

Amanda Martin-Hardin (AMH) 1:29

Welcome to Overdue Conversations, a podcast about the ways archives inform our discussions around history, literature, and politics. From digital publishing to reparative justice, climate change to public health, this series of overdue conversations takes archival documents out of the stacks and into the public forum to consider how collecting practices, selective reading, and erasure of past knowledge informs and distorts contemporary debates.

I'm Amanda Martin-Hardin, a history doctoral student at Columbia, and a producer for this podcast.

In this episode, Columbia literature curator Lina Moe sits down with historian and curator of NYU's AI Now Institute, Joy Lisi Rankin. Lina and Joy discuss urgent questions about the social history of computing; the ethical dilemmas posed by the power of tech industry giants today; and how race, class, and gender factor into online culture.

Lina and Joy also speculate on the paths not taken in computing. Instead of understanding computers as commodities for purchase, computers could have been considered necessary public goods, similar to utilities.

Joy provides fascinating archival stories that shift the paradigms of computer history, like how instant messaging was created as an educational tool decades before AOL popularized it--or how a Minnesota librarian wrote the early software for what became Apple's music library, but was never paid for it.

Let's listen in!

LM 3:20

Joy Lisi Rankin, welcome to the podcast. Your book, *The People's History of Computing*, with its echo of the famous volume by Howard Zinn, is trying to tell a more democratic story and is pushing against a hagiographic version of the Silicon Valley story. And in preparation for this podcast, I was looking at Walter Isaacson's biography of Steve Jobs. And some of the quotations that he draws out from his interviews with him. And there's one that struck me as being very anti People's History of computing that I wanted to run by you. So Jobs says, "Some people say give the customers what they want. But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, If I'd asked customers what they wanted, they would have told me a faster horse. People don't know what they want until you

show it to them.” So there are probably lots of parts of this quotation that you might want to push back against. But I guess I want to start off with what do you think is basically wrong with this perspective?

JLR 4:27

All right. So thank you for having me on the podcast, I'm really excited to talk to you. And I love that you started with this quote, I could probably speak for an hour about what I think is wrong with it. But part of the problem with how we think about the history of tech in the United States, certainly, and the centrism of Apple to that story, or now Google and Facebook and Twitter, and the list goes on. And especially what Steve Jobs is saying in this quotation is he is talking about consumers. So I would say that part of what Steve Jobs was really good at is selling people on the idea that they needed to buy computers, when, for the previous two decades—so we'll say most of the 60s and the 70s—many Americans had access to computing as an act or a resource without having to purchase anything. So there were computers—as I talked about in my book, there were many students at public schools, and universities, who could use computing as a resource that was funded by—whether it was the federal government or their local school districts—and they didn't have to pay for hardware like an Apple computer or software. And I think part of what I talk about in the Silicon Valley mythology is that during the late 70s and early 80s, Steve Jobs and others, erased that history that so many Americans had previously had access to computing. And instead, part of it was to say, to create a false market to sort of sell computers to people. And for a lot of the 80s people who bought computers were pretty limited in what they could do with them. Most of them weren't networked and they sort of were in venting uses for them. So I would say that Steve Jobs was an expert, charismatic salesman, to the point that he sold people on forgetting that computing was at one time viewed as a public resource, and could have been moreso.

LM 6:50

You do a wonderful job pointing out a somewhat bizarre fact, which is that in these little communities of early computing, there was a staggering degree of computer literacy. Something that I think would be shocking to most of us today who are used to say, going to the Genius Bar and just saying, “What's, what's wrong with my computer?” And I think that this degree of active computing, you really directly connect to the time sharing system. So could you just talk a little bit about the central distinction between what is time sharing as a way of computing versus personal computers?

