Chapter 7. Conclusion

The interviews in the previous chapters have provided insights into how technical and professional communicators are using AI in the workplace, and described the role that generative AI plays in automating workflows. Bridget described her role in developing AI-powered image search tools at ContentLib, how her contributions are used across a variety of fields, and address ethical concerns about generative AI as it relates to her field. Kate described how her small team of technical writers at McAfee use generative AI to extend their capabilities, how AI helps her team maintain a consistent style across the company, and the management work that she does as a professional writer. Finally, Terry discussed the advanced automation used to produce medical testing kits and analyze samples at Labcorp, the communication challenges involved in that automation, as well as plausible applications of AI in manufacturing. In this Conclusion, we bridge these three expert interviews with a series of metaphors and examples to help understand past, current, and potential future impacts of AI on automating writing as it relates to the workplace and training future professional writers. We extend the metaphor of photography here—with its history of automating manual techniques, transition from analog to digital, ubiquity thanks to smartphones, and close relationship with AI-generated images and image editing—to the problematic automation of driver's license photos that perpetuate racism. Throughout this book, our interviewees have explained how AI tools are changing the way writing happens and the work that employees are doing in our interviewees' respective workplaces. Here, we step back and consider how AI is impacting work across contexts. We connect AI's presence in the workplace to broader collaborative efforts, such as citizen science and volunteer GIS mapping—fields where collective input and shared tools make new work possible, while attending to nuances within the layers of infrastructure that enable such distributed collaborative work. We also examine how students interact with professors and AI, considering authentic encounters and scripted dialogs. Through these examples, we consider how generative AI and large language models (LLMs) influence the workflow of writing and collaborative ethics.

We also include dialogic excerpts throughout this chapter from our conversations. For us as authors, these dialogs helped to draft the Conclusion and complete the text, but for readers we include them to address multiple audience needs: to humanize the knowledge creation process and remind readers of the layers of infrastructure and automation involved in the production and compilation of polished written text ready for publication and distribution as a print and digital artifact, to provide interludes—breaks—in the process of reading academic prose, to center the importance of dialogic participation, and as a call-back to the written history of rhetoric that is foundational to the broad

fields of composition, communication, and others. Our original conversation took place via Zoom, as we collaborated from our offices in Michigan and Indiana, and the conversation was automatically transliterated by Otter.ai. We then edited the AI-generated transliteration into a written transcript, which we subsequently polished for readability and then revised for clarity before situating it in this chapter.

Dialogic Excerpt

John. So, what is the value of a technical communicator when ChatGPT can do it? We started off talking about that, linking that back to Johnson-Eilola, Selber, and York, in that the technology isn't there yet. And maybe it won't be in fully automated terms. And there are always technical limitations, for example hallucinations. So it's still a human driven system, much like digital photography, but it's going to improve. So that value is still in the experience and the rhetorical nuance of the human. And technical proficiency is no longer enough, or is no longer going to be enough on its own, even though it never really was. But we're at that point where it's already for—and I don't know how to articulate this other than to use other metaphors—where like, the average person isn't going to know the difference between a website that's running on WordPress versus a website that was built from scratch. So when my mom was still working for a web development company, they had a lot of credit union clients that were—to me, this seemed absurd—but they were running banking websites on WordPress. And I was like, how?! I get that there are a lot of plugins developed that you can do different things with. But that was just mind blowing to me: The number of banks that are using WordPress rather than a dedicated site that was developed for *banking* specifically. But, would an average user even know the difference, so long as the front end looks the same? But again, when you talk about it from a technical or security standpoint, or professional standpoint, those differences *are* important.

Michael. Especially when it comes to security. And one of the biggest security flaws for something like WordPress is that it's so ubiquitous that any problem becomes multiplied by 10,000 sites. And then you add that people aren't maintaining sites with security updates. So security updates compound. So it's not that there aren't problems, it's that there are new problems and the vulnerabilities are shifted elsewhere. And one of the things that I always think is so interesting is that the sleekness, the slickness, of a WordPress design or a commercial product's design hides the fact that it has a very low threshold of entry. And so one of the things that people complain about, that look and feel, is actually adding to its security and its sustainability.

John. Which probably, somehow circles back to the distinction between user friendly and user centered. That illusion of being more usable just because it looks or feels different.

From AI as Replacement to Amplification

Or, as Johnson-Eilola et al. wrote, "The danger of ChatGPT is not that it can replace highly routine genres but that it seems like it can."

So far, we have described humans working with automated technologies and wrestled with issues of what the technologies automate, whether those tools can be autonomous, and to what extent they can generate human-enough output. The metaphors we have used draw attention to affordances and limitations of AI-driven systems, examining their potential to replace human agents. In the next section, we move our discussion from analyzing the performance of human versus AI agents towards human-AI collaborations. We shift our attention now, drawing from our interviews and other encounters, towards describing what new workflows and capabilities AI opens for professional writers. Throughout our discussion, informed by Knowles' theoretical framework of machine-in-the-loop writing and the concept of rhetorical load sharing, we understand the systems we describe as collaborations where ideally humans are the primary actors, and AI-driven technologies act as assistants supporting that work (Knowles, 2024). Knowles provides a framework for situating human agency in human-AI collaborations, distinguishing between machine-in-the-loop and human-in-the-loop systems along a continuum. Ideally, machine-in-the-loop systems offset the labor of humans by automating tasks, with machines serving as assistants. That is, humans are responsible for rhetorically nuanced decisions and maintain agency throughout the process, while the automated assistants provide support. In contrast, human-in-the-loop systems require only minimal input from humans. To be considered human-in-the-loop rather than fully autonomous, automated systems at a minimum must have a human actor initiate the final step. Knowles gives the example of automated weapons guidance systems in which a person merely pushes a button to fire, but all other steps are automated (2024). In such human-in-the-loop systems, most labor is handled by automated machines rather than humans. While not all automated systems are inherently violent or as ethically fraught as weapons systems, in the final section of this Conclusion we provide historical and modern examples where human-in-the-loop systems can be problematic due to being arhetorical in their decision making—even when the systems are not AI-based. We extend Knowles' analysis of automated weapons systems to include systems that automate driver's license photos with sometimes deadly consequences, while appearing more mundane, as one example of algorithms of oppression (Noble, 2018).[19] These stark examples underscore the stakes of poorly designed automation. Before we turn fully to those cautionary cases, however, we pause to describe through dialog how machine-in-the-loop

