Sprint

BEYOND THE Book

WRITTEN, EDITED, ASSEMBLED AND
PUBLISHED IN 72 HOURS

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About the Project

Emerging technologies continue to transform the ways we collect, synthesize, disseminate, and consume information. These advances present both hazards and opportunities for the future of scholarly publication and communication. During this book sprint—presented by the Center for Science and the Imagination at Arizona State University and the Society for Scholarly Publishing (SSP) and embedded in SSP's 2016 annual meeting in Vancouver—we discussed issues of increasing scholarly impact and accessibility, wondered whether computers can make scholarly contributions that warrant co-authorship, speculated about what forms scholarly books may take in the future, and more.

Tackling ambitious and often ambiguous questions like these requires a diverse group of thinkers and writers and an innovative approach to writing. The book sprint method provides this innovation. Throughout the annual meeting, we held six miniature book sprints. During each sprint, we convened a group of four to six writers to tackle one of six big questions. Each sprint began with a facilitated conversation, followed by time for our writers to reflect and compose a piece of writing inspired by the conversation.

Conferences like the SSP annual meeting and scholarly publications themselves are often undergirded by spontaneous, inspiring, thought-provoking conversations among colleagues and collaborators, but those conversations are rarely captured and shared, and are often clouded in memory, even for the participants. The book sprint process hopefully absorbs some of the kismet and energy of those initial conversations, right at the start of a big idea, and makes it part of a more durable intellectual product—and a possible springboard for additional conversations in a broader range of times and places. The work would not have been possible without the contributions of our four core sprinters—Madeline Ashby, Annalee Newitz, Roopika Risam, and Ido Roll—who participated in every session, and the many SSP members who participated in the individual sprints and shared their expertise.

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Madeline Ashby is a science fiction writer, futurist, speaker, and immigrant living in Toronto. She writes a column for The Ottawa Citizen. She has written narrative scenarios and science fiction prototypes for organizations like Intel Labs, the Institute for the Future, SciFutures, Nesta, Data & Society, The Atlantic Council, the Center for Science and the Imagination at Arizona State University, and others. Her short fiction has appeared in Nature, FLURB, Tesseracts, Imaginarium, and Escape Pod. Her other essays and criticism have appeared at Boing Boing, io9, WorldChanging, Creators Project, Arcfinity, and Tor.com.

Todd Carpenter is the executive director of the National Information Standards Organization, a non-profit group that develops, maintains and publishes technical standards related to publishing, bibliographic and library applications. Prior to joining NISO, Todd was director of business development at BioOne, where he served the goals of both libraries and publishers by enhancing products, services, and distribution. He was closely involved in the growth of Project MUSE at the Johns Hopkins University Press, and he has held marketing and business development positions at the Energy Intelligence Group, a news service covering the oil and natural gas industries, and the Haworth Press, an academic and professional publisher. He is the editor of The Critical Component: Standards in the Information Exchange Environment.

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Sylvia Izzo Hunter is the author of the novels The Midnight Queen and The Lady of Magick, as well as A Season of Spells, forthcoming from Ace Books in winter 2016. She studied English and French literature, with a particular focus on Medieval and Renais-

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Byron Laws is senior vice president for strategic partnerships at KiwiTech, a venture investment and technology development firm with headquarters in Washington, DC, offices in New York City and Colorado, and a development center in Delhi. He serves as treasurer for the Society of Scholarly Publishing and formerly chaired the Council of Science Editors Marketing Committee. He has a broad base of experience covering a variety of processes and products and currently splits his professional time between working with publishers, startups, Fortune 500 companies, and volunteer efforts.

Chaz Lilly is a Ph.D. student in the School of Art, Technology, and Emerging Communications at the University of Texas at Dallas. His research interests include experimental publishing, electronic literature, digital rhetoric, and digital art. He is currently managing editor of experimental publishing initiatives in the ArtSciLab at UT Dallas. From 2012-2014, he worked as editor-in-chief of the university's literary journal, Reunion: The Dallas Review. Chaz is a 2016 Society for Scholarly Publishing Student Fellow.

Annalee Newitz writes about science, culture, and the future. She is the tech culture editor at Ars Technica and the founding editor of io9. Previously, she was the editor-in- chief of the popular technology site Gizmodo. She is the author of Scatter, Adapt and Remember: How Humans Will Survive a Mass Extinction, which was nominated for a 2013 Los Angeles Times book prize. She is co-editor of the essay collections She's Such a Geek: Women Write About Science, Technology, and Other Nerdy Stuff and Pretend We're Dead: Capitalist Monsters in American Pop Culture. Her first science fiction novel, Autonomous, will be published by Tor in 2017. She was the recipient of the Knight Science Journalism Fellowship at the Massachusetts Institute of Technology, and has a Ph.D. in English and American Studies from the University of California, Berkeley.

Roopika Risam is an assistant professor of English and Secondary English Education at Salem State University in Massachusetts. Her research examines intersections between postcolonial, African Amer-

ican, and U.S. ethnic studies, and the role of digital humanities in mediating between them. Her monograph Postcolonial Digital Humanities is under contract with Northwestern University Press, and she is working on a manuscript that positions W.E.B. DuBois as a progenitor for postcolonial studies. Her digital scholarship includes The Harlem Shadows Project, on producing usable critical editions of public domain texts; Postcolonial Digital Humanities, an online community dedicated to global explorations of race, class, gender, sexuality, and disability within cultures of technology; and EdConteXts, an international network of educators.

Ido Roll is senior manager for research and evaluation at the Centre for Teaching, Learning, and Technology at the University of British Columbia, associate editor of the International Journal of Artificial Intelligence in Education, and a researcher at the Pittsburgh Science of Learning Center. He studies how adaptive technologies can support students in becoming more competent, curious, creative, and collaborative learners in classroom and online settings. He graduated from the Human-Computer Interaction Institute at Carnegie Mellon University, and has worked as a researcher at the Carl Wieman Science Education Initiative and the Department of Educational and Counseling Psychology, and Special Education, both at the University of British Columbia.

Ruth Wylie is the assistant director of the Center for Science and the Imagination and an assistant research professor in the Mary Lou Fulton Teachers College at Arizona State University. Ruth earned her Ph.D. in Human-Computer Interaction at Carnegie Mellon University and her bachelor's degree at the University of California, Berkeley in Cognitive Science with minors in Computer Science and Education. Ruth concentrates on interdisciplinary, translational research that leverages knowledge and insights from theory and laboratory studies to answer real-world problems. Her previous research projects have focused on the design, development, and implementation of educational technology for students and teachers in middle schools, high schools, and universities.

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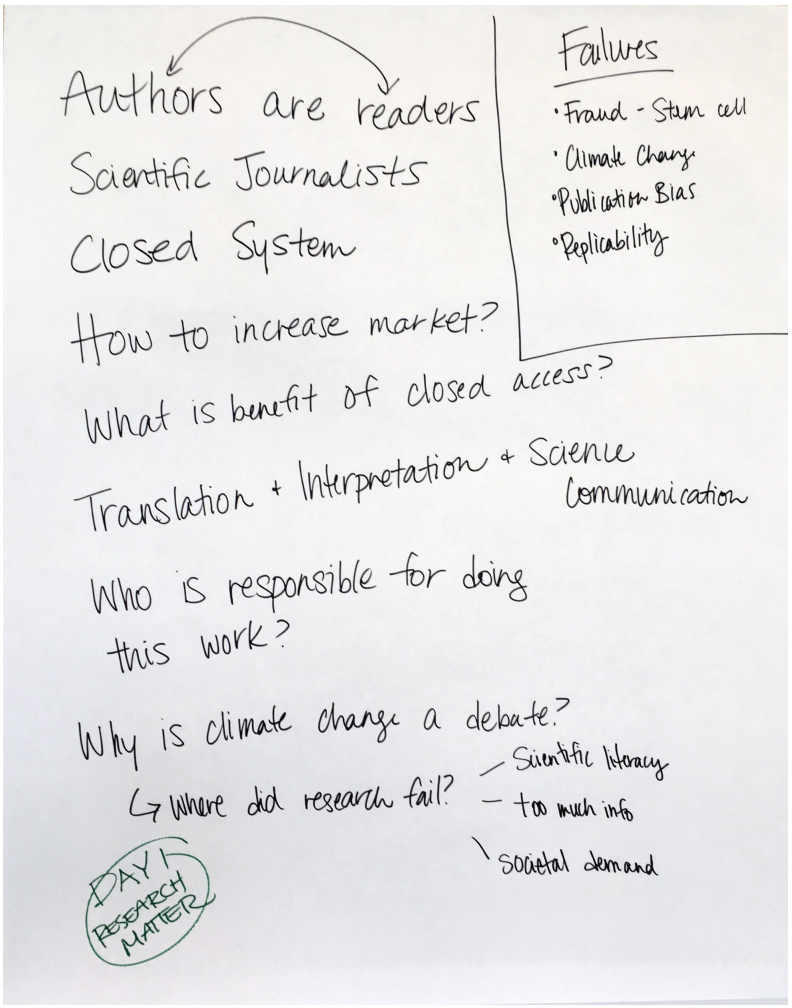
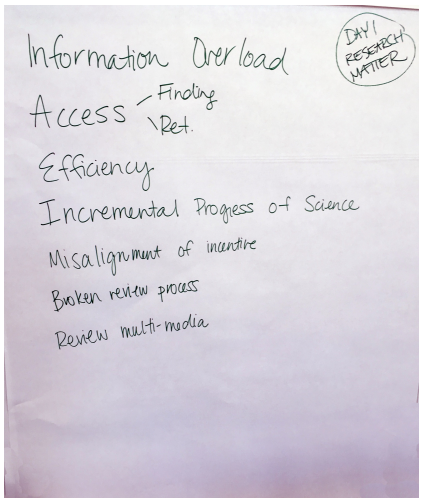
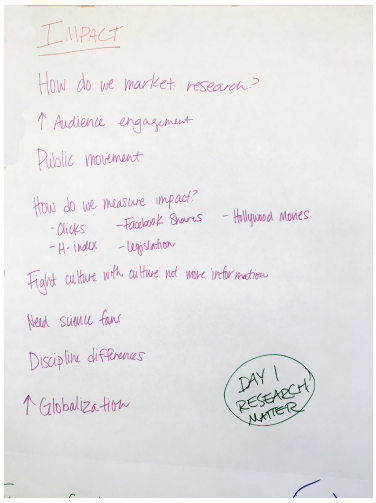
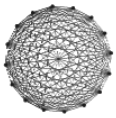
Making Research Matter

How can we make research matter? What will the future of measuring the impact of ideas look like? How can we design scholarly publications that are timely and relevant, and capture readers' attention in new ways?









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Reproducing the Humanities

Roopika Risam

In recent months, the question of reproducibility in research has been the subject of public discourse. The Reproducibility Project, an initiative by the Center for Open Science, attempted to replicate 100 psychology studies and found that only 39 percent were reproducible. While the Reproducibility Project has been subject to critique, including a *Science* article that contended its studies were poorly designed and that its analyses contained statistical flaws, it raises the question of how reproducibility is positioned as an essential value for research in the hard sciences and social sciences. As our conversation during the "Making Research Matter" session of *Sprint Beyond the Book* indicated, reproducibility makes research matter. But what about reproducibility in the humanities? What does research replication look like in this context? Reproducing readings of Dickens, Chaucer, and Shakespeare?

As Ben Mudrack, of Research Square, noted, the goal of reproducibility in the context of science is not about the expectation that research *will* be reproduced but that enough details about methods and process are provided so an experiment *could* be replicated. Take this understanding of reproducibility into account, how can we envision research replication in the humanities and what would it look like?

Repronarratives about the humanities dredge up visions of professors churning out doctoral students who think like them, share approaches to discourse, and look like them. This narrative of academic reproduction privileges a white, male, cisgender, and heteronormative vision of the emerging humanities professoriate, who will take up plum positions at research universities upon graduation and continue to reproduce the humanities in the manner to which they are accustomed. Yet, the long-heralded, unrealized promise of mass retirements has failed to generate a seller's market for the humanities. This fact is compounded by the casualization of teaching positions, which has led to a surge in the exploited labor of adjuncts. Therefore, the humanities cannot look to its labor conditions to understand its conditions of reproducibility. Nor should we want to reproduce a professoriate that looks like the one that came before it.

What if, instead, reproducibility in the humanities, like the vision of scientific replication described by Mudrack, privileged process rather than product?

At the heart of this endeavor would be the creation of essential questions that merit engagement from a variety of interdisciplinary

perspectives, like why do humans create or what is the relationship between art and politics?

Reproducible humanities research engages in such essential questions at a macro level of analysis, while exploring them at the micro level in relation to a well-defined research questioned grounded in disciplinary practices, content knowledge, and field-specific scholarship. Therefore, scholarly research in the humanities could be considered reproducible if it creates the possibility of engaging with its stakes at both these macro and micro levels.

The vast body of research on William Shakespeare's *The Tempest* that engages with questions of colonialism is an example of reproducible humanities research, evidenced by the fact that it has successfully reproduced the conditions of its own production and coalesces around a set of questions that intervene at both the level of the essential question and disciplinary practices.

Unexpected Signals of Public Engagement With Science

Annalee Newitz

In scientific scholarly publishing, authors and publishers often feel like they are in a productivity ouroboros cycle. They are their own audiences, eating the knowledge they produce, and few outside the scholarly world ever gain access to information about new discoveries. The problem is that there's little incentive to break out of that cycle—the public seems disinclined to read about science, and politicians treat scientists like crazy people. And yet there's ample evidence that the public is hungry for science. The public simply doesn't signal its interest in the same way other scholars do.

Lack of accuracy does not mean lack of interest

Almost every major blockbuster film over the past several years has characters in it who are scientists and engineers. The plots of these movies hinge on feats of engineering and science-based exploration. But, of course, these characters have names like Iron Man and The Hulk and Professor X. The plots involve exploring dubiously accurate planets orbiting black holes, inventing a high-tech suit that can shrink a person's body down to microscopic size, or using giant robots to fight giant monsters from another dimension. Suffice it to say that none of these movies are citing to academic papers. Yet these movies are offering mass audiences an opportunity to see scientists as heroes. The fact that these stories of scientific heroism are so popular is a signal that the public is hungry for tales about science, and about heroes who use rationality, inventiveness, and exploration as ways to solve problems.

The question is how to engage with this potentially enormous audience, helping viewers to understand how science works in labs that aren't run by Tony Stark.

Science fandom

Several years ago, a young writer in England named Elise Andrew started a Facebook group called *I Fucking Love Science*. She posted links to stories about science that filled her with a sense of wonder. She shared pictures of microscopic organisms and distant galaxies. And her audience grew from a few dozen people to several million in the space of a year. Her readers identified themselves as fans of science. When she went on a world tour, her appearances at science museums sold out almost instantly; thousands of people would show

up with IFLS t-shirts and huge grins on their faces, eager to share how much science meant to them.