JLR 7:29

So time sharing as a form of computing originated in the early 1960s. And it was a form

of computing where you could have multiple terminals, and the terminals were often teletype writers, which were like typewriters that had built in printers, so you could type on them and see what you were typing on the printer. And then that was how the computer communicated back to the user; it was by commanding the printer to print out results on that teletypewriter. But time sharing meant that you could have multiple teletype writers or other terminals, all connected to a single mainframe computer, and they were connected by telephone lines. And what that meant is that you could have terminals, in different states in different cities, all connected to one mainframe computer. And that also meant they were essentially a network and that all of those terminals were connected to each other through the mainframe timesharing referred to the fact not that one user got five minutes or 10 minutes or 15 minutes, but rather, that the computer was sharing its own time. Time sharing was basically a way of programming the computer to almost interrupt itself when it was executing a program to see if there were other requests coming in, and dividing the processing time so that you could actually have 10, or 20 or 100 users all on their teletype terminals all writing and executing programs at the same time. And what it meant in terms of literacy—and here specifically, I'm thinking about Dartmouth College—is Dartmouth as an institution wanted its students to learn how to compute. They thought it would be necessary for citizenship in the coming decades. And so in implementing time sharing, they also wanted to make sure students could program, and so [they] created a programming language, BASIC, that was very easy to learn, very easy to teach. And [they] implemented that in tandem with timeshare, a time sharing system at the university. BASIC was wildly successful. So it meant that not just students at the college as well as professors and staff, but also elementary school students and middle school and high school students around New England. And students at other colleges and universities also had access, or connected to this Dartmouth network. And their students also learned how to write programs in BASIC and then communicate with each other through the time sharing network, which really created a community and a wide network of early computing users. And then BASIC spread from its New England roots across the United States as well.

LM 10:27

So one of the visuals of this is that people come together in public spaces and use these teletypes. And certainly, that's a far cry from using personal laptops, each individually, perhaps in our own dorm rooms as students. So is the distinction you're trying to draw based on the hardware? Or do you think eventually timesharing would have allowed say everybody to have a teletype in their own space and use the mainframe in a similar way? Or would computing have remained something that happened, you know, in the Student Union or in shared spaces?

JLR 11:04

Historians are always reluctant to sort of project into the future. I do think eventually, if say, in the 60s, there was a vision of computing in this forum, as like a utility like electricity or water. So like, the idea that you would sort of put computing power to every school and every university and every home in the same way that you would electricity. And I think you could still have ended up with a terminal in every home, although they would have been networked from the start. So the distinction I want to make is that with time sharing, and in some ways, because each school maybe did only have a few terminals, for hundreds of students, there was a sort of enforced sociability. And that often students were gathering around the teletype to be able to run programs, or if there were multiple teletypes, they were gathering together to sort of think together and work together and share what was happening. But also the sociability of knowing that they were on a network—I think it's hard for us in some ways now that we're hyper-connected in many ways, to sort of think about what it would mean, if you were in school in rural Maine, in the 1960s. And all of a sudden, you could actually communicate without picking up a phone—which would have been prohibitively expensive due to long distance rates at the time—but you could communicate by typing on this machine and connecting to a student in Connecticut or Massachusetts. And they did. So I think it was also, there was a sense of possibility and connection that got foreclosed with the sale of personal computers, because like I said, most personal computers weren't networked. They weren't collaborative. And so, also the possibility of something that would be publicly funded and nationally supported or even regionally executed, was really in some ways closed off as more and more PCs were sold.

LM 13:11

You brought up a couple of points that I want to come back to: one being computing as utilities, and, and the other being the sort of gender dimension of your analysis. But before we get to that, I want to ask, do you think that cloud computing today is a new form of time sharing?

JLR 13:31

So I think it's a question that we often ask because hindsight seems so clear. So in the sense that I think when time sharing was developed, it was intended as a way to distribute a scarce resource. So at the time, and in the early 60s, mainframe computers were prohibitively expensive. And that meant that only large corporations or institutions could afford to buy or lease them. So the idea of time sharing was really a way of saying, "How can we enable more people to access and use this scarce resource, rather than batch processing?" Which was the dominant form of computing at the time, which was where you basically had to write your program, and transfer it to punch cards

and hand the punch cards over to someone to run and wait for that to be batched. And that meant, if you wanted to write a program, it could take days or even weeks to actually go from start to finish in successfully programming a computer program. Whereas, time sharing enabled someone to sit at a terminal and write and debug and complete a program in minutes or hours, it was more direct access to the computational time. So for me, time sharing was really about equalizing access to a scarce resource. Whereas cloud computing seems to be more about sort of storage and like, you can get to your files from anywhere. And the distributed aspect is certainly there. But I think that the intentions of both were very different. And while they may sort of end up looking like they came out the same way or had similarities, I don't think they started out from the same place, if that makes sense.

