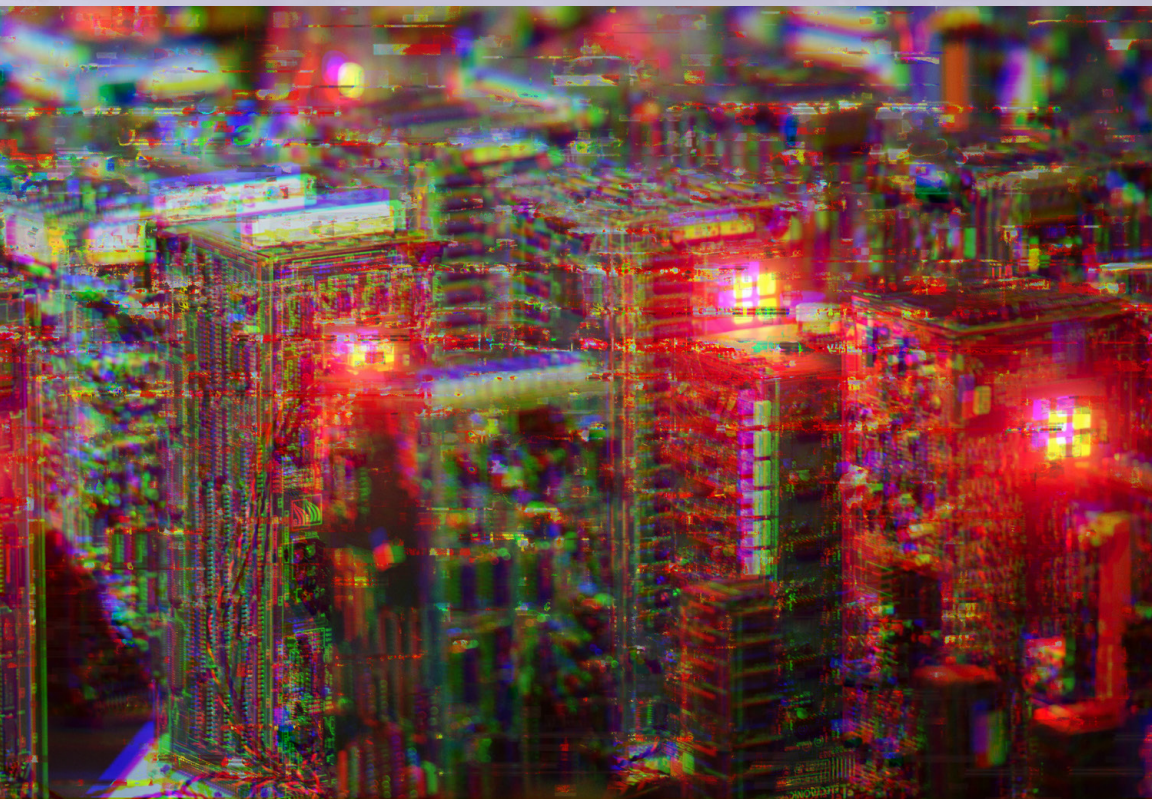


Artificial Infrastructures



Michael J. Salvo
and John T. Sherrill

ARTIFICIAL INFRASTRUCTURES

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Finally, while we acknowledge the convenient affordances of the technological infrastructure that supported our composing process, it is the *people* we acknowledge here—and you, the reader—who ultimately make this technorhetorical work meaningful.

Foreword

Derek N. Mueller

VIRGINIA TECH

The great question that hovers over this issue, one that we have dealt with mainly by indifference, is the question of what people are for. Is their greatest dignity in unemployment? Is the obsolescence of human beings now our social goal? One would conclude so from our attitude toward work, especially the manual work necessary to the long-term preservation of the land, and from our rush toward mechanization, automation, and computerization.

—Berry, 1990

What is AI for?

Who here remembers what Wendell Berry wrote in 1985, in an essay titled “What Are People For?”

Lest we forget, Berry called us to witness with him the waning connection between human labor and the land, a connection loosening hold as small, local farms were tilled under by the machinery of industrial-scale food production. Berry’s essay grieved agricultural changes by then well afoot in mid-1980s Kentucky and its arable surrounds—perhaps reaching as far as a small farm you can remember near where you grew up. His own response to that core question—What Are People For?—pinwheels out, feathering into wider and wider ploughlines. Modern technological change keeps this question lit brightly as if on a marquee; it is a question we must ask and answer again and again in an increasingly machined, engineered world. “What Are People For?” was critical and cautious without resorting to moral panic. Berry sketched out an ecological understanding of the deeply interdependent networks we are, whether we like it or not, a part of, an intricate lattice linking food, labor, well-being, and community.

Berry’s essay was published at nearly the same time as Hugh Burns’ prescient 1983 *Computers and Composition* piece, “A Note on Composition and Artificial Intelligence.” Berry’s writing traced vectors of analysis back to the landscape, whereas Burns, owing to his appointment with the Air Force Human Resources Laboratory at Lowry Air Force Base, contemplated what traditional artificial intelligence might mean for writing teachers and, by proxy, for writers heeding the guidance and support of those teachers. Burns had programmed “three open-ended invention programs named TOPOI, BURKE, and TAGI,” (Burns, 1983) and he saw in them promising possibilities for assisting writers as they composed. These programs identified strings of text from an in-progress shitty first draft (SFD) and reformulated the strings into dialogue and questions, designed

to aerate a writer's repertoire of possibility. This important work, which is referenced in *Artificial Infrastructures* [History, Equity: Early Provocations section], sets up as one among many formative efforts that helped to establish the field of computers and writing. Writing machines and implements for inscription have been with us for millennia. Yet, because technological change is double-edged, clear consensus has never settled for long about just how much or in what ways computers ought to assist writers. We can trace similar patterns of spirited flux—deliberation, disagreement, experimentation, and mixed-use resolve—across the arcs of word processing, spelling and grammar checkers, predictive autocomple, speech-to-text translators, and at least a hundred more examples.

The November 30, 2022, public release of ChatGPT unleashed a frenzy of engagement with generative artificial intelligence, catapulting many professionals right along with everyday folks into the fitful, feverish conditions Scott Graham, in *The Doctor and the Algorithm* (2022), characterizes as a boiling hot summer. Leading into his research on health-related AI, Graham comments that researchers have for a good long while resorted to seasonal metaphors to account for AI's patterns of rising and falling intensity. As interest in AI cools off, winter returns; then, as AI warms up again, summer sets in. The periodic flux is nothing new, although, as Graham acknowledges, we are in "a particularly hot AI summer of late" (Graham, 2022, p. 3). In dollars and cents, the high heat metaphor translates to titanic capital speculation and investment. Precise accounting is difficult to track, but for a passing temperature check one needs to look no further than the magnitude of investment. Consider David Cahn's optimistic yet cautious series of market analysis articles with Sequoia Capital, first, in September 2023, "AI's \$200B Question," followed nine months later in June 2024 by a piece titled "AI's \$600B Question." The steep fiscal trendline underscores a growing concern for whether a hype bubble happens to be ballooning more grandly than will rise to meet any comparable investor expectations. The investments in AI are enormous, and the returns remain in question (Cahn, 2023, 2024).

Of course, extreme seasonality and grandiose capital investments in artificial intelligence only tell part of the story. With the continuing goal of walking, as one would pace the fence line of a bygone small farm field, the opening question, What Is AI For?, I want to share one more anecdote before discussing some of what I consider to be the most poignant themes in *Artificial Infrastructures*. In the Fall 2024 semester, my daughter, Isabel, started college as a first-year student enrolled at a large, midwestern public university. In that first semester, with her interests taking hold around public health, biochemistry, and writing, she enrolled in classes matched with these areas of study and with general education requirements.

General education fortifies the undergraduate degree path with a colorful spectrum of classes meant to connect the dots as a generalist who is knowledgeable across areas of specialization, thereby laying a groundwork for an informed, functional democratic citizenry. Put another way, a general education expects that a pre-law student ought to understand how plants grow, that a mechanical

engineer ought to fathom the health impacts of food deserts, or that a computer scientist ought to know enough about early childhood education programs to support them as a public good for herself as for her neighbor.

To zoom in and then out again on Isabel's small subset of general education classes is to notice extremely varied framings of artificial intelligence. As I recall, starkly stated right there in the syllabus, one class prohibited any use of generative AI whatsoever. Another class was ambiguously *laissez-faire*, a phrase which translates to "let do," in effect trusting students to enlist the assistance of AI in whatever ways they wished. With a third class came yet another stance; in this case, students were encouraged to use one specific AI platform for writing-related matters of outlining, sequencing, and rearrangement. When we would check in via Zoom about how classes were going, these jumbled approaches came up often. I was proud to see her negotiating these complex issues so deliberately, but I was also led to witness through our conversations the quagmire so many have found themselves in, as they forge way, grasping at ethicality while anticipating what is just ahead for this wildly accelerated trajectory of AI implementation into learning environments. Furthermore, as one who researches and teaches writing in college, I felt a responsibility to provide some kernel of wisdom for discerning which approaches to AI were *good* for Isabel's development as a writer. This uneven landscape shows us from yet another angle the moment we are in, when college students are making decisions about how to write among radically assorted approaches, when experienced professionals can offer suggestions while still feeling uncertain, and when policies range from hardline opposition, even refusal, all the way to wholesale, unconditional embrace.

Personally and professionally, I am not alone in my misgivings about AI, but I am oftentimes conflicted, because I also recognize that AI can powerfully aid human problem-solving. These complex feelings circle again to the opening refrain, What Is AI For? As with countless examples of technological change, paradoxes bloom, and we are sure to commit missteps. It seems to me that our responsibility in this moment, whether as students or as teachers, whether as parents or as public citizens, obligates us to find, follow, and to engage first-hand, when possible, in specific use cases.

