

Disrupting the Future

Disrupting the Future of Higher Education Evolving Learner-Center Environments

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Technology Changes Society

- Creative Destruction

- Joseph Schumpeter, Austrian Economist 1934
- new products and technologies make old products and technologies obsolete
 - Videotape ->DVD-videodisc -> network delivery of digital video

- Disruptive Innovation

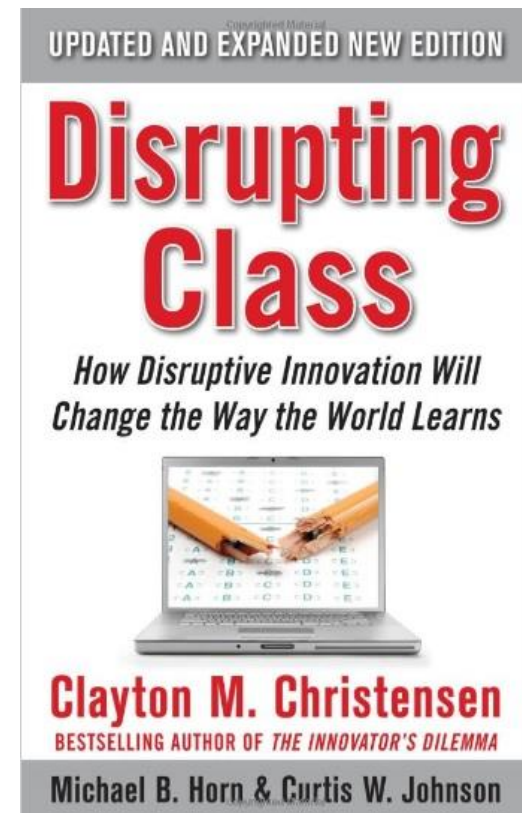
- Clayton Christensen, Harvard, 1997
- new products begin in new, unexplored markets but grow in quality and capability to displace older markets.
 - Mini-computer disrupted mainframes and were in turn disrupted by PC's.
 - Steel mini-mills created poor quality steel at low prices to take the least profitable part of the steel market. They then grew to displace the old-line steel companies.

Forces on Higher Education

- **The Five C's** -"Using the Computer in Teaching Physics," J.M. Wilson, Physics Today 42(1) (Jan. 1989).
 - Computing,
 - Communication,
 - Cognition
 - Community
 - Contemporary Issues
- **Financial Change**
 - Government disinvestment
 - Unsustainable price escalation
 - Consumers (students and parents) seek value
 - Value = Desired results/total cost
 - See: <http://www.payscale.com/college-education-value-2013>

Disruptive Innovation

- Clayton Christensen manages to write an excellent treatise on how technology is disrupting higher education.
 - He “gets” the general pattern of disruption (as expected) while missing most of the details due to a lack of understanding of some of the fundamentals of higher education marketing, branding, and pedagogy. (I really did come to praise him instead of burying him.)
- Missing: the cognitive science of how students learn and how learning environments need to be constructed.
- Automating ineffective technologies like lectures and other non-interactive and non-engaging activities will not do it. MOOCs are not the answer.



Focusing on the C's *

- **Community:** this includes both issues of diversity and development of learning communities -which will be further addressed under cognition.
- **Contemporary issues:** must be addressed
- **Computers:** it is completely apparent that computers have changed the way all of us work and live our personal lives, but is still at work on our educational systems
- **Communication:** the internet and social networks have made possible new learning communities and allow (but sadly do not require) the development of far more engaging educational environments.
- **Cognition:** research in student learning informs us as to which learning environments are effective and which are not!
 - Learner centered environments rather than teacher centered environments

* "Using the Computer in Teaching Physics," J.M. Wilson, *Physics Today* 42(1) (January 1989).).

Focusing on the three C's

- For purposes of this discussion, we will consider the three C's
 - Computers, Communication, and Cognition
- Many of the innovations that catch the eye of the public do a good job on the first two and a lousy job on the third.
- We know much more about how students learn, and learning environments need to change to create the engagement that leads to student learning.
- But too little of what we have learned about how students learn has been incorporated in our mainstream classes.
- Worse: we continue to use pedagogical techniques that have marginal effectiveness. In many cases the bulk of time on task is spent in marginal activity.

Physics NRC Report on Undergraduate Physics Education:

- “Evidence indicates that the physics community remains in a traditional mode where the primary purpose of physics education is to create clones of the physics faculty.”
- “Over the past several decades, active research by physicists into the teaching of their subject has yielded important insights about what can be done to heighten the quality of students understanding of their universe, at all levels. “
- “But this new knowledge is slow to find significant adoption, nor is it fully understood by physics faculty.”
 - http://www.nap.edu/openbook.php?record_id=18312&page=1

Cognition

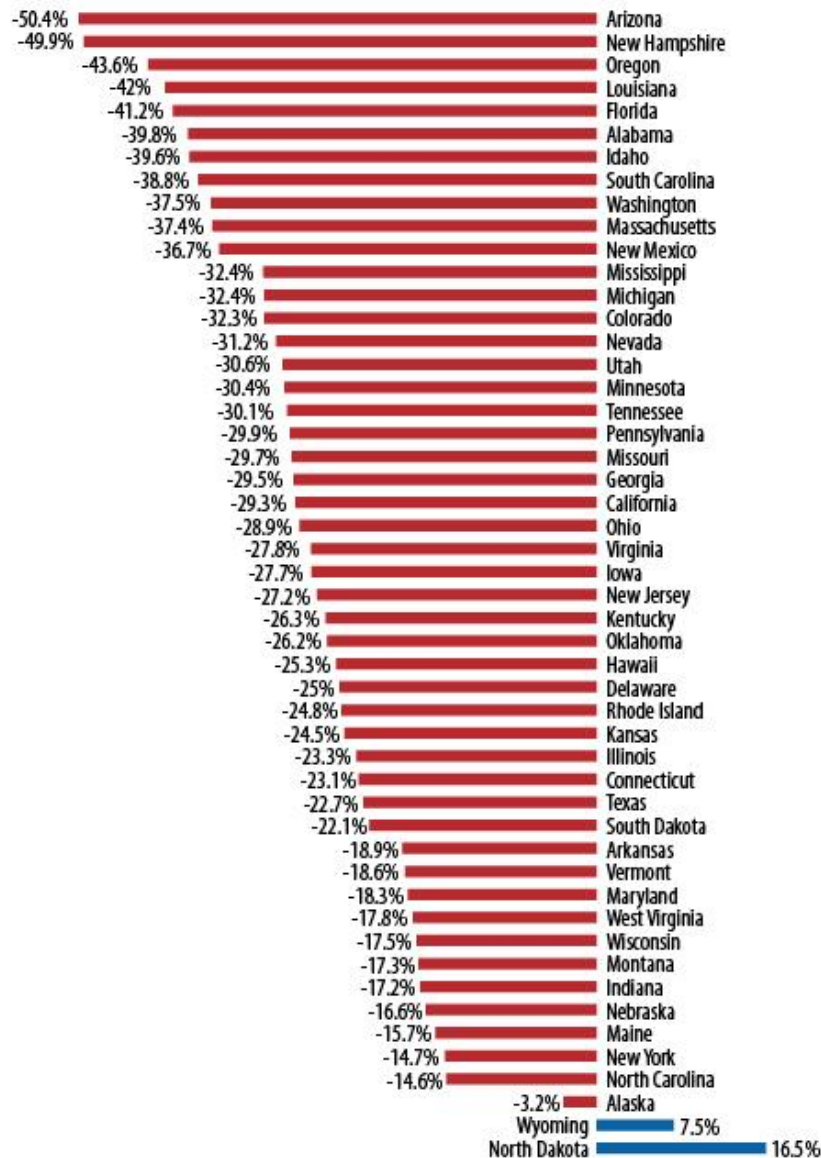
- My involvement with the recent NRC report reminded (and saddened) me to note that educational innovation often reinvents the wheel rather than advancing our understanding –based upon the research on the way students learn.
- There are notable exceptions like:
 - The National Center for Academic Transformation
 - The Rensselaer Studio Courses
 - Carnegie Mellon Open Learning Initiative (OLI).
 - Many others but not enough.

And then there are finances.....

- The need is clear, but the support is not there
- Most states have been through a period of disinvestment in higher education that began in 2008 and has only begun to flatten recently.
- Even over the longer term, the relative share of the cost of education that is born by the state has declined.
- California has perhaps been the most watched, since it HAD been the exemplar of public support in the past.
 - My bad joke at a national conference: how UMass become more like California, but not the way we wished.

States Have Cut Higher Education Funding Deeply in Recent Years

Percent change in state spending per student, inflation adjusted, FY08 - FY13



- Median Cuts were 27.7%
- Press reports like to focus on two numbers for effect:
 - The high posted price of privates
 - Which are often deeply discounted
 - The large percentage increases of publics
 - Which are applied to much lower costs and driven by state cuts.
 - Actual cost increases are only 1.2% over many years.