LM 15:28

It does. And I think you have an interesting metaphor, at one point where you described the Dartmouth versus the MIT early computing programs as a closed stack versus open stack library.

JLR  
Yes.

LM

And as somebody from the library's background, I was fascinated by the kind of implications of that comparison.

JLR 15:48

Yes, yeah. And that's exactly it. Dartmouth, when John Kemeny and Tom Kurtz, who are the math professors who really sort of spearhead this push for computing at the college. I think it's Tom Kurtz, who draws the analogy and says, computing for our students should be like open stack library access and a privilege where if you're a student at the college, you get access to the library, but also you can go in and pull the book soft stacks yourselves as opposed to MIT was very much this batch processing system, or only a few people could actually access the mainframe directly, often. In the sciences, or engineering fields, which is like a closed stack, where you don't get the book yourself, you can't browse the shelves, you have to hand over a slip to someone just like you would hand over your punch cards. And say, this is the one book I want. And similarly, like, this is the one program I want to run. Whereas in the same way, I think for those of us who like to go to libraries and browse the shelves and see what is on the shelf next to the book you think you're looking for, it opens up new possibilities, and new avenues of creativity. That really is what happened at Dartmouth. And all the places were BASIC

to code because students often and they reported this to themselves, they would start writing one program, and somebody would see what they were doing. Or they would sort of be tinkering with it. And they would end up somewhere that they didn't intend, but was maybe even more wonderful or more exciting or interesting.

LM

Well, you describe a lot of really interesting and compelling things about the Dartmouth community. But you also, I think, want to emphasize the gender dimension of it. And I, I want to get into that via I guess the Dartmouth example where you have some amazing archival photos of students in there wearing their leather jackets, sitting at the teletypes and reporting that they're wooing their girlfriends, who maybe are at Smith, you know, from afar. And the Dartmouth culture seems to be based both on this hardware sharing the teletype and the mainframe, but also the norms that grew up around it so that all the students in the math class learn BASIC and they contribute programs to this computer library, the shared open computer library. So the picture of the student body has, you know, a large degree of cohesion. And I think part of your argument is that both facilitates the growth of computing, but also it means that there's this link between computing and masculine culture early on.

JLR

I am happy to have the opportunity to talk about this now, especially that my book has been out for a bit, because I think, I want to say, I think some people think that I'm arguing that Dartmouth students set out to make computing masculine. And I should say, sort of as a point of clarification, that the Dartmouth time sharing system started operating in 1964. And at the time, Dartmouth was all male, it was not yet co-educational, and it was predominantly, almost uniformly white—so a very affluent, a very homogenous student body. And what I want to emphasize is not that I think the sort of students were like, oh, let's make computing masculine, but rather just by virtue of the fact that the students were a group of college age affluent white males, what they created in their computing culture, really reflected in some ways amplified the norms of their social world. And so what do I mean by that? A lot of students that I talked to, or exchanged emails with reported that they use the computer to sort of woo their girlfriends or impress dates. And what they always fail to mention, but I—with my sort of historians head on—was observing, is that often they were dating women from Smith or Holyoke, or one of the all women's colleges in New England at the time. And all of those women also had access to computing, often through the Dartmouth network, or through their own institutions. And many of them were also equally adept at programming and mathematics.