Glancing over general cases, we can easily locate practical, applied scenarios to answer for AI's assistive merits. Sector for sector, there are plenty of general cases to show for what AI can do. For example, AI has participated in modeling protein chains, it has accelerated diagnoses of rare health conditions, and it has indexed biodiversity and posed opportunities for environmental rehabilitation. Yet for every positive, a problematic counterpart looms: anticipated job loss, deep-fakes and misinformation, the ecological impacts of gargantuan data centers, the proliferation of mainstream monolingual standards, and violations of personal privacy, to list only a few. Moving from general scenarios toward specific use cases is a sharp, incisive approach to research. Contexts bring more sharply into view the specific ways a human who writes is undeniably embodied, earthbound/

terrestrial, and mortal. Context compels us to consider humanistic conditions as they are co-shaped with more-than-humans (e.g., a cat or a chicken who curls into the lap of the person using AI) and with a broader, shared environment. With this in mind, I consider the approach showcased in *Artificial Infrastructures* to be one we all can learn from for its adherence to a research design ethically modeled and contextualist all throughout.

Artificial Infrastructures places specific use cases at the forefront of its inquiry into generative AI via semi-structured interviews with three professional writers. Many of the paradoxes I have tried to describe also surface throughout the interviews. The careful analysis by John Sherrill and Michael Salvo call readers again to the mantle of possibility, acknowledging that AI, albeit in myriad forms, is here, that many people are learning how to use it and making sense of what to use it for. An implicit exigence for their research extends from Cindy Selfe's insistence on the importance of paying attention (Selfe, 1999): for discernment about how to use AI to remain ethical, our learning about specific use cases ought to be careful and continuous.

The use cases anchoring *Artificial Infrastructures* bring to light numerous themes, each deepened by this study and extensible for continuing inquiry.

Definitional Parameters

Readers will find early in the book a crucial historical distinction drawn between *traditional* artificial intelligence and *generative* artificial intelligence. These and other definitions help us identify important differences, for example, between open models and closed models, between platforms indiscriminate about intellectual property and those designed to honor intellectual property rights. Distinctions of this sort help us all become more critical, astute users of AI.

Root Metaphors

Throughout the AI frenzy of recent years, different metaphors have jostled for explanatory power. The summer-winter seasonality metaphor referenced earlier is one example. In the book, you will encounter additional metaphors: photography, bicycles, pizza, and soup. In addition to overt metaphors, root metaphors are ingrained even more deeply, both in the book and in the interviews, at times hinting at mechanical explanations, others tending toward context. By noticing and exploring these root metaphors, we can gauge the deeper values guiding mixed, emergent uses of generative AI.

Writing and Its Social Turns

In the 1980s, the social turn for writing commonly referred to a breakthrough in understanding acts of writing as socially entangled—as acts of involvement not purely centered on texts and texts alone (Brandt, 1990), but circumscribed in human

relationships, lifeworlds, identities, and kinship networks (Kinney et al., 2010; Rhodes & Alexander, 2014). In the decades since, social dimensions of literate practices have expanded again, as research has inquired yet further into the ways acts of reading and writing amplify, create, and sustain connection. However, no account of a social turn would be complete without recognizing how acts of reading and writing are entwined with technologies. When one writes with the assistance of generative AI, has a new and distinctive social turn unfolded? The authors of *Artificial Infrastructures* urge us to think about generative AI as collaborative. Returning to the thesis that specific use cases are essential to our emerging grasp of literate activity in this moment, consider as you read how the involvement of generative AI constitutes an expanded, and in many ways disruptive, sociotechnological turn for literacy.

Labor Saving

Etched into accounts of generative AI are suggestions that these powerful (though also frequently clumsy) agents will relieve people from arduous labors. Generative AI relieves workers, is how this line of reasoning tends to go, helping us bypass onerous, repeating tasks as it lubricates workflows so we can reclaim a few hours each week. As a prevailing theme, labor saving points us back to Berry's question, "What Are People For?" The question stages again an interdependence that remains unresolved and unresolvable, showing us the eternal puzzle where, piece by piece, many not fitting neatly, humans fashion technologies and technologies refashion humans. Meanwhile this blue-green planet spins and hurtles through space for a while longer.

Given this, what will we do with our saved time? What forces/lessons/values will guide us in these choices?

~ ~ ~

Amidst enthusiasts, amidst refusalists, we shall continue to forge a way with generative AI in the world. Specific use cases, such as those presented so thoughtfully in this book, can help us to distinguish among the opportunities, to forecast the consequences, and to weigh the trade-offs as the current frenzy cools off, as capital investment stabilizes, and as people live as well as they can with yet another technological paradox. As we go, let us not deal with the question, What Is AI For?, too casually or with indifference. Refresh the question; answer it continuously. For calling from the shadows is a closely related question, What Is AI Good For?, and we can hardly do justice as ethical communicators unless we also care actively for the choices, the complications, and the fray detailed within these—and our own—specific use cases.

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ARTIFICIAL INFRASTRUCTURES

Introduction

This concise book explores the intersection of writing, literacy, and artificial intelligence, offering readers an overview of the deployment of artificial intelligence technologies in workplaces employing professional writers. These stories are presented alongside the history of computers and writing research, including connections to preceding technologies and trends. It comprises a series of sections alternating between analysis and three interview subjects. These interviewees and their research profiles and work histories are detailed in the pages that follow, each selected to support readers' understanding of the area of artificial intelligence in existing workplaces with an eye toward understanding and participating in future developments.

This introduction is designed to provide a brief overview of the book's contents and provide a roadmap for the overall argument, highlighting important elements of the book. In this section, we introduce the book's framework, which includes overviews of each of the carefully curated discussions with seasoned professionals in the field of professional writing working with AI. These interviews are integrated with insightful analyses and explanations of complex technical concepts. Additionally, concise explanations are thoughtfully interspersed between the pivotal chapters, serving as informative guides for those new to AI technologies.

Chapter 1 is titled "The Current State of Artificial Intelligence in Writing." It briefly describes our orientation towards artificial intelligence and introduces the research ensemble we work with: a network of humans, machines, technologies, and infrastructures that support creating this complex text. The chapter offers foundational definitions of different types of AI technologies: traditional, machine-learning, and the newest generative types. This definitional work then flows into descriptions of classroom applications that reveal limits of the current technology. The chapter concludes with a history of how this latest disruptive *têchné* developed, intertwined with rhetoric (with pointers to more in-depth resources) and setting the stage for subsequent discussion.

Chapter 2 presents the first interview, focusing on "Artificial Taxonomies: Agents Sorting Images." In this dialogue, a distinguished professional with a notable background in museum curation and exhibit design shares her journey into the world of artificial intelligence, particularly in stock image searches. The interviewee expands on her academic preparation and continued industry-campus partnerships, which includes organizing one of the earliest AI professional conferences, earning recognition as an authority in algorithmic image searches and creative work supported by intelligent agents.

Following this interview, an interlude and analysis section revisits the history begun in Chapter 1. This third chapter investigates the foundations of artificial agents and their historical evolution, with a specific focus on stock image storage

and the complex domain of intellectual property issues in visual media. It adeptly connects the theoretical foundations introduced in the book's introduction with the practical experiences and biographical elements gleaned from the interview, creating a unified narrative. The emphasis is braiding technology history with the development of the computers & writing and technical & professional writing communities in rhetoric.

Chapter 4 showcases the second interview, with a theme of "Professional Progressions: Agents Writing." Within these pages, a seasoned professional writer with two decades of experience offers insight into her career trajectory, spanning from technical writer to experience architect. Her work involving algorithmically-generated content is thoroughly examined with attention to the application of AI in cybersecurity and marketing.

Another interlude and analysis section follows in Chapter 5, shedding light on the evolution of the writing profession and the pivotal role of programmed agents within it. It connects the subject's experiences to the broader realm of technical communication. Central to this chapter are two important precursor disruptive technologies: photography and bicycles. Both chemical image making and two-wheeled transportation are different enough from writing and literacy that the contrast with AI offers readers some cognitive distance to understand the complex relationships between disruptive technologies and the cultures of practice supporting them. As authors, our goal is to help readers thoroughly understand AI technologies, so engagement is rewarded with depth of understanding and productive interaction. Photographs are so ubiquitous today in digital form in part because many of us carry powerful cameras as part of our phones. And we barely hesitate to apply automated post-production tools to our images. Texts follow suit.

Chapter 6 presents the third interview, focusing on pharmaceuticals and advanced manufacturing with artificial agents. This interview features a senior expert with extensive experience in integrating AI into advanced manufacturing and pharmaceutical production. The conversation offers invaluable insights into the integration of AI and automation within these industries, grounding the discussion in real-world examples.

The book concludes by acknowledging the fast-developing landscape of text-producing agents and their implications. The Conclusion emphasizes the numerous opportunities for professionals in writing and related fields to collaborate with artificial, programmed, digital agents, while also addressing potential challenges and concerns, consistent with the work of William Hart-Davidson¹ and others. The Conclusion is presented in an accessible and evocative manner, ensuring that readers conclude their reading with an inclusive understanding of AI in professional writing and workplaces.

1. William Hart-Davidson, "Writing with Robots and other Curiosities of the Age of Machine Rhetorics," in Jonathan Alexander and Jacqueline Rhodes (2018), *The Routledge Handbook of Digital Writing and Rhetoric*. Routledge.

Why a Book?

So why in 2025 in the late age of print, a book? The interview form lends itself to a podcast, why not a podcast?

We wanted to create a print artifact: something not only tangible but recognizable as a book to describe and document the emergence of artificial intelligence. Permanent, print, a thing of atoms.

Whatever direction history goes after the emergence of AI, we wanted to create a text to say: this is what we were thinking, this is what we were doing, and this is whom we were talking to and thinking about. Now, we don't imagine anything as dramatic as future archeologists returning to this moment (or this text) in the ruins of a fallen civilization. Instead, we offer a snapshot of the moment at the emergence of artificial intelligence in a powerful, widespread, and accessible form. We wish to capture and articulate both what we are thinking about this moment as well as the cultural zeitgeist at the emergence of generative artificial intelligence specifically focused on the impacts on writing and writing instruction.