Source: CBPP calculations using data from Illinois State University's annual Grapevine Report. Illinois data is provided by the Fiscal Policy Center at Voices for Illinois Children. Because enrollment data is only available through the 2012 school year, the enrollment data for 2013 used in these calculations is estimated based on enrollment trends from past years.

Finances at private universities have become unstable

- While all of the private colleges and universities have become less stable, the problem is particularly acute at those institutions without large endowments.
- Until recently institutions could use a “price signaling strategy” (high prices signal high quality?) which works if:
 - Other information about the quality is hard to obtain.
 - Consumers tend to equate price with quality.
 - There is a context in which the price quality relationship appears to hold true.
- These conditions have been largely present in higher education.
- The first condition is probably the most important:
 - In the absence of other information, consumers will conflate price with quality.

Breaking the price-quality lever

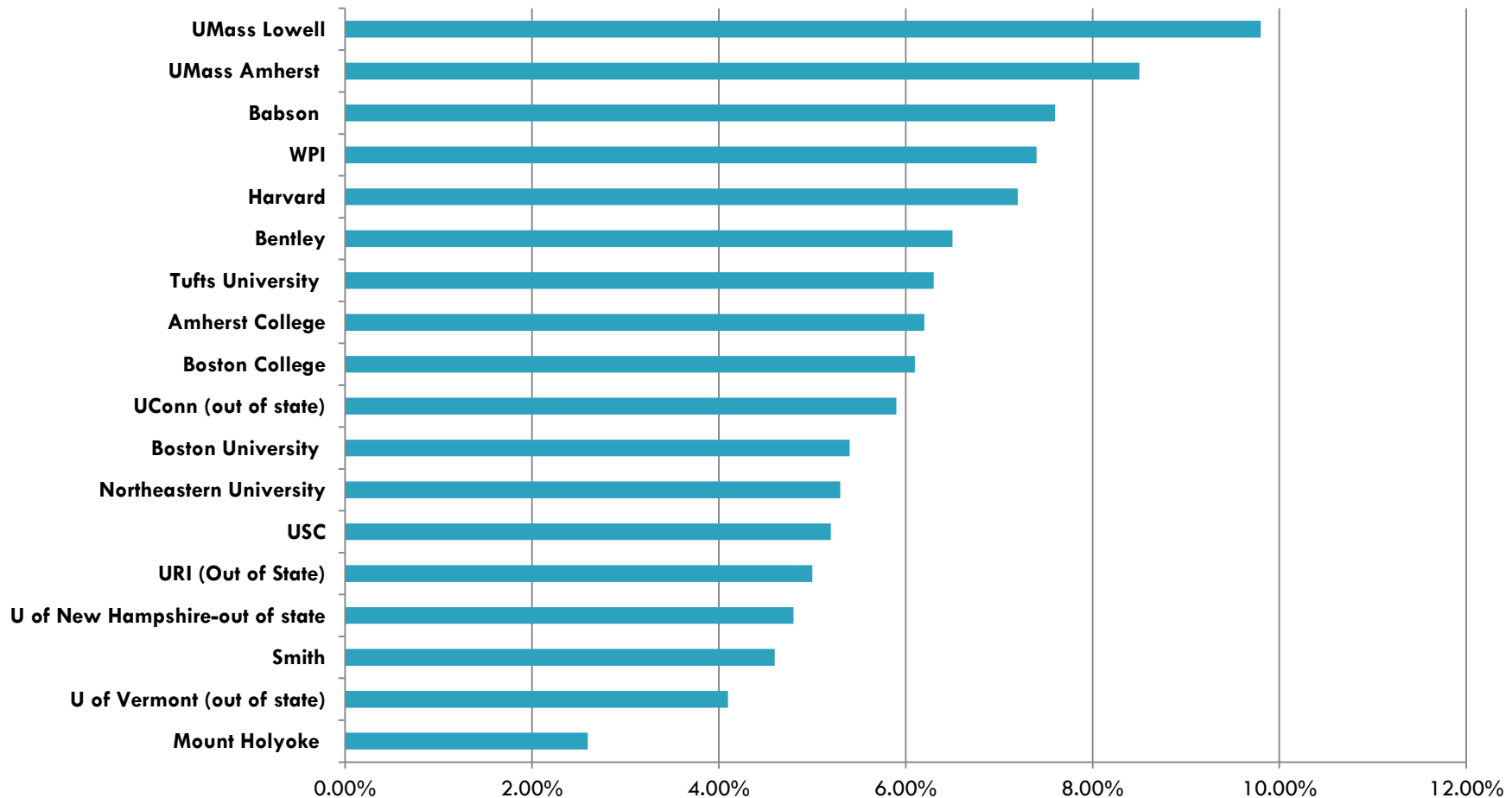
- It is very difficult to find indicators of the quality of a higher education experience.
- Universities resist comparative testing at all costs,
 - and private universities resist the most.
 - High cost private universities rely upon the consumer perceiving them as higher quality –in the absence of other information.
- Universities resist and denigrate efforts to compare the success of their graduates.
- “We Need to Sever the Iron Bond Between Price and the Perceived Quality of Colleges” Chronicle of Higher Ed. –Feb. 29, 2008
 - Long recognized, but hard to do.
- But that is changing –and has dire implications for all of higher education

ROI: Return on Investment

- Increasingly colleges are being ranked on value or return on investment. Payscale.com is the most quoted example.
 - <http://www.payscale.com/college-roi/full-list>
 - This rewards institutions that graduate students who get higher salaries and penalizes those schools with the highest net tuition.
- This is quite a change from the time when higher education was seen as being price insensitive.
- Selected Examples: MIT – 8.2%, Stanford-7.8%, Harvard-7.2%, Georgia Tech.-11.9%, Columbia University-6.8%, UMass Lowell-9.8%, Tufts University 6.3%, Boston College-6.1%, UMass Amherst 8.5%, USC-5.2%, Northeastern University- 5.3%

ROI- For a prospective student from MA

Return On Investment (<http://www.payscale.com/college-roi/full-list>)



Price signaling

- In the past many universities have actually been able to INCREASE demand by increasing price.
- Contrary to traditional economics -but has been studied and documented in higher education and other markets.
- Now that students can find more information about quality and outcomes, it is making that strategy less tenable.
- Institutions without large endowments have painted themselves into a corner with high prices, high discount rates, high financial aid (other side of the same coin), and a insatiable need for tuition revenue.
 - The model is no longer sustainable.

Strategies for the Future

- Challenges:
 - Public disinvestment
 - Curtailed growth in research funding
 - End of growth in potential students
- Universities must become more entrepreneurial
 - Find new sources of revenue
 - Online education, fund raising, international students, enrollment growth, joint programs with industry, etc
 - Constrain expense growth
 - Online education, blended learning, MOOCs?, etc.

Financial Challenges: The Paradox

- At the same time that Universities are facing extraordinary financial pressures due to a collapse of state revenue and endowments
- Everyone is looking to Universities to lead us out of the economic decline
- Creating futures for students and communities
- And solving social challenges like
 - improving college readiness
 - Reducing disparities (racial, economic, gender, etc)
 - Increasing graduation rates
 - Attracting students into STEM fields
 - Better matching workforce needs

President Obama's Goal

- To be first the world by 2020 in the proportion of college graduates.
 - -Address to Congress on Feb. 24, 2009.
- The US was tied for 6th place at 30% according to 2006 data.



The Catalyst for the Future

- What do Boston, Bombay, Beijing, Bangalore have in common with San Francisco, Austin, Raleigh, Cambridge, and other world economic leaders?
- They are vibrant economic regions nucleated by world class universities.
 - Universities pouring out highly educated graduates with skills and intellectual property.
 - World class research that is curing illnesses and creating new jobs, companies, and even entirely new industries.
 - And doing this at very large scale.

The Path

- I love to say:
- “The path to economic and social development in Massachusetts goes through the University.”
- It is fair to say that the path to economic and social development in the world goes through our world class universities, and through the continuum of world class education from K-Retirement.

Not everyone believes!

