Reinventing the Modern American University (Again)

Thomas P Seager
Assoc. Professor
Sustainable Engineering & The Built Environment
• The Jeffersonian ideal
• the Land Grant Act, 1862
This panel, with its toiling farmers and horse drawn wagon, represents the state of nineteenth-century agriculture and technology. To the right a robed figure, representing Education, pushes back the dark curtain of ignorance and leads young students through.

President Abraham Lincoln signing the Act, opening a new era in American education. In the background we see students passing through the curtain of ignorance to become new graduates. These graduates are shown crossing over a bridge, under which are the advancements produced thanks to the Land Grant college.

Benefits of the Land Grant college:

- Agriculture, made mechanized and producing more abundant food thanks to a greater understanding of life.
- Engineering: tapping new sources of power and creating new methods of production and transportation.
The benefits of the Land Grant college continue with Science, and the Liberal and Fine Arts (represented by the lyre and, artists' palette theatrical masks and Janis bust). Above it all a figure, representing Truth, emerges from a cloud, crushing under her foot the mask of Falsehood.

Great benefits to society flow from the Land Grant college. The many goods made possible by the learning of the educated are loaded onto a ship named Abundance, to be distributed to the world.
• Vannevar Bush, *Science: the Endless Frontier* (1945)
The New American University

Design Aspirations

ASU is a New American University, promoting excellence in its research and among its students, faculty and staff, increasing access to its educational resources and working with communities to positively impact social and economic development.

Eight design aspirations guide ASU’s transformation.

01. Leverage Our Place
ASU embraces its cultural, socioeconomic and physical setting.

02. Transform Society
ASU catalyzes social change by being connected to social needs.

03. Value Entrepreneurship
ASU uses its knowledge and encourages innovation.

04. Conduct Use-Inspired Research
ASU research has purpose and impact.

05. Enable Student Success
ASU is committed to the success of each unique student.

06. Fuse Intellectual Disciplines
ASU creates knowledge by transcending academic disciplines.

07. Be Socially Embedded
ASU connects with communities through mutually beneficial partnerships.

08. Engage Globally
ASU engages with people and issues locally, nationally and internationally.
Crisis in Higher Education

• Exponentially increasing costs
• Unserviceable debt loads
• Unprecedented expectations with regard to access
• Shrinking federal, state, and local government support
Inflation of Tuition and Fees (Private 4-Year Colleges), Medical Costs, and Cost of Living, 1978-2008

The Crazy Growth of Student Loans

Cumulative Growth of Household Debt Less Student Loans
Cumulative Student Loan Growth

Sources: New York Fed, Bureau of Economic Analysis

• Increasing external subsidies?
• Innovation brings costs down – Drucker

• Keeping prices high holds an umbrella over your competition
In class we discussed an increasingly familiar situation in which a homeowner that can afford their mortgage chooses not to, because the value of their home has fallen well below the total amount of their mortgage debt. Ordinarily, a homeowner that defaults on their mortgage would face negative consequences such as:

1. Loss of their home through foreclosure.
2. Downgrading of their credit rating.

However, homeowners have been avoiding these negative consequences in two ways: 1) where a married homeowner is the sole borrower on the home, they can use the spouse's credit to purchase a new home, or 2) purchasing a second home prior to defaulting on the first.

Although the original borrower still suffers from a poor credit rating, they can avoid tens or hundreds of thousands in debt, and still benefit from the tax benefits of home ownership, as well as enjoy any gains in price appreciation of their new home, should the market rebound.

Cherylynn objected to this behavior, and stated it was unethical. Julian disagreed. I proposed a compromise wherein the morality of homeowner could only be judged relative to the willingness of the bank to negotiate.

Explain your own views here.

The students' answer, where students collectively construct a single answer

Clearly defaulting on your mortgage is unethical because you as a homeowner have signed a contract saying that you will pay back the money you borrowed whether the market is doing well or not if you don't then you are basically stealing from the banks. But the fact that you can climb out of debt by a couple hundred thousand dollars by simply walking away from the current home you own is the logical choice to make if the only repercussion is your credit score gets lowered and you rely on your spouse to take out loans for you. However, if the bank is willing to negotiate a deal then the options to walk away from a mortgage is clearly unethical because now you have an option to reduce your debt that won't have as great of a negative effect on everyone involved in the contract.