It's fairly common in rhetorical studies to refer back to Plato's *Phaedrus* for the longevity of concern with emergent technology in which Socrates decries that one of the impacts of writing is forgetfulness. Plato records Socrates at the emergence of writing as a technology and it is only because Plato creates durable texts that we have words attributable to Socrates, access to Socratic thought, at least insofar as Plato can be trusted with reporting them. More than anything, we have access to the change from a dialogic to a literate culture.

And here we are at the emergence of what Ong named secondary orality, or at least at the moment of the emergence of a post-literate culture, and we want to capture it in the "old" technology of writing, preserving elements of writing that we might not even fully grok are literate entanglements. That is, while we strive to document and preserve, we do not fully discern all that is conserved; it is only in retrospect that others might assert what it is that we will have captured here. The very aspects that we see in danger of falling away in the post-literate may not be valued by future scholars, teachers, or writers.

John and Michael tend not to be overly sentimental about writing or literacy, but are very much interested in how it changes us, encapsulates thinking: literacy is the software on which we run. Part of what has grown up around literacy, at least in the Western tradition, is the idea of the encapsulation of the self in the ability to write and access reason. To be literate is to become a person, an individual worthy of citizenship, capable of engaging in democratic institutions from law and debate to the processes of self-rule, just as Socrates in the *Phaedrus* is bemoaning the fact that citizenship will be weakened by this technology. This *writing*.

So too our culture has built markers of identity, of selfhood, of worthiness, around literate action. And so, especially in the United States, we have connected

literacy, the ability to express oneself in written form, with the ability to vote in all the ways that have been twisted over the years to exclude huge swaths of people. We cling to this belief that a literate self is a responsible self, and that literate self can be engaged in the processes of democratic self-rule.

So many of these values were in flux throughout the imagining, writing, interviewing, and editing of this text from 2023 through 2025, and it is worth recording these thoughts in as much of their context as we can, so that we might remember the paradigm in which we lived: preserving whatever we can of the constructive context that made our choices visible in permanent words on the page. We don't yet know from the perspective of 2030 and 2040, what this moment will become. Looking back, we wonder whether this will be a watershed moment, as many of our interview subjects seem to think. The moment, the disruptive technology's emergence, these and other developments are interesting and important: worthy of preservation, and to capture this time and our thoughts at the emergence of generative artificial intelligence.

A book-culture perspective allows us a longer timeline for reflection. Writing is a few thousand years old, moveable-type 500: literate technologies allowed longevity, accuracy, fidelity, consistency, and reproducibility—and stability—to words. Today liquid text technologies and emergent multimedia reintroduce instability, particularly as artificial intelligence technologies allow the creation of deepfakes not just in text creation, but artificial voices mimicking recognizable sounds and emerging video technologies that have ended the era of believing what we see. Entire manufactured multimodal immersive experiences at levels of fidelity and apparent authenticity that seemed unattainable seemingly minutes ago.

We, John and Michael, want an authoritative text with all the stability of the print age—however late in the alphabetic game we are—that leverages all the affordances of the digital age. So, under the insightful auspices of the WAC Clearinghouse and founder Mike Palmquist, this book includes all that offers the illusion of stability in the digital age: an International Standard Book Number (ISBN), Digital Object Identifier (DOI), and and unique keywords to allow both for storage and findability. We want this book to be *read*. By human eyes. But we care less about whether the book is read off paper infused with pigment or high-resolution pixels through Gorilla glass. Having published in a variety of formats, from freely available webtexts to tightly controlled commercial publishing to academic publishers, we forgo the pennies in royalties to make this anachronistic text as accessible as possible, internationally, available with the click of a button. Reflecting a primarily digital readership, the book has no index. While we imagine some readers will use a paper interface and miss the traditional index, we also expect most would utilize the search function in PDF or eText—digital—interfaces. Indeed, we welcome and celebrate the savings in shifting from physical production, distribution, storage, and retention to digital access and perpetual retrieval—so long as the electricity and network infrastructures remain

humming. We have enough nostalgia to want to access a few physical paper copies we might sustain.

Therefore, yes, we recognize ironies in the process of capturing speech acts, turning these utterances into reader-accessible prose, sound into text, and recording those texts in a book—copies of which can be printed on demand and added to dusty shelves of similarly inert analogue sheaves of paper, waiting to be reinterpreted in the brain of a reader, an imagined audience member still attentive to the mode of textual enactment known as *reading*. And so, a book. Besides, being academics, hardcover formations continue to be the coinage most favored by promotion committees—so long as tenure remains part of the newly emergent reconfigurations of academic life: research, scholarship, teaching, and service. Indeed, a book for transferring knowledge. Certainly, tenure will survive in some form; but will it be available to writing specialists?

As Michael continues to tell students each semester, writing is worth studying precisely because it is a form of magic. An idea in one brain is painstakingly encoded into symbols that we collectively call “text,” transferred on the page or screen, and those symbols appears before a reader who interpolates the text, decodes it, imagining the voice of the author, and miraculously a close facsimile of the original thought appears in the brain of the reader. It’s a little miracle that literate minds take for granted every time that process of thinking, encoding, transference, interpretation, and engagement transpires. A thought whisks from one brain to another. Pure magic. AI provides an illusion of the encoding, but the utterances are collective probabilities of thought and not writing itself. We are Plato? As Isocrates convincingly argues, sophistry is an ancient discourse created to discern authentic thought from rote memorization. Sophistry serves us well in the age of artificial intelligence as well.

We believe in the open access print-on-demand model of publishing, and remain activist participants in the reinvention of scholarly communication in the digital age—*née* the age of artificial intelligence—and we ask the impertinent question in the future imperfect: what will literacy have become?

Artificial Intelligence, Emergent

In the wake of the burgeoning interest and hype surrounding generative and predictive artificial intelligence, we embarked on a journey to historicize the emergence and introduction of these technologies. This book presents interviews with experts who have been at the forefront of developing artificial intelligence (AI) for over a decade, offering insights that span both traditional predictive AI and cutting-edge emergence of generative AI.

With all the hype, our interest was in historicizing the emergence and introduction of generative and general artificial intelligence.

Our interview subjects were selected for their deep expertise and long-standing involvement in AI. They have been instrumental in developing and deploying

AI systems, providing a unique perspective that looks back into the past and forward into the future. Their insights are invaluable, especially as AI continues to impact workplaces and job searches, shaping the skills and knowledge required in today's workforce.

We chose our interview subjects because we knew they had been working in artificial intelligence for at least a decade, starting first with more traditional forms of predictive AI, but also were in the vanguard of generative AI. The interviews that we present are with people who know the technology quite well. They have been working with the intricacies of establishing systems for many years, and the perspectives they offer are longer range. They see further back into the past because they've been working on these issues for a long time, and they give perspective that can look further into the distant future, because they have been working and developing these technologies and the systems that are based on them for a longer time than most of us who encountered ChatGPT. As this book is being prepared, we're now seeing impacts of the technology in workplaces and employment.

AI in Education and the Workforce

We emphasize the importance of AI literacy, particularly for students and professionals. Whether skeptical or enthusiastic about AI, understanding this technology is crucial. Students, especially those from technologically advanced institutions, will inevitably face questions about AI in job interviews. Similarly, writing instructors must be prepared to discuss and potentially integrate AI into their teaching methods.

Coming from a high technology campus with a strong STEM orientation, no matter what their belief or feeling about generative AI, they will be asked about artificial intelligence when they are interviewing for jobs, and that's an important thing, even if students are skeptical, even if they do not want to use artificial intelligence technology. If they are avoiding or resisting use of the technology, they're going to be asked that question in part because they're coming from Universities and have cutting edge exposure to the technology, but also because these are the experiences that their current workforce is unlikely to have encountered. Managers and interview teams are going to ask new graduates what they think of the emergent technology, if it is as disruptive, if it is as effective, as they've been hearing—and talking to them about how different folks have planned to deploy the technology at different workplaces. The same is true of teachers of writing, whether they are teaching first year composition courses, professional writing courses, or preparing the next generation of writing instructors. Whether primarily teaching service courses, or advanced major courses, or in a concentration or a program that offers a minor, in any of these configurations, we are still bound to have an answer whether or not we want to use artificial intelligence, or to the extent to which we want to use artificial intelligence.

Our Experience with AI

Throughout the writing of this book, we have increasingly incorporated AI into our workflow. John and Michael share their experiences using AI to respond to student queries and assist in the creation of this text. While the ideas and content are ours, AI has been instrumental in clarifying complex sentences, providing running summaries of interviews, and aiding in the revision process.

One of the interesting things that has happened as we have written this book is that we have grown increasingly comfortable using the technology for certain applications in different sections. John describes the ways he has used generative artificial intelligence to respond to student queries. Michael offers narratives of different students in advanced classes working with generative artificial intelligence, but we both talk quite openly about how we use the technology in our work, in our everyday flow, and even how we've used artificial intelligence in the creation of *this* text.

This introduction was drafted as speech, spoken into Otter.ai, which produced a transcript. The transcript had “highlights” that Otter determined represented major themes in the 24-minute-long speech. That transcript was analyzed by Mistral's chatbot, which generated section headers and suggested organizational changes. For instance, the tool gathered mentions of the interview subjects together for clarity and created a list of 4 sentences that all addressed social justice issues. Those sentences were rewritten as a stand-alone paragraph.

The text itself and the ideas embedded in the text are ours. They are human created. We have used artificial intelligence to clarify muddled sentences. Interestingly, AI is good at locating confused and confusing prose, looking at a complex compound sentence and a paragraph of complex, compound sentences and drawing out main ideas—helping us with revision. If the AI can effectively assist in doing in 30 seconds or a minute what would take humans 20 minutes, half an hour, most of a day, to sort through convoluted, confused sentences or paragraphs, then why wouldn't we use the technology?