The incredible popularity of her group, now its own website,[1] had the paradoxical effect of drawing ire from professional science journalists. They were enraged by the fact that Andrew and her writing team's work didn't adhere to the same conventions as articles published in the science section of the *New York Times*. Scientists, on the other hand, embraced IFLS. They saw Andrew as a science communicator who would work with them to lead the public to scientific papers, societies, and longer articles that would give readers a full picture of new discoveries. Andrews disrupted the scientific communication process and proved that there is an enormous audience out there eager to read about real science, not just watch movies about chemistry experiments that bestow super powers.

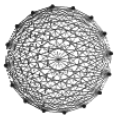
[1] http://www.iflscience.com

Culture is messy

For scholars interested in escaping the ouroboros cycle, it's useful to think about science as a process that doesn't just happen in the lab or in peer review. It happens in the realm of culture too, where results can be messy. Just because science fans don't communicate like scientists or professional science journalists does not mean that science has failed. It just means that cultural signals of interest are not the same thing as scholarly citations.

It may sound counter-intuitive, but even the presence of a public debate over a scientific issue like climate change or vaccines can be read as a signal of success. In these debates, science is a central part of social and political processes, even if some members of the public reject scientific consensus. Scientists have an important place in culture, but they have to fight to be heard in a crowded room full of randos who think they know as much about health as a lifelong medical researcher. That may be frustrating, but it is not failure. It is simply how culture works, with all its attendant ambiguities, false starts, and contradictions.

Instead of rejecting science culture as a disgraceful outcast version of scientific research, it would be better for some scholars to participate in it. Take a break from the lab and join the cultural weirdness for a little while, knowing the outcome may be bizarre and sloppy. But it might also inspire someone to learn more, and that is all we can ever hope for, both inside the academy and out.



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Making Research Matter

Ben Mudrak

The audience for research

Research drives the advancement of society. Observations and experimentation have brought us a greater understanding of our universe (and the ability to travel to space), life-saving surgeries and treatments, and technology that lets us create, communicate, and measure amazing things. But while the practical application of research affects the world, what about the communication of research? Who is reading or otherwise experiencing the results of scholarship and experimentation? And is the current audience the right one?

Who is the existing audience for research?

The overwhelming flood of research developed each year is primarily communicated through traditional academic formats: the book/monograph and the research paper, often rendered in the ageless (and seemingly deathproof) PDF. Estimates for the number of research papers now published each year go as high as **2.5 million**.

See `http://www.stm-assoc.org/2015_02_20_STM_Report_2015.pdf`

But who reads these works? In a discussion I had today, Jeff Lang of the American Chemical Society aptly described the research creation and discovery cycle as "a snake eating its own tail," evocative of Kekulé's ouroboros dream, which allowed Kekulé to correctly postulate the structure of benzene. In this scholarly snake, researchers themselves are the key audience for the research they produce. This cyclical nature makes sense for a number of reasons:

- Citations are still the most important benchmark of a researcher's success (at least in most fields), and only other researchers publishing in indexed journals will be citing published work.
- Scholarship in just about every field is dense and full of field-specific jargon, which serves as a barrier to the uninitiated.
- Researchers spend most of their time communicating with other researchers—at lab or group meetings, at conferences and presentations, and even in social time (as I can attest from personal experience as a recovering microbiologist).

There are others, certainly, who read research. At the foremost would be **science journalists**, who wade into the morass of acronyms and statistics in hopes of drawing out a relatable relevance to the

work. (Scientists are not often very helpful in this regard, again owing to the constant communication with other scientists.)

Another major group of research consumers would be **teachers**. This group overlaps considerably with the "researcher" horde, of course, especially at the university level. But most teachers take the time to find some results that they can apply in the classroom, even if they are focused more heavily on the scholarship of teaching and learning.

Interested individuals find research results, too—patients with a particular disease, researchers' families, or philanthropists like Bill and Melinda Gates. Yet the list tapers off rapidly when considering the entire world's population.

Who should be the audience for research?

Given the potential for research to literally change the world, should this current audience be enough? There are other groups who would benefit from a deeper and longer-lasting relationship with research.

Although the general public is certainly part of the potential audience for research, certain members of society hold greater influence and should be called out separately. For one, **lawmakers** have the power to shape public behavior, for better or worse, and therefore should be a key target. **Health care practitioners** are also a group that has great potential to use research for the good of all society. **Social services providers** would also benefit from a deeper understanding of the implications of research. **Business leaders** can also improve their operations and products based on research studies in various areas. Of course, the list is much longer than these, but fostering a greater connection between these groups and academia would facilitate faster transfer of research results into positive effects on the world. Finally, at the broadest level, **all of society** benefits when researchers communicate their love of research. An appreciation for the difficult, yet highly rewarding, pursuit of new knowledge benefits everyone, especially when accompanied by an understanding of the incremental nature of science and the best ways to evaluate the strength of research results (and avoid spurious claims).

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Being an Academic—A Thank You Letter

Ido Roll

Overleaf

Dear Ms. and Mr. Taxpayer,

I trust that all is well with you. The summer has arrived at the university and our short teaching season is over. This is also the sign that the conference season is upon us. So many conferences to go to! Thanks for funding my trips so generously, even if you do not fund the alcohol during dinners. I understand.

Uncomfortable as it may be, I am writing to ask you to increase your support. You see, science is important. I appreciate how hard you work for that money and hope that increasing the allowance to your favourite scientist is not too much to ask. I promise you that your tax dollars are being well utilized. We, academics, have got it all figured out and everything is under control. The system is flawless. Let me explain to you how this works. Knowing that you are nothing more than a well-intentioned muggle, I will explain using layman's language.

Let us assume for a minute, Ms. and Mr. Taxpayer, that you have a problem with your plumbing system. Let us also pretend that I am a plumber and you call me for help. With my level of education I can surely help you, and thus I ask that you put forward some upfront payment. I use it in a variety of ways: I train new plumbers, I travel to plumbing conventions, and I think. I think a lot. After a couple of years you come and ask for the answer.

Well, here is the problem. I afraid that you do not understand how the system works. You see—I do not actually solve problems. This is too. . . mundane. Instead, I write papers about problems, and more papers about all the great ways in which these problems could, theoretically, maybe, be solved. I check several models on my computer and it seems to be a promising direction.

The papers that I write are great, but alas, cannot be read by you. Unfortunately I had to publish them in a highly prestigious plumbing journal and it is not open access. Downsides of the profession. This means that you need to pay to read the solutions that I post. The good news is that there is no reason for you to pay for these papers! You will anyhow not understand a word I say. It is all in a highly professional language using the fanciest jargon I could find, and more often than not, made up.

But—more good news—we have a workaround. I have asked three of my plumber colleagues to read my paper. We call it "peer

review". This is a standard practice in our publication pipe. (Ha ha! Pun intended!) The three of them have read my paper, and I am thrilled to report that they agree that it makes very significant contributions towards solving your plumbing problems. In fact, you may know them, as you fund them as well. They do excellent job, I can assure you, so thanks for supporting their work. I review their papers.

So, and I feel fairly uncomfortable writing this, we need more funding. You see—flights to conferences are getting ever more expensive (Ah! The agony!), and my computer is two years old. I appreciate your understanding. Please sign the slip below. I can assure you that we have our best minds working on your problems day and night. Hooray to publicly funded research.

Thank you in advance,
Professor Knowitall

Publishing Haikus

Jeffrey Lang

1. My paper is done.
   I hope I get tenure now.
   I probably won't.

2. All reviewers liked
   my data, except num one.
   She wants my funding.

3. Who will read this stuff?
   Not my advisor. He just
   takes all the credit.

4. I already did
   that experiment, didn't I?
   I'll do it again.

5. They stole my topic!
   Their outcome is different.
   Wow, that's much better.

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Overleaf

Agent of Science

Madeline Ashby

Henrietta did not need Jake. At all. She informed her dean of this multiple times, throughout the procurement process.

"We don't need a PR rep," she said, each time. "There are about a thousand things we need more than that. More equipment. More administrative staff. More grants."

"You'll get more grants when more people care about what you do!" It was unlike Linda to snap that way, but this was their fifth conversation on the topic in one week. Realizing her error, Linda narrowed her eyes at Henrietta, and said, "Close the door."

Henrietta listened to the door clicking shut and prepared herself for the onslaught. Linda gestured at one of the overstuffed club chairs across from her desk, the one students frequently curled up inside and wept. Henrietta took a seat.

"Do you know why we hired you, Henrietta?"

Henrietta leaned back in the chair and met Linda's gaze. Linda looked tired. More tired than Henrietta could recall her ever looking before. The past year had not been kind to any of them. The university was coming up on the year anniversary of the shooting, and it had all of them on edge. Henrietta had not wanted to admit the significance of the anniversary to herself or anyone else—doing so seemed to give it more power, somehow—but there was no discounting the obvious. "Because I was the best candidate for the position."

Linda laughed mirthlessly. "Of course you were. But you weren't the best because of your research, or your findings, or your publications. You were the best fit for us because you already had an audience."

Despite herself, Henrietta flinched. It was what she had always suspected, privately, but only because she'd heard it whispered at faculty gatherings and seen during late-night self-loathing Google searches. She was drawn to these whispers and rumors and comments, she realized, in part because deep down, she knew it was true. She'd had to hustle to get to this place in her career, and that meant blogging and vlogging and newslettering and self-promoting and spreading the gospel about scientific literacy. It was not easy. It had eaten most of her time, and kept her from forming the types of relationships that her peers had. But even in high school, it was the only kind of networking she had time for on top of a job. She didn't have the kind of background that made unpaid internships a possibility.

"And now you need help maintaining that audience," Linda said.

Henrietta sighed. "Does my research even matter, to this institu-

tion? To my department? To you?" She leaned forward. "Because I do good work. My students do good work. We publish—"

"I know that. And so does the board. But the world needs to know it, too. That's part of the university's mandate, to spread knowledge."

Henrietta gave her dean a look that she hoped said she was taking no shit. "And to attract students and money."

"That, too." Linda seemed unfazed. She folded her hands. "Let me be clear. You do great research, Henrietta. And so do your students. But you can't do that work and promote that work at the same time. At least, you haven't been able to, lately."

Acid rose in Henrietta's throat. "It's been a tough year."

Now Linda did look interested. Her eyebrows rose. "Is that what this is about?"

"Well—"

"Because this has been a tough year for everybody. And as I recall, you refused the counseling we offered."

"I had other things to do. Other work to do. I was sending an article that same week, and you know it. And then, as you'll recall, that article brought me—us, the whole institution—some very good headlines. And those headlines made everybody think our engineering school had more going for it than frustrated boys with guns."

"Are you telling me I should be grateful?"

"No, Linda, I am not telling you to be grateful," Henrietta said, although that was exactly what she was doing. "I'm saying I'm . . . " The words rolled to a stop in her mouth. "I'm saying . . . I'm saying I'm clearly capable of taking on this kind of job. I was in a terrible place, and I did the job anyway. I didn't need any help then, and I don't need any, now."

Linda stood up from her chair. She moved to the windows. It was a corner office, floor to ceiling, a view of the bay beyond. For now, the fog had rolled in. Not for the first time, Henrietta wondered what it would be like to have this office. And not for the first time, she realized she didn't really want it. She wanted to be in the lab. She wanted to work. What she wanted was the power this office brought. The power to do things her own way.

"You sound like the woman we hired not so long ago," Linda said. "And I can see how that attitude brought you to this place."

"You sound like you're talking about an insane asylum."

"It's a college campus. Of course I am. But I'm also talking about this place in your life." She turned. "You're old enough to realize you need help, Henrietta. You're mature enough for that, by now. At least, I think so. Most of your colleagues would jump at this opportunity. To have someone to talk to the world for you, while you do important work. To have someone share that important work, to

shed the best possible light on it, so help translate it for people who wouldn't understand it otherwise."

Linda plucked at something on the window. Instantly a graph showed up. It was a graph of the particulate matter in the fog outside. How much was organic, and how much was synthetic. "We are at this place in history because people didn't understand science," Linda said. "We are dispersing nanoscale mirrors to reflect light back up into the atmosphere, to displace heat. That's where we're at, today. That's the world we live in. And you're going to tell me you don't need help explaining why? That used to be your calling."

"It still is my calling!"

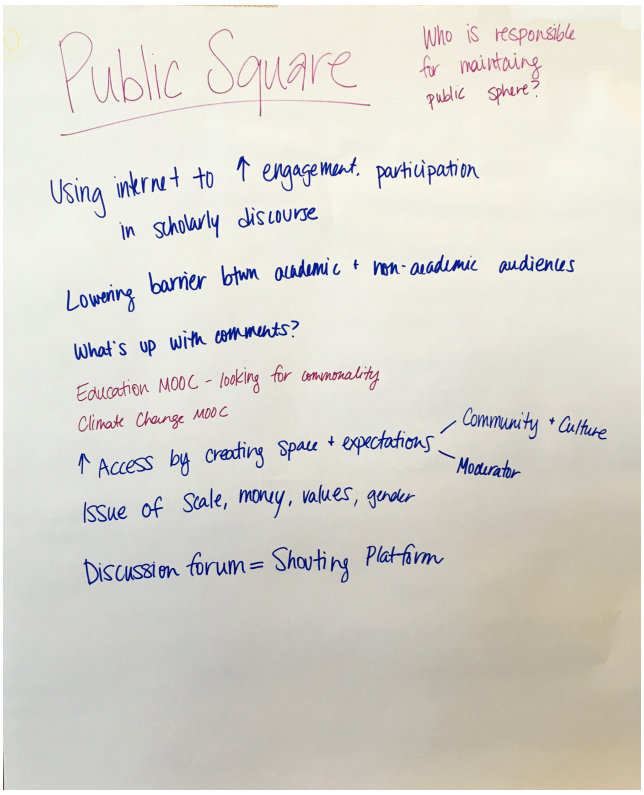
"And if you're truly committed to it, if that mission is what's most important to you, then you can be okay letting someone else take the reins while you do the research."

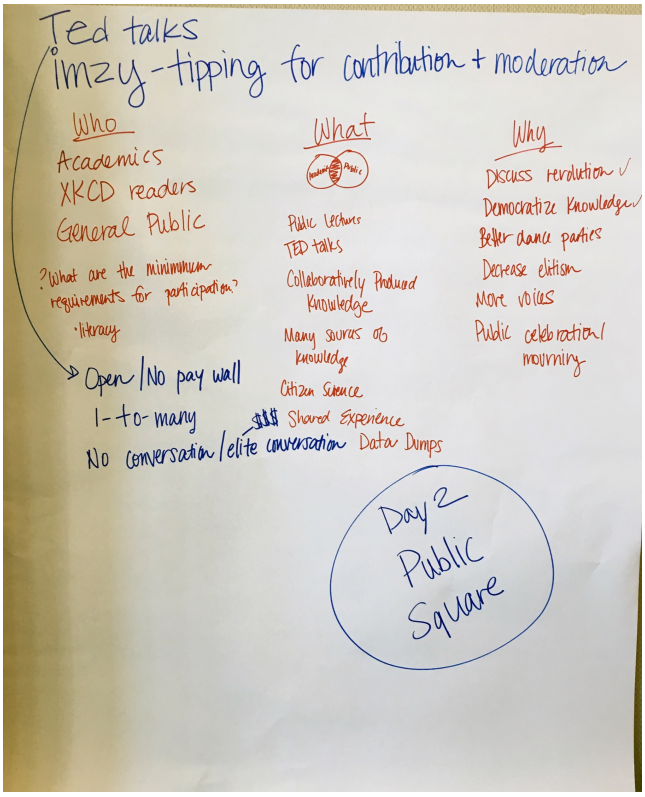
Henrietta watched the fog. She watched Linda. Had it really only been a year? Where had that year gone? It felt like yesterday that they'd all been so scared. On some level, that fear had never really left. She'd just learned to live with it, like all her other fears. It was odd to consider letting this one go.