19. See also a list of relevant critiques and resources via the Algorithmic Justice Project. Gipson-Rankin, S., et al. (n.d.). *UNM Algorithmic Justice Project*. Retrieved March 30, 2025, from https://algorithmicjustice.cs.unm.edu/index.html

systems—when carefully designed and ethically deployed—can extend human expertise and enable new kinds of professional writing work. We discuss how AI is being used to extend the work of citizen scientists tracking birds, the role of technical communicators in structuring participatory systems, expert and amateur uses of automated systems, and arhetorical dialogs. While discussing these implementations of AI, we emphasize the expert technorhetorical work that makes technical and professional communicators essential in machine-in-the-loop systems. In particular, we highlight their roles in structuring data collection and synthesizing complex information for diverse audiences (15:42) as well as the ability to recognize what constitutes effective writing—or "good output"—and knowing how to respond when automated tools fail to deliver acceptable results (20:51; 22:29; 27:17).

Michael 10:32. I want to go back to something that you brought up I think is really important. It illustrates the epochal nature of this shift that is underway. And one of the students who I'm working with this summer is an environmentalist, a technical writer, trained in the professional writing program working with a number of different systems that are created for national parks and mapping systems. And he's written quite a bit about citizen scientist efforts. One of the big differences for the work that is being described is that it's a deluge of information. And the same thing happened with citizen scientists reporting of birding. You know I'm an amateur birder and get the Ornithological publications out of Cornell (Cornell Lab of Ornithology, n.d.; 2023). And they talk about the problems of citizen scientists. And for them, as for the GIS system that is recording off of game cams, is that it's a deluge of information which is an exact opposite problem of information scarcity. So information scarcity is the pre-digital problem. Information deluge and overload is a new problem, and AI provides solutions. For the citizen scientists, for the game cams, AI actually does a pretty good job of determining whether the animal in the image is an unremarkable critter, a group of trash bandits, raccoons raiding, possums, or squirrels, right. Or if it's something interesting, a mountain lion, or bobcat, or coyote, or even wolves, and so training the AI in that way to recognize interesting and unusual sightings. With a million, half a million, even 10,000 images, a human team could not sort through to make any meaningful analysis in a timely manner. And the same thing is true of the Cornell Backyard Bird Count (Cornell Lab of Ornithology, n.d.), the original participatory science project, that they can go through and quickly sort out a million, half a million, 25,000 reports that show common backyard birds that aren't under any threat, but then can trace a specific species of warbler, or a specific species of woodpecker that is endangered or rare. Locally, over the last few springs we've had trumpeter swans or saltwater … I'm going to forget the name of the bird now.

John. Pelicans?

Michael. Pelicans! Yes, pelicans showing up at Celery Bog [a local wildlife sanctuary] for two weeks. And interestingly, they have followed the Mississippi

from the Gulf of Mexico, up into the Ohio River basin, along the Wabash locally and up to the Great Lakes, and then over land to Hudson Bay, which is an atypical migration pattern. But, this group of two or three dozen birds has now been using this path for the last few years. And so that's of interest to scientists, as well as to local birders. And so the fact that AI can locate those species is a very interesting development (Elliott, 2024). [In the time since this dialog took place, scientists have also used AI to automate the process of identifying and classifying fireflies based on flash patterns (Martin et al., 2024).] This ties in to what Bridget was saying that her team can do work that they would never have the opportunity to do because it was too resource intensive. With her modest staff of five or six people who are very tightly linked in together, they can look like a team that would have taken double, triple, quadruple the number of people to produce similar results without artificial intelligence tools. And so that to me is intriguing in that the goal is not automating jobs out of existence in the Kurt Vonnegut *Player Piano* mode. In the best-case scenarios, we are training the AI to do things that have not been possible, because they required too much expensive human labor.

John 15:42. Refocusing on another aspect of user participation dear to me is reporting downed trees on the North Country Trail (NCT). I've reported multiple trees blocking the trail, and ever since I've been copied on any subsequent emails about downed trees on the trail. Recently an email arrived announcing the organization had shifted its communication: "We stopped doing a newsletter because we never had sufficient content. But here's a newsletter because we now have stuff to report." But there was a long section talking about reporting down trees. And it was really interesting, because the once or twice I reported, I knew in advance from reading their documentation online—which I guess a lot of people don't do—you should take a picture or multiple pictures, and give something to provide a sense of scale so that they know what equipment to bring, and provide the location, ideally giving latitude and longitude coordinates. Even a trail reference works. And so the first time I submitted a report, I was like, "Oh, I'll just look at the map, and put in the mile marker and say, well, it's close to marker X." And then, because I did that, I realized, oh, I have two different maps that are showing two different mile markers at the same position, what the heck? Well, it turns out that all of the mile markers are relative—I forget which trailhead they start at—but all the markers are relative to that point. So anytime there's a change to the trail route in the state, it subsequently changes all mile markers. Once I figured that out, I was like, "Oh, I should specify which version of the map I'm looking at." But then in this email, it was like, "Yeah, if you're going to make reference to a trail marker, make sure you include the map version, because this changes all the time." And so I was thinking, it seems like it would be relatively easy to automate a system to identify which of the different map versions even approximate coordinates were referring to. So, based on the location, which of these is most likely where it is? Because right now, there's one guy that has to go and try to make a best guess as to which mile marker the reports are actually referring to.

