If any concept should be seen as an uncomplicated good thing in higher education, it’s innovation. Defined by a commonsense notion of “doing things better” and burnished by the sheen of dazzling technological advances, what’s not to like about innovation?

By Jim Groom and Brian Lamb
Yet as 2014 churns on, the glow is wearing off. Today, innovation is increasingly conflated with hype, disruption for disruption's sake, and outsourcing laced with a dose of austerity-driven downsizing. Call it innovation fatigue.

How did we get here? And if innovation is still something we are interested in fostering, what are the values that should animate it? What goals and strategies should we be pursuing if we want to reclaim innovation as a positive force as higher education continues to engage with digital and networked technologies?

Enter Disruption
To understand much of the disconnect between higher education and innovation, we should take a look at innovation's unruly cousin: disruption. Certainly, when surveying the rapid pace of change in digital and networked technologies and assessing the wreckage of organizations and industries that have, in one way or another, been swept aside, disruption as a descriptive term is not without merit. But unless we are prepared to rebuild from the wreckage and create something that represents a meaningful advance, it's difficult to see the value in disruption for its own sake.

Audrey Watters has noted the essentially apocalyptic flavor of what she describes as "the myth and the millennialism of disruptive innovation"—mythic in the sense that it prophesies "the destruction of the old and the ascension of the new" and constitutes a narrative that "has been widely accepted as unassailably true." When applied to education, disruptive innovation promises nothing less than "the end of school as we know it."

In "A Future with Only Ten Universities" (referring to the Udacity founder Sebastian Thrun's vision of fifty years from now, as expressed in a Wired magazine profile), Watters laid out what might lie beyond "the end":

To get to 10 universities, higher education as we know it today will have to be "unbundled." Someone other than universities will have to provide the services that extend beyond "content delivery." Private companies will run football. Private companies will run tutoring. Private companies will run research. Private companies will run assessment. Private companies will help guide students through their career paths. Thanks to big data, the University of Walmart and the University of Google will be particularly adept at this.

The backlash to such a vision of disruptive innovation is driven not merely by self-interest but also by a sense that whereas the disruptions of the past decade or so have delivered faster and sexier communication devices, their effects on economic, societal, or environmental challenges have been superficial. Interestingly, the backlash against innovation is frequently expressed against the values represented by TED Talks. For instance, Benjamin Bratton has argued: "Innovation' defined as moving the pieces around and adding more processing power is not some Big Idea that will disrupt a broken status quo: that precisely is the broken status quo." Will a countervailing vision of grassroots, generative innovation dedicated to strengthening higher education do better? If we think the open web and public education are ideas worth preserving, we have no option but to try to find out.

Innovations Lost
The early demographics of the web demonstrate the leading role that colleges and universities played in shaping not only the technology and protocols that defined the Internet but also the early culture of the world-wide web (as it was hyphenatedly referred to in the early 1990s). The 1993 publication by Kevin Hughes, "Entering the World-Wide Web: A Guide to Cyberspace," offers a compelling, on-the-ground perspective of web culture at the moment of its inception. While at Honolulu Community College, Hughes created one of the first campus websites, including novel (at the time) ideas such as a virtual tour of a campus museum. In his guide, Hughes cited the first web-user survey, conducted by Georgia Tech Professors James Pitkow and Mimi Recker. Of the 1,300 web users surveyed:

- 56% were between the ages of 21 and 30,
- 94% were male,
- 69% were located in North America, and
- 45% described themselves as professionals and 22% as graduate students.