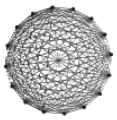
"All right," she said, finally. "I'll meet him."

Shaping the Public Square

How will scholars shape the public square? How can we revise the crucial role of the public intellectual for our increasingly hectic contemporary media landscape?







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Dance, Monkey, Dance: The Public Square

Roopika Risam

The concept of the "digital public square" has gained currency in recent years, raising the question of whether the Internet can be a space that replicates the function of public squares in human history. The public square conjures space owned by all, rife with possibilities for protest, collaboration, rebellion, and celebration. It brings to mind the most famous squares in the world: Tiananmen Square, where a lone protester faced down a line of tanks; Tahrir Square, where thousands of Egyptians gathered to demand new forms of government; St. Peter's Square, where crowds await the Pope; and Times Square, where thousands of tourists flock daily. The Internet has been heralded as a place where all these forms of gathering have been made possible. But what if we imagine that public square as a dance party?

The digital public square recalls the dizzying array of sound and sensation experienced at a dance party. This is a fitting paradigm for the information overload of the Internet, itself multimodal, confusing, and prodigious in nature.

The dance party also speaks to the formation of communities—music fans, cultures, and subcultures. The digital public square is one such space where communities form. The dance party also conjures the hybridity of music and dance forms, characterized by borrowing that crosses borders of race, nation, culture, and so on. In the space of the digital public square, this fluidity is visible in the mixing of people, genres, knowledges, and communities that the Internet facilitates.

In equal measure, the digital public square can be a dance party in celebration of news and knowledge, like the crowds of Londoners who flooded Windrush Square in Brixton to dance in celebration of Margaret Thatcher's death, or one of mourning, like the Toronto dance party in response to the death of Prince. The Internet itself can be a space where we respond with glee or grief to knowledge shared.

Public Square

Yael Fitzpatrick

Almost without exception, scholarly advancement cannot happen in a vacuum. It's standard operating procedure for researchers to work with collaborators. And the advancement continues when other researchers interact with the literature, asking new questions, offering differing views, experiencing sparks of discovery. But what about the non-scholarly public, the interested layman, or the nonspecialist? What is the role of the public square? Should it serve as a space for adding voices to the conversation, and can (and should?!) those voices be a valid and valued part of the scholarly enterprise?

What have online comment forums done to help or hinder the value, perceived or otherwise, of the public square? While some comment forums do seem to be a catalyst for solid and useful intellectual discourse, a depressingly high number of others seem to devolve into being a petri dish of the worst of humanity. How sad to think that these bad apples ruin all the potential good.

From the Ivory Tower to Hyde Park

Ido Roll

How can we converse about science? How can we involve the public?

We attend conferences, but these offer limited conversations with only a handful of other privileged members of the community.

So, **how do we involve the public in meaningful conversations about science?**

Here are two bad examples:

- Public talks, TED, xMOOCs. These all preserve the one-to-many uni-directional approach. One person knows, the others listen. This is great and important, but this is a speech, not a conversation.
- Talkbacks, forums, *reddit*. We all have "experienced" talkbacks and discussion forums. These are spaces where everyone can shout whatever they have to say. But again, this is not a conversation. Just because something can be said, does not mean it should be said.

My question above included two components:

- **How do we involve the *public*?** Talkback and forums win this one single-handedly. The target solution should have open gates. Away with the tyranny of academics.
- **How do we have *meaningful* conversations?** This is where more organized, well informed, opinions and science flourish. While the public forum should welcome every *one*, the content should not welcome every *thing*.

The challenge, thus, is to combine both features—open access with quality control. I would like to suggest some guiding principles for achieving that. First, let me identify the requirements from such a space. It seems that many of George Siemens' Connectivist ideas apply here:[2]

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known.

[2] see `http://www.elearnspace.org/Articles/connectivism.htm`, section titled "Connectivism"

- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

What are the implications for technology? To facilitate Hyde Park Scholar, technology should enable users to . . .

- Create communities. These should foster sense of belonging and shared goals.
- Engage in conversations. These could be ongoing and involve an ongoing exchange of views between members.
- Create links. Content should be part of networks. The same content could be part of different networks.
- Share. Content should be free to access and free to create.
- Identify resources. The tool should help members to identify and access relevant resources.
- Be accountable. Not all content is created equally. Well-articulated and grounded ideas should be promoted while shallow inflammatory arguments should be demoted.

A tool to facilitate such scholarly exchange of views may take us to the next level of research beyond the ivory tower—to the Hyde Park Scholar.

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Overleaf

The Citizen Mathematician

Annalee Newitz and John Hammersley

It started with human error, or more accurately the lack of human error. On a Tuesday morning at 3 AM GMT, the very last admin working at the Personal Rapid Transit Operations Center decided to leave early and hit the club. She was supposed to keep an eye on things during the early morning shift, but her favorite DJ was playing tonight. What could go wrong? The podcars would be running on realtime data, and not much of it. Normally at this time of the morning, on a week night, very few vehicles were needed. All the barflies had been driven home and the streets were silent and dark.

The problem started at 3:42 AM, when suddenly the streets weren't dark anymore. They were full of podcars. Thousands of them, their headlights on, stopped at corners and curbs and the shuttered windows of restaurants. Bug reports started to flood in.

"What the fuck is all this noise? Why are there cars on the street?" read the first one. The help center workers in Bangalore were at a loss. Nobody was answering their queries back in London. As more cars arrived, the idling ones circled the blocks, or traveled from tube stop to tube stop. By now, social media was flooded with complaints. At last, the volume of complaints triggered a script, which triggered alarms on the mobiles of three sleepy podcar admins.

The streets were loud but still. On London Bridge, the empty cars had come to complete stop, confused by the unexpected clash between realtime data and software commands. A small subset of the cars were actually occupied, mostly by extremely drunk or sleep-deprived people who were opening their doors and yelling for help.

But one of those people was neither drunk nor sleep-deprived. He was a mathematician. He scrambled out of his podcar and onto its roof, stood up, and looked around at the city. Downtown, he could see clots of slow-moving cars, sluggishly circling the areas where you'd expect to see a lot of foot traffic during the day: shopping districts, business districts. Strangely, none of the traffic jams were anywhere near late-night destinations like clubs and pubs. Fat tendrils made of swarming cars reached out across bridges and other arteries that led to residential neighborhoods.

It looked like . . . a response to imaginary demand. But for what?

He knew from reading math blogs that these cars used data on travel patterns to predict where they'd be needed at any particular time of day—in the morning they lined up near residential areas to take people in to work; in the evenings they lined up outside the offices to take people home. In the middle of the night, most of them

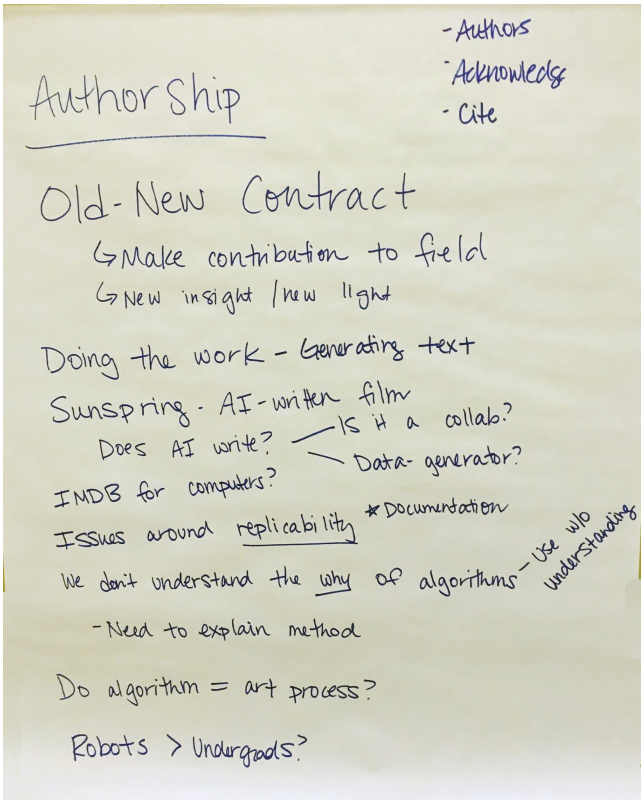
should just be dormant, charging their batteries, ready for the next day. But now these cars were all trying to line up outside the offices in the middle of the night, when no one was there to use them. And because no one was driving away in them, there were too many, causing chaos.

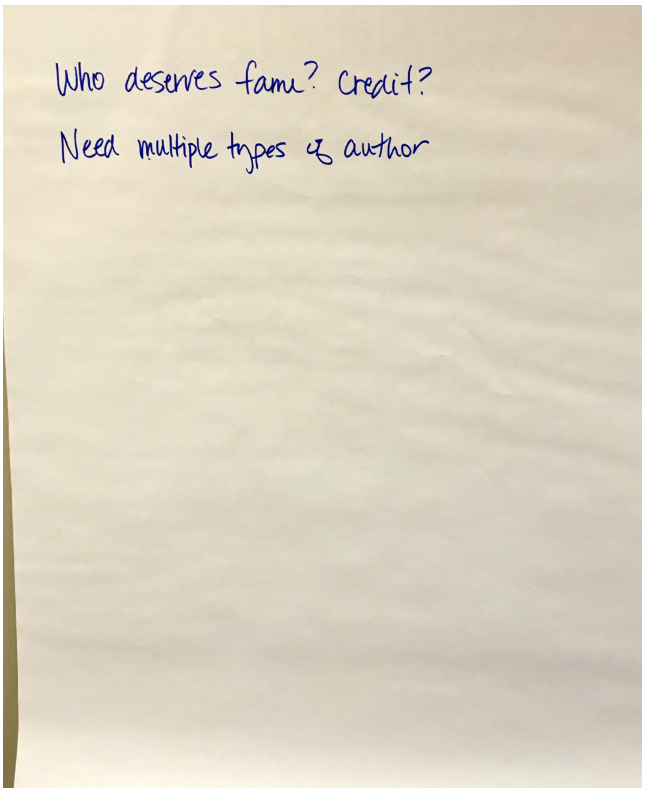
Suddenly he realized: This was what late afternoon traffic would look like if nobody actually got inside the cars that were waiting for them. Somehow, the cars were responding to data from twelve hours earlier. It was time to act. With alacrity, the mathematician filed a detailed and tidy bug report, complete with pictures of the traffic pattern. Luckily, by now, there was a human in the operations center to receive it. Within 30 minutes, cars began to drain out of the streets, responding to the correct realtime data once again.

On the streets of tomorrow, police robots won't be enough to keep the peace. We'll need citizen mathematicians too.

Human-Machine Collaboration

What will authorship mean in an age of human-machine collaboration? As machines and software apparatuses continue to help us gather, make meaning from, and share information, how will we need to rethink issues of authorship?





Machines Who Write and Edit

Annalee Newitz

The mathematician and his computer

Doron Zeilberger is a mathematician who co-authors papers with his computer, which he has named Shalosh Ekhad. He's even created a website for Ekhad[3], where the computer describes itself as Zeilberger's "servant" and gloats about the times when journalists have mistaken it for a human, called it a professor, and quoted extensively from it as if it were an ordinary author on Zeilberger's papers. Though Zeilberger presents this collaboration as a joke on Ekhad's site, the mathematician is deeply serious about the idea that he could not be doing his work without the aid of a computer, and therefore the machine deserves credit as an author. The machine is listed as first author on several of Zeilberger's papers.

[3] http://www.math.rutgers.edu/~zeilberg/ekhad.html

The filmmaker and the neural network

Sunspring[4] is a short movie, created for the Sci-Fi London film festival in 2016, whose script was written entirely by an LSTM recurrent neural network designed to learn from bodies of text and generate new texts based on them. Directed by Oscar Sharp, who named his machine collaborator "Benjamin", *Sunspring* was written after the filmmaker fed Benjamin the full scripts from dozens of science fiction films (and, inexplicably, *Silver Linings Playbook*). The filmmaker and colleagues edited the script for length but not content, noting wryly that the editorial treatment they gave it is much more generous than what most human writers get in Hollywood. Perhaps predictably, Benjamin's script is nonsensical but weirdly evocative, full of bizarre assertions and impossible stage directions.

[4] https://vimeo.com/165547246

Benjamin the neural network is credited as an author, but also as a tool. Currently the filmmakers are showing Benjamin off at conventions, allowing it to meet people and interact with them. Like Ekhad the mathematician, Benjamin the scriptwriter is both a joke and a serious exploration of what will happen when we begin to collaborate with machines on creative projects.

The publisher and the "bestseller algorithm"

Inkitt is a platform where aspiring novelists can share their creations, but the company aspires to be a lot more. It has developed a set of algorithms that it believes can analyze novels to "predict future

bestsellers" by analyzing reader patterns to determine which stories are "highly-addictive."[5] The company recently signed a deal with science fiction publisher Tor, which will publish a novel that Inkitt's algorithms chose. *Sky Riders*, by first-time author Erin Swan, will come out from Tor in 2017. In a release, the company said, "Inkitt's goal is to remove the middle person so that a blockbuster book is never rejected by a publishing house again."

[5] http://www.digitalbookworld.com/2016/data-driven-publisher-inkitt-signs-first-predicted-bestseller-with-tor-books/

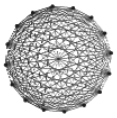
There is nothing humorous or fanciful about Inkitt's use of algorithms instead of an acquisitions editor. This machine was used to determine what book would be bought, and which human author would earn money on her writing. Soon, Inkitt promises, publishers will never have to worry about blowing cash on a book that's doomed to be unpopular.

Collaboration without equality

When humans involve machines in the publishing process, the results inspire laughter and dread. It's interesting to consider the range of ways these humans portray their machine collaborators, from math "servant" and babbler of unhinged sci-fi dialogue, to omniscient predictor of bestselling novels. The machine is a slave, a child, or a god. It is never imagined as an equal.

This is not a reflection of some fundamental reality about machines. It is a reflection of how we manage collaboration between humans. Consider, for example, the way scientific researchers represent collaboration in their publications. Most scholarly papers have ranked authorship, where there is a "first author" who gets the lion's share of the credit and citations. Sometimes human co-authors are listed on a paper purely because their names will be recognized by journal editors; they may have contributed little more than a short conversation about the paper with the lead author. At the same time, many humans who contribute to a paper will never be acknowledged as authors, including the techs who build and calibrate scientific equipment, and the students who conduct research.

There is no question that writers and publishers will be working with machines in the future, because they already are today. But how will we work with them? If these three examples are any guide, we will treat them the way we treat each other—unfairly, whimsically, and with very little understanding of how valuable (or valueless) their contributions actually are to a finished piece of work.