Is the Problem a Tree or a Forest?

Piecing together fragments of reported data to create a cohesive response is still a rhetorically complex task that requires human decision-making.

Compounding the issue of having multiple versions of maps covering the same trail section, sometimes multiple people report the same tree, but with very different photos in slightly different locations, and sometimes drastically different weather conditions. Is it the same tree from multiple directions or angles? Are there actually multiple trees down in the same general area? Did another tree fall after the first one was reported? Were there actually multiple downed trees but the hiker only reported one for the sake of time, wanting to get back on the trail after already encountering three other downed trees? Or perhaps after a long day of hiking, the details are all a bit fuzzy when reporting. From there, the NCT volunteer in charge of coordinating responses to trail conditions for each section provides information to sawyers about route planning to access the trail efficiently (because hiking with a chainsaw is exhausting, but so is driving around the county inefficiently), which direction to approach the downed trees from on the trail, how accessible a given route may be depending on the season, what equipment and consumables sawyers may need to bring with them, which trees take highest priority, etc. These are all complex decisions to make based on pictures, a brief description, and a location of uncertain precision. Those decisions, and an effective response overall, requires a human to understand the context of each individual case to make sense of the data and to provide effective written instructions to volunteers. This continues to be the work of professional and technical communicators in an age of generative AI: structuring data collection and the creation of technical information, and synthesizing complex information for varied audiences.

Resume Dialogue

John. The North Country Trail (NCT) volunteers also encounter another problem with reports, where unless it's an egregious example of a tree across the trail, a lot of times it doesn't get reported. So for example, leaning trees are a big problem. They could fall at any time and potentially hurt someone, damage trail markers, or impede travel, but depending on how extreme the lean is or where it's at, it might not be obvious, so it doesn't get reported. Similarly, in one of the reports I submitted, I wrote, "Okay, these are trees that were impeding my way, but there was also another one somewhere between these mile markers. I didn't log the exact location because it was just flat across the trail." So, I could step over it easily. And the NCT volunteers clarified in this later email that people tend not to report those downed trees because they can just step over them. But, I was hiking in the winter. And they're saying, "When we mow the trails, that's a big problem because somebody that's on a riding mower can't necessarily just navigate around

that. And if they don't know it's there, they can have to stop at that point." And also for wheelchair users, these types of trees pose a major issue. That's probably more of a communication problem with informing people that you should report these downed trees. But when you were talking about the masses of data, I was thinking about what applications does AI have in resolving some of that incomplete reporting of information.

Michael 20:51. What I'm hearing is two different issues. First, there is a universal constant, which is the latitude and longitude data. The second issue is an accumulation of soft changes that alter markings when the map is adjusted in relation to another signpost or landmark, in the way that you mentioned. And so those two standards gesture towards an infrastructural dimension of the technology. GPS is infrastructural. The trail markers are infrastructural, but it's soft and fungible in an interesting way. The most virtual, the GPS, which is only beamed down to us and only exists as an idea, is much more definite and stable because it's at a different level of consistency and assurance.

John & Michael (in unison) 21:46. In theory.

John. That's another part—even when I log the location it is not constant—and it's irritating because I have a more accurate tracking device: my stand-alone GPS for hiking. But when I'm logging my trip, I can't easily get the quick coordinates of where I am. So I have to use my phone GPS, a lower-accuracy device. But then when I get back home, I always double check and I cross reference both of those automatic systems with the trail-marked maps. I triangulate my locations because I have no idea where these coordinates are just by looking at the numbers—and they could be over in another county if my phone pinged from the closest tower or just filled in approximate coordinates rather than indicating that it didn't have sufficient signal to be accurate. Even with a dedicated GPS, it's more accurate than my phone but it's still only logging my location at set intervals. Plus, any time it loses signal temporarily, it makes an estimated guess between the last-known point and wherever it regains signal. But because that's what logged, I don't want to transmit bad information.

Michael 22:29. The care that you're taking is that distinguishing characteristic that you're saying between an expert and a casual user. You are aware of the limitations of GPS. And so you have a number of strategies that you use to take into account the problems that [the technology] reintroduces. And that's exactly the kind of distinction that we're making with AI. As experts, we understand roughly what the output can and should look like. But we also understand when it goes wrong, and how it can go very wrong very quickly and users have to adjust. We use different methods of triangulating information so that we don't create, share, or rely on bad data, which in turn leads to inaccurate knowledge; it is a continuous stream from experience, to data collection and sharing, and knowledge-making. Whether we are talking about trees blocking hiking trails, photography, or writing, experts understand what output based on corrupt data is likely to look like.

Your example of the GPS and the downed trees knits together what Kate was describing for us. The whole interview was about documentation and the changing nature of documentation. I've been talking about these changes for many years and the irony [is] that as you gain more experience as a professional writer, you actually are doing less writing. Experienced professional writers take on more responsibility for creating the environment in which other people write. And so I think that came through in Kate's descriptions, in the work processes she described, and in the details of her day-to-day work. A significant challenge she faces is creating consistency across authors, across different tasks, and across different contexts of use. And so that infrastructural element is important again. It's not that documentation isn't important, as you just described. In fact, documentation processes become increasingly complicated because of layers of triangulation and of trying to scrub data in real time as you're collecting it.

