our idyllic settings pose just another parking problem. Most students will likely toggle between the pressures of busy lives and the sincere love of the physical learning environments we have constructed. Our challenge, again, is to reimagine place as one important element in a broader educational strategy and to temper our deep understanding of place with insights and investments in "connection" in the digital world.

## Endnotes

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