The instructors' answer, where instructors collectively construct a single answer

There is something of a contradiction in this response. How does the last sentence add anything to the first?

If it is clearly unethical for the homeowner that can afford to pay to default, then what does the banks willingness to renegotiate have to do with it?
MITx will offer a portfolio of MIT courses for free to a virtual community of learners around the world. It will also enhance the educational experience of its on-campus students, offering them online tools that supplement and enrich their classroom and laboratory experiences.

The first MITx course, 6.002x (Circuits and Electronics), was launched in an experimental prototype form. Watch this space for further upcoming courses, which will become available in Fall 2012.

MITx Courses will be offered on an online learning platform that:

- organizes and presents course material to enable students to learn worldwide
- allows for the individual assessment of any student’s work and allows students who demonstrate mastery of the material to earn a verified certificate
- features interactive instruction, online laboratories and student-to-student and student-to-professor communication
- operates on an open-source, scalable software infrastructure in order to make it continuously improving

On May 9, it was announced that Harvard University will join MIT as a partner in edX. MITx, which offers online versions of MIT courses, will be a core offering of edX, as will Harvardx, a set of course offerings from Harvard.
MITx Honor Code Pledge
By enrolling in an MITx course, I agree that I will:
• Complete all mid-terms and final exams with my own work and only my own work. I will not submit the work of any other person.
• Maintain only one user account and not let anyone else use my username and/or password.
• Not engage in any activity that would dishonestly improve my results, or improve or hurt the results of others.

Harvard Students in Cheating Scandal Say Collaboration Was Accepted
By RICHARD PÉREZ-Peña
Harvard students suspected in a major cheating scandal said on Friday that many of the accusations are based on innocent — or at least tolerated — collaboration among students, and with help from graduate-student teachers who sometimes gave them answers to test questions.

Students said they were tripped up by a course whose tests were confusing, whose grading was inconsistent, and for which the professor and teaching assistants gave contradictory signals about what was expected. They face the possibility of a one-year...
Network-based Education

This video from Sir Ken Robinson presents a modern critique of public education. "The Problem", as he puts it, is that the modern system of education is out-of-date. It was conceived in the 19th century to serve the Industrial Revolution, and as such it is predicated on a factory metaphor.
Entropy Intuition: A discussion of what entropy is and what it isn’t.

Questions and answers about entropy intuition:

Q. A small question, I think I get how an increase in volume increases entropy, but now I understand a little more this concept... can somebody explain to me how an increase in temperature increases this combination of states?

Chuy06 asked about a year ago

Q. Can you do a lecture series on Shannon’s information theory?

Imagination asked about a year ago

Q. I think it would be nice to add that the bouncing ball also loses energy by friction with air. I mean, I know for some people is obvious, but just in case somebody doesn’t know.

J. Garcia

Chuy06 asked about a year ago

Q. Is there a reason you use Q for heat? In my textbook, H is used for enthalpy, which ones the industry standard?

Murs Fazir asked 6 months ago

Q. Is being in Ordered state the same thing as being in least state of energy? If so then isn’t it the natural tendency for matter to be in the least state of energy? So is it possible for it to return to ordered state unlike 17.06.(c)?

Jayant Mathur asked 5 months ago

Q&A with lower votes
# Evolution of Higher Education: Reinventing the Modern American University (again)

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REAL problems (rather than “made up” homework problems). For example:

- Ink jet vs. laser
- Incandescent vs. CFL vs. compact fluorescent
- E-book vs. printed book
- Buying vs. renting a home
- Leasing vs. borrowing to purchase a car

REAL TEAMS (students become interdependent)

OPEN, but monitored

BLENDDED

- Active exercises in class (more tacit in class, more explicit online)
- Short lectures posted on freely available sites
- Leverage peer-to-peer without totally breaking existing norms.
from spectators to players
from passive to active
from apathetic to emotionally invested
from narratively closed to experimentally open
from predictable to surprising
from producing outputs to outcomes