Awareness of data infrastructure allows experts to build off each bit of data. If that data is corrupted or inaccurate or bad, we get the well-worn phrase "garbage in, garbage out." If it's not being scrubbed at that level of input, you're going to get garbage out every time. Returning to what Kate's expertise and experience, data integrity remains a very important part of creating value in documentation. Creating documents and keeping that historical stream accessible are reinforced as an important part of what has traditionally been the technical communicator's realm, including the infrastructural dimension of technologies, thinking about the clarity of data, but also ensuring that the right data points are being collected, and that the data points are accurate.

But then also talking about the granularity, right? When you're working with the technology of GPS, you're not ever going to be accurate down to a millimeter, centimeter, or even meter length. It's still at three to five meters in accuracy for a number of different reasons. And, things like the overactive sunspot and sun flare this summer made it even less accurate. And so awareness of these things and how they impact the technology are imperative and become even more important, as we're talking about artificial intelligence. When I was talking with students, I was getting email from the students complaining about other students' use of AI. And it goes back to your survey results, talk about how the students are most fearful of being the sucker, of being the person who spends hours poring over their text getting it right. And that feeling of pride—of accomplishment—is undercut by that feeling that someone else in the class is getting away with something.

John 27:05. Right. "I took manual compass readings on the map and used pace count beads as I walked versus," "eh GPS that was within 100 meters was good enough." Yeah.

Michael 27:17. Right. So it just reinforces what Johnson-Eilola, and Selber, and York found, which is that if you are experienced, you can see all the problems with the text the AI creates. And the problem—and I think that you alluded to this as well—in the realm of photography, or any realm where you have expert

versus amateur, the amateur user doesn't have enough information and cannot perceive the nuances of technical photographic details. But someone with experience can tell them right away, the same way that yes, I recognize that the students are doing this to lighten their load. There isn't a clear set of policies yet for AI use. And so we need to set, as a community in this class, acceptable levels of AI use. And then the students reveal how much experience they have in producing their text, how much experience they have using generative AI. But then most interestingly to me, they begin to talk not just about how they're using generative AI, but then what they fear about the generative AI and how it makes them feel. What they feel like they're missing out on. And then also to have that moment to challenge other students in their class, in their community, to say, we know you're doing this. You've left telltale signs, and you've left this trail. And it's not fair for me to make 100 or 200 words in response to what you've done, when *you* haven't done it. And then in response to my text, you've let an automated technology give some sort of spurious generic response. And in some way, it *kind of* does what the teacher asked, but it didn't. And I think we're still at a place where that level of AI is sort of clumsy, lazy, use—arhetorical use. And then we open up these questions of rhetorical knowledge versus writing knowledge, situational knowledge, and writing to a rhetorical situation. And the AI really is at a loss when it comes to any sort of a rhetorical contextual challenge.

AI-Enhanced Trail Infrastructure

As one example of what responsible AI use might look like in the context of trail reports, while also helping to bridge the gap between expert and amateur writers, we briefly describe here a potential AI-enhanced web form for the North Country Trail Association (NCTA).

Currently, to report any trail conditions that may need to be addressed or monitored, hikers are asked to use a form on the North Country Trail Association website.[20] Though seemingly straightforward, this form presents an interesting rhetorical situation. A form that is too menu driven or overly constrained could limit the types of trail conditions that get reported. Similarly, a lack of scaffolding could yield trail reports that are too vague to be helpful when the NCTA needs to coordinate with local volunteers. Though the current system is functional, there's potential here for an AI chatbot to be helpful in data cleaning, as an advanced form of spellcheck or Grammarly, not too distant from the use Kate described in helping writing across a company conform to a uniform style guide. Though developers would need to be mindful of introducing unintended biases into data, partially faking a human agent could be beneficial in this instance.

For example, the current general-purpose form for reporting trail conditions on the North Country Trail includes the following description:

20. https://northcountrytrail.org/the-trail/report-trail-conditions/

> Help keep the Trail in its best condition by reporting maintenance needs.
>
> Use this form to report a poor trail condition, from downed trees to overgrown sections to washed out areas to faded blazes. Please be as precise as possible regarding the location description and trail problem; provide GPS coordinates if possible. Photos of the trail conditions are also helpful.

The standard web form includes the following fields:

- Name
- Email
- NCTA Chapter/Affiliation
- State
  - "Location of trail condition you're reporting"
- Date Observed
  - "This can be approximate or a date range, if the issue is ongoing."
- Detailed Location Description
  - "GPS coordinates are helpful if available"
- Trail Condition Description
  - "Please be as detailed as possible (e.g., if reporting downed trees, how many?)"
- Photos

Considering the primary use cases, this form offers appropriate flexibility for hikers to report descriptive trail conditions while they're out on the trail and reporting from their phone or when they've returned from a trip. One constraint of using open-ended fields, however, is that the descriptions may be insufficient. New hikers may not be familiar with the genre conventions of trail reports, and even experienced hikers may lack commensurate writing experience. Although an actual human working on behalf of the NCTA could email a hiker to request additional information on a trail report, it would be more efficient to have the relevant data up front (particularly if the hiker in question is out enjoying the trail for days, without internet access, after submitting a trail report). A dialogic approach via email could quickly become unmanageable as the scale of reporting grows (creating a deluge of information), and the passage of time between emails could lead to forgotten details. By the same principle, a dedicated chatbot alone could exhaust users capable of drafting an effective trail report. In this context, an AI-driven "quick review system" could help improve the initial trail reports by providing an automated review of the report and providing feedback via the reporting interface, even for common issues based on keywords or categories. Such a system might resemble a hybrid of Interfolio's automated "quality check" of confidential recommendation letters, and a standard web form's field