Artificial intelligence also helped compile the minute by minute running summaries offered in the analysis, the descriptions of the content as the clock is running, and we imagine readers being able to use these glosses to orient themselves in the text of the transcripts. These summaries do not create or establish ideas. They are simple functional descriptors of what is contained in the text, when it appears in the interview, and that distinction is an important part of engaging with the technology, of learning what the technology is good at, what the technology is less good at, but it's also bred of familiarity. It's only because we have developed expertise using generative AI and descriptive AI, and have spent time with several different generative AI interfaces, that we're able to meaningfully and purposefully engage the technologies and to discern how, where, and why they are effective. AI created none of the ideas in the book, wrote zero of the insights, and added nothing of value beyond streamlining the processes of writing we have already developed as expert

writers. This is perhaps a key distinction: here we are not primarily writing about the teaching of writing using AI but writing about AI in workplaces.

AI as Technosocial Agent

We acknowledge the dual nature of AI—its potential for both empowerment and disruption. By engaging with the technology, understanding its development, and participating in its deployment, we can influence its future trajectory. We draw on the insights of Bruno Latour and Paulo Freire to discuss the adoption and adaptation of technologies in people's lives, highlighting the importance of democratic engagement.

The technology simply isn't scary. We are watchful of the use of AI as an excuse for numerous unethical actions forced on to people in culture. Like a bulldozer, there is potential power in the machine and it can be abused and misapplied. Moreover, AI allows entrenched powerful cultural agents to mask continued oppressive behaviors. But the AI technology itself? It isn't scary, not to us, not anymore. Bruno Latour, in an interview from 1993 that had a strong impact on thinkers working with the early internet, said that the post-moderns often describe technology as arriving sleek and magical from beyond human intervention, and he laughed, and I think that laugh is precisely descriptive of our relationship to this emergent technology (Latour & Crawford, 1993). Latour understands technologies as historical, as the outcome of sustained human labor, working in communities to produce a given outcome. The values embedded in the technologies may be obfuscated and they may not be the values of the users, but the values are always added by those developing the technologies, discernable through engagement and investigation, as in Latour's *Aramis* (1996). The technologies are human and imbued with all the wonderful and terrible features of everything human, including the ability to both unravel the tendrils of discourse as well as intervene in the deployment and use of the technologies.

We chose these interview subjects because they contributed to and participated in and helped launch some of the most advanced and sophisticated artificial intelligence tools that professional writers and writing instructors are liable to encounter. In doing so, we can see the history of how the technology has been built and established over time. It is not a mystical force arriving from beyond the stratosphere. It is a human created technology, and yes, it is deeply problematic in that it is a corporate, controlled, billionaire-sponsored, oligarchical designed system that, in its worst applications, is seen as a way of displacing workers. Yet only through engaging the technology, understanding and criticizing this development history, and participating in the continued deployment and widespread use of the technology will we have any voice in the distribution and adaptation of these technologies.

We return to Freire's insightful distinction between *adoption* of technologies into people's lifeworlds and *adaptation* to technology in people's work. Freire's

values are very different from those expressed by the creators of AI, misaligned with ours, as expressed here (Freire & Macedo, 2000). We are primarily concerned with describing workplaces, and workplaces that are technologically advanced and financially privileged. We recognize that gap between the Brazilian peasants Freire writes about, yet that distinction between adoption into and adaptation to imposed technologies asserts an important distinction that continues to drive our interest in and evaluation of automation technologies. People either adapt to technologies that are forced upon them, and they find coping strategies, resisting strategies, whole hosts of ways of working against the perceived requirements of technologies, or they adopt them into their lifeworlds, changing their habits, their *habitus* to better interact with and labor with new artifacts in their environment, their community, their context, their surroundings.

There is hope that we can adopt technologies, even those described as disruptive, even those created through not only non-democratic but anti-democratic design regimes. We can engage those technologies and create democratic applications and niches for citizen participation. Much like Andrew Feenberg describes, we're not talking about utopian hopes for technologies that somehow are autonomously going to generate a better world or a healed planet. We acknowledge the huge amount of labor and time such engagement requires, but we also believe, with Feenberg, that the alternative—the right of refusal—leaves citizens powerless and subject to the whims of the powerful that have created the technology. In looking back at the histories of technology that have been built—the telegraph, the railroad, radio, television and broadcast technologies in the mid-20th century—each of these technologies have liberatory potential, empowering possibilities. Their histories often record initial opportunities for democratic engagement. Once they have a business model and are generating revenue, moneyed and powerful interests reduce the use value, reduce the democratic potential, reduce the liberatory potential of different technologies over time—the process that Cory Doctorow so wonderfully captures in his term *enshittification*. Artificial intelligence is a significant and powerful emergent, disruptive technology, thoroughly enshittified.

AI as Co-Created Agent

In a 2025 presentation for the Berkeley Language Center's *Language, Literature & Culture Study in an Age of AI* conference, Rodney H. Jones traces theories about human interaction with AI through a history of linguistics (citing Vygotsky's theory "Thought itself ... cannot take place without cultural tools to mediate it"), media theory, (citing Marshall McLuhan's understanding of media as extensions of humans), cybernetics (Katherine Hayles' concept of technogenesis), human-computer interaction (Alan M. Knowles's theory of machine-in-the-loop systems), and post-humanism (Donna Haraway and Karen Barad, with Haraway's cyborg thinking and Barad's understanding of "humans, the physical world, and technologies as always already entangled") (Jones, 2025). Jones

ultimately explores how a post-humanist understanding of AI might inform classroom practices regarding LLMs, but his work is also helpful in understanding how we conceptualize AI throughout the book as infrastructural in relation to the workplace and writing classrooms.

Situating AI within post-humanist theories, Jones argues that, “From this [post-humanist] perspective, it’s not a matter of interactions between separate entities separated by a jagged frontier, but of intra-action—the ways different parts of the whole work together and come to co-constitute one another” (2025, 25:43). To understand these “intra-actions” as a process of co-creation, Jones distinguishes between loops and cuts, explaining that “The loop metaphor assumes that human-machine interaction is about regulating and improving a system, while the cut metaphor recognizes that each interaction redefines what counts as human, machine, creativity, intelligence and culture” (27:28). While this distinction is useful for moving broader conversations in the field forward, as technical communicators (like Knowles) we are invested in “regulating and improving” human-machine interactions, in this case with AI in particular. We would be doing our students a tremendous disservice if we weren’t, though we must also do so critically and ethically. That said, Jones also attempts to translate post-humanist understandings of AI “into actual pedagogical practice” (28:02), and several of his insights help describe how we implicitly approached the research in this book. Jones defines creativity as a combination of three concepts: interfacing, inferencing, and imagining. Imagining, in particular, identifies an important underlying assumption that emerged from our dialog and analysis throughout the process of writing. Jones explains:

This idea that we shouldn’t be focusing on using AI, but on imagining it, has also been gaining ground in the digital humanities, with scholars like Foster and Evans [Evans & Foster, 2024], who suggest that literary scholars shouldn’t try to turn AI into good literary critics, but rather strive to create what they call “bad robots,” designed to disrupt conventional readings, changing the question from, “Is AI a good literary critic?” to “What kind of literary critic can I imagine AI to be?” and “What kind of critic can AI imagine me to be?” (48:27)

Similar to Jones, in our Conclusion we call for a shift away from framing AI as a potential replacement for technical communicators towards understanding AI as an assistant. That said, replacing “literary critic” with “technical communicator” in Jones’ construction illustrates an important unstated premise of our research. Not only did we set out to answer the question of “How are technical and professional communicators using AI in the workplace?” and “What now?” we also found answers to the questions “What kind of technical and professional communicators can we imagine AI to be?” and “What kind of technical and professional communicators can AI imagine us to be?” These questions are

entangled with Derek Mueller's questions in the foreword: What is AI for? What are people for?

Jones concludes his presentation by referencing Sarah Burris' dissertation, amplifying three commitments that Burris calls for:

[Burris] Argues that critical post-human literacies require that we commit to three things. First, a recognition of entanglement. The understanding that creativity is not about power or control, but about how we share the world with other human and non-human beings. Second, speculative thinking, which is about training our capacities to simulate and role-play and imagine. And last, ethical engagement, which is not just a commitment to social justice and the critical questioning of power relations, but the recognition that we are always implicated in processes of gentle cutting, of talking AI into existence. We are always in some way responsible. We are always on the hook. (49:16)

Like Jones' work, Burris' commitments are also reflected at different points throughout—with our emphasis being on speculative thinking and ethical engagement.

Historical Context and Future Potential

Looking back at the history of technologies like the telegraph, radio, and television, we see patterns of initial democratic potential followed by corporate control. AI, as a powerful and disruptive technology, follows a similar path. We feel a professional obligation to explore its potential for social justice and democratic application, despite the challenges posed by its corporate-controlled design history.

We feel we have an obligation, and we do have interest in engaging and articulating possibilities for the technology, however unlikely it is to realize any liberatory potential. We also feel professional obligation to engage with and articulate the possibilities for the technology, because we know that every literate user, every writing instructor, every student and every student becoming a professional, every young emergent professional who takes the time to understand and utilize the technology has the potential to become the user who cracks the code, makes some insight, creates some unforeseen ability to engage and rearticulate the technology and bring it in the direction of Feenberg's pre-Internet French Teletel and Minitel. We see potential for social justice in AI, as we tell the tale briefly, of a New York City lawyer who brings in artificial technology to help support tenants' rights. The same tenants who need the support of this technology simply would not be able to afford the kind of legal representation that they need to take on their moneyed landlords. That discrepancy in power is precisely the kind of asymmetrical resistance that a tool as powerful as artificial intelligence

can provide. We're not saying that undoes any loss of employment that seems on the horizon, but we hold fast to our assertion that unethical management practices result in layoffs. Managers, CEOs, and HR professionals are blaming and scapegoating the technology when these powerful decision-makers are looking for ways to reduce the workforce and further increase productivity by further encumbering over-burdened workers.

Emergent Examples: Future Agents ... of Justice?

We hope that this book inspires readers to see the alternative configurations of AI that are possible. By engaging with the technology critically and creatively, we can shape its future in ways that align with democratic values and social justice. We draw parallels with the early internet and the participatory ethos of platforms like Wikipedia, envisioning a future where AI can be a tool for empowerment and resistance to power, asymmetrically.