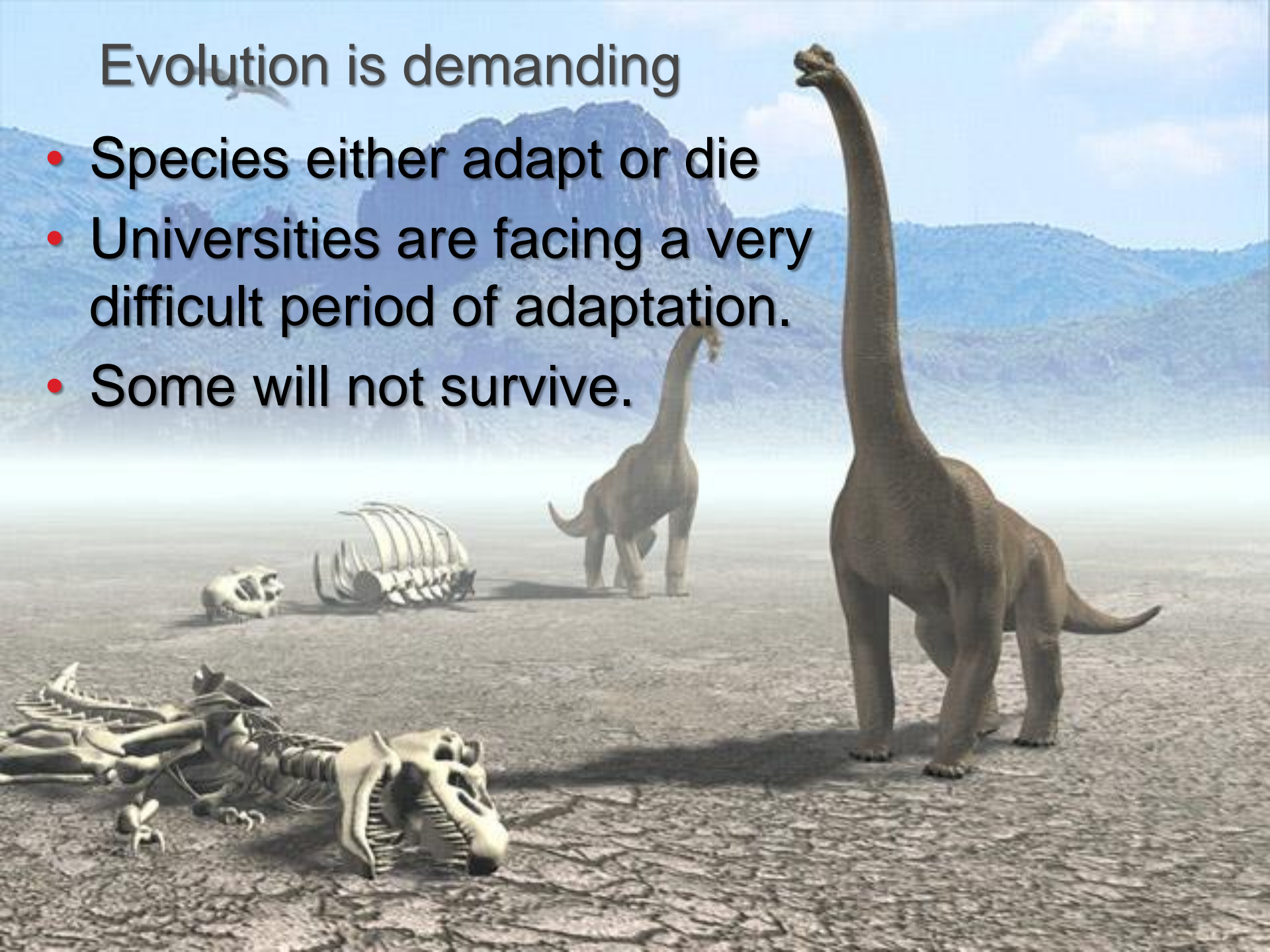
- Higher Education Costs too much?
 - This widely held political position is most notable for the lack of understanding of why this might be –if indeed it really is!
 - Nonetheless- we should buckle our seatbelts for a ride to drive down the cost of higher education -and many of the “well meaning” efforts will be far more damaging than helpful.
 - Some will be downright foolish like government attempts in Florida and Texas to mandate \$10,000 bachelor’s degrees –based upon political rather than academic considerations.

But far too many are in denial

- While change has actually been rather large scale, the conventional wisdom is that there has been little change.
- It is also probably accurate to say that even the large scale changes have not penetrated the culture of higher education nearly as much as necessary.
- There is no shortage of contrarian voices that decry even those changes that HAVE occurred.
- The disparity is creating a vacuum into which politics is inevitably drawn.

Evolution is demanding

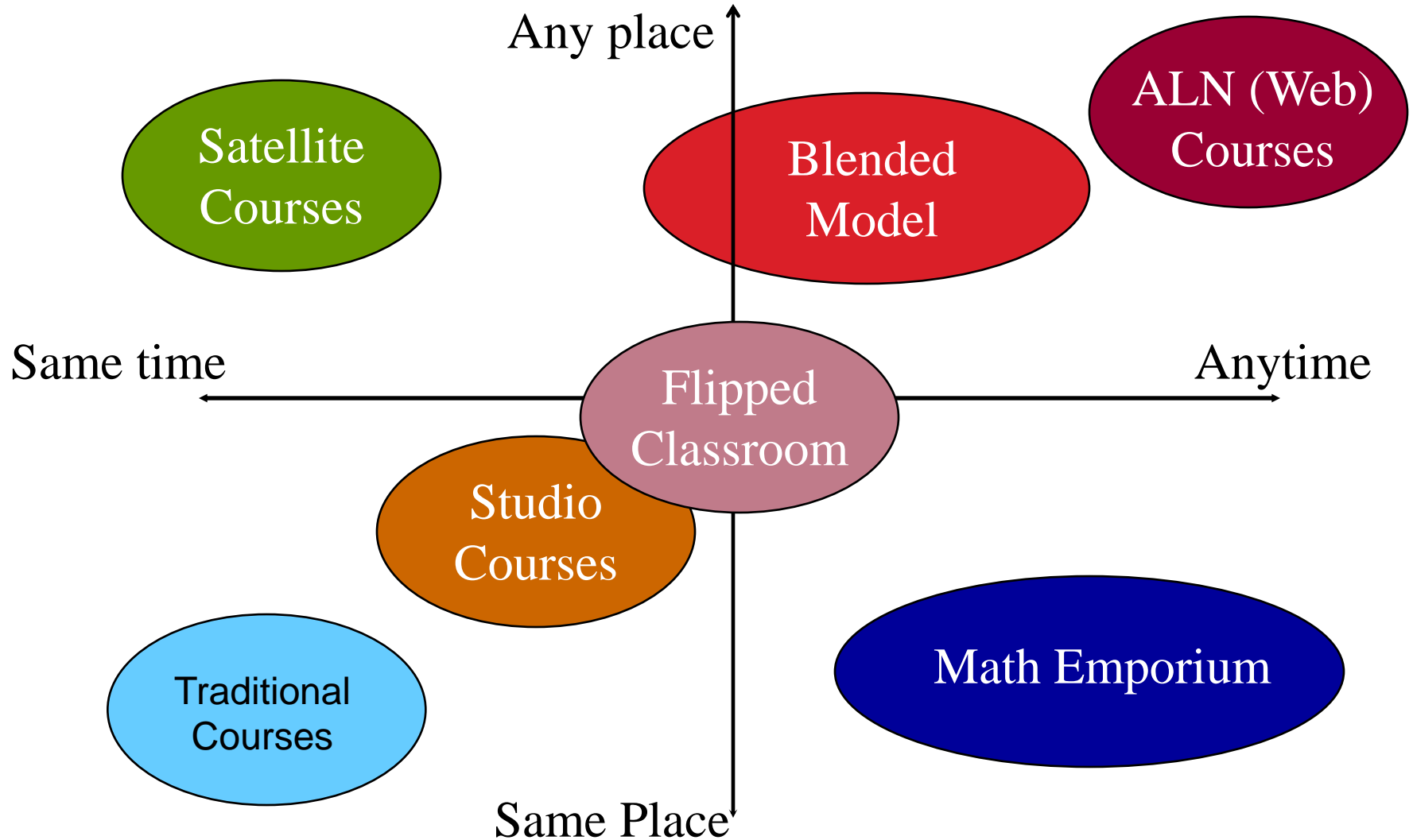
- Species either adapt or die
- Universities are facing a very difficult period of adaptation.
- Some will not survive.



What are key viable strategies?

- Online Education (not so much MOOCs)
 - Increase access, reduce cost, increase revenues, develop a global market presence
- Educational Engagement
 - Maker Spaces, Flipped Classrooms, Studio Classrooms, Emporia, Peer learning, “clickers,” etc.
- Technology Enhanced Learning
 - Blended learning, MOOCs as part of a more engaging environment, flipped classrooms, studio classrooms, etc.
- Global recruitment of students.
 - Companies like Navitas, World Education Group,
 - (<http://www.nacacnet.org/international/documents/intlstudentrecruitment.pdf>)
 - Provides a welcome revenue stream of full pay students to cross subsidize local students –but there are limits.

