Community, openness and directions for library technology.
KohaCon: Dublin. May 2019

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My contribution today should be treated as "food-for-thought"

My experience is somewhat biased toward universities

I'm going to *start* with some thoughts about library tech/library systems

(and talk about possible community responses at the end)

What were people saying a decade ago..

2009

Open Forum: The Future of Library Systems

Maria Collins
North Carolina State University at Raleigh, Maria_Collins@ncsu.edu

Andrée J. Rathemacher
University of Rhode Island Library, andree@uri.edu

"discussion at this open forum on the future of library systems touched on open-source library systems, cloud computing, new initiatives by the Open Library Environment (OLE) Project and OCLC, and desired characteristics of future integrated library systems"

Open Forum: The Future of Library Systems. Maria Collins and Andrée J. Rathemacher. University of Rhode Island Library 2009. https://pdfs.semanticscholar.org/fe22/fa463708e3afe9e939fff53efdc6a0763511.pdf

What librarians wanted in 2009

The ideal future library system will …. incorporate enhanced discovery tools, and be interoperable with other systems inside and outside the library

There was broad agreement.. that integrated library systems or system components need to be interoperable with other systems. More than one participant suggested that we do not need a single system; we need specialized sub-systems that are able to exchange data

The ideal result will be a workflow management system that can be customized as needed and adapted to future work flows.

A strong desire to customize library systems to meet local needs emerged as the primary factor in support of open-source software, while the fear of not being able to provide needed levels of technical support was the biggest challenge to implementing open-source systems

Key features of an ideal future library system

- Ability to customize a system to meet local needs
- Open-source software to allow for transparency and flexibility
- A wider use of standards to enhance interoperability
- Enhanced discovery tools that facilitate searching and integrate the catalog with other data streams including federated search results, article databases, and institutional repository contents; and the ability to better define roles and relationships between entities, as with "soft linking."

Open Forum: The Future of Library Systems. Maria Collins and Andrée J. Rathemacher. University of Rhode Island Library 2009. https://pdfs.semanticscholar.org/fe22/fa463708e3afe9e939fff53efdc6a0763511.pdf

Library Tech Trends for 2019

- Graphic Design **Trends**. ...
- Fake News and Fake Information. ...
- The Printed Book Shall Continue to Rise Again. ...
- The Bleeding Edge: Facial Recognition Is Coming of Age. ...
- **Libraries** Should Be **Tech** Risk Averse. ...
- Updating Media Labs and Makerspaces. ...

Library Tech Trends for 2019 | TechSoup for Libraries
www.techsoupforlibraries.org/blog/library-tech-trends-for-2019

Privacy
Patrons will finally be interested in taking some control of their online privacy. At the same time, legal structures are being put in to place to protect consumer information. We're getting much better clarity on the perils of not paying attention to our digital identity.

Fake News and Fake Information
How much of the Internet is fake? It turns out, a lot of it, and it is getting worse. New York magazine's Max Read recently discovered that less than 60 percent of web traffic is now human. On Twitter, bots may be behind more link sharing than human beings. Many Internet metrics are fake, as are people, businesses, content, and politics.

Libraries *Should* Be Tech Risk Averse
The chief digital officer of New York Public Library, Tony Ageh... maintains that "libraries have been very reluctant to move too quickly and have allowed the marketplace and allowed other organizations to kind of prove things work before libraries have taken the plunge." He thinks this wait-and-see behavior generally suits libraries well.

Open Forum: The Future of Library Systems. Maria Collins and Andrée J. Rathemacher. University of Rhode Island Library 2009. https://pdfs.semanticscholar.org/fe22/fa463708e3afe9e939fff53efdc6a0763511.pdf

So where is the *library system* (ILS/LMS) in all this?