While concern for the environment has driven significant critique of AI, our apprehensions stem from the technology's development history. It is a top-down technology, feared often for its labor-saving and therefore workforce reduction potential. While we continue to assert that decision-making based on these empty promises are abuses of power, such critique has not stopped unscrupulous managers from using the technology as an excuse to reduce the number of employees. While unfortunate, such labor reductions seem to be localized for the moment.

Moreover, it is at the intersection of social justice and artificial intelligence we wish to dwell. Social justice applications and citizen control of the technology is vividly exemplified through the lens of tenants' rights in legal aid AI. By examining case studies where AI has been deployed to support tenants' legal rights, we can observe how technology can be harnessed to address systemic inequalities. This exploration leads to a broader consideration of what constitutes legal aid AI and its potential to transform access to justice.

Sateesh Nori developed Roxanne AI in order to support the needs of tenants in New York City who could not otherwise afford legal consultation let alone representation (Poggio, 2025). In New York City, tenants often face difficulties in getting landlords to make necessary repairs, often enduring long wait times and complex legal processes with limited professional support. To address this issue, Nori, a housing attorney and professor at NYU (New York University) School of Law, developed Roxanne AI, an AI-powered chatbot. Launched in early January of 2025, Roxanne AI provides tenants with actionable legal information about their rights regarding repairs and housing conditions.

The chatbot, a collaboration between NYU Law School, Housing Court Answers, and Josef Legal, uses retrieval-augmented generation (RAG) technology²

2. See Martineau, 2023 for a more detailed explanation of this approach: <https://research.ibm.com/blog/retrieval-augmented-generation-RAG>

to guide tenants through legal processes for issues like heating, hot water, mold, and lead paint. It aims to fill a gap in legal assistance, as the right to counsel in eviction cases does not extend to repair issues.

Roxanne AI has been used thousands of times, with positive feedback on its ease of use and accuracy. The chatbot is designed to avoid providing incorrect information and has garnered interest from legal aid organizations, the New York court system, and the state attorney general's office for its potential to improve access to justice. With landlords resorting to orbital strategies to hide their identity as well as their organization's size from tenants, such real estate legal shenanigans have attracted scholarly (Gomory et al., 2024) as well as citizen journalist (Mykulyn & Raymond, 2022) and activist attention (Dingari, 2023). There is enough demand from a wider public audience that such case studies and stories that Thompson-Reuters has established a "channel," or persistent web presence, for "AI for Legal Aid" and "AI for Justice" (Thomson Reuters, 2025) among its technology-centered reporting.

Drawing on Andrew Feenberg's philosophy of technology, we argue that, while initial opportunity for participatory design in AI development has passed, activist engagement allows for the reapplication of AI as an engine for citizens' rights. Feenberg's emphasis on the social shaping of technology underscores the importance of stakeholders impacting usage patterns after the design process. Such interventions, like Sateesh Nori's Roxanne AI, offers examples of effective reinterpretations of AI systems that show pathways forward reflecting and promoting social justice values, however the technology was developed. This participatory dimension may not immediately democratize the technology but it fosters critical citizen engagement, empowering individuals to actively shape the tools that govern their lives.

The potential of AI to advance social justice, particularly in the realm of tenants' rights and legal aid, is significant. Through participatory design and a commitment to linguistic inclusivity, AI can be reimagined as a tool for empowering citizens and promoting a more just relationship among populations with competing interests.

The organization Black in AI³ recognizes contributions to the developing technology from one underrepresented group and points a way forward in engaging and participating in the development of the technology into the future. Meanwhile, HYFIN historicizes and rearticulates the timeline of the technology's development, making sure contributions from a wide variety of programmers and designers are recognized (Moody, 2024).

Though some critiques of AI center on its environmental costs—particularly electricity and water usage—these concerns, while urgent, risk narrowing our focus to infrastructural efficiency. Groups like Black in AI and HYFIN expand the conversation, showing that shaping AI's future also depends on recognizing

3. <https://www.blackinai.org/about>

who contributes to its development and how those contributions are framed. All networked computer requests consume resources: electricity to run hot memory, access long-term storage, and transfer data. Analysis of AI requests are misleading insofar as the resources necessary to run standard internet data requests are part of the AI requests, indistinguishable from them, and so the AI premium of resource consumption is unclear at best (Amanta, 2024; Energy.gov, 2024) and, at worst, misleading. It is true that the organizations supporting AI development are considering new low-cost power sources, pointedly modular nuclear power, which is a chilling dimension to a narrative already fraught with alarmist appeals to moral panic. And it seems we use every kilowatt for new processes saved through efficiency, known as the rebound effect (Greening et al., 2000). These infrastructural dynamics matter, and surface at times throughout our interviews—but so do the stories we tell about AI's origins and potential.

As readers engage this text and read the interview transcripts, we hope readers catch glimmers of the alternative configurations of artificial intelligence that we not only see, but hope for. Michael remembers the beginning of the internet, Internet 1.0, that held the potential power of the electronic printing press. The early web presented opportunities for writers, for authors, to control and contribute texts and ideas as never before. The journal *Kairos* emerged from that early web, and it is in that spirit that we engage artificial intelligence not as a *fait accompli*, but as an ongoing unfinished narrative. Citizens have important roles to play in what artificial intelligence will and can become, and our hope remains that this slim volume contributes to not just alternatives, but a powerful counterfactual engagement with the technology that reflects the hope—the optimism—of the early web that recreates or re-envision hopes for participatory technologies. We're happy that Wikipedia still exists and that it has mostly, and interestingly, recently remained resiliently resistant to oligarchical meddling,⁴ that it has maintained attention to the participatory and democratic values on which it was founded. We hope that the early case studies we include, like those aimed at increasing the potential for social justice supported by artificial intelligence, that we will see new green shoots, new potential counter-cultural and counter-trend examples emerge in the tradition of Hawk (2007). We hope we might even inspire students and other literacy professionals to download, experiment, and reprogram open-source chatbots. We can build our own rebellious, subversive versions of AI technologies: resistance machines

4. Britain's *Guardian* first reported tension between Musk and Wikipedia in 2024, then France's *Le Monde* was the first to report Musk's renewed attack on the functional, democratic technology in the wake of the enshitification of X, formerly Twitter. See <https://www.theguardian.com/commentisfree/2023/oct/23/why-is-elon-musk-attacking-wikipedia-because-its-very-existence-offends-him> and https://www.lemonde.fr/en/pixels/article/2025/01/29/why-elon-musk-is-calling-for-a-boycott-of-wikipedia_6737574_13.html

that automate dissent, subversion, social action, and amplify pro-democracy messaging. We look forward to case studies of AI rhetorical jujitsu, which use the momentum of the hype machine against itself to demonstrate how we can push the oligarchs off balance and reclaim access to the deeply powerful but misapplied lessons of generative artificial intelligence.

Artificial Intelligence as Superpower

Over the last few years, we have been fortunate enough to speak with people who have been defining, creating, and working with artificial intelligence technologies. Here, we present three extended interviews with people who have occupied representative places in organizations and industries that reveal the development, current status, and the future of these technologies. It has become commonplace to mention Gibson's oft-referenced mantra, that the future is here; it just isn't evenly distributed, and nowhere is that more evident than in the use of programmed agents in the workplace. But technoculture critic Igor Schwarzmenn asserts the time for that quote has passed, asserting:

The more we rely on this quote as a mantra, the more we relinquish our own agency. It puts us all into the position of living in a future that belongs to someone else and never our own. (Schwarzmenn, 2019)

If Schwarzmenn is right, the last thing John and Michael want to do is erase the agency of our interviewees, especially Bridget and Kate, whose gender status leave them often spoken over and under-appreciated in the male-dominated tech sector; they have earned their agency and expertise. These are both technical experts and literacy experts, and provide insight into professional uses of language models, the promise they represent, as well as some of the pitfalls these technologies have revealed. Our hope is that readers will be able to discern the useful role AI has in communication. Our motivation in collecting these narratives is to strengthen our assertion that artificial intelligence, deployed as a human-centered and participatory technology, can enhance human capacity for symbolic-analytic work, problem-solving, and increase satisfaction for work beyond the information age into whatever the human-machine cooperative co-botic future comes to be called. Far from displacing humans, by focusing on the lived experiences of our interview subjects, we see potential for expanding human capacity with artificial intelligence, which Shneiderman insists has the capacity to become a "superpower" (2022). So long, that is, as the technology is developed as a human-centered technology with controls, affordances, and transparency.

Together, the three interviews provide an overarching introduction to the creation, establishment, and work-a-day world of artificial intelligence technologies. Developed over the last few decades, the recent public emergence of numerous

generative AI tools for producing text, images, audio, and video is a public cotillion for capabilities that have long been in development. The interviews have been selected because of the places they hold on the timeline of the development of the technologies, in representative organizations, and the kinds of work being done by rhetorically trained professionals.

Artificial Infrastructures articulates the emergent roles of artificial intelligence specifically in high technology environments, with an eye toward the concerns of technical and professional writing experts and writing instructors, accessible to readers with a wide range of familiarity with artificial intelligence technology. The book addresses the question of *What now?* in an age when artificial agents draft text and respond to requests for unique prose. We are mindful that by the time this text is published, the capabilities and even the names of the technologies referenced will likely have changed, and may have cycled through more than one or two generations, leaving the technologies more capable and even more discomfitingly uncanny. Yet undeniably *artificial*.

Artificial Infrastructures develops a durable argument about the nature of technology, ensuring it lasts longer than the current generation of AI tools. With a new GPT engine available as this book is published, the next generation already promises to “radically disrupt” writing, and by extension, the lives and careers of writing professionals (and writing instructors & instruction). Rather than anxiety caused by the disruption of writing with the aid of technology, *Artificial Infrastructures* recognizes the “always already” nature of literacy and its technological enframement, arranged and presented for writing teachers, professional writers, and professionals who write.