But we're sort of doing what was a very typical 1960s sort of heteronormative gender performance of saying, like, "Oh, I'm a male. I'm going to show you my new thing that I can do." And it's computing, even if the women knew just as much. Similarly, like, Dartmouth was Ivy League football, and during the 60s, Dartmouth was winning the Ivy League Championship. And so they created many versions of football to play on the network. And the press, or Kemeny, who was one of the math professors who sort of pushed for the network became president, and was really proud of this, and often demonstrated Dartmouth football on the computer to other visitors. And, you know, one more good example of this is at the time Dartmouth had a mascot. That was what they then called the Indian Head, the caricature of an Indigenous American with feathered headdress and carrying an axe, or something like this. And they were very proud of their Dartmouth Indian mascot. And when they named the sort of proto-compiler, if I'm remembering correctly, they gave it an acronym that spelled "SCALP" in this sort of reinforcement of this racist caricature, which at the time was the norm. And I don't say that to justify it. But to say, these are the ways that sort of the culture in which they lived in breathe became part of the computing culture.

And it would have been one thing if it was just a network that was at Dartmouth. But as I said, this was a network that spread across New England, and BASIC spread across the United States. And then all of these ways big and small, that computing was masculine at the college, as it spread into the world, I would argue, carried that influence. And there are many other aspects to this as well. The final thing I'll say is, even though Dartmouth had an all male student body, there were many women who worked at the college computer center who were either graduate students, because women could be graduate students, or just women who had earned degrees in what we would now call STEM fields elsewhere, and we're working in the computation center. And were by and large, sort of overlooked and erased in their labor. Like when Kemeny as President gives this speech about how great computing at Dartmouth is, he talks about housewives programming chores and nutritious meals on their home terminals, and completely overlooks saying, like, oh, half of our staff at the computation center is women who are also doing amazing work. So it's in those ways that there's sort of both the ratio of the women doing this work, as well as like, creating this very macho sort of athletic heteronormative culture around computing.

LM

I was also not surprised, unfortunately. But I'm interested by the evidence that you found especially in the Illinois and Minnesota cases, about moderators, and about how à la an argument that somebody like Wendy Chun might make, we carry our bodies with us into these virtual worlds. And so the women moderators were treated very differently than

the men were, assuming that these genders represented the person in the real world. But it reminded me of how something like Reddit functions today, in which the relationship between users and moderators, and the authority that moderators hold, is very baffling. And it seems to bleed across the virtual and real worlds. So in a lot of ways, your book describes the versions of hazards that we continue to experience today. And so it seems like the network computing doesn't necessarily avoid some of these other major social pitfalls and violences. Would you say that that's accurate, that some of the same sorts of maladies that befall us today would have befallen us, even if we had gone a different route?

JLR

Yes, I think that's 100% accurate. I think, often, if you ask me if my book is optimistic or pessimistic, where I would land at the end of the day, I mean.. I think it's both. I think there's sort of some aspects of it that say, "Oh, we had agency as users in a way that's not recognized today, and maybe want to rethink our relationship with technology in that sense." But there are other aspects, such as this very masculine computing culture, and also the ways that women and other historically excluded people found that they were being treated sort of reflected societal patterns. And I think that's true, probably with any technology, right? Technology is not something apart from the societies in which it's created and operated, but merely in some ways is a mirror, in some ways, an amplifier. So the misogyny, writ large and American culture in the 70s, as well as the 2010s, is enacted on these networks, as well as the racism. And this is something I didn't write about explicitly in my book. I sort of think of this as reflecting on book, part two, what I write now, or sort of now that I've thought about it more, and I think a book is always a snapshot of a moment in time. But what I've thought about since its publication is the ways in which all of this computing is white and not made explicit as such. So the ways that Dartmouth as a historically white university is resourced to be able to create this network computing system. And the ways that the University of Illinois has a military-funded lab that is also historically white and enables the creation of the PLATO network is sort of an element of analysis that I would like to do more of myself. But I think there's more room for that more broadly in the history of technology. And we're starting to see more of that, but to say, calling attention to the ways in which not just who has access to technology, but the spaces and how they have been resourced historically and what that means for who gets access and who is included and who is excluded.

