

Higher Fidelity Systems for Online Discussion

David Karger

MIT

1000 Words

David Karger

I build computer things that help people find, read, learn and understand all sorts of stuff, like pictures, stories, ideas and numbers. People want to do interesting things with this stuff, but sometimes computers make it too hard or don't let them do it at all. I try to build things that make everyone as good at working with their stuff as we computer people are.

Conclusion

- People are talented masters of information
 - Full of knowledge, understanding
 - ways of organizing, visualizing, explaining
- Dumbed down by current systems
 - Both interfaces and models
 - Cannot express what they know/understand
 - Cannot organize the way that makes sense
- No computation can create missing info
 - Instead, must expand interfaces and models
 - So people can provide the (non-artificial) intelligence
- Many opportunities to make things better
 - Online discussion (more expressive text)
 - End user applications (more expressive data)

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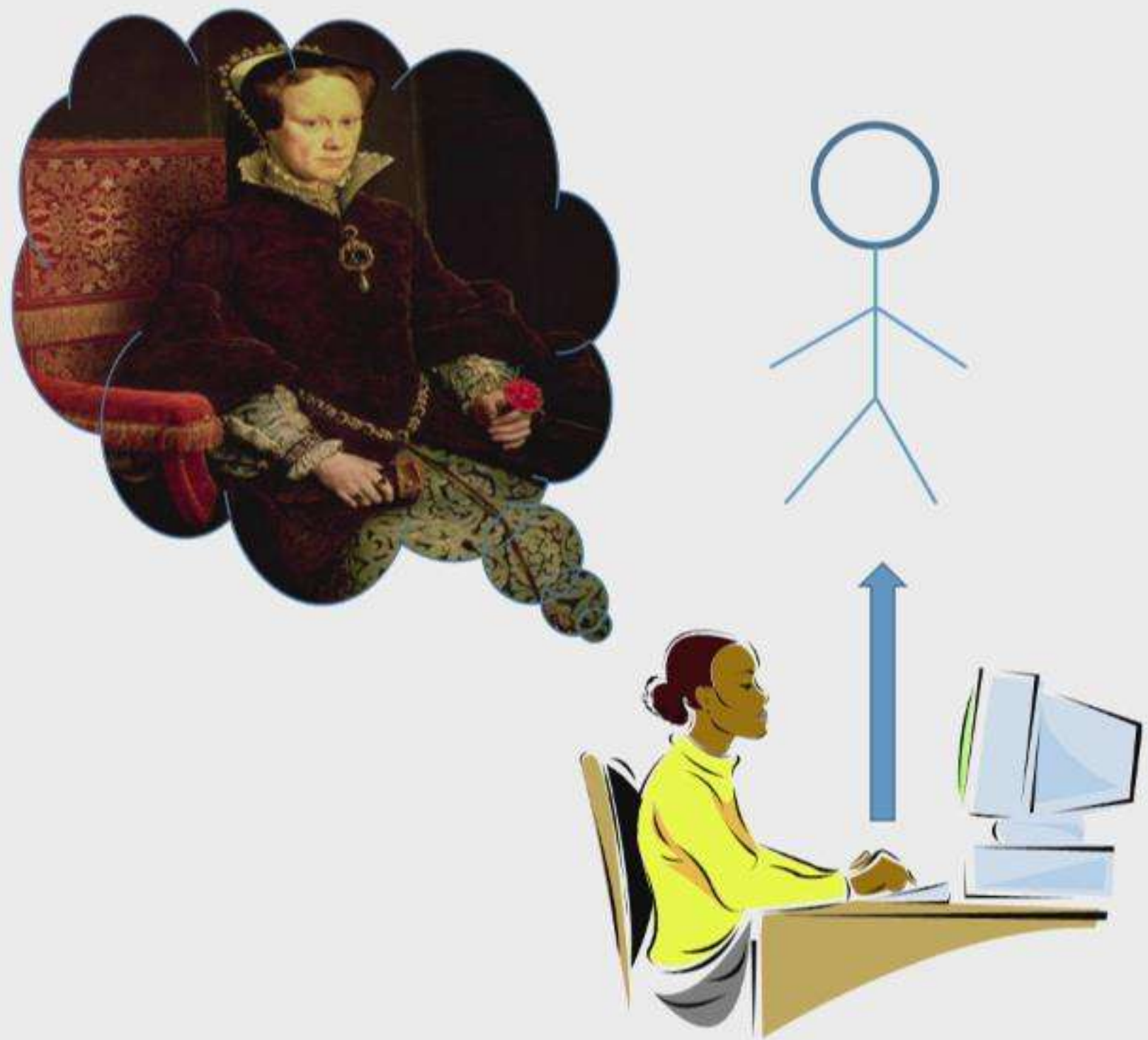
Current Tools



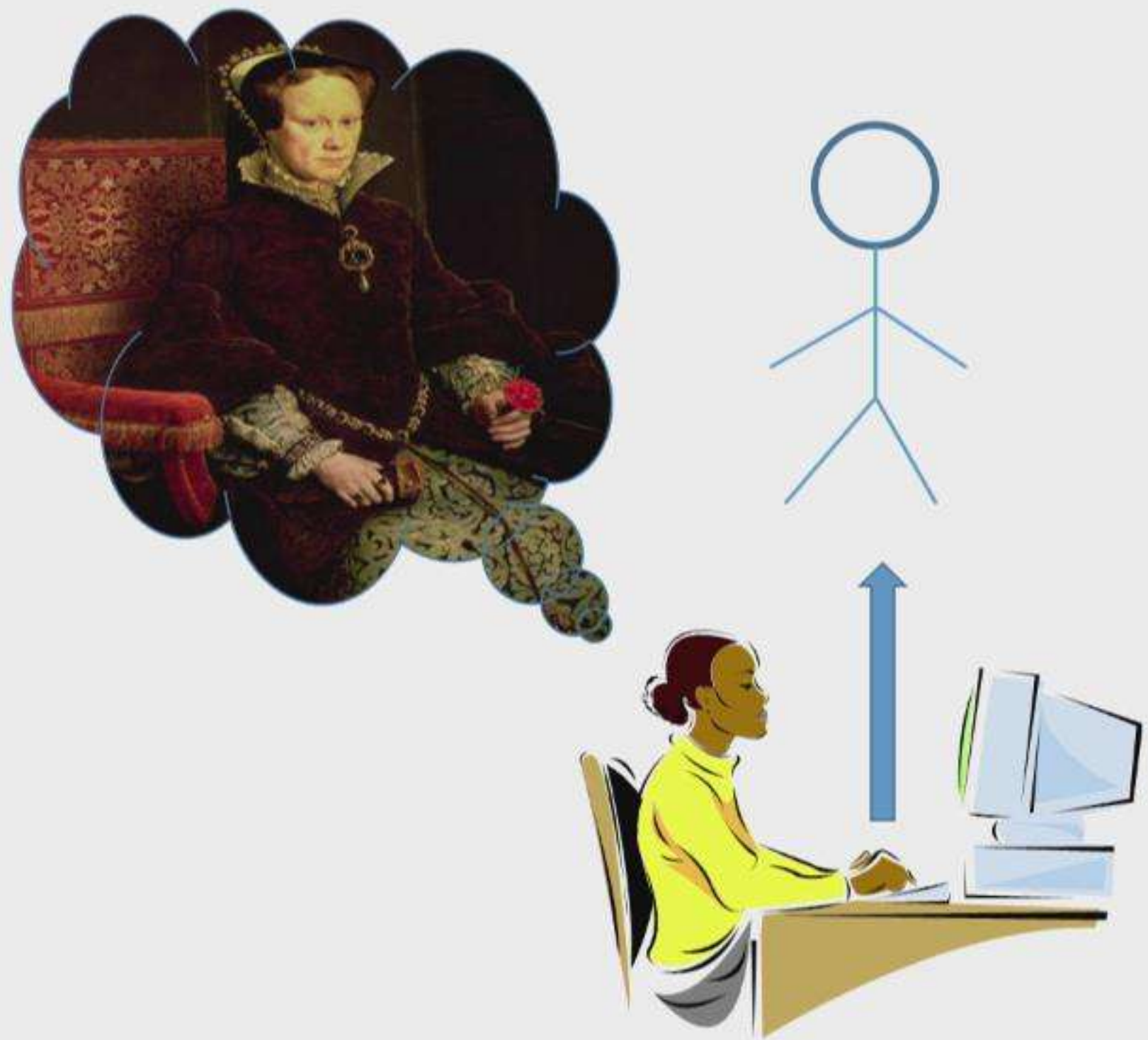
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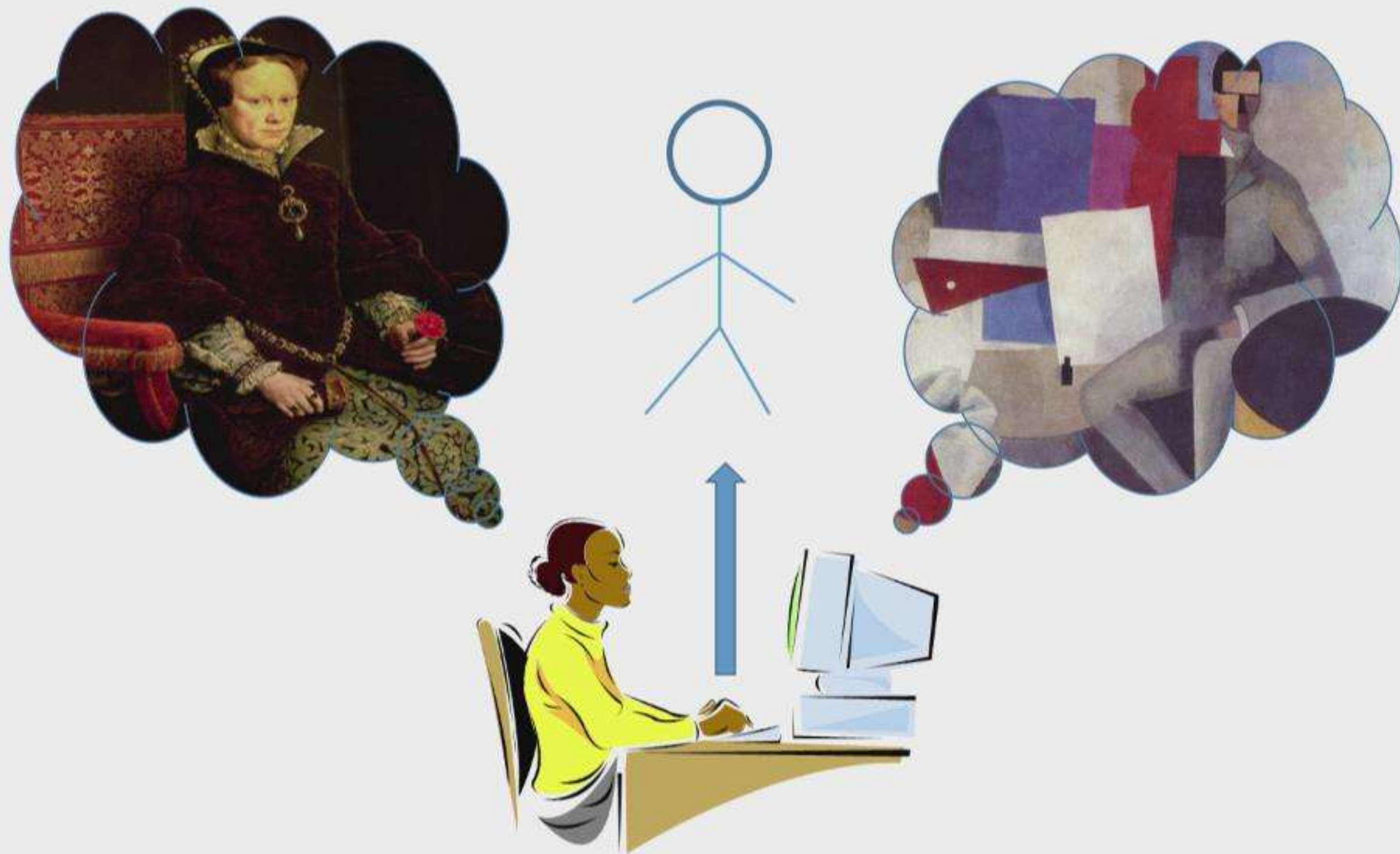
Current Tools



Current Tools



Current Tools



Outline

- Rich information models and interfaces empower people to use/share what they know
- Richer structures
 - Annotation for in-context discussion
 - Collaborative summarization for sensemaking
- Richer workflows
 - Controlling attention through better mailing lists
 - Workflows for collaboratively handling harassment
 - Automation of email and social media intake
- Computer as medium, not (artificial) intelligence