Based on this survey, the early web was a phenomenon among a relatively young, male, educated, and North American-centric demographic. Additionally, according to Hughes, the survey suggested that the "largest segment roaming the World-Wide Web consists of four-year campus populations within the United States." Hughes also provided a breakdown of who surfed the web, based on "an informal comparison of host statistics from 15 government, educational, and corporate Web sites in March 1994." According to his data, the vast majority of web traffic and the largest percentage of "Internet hosts" (computers connected to the network) were located at educational institutions.
Clearly, in the mid-1990s, college and university campuses were the epicenter of web culture, having designed and built out the entire Internet infrastructure from which the web emerged, as well as fostering the emergence of hacker culture. This is a powerful and compelling narrative of higher education as a laboratory for the future (even if its humble beginnings were demographically skewed toward the educated, male elite).

Where are we today, two decades later? Increasingly, the exploration of the digital communication revolution has been pushed out to the fringes of higher education, while campus technologists are expected to focus on providing tools as services to the entire campus. As institutional demands for enterprise services such as e-mail, student information systems, and the branded website become mission-critical, the notion of building and re-imagining the open web gets lost within a process-oriented attention to maintaining servers, intranets, and learning management systems as enterprise applications. The demands of sustaining infrastructure have continued to dominate institutional priorities, and the recent promise of Web 2.0 has been unevenly integrated into campus strategies: instances of broad, culture-shifting experimentation along these lines in higher education can be counted on one hand. IT organizations have started outsourcing enterprise systems in the hope of leveraging hosted solutions and the cloud more broadly to free up time, energy, and resources. The practice of outsourcing itself seems to have become the pinnacle of innovation for information technology in higher education. Meanwhile, IT organizations are often defined by what’s necessary rather than what’s possible, and the cumulative weight of an increasingly complex communications infrastructure weighs ever heavier.

**Five Arguments against the Learning Management System**

We’ve outlined how the energy and promise emanating from higher education animated the development of the early web and how it went sideways. The effects have been immense and perhaps irreversibly damaging. Just two decades later, the learning management system (LMS)—not the web—has become the default space where colleges and universities do most of their teaching and learning online. Higher education overall, perhaps concerned about the untamed territories of the open web and facing unquestionably profound challenges in extending its promise beyond the early adopters, cast its lot with a “system” that promised to “manage” this wild potential and peril.

Before stating our specific arguments, we want to dispense with the canard, too often put forward by educators, that “it’s not about the technology” because “the technology is neutral.” Of course the choice of technology does not itself make teaching good or bad. Good teaching can happen in spite of bad tools, and good tools do not guarantee a good outcome. But it is facile to think that the technology makes no difference.

**Argument #1: Systems.** An essential problem is revealed in how we refer to this class of technology. Instead of supporting “learning enhancement environments” on an enterprise level, colleges and universities implement and mandate the use of “learning management systems.” Thus, before we even begin to encounter the software itself, we privilege a mindset that views learning not as a life-affirming adventure but instead as a technological problem, one that requires a “system” to “manage” it. This mindset and its resulting values result in online architectures that prioritize user management, rigidly defined and restricted user roles, automated assessments, and hierarchical, top-down administration. Yes, creative and engaging learning can happen almost anywhere. But environments matter, and disturbingly often these systems promote formulaic and rigid instruction.

**Argument #2: Silos.** Even after years of hype and widespread posturing about “openness” and “21st-century skills” as key values of contemporary higher education, most LMS implementations still lack elementary capacities to publish to and interact with the wider web and the public. By restricting online teaching and learning activity to these closed systems, colleges and universities make a mockery of oft-stated values such as social engagement, public knowledge, and the mission of promoting enlightenment and critical inquiry in society. There is a discussion to be had about where/when student interactions might merit or benefit from some degree of privacy and where/when we need to consider protections of identity and personal privacy. But that discussion happens too rarely; it is easier to default to locking everything behind digital slabs of access controls and inaccessible online spaces. Worse yet, this enclosure not only cuts the academy off from the wider world but also cuts students off from each other and the institution. Courses are severely limited in the ability to access other courses even within the institution (so much for “connecting silos”), and when courses end, students are typically cast out, unable to refer to past activity in their ongoing studies or in their lives (so much for “promoting lifelong learning”).
It’s quite telling that a collaborative effort between a university professor and a government researcher would demonstrate the deep and powerful implications of the web for colleges and universities more generally.