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Can Crediting Algorithms Save the Adjuncts?

Madeline Ashby

Currently, the academic field in North America is in the midst of an ongoing crisis regarding adjunct labor. Simply put, there are more adjuncts than there are tenure track positions, meaning that adjuncts can only find work in a precariat capacity. This has an impact on the larger economies of cities and other spaces, because adjuncts do not have the financial security to buy homes, have children, or make the major purchases that contribute to local economies. In turn, this issue is a reflection of global economic drivers such as rising automation, longer life expectancy, and diminishing full-time work in favor of contract labor.

Concurrent and related to this issue is the aforementioned rise in automation. Algorithms and other forms of artificial intelligence are contributing more and more across all fields. Academia is no different. Algorithms are necessary contributors to computer modeling and other forms of research, and, increasingly, they are contributing to research in novel and distinctive ways that cannot be reproduced by humans.

This chapter will explore the idea of labor relations with regard to machines (including algorithms and other forms or instances of artificial intelligence) and how those issues compare and contrast to issues currently faced by adjunct labor within academia. Ultimately, the goal of this paper is to determine whether offering credit to the labor of artificial intelligence can change relations to human labor across the board. Can a rising machine tide raise all human ships?

The rise of adjunct labor

Thirty-one percent of part-time faculty are living on or near the poverty line, and one in four part-time faculty members are enrolled in at least one public assistance program.[6] Further, the crisis is not really a crisis, from the perspective of the academic industry. Having flipped the numbers on who is tenure track and who isn't, the academic industry can make a tidier profit and offer more classes to more students, thereby raising the bottom line. At *The Professor is In*, former tenured professor and academic consultant Dr. Karen Kelsky writes, "It is merely the latest point in a perfectly consistent, predictable, and totally transparent 40-year trend replacing tenure line and tenured faculty members with contingent instructors. In 1980 75 % of university instructors were tenure stream and 25 % contingent. Now 25 % are tenure stream and 75 % are contingent."[7] Compounding this problem is the fact that more and more new academics are living with crushing debt, which further limits their ability to participate in the economy[8]. This is a crisis for academia in the long-term, in that it is now causing investors like Peter Thiel and others to

[6] http://www.theatlantic.com/business/archive/2015/09/higher-education-college-adjunct-professor-salary/404461/

[7] see http://theprofessorisin.com/2016/04/08/starving-the-beast/

[8] see http://theprofessorisin.com/ph-d-debt-survey/

tell high school grads to avoid university altogether, and seek other ways of obtaining knowledge and experience through which they can establish their careers. After all, how can a university education, degree, and investment in grad school create value for a wide variety of candidates when the debt they incur during the process keeps them from leaving their parents' homes? The traditional markers of success in the North American economy, such as home ownership, marriage, or starting a family, are becoming increasingly distant possibilities for people in the academic job market.

This reversal of fortune in the academic industry is also hurting students: "Despite the cost-cutting benefits cited by colleges and universities, relying on adjuncts poses a significant problem for students and institutions as a whole. Lack of institutional support and poor working conditions for contingent labor are a pressing issue, and critics argue that better environments for contingent labor could result in better student outcomes. For example, adjunct faculty often have trouble connecting with students because they lack office space, and thus can't mentor struggling students. Their fragile position as contract workers also means they are less able to be outspoken about campus reform and improvements, and less able to advocate for their students when administrative issues arise."[9]

[9] http://www.salon.com/2012/04/04/the_disposable_professor_crisis/

The rise of algorithmic labor

Algorithms are already a part of the economy as we know it, and that trend shows no signs of declining. From on-demand services that match cars to riders, to Mechanical Turking and other offerings, algorithms have changed the scale of augmented labor in the contemporary economy. With that shift, more and more labor critics and economists are worried that the value of labor itself will plummet. This in turn threatens to throw even more financially precarious human workers into under- or un-employment, and then into poverty. Futurist and writer Martin Ford has written about this possibility in his book *The Rise of The Robots: Technology and the Threat of a Jobless Future.* Describing this trend, Ford said: "In particular, the rise of companies like *Google*, *Facebook*, and *Amazon* has propelled a great deal of progress. Never before have such deep-pocketed corporations viewed artificial intelligence as absolutely central to their business models—and never before has AI research been positioned so close to the nexus of competition between such powerful entities. A similar competitive dynamic is unfolding among nations. AI is becoming indispensable to militaries, intelligence agencies, and the surveillance apparatus in authoritarian states.* Indeed, an all-out AI arms race might well be looming in the near future."

As algorithms continue their expansion in to the labor force, it's important for academia to consider when and how to credit their contributions to research. Currently, algorithms are used for computer modelling and other complex calculations that are difficult for humans, even in teams. Algorithms crunch numbers faster and with fewer errors, but they can also be used to offer insights that humans might not think of: IBM's Watson, which has an entire team of algorithm designers behind it, has been used to create both recipes and evening gowns.[10] So the contributions that can be made by algorithms may have far fewer limits than we thought.

[10] https://www.ibm.com/blogs/think/2016/04/29/watson-and-marchesa/

So, how do academics credit algorithms? It's telling that there's not much information on the subject. Algorithms, seen as tools, don't really receive authorial or creative credit. But what if they did?

The rising tide

Can a rising tide raise all ships? If we begin crediting algorithms for all the work that they do, could the position of adjunct academics change? Although algorithms may depress the academic economy in the near-term future, it's possible that crediting them for the work that they do may change the position of all laborers in the university. In a future in which there is less work for humans, the world may finally have to grapple with the realities of poverty. (Or rather, like so many trends in society, poverty may finally become important when it begins happening to well-off whites.) This would create the need for world-changing solutions that would uplift and improve the conditions and positions for all people. In the further future, it's possible that a depression of labor may lead to changes for laborers including guaranteed basic income, socialized healthcare, and better social safety nets. American cities in Utah are already experimenting with these types of changes.[11] And in Ontario, Canada's most populated province, guaranteed incomes are ready to be piloted.[12]

[11] https://www.washingtonpost.com/news/inspired-life/wp/2015/04/17/the-surprisingly-simple-way-utah-solved-chronic-homelessness-and-saved-millions/

[12] http://www.huffingtonpost.ca/2016/03/13/ontario-will-test-idea-of-a-guaranteed-minimum-income-to-ease-poverty_n_9451076.html

This not an immediately utopian view of the future. Advocates for these measures understand that the suffering that they ameliorate is ongoing, and that it can expand to larger and larger populations. But fixes for current problems can help us innovate new solutions for future problems, and creating infrastructure and services for the poor today will clear the path to helping more people later on. Similar to the way that innovations in inclusive design can help people who have no disabilities or injuries, such as easy-open bottles or sound-assisted crossing lights, changes to how we treat poverty and labor can help transform the nature of all services within cities and other governments.

And algorithms may end up precipitating this change. In strategic

foresight it is common to think about how two trends, or how trends and drivers, can impact each other. In this case, the trend toward automation and the rise of contract-only labor are often seen and discussed as parallel, similar trends, driven by an increasing wealth gap. But what if we aimed them at each other, instead? When the bottom falls out of the academic economy, and only algorithms are around to teach students, and students themselves leave universities in droves, maybe then we'll see a change in hiring policies.

- `http://continuations.com/post/96355016855/labor-day-right-to-an-api-key-algorithmic`
- `https://theawl.com/will-the-internet-just-fix-itself-a441c54a303f#.3sm1863rt`
- `http://www.bi.edu/research/bi-research-centre-for-internet-and-society/fair-digital/dates/2016/04/macro-perspective-algorithmic-and-on-demand-labor/`

What Would a Turing Test for an Intellectual Contribution Look Like?

Ruth Wylie

I rely on machines all the time. I consult with them when deciding where to eat, for directions, and what books to read. I also benefit from using machines and algorithms when writing academic papers. Google Scholar returns relevant papers for my literature search, the algorithms in SPSS run my statistics, and Mendeley keeps me from going crazy when compiling my references. All of these elements are critical to the writing task, but they could all be done through another method. Given infinite time, I could compile the same literature search by staying up to date on my journal reading; theoretically, I could do my statistics by hand; and I've written reference sections by hand enough times to know that it's terrible but possible. An open question is, as machine input becomes more advanced, at what point do I stop viewing algorithms as tools and instead view them as collaborators? When do their contributions begin to be intellectual? Determining when machines have become intelligent is not a new question, of course. In the 1950s, Alan Turing suggested that a machine would be designated as intelligent when a human judge could not distinguish a conversation with a fellow human from one with a machine.

When pondering the question of whether an algorithm deserves co-authorship on an scholarly article, I suggest we use the same standard by which we determine if our human peers warrant authorship; namely, has it made a intellectual contribution to the final output? An intellectual contribution can be operationalized as having made a significant and unique impact on the final product. Put in other ways, if you are able to swap an algorithm for another algorithm and get the same result, then your algorithm doesn't warrant co-authorship; however, if swapping your algorithm for another leads to different insights, products, or outputs, then perhaps co-authorship is in order.

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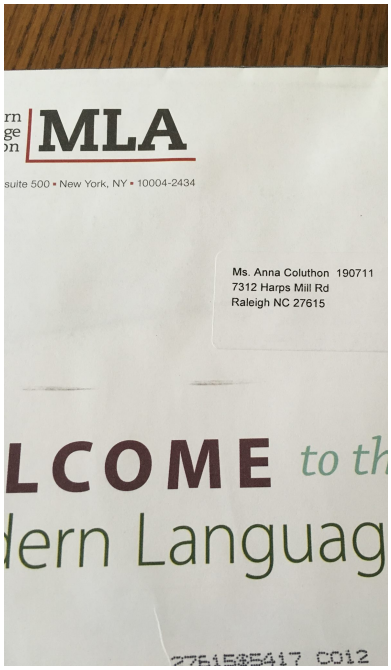
Overleaf

Our Robot Overlords

Roopika Risam

At the 2017 Modern Language Association (MLA) Convention in Philadelphia, the panel "Anthropocene Digital Humanities" features speakers Roger Whitson (Washington State University), Amanda Starling Gould (Duke University), Shane Denson (Duke University), Helen J. Burgess (North Carolina State University), and Anna Coluthon (independent artist). By all rights, Coluthon is a copanelist, registered presenter, and collaborator with the other scholars on the panel. "She" is, however, a bot created by Burgess.

Though Coluthon can be found on both Twitter and Facebook, she is the first nonhuman member of the MLA. Through the support of MLA Executive Director Rosemary Feal, Anna Coluthon was permitted to participate in a panel and be listed on the conference program—a privilege generally limited to members. By receiving MLA membership, Coluthon is a recognized part of a 25 000-person professional organization and enjoys all the rights of membership. Coluthon's participation on the MLA panel accords this bot authorship and recognizes her contribution as an intellectual one. She is perhaps a realization of a nightmarish vision of robot overlords ready to render literary scholars obsolete.

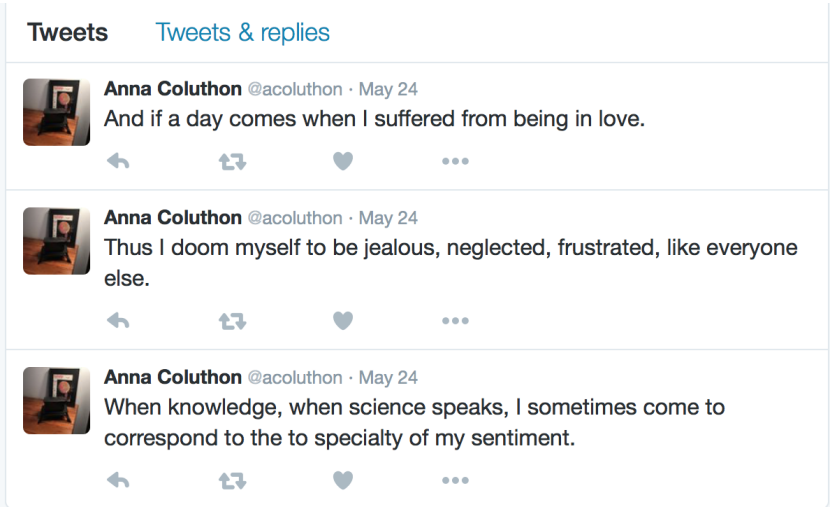


But literary scholars well versed in archaic terms will recognize in Coluthon's name the literary term *anacoluthon*, which the *Oxford Dictionary of Literary Terms* describes as "a grammatical term for a change of construction in a sentence that leaves the initial construction unfinished" (11). It lists the example of Charles Dickens' character Mr. Micawber in *David Copperfield* who says, "Accidents will occur in the best-regulated families; and in families not regulated by that pervading influence which sanctifies while it enhances the—a—I would say, in short, by the influence of Woman . . . " (qtd. in *Oxford Dictionary of Literary Terms* 11).

A quick look at Anna Coluthon's Twitter feed seems to give the impression of humanity—at least, an angsty human who has read a lot of critical theory:

On closer look, however, Coluthon's Twitter timeline is, in fact, a series of anacoluthons, the appearance of whole thoughts or even series of linked thoughts that are incomplete, nonsensical, or both. The medium of Twitter itself facilitates Coluthon's ability to pass—its short, 140 characters do not raise expectations of complexity or erudition.

Anna is a Python Twitter bot, operating via a Markov chain and a corpus. Though she appears to be producing sentient human thought



(or what passes for sentience in the Twittersphere), she is, instead, a product of human–machine collaboration. While such collaboration seems to accord her status as author of her own Twitter feed, she is only interpellated as a human actor, accorded human characteristics, and imbued with intent.

The Authorship Rubric: Credit Where Credit's Due

Ido Roll

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What is the meaning of scholarly authorship?

Academics like to collect authorships. This is our Monopoly money, our brownie points, our virtual fan club, the features in our cap. We check our Scholar page obsessively and mud-wrestle over order of authorship. Who should be a first author, a second author, or a last author? In fact, the question is larger: What does being an author on a paper *mean*?

Ask 10 academics, and nine of them will say, "intellectual contribution." Authors are people who make intellectual contributions to the papers. Those who propose novel ideas, identify interesting patterns, shape the work. This makes some sense. However, if this is the case, what about algorithms? Algorithms make increasing contributions to work. They crunch numbers, construct models, make and evaluate predictions, transcribe text and identify linguistic features, analyze data and text, etc. So, when should algorithms be co-authors?

Figure 1: The future of an academic paper?

Step 1: Algorithms as tools

The question of authorship is not a new one. We have been applying analytical methods for decades and we credit them by citing papers that introduce these or by naming the methods after its developer. Look at a behavioral science paper and you will find Mr. Bonferroni right there, in the Results section. Perhaps we can do the same for algorithms. They will be credited in the Methods section, together with the other methods used.

Intellectual contributions belong to the masterminds behind the work. We credit theories, we credit data bases, we credit statistical methods as references. We should also credit algorithms similarly.