Course models

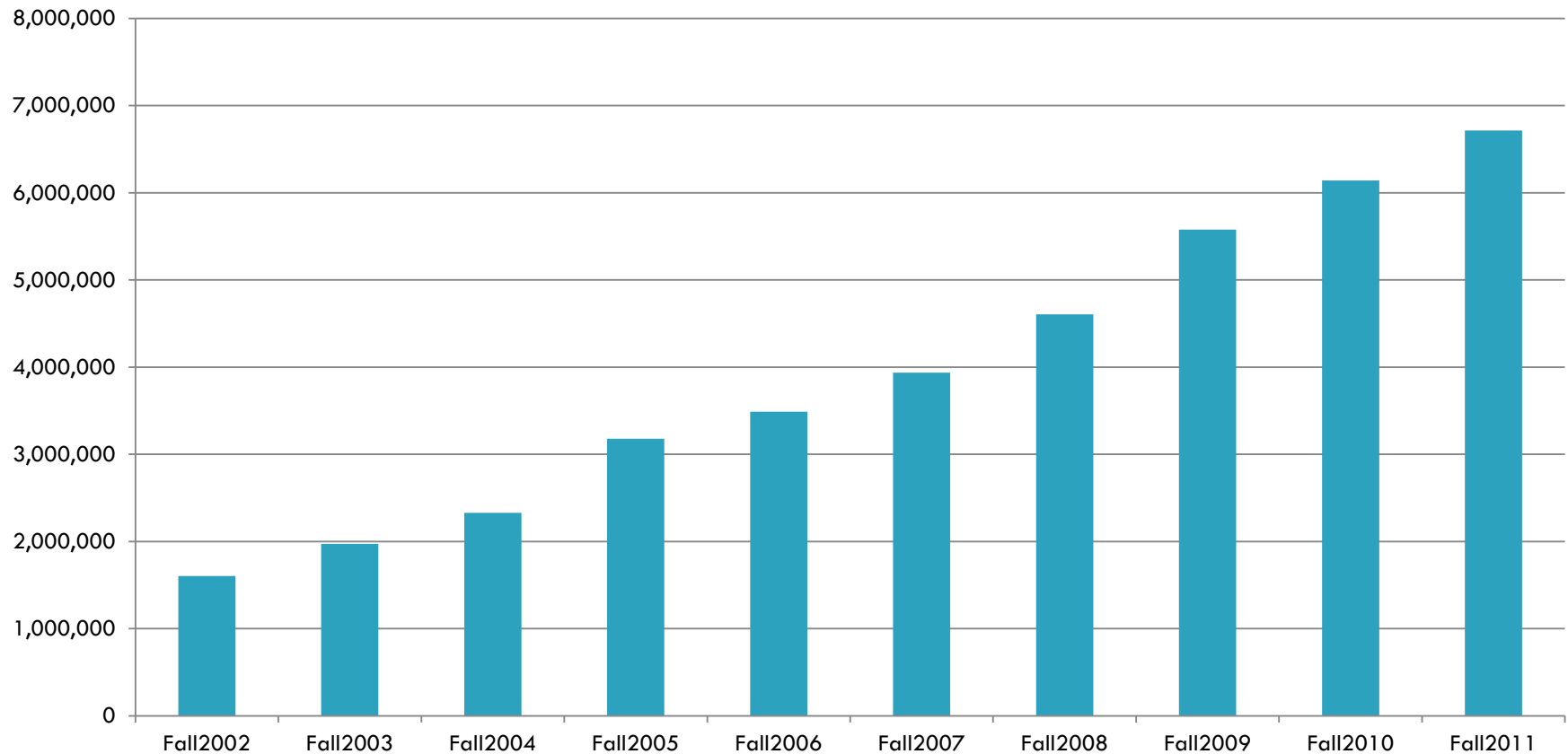


The Reality of Online Education transcends

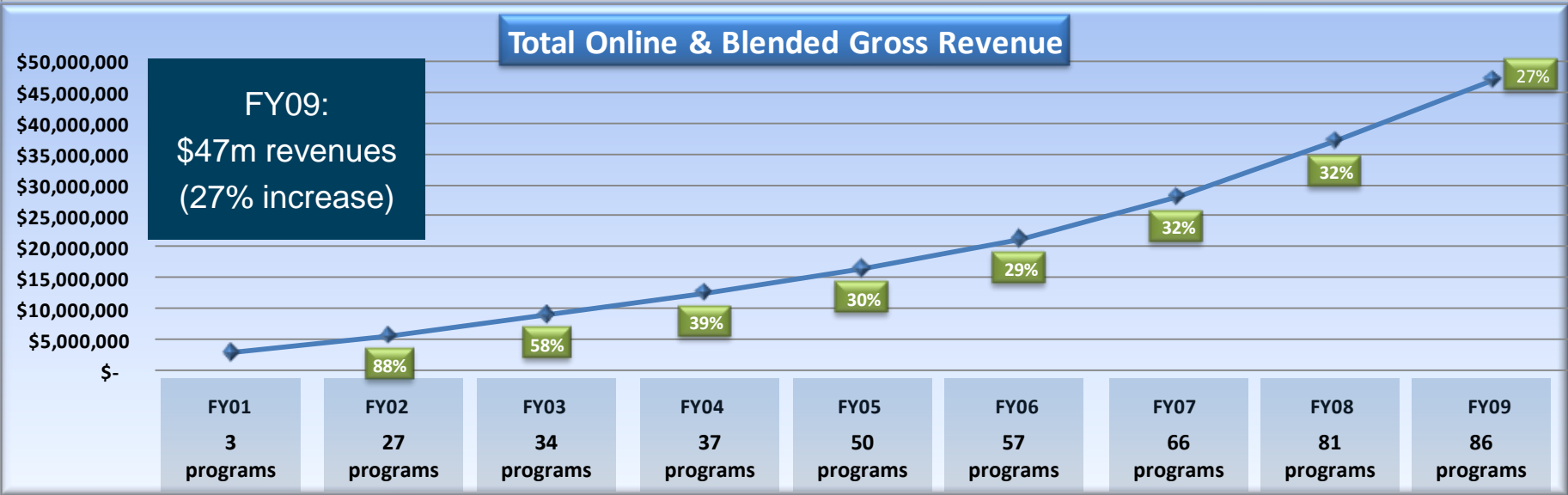
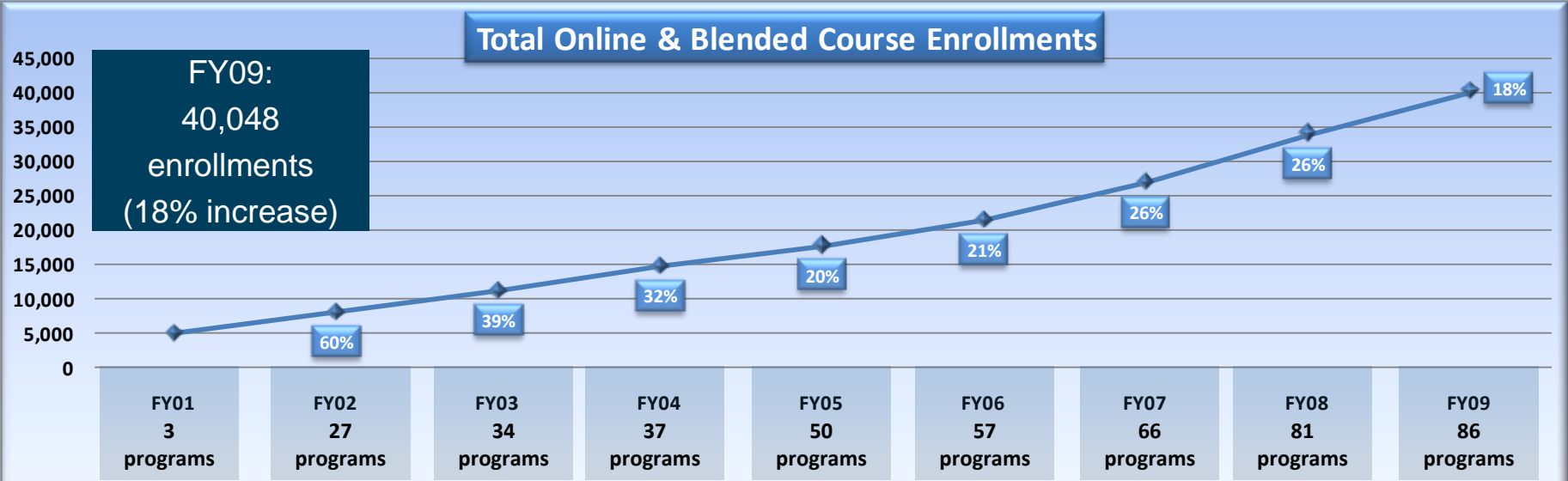
- If one reads the traditional press coverage of online education it is dominated by either
 - Skepticism
 - Can students learn?
 - Cheating
 - etc
 - Hype
 - MOOCs will change the world and make higher education obsolete
 - The hyper prestigious universities drive the change
- **Not!**
- So what is the reality and the future?