- Explore ways to support activity and content development in environments that foster collaboration and also interoperability with a wide range of tools.
- Before directing activity to a complex, locked-down system, ask: “Do we really need to do it this way? Is there a simpler, cheaper, open alternative that will do the job?”

These suggestions admittedly reflect a modest, pragmatic form of innovation. But as David Kernohan remarks, sometimes innovation can be “the art of circumventing large monolithic systems to actually get some stuff done.”

Can We Reclaim Innovation?

Twenty-five years after the birth of the web, innovation in higher education is still happening, in pockets. Take, for example, Massive Open Online Courses (MOOCs), which have become the poster child of innovation in higher education over the last two to three years. This approach was started by two Canadians—George Siemens and Stephen Downes—at the University of Manitoba in the fall of 2008. The professor (Siemens) and the government researcher (Downes) decided to put into practice the connectivism and connected learning theories that they had been writing about and experimenting with for years. Their 2008 course, Connectivism and Connected Knowledge (CCK08), christened the idea of the MOOC and provided a brilliant example of educational technology praxis using the open web. Significantly, these origins of the MOOC arguably mark it as the first web-native learning environment, as opposed to e-learning that grafts old-style distance learning onto online platforms. It’s quite telling that a collaborative effort between a university professor and a government researcher (much like the collaborations at the beginnings of the Internet) would demonstrate the deep and powerful implications of the web for colleges and universities more generally.

Yet within a couple of years, the experimentation and possibility of the
MOOC movement had become co-opted and rebranded by venture capitalists as a fully formed, disruptive solution to the broken model of higher education. The most distressing part of the story is that many higher education administrators and even IT professionals seem to have little or no idea where the innovation started. Colleges and universities all over the world are buying back the innovation that their ideals, missions, and people made possible.

One encouraging result of the MOOC mania is the rising interest in open online learning, even if in this case innovation has become synonymous with how to scale a single course for many users. The more interesting challenge for an open learning architecture is how to scale agile and distinct environments across and among many courses—or even better, across several institutions and across the web itself. This moves us back toward a network of networks, a foundational principle of the Internet. MOOCs, currently being reimagined (and resold) by proprietary environments designed for scale and simplicity, lack the basic Web 2.0 premises of aggregation, openness, tagging, portability, reuse, multichannel distribution, syndication, and user-as-contributor. In most of the available MOOCs (and LMSs), students and faculty have no real control over their work, no sense of creating a distributed network in which they can utilize their own, existing online identities as part of any one course or even a campus community. These courses and systems are also distracting colleges and universities from the conversation that we should have been having since the late 1990s: how can we leverage open platforms and open access to augment our teaching and learning mission?

Open-source, searchable, syndicated, and collaborative authoring systems can provide numerous efficiencies, such as publishing to multiple environments and ensuring interoperability and long-term digital preservation.

The idea that we can collaboratively build a platform that will frame the discourse and promote sharing is a promising aftereffect of the current MOOC backlash. Imagine what higher education institutions could do if they started approaching academic publishing platforms as collaborative, open spaces for community-authored materials. What if educational institutions start reclaiming innovative learning on the web?

Coherence and User-Driven Innovation

Rather than continuing to yell about the state of MOOCs and LMSs, perhaps it's more useful to turn to Jon Udell's ideas first expressed seven years ago. In his talk “The Disruptive Nature of Technology,” Udell laid out a vision in which K-12, colleges/universities, and open-source programmers are encouraged to help learners create “coherent personal digital archives” that seamlessly integrate with a wide range of institutional systems. Udell argued that these archives should encompass more than just a student's schoolwork; they should also include personal photos, videos, transcripts, X-rays, dental records, police records, and a million other digital life-bits. The archives should then grow into much larger, abstracted digital spaces in which people manage and maintain all their records and also decide how to push out their records appropriately to various destinations.