It's a complex environment…..The ILS is just a (small?) piece of the jigsaw
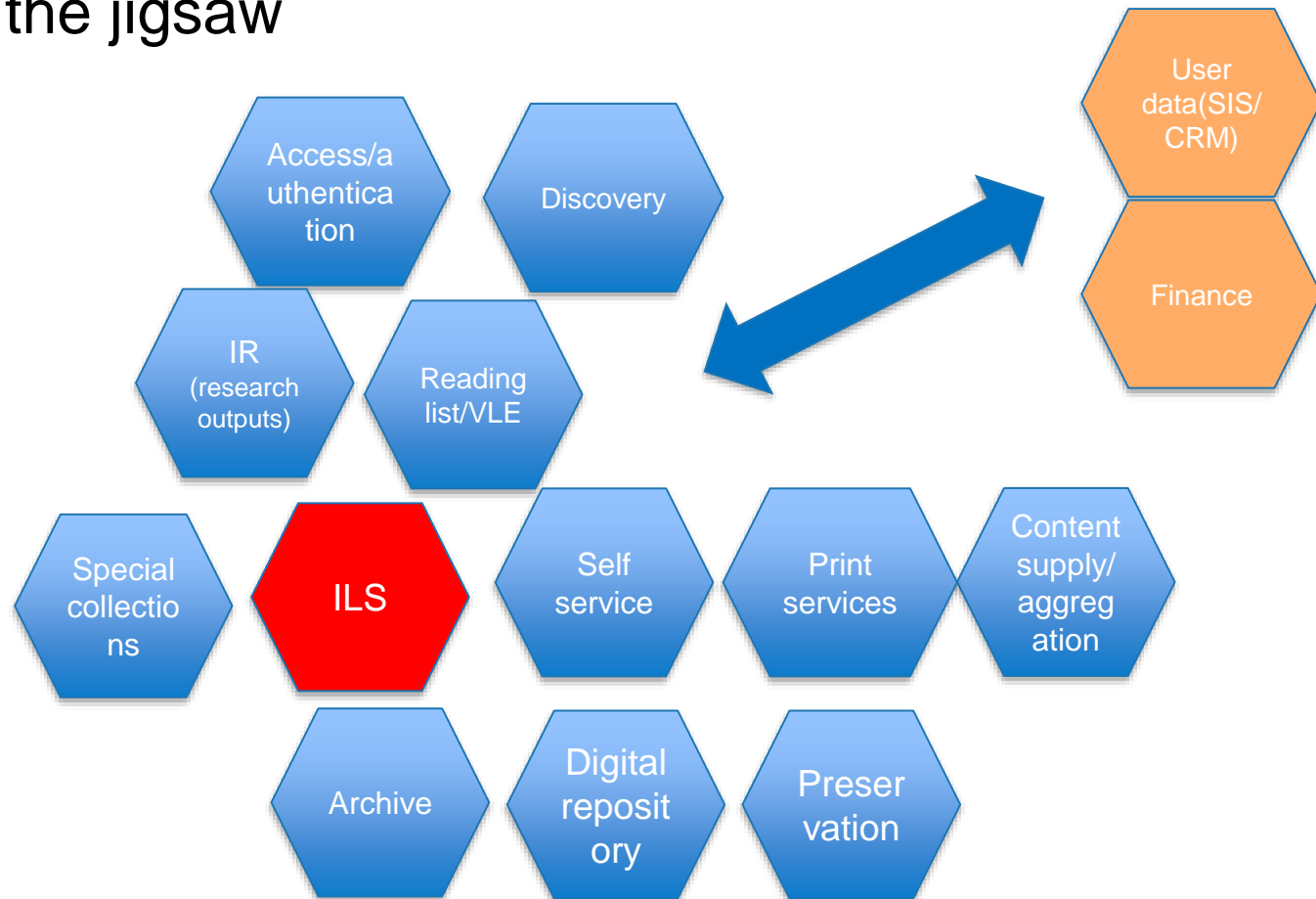
The monolithic integrated library system **(ILS) continues to diminish in importance** as libraries move toward a transition to a loosely coupled suite of applications.

Adoption patterns of proprietary and open source ILS in U.S. Libraries Marshall Breeding. Computers in Libraries 35(8):17-2. October 2015

How can we increase the *value* of library technology solutions?

First……..some context

8 Top Technology Trends for 2019 and the Jobs They'll Create

- Artificial Intelligence (AI) ...
- Machine Learning. ...
- Robotic Process Automation or RPA. ...
- Blockchain. ...
- Edge Computing. ...
- Virtual Reality and Augmented Reality. ...
- Cyber Security. ...
- Internet of Things.

11 Feb 2019

8 Top Technology Trends for 2019 and the Jobs They'll Create
https://www.simplilearn.com/top-technology-trends-and-jobs-article

Gartner
Top 10
Trends of 2019
www.youtube.com

I want to focus at what I think are three key and related themes that our community can address more fully:

User experience

Curation

Data, machine learning/AI

User experience (Ux)

Renovating the customer experience is a digital priority

Digitalization and the digital business are catalysts of change that are affecting the human-machine relationship and driving better customer outcomes.

Gartner.

Top 10 Strategic Predictions for 2015 and Beyond: Digital Business Is Driving 'Big Change'. Gartner [Report] 04 October 2014
http://www.gartner.com/doc/2864817?refval=&pcp=mpe

what are they *really* doing?

Flikr Texas A&M University-Commerce Marketing Communications Photography
14284-educational technology 3535.jpg

User experience (Ux)

Maybe you use the *user stories* approach?
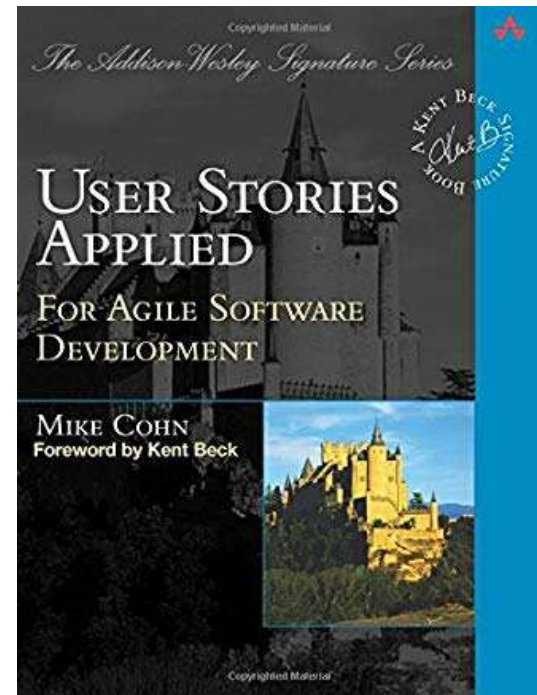
The *user stories* approach

As a/an	I want to...	so that...
moderator	create a new game by entering a name and an optional description	I can start inviting estimators
moderator	invite estimators by giving them a url where they can access the game	we can start the game
estimator	join a game by entering my name on the page I received the url for	I can participate
moderator	start a round by entering an item in a single multi-line text field	we can estimate it

"**The problem with user stories** is that it's too many assumptions and doesn't acknowledge causality. When a task is put in the format of a user story (As a [type of user], I want [some action], so that [outcome]) **there's no room to ask 'why'**—you're essentially locked into a particular sequence with no context."