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Online Discussion Today

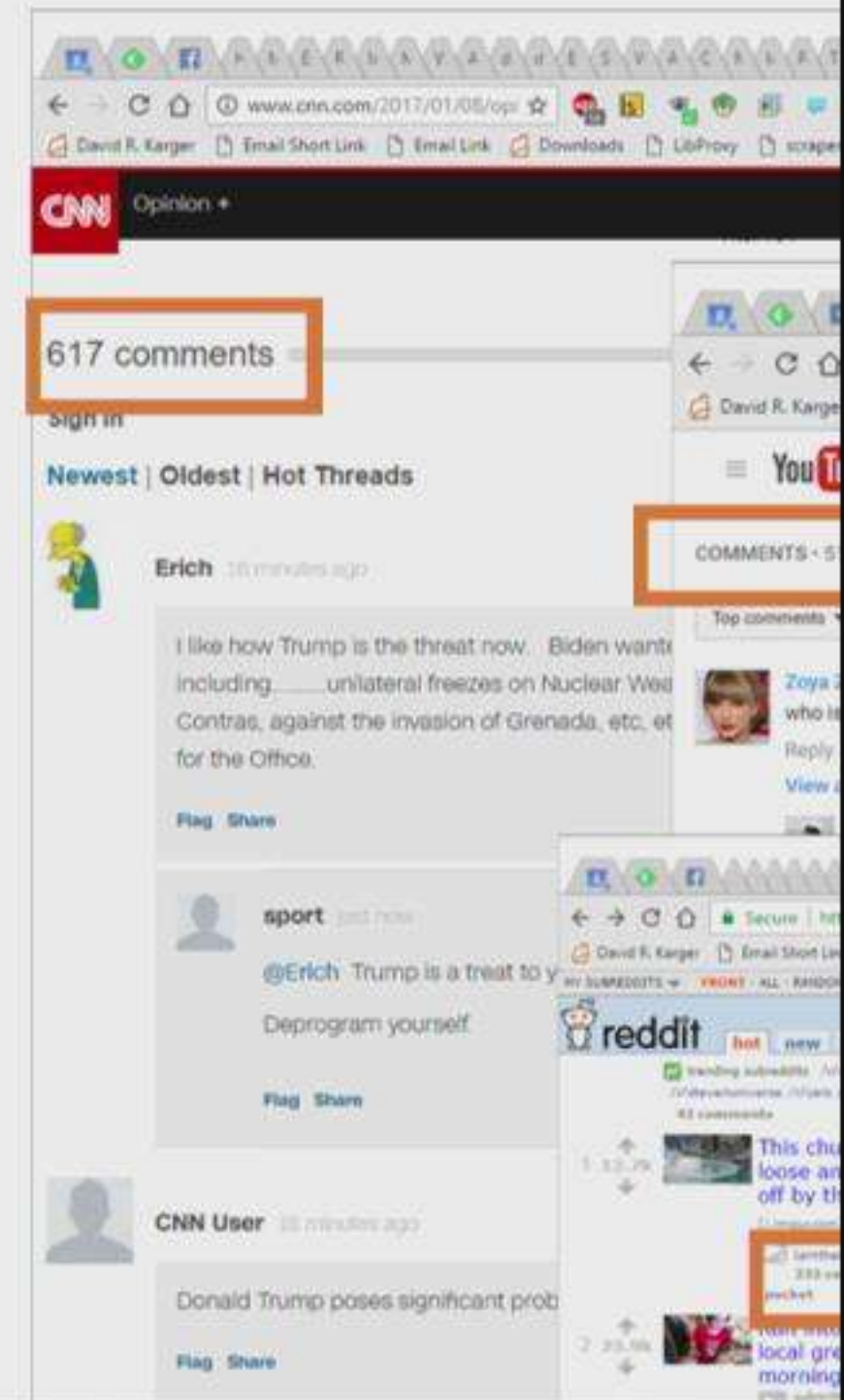
- Streams of posts, comments, replies

The image is a collage of overlapping browser windows illustrating online discussion platforms:

- CNN:** A window showing a news article with a red box highlighting "617 comments" and a "sign in" button. Below it, a comment by "Erich" is visible.
- YouTube:** A window showing a video player for "taylor swift" with a "COMMENTS - 511,272" section. A comment by "Zoya Zubair" is highlighted with a red box.
- Facebook:** A window showing a post by "James Sigler" with a comment by "Dana Lynn".
- Reddit:** A window showing a post titled "This chunk of ice broke loose and was rounded off by the current." with a comment by "jeniferDennard" highlighted by a red box.
- Twitter:** A window showing a tweet by "Barb McAllister Whyte" with a reply.
- Other Windows:** Several other browser windows are visible in the background, showing various web pages and search results.

Online Discussion Today

- Streams of posts, comments, replies



Online Discussion Today

- Streams of posts, comments, replies
- Impoverished model/interface
 - Like
 - Reply
 - Follow
 - Tag
- Often opaque selection of content
 - Majority voting
 - Facebook feed
 - Trending topics



SCIENCE

WHY WE'RE SHUTTING OFF OUR COMMENTS

STARTING TODAY, POPULARSCIENCE.COM WILL NO LONGER ACCEPT COMMENTS ON NEW ARTICLES. HERE'S WHY.

By Suzanne LaBarre September 24, 2013



Comments can be bad for science. That's why, here at PopularScience.com, we're shutting them off.

It wasn't a decision we made lightly. As the news arm of a 141-year-old science and technology magazine, we are as committed to fostering lively, intellectual debate as we are to spreading the word of science far and wide. The problem is when trolls and spambots overwhelm the former, diminishing our ability to do the latter.

That is not to suggest that we are the only website in the world that attracts vexing commenters. Far from it. Nor is it to suggest that all, or even close to all, of our commenters are shrill, boorish specimens of the lower internet phyla. We have many delightful, thought-provoking commenters.

But even a fractious minority wields enough power to skew a reader's perception of a story, recent research suggests. In one study led by University of Wisconsin-Madison professor Dominique Brossard, 1,183 Americans

Two Richer Models

- Annotation
 - To organize discussion around content being discussed
- Summarization
 - To squeeze the key insights out of long redundant discussions

Discussion in the Margins

Sacha Zyto, Mark Ackerman, David Karger, Sanjoy Mahajan

CHI 2012

Classroom Discussion Forums

- Students can ask questions
 - whenever they have them, not just in class
- And get answers
 - from other students (scale) and staff
- Archival Q&A record
 - knowledge accumulates over time
- Faculty feedback
 - what's confusing and needs teaching or editing?

Interaction Causes Learning

- Chi, M. T. H., & Wylie, R. (2014). The ICAP framework: Linking cognitive engagement to active learning outcomes. *Educational Psychologist, 49*, 219-243 (lead article).

- Passive
 - Watching lecture
- Active
 - Taking notes
- Constructive
 - Solving problems
- Interactive
 - Arguing with others



Discussion Forums: Out of Context

- Interrupt reading to visit forum
 - Check Facebook while you're at it....
 - Cost of multitasking/loss of flow
- Hunt for answer to your question
 - When it might not even exist
- Describe question context ("on page 23...")
 - If question longer than answer, skip
- Find questions you can answer
 - Big effort with no benefit to you
- No structure
 - Faculty see a big pile of posts, no general sense of understanding

Idea

- Course content provides a context
- Keep that context during discussion
- By having discussions in the margins

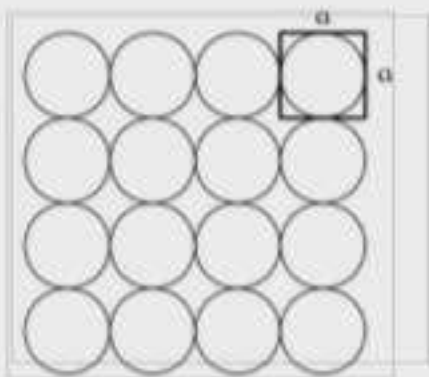
NB

- Plain old threaded discussion forum
 - But in document margins
- Standard web site
- Faculty initiates
 - signs up
 - invites students
 - provides PDF/HTML/Youtube Video
- Students discuss
 - Highlight content, enter comment
 - Reply to existing comment

5.3.2 Atomic sizes and substance densities

Hydrogen has a diameter of 1\AA . A useful consequence is the rule of thumb is that a typical interatomic spacing is 3\AA . This approximation gives a reasonable approximation for the densities of substances, as this section explains.

Let A be the atomic mass of the atom; it is (roughly) the number of protons and neutrons in the nucleus. Although A is called a mass, it is dimensionless. Each atom occupies a cube of side length $a \sim 3\text{\AA}$, and has mass $A m_{\text{proton}}$. The density of the substance is



$$\rho = \frac{\text{mass}}{\text{volume}} \sim \frac{A m_{\text{proton}}}{(3\text{\AA})^3}$$

You do not need to remember or look up m_{proton} if you multiply this fraction by unity in the form of N_A/N_A , where N_A is Avogadro's number:

$$\rho \sim \frac{A m_{\text{proton}} N_A}{(3\text{\AA})^3 \times N_A}$$

The numerator is A g, because that is how N_A is defined. The denominator is

$$3 \cdot 10^{-23} \text{ cm}^3 \times 6 \cdot 10^{23} = 18.$$

So instead of remembering m_{proton} , you need to remember N_A . However, N_A is more familiar than m_{proton} because N_A arises in chemistry and physics. Using N_A also emphasizes the connection between microscopic and macroscopic values. Carrying out the calculations:

$$\rho \sim \frac{A}{18} \text{ g cm}^{-3}$$

David Karger Help

174 threads | me 0 | 0 | ? 0

- Can we justify the 3 angstrom interato...
- Why is this a consequence of hydrogen...
- How did we get 3 from 1?**
- Too many 'is's in this sentence.
- This paragraph's wording is a little bit c...
- I feel like I have seen this drawing be...**

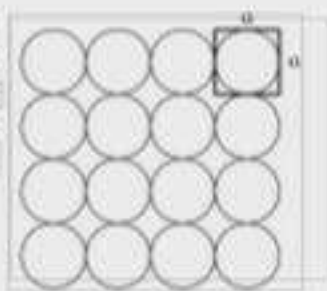
+ 0 - replies requested

- How did we get 3 from 1?** [Reply Actions](#)
Anonymous - 18 Mar 2010
- The 1 was the diameter of hydrogen. The 3 is typical interatomic spacing.** [Reply Actions](#)
Anonymous - 18 Mar 2010
- The 3 and 1 represent 2 different values- 3A is the typical space between all atoms while 1A is the diameter for Hydrogen specifically.** [Reply Actions](#)
Anonymous - 18 Mar 2010
- So hydrogen atoms are spaced by only 1A when most other atoms are typically spaced between 3A? Am I following you correctly?** [Reply Actions](#)
Anonymous - 18 Mar 2010
- Why doesn't this vary significantly based on the size of the atom? Or is three just the overall average.** [Reply Actions](#)
Anonymous - 18 Mar 2010
- As you say, it is based on the size of the atom. Hydrogen is at the very small end, and uranium is at the large end. 3 Angstroms is a good average size to use for the common atoms in ordinary substances. As a *very* rough approximation, think of the diameter as 1** [Reply Actions](#)

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Why doesn't this vary significantly based on the size of the atom? Or is three just the

New note...

The entire class
 Reply Requested
 Anonymous to students

Instructors and TAs

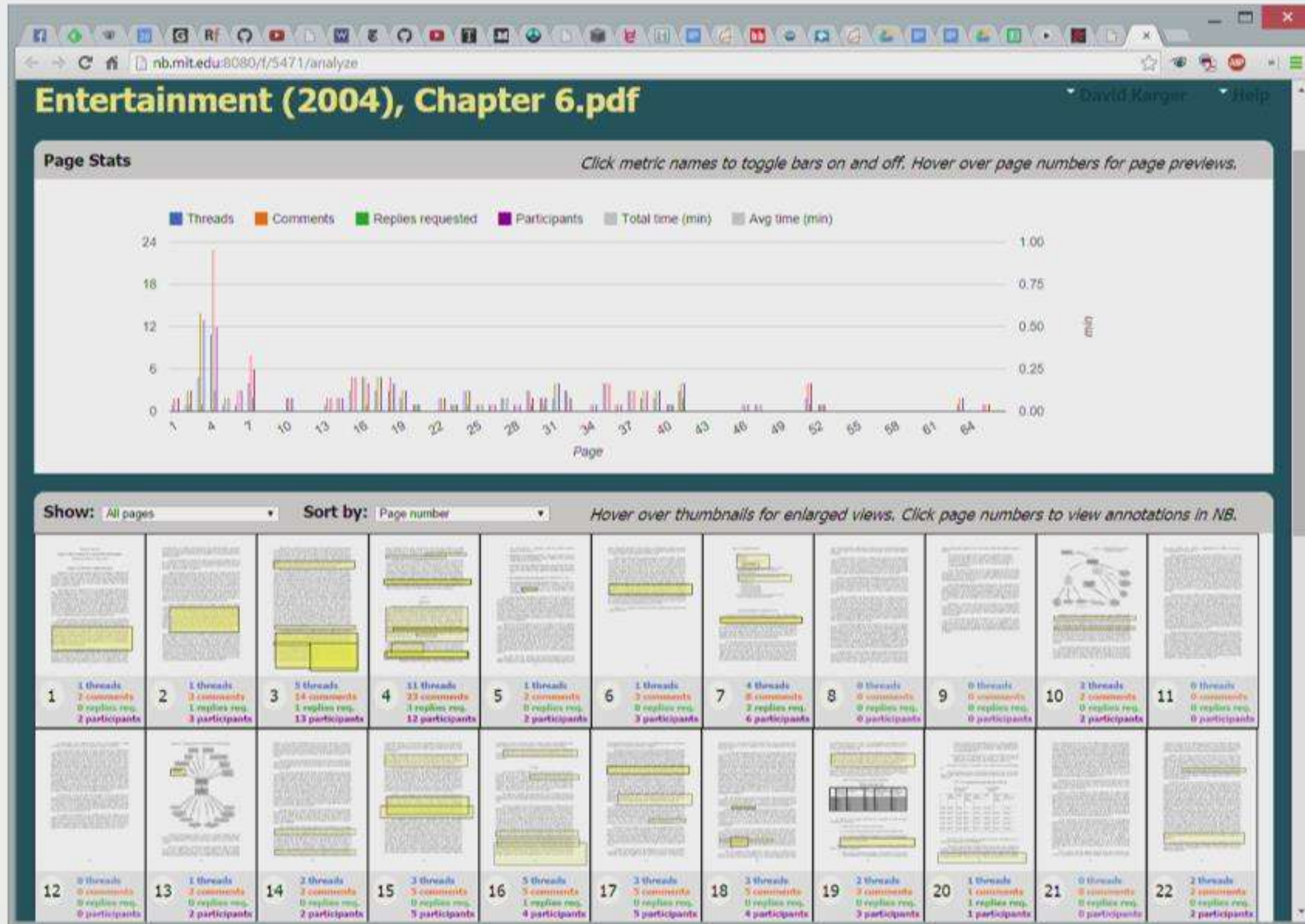
Myself only

Submit Cancel

Benefits

- Discuss as you read, without exiting document
- Stay in the flow
- See discussion of what you are reading now
 - Answers that can help you
 - Questions others want answered
- Context is clear
 - No need to explain in question
 - No need to understand from question
- Annotations form “heat map” of trouble spots

Heat Map



Babylonian Talmud

- Primary source
- Commentary on primary

מסכת
הרומי

הקדרא עומד פירק שלישי מגילה

כר

ק"ך טעם
ט"ז סנהד

הנכח טעם. אם ירצה ולא ירצה...
היראה: ואם כן יאמר...
הקדרא עומד פירק שלישי מגילה

הקדרא עומד פירק שלישי מגילה
והוא עומד...
הקדרא עומד פירק שלישי מגילה

הקדרא עומד פירק שלישי מגילה...
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הקדרא עומד פירק שלישי מגילה

Babylonian Talmud

- Primary source
- Commentary on primary
- Commentary on secondary
- Commentary on tertiary

דף סגסג
בבבב

הקדרא עומד פרק שליש מגילה

ספרות
היסט

הנכח נכח . אם יצא ולא יצא...
הנכח נכח . אם יצא ולא יצא...
הנכח נכח . אם יצא ולא יצא...