error messages (Jarvis, 2018). For example, when submitting a report about downed trees, a quick review by an AI chatbot could detect the topic of the report and prompt users to include an estimate regarding the diameter of the trees, or to specify how many were down. Or when reporting an overgrown area of trail, the chatbot might generate follow-up questions to request additional details, e.g., was an area overgrown with weeds and grass, or saplings that might require different mowing equipment? On average, such questions are not so rhetorically nuanced or complex that only a human could ask them. After all, hikers are typically not creating an artistic masterpiece when reporting trail conditions. And in case a report *is* rhetorically complex, a human can still intervene via email. Compared with alternatives to soliciting greater detail, such as a guide to reporting trail conditions, newsletter, or a lengthy form, even a relatively simple automated review could improve trail reports while avoiding replacing the form itself with a potentially less efficient dedicated chatbot. This use case would be particularly well suited to such an approach, as trail reports typically are not addressing wicked problems, but the communication between hikers and the trail organization is also distinct from chatbot-automated customer service systems that address returns and refunds. One step in complexity beyond a menu-driven form, but enough to make a difference to the recipient when the initial report isn't written well.

John 30:21. I'm wondering about the dialogic aspect of that [arhetorical use of generative AI and interactions between teachers and students]. The funny example that comes to mind is like prank callers that will put the Domino's ordering system on the phone with Pizza Hut [pitting automated script against automated script]. And they go back and forth. But I'm wondering—I think intent matters. Because if it doesn't feel like a genuine exchange, you're saying, "Well as a professor, where does my obligation begin and end to give genuine, effortful feedback versus here are the two or three things you need to work on, here's the ChatGPT generated expansion of that?" Because I've done that at times where it's like, yeah, I don't think this student based on their past performance is actually going to read this feedback, or maybe it's that they need to work on something straightforward like consistently extending their analysis in a paper. So like, here's the shorthand version, ChatGPT. Turn this into a sentence for me. Because in that context, the nuance of that sentence doesn't matter as much. And I can spend that effort crafting an impactful sentence for someone who I know is going to value that feedback or for a tricky situation, and then I still have 70 more drafts to give feedback on. So intent is important, but also, how much of that is just layering automated systems that do not respond well to other automated systems? At some point, it breaks down and you get repetition of these loops. I'm trying to think of how to articulate this. But the couple of times I've played around with different chatbots … let me say, I hate chatbots. I just hate interacting with them for customer service, or anything else. If I'm already to the point of needing dialogic guidance, I want to talk to a real person. But I've played around with them a few

times, where like, if you just click the button and it auto-prompts, and you click the button and it auto prompts back. After sometimes even two or three at most back and forth responses like that, it breaks down very, very quickly to where it doesn't have any new data to go on. And so it just spins its wheels. Which, to be frank, I also had plenty of student dialogues like that.

Michael 33:22. Because you reach an impasse. The student says, "Well, I think I deserve a better grade." Well, here is all the evidence as to how you didn't meet the requirements. "But I think I deserve a better grade."

John 33:37. Right. "I've heard your feelings and your justifications. And you've heard my response. And we've gone through that cycle twice now."

Michael 33:47. I feel for the students in that situation because by and large the advice that they're given is engage with your professors. But they don't know what that means. The current versions of content or classroom management systems frustrate me because they have a broadcast pedagogy baked into them. And I use the discussion areas to encourage students to share successful texts. I talk to the students about how to read through classmates' texts, and look at teacher comments, and then go back and reread your own text, and look at the comments that I've given to you, you can often see a difference in engagement. It's tough to explain critical comments to students: "I don't have enough here to give you the kind of feedback that you're wanting," and we end up in those low information loops that you're talking about.

Dialogue requires a certain level of effort on the part of the student as well. In terms of pitting the two AI chatbots one to one is a similar sort of situation. Low information, low feedback, low engagement, results in information entropy, where both sides in discussion realize, "Well, we know everything that's possible in this situation." Students and instructors are both frustrated because students are expert students, and they have learned many things, they've been told different things, "Well, you talk to your professor and they're bound to give you more than a C minus because at least you're showing that you care." And while that is a true statement to a certain extent, as you pointed out from an authentic engagement perspective, you can't *simulate* engagement. A student who is trying to get by is actually emulating the AI rather than the other way around. A frustrated student is thinking "I don't know *why* I'm supposed to do this work. I don't care any more about it. But I am here as I was advised to be. And I'm not getting the response that I was told to expect."

John 36:28. Right. "I recognize the steps or the structure of the genre. But I don't understand *why* those are the steps."

Michael 36:39. "Because I don't understand the rhetorical situation." And I think that, again, is the key. Students don't understand the context. Why have I been advised to talk to my professor? You haven't been advised to talk to your professor and go to office hours because professors are lonely. Professors are busy. And if you go in and further waste time, that doesn't help either person. But if students go to office hours, and are engaged, and talking about their ideas and

writing, and—this is key to effective pedagogy—if students are engaged and honestly trying to figure out … if you are honestly confused about what the professor's goals are, and why those goals exist, going in and talking and engaging and asking questions makes a lot of sense. It will certainly inform and improve student performance. *If* you understand why you're being asked to do things you're being asked to do. You know, it reminds me of Lester Faigley writing in *Fragments of Rationality* (1993), when he talks about his own child taking a finished draft and devolving it, because the teacher requires drafts. And so, "Well, I have to make some mistakes. So I took the conclusion and made it the second paragraph and I confused this description. Because I think that in the final version, it's much clearer." Yeah, yeah. If you don't understand the *why* …

John 38:23. That brings back high school memories of being forced to find three books and take notes on a note card following this exact structure. This is not helping my research process, but okay, English teacher.