Replacing The User Story With The Job Story. Too many assumptions are dangerous. Alan Klement [Blog] 12 Nov 2013
https://jtbd.info/replacing-the-user-story-with-the-job-story-af7cdee10c27

This approach doesn't tell the whole story….
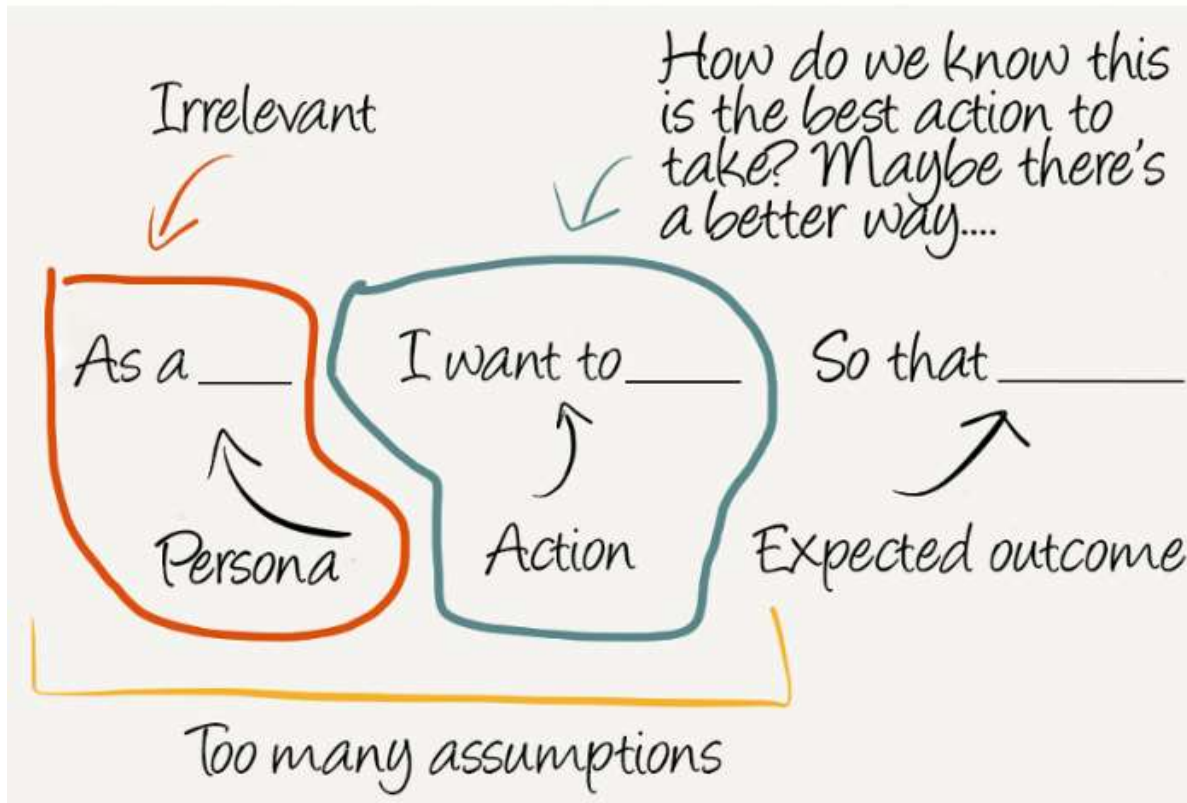
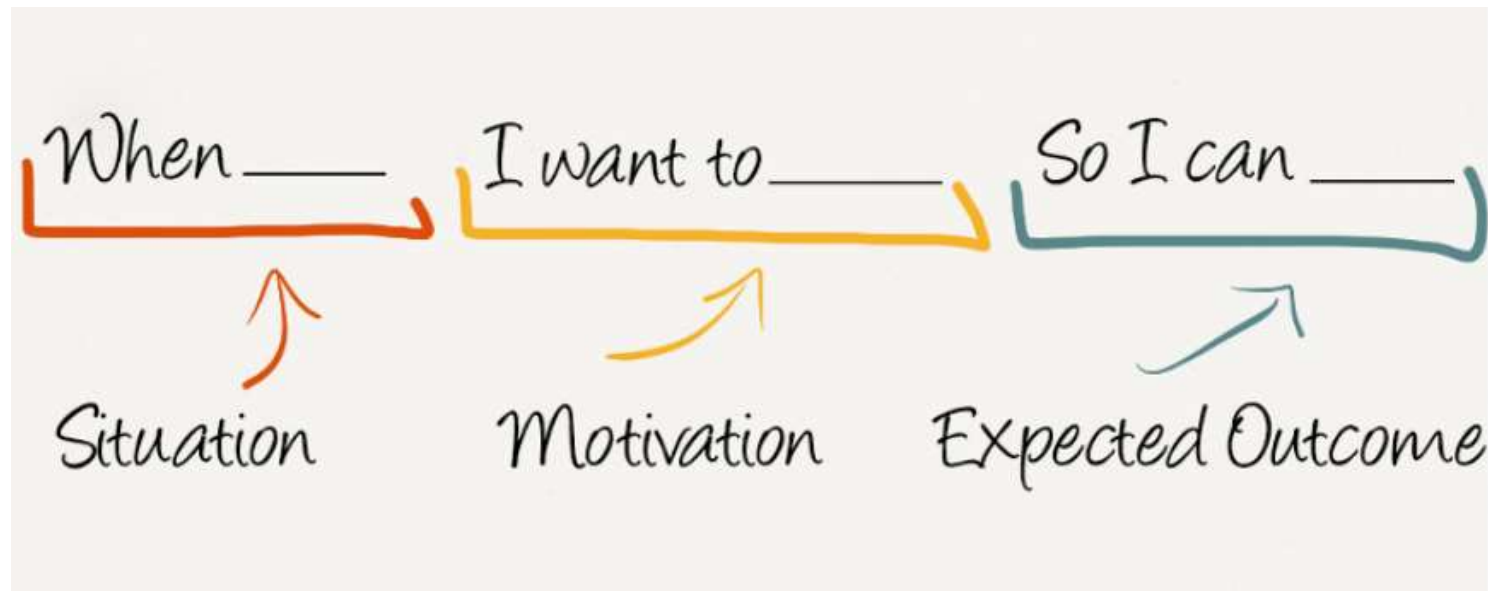"The first problem is that we start with a **Persona**, which **is a very bad idea**"