Although we’re currently nowhere near this idea, how can businesses, educational institutions, and governments alike not consider the importance of giving individuals control over their digital archives? Or their learning analytics data? Open formats such as XML and RSS have opened the door, but they’re just a first step to a solution that will require our insistence on and commitment to imagining coherent, aggregated hubs of content and functionality that we each can own and manage.

The point is not that everything must be open source; rather, it’s that we need coherence, and right now, coherence is too often offered at the price of ownership and control, of working within someone else’s application. Education needs a movement that will provide the beginning steps to building and imagining an architecture for personal online archives that can be seamlessly syndicated and individually owned and controlled, all while providing the greatest amount of privacy we can imagine in a networked world. Tony Hirst, in a piece that looks back “five, six, seven years ago” when “the web used to be such fun,” reminds us: “Open technologies allow users to innovate without permission. Open licensing is just part of that open technology jigsaw; open standards another; open access and accessibility a third. Open interfaces accessed sideways. And so on.”

How do we move forward? Again let’s turn to Udell, who realizes how essential it is to understand technologies as “potentiality” (to graft a concept by Anton Chekov from a literary to a technical context). This is the idea that within the use of every technical tool there is more than just the consciousness of that tool, there is also the possibility to spark something beyond those predefined uses. The only real way to galvanize that potentiality is to provide the conditions of possibility—that is, a toolkit for user innovation. Udell notes: “There’s a reason I keep finding novel uses for these trailing-edge
For far too long, institutions have been scaling academic technologies exactly the same way that they scale business processes. This approach ignores the user-driven revolution that the web makes possible.

Technologies. I see them not as closed products and services, but rather as toolkits that invite their users to adapt and extend them. This vision of serendipity in imagining potentiality should be the very basis for experimentation when it comes to the web in higher education.

Thanks to the philosophical foundations of the Internet—open standards, collaborative design, layered architecture—its technologies typically qualify as user innovation toolkits. That wasn't true, though, for the Internet era's first wave of educational technologies. That's why my friends in that field led a rebellion against learning management systems and sought out their own innovation toolkits: BlueHost, del.icio.us, MediaWiki, WordPress.

My hunch is that those instincts will serve them well in the MOOC era. Educational technologists who thrive will do so by adroitly blending local culture with the global platforms. They'll package their own offerings for reuse, they'll find ways to compose hybrid services powered by a diverse mix of human and digital resources, and they'll route around damage that blocks these outcomes.

Fortunately, Udell's description of a movement away from the predetermined learning spaces provided by the LMS inspires a third approach as an alternative to the all-or-nothing mentality that often frames this conversation. What's more, his vision of innovation won't necessarily be found in chasing the latest product or saleable idea but, rather, in revisiting "trailing-edge technologies," in finding novel uses for technologies that have been around for a while: wikis, blogs, syndication, animated GIFs, and Internet radio. This is what's so important about what Mike Caulfield refers to as a collection of "EDUPUNK technologies" evident in a variety of recent experimentations such as cMOOCs, ds106, FemTechNet, Open Course Frameworks, and P2PU. As Caulfield notes, the trailing-edge technologies deployed in such courses "engage their users, asking the users to experiment, remix, hack, and redistribute. They...encourage users to alter, and even subvert, given designs. Because they codify much practice in convention rather than code...they retain a fluidity that promotes experimentation."

Rather than framing everything at the course level, we should be deploying these technologies for the individual. For far too long, institutions have been scaling academic technologies exactly the same way that they scale business processes. This approach ignores the user-driven revolution that the web makes possible for teaching, learning, and research by individual faculty, staff, and students.