Michael 38:41. Well, and that's, you know, back to Ken Macrorie using the phrase *EngFish*, that peculiar kind of writing that is done in schools (Macrorie, 1985). And it's *only* done in schools, and it's only between student and teacher. And that's one of the reasons that I really enjoy working with the technical writers. Because I tell them all the time, yes, I have institutional power. I have institutional power, but they have content power. My class is that one place that they are teaching me the information and they have to recognize and accept that this is different from EngFish, different from that English class that has the power differential where the teacher always maintains more power. It's like *you* have the subject matter power, and you need to use and wield authority to effectively share information you have learned in your discipline. As a teacher, I must remind myself that I have insisted on this turning of accustomed power dynamics.

John 39:49. I'm curious. I plan to challenge ChatGPT by querying, "So why are these steps important if the power went out during an interview? Or what is the rhetorical situation" which I think it will probably be able to imitate surprisingly well. But I'm wondering at what point does it break down in that rationale part? Because I know it will at some point.

Michael 40:31. How will you judge the output? How do you decide if this strategy is working? It reminds me of the student during the fall 2023 semester who queried three different generative AI engines, and then created 32, or 36, prompts. This student, Jeffrey, then used the output of one as input to another, asking the AI to clean up the text for clarity and edit for conciseness. Ultimately, Jeffrey requested the output be changed to first person. And that shift to first person baffled the human readers, the other students in the class, because they hadn't expected an AI-generated text to be presented in first person because the AI has no "I," no ego. The AI has no personhood. And that was such an interesting move on Jeffrey's part. That's where I've been dwelling with AI. Not fearful, not concerned—resisting that cop role—"Who's cheating? Who's using AI? Who's doing this wrong?!" And instead asking, "What is possible with this technology?"

Which is where I started with word processing, and with Wikipedia. What is possible with chat as a replacement for spoken classroom interaction? And all these different moments where we could be fearful, or, we could embrace technology and say, what can we do with the technology? How has the technology made once impossible things possible? We've mentioned examples from citizen scientists from different research processes realizing all these possibilities utilizing AI critically and constructively. And so I love this idea. Where do we see the ends of generative AI? Where do we see the problems? Because we're dealing with this in another project. We're using AI, but it's not generative AI. And the reviewers are baffled because they're expecting assessment of generative AI.

John 43:30. We're not critical enough of the wonderful new technologies.

Michael 43:40. Well, that's the thing: that's not my project. There are plenty of people doing that. And I will be informed by those studies. And that's important. But it also isn't the only work that needs doing.

Tying the Threads Together

Michael 44:44. Well, tying the threads together. I think that you know, acknowledging that there is good critical work, important critical work that needs to be done. But that's not the project that we're doing. And to input, or import, conclusions from others' research, I think it feels disingenuous. That's just not the direction that this project is facing. And so, I think that's an important acknowledgement. But we are also looking at workplace applications that have been ongoing, in some cases for a decade and more. And I think it is important to recognize that because generative AI took 2023 and 2024 by storm, and it appeared everywhere. That this is meant to inform a number of conversations that have been happening that, I don't want to say they're worrisome, but they are lacking in any sort of future development. And so, I'm very much interested in presenting information and presenting a history that links up to computers and writing's origins, back to the 1980s, when Hugh Burns first published those notes on artificial intelligence. That is important to remember that that's where Hugh started. That's where Hugh Burns started with this. And artificial intelligence has access to huge processing, huge databases, huge amounts of power, electricity power, which is one of those critiques that we hear about. But the basic technology is being built on those early ideas and examples of how it should work, which I think is explained so clearly and effectively in that introduction to the *Computers and Composition* special issue (which is quoted at length in the third chapter).

John 47:18. I do think it's important, particularly important to establish that these are people using AI in the workplace. The final interview with Terry being the exception, but he has decades of experience in industry—and he certainly talked in some detail about how and where AI would likely be useful. Part 1 of the special *JBTC* issue has much to say about AI in different workplaces (Carradini,

2024). That was in some of the surveys that those articles cited. Are you integrating generative AI in the workplace? Yes or no? How effective do you think it is, scale of one to five? I do think that's an important distinction that these are industry experts who have seen that development over time. And, I wonder if part of the reason that we didn't pursue that angle necessarily of asking, "So, what are your critiques of this technology? What ethical concerns do you have?" I wonder if part of that was because we recognize that expertise, that's a—I don't want to say an unstated premise—but it's tacitly acknowledged because they're aware of the human designed nature of these systems. And they're looking at "what are the parts that we know break down and what do we want them to do? Or how are we responding to those limitations?"

[48:00-54:00 John and Michael discuss histories of photography. The section No Neutral Grey provides a detailed summary and expansion.]

Concluding Dialogue

John 54:17. Right. Yeah, so I guess like, it's kind of like that argument would make sense if you were talking about driver's license photos. Because that's a situation where it's a pretty much an automatic system other than the person pushing the button. It's, I don't want to say it's arhetorical [because increasingly offices show a preview image so the applicant still has some input and agency, though that configuration still places the labor on users to identify problems], but it's highly constrained in the rhetorical decision making.

Michael 54:55. *And* because then driver's license photos are used to feed AI systems, and then used by policing organizations to match equally poor images captured from security pictures and compared, if that same level of detail is not captured, then that standard, normal, default setting becomes racist, becomes oppressive, becomes an algorithm of oppression, for exactly that reason, because it is *default*. And the default is set differently. And it's repeated in medical context, where the bodies that have been tested for efficacy are White male bodies. So, again, garbage in garbage out.

John 56:08. I guess that's a different way of saying, that for the average person who doesn't distinguish in the rhetorical nuance, and saying, "Well, the automated system is good enough in *most* cases. So let's just do it that way."

Michael 56:32. Average of what population?

John. Right.

Michael. Inclusive and exclusive of who?