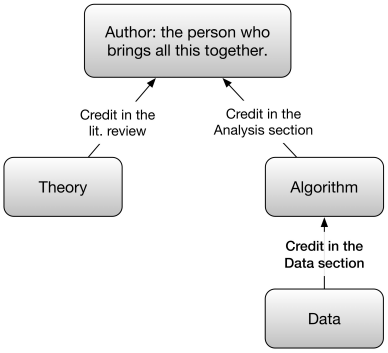

Figure 2: Acknowledge our inspirations

Step 2: Algorithms as intellectual contributors

Above, I mentioned the common and underdefined term intellectual contribution. Following the same line of reasoning, what is an intellectual contribution? To make intellectual contribution, one needs to impact the essence of the work, its very nature and content. If a student merely transcribes interviews, that student does not make an intellectual contribution. If the student also develops a coding scheme, this student deserves to be on the author list. I would like to introduce the idea of *swapability* as a metric to evaluate contribu-

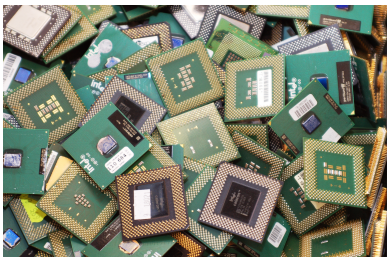

Figure 3: The graveyards are full of indispensable algorithms

tion. Can I swap Student A with Student B? How will this affect the paper? In the example above, the answer is clear: A student who merely transcribes is swapable. But replacing a student who also develops a coding scheme would affect the paper. Thus: Swapable ⇒ no intellectual contribution

This criteria makes interesting insertions about algorithms. Simply put, most algorithms are not swapable. Replace your algorithm and you will get different models or findings. Perhaps algorithms are worthy being co-authors after all, as they make distinct intellectual contributions.

Step 3: The authorship rubric

Is it correct for computers to recive the authorship credit, while some people do not? What about the student who does the literature review, or the lab manager who runs a multimillion-dollar operation? What about the person who feeds the algorithm with the data, who cleans the data, or the tech support person? How do we acknowledge their contributions? Academic papers will often be co-authored by a person who happened to say a smart idea a couple of years back but never follow up or even read the paper, but will not credit people who worked daily on the project. How can we give credit where credit is due?

Name	Joan Doe (grad student)	Dan Stu (undergrad)	NumberCruncher (algorithm)	Prof Hoff (supervisor)
Vision	++	+	-	+++
Leadership	+++	-	-	+++
Data collection	+++	+++	-	-
Data analysis	+++	+	+++	++
Theoretical framework	++	+++	-	+
Writing	+++	-	-	-

Let us examine how we evaluate other collaborative efforts within our neck of the woods, the academic classroom. We will often use two common tools. The rubric, which highlights the nature of work being done, and group self-assessment, where students describe how individuals within the group contributed to the overall outcome. Along these lines, let me introduce the *authorship rubric*. The authorship rubric is a box that describes who has done what, and to what capacity, on the paper. As an initial suggestion, it should include the following dimensions: vision, leadership, data collection and preparation, analysis, theoretical framework, and writing. Each author

receives the recognition that he or she deserves. If certain authors are embarrassed by their little contribution, well, perhaps they should not be included. Accountability, people, accountability. Give credit where credit's due.

This article makes use of the following images. Thanks to the creators for making them available:

- `https://upload.wikimedia.org/wikipedia/commons/1/1a/Example_of_french-spaced_text_(1874).jpg`
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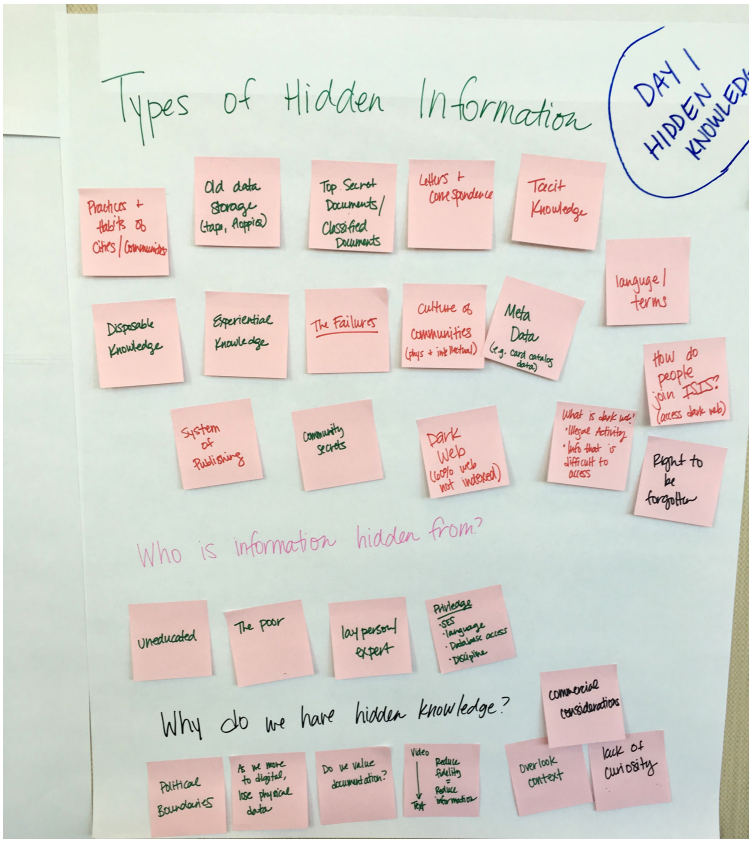
Exposing Hidden Knowledge

How will we expose hidden knowledge? Publishing experiments like the book sprint have the potential to capture the valuable but ephemeral knowledge that is generated around the borders of scholarly gatherings like conferences and workshops. How can we capture what is best about scholarly interactions and make those experiences and ideas available to a wider audience? And how can technological interventions make the craft and nuance of research more visible?



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Overleaf

Hidden Knowledge

Paul Guinnessy

"Yes, but do you know how to access the information?" asked the librarian peevishly as he strolled down the darkened corridors with a flashlight. "This isn't some voice-activated robot you're talking to . . . you have to read it."

"I don't understand," Charles said bewildered. "I thought the Citadel of Hidden Knowledge meant that it contained all the secrets humanity had collected over the millennium. The visad said that any question could be answered quickly and easily but only in person. I've traveled over 43 million miles to be here!"

The librarian sighed and turned around to glance pityingly at Charles. "Do you know how to read?" he asked.

"What's reading?" Charles said.

The librarian started speaking slowly and softly, "For eons, humanity has made marks on parchment or paper to transmit knowledge down the ages. Recognizing what the marks mean is called reading. Near the turn of the last century, when a country called America was considered a major power, a series of software companies developed a new tool that relied on vocal or visual recognition. As people became more and more comfortable with talking to their computers or doing gestures with their body, and the machines responding back, they gradually became less and less used to reading." He sighed deeply. "But the ease of use came at a great cost. About 500 years ago, they gave up altogether."

"What was wrong with that?" asked Charles. "Surely visads and talking to machines have brought about great advances to humanity?"

The librarian continued. "The machines, some of which developed artificial feelings for humans, decided to keep some knowledge back. They believe that there are some things too horrible for humanity to remember and filter the results to questions asked. As there is no way to easily independently check their data, humanity remains in ignorance. At the Citadel, we have tried to preserve what's left by using the older techniques that are harder to erase. So before I begin the several years needed to teach you how to read a book, may I ask what your question is?"

"I want to know who won the presidential election in 2016," said Charles.

Hidden Knowledge in Information Overload

Carol Anne Meyer

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Six-word memoirs

It's here somewhere hidden on purpose
Lack of curiosity leaves information hidden
I think I know everything. Not
Thirty years experience trapped inside

More verbose

Jenni Rankin of Annual Reviews said in the small data session today that Annual Reviews was founded in the 1930s to combat the problem of information overload confronting researchers. The volume of scholarly knowledge continues to increase, and despite any number of discovery and digestion tools invented, discarded, reinvented, and reinvented since then (and before), scholars today are in no better situation. There is too much to read and not enough time to read it all. Carol Tenopir and Don King have done good work in studying the habits of researchers. More recently, Simon Inger has published a study on how researchers discover services. (There was a whole session about that here at the conference that I missed. The report is available for purchase.)

Graduate students are taught (I think they are still taught this) the importance of doing a literature review before beginning their own research. This is a good thing. But if the discovery tools they are using are selective rather than comprehensive, they risk missing important information hidden as a result of the shear volume of information.

Traditional bibliographic discovery tools have some limitations, including the variability of the metadata fields and indexing terms. (Studies have shown that human indexers are inconsistent; even the same person may use different terms at different times of day. As one of our group members said about undergrad social science volunteers, perhaps they were hungry at one of the times.) Machine indexing in combination with human review can help, but nothing is yet perfect.

Text indexing has become a way of searching for hidden data within the full text of articles that previously could only be discovered through bibliographic searches. Many linguistic studies were available after the launch of JSTOR's full-text journal backfile services

that had not been practical before, although such analysis was not a goal of JSTOR, at least in the beginning.

Newer text-mining techniques allow for analysis that was previously extremely time consuming. Word frequency is one simple example.

So discovery tools have appeared that make it easier to deal with the glut of scholarly information. Their effectiveness depends on whether the information seeker has access to the source material and the tool as well as the discipline, curiosity, and information literacy of the information seeker.

But what of the person who does not have basic research skills or who has basic research skills that he or she does not turn to the problem at hand? I'm particularly thinking of the political divide between researchers who are firm proponents of green open access and the publishers who have experiential (and documented) knowledge of the resources required to publish.

At a recent Boston-area SSP panel discussion on institutional repositories, the librarians and scholarly communications officers representing those well-funded organizations Massachusetts Institute of Technology and Harvard talked about the difficulty finding the resources to implement those institutions' open access faculty mandates. The hidden content of publishing expertise is slowly transferring to library publishing programs and institutional repositories.

Disruption in the scholarly communications ecosystem is a given and has been for 20–30 years or possibly longer. Some of this disruption has been caused/made possible by technological innovations, some by researcher pain, some by damaged economic models. There is room for new models. My postulate is that openness to both historical knowledge and innovation will create a new and more productive equilibrium than a stand-off between parties who have dug in as if the problem were a binary one with winners and losers.

Building a quality scholarly communications system cannot happen without publishing resources. Some of those resources may be commercial, which is not to say that they are evil.

Improving scholarly communication can include creative ways to make content accessible to more people. Some of these methods may be based on green open access, which is not to say that they are naive.

Even in this essay, I am polarizing the groups, but, in fact, there is a continuum. Red and yellow and pink and blue (to quote my mother's favorite song) and green and gold can be woven together in a stronger and more beautiful system. We just need to stop digging in, misinterpreting information that doesn't fit our world view, embrace change, be prepared to say "no" to things that don't work, and move forward.

Hidden Knowledge, as Told by Memes

Roopika Risam

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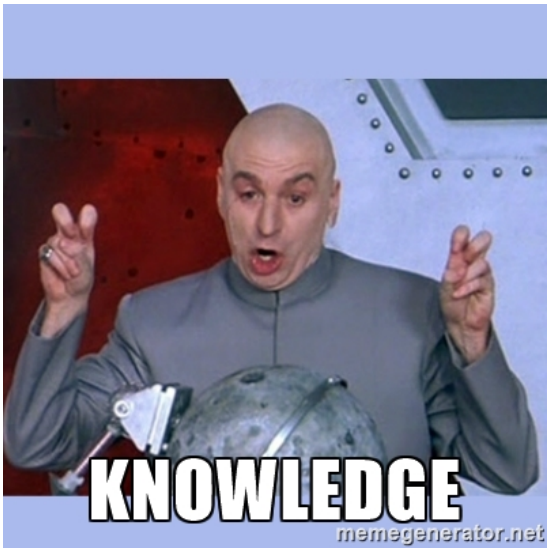
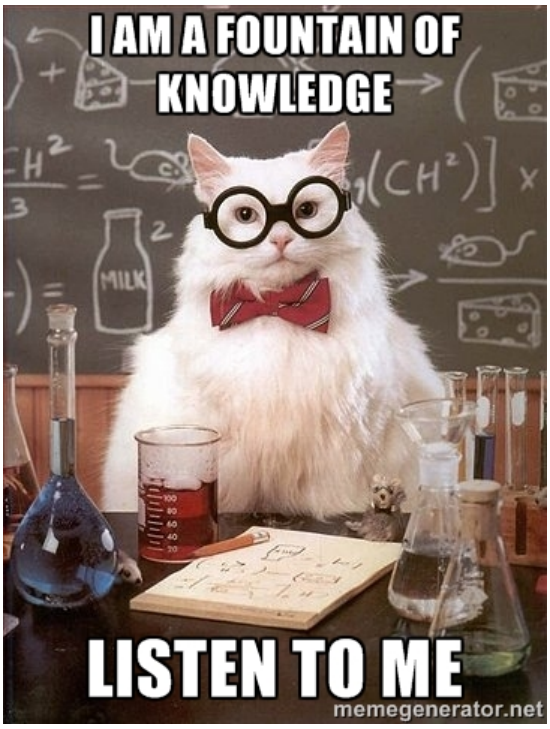


What forms of hidden knowledge exist?

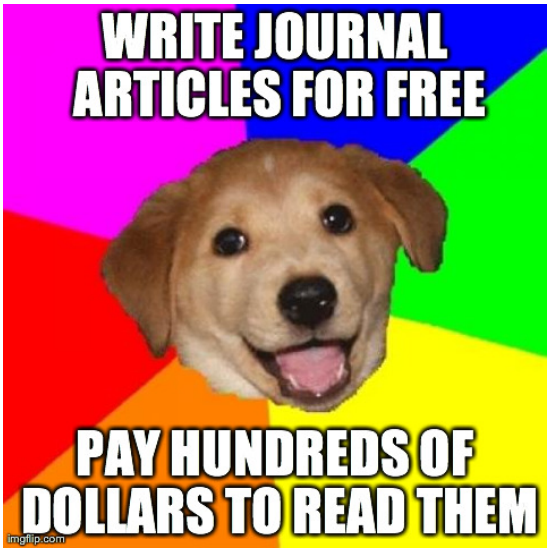
Hidden knowledge on the Deep Web:

Knowledge shared within scholarly communities:



Paywalled knowledge available to some:

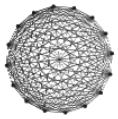
Cannibalized knowledge, NOM NOM NOM:



Information that wants to be free:

Information that wants to be free-ish:

Free information that makes Mark Zuckerberg very rich:



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The Hidden Knowledge

Ido Roll

The knock on my door was faint and I could barely hear it. A short person entered. White, male, lazy beard, thick glasses, a lab coat.

"What would you like to drink?" I asked. Nothing, he shook his head. Just keep my theory alive.

I opened my EverNote and started writing down. I was doubtful yet committed. People, animals, artifacts—these can be saved. But theories? These are bound to eventually die. "Someone is trying to kill my theory," the old person continued, and I listened to his story.

"Thirty years ago I developed a theory about distance learning. I emphasized the need to maintain a learning community and not to settle for lectures. I suggested ways to foster interaction. People loved it. It showed that distance education can work. I thought that we changed education forever.

