

Emerging Technologies: A task?
A specialty in librarianship? For
now, the answer appears to be,
“Yes.”

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About Me and My Institution

Me

- Title: Emerging Technologies and Systems Librarian.
- Since: 2014.
- Did not 'hit the ground running.'
- Why I proposed this talk

My Institution

- St. Cloud State University is is a complex organization.
- A public institution serving a total student body of approximately 15,000.
- At the University Library, no decisions on programs, systems, or materials happen unilaterally.
- Experimentation with new ideas most commonly done by individuals or very small groups *to address problems specific to their area.*



Where I Started: Mental Models—Ideas and Reality

Stages of Technology and Degree of Attention Paid.

Hokey metaphor...

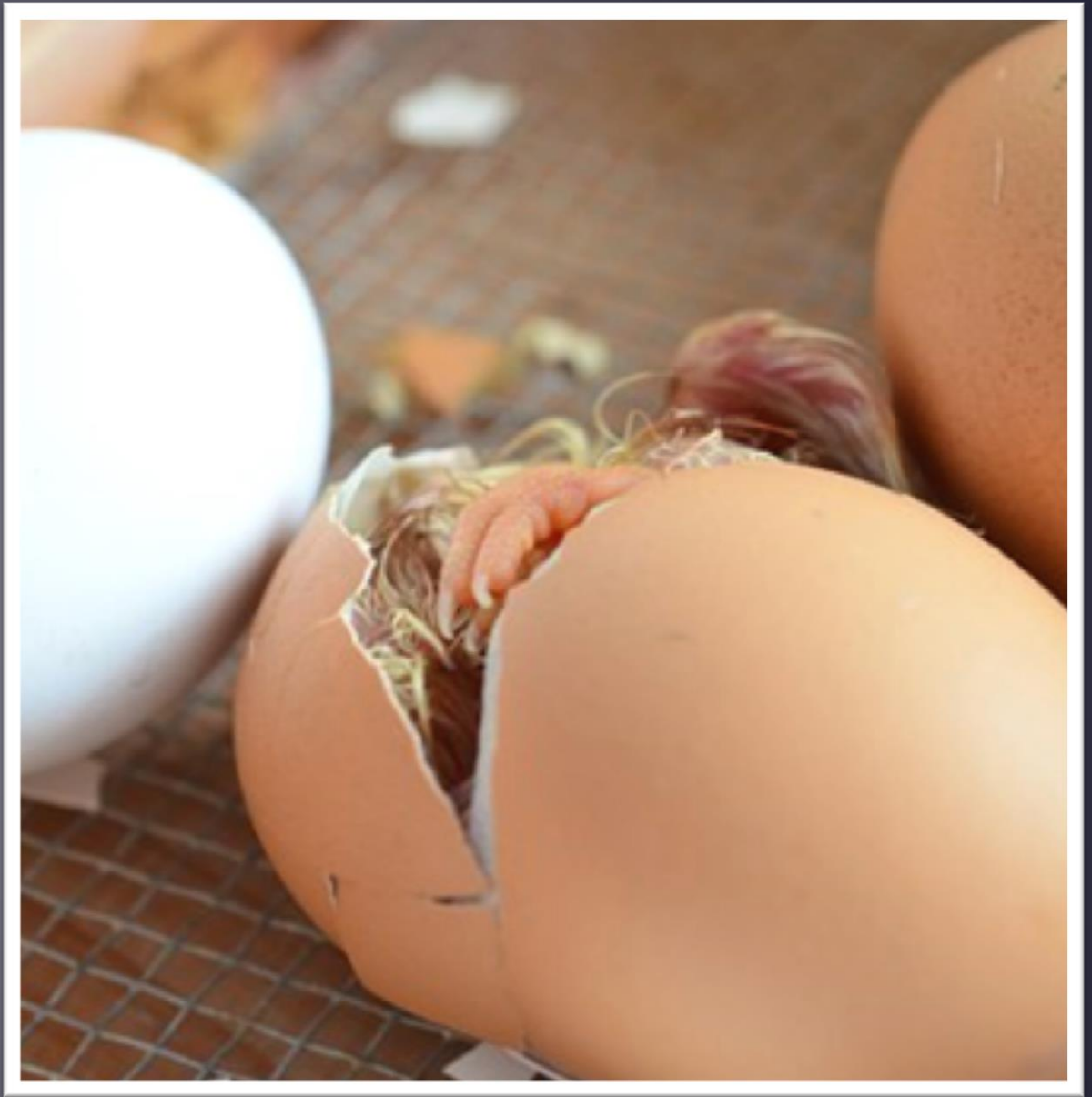
Tech not yet
hatched?