John 56:45. And also when we talk about the role of bad management, I don't know that, sure, there's an argument to be made that there should be more rhetorical decision making in capturing driver's license photos based on that line of reasoning. But I don't think that would be a particularly compelling argument for the like, mobile DMV office that is just trying to process X number of people in a day.

Michael 57:29. Except for the fact that Bridget talks quite a lot about the importance of diversity and building her teams and how important that diversity is to making these exact decisions that get embedded in the technologies. [For many of the reasons illustrated in our deep dive into the history of photography as analog to AI systems]

John. True.

Michael. You know, I'm drawn back to my own dissertation research, where historians have the question—and it seems obvious now to us because of Edwin Black's (2001) research—what was tattooed on Holocaust survivors' arms. That was the number of their IBM data card. And that data card was how they were traced through the German system. Through the Reich's system. One card, one person. It's all connected, because when we reduce human existence to data points, these are the results. It's not that we shouldn't do it, it's that we need to account for it.

John 58:53. I think that's an important line to include. At the risk of sounding alarmist, "AI is going to take over …" well, maybe that's worth including too, right, our fear is not that AI is going to become sentient and take over the world. It's that, it is so seemingly expedient that the risk is in losing that humanity. And losing that rhetorical nuance, because it's efficient.

Michael 59:34. And then we're back to Steven Katz's argument.

John. Yeah.

Michael 59:45. In "The Ethic of Expediency." And, you know, I can't help but think about two images. "Show me salmon in a river." It's an infinite salmon fillet falling over a waterfall. And the explanation that generative AI is a perfect mansplaination engine. So sure of itself and so, so wrong. And you know, those two go hand in hand for me.

John 1:00:24. Yeah, I guess that loops back nicely to where we started with all of this is that what makes the dialogic important in participatory design: human understanding emerges when one person creates and recognizes other people who are impacted by design choices. That it's not just a functional exchange for the purpose of usability. As Bradley [Dilger] wrote it. That's extreme usability (Dilger, 2006).

Michael 1:01:06. And not just individuals who are then marked by a system, but the whole communities and histories and cultures.

John. But these are not new problems.

Michael 1:01:21. They are not new problems. They're not new problems at all. And that's where we say, Socrates, Plato, Phaedrus …

John. The end.

The End, or What Are People For?

In the end, the question still looms: What's it all for? What is literacy for, and what role do humans play in the emerging scene of automation and artificial intelligence?

We immensely enjoyed our conversations with Bridget, Kate, and Terry, capturing their thoughts and sculpting their words into text. We reveled in the process of transforming spoken speech into written form, finding joy in the act of creation and the collaboration it entailed. Our discussions dove into the nature of work, automation, and artificial intelligence, allowing us to explore these topics from various perspectives.

While we found pleasure in our interactions and the intellectual stimulation they provided, we recognized that work is not solely about enjoyment. It is about achieving tangible outcomes, about looking at the words on our pages and screens and feeling a sense of accomplishment. Our interactions, often mediated by technology, spanned continents and miles, yet we hoped for the opportunity to engage face-to-face, to deepen our connections and understanding.

As researchers and teachers, we, John and Michael, are fortunate to have a degree of autonomy in our work. We have freedom to shape our days' occupations and choose our paths like hikers on a trail. We can opt for the challenging route, an easier one, or work to forge new trails entirely, metaphorically speaking.[21] This autonomy is a blessing for which we feel gratitude which also raises questions about the purpose of our efforts. What is the ultimate goal of our work, especially in the realm of literacy, where we grapple with words and their meanings?

As we contemplate these questions, we recognize that we are not alone in our musings. Bridget, with her decade-long exploration of AI image search; Kate, who enhances productivity across organizations; and Terry, who meticulously fits pieces together to create precise outcomes, are all accomplished professionals. Yet, they too must wonder about the objectives of their work, the value of their contributions in an age where technology often outpaces our ability to harness it effectively.

The concept of work in the modern era is fraught with uncertainty, even trying to determine what the emergent epoch should be called: postindustrial, (post)modern, post-professional, emergent automated, roboticized, or even *fully rationalized*. As automation advances, we are left to ponder what roles remain for humans. The traditional hallmarks of professionalism—guild structures, self-regulation, autonomy, and the ability to control entry—have never fully applied to literacy workers (see Faber, 2002). The question of whether we are in a post-professional era lingers, as we grapple with the evolving nature of work and the technologies shaping workplaces.

> Our work will at least have distracted us, it will have provided a perfect bubble in which to invest our hopes for perfection, it will have focused our immeasurable anxieties on a few relatively

21. To be clear, we're not advocating for bushwhacking where established trails exist. The metaphoric trails of knowledge production aren't constrained by the ethics of Leave No Trace.

> small-scale and achievable goals, it will have given us a sense of mastery, it will have made us respectably tired, it will have put food on the table. It will have kept us out of greater trouble. (De Botton, 2010, p326)

De Botton's reflections in *The Pleasures and Sorrows of Work* resonate with us. Work provides purpose, what Bourdieu called our *habitus*. It focuses our efforts and structures large swaths of our limited time, and keeps us distracted from the abyss. Our personalities derive from our labors, shaping identities and communities. Yet, as we strive for ease and efficiency, we risk being displaced by the very technologies we create.

Experiments with Universal Basic Income (UBI) (Afscharian et al., 2022) suggest that when basic needs are met, people find more meaningful ways to contribute. Pursuing passions and seeking improvement in the lives of others, driven by a desire to be valuable. The stability of basic needs is increasingly challenged, and the future of democracy and participatory governance hangs in the balance.