Replacing The User Story With The Job Story. Too many assumptions are dangerous. Alan Klement [Blog] 12 Nov 2013
https://jtbd.info/replacing-the-user-story-with-the-job-story-af7cdee10c27

Kenchadconsulting helping create more effective libraries…..

User stories
When __ , I want to __ , so I can _
For example: When an important new customer signs up, I want
to be notified, so I can start a conversation with them.

Replacing The User Story With The Job Story. Too many assumptions are dangerous. Alan Klement [Blog] 12 Nov 2013
https://jtbd.info/replacing-the-user-story-with-the-job-story-af7cdee10c27

What is the *job* -problem that needs to be solved?

Who needs to get the job done/solve the problem?

What is the particular *circumstance* of the problem?

Gains/Outcomes-what (measurable) criteria does the user consider in order to decide if the job has been successfully accomplished?

Pain points and barriers to getting the job done

http://www.kenchadconsulting.com/how-we-can-help/innovation/

Job/Task/Problem to be solved/job-to-be-done

Constant surveillance of the most fruitful bits of academic output
Signposting people to things (usually within the dept)—e.g. is there an example of this analytic technique—I will know the answer already in many cases from this surveillance rather than having to search from scratch

User/customer (their specific attributes/experience--be precise as possible)

Experienced: 38 years with XXX—'I know a lot of stuff'
External engagement around academics—experts on various topics.
Pretty familiar with resources, techniques
Member of Royal statistical Society

Circumstance (be descriptive and precise) Where is the user? What are the relevant attributes of the environment they find themselves in when they are trying to get this job done?

Mainly office based. Resources I need are on the Intranet in the most part. Do quite a bit of travel –train is a good place to work. But this needs to be offline mostly with the Surface pro—iPhone-can't connect surface pro outside the office. On train might just track emails and highlight ones which need action later

The power of asking why…..understanding *motivations*

Process (each process may help get several jobs done)	WHY	some possible JTBD
search for an ejournal	WHY	complete an assignment
find a book on the shelves	WHY	present a project
download an ebook	WHY	get a good degree
manage research data	WHY	improve my research reputation
(cataloguer) add/edit metadata	WHY	make the resource more discoverable

Output from workshop/focus group—concentrating on jobs and outcomes

Kind of user	Jobs	Outcome: typically thought of in terms of "minimise (decrease) /maximise (increase)"
University, Faculty Departmental and College Librarians	Align library curated content/resources to Teaching & Learning and Research	Minimise the number of resources that are used little or not at all
		Increase the impact on teaching and research outcomes
		Minimise delivery time of resource to end user
		Increase the number of reading list resources that are accessible/deliverable immediately at all times

There can be hundreds of Job/User/Circumstance scenarios

scoring them helps you focus....

Importance 1=not important; 5=critical	Frequency 1=rarely 5=very frequent	Frustration 1=very happy 5=very frustrated	Score (importance+frequency) X frustration = a score 2 to 50
4	3	5	35

"paradoxically the literal voice of the customer does not translate into meaningful inputs"

a 'jobs' and 'outcomes' based approach produces **meaningful outputs that can be acted upon**

'What customers want.' Anthony W Ulwick. McGraw Hill 2005

Curation

Content curation (National Library of NZ)

▸ **What content curation is**

Content curation is the process of selecting, sorting and arranging content on a specific topic or theme, adding value and meaning to what has been curated for your users.

Content curation is about:

- selecting the best quality digital content for your intended audience
- organising and displaying it on a curation tool your users can access
- adding value to the curated content through selecting, arranging and providing insights.

Curation is not only about presenting other people's work. The curator's role involves creating a new experience for user with information they've found.

Content curation is the process of sorting through the vast amounts of content on the web and presenting it in a meaningful and organized way around a specific theme. The work involves sifting, sorting, arranging, and publishing information.

https://natlib.govt.nz/schools/digital-literacy/strategies-for-developing-digital-literacy/curating-content

Kenchadconsulting helping create more effective libraries.....