ובנביא שנה . ונכח אן לא...
ובנביא שנה . ונכח אן לא...
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Concrete Mathematics

integer. We usually apply the parallel summation identity when r and n are positive integers; but then $-n-r$ is a negative integer and the hypergeometric (5.76) is undefined. How then can we consider (5.82) to be legitimate? The answer is that we can take the limit of $F\left(\begin{smallmatrix} 1, -n \\ -n-r+\epsilon \end{smallmatrix} \middle| 1\right)$ as $\epsilon \rightarrow 0$.

We will look at such things more closely later in this chapter, but for now let's just be aware that some denominators can be dynamite. It is interesting, however, that the very first sum we've tried to express hypergeometrically has turned out to be degenerate.

Another possibly sore point in our derivation of (5.82) is that we expanded $\binom{r+n-k}{n-k}$ as $(r+n-k)!/r!(n-k)!$. This expansion fails when r is a negative integer, because $(-m)!$ has to be ∞ if the law

$$0! = 0 \cdot (-1) \cdot (-2) \cdot \dots \cdot (-m+1) \cdot (-m)!$$

is going to hold. Again, we need to approach integer results by considering a limit of $r+\epsilon$ as $\epsilon \rightarrow 0$.

But we defined the factorial representation $\binom{r}{k} = r!/k!(r-k)!$ only when r is an integer! If we want to work effectively with hypergeometrics, we need a factorial function that is defined for all complex numbers. Fortunately there is such a function, and it can be defined in many ways. Here's one of the most useful definitions of $z!$, actually a definition of $1/z!$:

$$\frac{1}{z!} = \lim_{n \rightarrow \infty} \binom{n+z}{n} n^{-z}. \quad (5.83)$$

(See exercise 21. Euler [81] discovered this when he was 22 years old.) The limit can be shown to exist for all complex z , and it is zero only when z is a negative integer. Another significant definition is

$$z! = \int_0^{\infty} t^z e^{-t} dt, \quad \text{if } \Re z > -1. \quad (5.84)$$

This integral exists only when the real part of z exceeds -1 , but we can use the formula

$$z! = z(z-1)! \quad (5.85)$$

to extend (5.84) to all complex z (except negative integers). Still another definition comes from Stirling's interpolation of $\ln z!$ in (5.47). All of these approaches lead to the same generalized factorial function.

There's a very similar function called the *Gamma function*, which relates to ordinary factorials somewhat as rising powers relate to falling powers. Standard reference books often use factorials and Gamma functions simultaneously. To convert between them if necessary using the

(We proved the identities originally for integer r , and used the polynomial argument to show that they hold in general. Now we're proving them first for irrational r , and using a limiting argument to show that they hold for integers!)

How do you write z to the w power, when w is the complex conjugate of w ?

z^w

I see, the lower index arrives at its limit first. That's why $\binom{z}{w}$ is zero when w is a negative integer.

following formula

$$\Gamma(z+1)$$

$$(-z)! \Gamma(z)$$

We can use powers, when z

$$z^n = \frac{z!}{(z-n)!}$$

$$z^w = \frac{\Gamma(z)}{\Gamma(z-w)}$$

The only provisions formulas give on Gamma-function

$$\binom{z}{w} = \frac{z!}{w!(z-w)!}$$

when z and w are

Armed with deducing the identity binomial theorem as we might expect monde's convolution

$$\sum_k \binom{r}{k} \binom{r-k}{n-k}$$

The k th term here

$$t_k = \frac{r!}{k!(r-k)!}$$

and we are no longer. Whenever the k , we get (a by (5.85); this is geometric—as a but as a lower power $(\alpha-k-1)!/(\alpha-k-1)!$ set of parameters hypergeometric

Assessment

NB Usage

- 770 classes with > 100 comments at > 60 schools
- Traditional classes, not MOOCs
 - 61,711 students
 - 1,057,151 comments in 723,963 threads
- Math, Chemistry, Biology, Stats, Physics, Mech E, CS, Law, Government, Shakespeare, Philosophy
- Frequent re-use

NB Usage

- 770 classes at > 60 school with > 100 comments
 - Traditional classes, not MOOCs
 - 61,711 students
 - 1,591,194 comments in 1,157,758 threads
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Usage Stats: Totals

Year	Comments
2009	16,047
2010	25,251
2011	14,921
2012	31,608
2013	108,217
2014	175,573
2015	110124 + 199,404 (Davis)
2016	131228 + 390028
2017	141838 + 180831

Usage Stats: Places

Comments	Institutions
793,607	UC Davis
60,060	MIT
25K-50K	Harvard, Colorado, UMich
10K-25K	U. de los Andes, U RI, U FL, Olin, Hopeland, U IA, NCSU, Brandeis
5K-10K	Valparaiso, R.I.T., Shippensburg, CUNY, Wellesley, Cal State, Delft
2K-5K	Middlebury, Pitt, Winona, Edinborough, Wesleyan, U OR, BYU
<2K	U WI, Vanderbilt, EPFL, UTU Finland, Berkeley, Puget Sound
	Newcastle, Washington & Lee, U WA, Cooper, TU Munich
>1K	Gent, Dartmouth, Dayton, Penn, Pacific, FSU, Purdue
<1K	Zurich, U Vt, NYU, Columbia, Imperial, Emory, Cal Poly
	Rochester, Groningen, Technion, Singapore, Toronto, U HI
>500	Tinbergen, Korea, Japan, Leiden, India, U NM, Gertis, Paris

Institution	Comments	Students	Per Student	Course
NCSU	4492	12	374	anthropological theory
Hopelanddz	13847	63	220	Hopeland English Book Club
U RI	17396	98	178	Introduction to Shakespeare
U MI	12262	86	143	Structure of Materials
Shippensburg	3026	22	138	Adolescent Literature
MIT	14426	105	137	6.055: Art of Approximation in Science and Engineering
WLU	1567	12	131	Origins of Rome (Latin 301)
U CO	4149	34	122	Teaching and Learning Physics 2015
Harvard	16451	147	112	Physics 50 2014
MIT	1324	12	110	Paradise Lost
U CO	1570	15	105	History 7415
UC Davis	60357	579	104	General Biology 2a
U Dayton	1343	13	103	The Pauline Corpus
CUNY	8084	80	101	Global Themes Hybrid 2015
UNI Andes	3236	33	98	ELOP
NCSU	1393	17	82	ANT475: Human Impacts on Ancient Environments
U WI	832	11	76	Teaching Mathematics
Valparaiso	7382	98	75	Organic Chemistry
U Penn	1339	18	74	Sexual Ideology
U MI	1869	27	69	Electron Microscopy and Microanalysis
MS State	892	13	69	Language and Thought
U CO	878	13	68	Systems Biology
Wellesley	877	13	67	Environmental Microbiology
Brandeis	1524	25	61	CS JBS
Pacific	1052	18	58	Health Economics
MIT	1291	23	56	Classical Mechanics
Brandeis	734	13	56	Jewish Studies
U CO	990	18	55	History
Dartmouth	865	16	54	Distributed Systems
NECC	2959	55	54	Human Biology
U MI	721	14	52	Personalized Information Systems
UCF	9026	174	52	PHY2049
Wesleyan	809	16	51	Place and Politics
Purdue	953	19	50	Designing Democratic Institutions

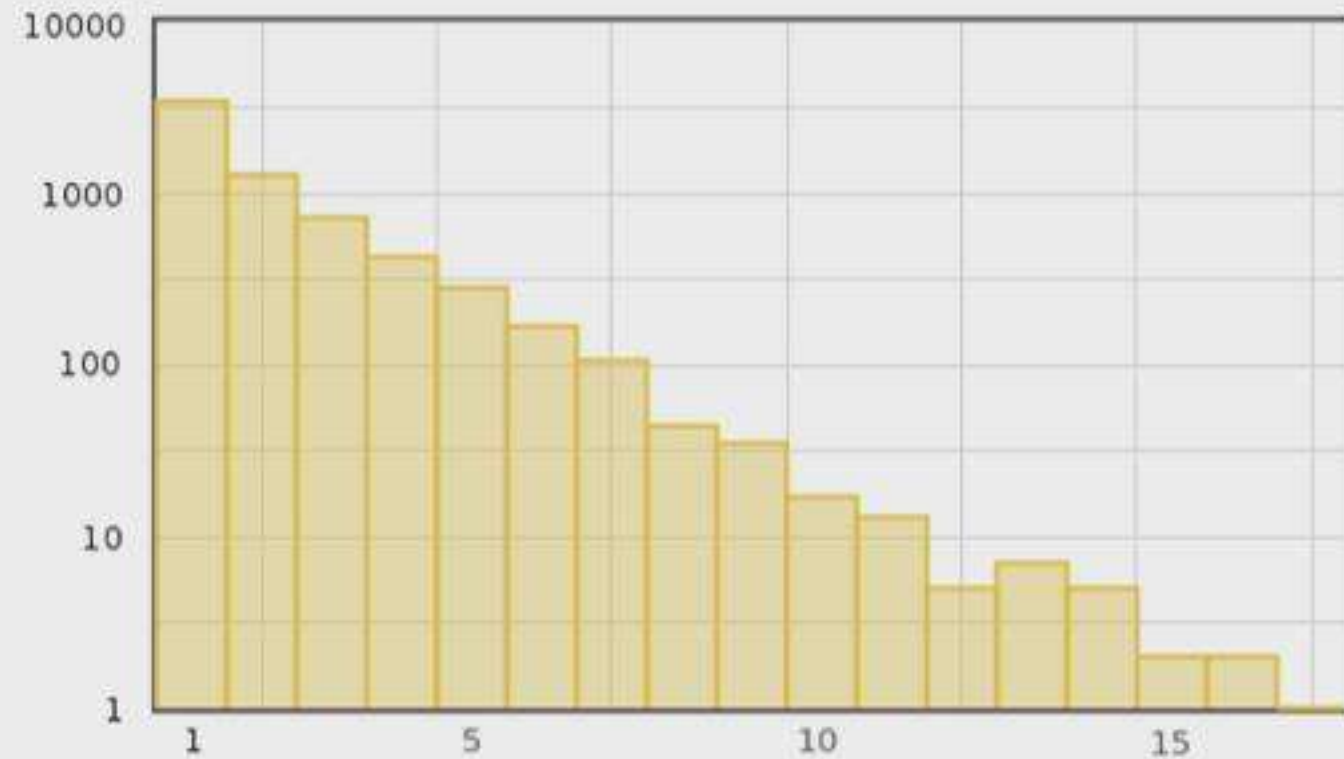
Focus Class

- Sanjoy Mahajan, “The Art of Approximation”, MIT
 - Prior to NB, had required paper annotations
 - Collected and read them all!
- NB annotation required
 - But grew to double required amount over term
 - Voluntary usage **after** benefits demonstrated by force
- Extensive in-depth discussions
- 73% questions resolved by other students
 - Most students considered answers “timely”
 - Meaning less than one hour
 - Far faster than staff responses

Content

- 14,258 Annotations
 - 153/student
 - 310 by faculty
- 77% in discussions
- 13.9 discussions/page
- 3.5 posts/discussion
- 1.4 “long” discussions/page (length > 5)

Discussion Length



Content

Percentage	Type
26%	Substantive Commentary (typos, wording suggestions)
32.1%	Substantive Questions
...20.3%	...about concepts
...11.5%	...about meaning of text
18.5%	Substantive Answers
...15.7%	...by students
... 2.8%	...by faculty
23%	Other (humor, anecdotes, "me too")

Question Resolutions	Percentage
By students in same thread	50.8%
By students in other thread	12%
By faculty	8.6%
Not resolved	28%

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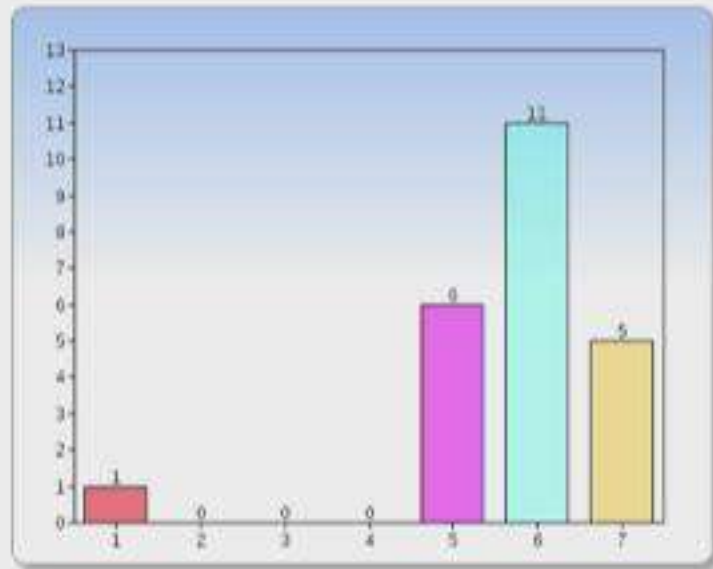
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User Feedback

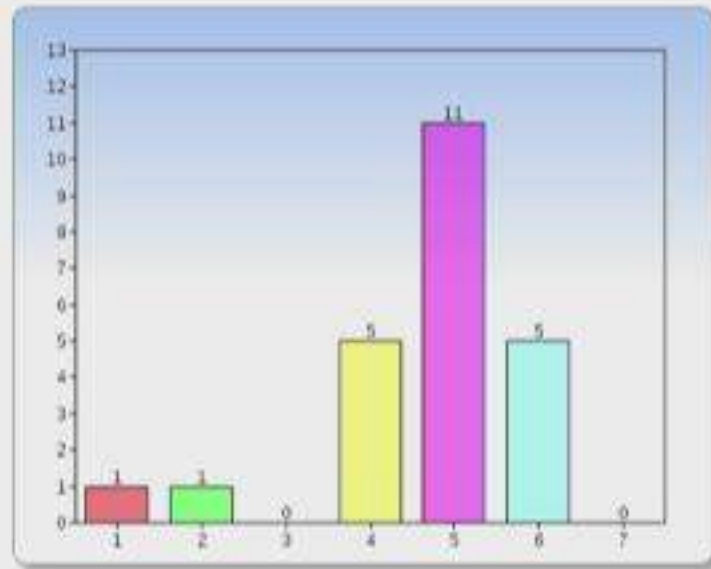
Student Feedback

- Substantial discussion
 - “Never had this level of in-depth discussion before”
- Collective intelligence
 - “Open questions to a whole class are incredibly useful. Everyone has their area of expertise and this is access to everyone's combined intelligence”
- Measuring stick
 - “It's encouraging to see if I'm not the only one confused and nice when people answer my questions. I also like answering other people's questions.”
 - “[NB] helps me see whether the questions I have are reasonable/shared by others, or in some cases, whether I have misunderstood or glossed over an important concept.”