Interested.



Hatching?

Quite interested.



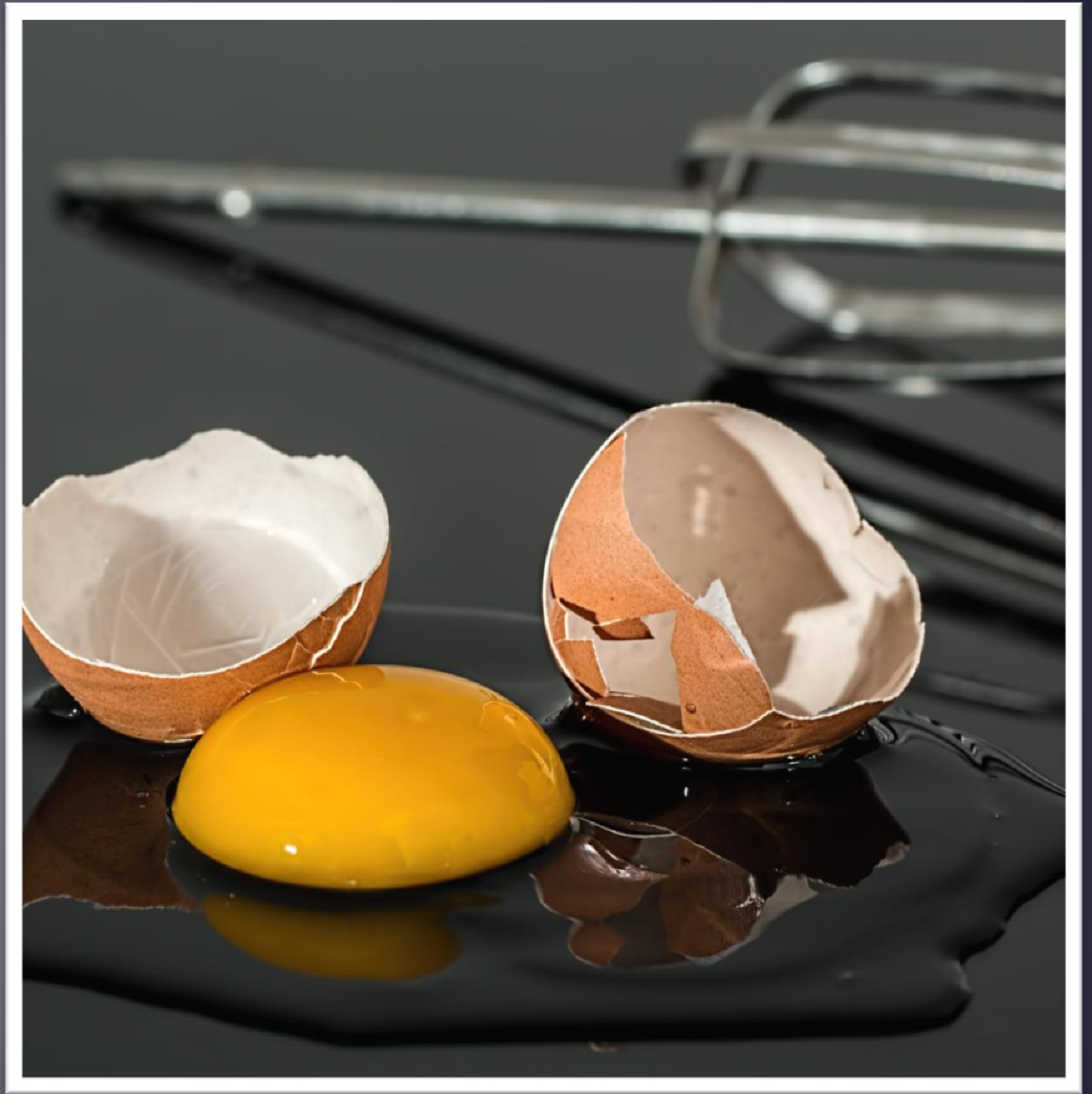
Totally hatched?