Kurt Vonnegut's *Player Piano* offers a poignant reflection on automation and its impact on society. Vonnegut asserts at the end of the book's fourth paragraph, "Democracy owed its life to know-how" (1975). The novel raises existential questions about the purpose of work and the role of humans in an automated world.

While we resist ending with definitive conclusions about our human roles—indeed, much of the work has emphasized the ongoing and emergent nature of generative AI integration—we must conclude. In addition to returning to questions that guided our research, we include several insights that have remained durable across interviews, historical contexts, and our own encounters with AI. These insights may be provisional, but they provide guideposts for navigating professional life with AI—especially in a landscape where expectations are still forming, and where myths of human obsolescence persist.

First, the landscape of AI continues to evolve quickly. Public-facing tools are still in a phase of relatively open experimentation. This openness will likely narrow as sustainable business models emerge and systems become increasingly black-boxed. Unlike prior open-source innovations in fields such as digital fabrication, where community-driven development played a foundational role (see Sherrill, 2014), the most popular generative AI models are proprietary and massive, developed and deployed by a small number of powerful companies, while open-source alternatives slowly emerge. The result is an uneven playing field where access to and understanding of core technologies are limited for most users, even as those users are asked to integrate AI into their everyday work.

Second, AI is not automatically replacing the value of human decision-making, creativity, or contextual expertise, though it is certainly being used to justify harmful management choices. The value of technical communicators remains in our ability to effectively translate user needs into meaningful experiences that go

hand-in-hand with effective deliverables, not just to provide technically proficient solutions or be good scribes to subject matter experts. For this reason, we believe that the threat of being reduced to "prompt engineers" has been overstated. Professionals may hand code, hand draft—whether drawing or writing—less than in the past, but their knowledge and skills remain valuable to their respective domains while augmented by automated tools. Like programmers, designers, and engineers working with advanced automation and design technologies before us, writers continue to evolve in relation to their tools while effectively and meaningfully engaging users. What endures is the human capacity to adapt job roles (and new professional titles), build domain-specific knowledge, and participate in complex, sociotechnical systems. As AI tools become increasingly layered into these systems—especially through small language models and retrieval-augmented generation (RAGs)—human authors will *at the very least* continue to create the base documentation (often localized) and context-specific knowledge infrastructures that such systems rely on, and will troubleshoot when these systems fail to deliver effective user experiences.

And finally, when the power goes out—or when multi-billion-dollar corporations restrict access—human memory, accessible documentation, and the value of meaningful dialog remain. Despite rising interest in and economic pressures for chatbot-based interactions, authentic encounters (Sullivan, 2017) still matter, even when they are undervalued by managers and institutions. These are not nostalgic conclusions, but infrastructural ones: reminders that written communication, like other forms of work, is never fully automated. People remain in the loop—technically, rhetorically, and ethically.

Yet, we would do readers a disservice to dismiss nostalgic conclusions or erase our own. After all, we would not have written a book if we found no joy in the labor of manual writing. As we grapple with these questions and uncertainties, nearly 80 years after Vonnegut's *Player Piano*, we are reminded of the magic of rhetoric, the power of words to shape our thoughts and communicate across time and space.

Magic of Literacy

The "magic" of rhetoric and literacy lies in the power of words to transcend time and space, connecting minds across generations. When we think and formulate ideas, we create a stream of symbols that externalize our thoughts. These symbols, whether they are words, images, or sounds, are like little machines that we build and release into the world. They travel through time and space until they encounter another willing human who decodes them, bringing the original thoughts to life in their own mind.

This process is akin to magic, as it allows us to share our inner world with others, bridging the gap between individual consciousness and collective understanding. The act of communicating through symbols is not merely functional

but profoundly meaningful. It is a testament to our ability to connect, to influence, and to be influenced.

As we engage with these symbols, we participate in a dance of signification and interpretation. We understand how it works, why it works, and that it works, yet the experience remains mystical. The power of words to change the world, to evoke emotions, and to inspire action is a constant reminder of the magic inherent in literacy and rhetoric.

This sense of wonder drives many to the profession of literacy, despite it often being underappreciated and undercompensated. The magic of sharing ideas, of seeing students grasp complex concepts, and of contributing to the ongoing conversation of humanity is what keeps us engaged and passionate. It is a reminder that, despite the advancements in technology and artificial intelligence, the human touch in communication remains irreplaceable.

In an era where automation and AI are increasingly prevalent, preserving this communicative magic is essential. It is what makes us uniquely human and allows us to forge deep connections with one another. As we continue to create and share knowledge, we must remember the importance of these symbolic exchanges and the magic they embody.

These questions, gestured at and referenced throughout yet left mostly unanswered, have driven our inquiry:

- How can we redefine the purpose of work in an age of increasing automation?
- What skills and mindsets will be most valuable for literacy professionals in a post-automation era?
- How can we ensure that technological advancement like AI enables rather than replaces meaningful work?

Literacy, as a technology, has shaped our consciousness and will continue to influence our evolution as a species. The ideas and notions we explore, whether through sound, video, or yet-to-be-invented technologies, are a testament to our desire to connect and understand one another. This drive to create and share knowledge is what compels us to engage in extended texts like this one, to capture the zeitgeist of our time and contribute to the ongoing conversation about the nature of work and the role of technology in our lives.

Artificial intelligence must be approached as a rhetorical artifact—crafted, contextual, and contested. It is neither neutral nor inevitable. Our task is to interrogate its origins, implications, and narratives, treating AI not as destiny but as discourse. Through critical engagement, we reclaim authorship, shaping technologies that reflect humane, ethical intentions. We learn to dwell in artificial infrastructures.

As we conclude this book, we hope that our efforts add meaningfully to the record of this moment in history, that we have found an audience that delights in and is informed by our exploration. Thank you for joining us on this journey.