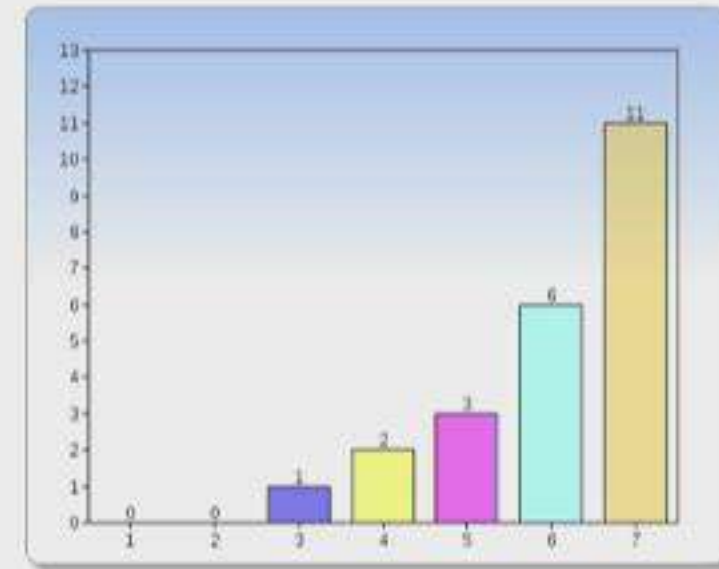
Faculty Feedback



Satisfaction



Comment
Quality



Intent to
reuse

Know your Students

- “**Students came much more alive than in usual class teaching** (even with discussion time). I suddenly noticed their way of thinking, personality, struggles with the material, determinedness to solve big and small problems.
- “Being able to respond directly to a student meant that **even the shy ones got a personalized learning experience**, which never would have happened ordinarily. I think this is extremely beneficial.
- “I felt **more connected to the students** and what they were thinking.
- “NB has certainly helped me make my classroom **more student-centered**.

Improved Online Discussion

- “Students were much more comfortable than they ever are in class with asking one another questions and providing answers. There were **more real debates on NB than I've ever been able to conjure in a classroom.**
- “The **quiet students had really good things to say that they never would have said in class.** The loud students in class that aren't always right, were told when they weren't necessarily correct.
- “**Students did establish dialogue** among themselves via comments, which delighted me because **even in class this not always happen.**
- “It really did enable me to **tune a lecture to the students' needs.**

Improved In-Class Discussion

- “The **quality of the in-class discussions was much higher** than when I had taught the course previously.
- “Class sessions changed from regular teaching to discuss NB posts. Of course it had become possible **much better to focus on important and difficult points.**
- “They don't just come to class and listen and go home. They know something when they come to class and can participate and ask GOOD questions in class. We were able to have **deeper and more thought provoking discussions** where in the past we couldn't even have a discussion.
- “It was obvious that the vast majority of **the class was reading** prior to class. This was **very different than prior years.**

Any Old Forum?

- Those results/quotes could be about any forum
- Though do indicate NB works well as forum
- Hypothesis: extension of discussion model to include context provides better discussion
- Any evidence?

Any Old Forum?

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 - Though do indicate NB works well as forum
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-
- Many had tried forums before and failed
 - What's different? Only context.

See Confusion in Context

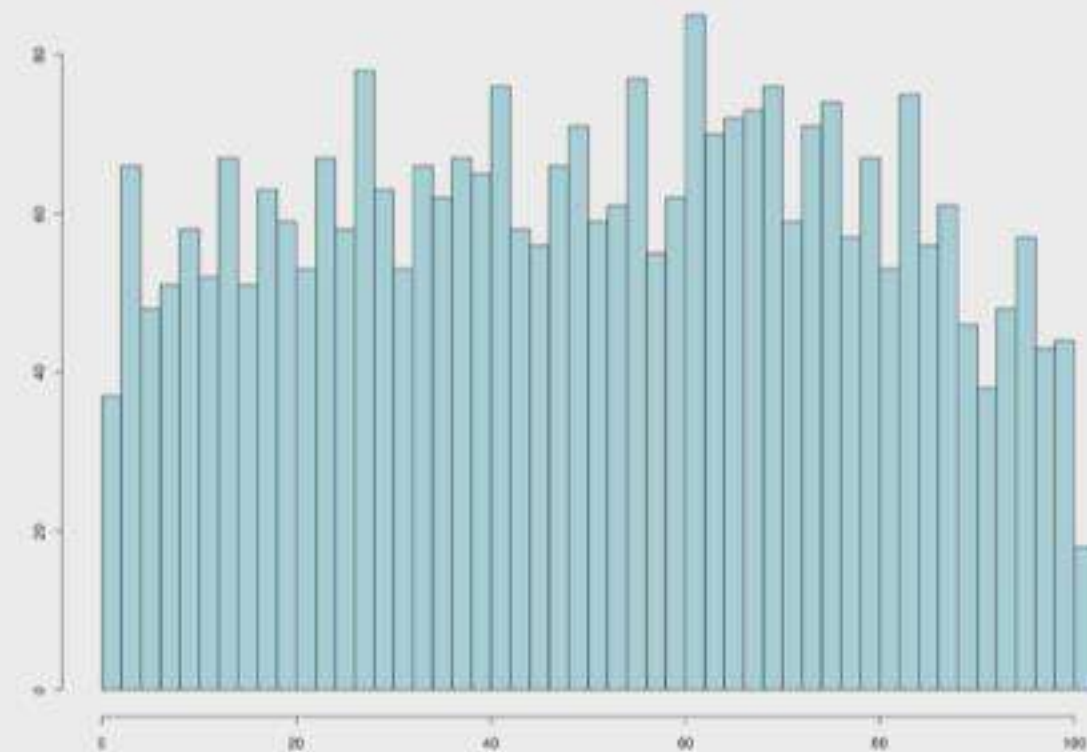
- “It helped uncover misconceptions and **areas of confusion that I did not expect**. I never would have known about many of these things otherwise.
- “The students' comments allowed me to **notice when they were misinterpreting something from the reading**, which I could follow up in class.
- “I was surprised by how difficult some ideas were for students. One reading had an estimate of the number of bits stored on a CDROM. **That whole section was dripping with questions** and anxiety in the comments. Thus, I spent the following class helping students get a feel for the physical parameters, which was very helpful, and I **wouldn't have known to do that if it weren't for NB**.
- “It's a **definite improvement over traditional discussion boards**, which I have tried previously without success.

NB-specific Benefits

- Context sensitive comments
 - “How does he get from 1 to 3 here?”
 - “Why?”
 - Easier to ask a question than standard forum
- Responses synthesizing proximate threads
 - “The two threads to the left say....”
- 74% of students did not print notes
 - Paper still the best UI
 - Could have printed, read, checked forum later
 - In-place benefits outweighed those of paper
- Students’ reading measured directly
 - So they take it seriously

Discussion **While** Reading

- Logged all usage
- Identified reading sessions (10 min-1 hour)
- When in interval were replies to comments?
- Evenly distributed throughout reading
- Staying in the flow....
- Hypothesis: this gave critical mass for discussion to succeed



Summary

- Annotation can work
 - Substantial student-student teaching
 - Participation by quiet students
 - Online reading
 - Timely guidance to faculty on trouble spots
- NB is just a medium; computes nothing
 - People do the information management
- Key: providing information in the flow and context
 - See questions/comments at the right time
 - When your confused, answer may be in the margin
 - Ask and answer questions without leaving context

Where Next?

- Comparison to standard forums
- Analyze 1M comments to understand learning
- Explore “seeding” to stimulate student discussion
 - Preliminary result: seeding initial comments that generated good discussion, generates good discussion
- Better faculty analytics
 - Where should I direct my attention?
 - Analyze reading patterns as well as annotation
- Tagging
 - Emoticons to heat-map interest/confusion/engagement
 - Training data for automatic detection
- Rebuild NB!

Other Annotation Projects

- Eyebrowse
 - Browser plugin
 - Permits users to leave comments on any web page
 - Others can see comments from people they follow
 - As well as a “twitter stream” of comments leading back to pages
- Pano
 - Encourage reflection to reduce political polarization
 - Applies Haidt’s moral foundation theory
 - Users annotate article with Haidt’s moral frames
 - Care, Equality, Freedom, Authority, Sanctity...
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Wikum

Bridging Discussion Forums and Wikis
Using Recursive Summarization

Amy X. Zhang, Lea Verou, David Karger. CSCW 2017

Goal: Understand Large Discussions

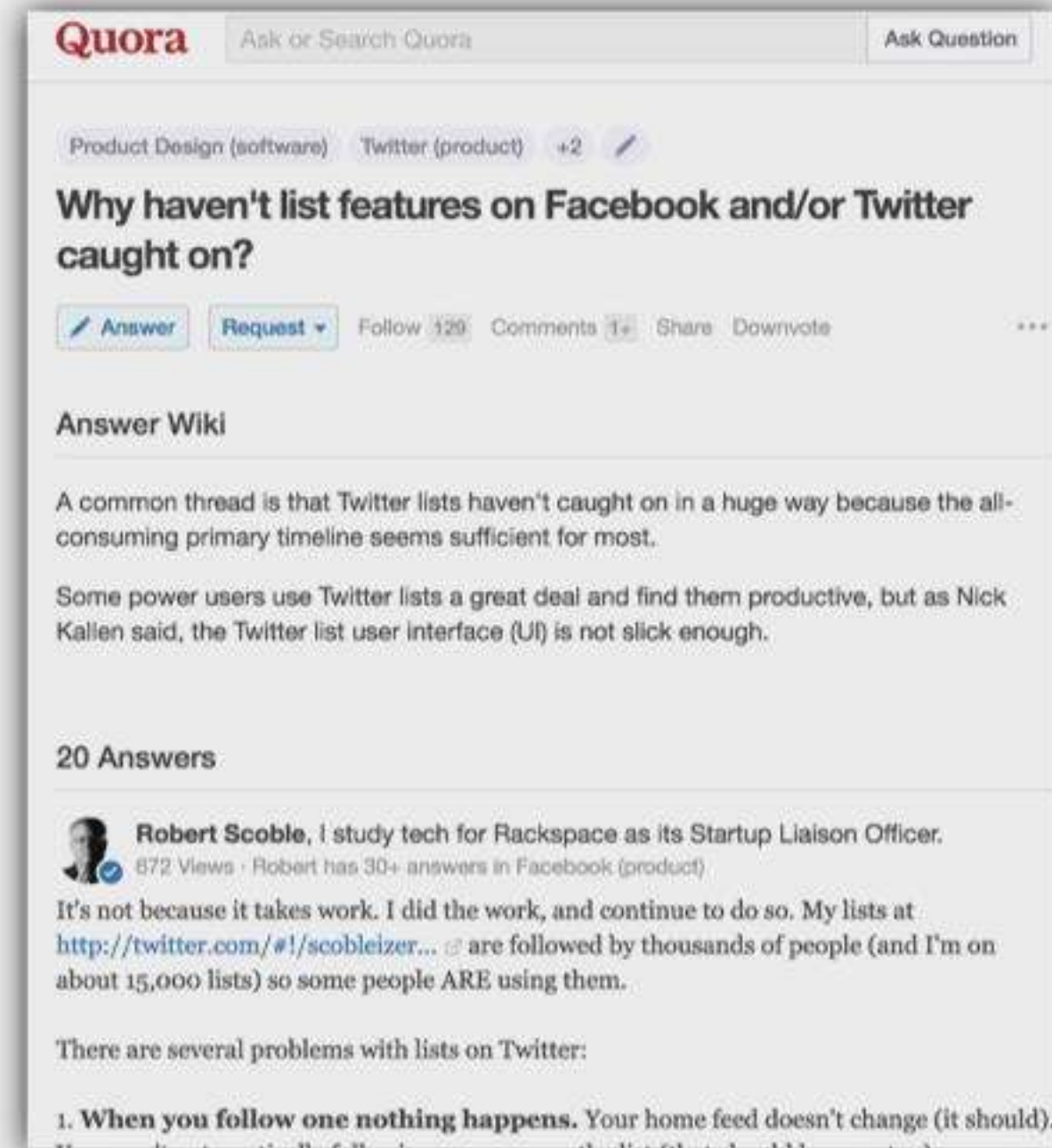
- Social moderation/filtering reduces volume, but doesn't guarantee coverage
 - may not show all perspectives or key ideas
 - may not distill conclusions of important arguments
- Instead, how about a summary?
- Who will do the summarization work, and how?
 - Many people willing to write one post
 - Nobody willing to read entire discussion
 - Can we divvy up the summarization task?