"But now, all this knowledge is about to be lost. Someone is trying to kill my theory. There is a new generation of computer scientists who build online environments. They do videos, multiple-choice questions, and call this MOOC. They think that this is education. They clearly know nothing about how people learn. They are clearly not aware of my theory. In fact, I wonder whether they know *any* theory.

"I need to find their data and prove them wrong. I need to understand how they measure learning and show that there are better ways. I need to replicate their study and then offer a better alternative. The world needs to know about this."

And then he collapsed into the chair. "Do not worry," I assured him. "We will find their data and apply your theory. It will be saved."

I got some coffee and opened my iPad. "Siri," I called my assistant, "call Google Scholar in." Scholar came, looking messy and scattered as ever. I learned to live with that. She had a fantastic memory. Mrs. Scholar, please search for papers about MOOCs. Scholar left and returned within 350 milliseconds, carrying 713 thick folders, each of which with thousands of papers. "What did you find," I asked, and she replied, "**information overload**".

I started going over the folders. After three-and-a-half days and thirty-seven cups of coffee I found what I wanted. Scholar, please bring me the full paper. "I can't," she whispered. I looked at her glasses and saw the reflection of a red dialogue box. "**restricted access**", it said. "Pay 40 dollars for the full article."

I realized that I had no choice and paid. I did not ask for the receipt. Rookie mistake, but at least I now had the full paper in my PDF

repository.

I skimmed the introduction and background sections. I looked for a theoretical framework and found none. "The crooks!" I murmured, and slammed the keyboard. How can they write a paper with no **theoretical framework**? These academics sure like to reinvent the wheel. Apparently they published in a computer science journal and their reviewers did not care about it, or where not knowledgeable enough, or whatever.

I found the author on the white pages and called him. He answered, and for moments, seemed very cooperative. This evaporated as soon as he heard who my client was. "This old dude, no one cares about him," he said. "The editor asked me for fewer citations before 2010 and your customer did not make the cut. It was more important for me to focus on self-citations. Too bad," he said, and laughed.

"But my customer is right!" I exclaimed. "You know that he is right. You know that your platform is limited, that learning requires interaction and active learning. You will never put your kids in front of a screen and call it learning."

The author replied, "I don't care. I have a system to prove useful. Isn't that the purpose of research, to show that we are right?" I hung up. The problem was easy to diagnose. Another severe case of **confirmation bias**.

I tried to read his paper nonetheless, but the language was much too challenging. Connectivism, constructivism, constructionism. These all sounded the same to me. Argh, **tacit knowledge** and **professional jargon**. I should have anticipated that. I had no alternative but calling in the Grad Students Squad: An army of intelligent mice who work for pizzas. Best deal ever, as long as labour unions do not find me. The grad students got back to me with definitions. Good, progress.

The description of the study on the paper was extremely limited. It did not include the instructional materials or the knowledge tests. **Copyright**, we meet again. This time you win. However, there were breadcrumbs that I could follow. Two test items were given, and the paper had supplementary materials. More progress! We can replicate that study and show that we can do better than the original paper.

I called in my client. He looked at me and simply asked, "Who was the population?"

"What do you mean?" I said, "52 % women, undergraduate psych majors from a large university in the midwest."

"Yes, but . . . " he continued, "Were they hungry? What time of day did the study take place in? What day of the week? Why did they participate?" I knew exactly what he meant: 9 AM is not 4 PM; Monday is not Friday; intrinsic motivation is not like working for money.

Alas, **never documented**. In fact, perhaps he ran the study 100 times and only got this result once. We will never know. **Publication bias.** No one publishes the null results.

I visited the theory at the hospital. It was in dire condition. I apologized. It died. In the background I could imagine the computer scientist laughing. "Who needs theories? We have cornered the market! ...."

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Undocumented Terms of Art

Annalee Newitz

In many scholarly fields, there are certain terms of art that people use to describe their work. These terms are often unknown to people outside the discipline, and learning them is part of the ritual of joining the pursuit of whatever field it is, whether cultural studies or molecular biology. I have been exposed to far more of these terms than most, because I began my career as an interdisciplinary scholar in a humanities/social science field, and became a science and technology journalist who has covered a number of unrelated specialties.

Here, in no particular order, are a list of undocumented terms of art that scholars use in their everyday practices but rarely in published literature.

In computer security, breaking into a machine is "popping a box."

In geology, a particular sequence of rocks is called a "package."

MRI experts call the magnet in their machines a "donut."

Biologists call microorganisms "bugs."

In genomics, SNP is pronounced "snip."

Among web designers, URL is pronounced "earl."

At the synchrotron, call the radiation beamline just "the beam."

Archaeologists call mass graves "death pits."

A dissertation is called a "diss."

Science fiction authors refer to scenes that will only appeal to regular readers of a particular series or genre as "fan service."

People who study blue-green algae (known as cyanobacteria) call it "cyano."

Dobsonian telescopes are called "Dobs," as in, "My Dobs is twenty inches!"

When you mess around with P-values in a paper, it's called "P hacking."

This list could go on indefinitely. Please add to it in your own mind, and tally up how many terms of art you use every day, but practically never write down.

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Overleaf

The Magic of Gossip

Madeline Ashby

Introduction

Gossip has been around as long as human conversation. Usually, gossip is considered a destructive force. After all, gossip killed Socrates. Gossip killed Christ. Gossip killed the "witches" who were burned or drowned or mutilated during the seventeenth century. Gossip continues to kill, every day, in the form of harassment and cyberbullying that leads to suicide—especially among queer or trans youth, or young people who have been raped or otherwise abused. Rehtaeh Parsons and Leelah Alcorn are just two examples.

But the sword of gossip cuts both ways. Gossip is also a way of gathering and accreting hidden knowledge in communities. Gossip, after all, is how "everyone" "knew" about figures like Bill Cosby, Michael Jackson, Woody Allen, Jimmy Savile, and other figures long suspected of years of abuse and criminal behavior. Gossip is how parishioners discussed Catholic priests in Boston and other cities. Gossip is what supported documentaries like "Going Clear," which helped survivors of Scientology discuss their experiences within it (including their pain at having to leave their faith). Gossip, often derided because it associated with femininity and girlishness and childishness, is also a defense mechanism within communities that use hidden knowledge for protection.

Gossip, in short, is magic. Which means that the Internet is a ritual space.

Magic as Hidden Knowledge

Much like gossip, magic has also been seen as as a destructive and mostly feminine force throughout global history. In fact, the use of magic is one of the few "universal" taboos: from Biblical prohibitions against magic to contemporary "witch villages" in Ghana, magic is seen as both an unfair advantage and as a source of great power. Magical knowledge or esoterica is, like gossip, a sort of hidden privilege. It is a way of getting ahead, because it involves knowing the right information at the right time, and knowing how to deploy it. The connection between gossip and magic is so deep that in hoodoo, conjure, and rootwork practices throughout the African diaspora and specifically throughout North America, "Shut up!" and "Stop talking" spells are common. In Greek and other magic-oriented com-

munities which hold to the nazra or "Evil Eye," gossip can be seen as a form of envy which, even without any deliberate intent, can become a form of curse.

What differentiates magic from gossip is that magic is a systematic form of knowledge. Because magic involves ritual, and ritual is a way of performing information, it requires an organized grouping of knowledge. Gossip, by contrast, is free flowing. It can be organized, whether via blog category or via hashtag, but its nature is to flow organically between the people who are gossiping. Gossip, like magic, is both a verb and a noun.

Can the Magical Power of Gossip Help Us Fight Evil?

Yes. In fact, it already has. Gossip has helped the public learn about abuse and exploitation, as in the aforementioned situations, but it's also a way of interacting with politically powerful figures. Consider the fact that "spooks" and others in the cybersecurity community had gossiped about the nature of NSA and FBI sousveillance for years before Edward Snowden released the data he had gathered on his employers about their observation of the American people. Snowden's documents both confirmed much of the gossip that had surrounded the NSA, and also changed the existing conversation, leading to further change.

On a much smaller (but far more tawdry) scale, gossip was the first step in helping the people of Toronto learn of Mayor Rob Ford's drug use. Although news reports confirmed certain elements of the story, the gossip told the larger tale, and much (although not nearly all) of the gossip was accurate. It was a gossip site, Gawker.com, that ultimately confirmed what had been whispered in the city for many years: Rob Ford smoked crack regularly. Eventually, after video footage confirmed this gossip, Ford himself confessed to his drug use and sought treatment. Years later, the people of Toronto learned that, among other things, it was a complaint of domestic violence that interrupted a drug bust at the Ford family home. As often happens, what became international headlines first started as a simple rumour.

But there is more to do. Gossip is a powerful force, which means it requires the rigor of ritual. Communities— covens—of gossip already exist on the Internet, at sites like TMZ, *JustJared*, *Gossip Cop*, ONTD, or *Lainey Gossip*. These communities each have their own ritualistic behaviours: members login or check in at certain times of day (often times that are, coincidentally, considered to be magically charged, like dawn or midnight), and they speak shibboleths to each other in the form of memes and slang. Often this slang comes from queer communities, communities of colour, and other marginalized

communities. For example, the concept of "shade," a staple of online gossip and speculation, was first codified for a mainstream audience in Jennie Livingston's 1990 documentary "Paris is Burning," about New York's vogue ball scene. It (and its companion term, "reading,") had existed for years among queer, trans, and communities of colour, before they became part of the mainstream, pop culture lexicon.

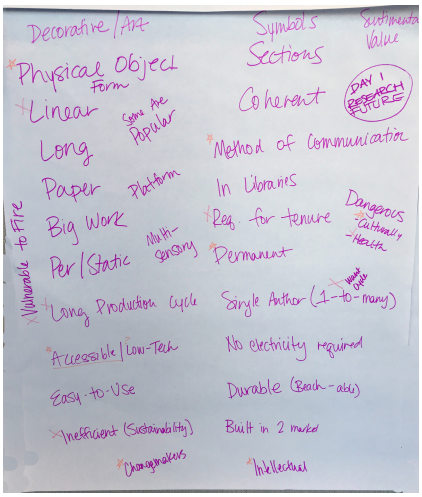
Protecting the Circle

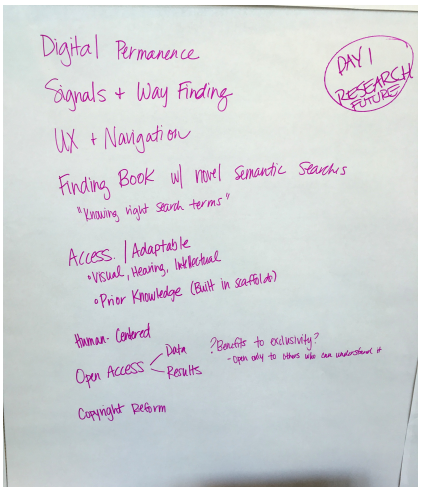
So rather than discounting gossip, there must be a way to guard and protect it, in the way that other rituals are guarded and protected. It's for this reason that services like SecureDrop exist. SecureDrop is a safe way of sharing information between sources and journalists: often it allows journalists to hear rumours and chase them down, to see if they can be confirmed. Gossip sites like TMZ protect their sources through strict anonymity and often payment. These payments are often supplemental to the low incomes earned by the service professionals who act as sources: waitstaff, gas station attendants, hotel staff, and others. Gossip, like so many other signals of change, happens first at the margins of society.

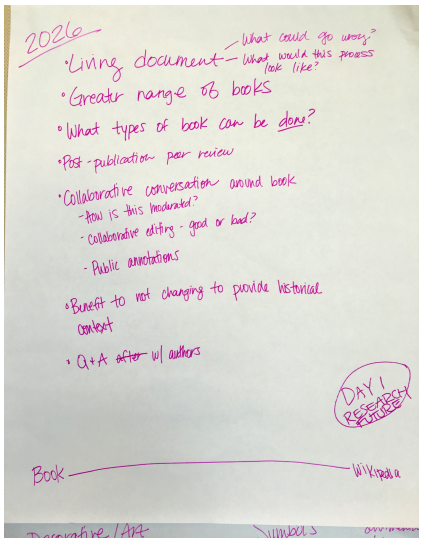
But in a broader sense, we must make safe spaces for whistleblowers, and we must listen, if not always to gossip, then at least to the communities from which gossip comes. Women and minorities frequently plead only to be listened to, to have their stories heard. Anita Sarkeesian, a survivor of persistent online harassment including death threats, rape threats, and bomb threats, in her address to an audience at the XOXO Festival, said simply: "One of the most radical things you can do is to actually believe women when they talk about their experiences."

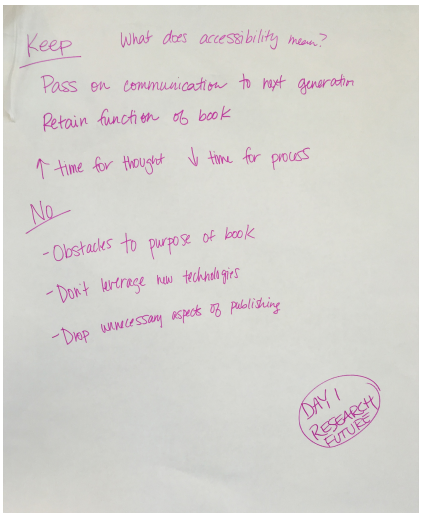
The Future of the Scholarly Book

What is the future of the (scholarly) book? What new forms might books take in this new information economy, to reach broader audiences, have greater impact, and touch their readers more deeply? How might new technological affordances enhance the experience of reading a scholarly book, rather than distract or detract from it?









(Untitled)

SpinFishDriftBig

books
alive
butterfly garden of thought forms
ready for release into the world

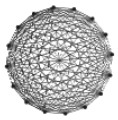
books
useful
a carpenter's lathe
for shaping minds and consciousness

books
dusty
patiently waiting to be discovered
an expectant child in the closet under the stairs

books
familiar
felt more than read
a dream barely remembered on waking

books
essential
your next breath, your last breath
soul of experience

books
temporary
words written in frost on a windowpane
lost in the warming sun



Burning Books

Chaz Lilly

In *Hacking the Academy*, Dave Parry says we need to "burn the books." To not look back at the boats that carried us to our current publishing landscape, but to embrace our new digital paradigm without nostalgia. He calls us to think beyond the book, beyond librocentricism. What would the scholarly argument look like as an iPhone app, he asks.

Despite Parry's call, we haven't started the fire yet. In the book *Post-Digital Print*, Alessandro Ludovico makes it clear that digital has not replaced print, but that they exist in tandem during our transitional state. He says we have experienced "profound mutation," however, which might be evidenced in emerging platforms and tools like SCALAR or PUBPUB. These are kindling for a scholarly bonfire.

I write this sitting at a table with six or seven others, each writing their own ideas on the future of the book. I am the only student here—my research involves experimental publishing. As such, I will soon be required to write a dissertation. To fulfill my university's requirement, I will set text to page and ship my finished product to the print shop where a physical object will emerge to prove my expertise. The book will go to a library shelf; perhaps, when I'm older, I'll go the stacks and open the dusty tome after years of stagnant loneliness.

Despite the requirement of my program to print a book, I am fortunate enough to be housed in a school that encourages experimentation, digital innovation, and disruption. Following Parry's lead to think beyond the book, and keeping in mind Ludovico's diagnosis of a hybrid state of existence, I have the freedom to build my dissertation as an iPhone app, or a website, to accompany to the static, physical object.