LM

Let me ask you a slightly different question, which is about regulation. Part of what I was interested and uncertain about in reading your book is whether the path not taken



involved more or less regulation. So on the one hand, these languages and programs are freely shared and open source. But on the other hand, there's a parallel discussion about regulating computing, like a public utility, which I assume would have involved some either state or even federal level legislation. So how do you think about those two different dimensions of regulation?

JLR

Two different dimensions and two different scales. Like, I mean, I think this gets at the question of, if we imagine that computing would have become a utility in the 60s or 70s, the regulation would have been around things like providers and costs of phone lines, and maybe maybe some anti-monopoly types of regulations, but not regulations. Because historically, the US is not very good at doing the kinds of regulations that would protect women, or Black people, or Indigenous people, or anyone who had not been the dominant cultural group in participation. It's sort of how it's constructed, say, one's freedom to express hate is sort of a choice over another person's freedom from the pain or trauma or violence that comes from being the object of or affected by that speech. So I think there's a longer history here, and even how we think about rights and liberties and protections and what can be regulated... Critical race theory thinks about whiteness as property. And I think this also gets us into the question of regulation, because enshrined in that idea of whiteness as property is also the idea of the dominant group [that] gets to sort of say, and do what they want, without this recognition that others may be harmed. And that the freedom from harm could equally be another right that would be enshrined. So even if we had had sort of computing as a networked utility, it might have afforded opportunities in one sense, but certainly not necessarily prevented harms that we experienced today. For that to have happened, it would have been maybe, if we picture some intersection of the Civil Rights Movement writ large with computing at the same time.

LM

Yeah, your emphasis there really helps me understand, I think, another question that I had, which is the idea of free computing. And if you think of 90s people like Lawrence Lessig, or Aaron Schwartz, they also talked about free computing and democracy. But their message seems to be slightly different about the democratic potential of computing, than I think the one that you are unearthing and the one that you articulated there, which has a lot more, as you say, to do with the civil rights dimension or the protection of historically discriminated groups, rather than thinking about information itself being freer.

JLR

Yes, yeah. And I think a lot of the rhetoric around open source or information being free is often, in some ways, it's like a false construction against the consumerization of computing. So the fact that as Apple and Microsoft and then Google and so on, sort of gain market share, it meant that it was sort of harder to do like the BASIC swapping of computing. And I'm trying to consolidate a lot of history and complexity here. But it's like a very particular strand of ideas of what freedom is and what rights are that again often sort of go without saying they're embedded in white American, masculine capitalist sort of framework, as opposed to thinking about other ways of understanding rights and communication and speech and access.

LM

Your book detaches computing from consumerism, but it also has lots of moments when it provokes a sense of what that thing was invented when. Or, how early these devices and innovations are from. And in some ways, it made me think of somebody like Mariana Mazzucato's *The Entrepreneurial State* in which a lot of later commercialized inventions are actually funded by research and development and were free and more available early on. And one of the ones I was really struck by was the talk feature of the networked PLATO computers, in which it was sort of like a community customer service. So if you were a student writing a program in Chicago, and you needed help debugging, and you could get in touch with an instructor in Illinois, well, maybe you could describe how it works.

JLR

Yes, I mean, though, you did a great job. I mean, it's basically—I always like my very shorthand for it it was like—they had sort of instant messaging and screen sharing, you know, on a video based or graphical display in the early 70s. And so they had extensive dialogues with each other on this PLATO network. And there were, I think, in 1975, there were 1000 terminals around the United States. And so there were literally 10s of 1000s of users. But they also had notes files, where they could just like—it would be like a Reddit thread today, sort of a post on all sorts of topics and continue to just post, and those files lived on the network, for whomever to access. And I should say, some groups were sort of, you know, not for the entire network. But were topic specific or working group specific, but really a rich, vibrant culture that we would very much recognize today, for better and worse. I mean, and that's exactly it, like women complained about harassment and receiving unwanted sexual attention. And people shared pornographic images of women and, you know, complained about central censorship at the same time, so.