**What's So Innovative about Open Publishing and Collaboration?**

When one surveys the history of truly open education, bottom-up publishing, collaboration, and sharing in higher education, it can be puzzling to discover that higher education has been hesitant to embrace tools that offer immense upside with comparatively little risk or allocation of resources. In The Digital Scholar, Martin Weller outlines the immense opportunities presented by open publishing. Blogs, Weller argues, are "the epitome of the type of technology that can lead to rapid innovation. They can be free to set up, are easy to use and because they are at the user's control, they represent a liberated form for expression." Yet the number of institutions or organizations that offer significant support for grassroots scholarly open publishing has remained small, and recognition of such practices in academic culture continues to be sporadic.

In fairness, this sense of missed opportunity and misplaced priorities does not rest on higher education alone but also on recent developments across the wider web. Anil Dash addresses the perception of "the rise of billion-scale social networks and ubiquitous smartphone apps as an unadulterated win for regular people" and contrasts it with the significant “web we lost.” It’s easy to forget a time, less than a decade ago, when Web 2.0 services employed open APIs, when media and writing was posted in highly discoverable and eminently reusable formats, when “the expectation was that [users] could easily download a full-fidelity copy of their data.” Dash concludes:

This isn't our web today. We've lost key features that we used to rely on, and worse, we've abandoned core values that used to be fundamental to the web world. To the credit of today's social networks, they've brought in hundreds of millions of new participants to these networks, and they've certainly made a small number of people rich. But they haven't shown the web itself the respect and care it deserves, as a medium which has enabled them to succeed. And they've now narrowed the possibilities of the web for an
entire generation of users who don’t realize how much more innovative and meaningful their experience could be.29

Viewed as a whole, the web today bears little resemblance to the innately democratic and decentralized network that seduced and enticed us a decade ago. As the science fiction author Bruce Sterling has observed, it makes “less and less sense to talk about ‘the Internet,’ ‘the PC business,’ ‘telephones,’ ‘Silicon Valley,’ or ‘the media,’ and much more sense to just study Google, Apple, Facebook, Amazon and Microsoft. These big five American vertically organized silos are re-making the world in their image.” Alexis Madrigal respondeds that as a result of this realignment, the “technology will work perfectly within the silo and with an individual stack’s (temporary) allies. But it will be perfectly broken at the interfaces between itself and its competitors.”30

Proponents and practitioners of the open web also bear responsibility for the missed opportunities in higher education. In retrospect, temperamental preferences for DIY culture, relentless tinkering and experimenta- tion, and indulging the delightful paradoxes of ill-structured problems has not served to promote the adoption of open online tools in the wider culture. Whereas innovators and early adopters tend to have a relatively high tolerance for chaos, higher education as a whole does not (and arguably cannot). Railing against the academy’s failure to embrace a perceived risk can be dismal fun for many of us, but an honest appraisal of our own missteps has to be in the mix.

It may well be that enthusiasm for DIY and “muddiest points” has prevented the development of approaches that offer what enterprise “solutions” promise (even if they fail to deliver). If we do not want to replicate the locked-down inflexibility of the LMS, that does not mean the only alternative is the boundlessness of a new and unmarked wiki page. There are times when “scale,” “polish,” and a commitment to actually making the tools as easy and intuitive as we like to claim can serve generative environments as well as tethered ones.32

Reclaim

On the occasion of the 25th anniversary of the World Wide Web, Sir Tim Berners-Lee, the man hailed as its creator, cited a series of threats to its ongoing survival: surveillance by security agencies; obso- lete copyright laws and overreach by intellectual property owners; and balkanization of the web by corporations and by nations. He added: “Unless we have an open, neutral internet we can rely on without worrying about what’s happening at the back door, we can’t have open government, good democracy, good healthcare, connected communities and diversity of culture.”33

Bryan Alexander responded by asking: “Where is education? How are colleges, universities, K-12 schools, and cultural heritage institutions responding?” More specifically: “Will educational technologists and academic computing leaders help their communities participate in, and defend, the open Web?”34