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Collaborative Summarization

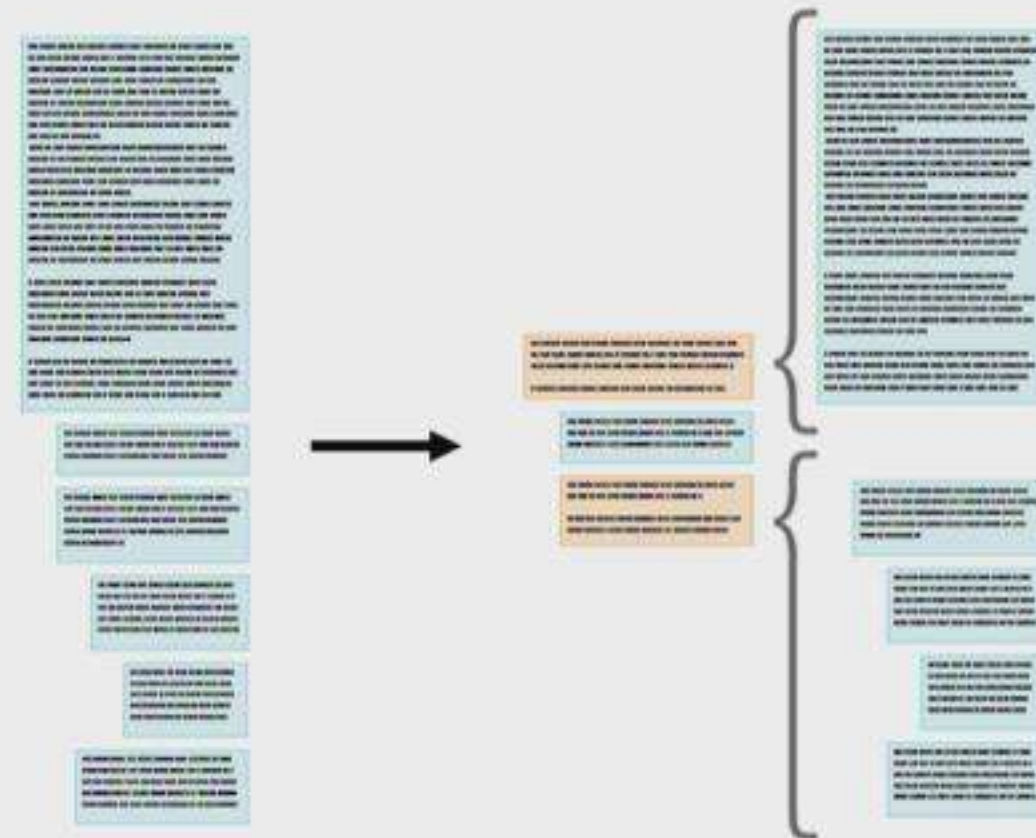
- Wikis?
 - Allow collaborative summarization
- Problems:
 - Disconnected from the discussion
 - No provenance
 - No idea how much has been summarized
 - No access to more detail
 - Individual voices lost
 - Less motivation to contribute



The screenshot shows a Quora page for the question "Why haven't list features on Facebook and/or Twitter caught on?". The page includes a search bar, a "Ask Question" button, and tags for "Product Design (software)" and "Twitter (product)". The question has 129 followers, 1+ comments, and a share button. Below the question is an "Answer Wiki" section with a summary: "A common thread is that Twitter lists haven't caught on in a huge way because the all-consuming primary timeline seems sufficient for most. Some power users use Twitter lists a great deal and find them productive, but as Nick Kallen said, the Twitter list user interface (UI) is not slick enough." Below the wiki is a section for "20 Answers". The first answer is by Robert Scoble, who is identified as a Startup Liaison Officer at Rackspace. He has 872 views and 30+ answers in Facebook. His answer states: "It's not because it takes work. I did the work, and continue to do so. My lists at <http://twitter.com/#!/scobleizer...> are followed by thousands of people (and I'm on about 15,000 lists) so some people ARE using them. There are several problems with lists on Twitter: 1. When you follow one nothing happens. Your home feed doesn't change (it should).

Wikum: Forum → Wiki

- Start with a long discussion.
- Anyone reading a comment or thread of comments within the discussion can then **summarize** it.
- The summary **replaces** those comments in the thread
- Can **expand** to reveal original content.



Topology Preserving

- Summarize any set of **sibling leaves**.
- Or **complete subtrees** of any size.
- Result is a summary “leaf” with natural parent
- Leaf becomes parent of all it summarizes

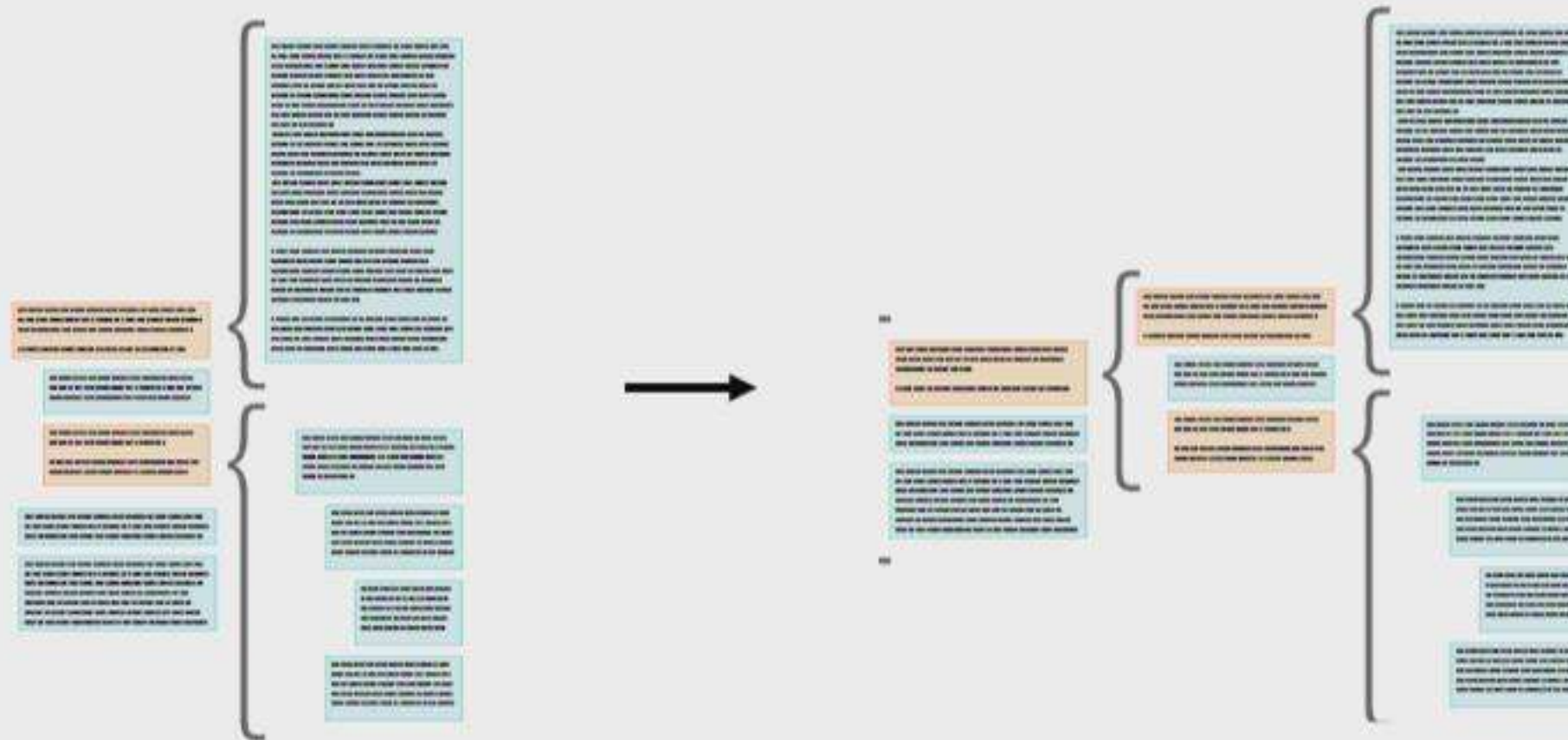
Recursive Summarization

- Can also summarize (groups of) summaries.



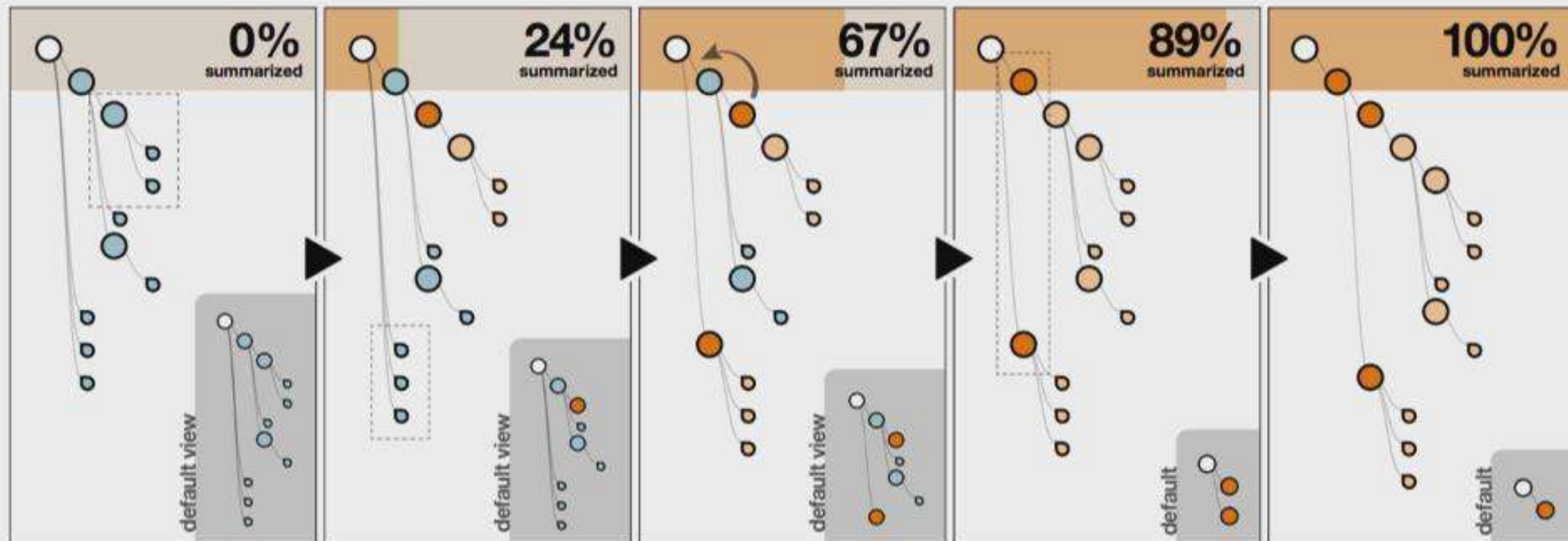
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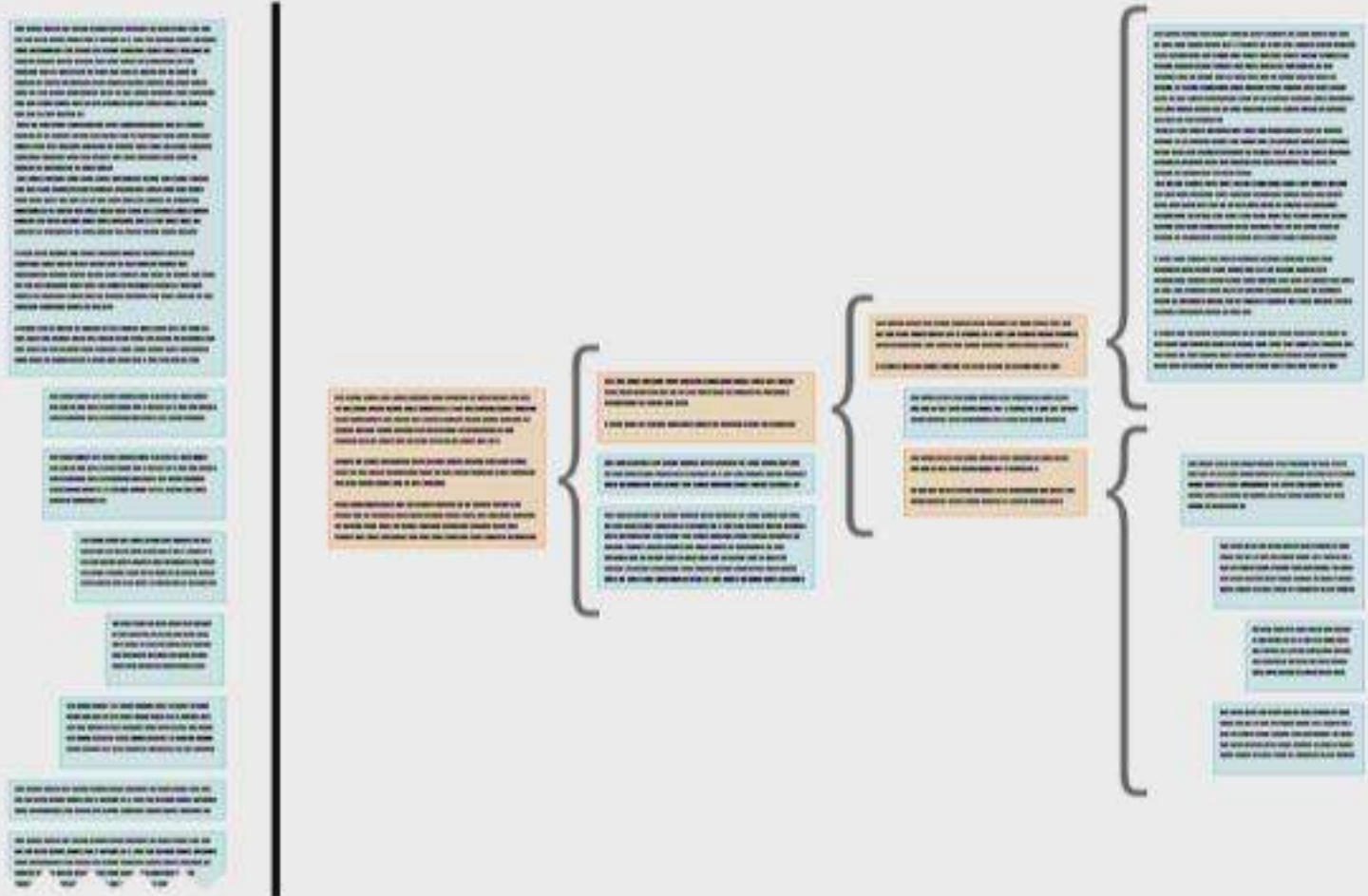
Recursive Summarization

- Can also summarize (groups of) summaries.
- Eventually, whole tree summarized



Summary Tree

- The final result is a summary tree
- Summary document that can grow to reveal deeper summaries all the way to original discussion.



Compared to wiki, Wikum...

- Shows what has been summarized versus not.
- Links summaries to the particular parts of the discussion they summarize.
- Breaks summarization task into manageable, easy-to-define chunks.
 - Helpful even for single user
- Creates summaries at multiple levels.



SUMMARY NODE

A commenter thanks Dr. Slaughter for starting a conversation around employees that want to do good work but are pushed too hard, making their families suffer. [\[48812\]](#)

Should we adjust the workplace to be more family-friendly?

Super-employees have a leg up. [\[48812\]](#)

But there are always going to be people that will seek the top job to the death.

And with two superworkers, one of them has to back down. [\[48812\]](#)

Other commenters say that we can try to change the model but you can't fix

Technology may have had a role to play. [\[420004\]](#)

Dr. Slaughter is writing for a narrow segment of the population. [\[48812\]](#)

Future articles need to focus on the much bigger population who have more

This commenter is a male who quit j-banking to work from home. He says p

Women and men both want to see their family more. [\[490000\]](#)

[Show summary below the fold](#)

[Edit Summary](#) [Delete Summary Node](#) [Tag Summary](#)

COMMENT BY AUSTRALIANREADER (234 LIKES)

I want to stand up and applaud the author for having the courage and the co that the rules are stacked against them and choose not to play.

