Disruptive Innovation and Academic Libraries

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“Because of the fundamental role that academic libraries have played in the past century, it is tremendously difficult to imagine a college or university without a library. Considering the extraordinary pace with which knowledge is moving to the Web, it is equally difficult to imagine what an academic library will be and do in another decade.”

Jerry Campbell on Academic Libraries
Possible New Roles

1. Providing Quality Learning Spaces
2. Creating Metadata
3. Offering Virtual Reference Services
4. Teaching Information Literacy
5. Choosing Resources and Managing Licenses
6. Collecting and Digitizing Archival Materials
7. Maintaining Digital Repositories
Jerry Campbell on Academic Libraries

1. Providing Quality Learning Spaces

“Thus, although it is highly likely that library space in prime locations will be utilized increasingly less for storing book collections, how such space will be repurposed is less certain.”
“Thus, if librarians are involved at all, it is already clear that their role with respect to metadata will be vastly different from their old cataloging role... So far, most major developments in these areas have taken place outside of libraries, in the commercial database or portal world, and this trend is likely to continue.”
3. Offering Virtual Reference Services

“Precisely where library reference services as a response to individual questions fit into the emerging knowledge environment is undetermined. And whether such a service will provide a viable reason to maintain libraries and librarians for even the mid-range future is unknown.”
“Will marketing directly to readers become sufficiently refined as to eliminate the need for providing information literacy? Will the maturation of the Web as a source of knowledge and as a knowledge-retrieval mechanism decrease the need for teaching information literacy? And if the need for information literacy persists, will that need be large enough to provide a reason for keeping a library?”
“This circumstance will gradually eliminate much of what remains of the collection-development process and will shift the librarian’s role much more toward managing licenses. What must be determined is how large and how important this role will be.”
6. Collecting and Digitizing Archival Materials

“Such archives represent almost every type of medium of communication—some are physical representations, some are originally digital—and most hold value for research and scholarship. For these reasons, collecting and digitizing archival materials may offer a significant opportunity for libraries and librarian/archivists in the future.”
7. Maintaining Digital Repositories

“Even though the management of IRs goes well beyond the skills of most senior librarians and even of some more recently educated librarians, to the degree that IRs become the responsibility of libraries, they may provide a solid foundation for the future of academic libraries.”
Jerry Campbell on Academic Libraries
Possible New Roles

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Today’s Agenda

1. Explain Why Campbell is Right
2. Review Clayton M. Christensen’s Theories of Innovation
3. Apply this Body of Theory to Academic Libraries
Clayton M. Christensen’s Books


Christensen’s and Theory

• Attempts to build theory that can be tested
• To do so he studies circumstances rather than attributes
• Should be able to use to predict when different strategies will be successful and when they will not
Christensen’s Theories of Innovation

1. Disruptive Innovation Theory: Simple, Cheap, Revolutionary
2. Resources, Processes, and Value Theory: Building Blocks of Capabilities
Disruptive Innovation Theory

“Disruptive innovation theory points to situations in which new organizations can use relatively simple, convenient, low-cost innovations to create growth and triumph over powerful incumbents.”

• Sustaining versus Disruptive Innovation
Disruptive Innovation Theory

“The theory holds that existing companies have a high probability of beating entrant attackers when the contest is about sustaining innovations. But established companies almost always lose to attackers armed with disruptive innovations.”
Sustaining Innovation

• Improves the performance of established products along dimensions of performance that mainstream customers in major markets have historically valued.

• Relationships, cost structures, and organizational dynamics are unchanged.
Disruptive Innovation

• Bring a difference value proposition to the market
• Initially under perform established products in mainstream market
• Superior in ways that are not valued by the established market — more reliable, easier to use, or cheaper
Performance Oversupply

“One bedrock finding from our research is that companies innovate faster than customer’s lives change. In other words, what people are looking to get done remains remarkably consistent, but products always improve. Thus, products eventually become too good.”
Disruptive Innovation Theory

Performance vs. Time

- Product Improvement Trajectory
- Customer Demand Trajectory
Disruptive Innovation Theory

Performance vs. Time

- Overshot Customers
- Undershot Customers
Disruptive Innovation Theory

• When customers are undershot they continue to pay a premium for improvements in functionality
• When customers are overshot they not longer will pay a premium for improvements and the basis of competition changes
Disruptive Innovation Theory