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#
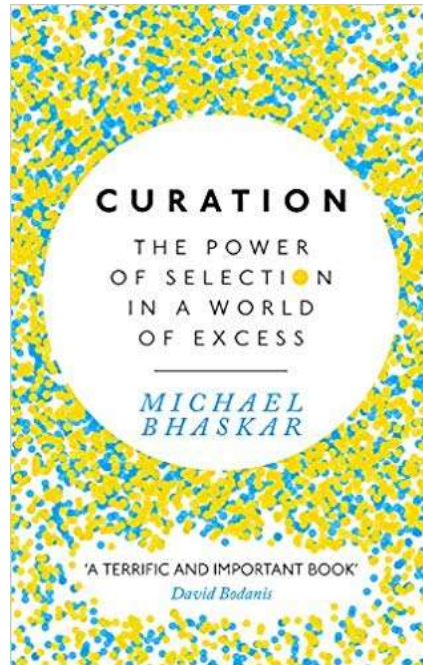
'Curation.' The word is everywhere these days….When people start calling football managers 'curators' of their teams, something is up.

CURATION
THE POWER OF SELECTION IN A WORLD OF EXCESS

MICHAEL BHASKAR

'A TERRIFIC AND IMPORTANT BOOK'
David Bodanis

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#
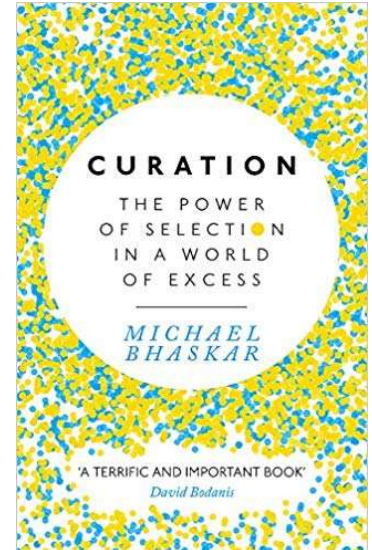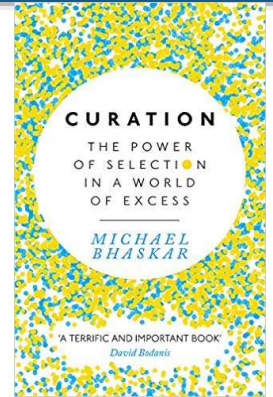
[The] case goes something like this. We live among unprecedented abundance. The internet offers more writing than we could ever read, more music than we could ever listen to, and more news than we could ever keep up with. …..

The result of all this abundance is that there are now **massive business opportunities in helping us filter.**

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#

Kenchadconsulting helping create more effective libraries…..

This isn't about searching; we don't always know what we're looking for. It's about curation: 'selecting, refining and arranging to add value'

Someone using their hard-won expertise to put in front of us only the good stuff, the stuff we haven't yet discovered but will want when we do. And doing so with style.

Hmmm….who might that be?

'One of today's most important business models,' as he puts it, 'is creating the tools and means for others to curate.'

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#

Bhaskar also argues that because **curation is a high-value activity by nature, it can also be a strategy for companies and countries to move up the value chain.**

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#
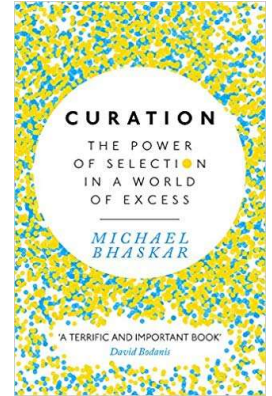
So why does the ILS do such a poor job of curation?

"Bhaskar's core argument is essentially right.....I would particularly recommend it to anyone searching for **inspiration as to what new business to start.** This is a rollicking, intellectually omnivorous guide to the future".

Reviewed by Asher Dresner (St Edmund Hall) http://www.oxfordtoday.ox.ac.uk/culture/book-of-the-week/review-curation#

Curation in practice in the library –The reading/resource list solution

https://rl.talis.com/3/bham/lists/DF40AAC3-9E75-A0EF-4EAB-263D34B092C8.html

Kenchadconsulting helping create more effective libraries…..

Introduction to high energy physics
Book - by Donald H. Perkins - 2000 - Background

Relatively historical treatment by an outstanding physicist

Introduction to high energy physics
Book - by Donald H. Perkins - 2000

Detectors for particle radiation
Book - by K. Kleinknecht - 1998 - Recommended

A great book, one of the standard detector texts; does not contain the most recent advances in solid state (

https://rl.talis.com/3/bham/lists/DF40AAC3-9E75-A0EF-4EAB-263D34B092C8.html

Data, analytics, machine learning, AI

Usage data on their own…give libraries and publishers very little insight into how content is being used or how much it is being looked at.

In spite of the huge amount of data that are now available to libraries, it feels as if **little progress has been made in developing metrics that may give an indication of how resources are being used** and the extent to which library users value the resources provided. These perceived shortcomings in conventional usage data led Nottingham Trent University and Alexander Street to partner in piloting an in-depth view of **analytics, demonstrating user engagement and impact of use**.