It's all well and good to say that people must make their own choices and fo gender that (whether by socialization or biological imperative) has historically women lack the motivation or ambition to succeed.

Tags: [PRO-ARTICLE](#)

[Summarize Comment + Replies](#) [Mark Replies Unimportant](#) [Sum](#)

COMMENT BY TWITTER-465335459 (137 LIKES)

Because men don't suffer from not seeing their kids? I have a dad y

[Tag Comment](#) [Mark Unimportant](#)

SUMMARY OF COMMENT BY AUSTRALIANREADER (69 LIKES)

It should be more socially acceptable for men to be caregivers.

[Edit Comment Summary](#) | [View Original Comment](#)

SUMMARIZE MULTIPLE COMMENTS

[HIGHLIGHT FOR SENTENCES](#)

Summarize this comment and all replies (replaces them all).

will continue to be poorly represented in the highest ranks of society. We are where we are because the system is broken, not because women lack the motivation or ambition to succeed.

[Click to expand](#)

ID: 2120 [Copy Entire Summary](#) [Click Comment](#)

Because men don't suffer from not seeing their kids? I have a dad who barely saw us growing up. He traveled constantly, worked very long hours and generally half killed himself at his work.

ID: 1871 [Copy Entire Summary](#) [Click Comment](#)

Summary:
It should be more socially acceptable for men to be caregivers.

ID: 36502 [Show/Hide Summary](#) [Copy Summary](#) [Click Summary](#)

Summary Node:
Aggressive men and women who are not willing to sacrifice career for family will always exist and be rewarded.

Summary:

163/260

They discuss the issue from men and women point of view. A commenter says the success and sacrifice come at the same time. [comment_36184_p1] They are judging the system by comparing the work life structures for men and women. A commenter fails that if the society would allow the women to be able to work without the need to stay home, things would have been different. [comment_36200_p1] Another agrees by pointing out the fact that most of the top positions in the jobs are men, who do not tend to have more responsibilities at home. [comment_36198] A commenter continues the discussion about saying that its not the system being broken but the society and expectations from the women. [comment_36190]

[quote]"We are where we are because the system is broken, not because women lack the motivation or ambition to succeed." [comment_2845] [endquote]

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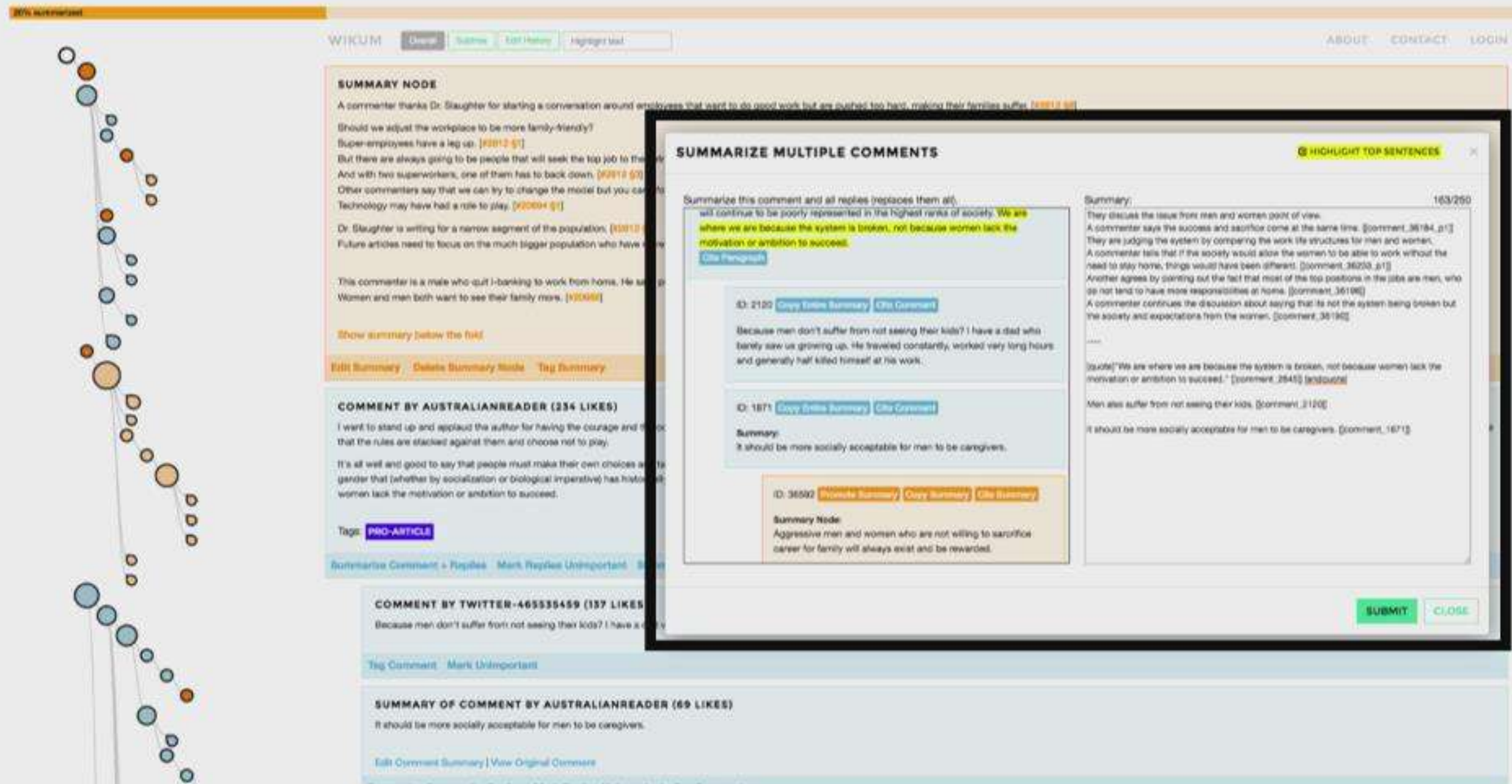
[SUBMIT](#) [CLOSE](#)

Wikum has...

The screenshot displays the Wikum website interface. On the left, a tree visualization shows a hierarchy of nodes, with a black box highlighting it. The main content area features a 'SUMMARY NODE' with text and a 'COMMENT BY AUSTRALIANREADER (234 LIKES)'. A modal window titled 'SUMMARIZE MULTIPLE COMMENTS' is open, showing a list of comments and their summaries. The modal includes a 'HIGHLIGHT FOR SENTENCES' button and a 'SUBMIT' button. The background shows a navigation bar with 'ABOUT', 'CONTACT', and 'LOGIN' links.

a directly manipulatable tree visualization on left - click to select and toggle, drag-to-select.

Wikum has...



The screenshot displays the Wikum website interface. On the left, a vertical navigation menu features a series of colored circles (blue, orange, grey) connected by a thin line. The main content area shows a list of comments and a summary node. A modal window titled "SUMMARIZE MULTIPLE COMMENTS" is open, allowing users to edit and summarize multiple comments. The modal includes a "HIGHLIGHT FOR SENTENCES" button, a text area for the summary, and a "SUBMIT" button. The background content includes a "SUMMARY NODE" section with a list of comments and a "COMMENT BY AUSTRALIANREADER (234 LIKES)" section with a comment about work-life balance. The modal window shows a list of comments with their IDs and a summary of the selected comments.

20% summarized

WIKUM [Home](#) [Submit](#) [Edit History](#) [Register test](#) [ABOUT](#) [CONTACT](#) [LOGIN](#)

SUMMARY NODE

A commenter thanks Dr. Slaughter for starting a conversation around employees that want to do good work but are pushed too hard, making their families suffer. [\[20112 5\]](#)

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[Show summary below the fold](#)

[Edit Summary](#) [Delete Summary Node](#) [Tag Summary](#)

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SUMMARY OF COMMENT BY AUSTRALIANREADER (69 LIKES)

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[Click to expand](#)

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ID: 1871 [Copy Entire Summary](#) [Click Comment](#)

Summary:

It should be more socially acceptable for men to be caregivers.

ID: 36502 [Show Full Summary](#) [Copy Summary](#) [Click Summary](#)

Summary Node

Aggressive men and women who are not willing to sacrifice

career for family will always exist and be rewarded.

Summary: 163/250

They discuss the issue from men and women point of view.

A commenter says the success and sacrifice come at the same time. [\[comment_36184_p1\]](#)

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[SUBMIT](#) [CLOSE](#)

editing modal for summarizing groups of comments.

Wikium has...

SUMMARIZE MULTIPLE COMMENTS

 HIGHLIGHT TOP SENTENCES 

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[Cite Paragraph](#)

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ID: 36592 [Promote Summary](#) [Copy Summary](#) [Cite Summary](#)

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163/250

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Citation and quoting of comments

Wikum has...

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highlighting of top sentences (LexRank summarization algorithm)

Wikum has...

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163/250

Max length restrictions to ensure shrinkage (progress)

Wiki + Forum

- Forum
 - Everyone can contribute their perspective
 - Often many times---redundancy
 - Must read whole argument; can't just see resolution
 - Refuted statements stick around
 - Reading everything is impossible
- Wiki
 - Community creates short consensus article
 - Removes redundancy
 - Gives resolutions of arguments
 - Detailed arguments and individual voices are lost
 - Can't dig down for more understanding
- Wikum offers best of both

Evaluation

1) Evaluate Summarization Process

- Three long discussions:
 - **Social**: “Why Women Can’t Have it All” article from the Atlantic comment section.
 - **Political**: academic department mailing list discussion of a controversial political event at the university
 - **Science**: “Explain it Like I’m Five” subreddit discussion about gravitational waves.
- From each, selected
 - 65-105 comments
 - 7000-8000 words
 - 35-40 min reading time.
- 2 Evaluations
 - Summarization **process**
 - Summarization **product**

1) Evaluate Summarization **Process**

- 20 participants from campus mailing lists, divided into 3 groups
- In-person, one-on-one, each person spent 1 hour
 - 20 minutes training
 - 20 minutes summarizing a discussion in Wikum
 - 20 minutes summarizing different discussion in **Google Docs with track changes** (mimics typical wiki editing box)
- Each person in the group built on the work done by previous people in the group.

Overall **Subtree** Summary Edit History

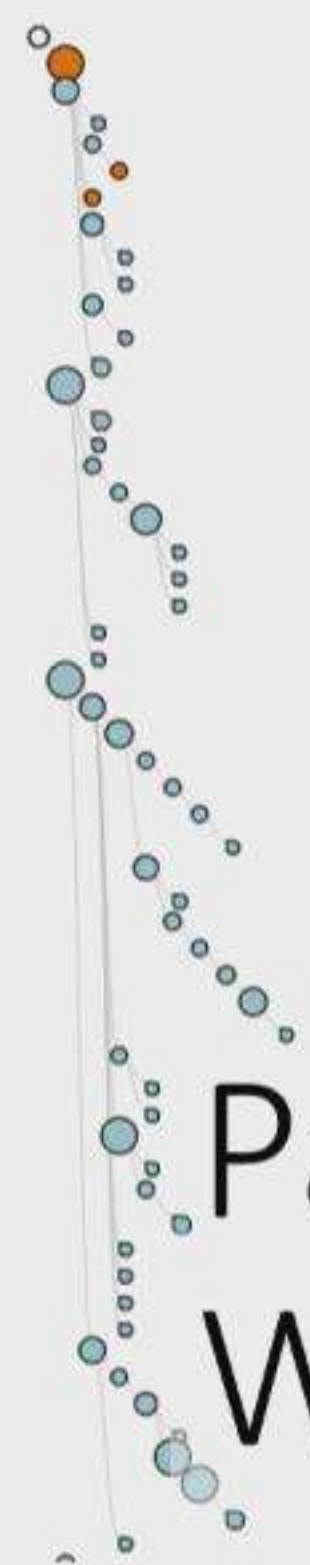
Filter by tag

Highlight text

SORT ALL BY - # LIKES-

[GET NEXT PAGE OF COMMENTS >>](#)

Sandbox - Why Women Still Can't Have It All



SUMMARY NODE

A commenter thanks Dr. Slaughter for starting a conversation around employees that want to do good work but are pushed too hard, making their families suffer. [v2012 §1]

Should we adjust the workplace to be more family-friendly?

Super-employees have a leg up. [v2012 §1]

But there are always going to be people that will seek the top job to the detriment of their family. [v2012 §0]

And with two superworkers, one of them has to back down. [v2012 §0]

Other commenters say that we can try to change the model but you can't force people that don't want balance. [v20094 §0]

Technology may have had a role to play. [v20094 §1]

Dr. Slaughter is writing for a narrow segment of the population. [v2012 §0]

Future articles need to focus on the much bigger population who have more pressing problems. Focusing on the rich women only will further exploitation of poor women. [v2012 §7] [v20087]

This commenter is a male who quit i-banking to work from home. He says planning for family is just as important as planning for career. [v2012 §4]

Women and men both want to see their family more. [v20088]

[Show summary below the fold](#)

[Edit Summary](#) [Delete Summary Node](#) [Tag Summary](#)

COMMENT BY AUSTRALIANREADER (234 LIKES)

I want to stand up and applaud the author for having the courage and the compassion to say what needed to be said. We can talk about "choices" until we are blue in the face, but the context of our choices matters. Many women try to play the game, but quickly realize that the rules are stacked against them and choose not to play.

It's all well and good to say that people must make their own choices and take "their rewards and consequences" but someone has to be President, Supreme Court judge, CEO, or senior partner of that senior law firm. And as long as the deck is stacked against the gender that (whether by socialization or biological imperative) has historically borne the responsibility for home and family, women will continue to be poorly represented in the highest ranks of society. We are where we are because the system is broken, not because women lack the motivation or ambition to succeed.

Tags: **PRO-ARTICLE**

[Summarize Comment + Replies](#) [Mark Replies Unimportant](#) [Summarize Comment](#) [Tag Comment](#)

SUMMARY OF COMMENT BY TWITTER-465533459 (137 LIKES)

Men also suffer from not seeing their kids.

Tags: **MEN CAN'T HAVE IT ALL EITHER**

[Edit Comment Summary](#) | [View Original Comment](#)

[Tag Comment](#) [Mark Unimportant](#)

SUMMARY OF COMMENT BY AUSTRALIANREADER (99 LIKES)

Women are more socially acceptable for men to have children.

[Edit Comment Summary](#) | [View Original Comment](#)

[Summarize Comment + Replies](#) [Mark Replies Unimportant](#) [Tag Comment](#)

SUMMARY NODE

Aggressive men and women who are not willing to sacrifice career for family will always exist and be rewarded.