Watch it grow, see what
it does, watch for its
neighbors and offspring.



Whoops.

Qualified 'Interested'.
(Maybe there will be a
tasty omelet soon.)



Innovation and the Notion of the “Adjacent Possible”

- Formulated by complexity theorist Stuart Kauffman in 2002 as a way of thinking about biological evolution.
- “Each innovation changes the landscape of future possibilities” i.e. creates new adjacencies.
- ‘Possible’ does not necessarily mean ‘easily imaginable,’ so there are always two sets of adjacencies.

(Emerging Technology from the arXiv, 2017).

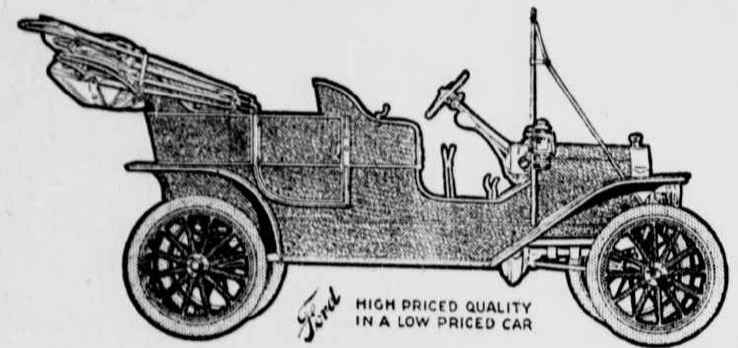
- In other words, development paths are enormously affected by the context of each step.

Reality: Obvious Example from the Past

- Horse
- Early Mass-Produced Automobile



Here's an announcement that will be welcomed by all people, who contemplate buying an automobile



Model T Touring Car \$780.⁰⁰

Ford Model T: ad from The Watchman and Southron, November 12, 1910, image from The Library of Congress.

Riddle/ Hypothesis

Q: When is an idea or technology fully mature?

A: *When it becomes a toy.*



Reality: Continuing this Example Into the Present

Modern Automobile



Autonomous Vehicle



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Commons



Libraries.

- Since 2014 there have been many vacancies in academic and public libraries for ‘Emerging Technolog[y/ies] Librarians,’ or listing emerging technologies work among the duties of posted positions.
- Recognition of the need for work in emerging tech is extending to law, STEM, and health sciences libraries.
- In academic and public libraries, emerging tech duties may be shared among library positions.

From the job market:

- “Effectively identifies and applies new technologies in support of efficient processing activities and develops expertise with emerging technologies.” 2017 vacancy for a head of tech services and electronic resources management.
- “...seeks a service-oriented and forward-thinking Emerging Technologies Librarian. The Emerging Technologies Librarian will be responsible [...] for taking a leadership role in leveraging new technologies to meet the needs of scientific researchers. To achieve these goals, the Emerging Technologies Librarian provides in-person and virtual reference assistance, library instruction sessions, and one-on-one in-depth consultations in all areas of the sciences. The Librarian also provides outreach and instruction for the Science Library MakerSpace and manages the Science Library website and social media presence. Night and weekend work is required. (late 2016)

Others:

- “Developing strategies to select, integrate and promote emerging technology in the modern library.” (n.d.)
- “Provide vision and leadership to investigate, evaluate, and incorporate emerging technologies into library systems and services.” (2014)