Relentless Growth

Sloan Alt C- Growth in Online



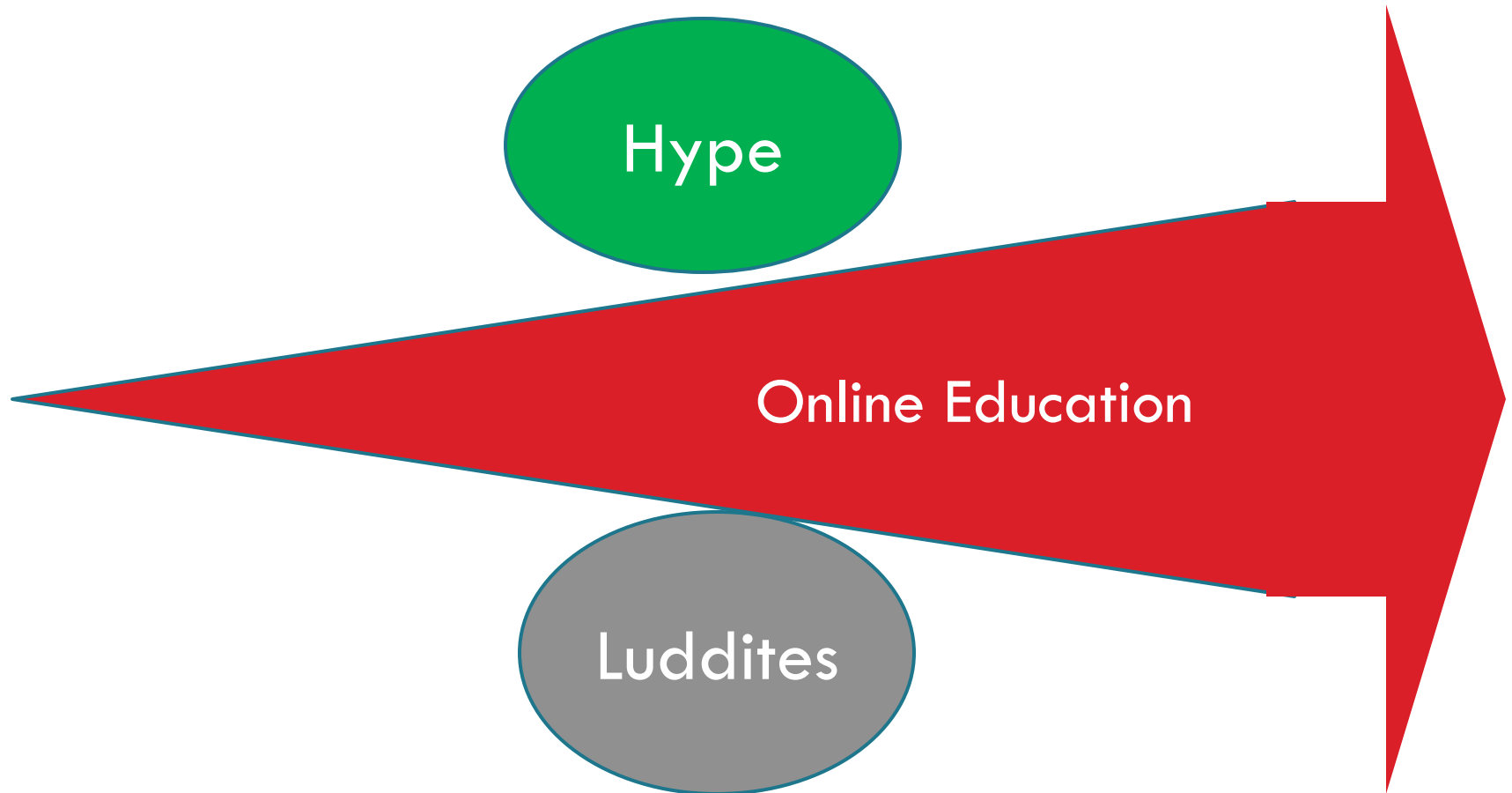
UMassOnline Growth Trajectory



UMassOnline Continued Growth

- FY 2010 UMassOnline
 - Enrollment 14.4% Increase to 45,815
 - Revenue 20.1% to \$56.2 Million
- FY2011: UMassOnline
 - Enrollment 12% Increase to 51,097
 - Revenue 16% Increase to \$65.2 million
- FY2012: UMassOnline – growth slows
 - Enrollment: 6.58% increase to 54,461.
 - Revenue: 10.55% increase to **\$72.1 million.**

A Relentless Force that Will **Not** Be Denied



Creating the Future

- Creating strong Universities to lead us out of the great recession.
- Leading the world in the proportion of college graduates.
- Distance learning is nothing less than a juggernaut.
- Most Universities are struggling with their financial model
- Many (but not all!) traditional universities are struggling to understand the strategy.
- For-Profit Universities are stepping in to fill the vacuum, but are increasingly under attack for their poor performance on retention, persistence, and graduation rates and for their poor use of federal financial resources.

The dangers of hype

- Students get hurt by well meant, but poorly designed experiments.
- Money gets wasted at a time when every dollar is precious in higher education
- Good ideas get discredited by over-reaching and then failing.
- To anyone in the audience that I offend, I offer this prior apology but.....
- I hope that it encourages you to adopt a position of scientific skepticism and innovative optimism.

Massive Open Online Courses MOOCs

- Kahn Academy -2006
 - Salman Kahn –non-profit -2006
- Udacity -2012
 - Sebastian Thrun, Stanford - for-profit
 - In 50 years there will be only 10 institutions in the world delivering higher education and Udacity has a shot of being one of them.
Sebastian Thrun- Udacity Founder
- Coursera -2012
 - For-Profit – Andrew Ng, Daphne Koller, Stanford
- edX (MITx -2011 and edX in 2012)
 - Harvard, MIT, Berkeley –non-profit
- Udemy -2010
 - Eren Bali and Gagan Biyani –for profit

Are MOOCs going to change the world

- Too late. The world already changed without MOOCs even if Stanford, Harvard, MIT and others had not noticed!
 - “the vast majority of people who sign up for MOOC’s don’t complete their courses, yet MOOC creators are hailed as visionaries rather than being denounced for their 10-percent completion rates” –Kevin Carey –Chronicle Blog
- MOOCs are interesting and valuable experiments, but they are not on the critical path of online education –at least in their current form.
- “The Myth of MOOCs;” by J. M. Wilson; 2013.
 - <http://www.jackmwilson.net/MOOCMyths.html>
- “The MOOC Hype Fades, in 3 Charts;” 2015
 - <http://chronicle.com/blogs/wiredcampus/the-mooc-fades-in-3-charts/55701>

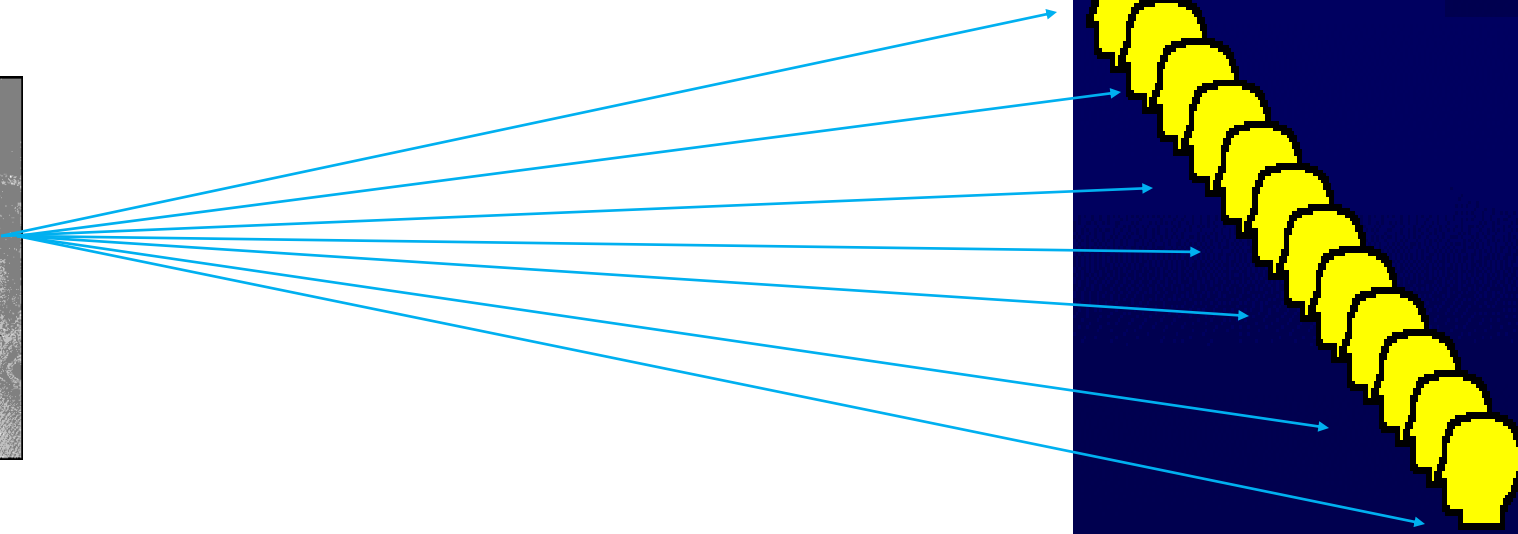
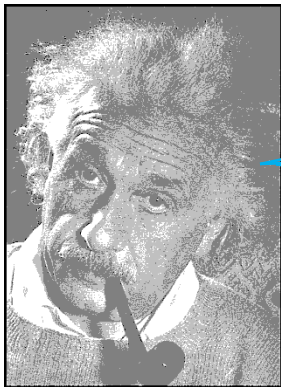
A Brief History of “Distance Learning”

- Correspondence Courses
- TV Courses – Cable, Satellite, Videotape
- Interactive Video Courses (2-way satellite, videoconferencing, and now Skype)
- ALN – “traditional” online education
- MIT OpenCourseWare
- Carnegie Mellon Open Learning Initiative
- MOOCs

- Unfortunately many of the MOOCs look eerily like the “moving hand writes and then moves on” of the video days!