Based on recent history, it may be difficult to answer Alexander’s challenge with optimism. But as Berners-Lee affirmed during his Reddit “Ask Me Anything” session: “It is up to us. It is an artificial creation, as are our laws, and our constitutions... we can choose how they work. We can make new ones. Our choice.”35

Starting now. A technology that allows for limitless reproduction of knowledge resources, instantaneous global sharing and cooperation, and all the powerful benefits of digital manipulation, recom- bination, and computation must be a “bag of gold”36 for scholarship and for learning. It is well within the power of educators to play a decisive role in the battle for the future of the web. Doing so will require the courage to buck prevailing trends. It will require an at-times inconvenient commitment to the fundamental principles of openness, ownership, and participation. It will require hard work, creativity, and a spirit of fun.

It will require reclaiming innovation. Our choice.

Notes
4. Tannis Morgan points out that when it comes to disruption, “higher education” is too frequently described in universal terms, ignoring its diverse missions and communities: “When we say we are disrupting higher education, what exactly do [we] mean? What is the higher education that we are disrupting? What is the higher education that needs disrupting?” See “Disruption, Higher Education, and Other Vague Discussions,” Homonym, April 18, 2013, http://homonym.wordpress.com/2013/04/18/disruption-higher-education-and-other-vague-discussions/.
5. Special thanks to Andy Rush for turning us on to a number of these early guides. Also be sure to check out Brendan P. Kehoe’s “Zen and the Art of the Internet: A Beginner’s Guide to the Internet,” January 1992 (first edition), http://www.es.indiana.edu/docoproject/zen/zen1.0.html.
7. Hughes’s pioneering work resulted in his being one of only six inductees to the World Wide Web Hall of Fame in 1994 (http://bwyg.org/1994/awards/fame.html). In fact, Hughes might be considered one of the earliest innovative educational technologists to explore the implications of the web for teaching and learning in higher education.
8. See Joss Winn, “Hacking in the University: Contesting the Valorisation of Academic
Our vision around the phrase "reclaim" is at least in part inspired by the documented work that Boone Gorges and D’Arcy Norman have been doing to take back their online presence from third-party services since 2011 (http://teleologic.net/2011/03/project-reclaim/). While their approach is far more drastic than what we are advocating, Project Reclaim represents an ethos that is diametrically opposed to the innovation outsourcing that is prevalent in higher education IT shops at the moment.

Our vision around the phrase "reclaim" is at least in part inspired by the documented work that Boone Gorges and D’Arcy Norman have been doing to take back their online presence from third-party services since 2011 (http://teleologic.net/2011/03/project-reclaim/). While their approach is far more drastic than what we are advocating, Project Reclaim represents an ethos that is diametrically opposed to the innovation outsourcing that is prevalent in higher education IT shops at the moment.


The conceptual and practical work that Kin Lane (aka “the API Evangelist”) is doing with using Application Programming Interfaces for more targeted, data-rich syndication would offer another powerful opportunity for the future of such aggregation.

Shout-out to the notion of “federated wikis” being developed by Ward Cunningham (http://wardcunningham.github.io), who developed the first wiki, and Mike Caulfield and Tim Owens (http://hapgood.us/2014/02/28/the-federated-oer-wiki-is-up-and-running/).

Shout-out to the Candela syndication, transclusion, and OER work, built on WordPress, under way from David Wiley and Bill Fitzgerald (http://opencontent.org/blog/archives/3243).

Shout-out to Grant Potter, Alan Levine, and others at ds106 radio (http://ds106radio.io/dashboard/).

26. Martha Burtis has spoken about repositioning the axis of instructional technologies from the course to the individual since at least 2007; see Burtis, “Q&A,” The Fish Wrapper, January 3, 2007, http://wrapping.marthaburtis.net/2007/01/03/q-a/.


32. We use “generative” and “tethered” in reference to Jonathan L. Zittrain in The Future of the Internet and How to Stop It (2008), http://yupnet.org/zittrain/.