Current Impressions

- Libraries need perspective on technological developments beyond their walls.
- Many libraries are struggling with staffing.
- Most tech acquisitions and implementations are intended to solve a specific problem.
- Those doing the hands-on work of the library are commonly in the best position to identify specific problems, and often, applicable technology solutions

‘Begin where I am’: @OurLibrary

St. Cloud State University Library



Our Challenges

- Forming an *understanding* of 'where I am'
- Shrinking Library faculty and staff
- Translating insight into action
- Gray/transition areas where no one person can buy and implement new tech
- Amorphousness of the task
- Money/Funding

My Approach to These Challenges:

- Shrinking faculty and staff
 - X
- Money/Funding
 - X
- Grey/Transition Areas, and Translating Insight into Action
 - Be present, and participate in group decisions.
 - Contribute the Emerging Tech (and Systems) perspective.
- Forming an understanding of 'where I am'
 - Has taken over two years.
 - Requires knowledge of the State of Minnesota, the System, the University, and the Library.
- Amorphousness of the task
 - Feeding my imagination regarding library applications
 - Devising iterative scan of:
 - the technology landscape—what people carry, wish for, or find interesting
 - sources of current awareness—periodicals, company information, research lab updates

Provisional Thought Framework (General)

- When are library resources needed?
 - Life/Professional/Educational context
 - Time of day/year
- Who doesn't use the library? Why?
- Resource Sharing
 - What is reasonable to expect people to pay for themselves?
 - What is reasonable for the Library to supply?
- Infrastructure.

Who *Doesn't* Think About What might catch on? I Ask Myself...

- What's now gone?
 - Ex. R.I.P. VHS, hello BluRay
- What's totally new, and gaining traction?
 - Ex. Blockchain: Bitcoin, then Medical Records. Will ILS developers adopt for circ transactions? (We will never need to develop this, but Ex Libris, III, OCLC WMS could. Are there privacy/data analysis implications?)
- No need to predict; **WONDERING** is constructive.

Keeping in Mind Possible Disruptions

- What *about* Open Access?
- What if ProQuest or EBSCO were to develop resource bundles affordable to the individual user?
- What is the future of patron privacy, and if it goes the wrong way, will patrons hesitate to use library services?

Old technology may become new again.

- “[...] the team was surprised that digital media didn’t capture the teenagers’ attention as they’d imagined [...]. Instead, the kids were fascinated by the typewriter and wanted to paint murals.” (Peet, 28)
- So. More questions:
 - What can users do at the library that they cannot do at home?
 - With whom? And: When? I.e. During what hours?
 - (What do users need *from* the library for use at home that they don’t already own?)

Getting there

- As we tell our students when teaching them the process of research, tech awareness is iterative.
- Community-awareness is layered.
- Keeping Systems work and Emerging Tech work each in their own compartments is tricky, but necessary.

For now I want to see over the horizon in as many directions, and from as many altitudes as I can, and accept that there will still be surprises.

Recommended Reading and Resources: A Start (also, this will change).

Further Reading

Araullo, J., & Potter, L. E. (2015). *The emerging technology consumer: Designing NUI interaction for learning and retention* Association for Computing Machinery, Inc. doi:10.1145/2838739.2838830

Berry III, J.,N. (2016). Predicting the unpredictable. *Library Journal*, 141(15), 46-47.

CES 2017 unveils game-changing innovation to the world. (2017,). *States News Service*

Designing our future. (2016). *Library Journal*, 141(15), 8.

Emerging Technology from the arXiv. (2017). Mathematical model reveals the patterns of how innovations arise: The work could lead to a new approach to the study of what is possible, and how it follows from what already exists; Retrieved from <https://www.technologyreview.com/s/603366/mathematical-model-reveals-the-patterns-of-how-innovations-arise/>

Freeman, M. (2017). *CES: 6 strange gadgets that just might work*. ().San Diego Union-Tribune, The (CA).