LM

And it also connected high school students, to college students and college programs and instructors in a way that I can't think of too many parallels. So in the resources that are available to today's public, high school students and those that are available, say to the Dartmouth undergraduates, there is such a chasm. But this networked instruction brings together these different age groups in a way that is hard not to be nostalgic about.

JLR

Yeah, and some of it even just sort of over the course of time that my book covers. It's fascinating to see what happens. So I interviewed a woman, Linda Bori Hausmann, who was a teacher in Minnesota, and she worked first on the TIES cooperative computing network, which was in the Minneapolis, St. Paul school district area. And then she worked for the Minnesota Educational Computing Consortium, which was really the statewide network to provide computing access as a public utility to all students in Minnesota. And she developed sort of on her own and—I think in the late 60s—she sort of wrote a version of a program that would create music on the time sharing network, and continued refining it and shared it with students. And it became part of the Minnesota Educational Computing Consortium (went by MEC), their software library. And by some point in the early 80s. It became what was Apple's music software, because Apple and Mac had a deal around software sharing. And I remember asking her like, “You know, did you ever get paid for your intellectual property?” And she said, “You know, I was paid when I worked at TIES and I was paid when I worked at MEC. And at the time, all of the software that we were writing was for the benefit of the public.” It was, you know, essentially taxpayer subsidized. It was for public schools, too, and some teachers. And then it became a corporate commodity and sold for profit and eventually, MEC itself was spun off from the state of Minnesota and sold as a private for profit entity. And so I think the turn from public good to entrepreneurial consumer object happened pretty quickly and dramatically between the 70s and the 80s.

LM

That makes me wonder, do you think that telling this history of computing from the perspective of the user rather than the inventor—because in some cases, you can go identify the inventor and interview her. But in other cases, it might be harder to figure out who really is the author of such and such a program. If that can help us think about the current fork in the road about net neutrality? And prior to the current many crises that we're facing, net neutrality was something that we were more worried about, both in the sense that companies would be able to control what we have access to, how much of it, how much of it we can consume, but also that our individual choices would be somehow

curtailed? If we weren't, say, consuming enough of something that you know, created advertiser wealth or something like that. Do you see your work playing into this conversation? And do you think that this is an important question? Do you think that net neutrality will come back to the fore as something that maybe was overlooked in the last couple years, but actually is quite important? Or do you think it was sort of overblown as a public question?

JLR

This is a great question. As you've been sort of outlining the question, what strikes me is the extent to which algorithmic technologies shape our lives every day. And I think many people are not aware of the extent to which what you see on Facebook, or what's popping up in your Gmail, or what is in your Twitter feed are being shaped by algorithms that mean you are seeing something that only you are seeing and no one else is seeing. And it is shaped by sort of the algorithm's idea of who what kind of person you are based on the data you're providing, and many other people are providing, but also the extent to which those technologies are just reinforcing all of the cultural inequities that we see all around us right at this moment of pandemic that's disproportionately impacting people of color and ongoing uprisings against white supremacy. Like, I feel like the conversation around net neutrality, in some ways created a smokescreen around, actually, what's the real crisis—which is the crisis of highly compartmentalised information, information or disinformation. And what we know now in terms of the abundance of disinformation that's spread on Facebook and other social media platforms, and the ways that algorithms shape the prices of what we see on Amazon, and who gets to, you know, to see what Netflix offerings to sort of who's sentenced for how long with policing algorithms. So I think there are very much questions around neutrality in some ways, although I think neutrality might be the wrong frame, but rather accuracy of information, availability, consistency, equity, and sort of transparency around the algorithms themselves.