Adey, H., & Eastman-Mullins, A. (2017). User engagement analytics case study: how customer behaviour can drive intelligent library decision making. Insights, 30(3), 138–147. DOI: http://doi.org/10.1629/uksg.387 https://insights.uksg.org/articles/10.1629/uksg.387/

Hierarchy of analytics use in libraries

Level 1 - Any analysis done is library function specific. Typically ad-hoc analytics but there might be dashboard systems created for only one specific area (e.g. collection dashboard for Alma or web dashboard for Google analytics)

Level 2 - A centralised library wide dashboard is created covering most functional areas in the library

Level 3 - Library "shows value" runs correlation studies etc

Level 4 - Library ventures into predictive analytics or learning analytics

By the time you reach level 4, it would be almost impossible fo library to go it alone.

5 reasons why library analytics is on the rise. Aaron Tay. Musings about librarianship [blog]
http://musingsaboutlibrarianship.blogspot.com/2016/11/5-reasons-why-library-analytics-is-on.html

Kenchadconsulting helping create more effective libraries.....

Library related data only gets you so far

"Many firms are not able to exploit their data in the most effective manner to drive the best insights when the data is stored across different silos." (PwC Global CEO Survey)

Data driven businesses race ahead but change doesn't come easily. By Nick Bouch. In Future of Data. Raconteur. 26 March 2019

Northumbria
University
NEWCASTLE

Using Student Data for Educational Analytics

The following data, which is currently captured by the University, is initially in scope
for Educational Analytics:
- personal information provided by the student at registration
- student level study records held by the University including assessment marks
- details of a student's assigned Personal Tutor system-generated data from Blackboard, such as the date and frequency of accessing pages
- student attendance data
- library borrowing logs
- smart card activity log on Campus
- Northumbria gym membership

This data will be used in line with the University's Student and Applicant Privacy Notice.

https://www.northumbria.ac.uk/-/media/corporate-website/new-sitecore-gallery/services/academic-registry/documents/qte/student-engagement/ethical-use-of-student-data-for-educational-analytics.pdf?la=en&hash=EEB8CF87D03669F66A935ECEA17D084F05947832

Learning analytics – also *for* students

Academic Development and Quality — NTU Student Dashboard

Student success | **Success for All** | **NTU Student Dashboard** | **Enabling Student Development & Achievement**

The NTU Student Dashboard is a learning analytics resource for students and relevant staff at NTU. It has been developed to help students engage more effectively with their studies. The dashboard measures students' interactions with various resources to present an overall picture about each student's engagement with their course.

These resources are:

> use of NOW

> course work submitted through NOW

> library use (count of resources used)

> door swipes (where applicable).

> attendance

> e-book usage

Each student then receives an engagement rating from high to low. These are criterion based and in theory every student could achieve a high engagement rating. We have tested student engagement against student academic outcomes and there is an association between average engagement and both progression from the first year and final year degree attainment. Students with a high average engagement do far better than those with a low average engagement in both progression and attainment. Importantly, having high engagement is a far more powerful predictor of academic success than any background characteristic or entry qualification.

Put your data to work

Your university or college already collects a variety of data about students and you can use it to:

- **Transform their learning experience**
- **Support their wellbeing**
- **Help them to achieve more**

https://www.jisc.ac.uk/learning-analytics

The Guardian

The bereaved father who says data could save lives

Murray is proposing that universities introduce a system that would automatically pull together disparate data – from schools, the student, attendance, assessment and library access. Multiple red flags would trigger an early warning alert and a meeting with a student support professional.

Student suicides: the bereaved father who says data could save lives
Guardian Education 8 October 2018
https://www.theguardian.com/education/2018/oct/08/student-suicides-the-bereaved-father-who-says-data-could-save-live
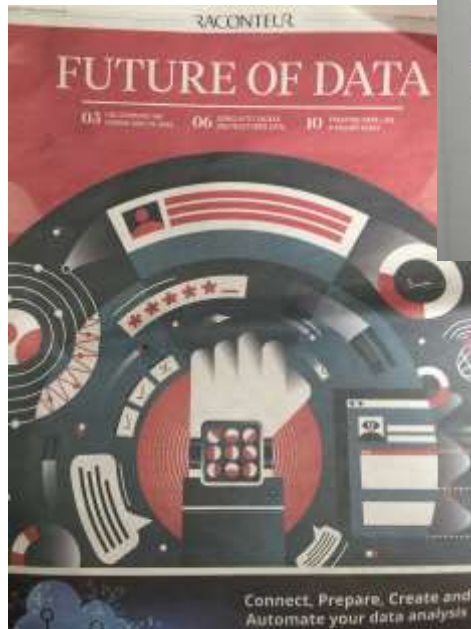
Adopting AI ...is a journey, not a silver bullet that will solve problems in an instant. It begins with gathering data into simple visualizations and statistical processes that allow you to better understand your data and get your processes under control. From there, you'll progress through increasingly advanced analytical capabilities, until you achieve that utopian goal .....

Data Is The Foundation For Artificial Intelligence And Machine Learning, By Willem Sundblad Forbes [magazine] 18 October 2018
https://www.forbes.com/sites/willemsundbladeurope/2018/10/18/data-is-the-foundation-for-artificial-intelligence-and-machine-learning/#6750b0a151b4

So what is AI?

To understand where AI should be used and will be most successful, one must understand what AI really is. AI, or machine learning, refers to a broad set of algorithms that can solve a **specific set of problems**, if trained properly.