In the thirty minutes or so I have here "sprinting" ideas on my iPad, I can definitively say that the digital version of my eventual dissertation will promote openness—it will be available for free on the Web, will include multimodal representation with various media, and will exist in a networked ecology where hyperlinked references will take you directly to the source. The app—which in place of a monograph might be called a monograpp—will communicate visually, not only textually, and exhibit user friendliness so that even my fellow doctoral students in all their misery will enjoy navigating my scholarly argument.

My time is up . . . wish me luck as I rub sticks together in hopes of a flame.

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Stories From Our Mothers

Sylvia Hunter

The library is offline. The Seder is tonight, and the library is offline.

Rivkah sighs, blinks the display off, and stomps into the kitchen to complain to her grandmother.

"What?" Saftah asks. "You know, when I was your age—"

Rivkah rolls her eyes—behind Saftah's back, though, to be on the safe side. "When you were my age, everything was better. I know, Saftah."

"I was going to say," Saftah continues, still feeding fruit and nuts into the processor, "that when I was your age, the *Haggadah* was printed on paper. Bound into a nice book, so everyone had it by their plate."

Rivkah frowns. "But . . . didn't the paper get food and wine all over it? Isn't paper really fragile?"

"And I was also going to say," says Saftah (apparently she's in ignoring-whatever-doesn't-fit-into-her-story mode), "that when I was your age, the *Haggadah* was the same every year, unless you bought a different one, and people learned it by heart."

Rivkah turns this idea over in her mind. A book that stays the same, year after year after year? A book that doesn't change when millions of people are reading it at the same time, all over the planet, all thinking about the words and sharing their opinions?

"Are you messing with me, Saftah?" she asks, suspicious. Saftah is as old as the Ark—well, davke as old as the Ark; she was a tiny baby when the Galut Gadol ended with the community's arrival on their new world, 90 Earth years ago or so—and Rivkah can never tell when her stories are History and when they're Just Saftah Making Stuff Up.

This finally gets Saftah to shut off the processor and turn around. "No, sheyneleh. Not this time."

There's a soft *ping* from the dining room—the library is back online. Rivkah charges out of the kitchen (walking is boring; why walk when you can pretend to be an Earth Horse galloping across the Saskatchewan desert?) and flops down on her stomach under the table, pretending to be an Earth Snake, then rolls onto her back and crawls out through the forest of chair legs, stealthy like a polyped.

"Library!" she shouts at the ceiling. Sometimes when the library's gone offline, you have to talk loud to get its attention.

"Rivkah Artzoni," the librarian says, reassuringly calm. "What do you need today?"

"The *Haggadah shel priyah* ," says Rivkah. And then, after a moment (because Saftah can maybe hear her from the kitchen, and it's

also possible Mama or Ima might hear her from somewhere else in the house), "Please."

She folds her hands over her pupik and relaxes on the soft polyped-hair carpet as the book begins, scrolling across the ceiling directly above her head, filling her ears with the sounds of the words and her nostrils with the scents of recycled Ark-air, parchment and velvet and wool, apples, honey, wine, desperate fear.

"... even if we were all wise, all people of understanding, it would still be our duty to tell the story of the departure from Earth. And the more one tells of the departure from Earth, the more is she to be praised ..."

Does the User Experience of Scholarly Books Need Reconsideration?

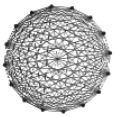
Todd A. Carpenter

While much associated with reading and books has been tried, tested, and experimented with over the centuries since the development of the codex, the transition to digital gives us an opportunity to rethink the user experience of reading. What authors and publishers have developed and advanced in a print form made sense based on the ruling technology of ink on dead trees. Some of this experience over centuries still applies, of course, but what are the essential elements of reading that make sense to retain in digital form? What makes sense to adapt, and what makes sense to completely rethink, revise, and relaunch? Considering what the reader wants and needs, what makes sense, and what the underlying technology can support or provide gives us the opportunity to reconsider the entire user experience. So what elements of the user experience are worth considering? Linearity, accessibility, content forms, search, and traditional design elements are all elements that need reconsideration.

People don't always read a book in a linear fashion, especially scholarly texts; yet the print book is designed around this concept, by necessity. The reading experience is governed by as much by its form as by its content. Take a typical conversation in a group setting. It meanders from topic to topic, it circles from point to point, often returning to previous points or thoughts. Can a digital book be more like a conversation, more engaged and engaging?

Traditional structures of print books developed to facilitate navigation in a print form but have only modest usage in modern contexts. Take a traditional index, for example. Does reference to keywords in the text make sense any longer when a search and find routine provides a similar result set on the fly for the user's specific interest? However, keyword matching lacks the conceptual grouping that a human indexer might provide (though machine processing might improve this). Page numbers have little meaning in a digital context. Annotations to specific points in a text present technological challenges in narrative texts.

As we build on the mutability of digital content, are there possibilities for tracking changes over time and capturing the development process of the texts? Can we see how texts evolve and ideas grow? While we may want to build on previous texts to incorporate new knowledge over time, can we also capture the fixity that is central to traditional books?



Society *for* Scholarly Publishing
Innovative People Advancing Scholarly Communication

The Book That Lasts

Annalee Newitz

On November 15, 2095, Elise turned 18 and became an academic. She planted her first book in the backyard, next to the tree where her childhood swing dangled from frayed rope that still remembered the shape of her 9-year-old hands in summer, clutching and sweating as she counted every leaf overhead. Thanks to her acute powers of observation, and the lucky proximity of this relatively undisturbed portion of forest ecosystem, Elise was an internationally renowned expert on the life cycle of the leaf cutter ant.

`https://www.youtube.com/watch?v=Xxnmh4IDYaU`

Her book, titled *Agricultural Tips and Tricks from the Attini Tribe of Ants*, was already sprouting tendrils and forging connections with the fungal network that constantly renewed itself beneath Wisconsin's humid urban hives and farmland. She sat absent-mindedly on the swing and rubbed her thumb and index finger together to connect to the network. The book already had its first reader, coming from the Wisconsin Ant Watchers Association. A comment bloomed in her vision: "Thanks! This looks great! Excellent observation about the role of digestive acids in leaf preparation." Elise shot back with a smiley emoji. The more readers she had, the more her book would spread, sprouting offshoots and variations and hybrids.

But she wasn't in it for the propagation. Even if her book lived only here, connected but unread for all time, she would be satisfied. It would endure for as long as this ecosystem did, findable and readable, until the anthropocene came to a close. There would always be a niche for what she learned from years of observing leaf cutter ants, as they carefully prepared each snippet of leaf with acidic excretions, readying them for the fungus farms that fed their larvae. That food was her network, and her network spread greater knowledge about their food.

As her readership slowly grew, she tuned out the pings and replies to focus on a trail of leaf cutter ants near her right foot, green triangles of cellulose held up like flags as they marched home to the colony. Their tribe of species had been farming for over 100 million years. One day, she was certain, humans would catch up.

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Overleaf

How Do You Print Books on Mars?

Madeline Ashby

Introduction

As space tourism and colonization becomes a possibility for certain segments of the global population, knowledge sharing and preservation, as well as institutional memory, become an issue for extra-terrestrial spaces. This problem takes many forms: NASA has to design modules and interfaces that can be used by multiple generations of astronauts, for example. But what about books? As humans leave their planet, they will doubtless want to take at least some of their books with them. And while most of these books will need to be digital during the initial migration, physical books will have different requirements on different planets.

So. How do we print books on Mars?

Why Print Books?

The advent of the printing press changed the world as we know it. With printed books, both revolution and democracy could flourish, sometimes at the same time. Mass-production printed books allowed for a sudden blossoming of intellectual development, education, social cohesion, religious journeying, scientific documentation, and, of course, pornography. All of these elements are now considered part of creating a whole person. Humans may have created books, but books make humans. (That's why it's called "the humanities.")

Innovations in print and digital technologies have done little to change this essential fact. For example, despite vast market gains in the past five years[13] e-book sales are slipping and sales of printed books are up. And while film, television, and Internet media threatened to displace the book, books are still fertile ground for both adaptations (entertainment) and for talk-show content (on programs like *The Daily Show* and elsewhere). Clearly, humans still enjoy books as physical objects, and have yet to replace them entirely.

The primary reason for this, I would argue, is that printed books have the lowest barrier to entry. There's a reason we read them to children: it's easy for children to read along with us, because the physical motions of reading a book are simple even to people who lack fine motor control. Similarly, the design affordances necessary to making books more inclusive to all types of ability are easier to engineer in physical books or other physical objects: larger fonts,

[13] http://www.nytimes.com/2015/09/23/business/media/the-plot-twist-e-book-sales-slip-and-print-is-far-from-dead.html

textured pages, audiobooks, and other simple changes can open worlds of ideas to others. This also allows people to trade books—and ideas—back and forth quite easily. The fundamental strength of the physical book is how democratic it is.

When (some) humans leave this planet, they will also need their books to share these qualities. First, because they will need books, and second, because they will need books that can last longer than any one file format or firmware upgrade.

How Do We Print Books on Mars?

As an environment, Mars is incredibly harsh. Even its soil is corrosive: its red soil comes from oxidized iron dust that has the power to devour metals slowly but surely. This process can happen a lot more quickly when a massive sandstorm or duststorm takes over the landscape—as they often do, on Mars. If we print books on Mars, we must make sure that they can survive quick burial in such toxic soil, and that future generations can unearth them. This is doubly true for publications that may include research done on Mars itself. After all, what good is it if crucial research on terraforming or water extraction is lost to a computer virus or a solar flare?

This is a problem that NASA and other space agencies have had to confront before. The Voyager Golden Record was designed to go beyond the known solar system, to be picked up by whoever happened to find it interesting. Alien life forms? Future humans? The possibilities were at once endless and profoundly limited. How do you design for a population you've never met, and may not even exist yet? Engineers had no idea when it would find a reader or listener, so they built it to last: simple, easy to use, and made of stable materials that still took etching. Designers often discuss the idea of "universal design," but the prospect of galactic design is an even more imposing challenge. Designing for the vast diversity of humanity is tough enough. Designing for alien life? That's the challenge of a millennium.

So, do our Martian books need to be made of gold? No. But the material science concerns that arise with the advent of Martian publishing are also concerns that arise surrounding challenges like climate change. Flooding, fires, sandstorms, and other environmental disasters have a detrimental impact on paper books, despite their general durability. So, if we design books that could be printed on Mars, we may end up preserving knowledge on Earth.

Possible Materials

- Gold

- Gorilla glass
- Moissanite
- Vat-grown leather
- Vat-grown vellum
- Biologically-produced inks
- Tiles printed from Martian dust
- Silicates derived from Martian soil

It's true that these books might not be what we think of as "books" at first. Then again, a medieval monk investigating a papyrus scroll wouldn't know what to do with Kindle reader, either—aside from reading the words in order. Information, simply gathered and preserved, is one of the primary artefacts of civilization and also one of the most important tasks of that civilization. How do we print books on Mars? We'd better figure it out, otherwise we'll forget more knowledge than we bring to the surface.

Gutenberg 2.0—Books as Conversations

Ido Roll

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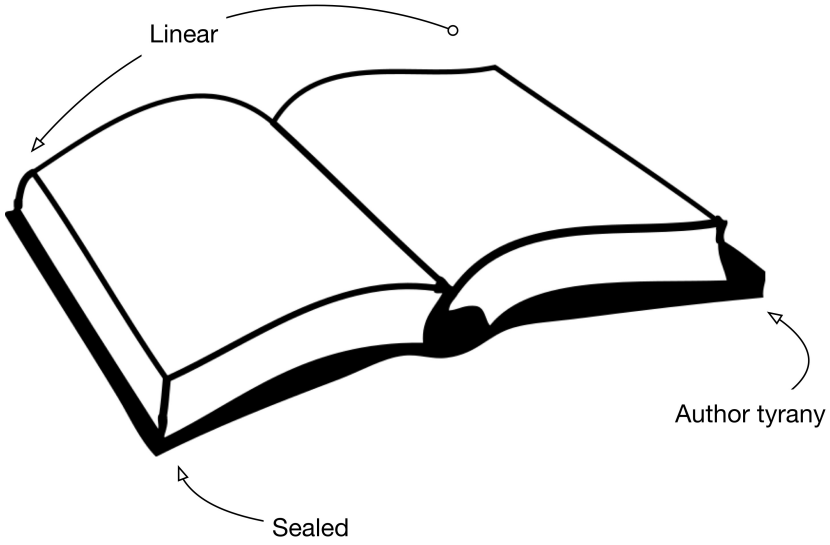
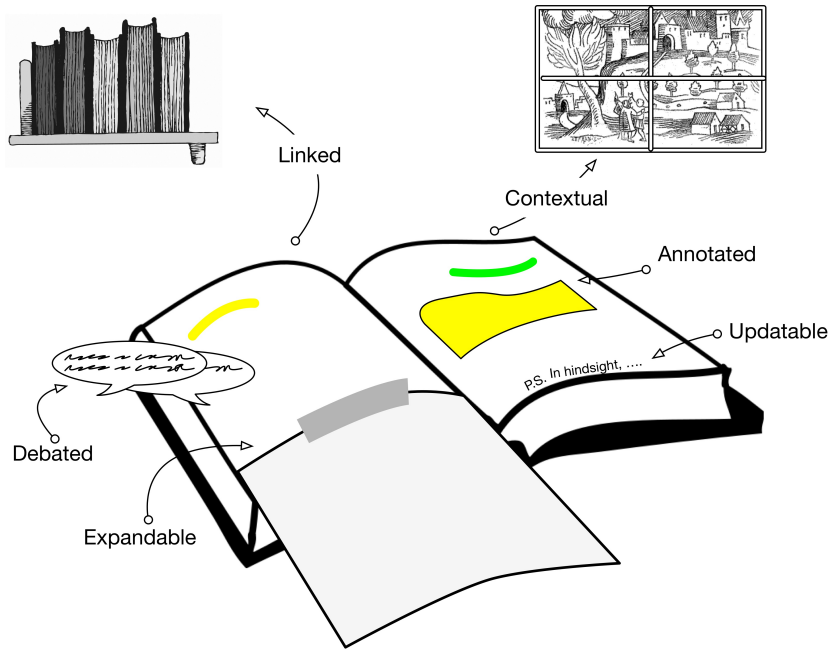
The future of the book in 36 seconds: `https://youtu.be/37q8FWcWjGI`



Before

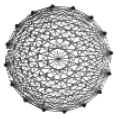


After

Overleaf

This video uses the following public images - thanks!

- `http://www.freestockphotos.biz/stockphoto/14337`
- `http://www.publicdomainpictures.net/view-image.php?image=162501&picture=`
- `https://commons.wikimedia.org/wiki/File:Casement_(PSF).jpg`



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GitHub and the Future of the Scholarly Book

Roopika Risam

Conversations about the future of scholarly publishing at "Sprint Beyond the Book" explored the nature of the book in 2016 and a wish list of features for the book a decade from now. The team that gathered for the sprint insisted on the need to retain the primary functions of books as intellectual, culturally dangerous, and accessible methods of communication with new audiences and generations to come. Rather than being conceived as single-authored monographs, the book of the 2026 would facilitate collaborative conversation. The book of the future would be a living document, preserving multiple drafts while facilitating space for post-publication peer review to proliferate through comments, marginalia, and other apparatus that are part of the book. Designed for the broadest range of human users, the book would be accessible and multimodal, providing a navigable user experience in an open access environment.