LM

I like that reframing a lot, in which net neutrality was framed as a debate that was—maybe it was too abstract and too neutral. And maybe the worst thing we were imagining was, they're gonna throttle my Netflix, or I won't get to stream as much video because I'm using too much data. But in fact, it's not. It's about net neutrality, anti-neutrality and how information is funneled and throttled, and you get stuck in a rut. And we're seeing that today with beliefs about COVID. And, of course, the election. So to redirect just a little bit, I think I wanted to ask you an earlier question about archives, because there are so many interesting pieces of paper that are actually reprinted in your book, from the teletype printing to basic programs that you can actually read and

reconstruct, because BASIC is still a language that's maintained and readable. I was wondering, did you have an archival find? Did you come across one of these incredibly rich archives and feel provoked to write this story? Or did you come to this story sort of instinctively knowing that there was something wrong with the way that we tell the history of computing? And I think this links back to the quotation I opened with from Walter Isaacson's biography just about how one-sided the story is. So I wondered how you would approach this project? Was it serendipitous? Or was it driven by a kind of larger sense that something was missing?

JLR

It was definitely driven by a larger sense that something was missing. So I should say, before I did my PhD, I worked in tech and education for almost a decade. And some of that was working with students using new and different forms of online learning platforms and networked technologies. And what I learned in those 10 years was that everyone I worked with—student, teacher—whatever inordinately creative, and whatever intent we had for a particular programming tool, or computing method, they always found new and creative uses for, and those uses often had to do with being social, or having fun.

And I sort of kept that in mind. When I had to do, as PhD students have to do—we have to do our qualifying exam fields—and my fields in the history of technology, I was reading all of this history of computing that was very business focused. And you know, not just Apple and Microsoft. But before that IBM and maybe talking about the military, of course, the military origins of computing, and World War II, building the ENIAC. And I just kept thinking, like, “Where are we? Where are we, and where are my students and my educators?” And so part of it was that I thought a different story could be told, and then I had to figure out where I might be able to tell the kind of story I wanted to. And I did my undergrad at Dartmouth. And as an undergrad, I knew there was sort of computing lore, I knew we had email way before other people did. But I hadn't delved into that history. And so there was like, maybe like a throwaway paragraph and something that I read about like Dartmouth having a time sharing system in the 60s. And I thought, like, “Oh, interesting,” and started doing more research about time sharing, and sort of then found the connections to Minnesota, and then learned about PLATO and sort of had the idea of the nucleus of a research project. And then in terms of archival finds, I think it was a mix of being prepared, and also, like really good fortune. So one of the first, actually, the first chapter that I wrote was on Minnesota, and I happened upon a big box of files in the archives. There was one very slim folder that was newsletters for TIES, which was this cooperative of schools in Minnesota in the Minneapolis–Saint Paul area. And those newsletters were so vivid in terms of describing

the engagement of the students and teachers and what they were doing. And I still can picture it—this like, very small folder—but it was so rich, and that was sort of the foundation of a chapter, but that also helped me think when I went to Dartmouth, like many other people have written about computing at Dartmouth. Or they've written about Kemeny or Kurtz. And they always say the archivists asked me like, do you want the Kennedy files? Do you want the Kurtz files? And I said, “No. Can you help me find you know, computer center files? Or were there any newsletters?” And then I turned up the keywords, comments, newsletters, and one of the archivists helped me find the records of the school network, that again, it was not many folders, but it was enough.

And so I think I was really fortunate to have a sense of what I wanted to find, but that also it was there. And then I had amazing archivists to work with and that also I am so grateful. I think about this a lot now with digital preservation. These records were there. And in the case of PLATO, like the PLATO system administrators actually had created physical printouts of the notes files, which were like the bulletin boards. And those files were deleted every two weeks for memory space. But before they deleted them, they printed them out. And thank goodness, I mean, it's amazing. They ended up in the archives, they were digitized, they were saved. But I wonder what it would be like for a historian 50 years from now to even say, “What was Twitter like in 2020?” And sort of, how you'd go about capturing that, because we all know, operating systems change and devices change. And I don't know if anyone's yet found a good way to store things that are digital with consistency over time in a way that, like, created digital worlds out of paper. And some of the greatest praise I got was from people from Dartmouth—like, including Tom Kurtz—wrote to me and said, “reading your book, it was like being there.” Like, yeah, this was so it. And I was like, “Oh, yes, I did my homework. It was very carefully researched.” But I couldn't have done it without the physical written records of this world.