The success of artificial intelligence depends on data, Nick Ismail Information Age [blog] 23 April 2018 https://www.information-age.com/success-artificial-intelligence-data-123471607/

The AI bucket consists of:
- Big data
- Analytics
- Machine learning
- Natural language processing
- Data visualisation
- Decision logic

Cox, A.M. Pinfield, S. and Rutter, S. (2018) The intelligent library: Thought leaders' views on the likely impact of artificial intelligence on academic libraries. Library Hi Tech. ISSN 0737-8831 https://doi.org/10.1108/LHT-08-2018-0105

SUPERHUMAN INNOVATION

Transforming business with artificial intelligence

CHRIS DUFFEY

"Human beings and artificial intelligence will work together to create a **brave new world**...This will be a world where **people are freed** to use their natural creative abilities and their amplified intelligence with concern for the drudgery of mundane, repetitive and quite frankly boring tasks. **This is the true mission of artificial intelligence**"

"Imagine walking into a grocery store, toward the produce aisle, but then getting a ping on your phone that the cookies you bought last week are on sale. You put them to your cart, put your phone away and

keep shopping"

Powerful as it is, one of the problems is that **artificial intelligence is not aimed at the worthiest of the worlds problems**. Today if you look at the very successful AI applications at scale they are in the field of making people click more ads

AI and bots can create fairer world. Rob Mackinley -interview with Kriti Sharma. Information Professional; March 2019

Yewno Discover: *Case Study*

As doctoral candidate and part-time instructor in Stanford's graduate school of Education, Kamran Naim is keenly aware of the importance of developing digital literacy skills to survive today's deluge of information.

"The volume of scholarly content that is produced far exceeds anyone's ability to read it."

He sees information tools powered by neural networks and artificial intelligence (AI) -- where computers replicate human processes like decision making or perception -- as a cutting-edge method to navigate this growing body of literature.

Kamran Naim,
Stanford University
Doctoral Candidate & Instructor

"Yewno's knowledge map allows Kamran to investigate concepts and relationships between concepts to help broaden the keywords he'll use in his research."
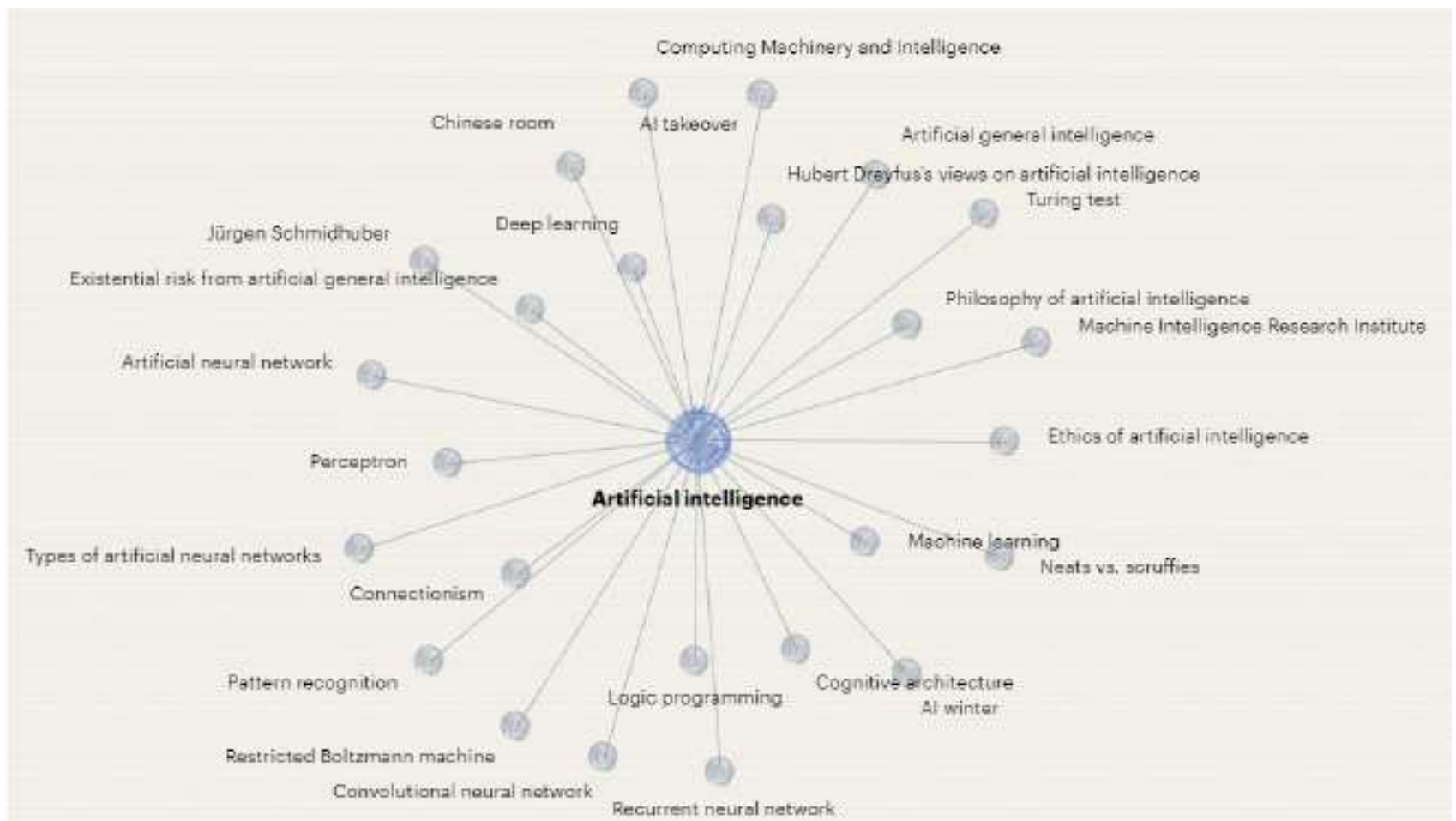
Making research more discoverable
Content is at the centre of everything a publisher does. Enriching that content delivers significant value across the whole content life cycle. One particular area where the need for content enrichment can add significant value is in **enabling the researcher to find and discover the most relevant content to assist in the researcher's workflow**. Features that can be enhanced using enrichment techniques are relating articles, subject and context navigation, categorisation of content and identification of entities to provide linking to other relevant content.