Organization & Structure

At its core, *Artificial Infrastructures* is built on a tradition of expert narrative and interview. Three professionals who have worked with artificial intelligence, in its early integration into image analysis, copy and instruction writing, and finally, in high-technology manufacturing and engineering. Our three expert participants offer long histories of automation, technology integration, and language digitization in a broad range of applications and workplaces. Since Plato—through Socrates in the *Phaedrus*—declared that technology in the form of writing gave students the appearance of wisdom without its substance, each emergent technology from alphabetic representation on the page to cut and paste through grammar checkers, Wikipedia, through paper mills through today’s artificial agents, writing has been contested ground since the western tradition equates identity and intellectual accomplishment with literate action. This is never more evident than in the increasing demands for publication in ever-more selective publishing outlets for academics to produce prose that fewer and fewer audience members actually have time to read. Machines—algorithms—that produce the appearance of literate action are not only suspect, but

to some corners of literacy professionalization, existentially threatening. *Artificial Infrastructures* addresses the concerns of these readers and informs those who address such audiences, offering perspective that informs and delights while also offering a salve to the apparent threat inherent in the appearance of intelligences that produce spontaneous copy. Historical, professional, as well as technological precedent informs the analysis presented alongside and between the interviews.

Three interviews are the core of the short text:

- A BA-prepared professional with over a decade of experience working, first, in museum curation and exhibit design, joined a startup as employee #7, the startup was acquired by a large stock image company, where she now writes a blog about the role of artificial intelligence in stock image search. Along the way, she designed and hosted one of the earliest AI professional conferences and is a recognized expert in algorithmic image search and creation.
- A Ph.D. prepared professional writer with two decades of experience who began as a technical writer for a multinational usability laboratory, became an independent contractor, and then joined a larger international security software corporation. Her current work involves balancing algorithmically-created copy with (human-) written text from support instructions to in-house technical documentation to marketing writing. She has seen the development of the field from technical writer to document specialist to usability engineer to experience architect and to whatever is next.
- Finally, we interview a senior expert with 30-plus years of experience working with advanced manufacturing and pharmaceutical production representing the interests of industry experts who have direct experience integrating AI-supported systems. With experience designing production systems for pharmaceuticals and advanced manufacturing, we ask the interview participant to speculate meaningfully about the field's future. This interview grounds the text in compelling recent real-world examples of manufacturing companies incorporating AI as well as automation and AI in pharmaceuticals and healthcare.

The book *Artificial Infrastructures* engages concerns of writing instructors and working professional writers considering their futures, articulates the role of writing for working professionals, engages students of professional and technical writing with substantive examples and role models for successful career trajectories. Artificial intelligence, in its many facets, is the revolution in technology we have prepared for, and we are ready to take advantage of its affordances. *Artificial Infrastructures* describes these opportunities and asserts strategies for advantageously engaging emerging technologies while dispelling many (mostly western) myths that link literate text production with identity formation and rational thinking.

This book, with its central focus on the convergence of writing, literacy, and artificial intelligence, places a substantial emphasis on the provision of vivid and context-rich insights through interviews with seasoned professionals actively engaged in AI development. These professionals stand as exemplars, demonstrating the real-world applications and consequences of AI technologies. The book's structure is designed to ensure that these interviews, complemented by in-depth analyses, furnish readers with a comprehensive understanding of AI's multifaceted roles across diverse professional domains. It builds on the history of computers and literacy as developed by the computers and writing community as well as the tradition of professional interviews with subject matter experts, as exemplified by Savage & Sullivan (2000) among many others. These encompass image sorting, content generation, advanced manufacturing, and pharmaceuticals. Through these interviews, readers gain invaluable and practical insights into the actual significance and potential of AI, making this book an indispensable resource for anyone interested in this emergent technology focused on the needs of writing teachers, technical communicators, and future professional writers.

A note on usage: we are aware of the increasingly popular use of TPC for *Technical and Professional Communicators* among scholars and pedagogues we read and respect and so use TPC when appropriate, as well as technical communicator, technical writer, professional communicator, and professional writer at different places in the text. *Technorhetor* is a favorite of Michael, while he also has some stake in convincing more professionals to accept Experience Architect as a title. While we note these terms are not without baggage, in a text as long and complex as this, we use numerous constructions for readability and wide appeal. We trust the reader will understand.

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The future is unwritten.

—Joe Strummer, *The Future is Unwritten*

# Chapter 1. The Current State of Artificial Intelligence in Writing

## Research Ensemble of Humans, Robots, Texts, and Computers

As scholars and researchers, we increasingly find ourselves in collaborative spaces where humans and artificial intelligence (AI) tools work side by side. This section is a reflection on our experience of working within such an ensemble, composed of human researchers, undergraduate interns, and AI agents like Otter.ai, all of which contributed to a more streamlined, productive, and less tedious research process. Our purpose is to demystify the alien-seeming partnership with our virtual tools and normalize the technology by emphasizing its mundane use rather than highlighting its more exotic, emergent qualities. By leveraging the capabilities of AI to handle repetitive tasks, we were able to focus our attention on analysis, writing, and organizing the core elements of our work. An earlier version of this section is published as an experience report paper published by the ACM SIGDOC and presented at the 2024 conference (Salvo & Sherrill, 2024).

We assembled a collaborative research team comprising a senior researcher, a junior faculty member, and six undergraduates. Alongside our usual technology tools—computers, software, smartphones, tablets, internet access, email, student backchannels, scheduling apps, and file sharing—we used AI to generate transcripts. Each team member, including our AI collaborators, contributed uniquely. In particular, Otter.ai, an AI-powered transcription tool, played a key role by providing quick, rough transcripts of interviews. These transcripts weren't publishable but offered a reliable foundation for further analysis. By handling transcription, Otter.ai saved us considerable time, allowing more focus on interpretation. It belongs to a more traditional class of AI tools, distinct from emergent generative AI—a distinction discussed in the next section.

Our interviewees were compelling figures in their own right. But were they team members? Chosen for their experience with both traditional and generative AI, they had no stake in this text but generously offered time, energy, and access to otherwise unavailable insights. Their interviews affirmed and extended observations made by Michael and John, offering vital triangulation and strengthening our findings. While many points aligned with expectations, each conversation—including a final exchange between John and Michael—offered surprising, insightful turns. Perhaps the most fitting way to describe the interviewees is by their proximity to the center of concentric circles: human and technological, primary and secondary researchers, informants and collaborators. These distinctions highlight varied participant roles, yet all contributed meaningfully to the collective.

The novice researchers on our team took these initial AI-generated transcripts and, using Robert S. Weiss's *Learning from Strangers* (1995) as a guide, edited them into coherent, readable prose. The students learned to transform the raw transcripts into formal writing that stayed true to the spirit of the spoken word while making them readable as text, a task that required both human intuition and attention to rhetorical nuance. In short, while Otter.ai gave us a head start, it was the human researchers who refined and enriched the material, ensuring accuracy, engagement, and readability (or so we hope).

What we found in this process is that AI need not displace humans but rather enhanced our ability to focus on more creative and intellectually demanding work. In this regard, we are aligning ourselves with the concept of *Human-Centered Artificial Intelligence* (HCAI) as outlined by Ben Shneiderman (2022) as well as echoed here both in Bridget and Kate's interviews. AI tools can give researchers what Shneiderman describes as "superpowers"—amplifying our abilities to complete tasks faster and with less effort. The tedious work of transcription, for example, was completed much more efficiently by our AI partner, leaving our human team with the more satisfying task of crafting the research narrative.

This is not to say that the role of AI in research is without challenges or concerns. A prevailing worry in many academic and professional circles is that AI will replace human jobs, taking over the very work that defines our expertise. We, however, experienced the opposite. AI was a collaborative partner, not a replacement for human labor. The technology relieved us of some of the more monotonous aspects of the work—like transcription—without taking away from the core research tasks that required human insight. Instead, we were able to discuss word choice and replacement, argue over what the word meant on the recording, and try to decipher competing threads of language when participants spoke over each other or referred to shared knowledge not explicitly stated. Each is an example of content beyond the ability of AI to ponder, as pondering is quite beyond the robots' capacity. It's important to acknowledge that while AI tools might multiply our productivity, they do so under the guidance and supervision of human researchers. We, humans, remain the driving force behind the research agenda, making critical decisions, interpreting data, and generating the scholarly content.

This collaboration between humans and machines led us to reflect on the concept of technological determinism—the idea that technology drives progress, independent of human will or agency. In our work, we consciously avoided falling into this trap. While AI undoubtedly sped up certain parts of our research process, it did not drive the project. Instead, it supported us. The research ensemble—a collective of human and non-human agents—functioned because we designed it to, always with a human-centered focus. Without our direction and critical oversight, the AI tools would have produced transcripts, but they would not have resulted in readable prose.

One of the standout moments in our collaboration came from Teah, an undergraduate member of our team. Teah quickly emerged as a leader, using

AI-enhanced tools to support the research in innovative ways. Specifically, she worked with image-generation technologies to develop visual content that represented video interview data in still images. She produced the screenshot images that appear in Kate's transcript. The AI generated numerous draft images, each offering different visual possibilities, but it was Teah's human expertise that selected and refined the images for inclusion in the final manuscript. The AI, in this case, did not replace the labor of visual design but accelerated the process of generating alternatives, allowing Teah to concentrate on the more complex work of refining and editing the images to meet the project's needs.

Teah's screenshots remain an important touchstone when John and Michael discuss the role of AI on the research team. Kate had a wonderfully structured presentation prepared and walked us through important steps in her and her teams' use of automated tools in three different environments (see Kate's interview for more). As video, the presentation and steps she took helped us understand her teams' working processes. The challenge was to translate the expert presentation, following John and Michael's conversational cues, and determining what a different audience—the readers of this text, *you*—would need visually to comprehend the details of Kate's presentation. As a team, we watched and rewatched the relevant sections of the interview, determining key elements and advising Teah on details she might want to represent for clarity with team members commenting and asking for refinement and clarity. The AI tool enabled rapid prototyping and Teah sketched a number of possible redesigns, sharing each draft not as contenders for inclusion but as visual strategies to represent fluid video in static text. We think we succeeded in capturing key elements of Kate's expert presentation, but ultimately it is the reader's role to determine whether the final product conveys the concepts Kate, Michael, and John seek to share.