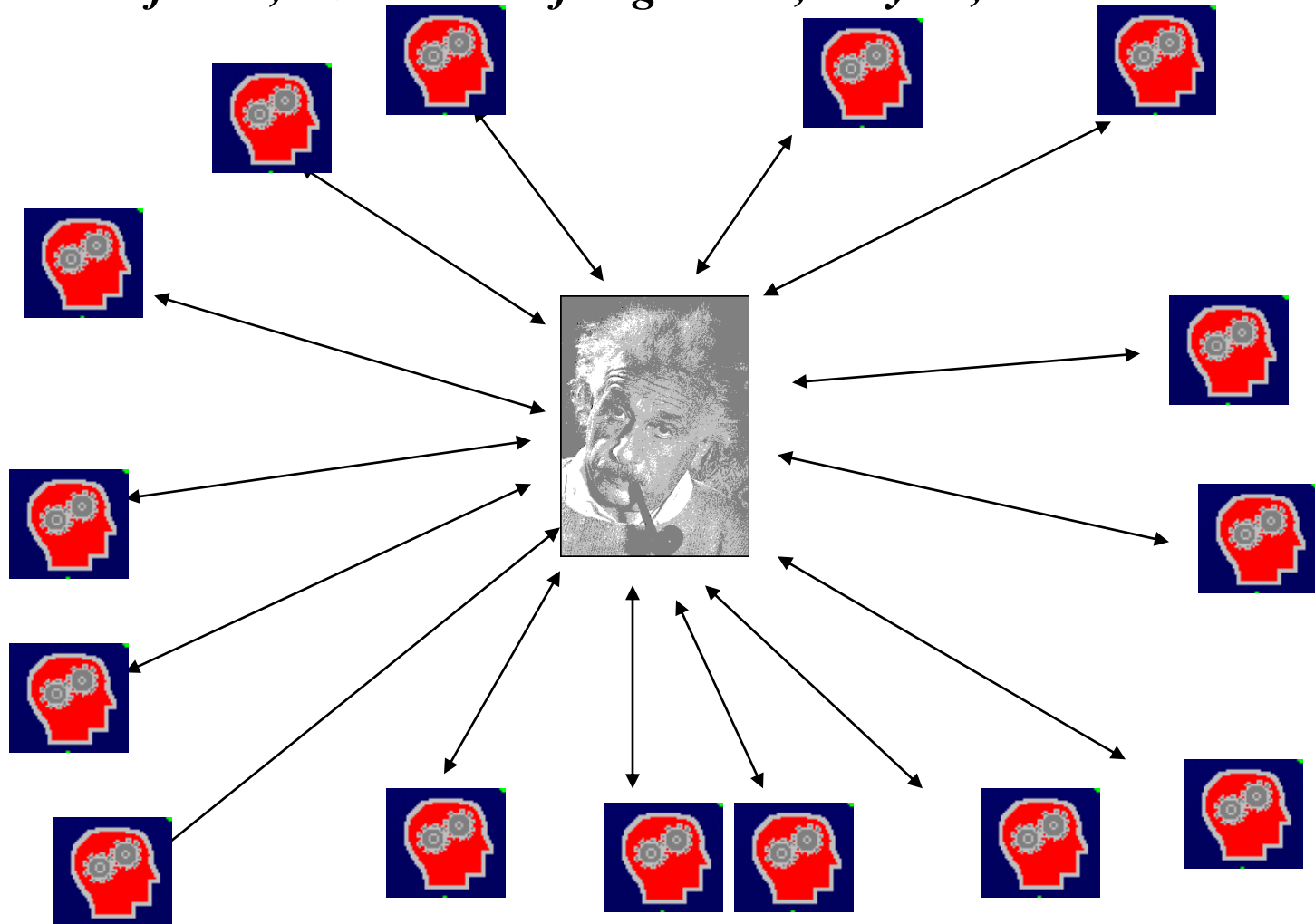
The transmission (lecture) model

- The mainframe approach
 - Face to Face: The Lecture
 - Distance: TV (Cable, Video, Satellite, or MOOC)
 - Pushes the back wall out a few thousand miles
 - Research in the cognitive sciences has demonstrated that lectures are not very effective –unless engagement technologies (like clickers) are added.



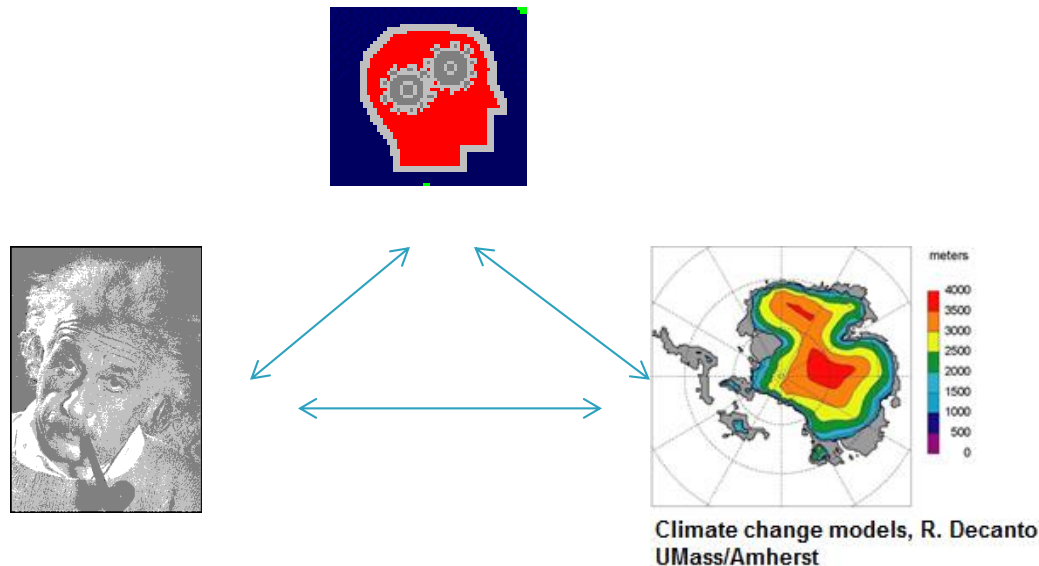
Which can become the usual on-line course organization!