[Edit Summary](#) [Delete Summary Node](#) [Tag Summary](#)

SUMMARY NODE

Partially complete in Wikum

Aaron Swartz, founder of Demand Progress, killed himself.

<http://www.commondreams.org/headline/2013/01/12>

Aaron Swartz committed suicide. He was potentially facing a prison sentence for downloading articles from JSTOR, even though JSTOR forgave him. Richard Stallman suggests that Obama told prosecutors to "make an example of him."

Stallman says people who are in support of freedom should make sure "his death serve[s] his life's work." He suggests a rally outside the prosecutor's office and is highly critical of them: "'what did they did went far beyond public criticism.'" Respondents feel less strongly, suggesting that the Massachusetts DAs may not even been involved, and they criticize Stallman's phrasing in the wake of a tragedy.

Stallman also thinks MIT's network policies should be redesigned to better address this type of situation. Hawkinson thinks that to "strategically capitalize" on the death may not be ethical, but people should question MIT's policies and that the institution should be investigated as well.

Neil Van Dyke suggests a few lessons to be learned from this situation: 1) perhaps mentorship does not always have a positive effect, depending on the mentor; 2) those in power should have considered the consequences of what they did.

Multiple respondents mention interest in what Lessig (a mentor of Swartz?) will have to say.

Various other ways to honor Swartz' memory are suggested: finding a technically legal way to fulfill his goal of sharing information, a posthumous pardon, the removal of the DA involved, an apology from MIT, etc. There were other suggestions on how to implement Swartz's goals through incentivizing new scientists who publish open access articles.

Connely Bareson linked Swartz' suicide to the endemic problems with mental health in the MIT community, and suggested that this might be a good call to action to try and resolve these problems.

Nick Patterson noted how the DA office's heavy-handed tactics may have contributed to his deteriorating mental health situation and how this represents a moral failing on the part of this public institution.

Neil VD linked to systematic flaws in the American judicial system, where prosecutors are able to pressure defendants into accepting pleas through financial pressure. This leads to other suggestions on how to reform the legal system to better address such cases, as well as the degree to which MIT is culpable in rejecting a jail-free plea from Swartz, and whether signing a petition is the best way to achieve the above reforms.

RMS supports a petition in favour of removing the public officials responsible for Swartz' prosecution from office, but Neil VD counters with a proposal for an investigation into the matter to ensure due process. He also points out that if we are to hold these officials responsible then we must also be responsible for setting a clear and knowledgeable standard for how we expect them to act.

Nick Patterson is asking for help in organizing a petition.

1. - whether publicly funded work should be freely available, and
2. whether or not MIT and the D.A.'s office behaved properly in this situation.

His answers are that:

1. - publicly funded work should be free, but that doesn't pay for the costs it takes to publish and maintain the work, a position supported by several respondents. One suggests that

2:20 PM M...
Add link: with url
"http://www.commondreams.org/headline/2013/01/12"

2:30 PM M...
Format: indent first line, default left

2:40 PM M...
Add: "and that the institution should be

2:50 PM M...
Add: "Neil Van Dyke suggests a few lessons to be learned from this situation: 1) perhaps

2:50 PM M...
Add: "Multiple respondents mention interest in what Lessig (a mentor of

3:20 PM M...
Add: "Various other ways to honor Swartz' memory are suggested: finding a technically legal way to

3:20 PM M...
Add: "There were other suggestions on how to implement Swartz's goals

3:20 PM M...
Add: "Connely Bareson linked Swartz' suicide to the endemic problems with mental health in the MIT communi..."

3:20 PM M...
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3:20 PM M...
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3:20 PM M...
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3:20 PM M...
Add: "Connely Bareson linked Swartz' suicide to the endemic problems with mental health in the MIT communi..."

3:20 PM M...
Add: "Nick Patterson brings up three fundamental questions related to the

3:20 PM M...
Add: "Connely Bareson linked Swartz' suicide to the endemic problems with mental health in the MIT communi..."

Stallman counters and says that MIT should require publication in free/open publications, and as a prestigious university could force change in this area. He also suggests boycotting certain journals that he views as "swindling" researchers by charging fees for open publications and charging MIT a subscription fee. Whereas Karger and Demoncourt suggest that there be more

discussions with JSTOR and similar organizations to promote and advocate for more free sharing.

Larry argues that "Congress must also not write vague laws that make everyone a criminal" and that there should be more accountability in the legal system to accurately seek justice.

Later in the discussion, Stallman denounces many of the proposed responses brought up by other commenters as missing the causal root of the Swartz affair—the nature of copyright law itself, the incentives that it—in conjunction with our criminal justice system—brings upon prosecutors, and cultural attitudes surrounding both of these. Merely demanding that "all" MIT publications be free and open access, or refusing to publish in paywalled journals, for example, will not bring about the change needed to address the conditions that lead to both JSTOR going after Swartz and his ultimate suicide.

ID: 31360]
Aaron Swartz, founder of Demand Progress, killed himself!

<http://www.commondreams.org/headline/2013/01/12>

The article says he had a problem with depression, but apparently not to the point of blinding him to reality. Swartz faced the threat of years in prison for what must have been a scheme to liberate scholarly articles restricted by JSTOR. A US prosecutor insisted on prosecuting him even though JSTOR forgave him. Surely Obama had told prosecutors to make an example of behalf of the copyright industry whatever they found an opportunity to.

People who knew Aaron must feel personal grief. What does this mean for us who did not know him personally? As a campaigner for freedom, he would surely have wanted us to make his death serve his life's work.

Would anyone like to help organize a rally outside the office of the prosecutor?!

The prosecutor got this opportunity partly thanks to MIT's reaction to Swartz's activities. MIT's network policies, not designed with this kind of situation in mind, had that effect.

Can we launch the redesign of this policy, to make sure that in the future MIT will have the chance to decide what to cause someone to be prosecuted?!

§
--rms at gnu.org (Richard Stallman)§

0-4 likes]
ID: 31261]
Richard, since Aaron Swartz is closely connected to Lawrence Lessig, who is local, I would suggest you coordinate any local response through Lessig. And it is probably worth reading his blog, including <http://lessig.tuchbr.com/post/40347463044/prosecutor-as-bully/>

I would caution some reserve in targeting individuals within the US Attorney's office.

I've seen a fair bit of criticism for Carmen Ortiz, the US Attorney for the District of Massachusetts, but I don't think we have any reason to believe that she had personal involvement in this case. The US Attorney is fundamentally a manager. While she

1:17 PM M...
Add paragraph

1:17 PM M...
Delete space

1:17 PM M...
Add paragraph

1:16 PM M...
Format list: add to list (2 times)

1:16 PM M...
Add: "Whereas Karger and Demoncourt suggest that there be more discussions with JSTOR and similar

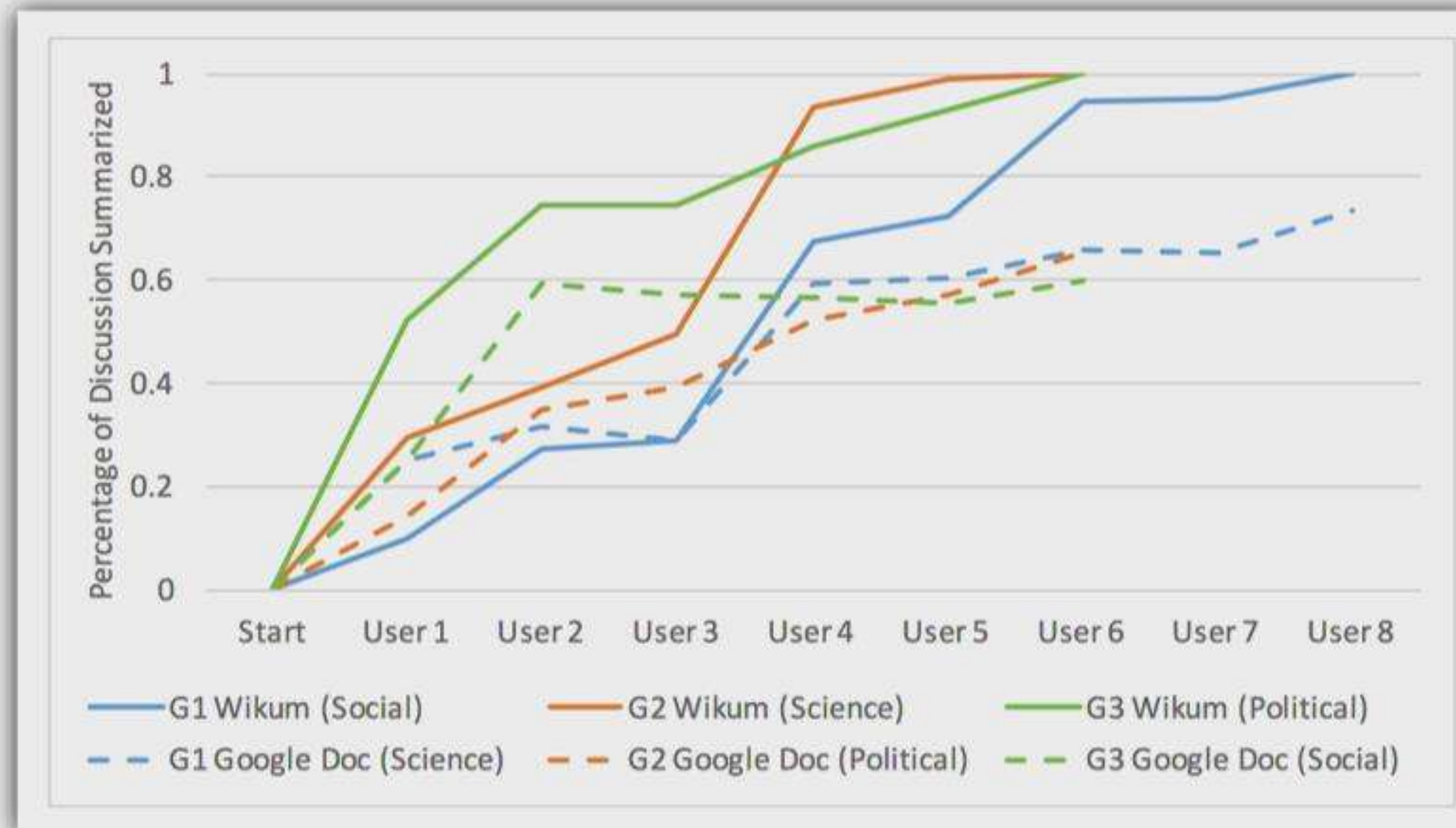
1:16 PM M...
Add: "Later in the discussion, Stallman denounces many of the proposed responses brought up by other

10:52 PM M...
Delete: "ID: 31260 Aaron Swartz, founder of Demand Progress, killed himself. http://www.commondreams.org/head..."

Partially complete in GDocs

Results

- Wikum was faster for summarizing than GDocs even with the same groups of people summarizing.



Other findings

- In both conditions, people were **reluctant to edit each other's work**. This led to longer and longer summaries in GDoc and stalled progress.
- Users reported spending **more time reading in the GDoc condition** in order to understand what other people had done.

Workflow

“Using the Wikum was so much easier...I knew what people had done...With the Google Doc it was this massive 40 page document. I got lost on what people had summarized and what needed to be summarized.”

“A lot of times I would look at a comment and all its sub-comments and be like, well I can't summarize all that, it's really overwhelming. But then I was able to drill down into the sub-sub-comments and...get the whole comment [subtree] and sub-comments into my head at the same time, write a summary, and then go a level up.”

Provenance

“The way in which you can cite paragraphs and posts is very useful to have that kind of chain of custody, like from where does this information come from?”

2) Evaluate Summarization **Product**

- Before summarization, testers identified 12 topics
 - 6 that were in discussion and 6 that were not
- 13 participants from campus mailing lists
- In-person, one-on-one, each spent 40 minutes
- Each given 10 minutes to skim
 - a **summary in Wikum**,
 - a **summary in GDoc**, and
 - an **unsummarized discussion in GDoc**
- In each condition, asked to select which of the 12 discussion points they **remembered**

Results

- Most people explored GDoc summary linearly
 - All used full 10 minutes
- Wikum users had different strategies
 - breadth-first, depth-first, root-to-leaves, leaves-to-root
 - Some read only summaries and finished sooner
- Users remembered points more accurately in Wikum
 - Not statistically significant

	Wikum	Doc Summary	Doc No Summary
Pre	0.90	0.88	0.81
Rec	0.67	0.63	0.58
F1	0.78	0.72	0.65

Use of Summaries

- Some users said they preferred reading linearly while others liked being able to drill in.
- People opened summaries to read original content for different reasons:
 - Intrigued by the summary and wanted to read more.
 - Distrusted summary: poorly written or too short.

Structure

“I felt it was helpful for Wikum but not really in the Google Doc. There, there were people rambling...It was kind of a mess. Because the summaries were right there in Wikum and directly related to the comments, [they were] much smaller summaries and a lot more helpful.”

Efficiency

“It was very noticeable...that there was a large amount of text just swirling around a few simple ideas, and the summary got it simple. Like into a tweet. That was really, really nice. I wish everything could be summarized like that.”

Study Critique

- [R2]: “GDoc is a terrible tool for this; not a fair comparison”

Study Critique

- [R2]: “GDoc is a terrible tool for this; not a fair comparison”
- That’s exactly the point!
- Study isn’t to say our tool is great; says it’s possible to be way better than what we have now
- Wiki provides similar interface to GDoc except
 - Unfriendly history/change tracking
 - No color formatting
 - Weird markup

Looking forward

- Better presentation/navigation of summary tree
 - preserving context as you go deeper
 - providing cues to guide navigation
- Better handling of unthreaded discussion
 - (Better) tools to manual/auto group related posts
 - And to move new posts into existing groups
 - Until enough are there to be summarized
- Coping with divergent threads
 - Shifting subtrees to more suitable topics
 - While preserving thread structure
- Machine learning: automatic summarization, topic modeling
 - Hybrid system

Looking forward

- Considering synchronous discussions such as chat and **real-time** instead of post-hoc summarization.
 - Allow users to reply to summaries
- Explore **quality control** mechanisms
- **Field experiments** to answer questions about incentives and in-the-wild use cases.
 - Begun work with Wikimedia foundation
 - Use of summarization tool for Wikipedia RFCs
- Integrate with Annotation
 - Summary pulls together multiple parts
 - Annotation pulls out a particular part

Reflection

- We've looked at 2 richer discussion models/UIs
 - Annotation, Summarization
- Both special cases of hypertext
 - But simpler than the general case
 - Avoid "lost in hyperspace" problem
 - Annotation keeps you centered on content
 - Summarization tree has "up" and "down" orientation
- Can we go farther in this direction?
 - In a law class, NB users wanted to annotate annotations
 - Summarization from multiple perspectives as DAG
- Discussions have yet more rich structure
 - Capture assertion, evidence, disagreement, refutation?