Gartner hype cycle. Retrieved from <http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp>

Gartner's 2016 hype cycle for emerging technologies identifies three key trends that organizations must track to gain competitive advantage. Retrieved from <http://www.gartner.com/newsroom/id/3412017>

Further Reading, cont.

Juma, C. (2016). *Innovation and its enemies: Why people resist new technologies* (First edition ed.). US: Oxford University Press. oi:oso/9780190467036.001.0001

Miller, R. T. (2016). Designing the future. *Library Journal*, 141(15), 24-25.

Patterson, T. (2017, -02-02T10:05:05.959Z). Fountain pen sales are surging, despite flat luxury global sales. *Bloomberg.Com* Retrieved from <https://www.bloomberg.com/news/articles/2017-02-02/fountain-pen-sales-are-surging-despite-flat-luxury-global-sales>

Peet, L. (2016). The future of futures. *Library Journal*, 141(15), 26-31.

Peet, L. (2016). Sci-hub sparks critique of librarian. *Library Journal*, 141(15), 14-17.

Rodgers, E. P. (2016). The future is now. *Library Journal*, 141(15), 48-49.

Schwartz, M. (2016). Future fatigue. *Library Journal*, 141(15), 44.

Sendaula, S. (2016). Proactive librarianship. *Library Journal*, 141(15), 95.

Wallace, M. The science of invention. Retrieved from <http://www.salon.com/2000/06/29/altshuller/>

Intellectual Property, Hiring, Mergers & Acquisitions (a Start)

- Amazon <https://www.amazon.com/>
- Apple <http://www.apple.com/>
- Adobe <http://www.adobe.com/> / Google
- IDEO <https://www.ideo.com/us>
- Magic Leap (the World's Most Secretive Start-Up! [Wired])
<https://www.magicleap.com/#/home>
- 3M <http://www.3m.com/> (and other library systems vendors)

Periodicals

- Ars Technica <https://arstechnica.com/>
- Businessweek <https://www.bloomberg.com/businessweek>
- Entrepreneur <https://www.entrepreneur.com/us>
- Forbes <https://www.forbes.com/>
- Inc. <http://www.inc.com/>
- MIT Technology Review <https://www.technologyreview.com/>
- MIT Technology Review Business Reports
<https://www.technologyreview.com/c/business/>
- New Scientist (UK) (some free content) <https://www.newscientist.com/>
- Science News (US) (some free content) <https://www.sciencenews.org/>

Email Newsletters, Listservs, Discussion Fora

- MIT Technology Review <https://www.technologyreview.com/> (scroll down for newsletter registration—just below ‘Top Stories’)
- NEW ATLAS <https://www.technologyreview.com/> (scroll down for newsletter registration)
- O’Reilly Media <http://post.oreilly.com/form/oreilly/signup>
- OZY <http://www.ozy.com/> (newsletter signup in upper right corner of homepage)
- Readwrite <http://readwrite.com/> (dialog box prompts for newsletter signup at homepage)
- Discipline-specific listservs
- Reddit/relevant subreddits

Occasional Publications

- Forrester Research <https://go.forrester.com/>
- New Media Consortium <https://www.nmc.org/>
- New Atlas <http://newatlas.com/>
- Pew Research <http://www.pewresearch.org/>

Research Entities

- MIT Media Lab <https://www.media.mit.edu/>
- Harvard iLab <https://i-lab.harvard.edu/>
- Pew Research <http://readwrite.com/>
- Forrester Research <https://go.forrester.com/>
- metaLab (Harvard Berkman Center)
<http://www.metalabdesign.com/>

Just for fun, watch:

- The toy industry
- Etsy.com
- Crowdfunding sites
(Which projects exceed their requests? How quickly?)
 - Kickstarter
https://www.kickstarter.com/discover/categories/technology?ref=discover_index
 - Indiegogo https://www.indiegogo.com/#/picks_for_you
- Tech in media
- Subscribe to discipline-specific listservs
- Follow scholars on Twitter

Thank you!

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