- Companies selling to overshoot customers are vulnerable to disruptive attacks
- They often move upmarket to sell to more demanding customers
- High-end users don’t value the disruptive innovation because it doesn’t meet their functional needs
Disruptive Innovation Theory

Performance vs. Time

- High-end Customer
- Low-end Customers
- Disruptive Innovation
Disruptive Innovation Theory

• Disruptive innovation should look to compete against non-consumption — new customers or new contexts for consumption

• Or where customers are overshot and they can prove a product which is good enough and more reliable, easier to use or cheaper
Disruptive Innovation Theory

• Disruptive innovations are always low-priced
• But are not always cheap in an absolute sense — cost per unit might be high
Disruptive Innovation Theory

• Established firms often retreat upmarket in the face of disruptive attacks
• They give up their least valuable customers in pursuit of higher margins
• Asymmetry of motivation
• Disruptive attacker develops skills and continues upmarket
Disruptive Innovation Theory

“If the technology can be developed so that a large population of less skilled or less affluent people can begin owning and using, in a more convenient context, something that historically was available only to more skilled or more affluent people in a centralized, inconvenient location, then there is potential for shaping the idea into a new-market disruption.”
Library Collections

• Paper collection best in amount of information (size), but many students are overshot
• E-journal collections good enough in size, more reliable, but not always easy to use
• Open Web good enough in size, more reliable, and easier to use
Study Space with Technology

- Computer Labs
- Starbucks
- Info Commons
- Students

Quality of Space vs. Time
Study Space with Technology

- Computer Lab - Low quality
- Starbucks - High quality, not reliable, expensive
- Information Commons - High quality, reliable, low cost
A Little Library History

Paper Library
Collections Paper
Bib Control Paper

Automated Library
Collections Paper
Bib Control Electronic

Electronic Library
Collections Digital
Bib Control Digital

1965-1995
1995-date

A Little Library History

Paper Library
Collections Paper
Bib Control Paper

Automated Library
Collections Paper
Bib Control Electronic

Electronic Library
Collections Digital
Bib Control Digital

1965-1995
OCLC & RLG
OPACs
CD-ROM Indexes

1995-date
Full-text Databases
Repositories
Digital Libraries

A Little Library History

A Little Library History

Paper Library
Collections Paper Bib Control Paper

Automated Library
Collections Paper Bib Control Electronic

Electronic Library
Collections Digital Bib Control Digital

1965-1995
Little Organizational Change

1995-date
Organizational Realignment Likely

Disruptive Innovations in Libraries

• Collections
  – Open Archives (ePrint servers) are challenging journals as means of scholarly communication
  – Web archives (like American Memory) make large collections available without institutional affiliation
  – Collections are **not** hand crafted one item at a time, rather whole collections are purchased
Disruptive Innovations in Libraries

• Bibliographic Control
  – Bibliographic control purchased rather than made one item at a time (Marchive, PromptCat, Serials Solutions)
  – Access to items not owned as, or more important, than access to owned items
  – Catalogs are for machines, not people (SFX and other linking systems)
  – Portal battle — library catalog versus Goggle, library interface versus Science Direct (Elsevier), or library interface versus state interface
Disruptive Innovations in Libraries

• Lewis’ Rule - “If the ARL Index can not accommodate the change it is disruptive”
  – OhioLink is disruptive
  – Repositories are disruptive
  – JSTOR is sustaining
Disruptive Innovation Theory

• Markets that don’t exist can’t be analyzed
• The experts, including you, will be wrong
• Don’t invest all your resources on the first effort
• Discovery, not implementation, based planning
Disruptive Innovation Theory

• Don’t think about the attributes of your customers, rather ask what job they are hiring you to do
• Be impatient for profits, but patient for growth
Resources Processes Values

“The resources, processes, and values (RPV) theory explains why existing companies tend to have such difficulty grappling with disruptive innovations. The RPV theory holds that resources (what a firm has), processes (how a firm does its work), and values (what a firm wants to do) define an organization’s strengths as well as its weaknesses and blind spots.”
Resources

• Things an organization can buy or sell build or destroy
  – People
  – Technology
  – Products
  – Cash
  – Brands
  – Information
Resources

• Provided by customers and investors
Processes

• Established ways organizations resources into products and services
  – Hiring and training
  – Product development
  – Planning and budgeting
  – Market research
  – Resource allocation
Values

• The criteria by which prioritization decisions are made
  – Cost structure - Return on Investment
  – Customer demands
  – Size of the opportunity
  – Ethics
  – How employees build successful careers
RPV Theory