“The 24-Hour Professor;” Chronicle of Higher Ed; May 31, 2002

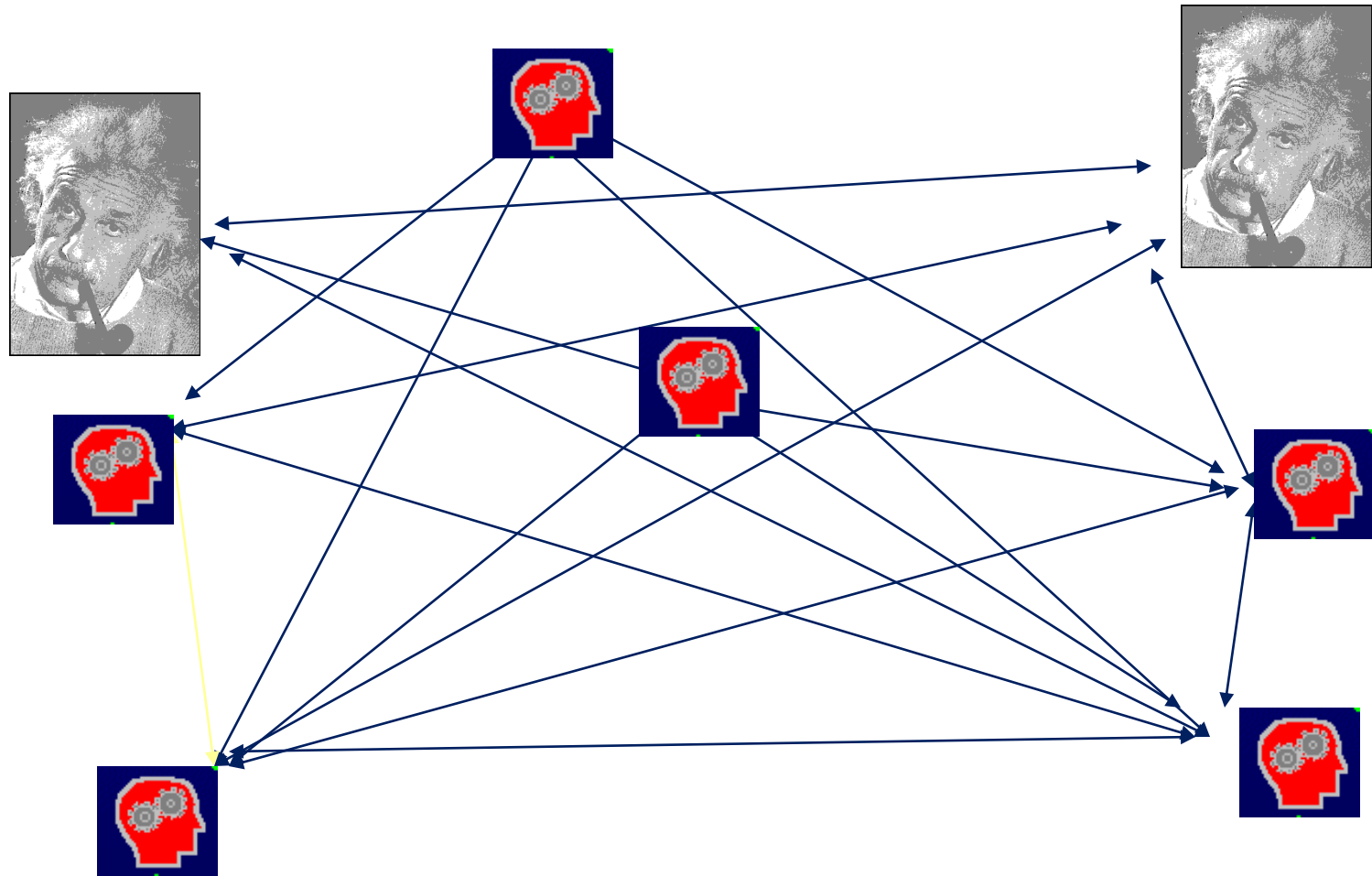


Engagement

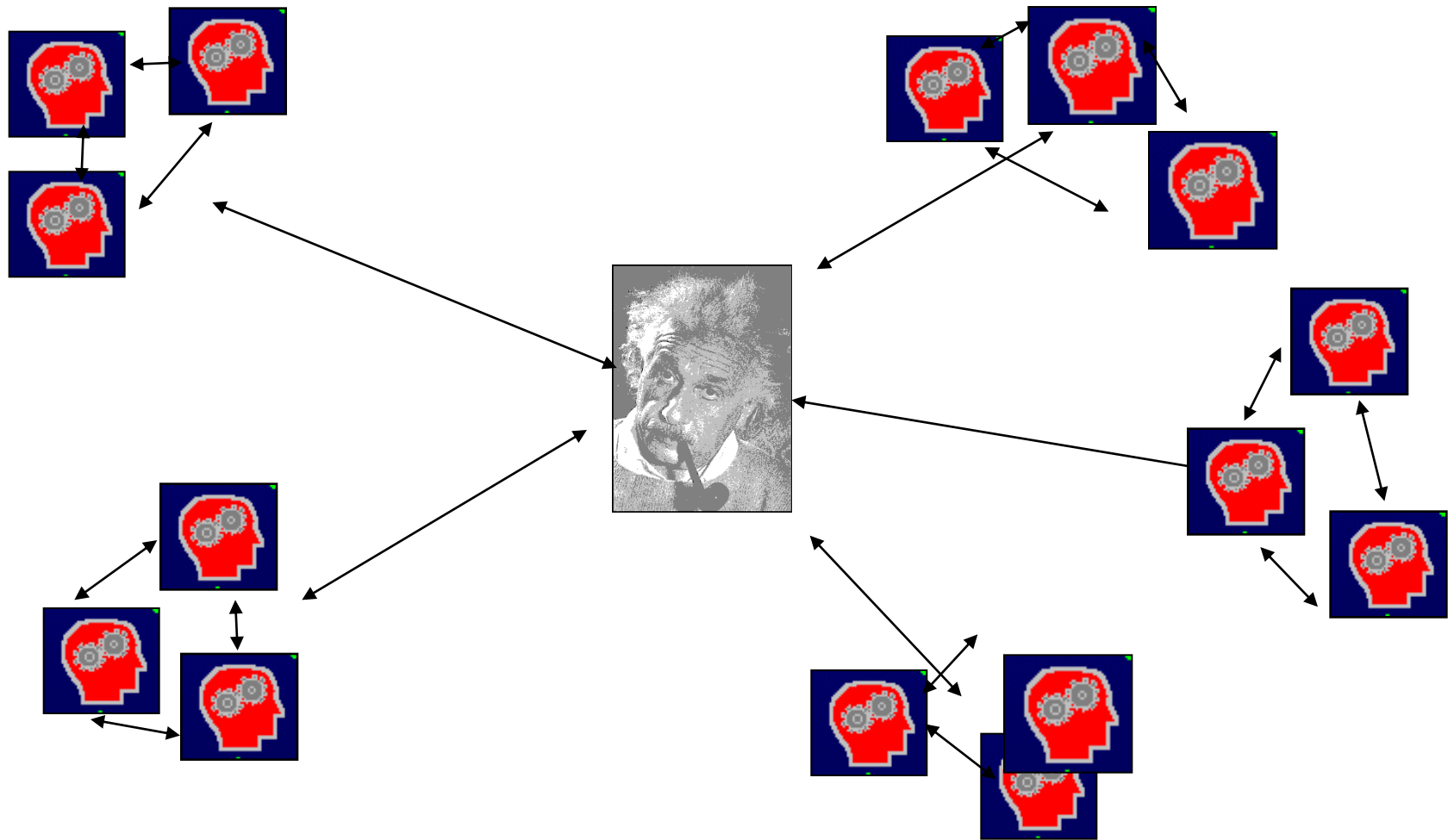
- Faculty with student (half done in lecture)
- Student with material (reading, homework, papers, adaptive tutorials, most MOOCs, etc)
- Student with Student (peer learning, small groups, team based projects, studio classrooms, etc)



Distributed Collaborative On-line Model



Collaborative Learning, Peer Learning.....