http://www.67bricks.com/index.php/content-enrichment-industry-insights-1-2016

The Augmented Researcher: What Does 2018 Hold for AI in Publishing?

01/19/2018 - 3:23pm   by Jabe Wilson, Consulting Director, Text and Data Analytics, Elsevier

Elsevier's Dr. Jabe Wilson answers the question "What does 2018 hold for AI in publishing?"

He points out that while many industries have shifted to digital, the impact is especially dramatic in scientific publishing and R&D "due to the sheer volume of data researchers must sift through." In fact, the desire to help researchers make sense out of all this data is behind **Elsevier's transformation from publisher to "information analytics provider."**

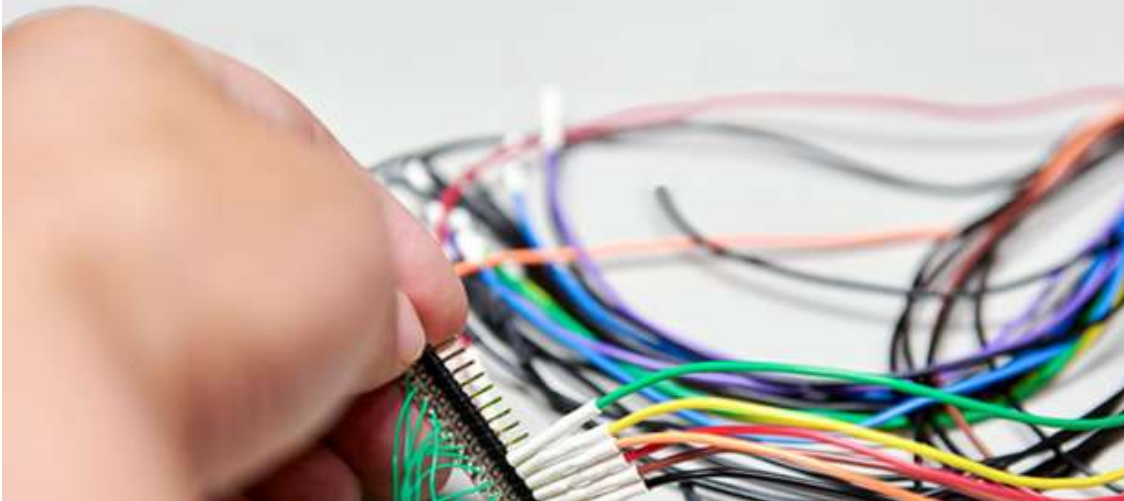https://www.elsevier.com/connect/jabe-wilson-on-the-future-of-ai-and-scholarly-publishing

So how might an **open community** address the opportunities of…

User experience
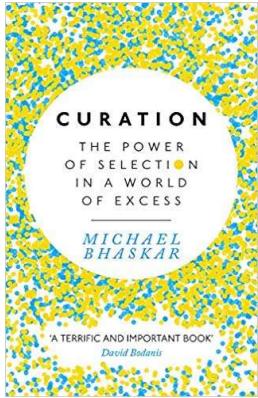
Curation

Data, machine learning/AI

I spend much of my time working on how to help distracted, stressed, anxious people accomplish the things they need to do in a day. To me, UX librarian means, "librarian who works to ensure that our systems, spaces, services, and resources help people work in the best ways for them, by gathering evidence and creating compelling narratives and processes to drive change."

What is a UX Librarian? Kelly Dagan. Researchops-community [Blog] 19 Oct 2018
https://medium.com/researchops-community/what-is-a-ux-librarian-88eb5293991b

Exploring UX research and design in libraries

http://uxlib.org/

As well as sharing code can we improve how we share user experience work?

The result of all this abundance is that there are now **massive business opportunities in helping us filter.**

Can we move our efforts to better (higher value) curation tools/solutions ?

Certain personal data are often required in order for digital systems to deliver information, particularly subscribed content. Additionally, user activity data can provide useful insights on how to improve collections and services. However, the gathering, storage, and use of these data must respect the trust users place in libraries and their partners. There are ways to address these operational needs while also respecting the rights and expectations of privacy

We can be the 'good guys' in terms of data

NISO

How the information world CONNECTS

NISO Consensus Principles on User's Digital Privacy in Library, Publisher, and Software-Provider Systems (NISO Privacy Principles)

Published on December 10, 2015

Community, openness and directions for library technology.
KohaCon: Dublin. May 2019

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