This experience reveals how AI can support human creativity, rather than undermine it. AI tools are not autonomous agents with independent desires or capabilities. Here, they are extensions of our human research teams, assisting us with tasks that would otherwise slow us down and focus attention elsewhere than on the research. The human-AI partnership we established within this research ensemble allowed us to direct our energy toward more meaningful and challenging aspects of the project. This is, in part, why our undergraduate team was able to remain productive and engaged throughout the process.

Our collaborative team—the mixture of interview subjects, senior and junior faculty, undergraduate researchers, and AI agents—was successful because of shared goals and collaborative, inclusive design. The AI agents handled the initial legwork, such as transcriptions, but their role was always to support the human researchers. As we worked, we were reminded of a critical distinction: AI tools, no matter how advanced, are limited by the instructions and intentions of their human creators, dependent on human direction to derive outcomes that hold significance for the humans directing action. The AI agents in our project were effective because we directed them and infused them



with our intellectual goals. In other words, the AI did not dictate the direction of the research; it facilitated it.

There is, however, a broader lesson to be drawn from this experience. The integration of AI into research ensembles has the potential to reshape how we work, but only if we maintain a human-centered approach. AI cannot and should not replace the uniquely human elements of research: interpretation, creativity, and critical thinking. Instead, AI offers us an opportunity to offload routine tasks, allowing us to focus on higher-order intellectual work. So long as humans retain control over the research process, AI can serve as a powerful partner.

The research ensemble we created represents one future of scholarly collaboration. The partnership between humans and AI allowed us to create a workflow that was not only efficient and effective but also deeply satisfying. By leveraging AI tools for routine tasks, we were able to concentrate on more engaging, intellectually stimulating work: should we conclude with pizza metaphors, and will the audience understand or care about John's struggles with reporting trail-blocking barriers, and do these metaphors illuminate complicated relationships between humans and our devices? Pondering these questions are worthy of our attention while formatting and transcribing audio to text shrinks back as a distraction rather than a burden. This experience highlights the potential of AI to enhance work. As we look to the future, we believe that AI will continue to play an increasingly important role in research, but its success will depend on maintaining a balance where human insight and direction remain at the center of the process.

## Distinguishing Generative and Traditional Artificial Intelligence

Artificial intelligence (AI) has evolved dramatically over the past few decades, encompassing a variety of systems and applications. In a pair of 2018 *MIT Technology Review* articles, Karen Hao published two flowcharts to help individuals quickly identify when systems are using AI, and when AI is using machine learning (Hao, 2018a, 2018b). We similarly draw two distinctions here: A key differentiation within the realm of AI is between *generative AI*, which is designed to create new content, and *traditional AI*, which is primarily focused on analyzing and making predictions based on existing data. While both types of AI have transformative potential, they operate in fundamentally different ways, with distinct goals and methodologies. Understanding the differences between these two approaches is crucial for appreciating the full spectrum of AI's capabilities and its implications for various fields, including technology, art, business, and science.

Traditional AI, often referred to as *discriminative AI*, is grounded in the task of recognizing patterns and making decisions based on those patterns. This type of AI excels at classification, prediction, and optimization tasks, all of which are contingent upon large datasets that have been pre-labeled for specific purposes. Examples include facial recognition systems, credit fraud detection algorithms,



and recommendation engines used by platforms like Netflix and Amazon. These systems are designed to process input data, compare it against pre-existing patterns, and output a predefined result based on that analysis.

At its core, traditional AI is built around supervised learning methods, where a model is trained on labeled datasets. The AI learns to map specific inputs to their corresponding outputs, refining its understanding as it is exposed to more data. For example, a traditional AI model trained to detect spam emails will rely on a dataset of emails labeled as either “spam” or “not spam.” As the AI analyzes the features of these labeled emails (such as certain keywords, patterns, or sender behaviors), it learns to identify future emails that fit the characteristics of spam. Its purpose is not to generate new emails but rather to classify existing data according to learned rules.

This type of AI is task-specific and excels at automating processes that require repetitive decision-making. A well-known example is AI-powered diagnostic systems in healthcare, which can assist doctors in identifying diseases by analyzing medical scans. These systems have proven to be highly efficient at processing vast amounts of data and making accurate predictions based on known patterns. However, they are inherently limited in that they do not create new knowledge or content—they simply act on what they have learned from existing data. This is also referred to as machine learning.

In contrast, generative AI represents a more dynamic and creative form of artificial intelligence. Rather than simply identifying or classifying patterns, generative AI is designed to produce entirely new content. This new content can take many forms, including text, images, music, or even videos, and is generated based on the underlying structures and patterns the AI has learned from training data. Notable examples of generative AI include GPT-x (a language model capable of generating human-like text), DALL-E (an image generator that creates visuals from text prompts), and StyleGAN (a model that generates realistic human faces and other images).

The foundation of generative AI lies in techniques such as unsupervised learning or self-supervised learning, where the AI does not rely on explicit labels or predefined outputs. Instead, the model learns to recognize patterns and relationships within the data on its own. A common method used in generative AI is the Generative Adversarial Network (GAN), which consists of two neural networks—a generator and a discriminator—working in tandem. The generator creates new data, while the discriminator evaluates the data’s authenticity compared to real data. Over time, the generator improves its ability to produce increasingly realistic outputs, whether it is generating artwork, audio files, or synthetic datasets.

A significant aspect of generative AI is its ability to simulate creativity. For instance, when a generative language model like GPT-3 is trained on large corpora of text, it does not merely replicate what it has seen. Instead, it generates new text based on the patterns of language, grammar, and context it has learned.

This ability to create content that resembles human creativity represents a shift from traditional AI's analytical role. Generative AI is not limited to responding to input in predictable ways; it can generate novel outputs that may not have been explicitly programmed into it.

## Fundamental Differences Between Generative AI and Traditional AI

- **Objective:** One fundamental difference between these two types of AI lies in their goals. Traditional AI focuses on analyzing existing data and providing accurate classifications or predictions. It is task-specific, aiming to improve efficiency in tasks like sorting, diagnosing, or recommending. Generative AI, on the other hand, is focused on creating new content, often attempting to mimic human-like creativity. Its objective is to innovate and generate outputs that are novel and previously unseen.
- **Methodology:** Traditional AI typically employs supervised learning, requiring large, labeled datasets to function meaningfully. Generative AI often utilizes unsupervised or self-supervised learning, which does not depend on labeled data. Instead, generative models are designed to uncover hidden patterns within the data, allowing them to generate new and original content. Techniques like GANs and transformer-based models (such as OpenAI) enable these systems to push the boundaries of creativity.
- **Output:** The output of traditional AI is often deterministic and predictable. Given a certain input, traditional AI models will provide a predefined outcome, such as identifying whether an email is spam or not, or determining if a medical scan shows signs of a disease. Generative AI, by contrast, produces novel outputs—text, images, or music that did not previously exist. This creative output is not a replication of the data it has been trained on but a synthesis of patterns that allow it to generate something new, at least probabilistically.
- **Use Cases:** Traditional AI is used in scenarios where repetitive, accurate decision-making and classification are critical. This includes applications like fraud detection, recommendation systems, or autonomous driving. Generative AI, however, is used in contexts where new content creation is the goal. It is employed in fields such as text and image generation, where AI creates articles, stories, or marketing copy, and in visual and aural applications, where it generates images or sound. Additionally, generative AI is being used in synthetic data generation, which helps in creating artificial datasets for training other AI models without exposing real, sensitive data. John and Michael have published on this question in usability and whether data generated through user participation can be automated. While our answer, in short, is no, the expense of usability testing will make synthetic feedback increasingly attractive, if ultimately rendering usability useless in an entropic feedback loop. See the Conclusion for more on information entropy.

## Working with Both Traditional and Generative AI

The emergence of generative AI marks a milestone in the development of artificial intelligence. By enabling machines to generate novel content, we enter an era where machines can simulate creativity—a domain traditionally reserved for humans. The potential applications range from automating creative processes to generating synthetic data for training other AI systems. The industry claims this process preserves privacy because no discernable link can be made between the data the AI used to produce its personas and real people.

While AI appears to preserve privacy, the rationale sidesteps the issues—ethical and otherwise—regarding whether this data is authentic or reliable. Further, generative capabilities raise a host of ethical concerns and challenges. The ability to generate convincing synthetic content—such as deepfake videos or AI-written articles—raises questions about intellectual property, misinformation, and the ethical deployment of these technologies. It becomes essential to ensure that generative AI is used responsibly, balancing innovation with safeguards against misuse.

The primary distinction between generative AI and traditional AI lies in their objectives and methods. Traditional AI excels at analyzing and classifying existing data, while generative AI pushes the boundaries of creativity by generating new content. Both forms of AI are transformative in their own ways, but generative AI introduces novel possibilities by enabling machines to mimic human creativity, potentially revolutionizing industries from the arts to technology. As generative AI continues to evolve, it will be essential to explore its applications thoughtfully and ensure ethical guidelines are in place to manage its far-reaching impacts.

Distinguishing between different kinds of artificial agents is important: while new generative AI applications have captured the attention of the technology press, investors, and the general public, traditional forms of AI have been in unremarkable and mundane use for quite some time. The implication of creativity in novel expressions of language and image both make creatives nervous and promise access. In this text, John and Michael have been careful to point to promises of the new technologies, and we agree that the emergent agents open a new realm of creativity not available previously, and agree with Bridget that AI deserves the coverage it receives as a “big deal.” What we find ourselves concerned about, though, differs from many critical angles. We are less worried about power consumption: all electronic technologies require electricity to function and numerous investigative journalists are revealing some truly horrifying abuses, and we leave it to them and cheer them on. Another thread of criticism has been intellectual property, and we rely on Peter Schoppert’s important work cataloguing the ISBNs included in various language models. Interestingly, Michael was actually disappointed that the ISBNs of neither of his books were included, but the third wave included the edited collection. And with Routledge’s announcement that they have a collaboration with Microsoft, the monograph has been assimilated into the Borg (Dutton, 2024; Schoppert, 2023a, 2023b).