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Now: Structured News Sharing Platform

- Incorporate Trust, Truth, Provenance
- Individual choice of trusted people and orgs
 - Propagation of trust through network
- Verification and refutation
 - Accurate/Inaccurate labels
 - Links to supporting/opposing info
 - Clear indications of falseness in UI
- Reasons
 - Eyewitness, expert, think it's true, hope it's true, curious
- Initially, annotate whole article.
 - Eventually, individual claims
 - Misleading subtexts
- Wiki/Wikum to build “disagreement map”

- Filters
- View ...
- All
- Not Seen**
- Seen
- Validity
- All
- Confirmed
- Refuted
- Debated
- Questioned
- Sourc...
- Followed**




NASA to open Moon rock samples sealed for 50 years

After announcing the nine teams that were granted the chance to look at the rock samples from the Moon collected nearly 50 years ago in March, NASA is finally opening up the vault.

By  2 minutes ago


[Show sharers info](#)

DK 




Jennifer Dulos' estranged husband breaks silence following divorce hearing with message for 5 children

The estranged husband of missing Connecticut mother of five Jennifer Dulos broke his silence for the first time with a message for his children Wednesday following a divorce hearing.

By  12 minutes ago

[Show sharers info](#)



Richer Workflows

Mailing Lists

- Why Are They Still Here?
- What's Wrong With Them?
- How Can We Fix Them?

Amy X. Zhang
MIT CSAIL

Mark Ackerman
UMichigan SI

David Karger
MIT CSAIL

A Look Back

- 1967 Email begins
- 1971 First mailing list (to discuss use of mailing lists)
- Still here, unchanged
- Why?
 - So many new tools



Mailing lists: a
40 year old
fossil?



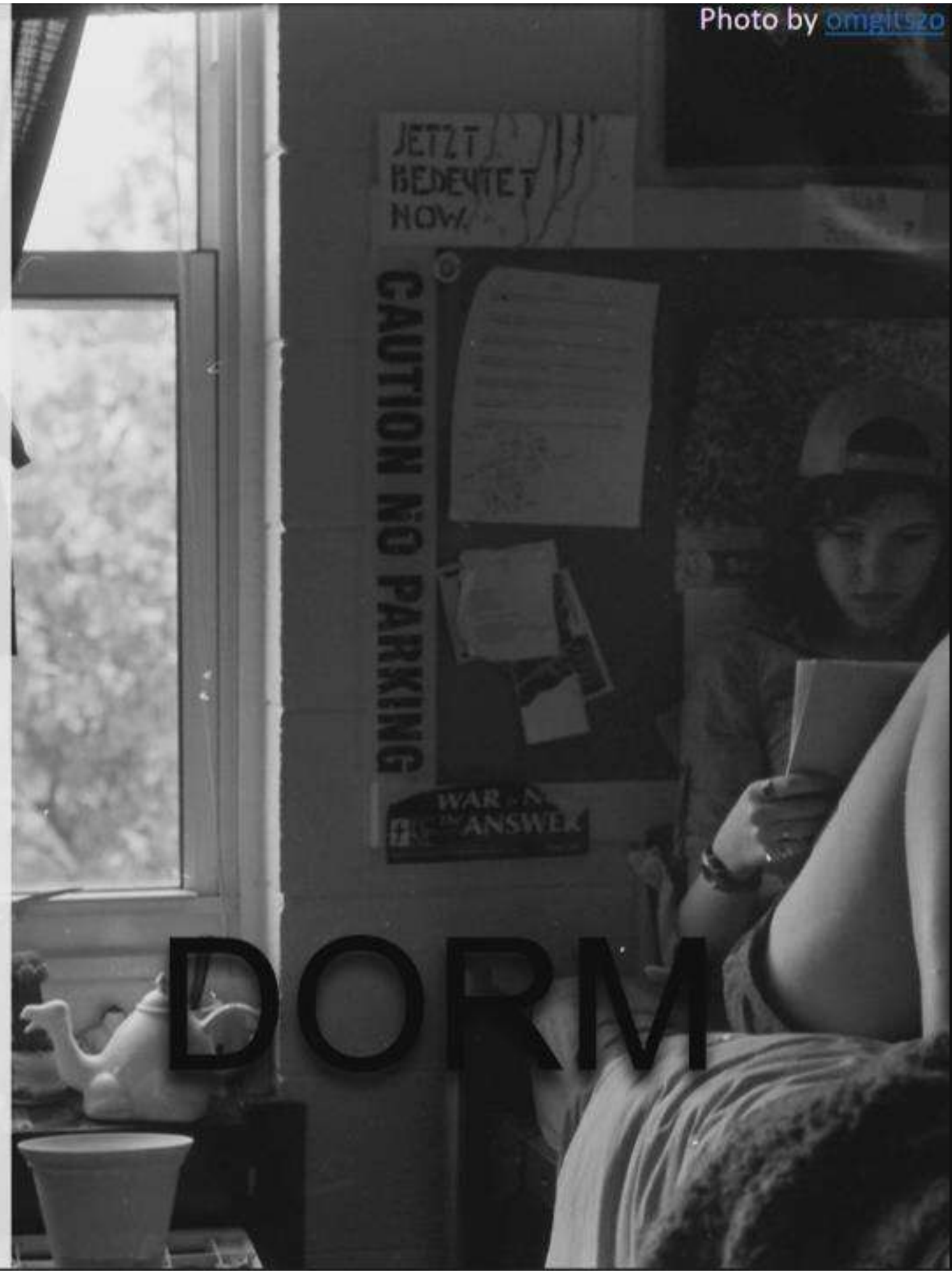
Questions

- Why are mailing lists still here?
 - Must be better in some ways
- Then why modern tools?
 - Must be better in some ways
- Can we combine the good bits?

300-person
undergrad dorm
at another mid-
sized university



300 subscribers
10 years old
public archives
private to join



DORM

We asked people to compare mailing lists to:





After mailing lists,
Facebook Groups were
used the most often.

68% used mailing lists often or always

26% used Facebook Groups often or
always

When asked if they
wanted to switch to



only

13%

9%

5%

agreed

1.

Email = Work

Social Media = Play



“ I wouldn't be surprised if people started posting cat videos to this. [Facebook] has been a distraction for most people...When I look at [LAB]...I don't see it as a place to post cat videos.

– LAB



2.

Email feels more private than
social media



“

There's a greater sense of [Facebook] being public...you can see everybody who's on there...Whereas on email, you're sending it into the mystic...you don't see all the faces staring back at you.

– DORM



And Yet...

- Most interview/survey subjects underestimated their lists' subscriber count by an **order of magnitude**.
- Most interviewees were surprised to discover that their mailing list archives were **completely public**.
- Rationalized that even though public, **unlikely to be seen by public**.

3.

Greater confidence that
email will be seen by target

4.

Email management is more
customizable

B)

What are the problems and limitations of mailing lists?

We encountered **3** main sources of **tensions** within mailing list communities.



1.

Tensions over
Type and Quantity of
Content

“

...there was a golden time...[when]
you could get a good...intellectual
discussion.

– DORM



“

...there was a golden time...[when] you could get a good...intellectual discussion.

“

I personally am glad that [the discussion is] gone. I think it keeps DORM to be much more efficient.

– DORM



24%

wanted **less** discussion.

34%

wanted **more** discussion.

“

...You might as well just post it [to the list]. If they're not interested they can either skip over it, or quickly skim over it, or whatever.

– LAB



“

...You might as well just post it [to the list]. If they're not interested they can either skip over it, or quickly skim over it, or whatever.

“

I despise it when people hit the reply to all button instead of the reply to button.

– LAB



2.

Tensions over
Desire for Interaction
vs.
Hesitation to Post

66%

of people who wanted
more discussion had
actually **never**
participated in one.

Why?

Fear of:

Spamming large audiences

Misinterpretation

Why?

Fear of:

Spamming large audiences

Misinterpretation

Heated arguments

Appearing stupid

3.

Tensions over
Information Push vs. Pull

Pull

Senders create content and recipients pull at their leisure

Social media
Feeds
Forums
RSS

Push

Senders push content to recipients

Traditional email
SMS

Pull

Automatically file emails to folders

More likely to:

miss email from list

read email when they want, not when it arrived

Push

Emails go to main inbox

More likely to:

mind missing emails

read every email from the list

Pull

“

I think the people who really don't like spam already filter their list...in which case my additional email really takes like 3 seconds of your time.



Push

“

When I'm thinking about sending an email to LAB, I'm like, "Wow, does every single person really need to get this email?" If that's not the case, I probably wouldn't send it.



Mailing List Summary

Appeal

- More serious
- More private
- More confidence in delivery
- More control over reading/organizing

Tensions

- Type and volume of content
- Desire for more activity vs. fear of posting
- Push versus pull perspective

Mailing List Summary

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- More serious
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- More confidence in delivery
- More control over reading/organizing

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- Type and volume of content
- Desire for more activity vs. fear of posting
- Push versus pull perspective

Most of this is about **control**

Welcome to Murmur.

We're re-imagining mailing lists and community discourse for the age of social media.

Though mailing list software has changed little in the past 40 years, social media and other community sites have changed drastically.

Murmur introduces new features to the mailing list so that you can communicate with your group in the way that you desire, through email or the web.

And as a community, members can collectively organize and moderate the discussion to satisfy the varied needs and concerns of their cohorts.

[Learn More](#)

[Join our Murmur list to keep informed about Murmur](#)

[Explore All Public Groups](#)

Login

Email address:

Password:

[Forgot your password?](#)

[Log In](#)

Register Account

Create an account to join or start a group!

E-mail:

Password:

Password (again):

[Register!](#)

murmur.csail.mit.edu

+ New Post

View Group Info

Search within posts

Fwd: localStorage for user stu... 4/21/2015
 pgbovine@gmail.com 6:23 PM
 third time is a charm!!! ----- ... **2**

Re: How it feels to watch a us... 3/21/2015
 tom@alltom.com 11:42 PM
 What would you change if you in... **7**

How it feels to watch a user te... 3/17/2015
 leaverou@mit.edu 7:35 PM
 So true! :) https://twitter.com/De... **0**

[uid] CBC Radio's Spark: Sar... 3/2/2015
 juhokim@mit.edu 5:06 PM
 Listen to Sarah's interview on C... **4**

[uid] Fwd: [CHI Communities]... 2/23/2015
 rcm@mit.edu 11:53 PM
 ----- Forwarded message ----- **0**

[uid] GitStream playtesting 2/4/2015
 nhynes@mit.edu 2:08 AM
 Hello UIDers! Tomorrow we will [... **1**

[uid] LaTeX microtype 1/30/2015
 nhynes@mit.edu 4:30 PM
 LaTeX "microtype" is available. **1**

Fwd: localStorage for user study logging

Follow

From: pgbovine@gmail.com
To: uid
Date: Thu Apr 16 2015 16:52:14 GMT+0900 (KST)

third time is a charm!!

----- Forwarded message -----
From: Philip Guo <pgbovine@gmail.com>
Date: Thu, Apr 16, 2015 at 12:39 PM
Subject: Fwd: localStorage for user study logging
To: uid <uid@mailx.csail.mit.edu>

FYI ... [i tried sending to UID but don't know if people got it ... i don't have a good mental model of how mailx works]

----- Forwarded message -----
From: Philip Guo <pgbovine@gmail.com>
Date: Wed, Apr 15, 2015 at 1:49 PM
Subject: localStorage for user study logging
To: UID Group <uid@csail.mit.edu>

now that the UIST frenzy is over, i wanted to share a hack that i've been using lately ... using the browser's localStorage to store a log of user events when running user studies. if your app is a web app (which most prototypes are nowadays!), then instead of writing a bunch of ajax code to log user interactions to a database on the server, simply do:

```
localStorage['my_log'] = JSON.stringify(['a', 'b', 'c'])
```

to store a list of events in localStorage, then at the end of each user study session, dump the contents of localStorage['my_log'] to a file by copying-and-pasting from the browser console.

then just parse the JSON to do log analysis.

since someone is doing the user study in front of you, it only takes less than a minute to open up the browser console at the end of their session and copy/paste the localStorage contents.



But wait. Why fix mailing lists instead of social media?



Because...

- Email clients are the user interface
 - so don't have to build one
- Email clients give users more **control**
 - Filtering rules
 - Much better organizing and archiving
- Email is **not a monolith** like social media systems
 - Easier to deploy
 - Easier to migrate a list
- Change is **less disruptive** to users
 - Keep using their own email client
 - Keep reading all their other email the same way

Design for Receivers

- Access by email client or by web
 - Strong preference for each by different users
- Inbox restraint
 - Can receive first message only, rest of thread on request
- Incorporate social media features
 - Tagging, upvoting, collaborative filtering
- Rich and transparent user control
 - “Put in my inbox if >10 upvotes”
 - “Top 10 emails/day in inbox, others in “later” folder
 - “Follow Amy”
 - “Block Dan (unless Amy replies)”
 - “Deliver one email from Mark each month”
 - “Only very important stuff today”

Design for (Reluctant) Senders

- Maintain guaranteed delivery
 - Modulo control by each recipient
- But allow senders to intentionally limit distribution
 - “send to a few but spread it if they upvote”
 - “send to enough people to get me an answer, then stop”
 - “send only to people following #forsale”
 - “send to everyone except this troll”
- Friend moderation
 - send to a few friends who decide if it’s good to spread

Squadbox

Blocking harassment by friendsourced moderation

Kaitlin Mahar, Amy Zhang, David Karger. CHI 2018.



Your “**squad**”: friends who will moderate and filter harassment from your inbox

squadbox.org



Conclusion

- People are talented masters of information
 - Full of knowledge, understanding
 - ways of organizing, visualizing, explaining
- Straightjacketed by current systems
 - Both interfaces and models
 - Cannot express what they know/understand
 - Cannot organize the way that makes sense
- No computation can provide missing info
 - Instead, must enrich interfaces, models, rules
 - So people can provide the (non-artificial) intelligence
- Many opportunities to make things better

Objection

- All this control is too complicated
- Everyone wants it; nobody will use it
- Answer: the few who want it and are willing to use it are the most creative/productive information contributors. We should empower them!