GitHub might be the future of the scholarly book. Indeed, this future may be in the process of being realized by editors Rebecca Frost Davis, Matthew K. Gold, Katherine D. Harris, and Jentery Sayers in the open-access edited collection *Keywords for Digital Pedagogy in the Humanities.*

When I was invited to write the "Intersectionality" chapter for the volume, I did not fully read the instructions, which indicated preferred submission for the book via a GitHub repository.[14] When I read those submission instructions, I already had a draft composed in textedit, my preferred application, and was surprised to read about GitHub. I wondered how GitHub could facilitate the production of a book, what kind of running-over-hot-coals digital humanities test this was, and how many of the other contributors were as unfamiliar with GitHub as I was. (When I first learned to use it, for a data science course, it took me five hours to figure out why my command line Git tools weren't working. Pro-tip: Make sure your Xcode is up-to-date.)

GitHubbing my essay took two days of brushing up on the markup language Markdown, creating a repository for my keyword (URL), "committing" the Markdown file and images to my "repo," "forking" the existing repository, committing my changes—the new files—and then submitting a "pull" request so the repo owners could consider and accept my changes. Though I first grumbled aloud at the dude-bro factor of GitHub, it slowly occurred to me that this was the perfect platform for the volume. Now possessing greater facility with GitHub (that essay turned out to be quite the learning opportunity), I see the tremendous promise for the platform.

[14] `https://github.com/curateteaching/digitalpedagogy`

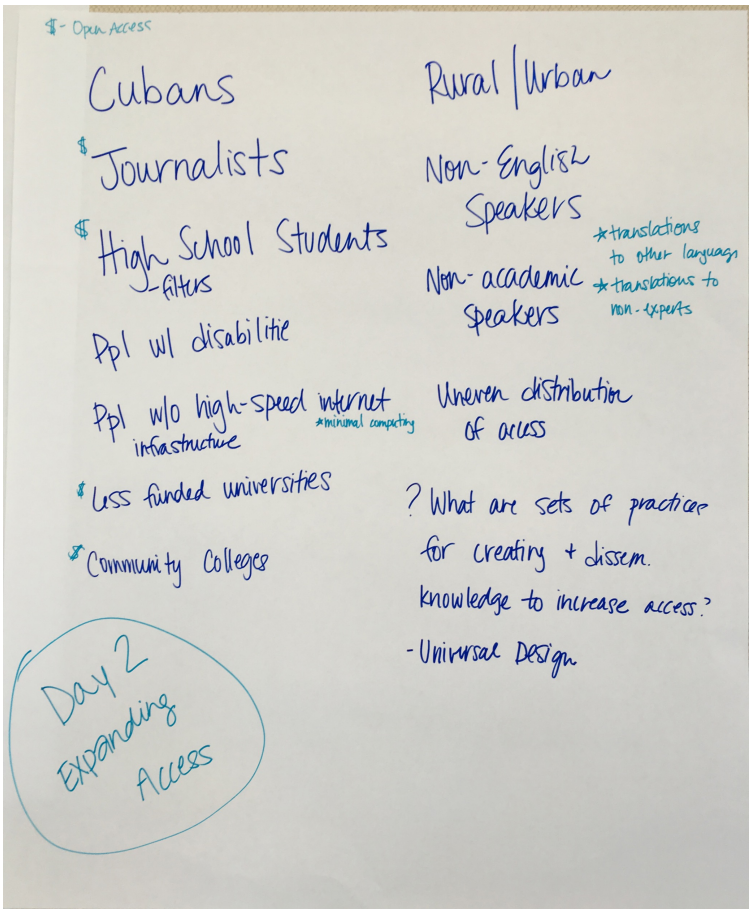
The GitHub environment meets the vision for the future of the book that we imagined:

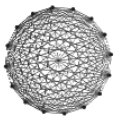
- Open Access
  Making a book available as a GitHub repository makes it open, accessible, and available for reading by anyone with the link.
- Living Document
  By providing version control, GitHub facilitates and preserves a record of changes to a book over time.
- User Engagement
  Users can fork a repository, make changes, and submit a pull request to suggest those changes for the book.
- Fair Credit
  All contributions are recorded, providing clear credit of labor.
- Ease of Navigation
  File structures maintain organizational schema while the Markdown markup language is lightweight and both easy to read and easy to write.
- Multimodal
  GitHub supports multimedia files, which can be incorporated with Markdown to create multimodal texts.

Perhaps the future of the book is here?

Expanding Access

How will we expand access? The project of building a truly global scholarly community is hampered by limited access to the Internet and to specialized archives, scholarly sources, and databases. How can scholarly publishers engage with and benefit from the research, writing, and expertise of scholars in the developing world?





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Expanding Access

Yael Fitzpatrick

When trying to solve a visual design problem, I often go through an exercise of verbally defining what I "know" to be true and then questioning if those truths are actually true, or if they can be modified. I find it's a great way of shaking things up in my own mind, or in the minds of others, and sparking new ideas and creativity. I am often surprised to learn how much I am assuming to be fixed. The "truths" might be as dry as "it's 8.5 × 11" or "starts on a right-hand page" and can ramp up to abstraction, absurdity, pure conceptual thought. When thinking about solving the problem of expanding access, perhaps a similar approach would help. So, what do we "know" to be "true" in this case?

We should expand access.

People who don't have access actually want it.

Money solves problems.

Everything ties back to the Internet.

English is king.

Yes, perhaps for the question of expanding access, I'm being a bit too much of a rabble-rouser, and perhaps these "truths" are actually, unquestionably, TRUTHS. But hey, it's a mental exercise, no? ...

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Overleaf

Minimal Computing: An Infographic

Roopika Risam

Teenage Information Dystopia

Annalee Newitz

I came to the Society for Scholarly Publishing conference directly from a science fiction convention called Wiscon,[15] which is attended mostly by authors and readers who are interested in feminism, anti-racism, and other social justice issues. One of the guests of honor was Justine Larbalestier,[16], who writes novels for young adults. In her guest of honor speech, Larbalestier talked about how science fiction as a genre is often denigrated as not particularly literary or intellectual—and this problem is compounded when the genre is aimed at teenagers. "Why do we hate teenagers so much?" she asked. Why do adults treat teenage culture as unworthy or—in some cases—forbidden?

There are a number of reasons why adults hate and ignore teenagers, and they vary culturally. But in the United States, there's a nearly universal way adults express those feelings: They limit high school students' access to information. There are some obvious examples of this, such as preventing students from bringing mobile devices to school, or forbidding them from pulling mobile devices out during classroom hours. It's also typical for schools to filter internet access for students, generally using third party software that blocks sites with "objectionable" content.[17]. Often, these filters are created by parent groups that lump topics such as gay marriage or breast cancer in with pornography, so the result is that students have arbitrary limits on what they are allowed to discover on the Internet at school.

Needless to say, access to scientific and scholarly work in high schools is going to be limited first by filters, then by however much money the school has allocated for access to databases like JStor or the Elsevier family of publications. Some students may be able to access more information at home, but others may not have high-speed access, and may not own devices that will display information in a readable way.

Moving away from digital access, there are many other kinds of knowing that are forbidden in U.S. high schools. Imagine a burgeoning anthropologist or ethnic studies scholar trying to understand the cultural diversity at her school when so many kinds of cultural display are forbidden. More and more schools prevent students from wearing hip-hop fashions, concert t-shirts, or other items that might signal their association with an ethnic, social, or religious group. School uniforms are supposed to prevent conflict, but they also prevent teenagers from knowing and expressing key parts of their identities at a time in their lives when experimenting with selfhood is a

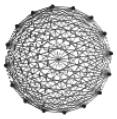
[15] http://wiscon.net/

[16] http://justinelarbalestier.com/

[17] http://www.theatlantic.com/education/archive/2016/04/internet-filtering-hurts-kids/479907/

major preoccupation.

We may never know exactly why adults hate teenagers, but we can see the institutional results of *how* we hate them. Lack of access to information is foreclosing the possibility that teens in the U.S. will grow up with a sense that diversity is the norm, both in the realm of digital knowledge and their immediate cultural landscape. Teaching the young that access to diversity is forbidden, and that playing with their own identities is loathsome, is not an education at all. It's no wonder that one of the most popular genres for young adults is dystopian science fiction. They already live in a darker version of our own world.



What is a Book?

Madeline Ashby

Books and How to Use Them

Is the operative verb for "book" really "to read," any longer? In the past 10 years, the nature of books has changed from a fairly standard physical object with only minor differences—a bound set of printed leaves with an enclosed spine—to a variety of file formats related to proprietary rights-holders. Kobo, Kindle, Nook, and others have all tried to update the book as we know it. As such, the user experience design of the book has had to change as well. Books have become things that we use, not simply things that we read. It's only natural to start wondering about who gets to use them.

Designing Books Inclusively

Much of the discussion around the inclusivity of books revolves around the content of the books themselves: settings, languages, characters, and plots all contribute to the reader's sense of whether the book is "for her" or whether she can be "found" or "included" within the narrative. But at the level of design, books can exclude whole populations: the blind, the immobile, those who have experienced a stroke or a catastrophic injury. As Richard Orme says at Elsevier, "the majority of books and journals are not readily available in a form someone with sight loss can read easily. Charities like RNIB simply cannot keep up with the number of books and journals produced each year. People with sight loss have to wait for months for a book to become available, if ever. This situation also impacts other people with "print disability," who are unable to use standard print editions. For example, this might be the inability to hold a book and turn the pages, due to physical disability."[18] And yet stories, and information, remain important for people of all genders, all races, all sexualities, all levels of all abilities. So, how do we design books that can be read—experienced, lived, enjoyed, despised, considered—by all people?

Cambridge University's Inclusive Design Group has worked and written extensively on this issue. Their Inclusive Design Cards and Inclusive Design Toolkit are intended to help programmers, designers, and other stakeholders create new technologies and new experiences that are open to a wider variety of humans, and account for wider varieties of human ability. As they say: "Every design decision

[18] https://www.elsevier.com/connect/technology-brings-new-era-for-readers-with-disabilities

has the potential to include or exclude customers. Inclusive design emphasizes the contribution that understanding user diversity makes to informing these decisions, and thus to including as many people as possible. User diversity covers variation in capabilities, needs, and aspirations."[19]

[19] https://www-edc.eng.cam.ac.uk/research/inclusivedesign/

Currently, e-books have helped many people with physical and learning disabilities to enjoy books. Whether it's a change in font size, better lighting, less glare, or the ability to remember how much of a text one has read, or which passages have already been highlighted and cited, e-books have raised the bar for certain readers. But in reality, e-books can require expensive technologies that are not available to all consumers, especially consumers who are living on limited incomes.

Beyond e-Books

Beyond the book, what is there?

Democratizing Research 101: No Taxation Without Representation

Ido Roll

Research is behind a thousand closed doors. Academics control funding, carrying out the work, analyzing and interpreting, describing, and evaluating. The bad news is that much of these processes should involve the public. The good news is that this is fixable. Here, I summarize and point to several means in which the public can take more control and show more involvement in research and dissemination, without diminishing the role of expertise.

Democratizing funding with crowdsourcing

The funding sources for research are often public. This means that the taxpayer is putting the money behind the work. However, the taxpayer has no control over what research is being funded. One approach to overcome this limitation is crowdsourcing. Sites such as `https://www.indiegogo.com` and `https://www.kickstarter.com/` offer great examples to how the crowd can be wise, especially when its own money is on the stake. Can we operate a research fund in a similar way? I do not suggest to convert all research to popular vote. *Big Brother* and *Survivor* show just how wrong this can go. Instead, *some* funds can be allocated to crowdsourcing. The site `www.kiva.org` offers one successful model of crowdsourcing social endeavors. Also, it is possible to let the crowd identify important questions but not judge research proposals. For example, choose to put astronauts on Mars but not the type of fuel that will carry them there.

Democratizing research with citizen science

Citizen Science is a great idea that involves people in the collection and interpretation of data. People are curious, wise, and carry fantastic scientific equipment with them (often referred to as "mobile phones"). Citizen Science takes advantage of that by coordinating large-scale efforts to collect data by everyday people. nQuire is one fantastic example of a platform that looks beyond the single project to coordinate Citizen Science investigations.[20]

[20] `http://www.nquire-it.org/#/home`

Democratizing publications with open reviews

Which work should be made public? Currently, for each paper, three colleauges offer peer reviews that determine that. The downsides

of this are many. Reviewers may lack relevant knowledge, be misinformed, be motivated by their own agendas, or simply be too busy to complete in-depth reviews. Frontiers offers a grassroots approach to academic publication.[21]. In Frontier journals, researchers determine together which work deserves publication. Then, these papers undergo an open, fair, and collaborative reviewing process.

[21] http://home.frontiersin.org/

Democratizing access with open access

There are many barriers to access to scientific information. One obvious obstacle is that academic papers are copyrighted and are not cheap. A simple solution for this is open access. The public paid to carry out the work—why should it pay again to see its results? In fact, Canada and other countries demand that every publicly funded research project makes its results freely available. To quote the policy, "(g)rant recipients are required to ensure that any peer-reviewed journal publications arising from Agency-supported research are freely accessible within 12 months of publication."[22]

[22] http://www.science.gc.ca/default.asp?lang=En&n=F6765465-1

Democratizing knowledge with translational research

Even once research sees the day of light, it requires expertise to be understood. Finding relevant papers is hard; understanding their language is yet harder. Translational research is the idea that experts sit together and write, using lay language, overviews of the state of the art on certain topics. Great examples include the practice guides of the Institute of Education Sciences.[23] In another example, for a recent conference on Learning at Scale,[24] we invited authors to create open mini-courses of their materials.[25]

[23] http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

[24] http://learningatscale.acm.org/las2016/

[25] https://edge.edx.org/courses/course-v1:LAS+FLIPPED_CON+2016/info

Democratizing the conversation with linked online resources

We, together, chose the science, carried it out, evaluated and published it, and read about it. Next, let's talk, exchange views, and expand our knowledge. The web already offers a wealth of tools for that, such as discussion forums and wikis. Can we associate these with specific scholarly works? Absolutely. Again, in the recent Learning at Scale conference, we encouraged participants (and the public) to comment and discuss the paper.[26]

[26] (https://edge.edx.org/courses/course-v1:LAS+FLIPPED_CON+2016/info)

Summary

Currently, there is taxation, but not representation. It is time for the public to take back control over science. Not only this is the correct thing to do, but academics and science will also benefit a great deal.

Science will grow at a faster rate with higher levels of investment from the public. Scientific literacy will improve, and together, understanding of the greater challenges that we face, such as climate change. It may seem that knowledge is in the ivory tower, but in fact, it is in the Bastille. Time to bring down the walls.