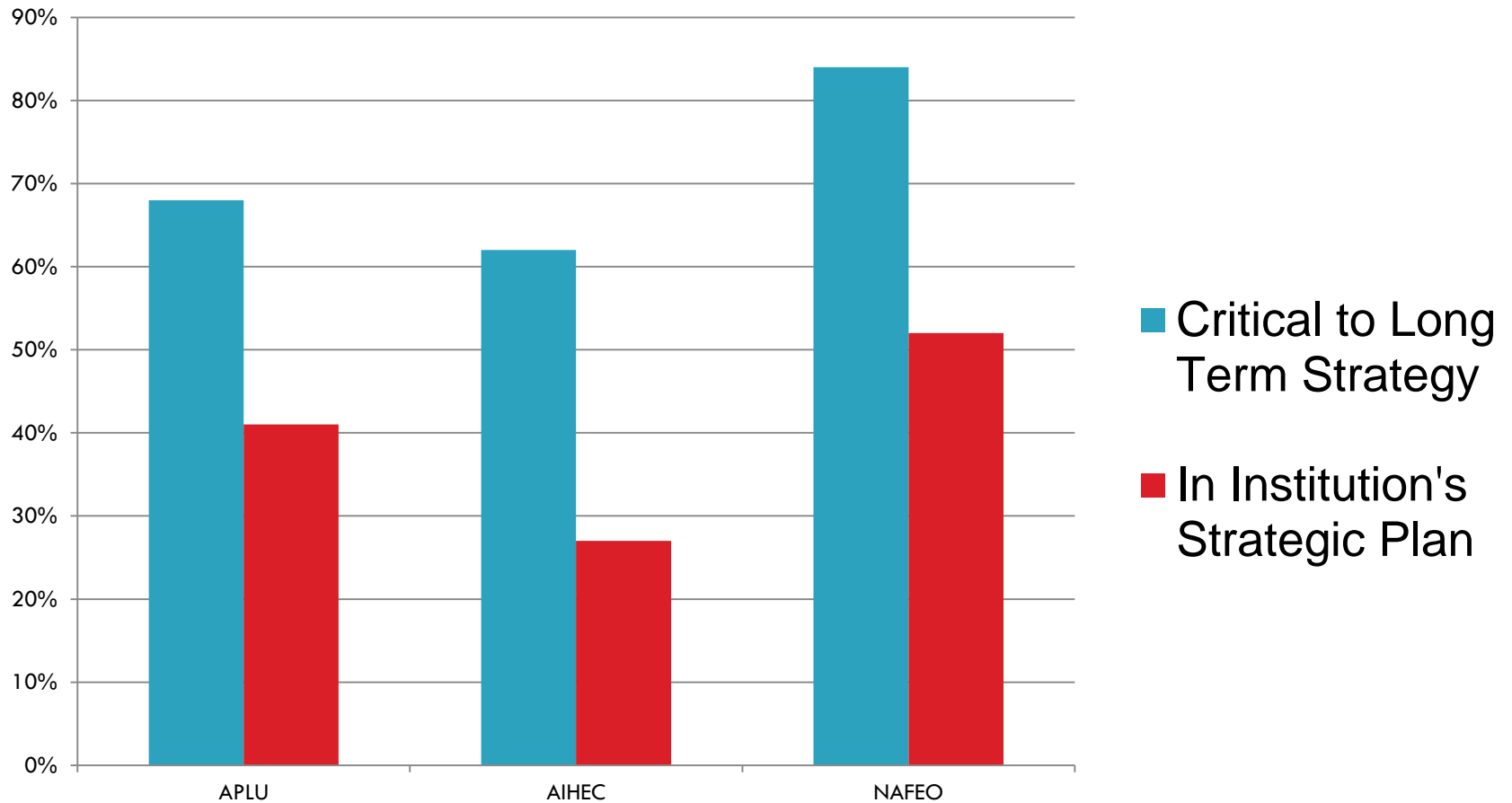
Online Education: A Strategic Tool

- While most faculty use online technology to support their teaching, too few institutions systemically and institutionally support a portfolio of programs that can be completed at online and at a distance
- However, for many institutions, distance and online learning is becoming an indispensable part of their strategic plans
 - A tool that can reach diverse communities of learners in an efficient, sustainable way
 - Providing additional financial resources to institutions.

Online Learning as a Strategic Asset

- Task Force on Online Learning –I chaired
- APLU-Sloan Benchmarking Study: Online Learning as a Strategic Asset
- First survey of Presidents and Chancellors regarding their attitudes and experiences regarding online learning. A significant study:
 - Surveyed more than 850 people, including more than 300 Presidents/Chancellors.
 - Institutions in this study represent more than 1 million students and more than 100k online enrollments.
- The Overarching Question: Are Universities equipped to respond to this challenge?

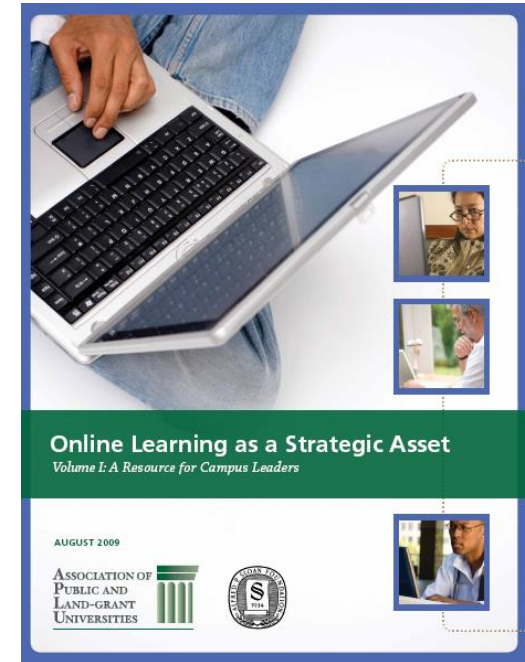
There IS a disconnect!



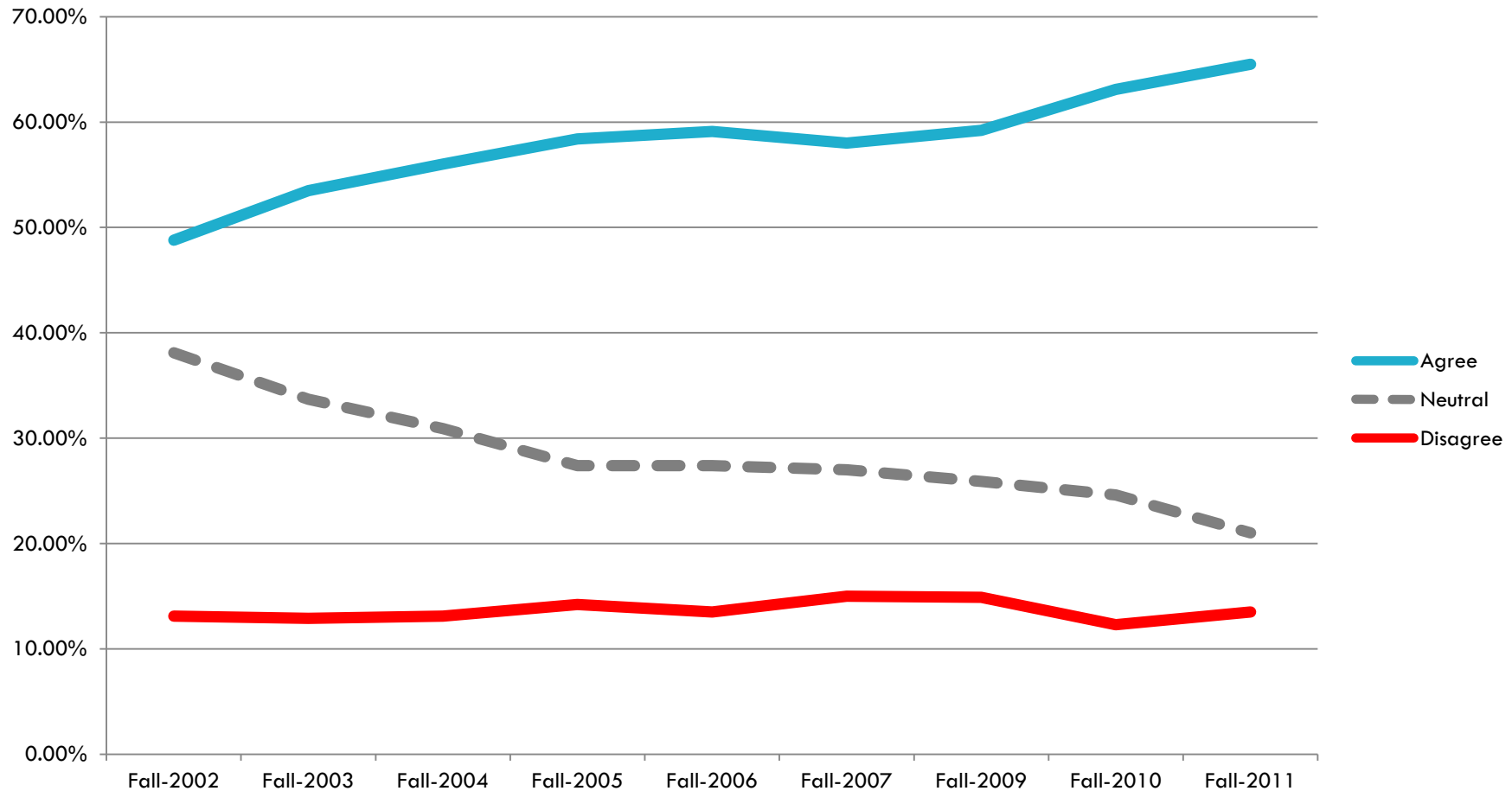
Online Learning as a Strategic Asset

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- Survey revealed that President's know that distance learning needs to part of the strategic plan,
- However, many of them **were not well equipped by past experience** to understand how these programs, once considered peripheral, could become an **integral tool of their institutions strategic plans.**



ONLINE EDUCATION IS CRITICAL TO THE LONG-TERM STRATEGY OF MY INSTITUTION -- FALL 2002 TO FALL 2011 -Babson Survey



- **Stereotypes are not correct**
 - Every sub-group teaches (full, part time, tenured, non-tenured, early and late career)
 - Faculty are motivated by student needs
 - Faculty recommend online
- **Faculty with online experience are more positive**

The online/traditional boundary -disappearing.

- At this conference we will hear many presentations on how the technologies of online learning and the three C's of Computing, Communications, and Cognition are creating new learning environments for students in traditional settings.
- In 1997, I was asked to write an article entitled:
- [“Will the Ivory Tower Survive the Electronic Village?”](#)
 - EDUCOM Review, Vol. 32, No. 2, pp. 12-16, March/April 1997.
- My conclusion is an emphatic “YES,” but it will be a far more engaging university that educates students in new and exciting learning environments.

Summary

- Universities have changed rather radically in many ways.
 - Meteoric rise of online learning
 - Involvement in economic development
 - Deployment of 2 of the 3 C's
 - Some deployment of more engaging research based courses.
 - Disinvestment by government
- Fault lines are developing demarcating the disparity between the changes and our deployment and understanding.
- Hype often detracts and distracts from serious innovation
- The future will continue to be quite a challenge for leaders of higher education.

Thank You!

- Jack M. Wilson
 - President Emeritus and Distinguished Professor of Higher Education, Emerging Technologies, and Innovation.
 - <http://www.jackmwilson.net>