So that's my ode to archivists and archives and paper and, and thinking about preservation because I feel really fortunate, like really fortunate that I found what I did. And I suspect there are many other projects that could be done in a similar way. And I, you know, feel sad for all of the stuff that was great in the 80s or 90s online that's just gone, or 10 years ago, for that matter.

LM

It's a huge challenge moving forward. Yes, I thought just because programs are quickly outdated, and how do you spin up a really old InDesign file in your reading room? But also now, something that I've talked with Matthew Kirschenbaum about is the flattening of different kinds of data into a single stream so that you might have the

correspondence between two authors right next to a memo from your boss, about new HR policies? And how are those two things going to make it into the archive? Well, it's so difficult to sort them out that they just might not make it into the archives at all. So I really appreciated reading through archives that you were also able to reproduce in your book, and how some of the programs were even readable for a lay person.

So to end, I wanted to ask you about your new work. One thing we hear a lot of in the AI conversation-- and I think part of the popularization of this was Andrew Yang's presidential run, is that we need to worry about tech destroying jobs. And so we have to think about a UBI, or universal basic income for people who are put out of work by automation. Now, economists often push back against this and say tech creates as many jobs as it destroys, so this isn't precisely the thing we need to worry about. But I thought that your work brings a different perspective to the relationship between labor and tech, by focusing on users and the active contribution of users to tech. So now that you're based at NYU AI now Institute, I'm wondering how your work in this book, *The People's History*, fits into this new AI conversation.

JLR

So first, I would say I mean, in terms of like, "Oh, tech destroys jobs," or "Tech creates jobs.." People have been saying that for hundreds of years, like as long as there's been technology. And neither is true. Tech neither destroys jobs, nor creates jobs, but rather changes how work is done. And it often creates a new kind of labor, and it also affects how we differentially value labor. So this is something that I'm working on now at AI Now. So I direct the research program on gender, race and power in AI. And I am a historian and the program really aims to mobilize history to show how these technologies, how they concentrate power, how they create and perpetuate gendered hierarchies and racialized hierarchies and how, for instance, one of the examples I talked about with computing is, computers used to be people, they used to be people who did mathematical computation. And often those computers were women. And in fact, during the 1940s, and 50s, there were many women working in tech working in the computing industry, and really through the 80s. But during those same decades, as computing became more prestigious and more clearly, culturally important and economically valuable and viable, the fields professionalized. My colleagues, Nathan Ensmenger and Mara Hicks both write about this in different ways and their books. Nathan's book is, *The Computer Boys Take Over* and Mara's book, their book is *Programmed Inequality*.

And so through a series of forces basically, as computing became more prestigious women were pushed out of these jobs, and it became a masculine profession. And so

this is like an example of tech neither created nor destroyed jobs, but rather changed them. Certain types of computing became more highly paid and more prestigious. And those were typically the jobs that men did, and jobs that women did were sort of gradually devalued, and deskilled in the same ways that like—there's a great *New York Times* article from the 1980s that says, “you know, women have been working in computing doing really important work. And now their work is being treated like the factory girls in Lowell, Massachusetts, from the late 1800s, where they were doing highly skilled work, but they were women.” And so it was not paid and it was treated as not highly skilled.

So that's like a very long winded way to say what I'm focusing on at AI now is saying, AI is with us every day. It's not something that's futuristic or science fiction, it's these technologies that shape, who is hired, how they're hired, who's surveilled, how the fact that facial recognition technologies for students who are being proctored online, those technologies work far worse if you're a Black person or a woman. And so thinking about the fact that AI because it uses data, and data always has a history, it is something that is classified and categorized over time, and collected just like archives, and the way that we classify and categorize is not neutral. It's always hierarchical. And there's always values laden in there, so it's saying you can't do responsible AI without reckoning with history and past inequity.

LM 54:22

Joy, thank you so much for being on the podcast.

JLR 54:25

My pleasure. Thank you for such thoughtful and carefully prepared questions. I really appreciate that.

AMH 54:43

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