• Resources by their nature are flexible
• Processes and Values don’t change easily. This allows the organization to be consistent in the way it makes decisions. In most situations this is a key factor in organizational success
RPV Theory

• Organizations successfully tackle opportunities when
  – They have the resources
  – Their processes facilitate what needs to be done
  – Their values allow them to prioritize the opportunity in the face of all other competing demands
RPV Theory

• Organizations will fail when resources, processes, and values do not match the opportunity

• “When people use a process to do the task is was designed for, it is likely to do the task effectively. When people try to use that same process for a very different task, if often seems highly bureaucratic and inefficient.”
RPV Theory

• Values not aligned to task
  – Return on Investment is too low
  – Major customers not interested
  – Project is too small
RPV Theory

Fit with Organizational Processes

New

Customary

Fit with Organizations Values

Strong (sustaining)  Weak (disruptive)

Heavyweight Teams

Lightweight Teams

Functional Organization

Autonomous Organization Required
RPV Theory

- An organization can not disrupt itself
- Established values and processes will keep this from happening
- Innovation will be “crammed” into the existing values and processes and will lose their potential
Academic Library Values

25 years ago the most important thing libraries did was keep millions and millions of small pieces of paper in the correct order.

The processes and values that made it possible not to lose very many of those millions of pieces of paper was required then. Today these structures and that culture have become counterproductive.
Academic Library Values

- The ARL Index (size of collections) defines the pecking order (quality)
- Faculty are the most important users
- Students need to learn how to use our systems (that they’re difficult is not our fault)
- There is no flexibility in our budgets
- The catalog is our most important tool
RPV and Academic Libraries

• Since setting up an autonomous unit to implement disruptive innovations is not possible in many libraries
• Need to work to change values and processes
• This is VERY hard!! It is academic library leaders’ most important task
RPV and Academic Libraries

Fit with Organizational Processes

New

Customary

Strong (sustaining)

Weak (disruptive)

Task Forces

Committees

Functional Organization

Autonomous Organization Required

Fit with Organizations Values
RPV and Academic Libraries

• Don’t “cram” disruptive innovations into a faculty context
  – Introduce repositories in a student context
• If undergrads don’t see the value in the innovation, it is not disruptive
• Look at what is happening in developing countries
• Teenagers, the “rebar of humanity”
Value Chain Evolution Theory

• Attempts to assess whether a firm has made the right design decision (integrate or modularize) to compete successfully
Value Chain Evolution Theory

• Firms should attempt to control those aspects of the value chain that drive performance along the dimensions that matter most to customers

• VCE theory’s golden rule: Integrate to improve what is “not good enough” and outsource what is “more than good enough”
Value Chain Evolution Theory

• Create modular (standards-based) interfaces to increase flexibility
• Create modular interfaces to speed development
• “When your world becomes modular, you’ll need to look elsewhere in the value chain to make any serious money.”
Value Chain Evolution Theory

• Law of the Conservation of Attractive Profits - The power to capture attractive profits shifts to those activities in the value chain where the immediate customer is not yet satisfied with the performance of available products
Scholarly Communication
Value Chain

Write Work

Edit Work

Produce Work

Advertise Work

Distribute Work

Preserve Work

Circulate Work

House Work

Read Work
Scholarly Communication Value Chain

Author
Write Work

Publisher
Edit Work
Produce Work
Advertise Work
Distribute Work

Library
Preserve Work
Circulate Work
House Work

Read Work
Value Chain Evolution Theory

- It is in the interest of academic libraries (and universities and scholars) to modularize the interfaces in the scholarly communications value chain.
- If this is done, publishers will not be able to extract premiums.
Challenge

• Create a portfolio of services to serve constituents that will succeed based on Christensen’s theory

• Create organizational structure matched to this task
Challenge

• Defensive Strategies
  – Quality Informal Study Space with academic support — “Information Commons”
  – Integrate library services into course management systems
  – Requires librarian/technologist collaboration and campus partnerships
Challenge

• Offensive Strategies
  – Migrate from paper collections to access and electronic alternatives - Find/create cheaper alternatives
  – Migrate resources from purchased collections for library’s users to curated collections (repositories and digital collections) for the world
Challenge

• Libraries are about collections
• But… the old way of doing collections no longer works and we need to find new, disruptive ways to do collections
Challenge

• Introduce disruptive innovations into the scholarly communication value chain that make it more reliable, more convenient, and cheaper

• Even if we disrupt ourselves!!
Questions?

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