Latour used the novelist Richard Powers to explain *scientifiction*: not space opera or alien horror but science fact stretched just slightly into the future—plausible and based in emergent laboratory findings, stretched to imagine what *might* or *could* happen. Powers has written about genomic intervention, articulating a new Frankenstein’s Monster and imagined how trees communicate over eons. That last book, *Overstory*, won the Pulitzer Prize in 2019. And he has written about artificial intelligence and saving the planet from environmental devastation in 2024 by “colonizing” oceans. Powers famously revealed his use of speech-to-text technology only after winning the National Book Award in 2006 for *EchoMaker*, a book simultaneously about a fractured human mind and the equally fragmented environment. In 2007, National Book Award in hand, he described how he was no longer able to sit at a desk and type for hours every day. He was using technology—speech to text—to write. He didn’t want to be known as the dictating novelist, so did not reveal his technology usage profile until after winning the prestigious prize. He published a piece in the *New York Times Review of Books* in 2007 describing his process (Powers, 2007).

We have no delusions about winning prizes for our work, but did want to describe our technology practice, particularly how we are using AI, both traditional and generative, in the interests of transparency. Michael’s practice has changed through the process of writing this text, starting tentatively with Otter.ai for transcription. Besides creating the transliterated transcripts described elsewhere in this book, Otter.ai also provides summaries of the scripts. These summaries supported writing the timestamped overviews of the interviews, again reducing tedious tasks by creating structure and then we rewrote and revised the summary text. We started using the transcriptions to navigate the interviews, remembering a keyword or pithy phrase and then not being able to locate it in a timely manner, so the AI-generated summary became a tool for our own use. When we considered the reader and the accessibility of the transcript texts, we decided to leave them as part of the printed artifact. As reader, you will ultimately decide whether this is a helpful gloss accompanying the transcripts and, as an open-source text, having two copies, side by side, one open to the transcript and the other open to the summary may provide a further use case for scholarly open-source electronic texts. The most “generative” of AI use was in scraping text from existing slide decks and pasting them into AI prompts, and the chatbot compiled messy notes into a zero draft by putting related content together and stripping any formatting from the text. Editing and revision was all done by its human authors. This process is consistent with the descriptions of technology support and elimination of repetitive tasks in writing, while acknowledging that every word was not selected and typed by the credited authors. Like Powers before us, we confess to using technology.

Similarly, Michael and John used AI to help clarify long, complex sentences and organize confusing sections of text. While algorithmic interventions in the book were modest, it does signal a shift in the way we think about text and

the fear of the empty page, which is where most of Michael's writing frustrations arise.

*What am I trying to say here?* It is a question I ask myself during revision, and the literal prompt I used when interacting with the generative AI chatbot, asking the AI to locate subjects, verbs, and nouns, independent and dependent clauses, and to untangle subordinated clauses and sentences, to highlight fragments.

With something already on the page, the task of revision somehow seems less daunting. For John, generative AI is helpful in stitching chunks of writing together into the confines of linear text (writing for the web vs. writing for print). Though the generative output is often corny or trite, it can help reveal implicit connections that require signposting. Is it important whether the author is revising bad prose written by a human or that provided by an algorithm? As Michael asked his class, *how much* AI provided content is an ethical amount? Twenty-five percent? And what does it mean to have 25 percent or 50 percent of the content provided algorithmically? And what of the meme we've all seen online asserting: "why would I bother reading something no human could be bothered to write?" We wonder: Are these questions that arise because generative AI assistance is new, and will these questions fall away as we generate a new sense of normalcy with our AI tools? Right now, because of hype and marketing, the most mundane of assistive applications is labelled AI. If there is a backlash, will the marketing change without altering the assistive component? All these questions remain asked but unanswered.

Meanwhile, John has discussed how he has used AI to generate routine, repetitious, and tedious communications with students and to address institutional demands. He has described the value in using the tireless robotic eyes to edit dozens of fraught end-of-semester emails with students without concern that a tired human would miss an unedited reference to someone else's name or a simple mistake that would allow a student to make an appeal based on a claim of an erroneous deadline or mathematical error. At a time of semester when all participants are tired, stressed, and error-prone, generative AI can help facilitate clearer, more empathetic communication. Similarly, John has used generative AI to quell the tedium of writing point-based rubrics—institutionally required not only for every assignment, but even for daily class activities, which in other institutional contexts would commonly be graded as complete/incomplete. Manually establishing clear performance criteria for each category of a rubric, John still does the rhetorically and pedagogically nuanced work of aligning grading criteria used to evaluate assignment outcomes with the respective assignment goals and means. John manually drafts a baseline description of excellent student work. But ChatGPT can quickly adjust the wording of descriptions within each category to fit performance levels of "Excellent," "Competent," or "Needs Improvement," requiring John to make just

minor revisions. For example, compare the following lines from a longer rubric section evaluating the organization of proposals:

*Competent:* Proposal is generally organized for readers and follows a logical progression of ideas, but may have some issues with navigation or skimmability.

*Needs Improvement:* Proposal is poorly organized and impedes skimming or easy navigation.

Such interventions do not replace expertise in education or writing pedagogy, but maximize the AI's labor-saving potential, allowing John to concentrate on the writing of new parts of this manuscript, mentally and emotionally complex aspects of teaching, and other related and unrelated research.

We imagine scenarios. We report on existing collaborations. And we gather available means of persuasion, some of which we might have overlooked without effective, if synthetic, partnerships. The integration of both traditional and generative AI into academic and professional workflows demonstrates the potential for effectiveness and innovation. Traditional AI, with its ability to automate routine, rule-based tasks, complements the creative capabilities of generative AI, which produces new content based on patterns and data. Together, they form a hybrid model that supports educators, researchers, and professionals by streamlining administrative duties and enhancing productivity. Traditional AI tools are invaluable in checking emails, proofreading documents, and providing drafts of timely feedback, as John experienced when addressing student communications. The benefit of such tools lies in their ability to reduce errors, save time, and enable more focused intellectual engagement, as well as to create reflective moments when humans can rest weary brains and let artificial agents grind through routinized tasks.

Meanwhile, generative AI offers rough new material, ideal in early ideation in research to the initial drafting of content, fostering creativity that might otherwise be hindered by more time-consuming tasks. The thoughtful use of both systems enhances human potential rather than replacing it, allowing educators to focus on high-level tasks such as pedagogy and research development: infrastructural decision-making. As we consider these tools' emerging roles, it's crucial to evaluate their effectiveness in balancing repetitive tasks with the pursuit of innovative, thought-provoking work. This synergy between traditional and generative AI serves as a promising model for how technology can assist rather than detract from academic and professional growth.

## Responsible AI Use in Writing Courses

In the discussion of student experiences with generative AI, classroom insights offer a valuable perspective on students' expectations and usage of AI tools. We provide some of our experiential insights here. Our survey findings and

observations align broadly with classroom observations shared by many in the field: while most students are familiar with the concept of generative AI, fewer have engaged with it. The policies governing AI use in academic settings remain inconsistent, ranging from outright bans to vague warnings, with Penn State's extensive site the clear exception, for which we are grateful in part to Stuart Selber's efforts to push the institution to articulate its reliance on and interwoven relationship with development of AI (The Pennsylvania State University, n.d.). Students tend to utilize AI primarily for editing and smoothing text, but seldom for substantive revisions or text improvements. Interestingly, both students and faculty express shared concerns about plagiarism and the fear that reliance on AI might reduce the depth of student learning. Recent technical communication research suggests that students use LLMs in ways similar to how Kate describes her use of Writer in Chapter 4, as a helpful brainstorming and editing tool. Aligning with our own observations and studies, Gustav Verhulsdonck and Jialei Jiang reported that students used AI-based Figma plugins to brainstorm ideas, rapidly prototype, and review design checklists in a user experience (UX) design program (2025); Aditya Johri et al., described similar uses of AI tools in the workplace to generate ideas and refine output (2025); and such experiences resemble Teah's use of AI tools to efficiently prototype images for this book.

Furthermore, the ethical considerations around AI use are being actively discussed. Students are cognizant of the implications and express a collective anxiety about the possibility of academic dishonesty. Many fear that some students exploit AI to complete assignments, undermining the integrity of those who labor without such assistance. This frustration was well articulated by students who did not want to feel like the "rube" working diligently while others leveraged AI to "automagically" produce well-formatted papers with minimal effort.

## Bits and Bots: Students Using AI

The 49-page report titled "Bits and Bots: A Guide to Ethical Artificial Intelligence, by & for Students" (Blunt, et al., 2023) was the product of an advanced professional writing course Michael recently taught. In this class, students engaged with large language model (LLM) AI tools to critically analyze and reflect on the ethical implications of AI-generated text. The report is set to be archived in Purdue University's digital library, and we look forward to it becoming publicly accessible. Once available, it will offer insights into students' collaborative work with AI, allowing readers to trace its impact (Blunt et al., 2023).<sup>5</sup>

Jeffrey was the first student to push the boundaries of AI use within our classroom, prompting ChatGPT to write in the first person—a result that surprised

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5. The Bits & Bots report is available upon request: <https://asco3d.lib.purdue.edu/repositories/2/accessions/2773>. There is a large "Request" button in the upper-right hand corner. The Purdue Libraries trace downloads.



both him and his classmates. Prior to working on the report, Michael asked students to produce three to five pages of writing within two weeks, with one catch: they had to “collaborate” with AI to varying degrees—ranging from 0 percent to 100 percent. Jeffrey, who was assigned a 100 percent AI collaboration, initially expressed concern, wondering if the assignment was a trap. However, after reassurances, he embraced the challenge and interacted with multiple AI platforms including ChatGPT, Jenni.ai, and writer.com, exhausting their free trials over a weekend. His most notable achievement came when he prompted ChatGPT to rewrite his draft in the first person, an outcome that no one in the class had anticipated. His classmates estimated that about 50 percent of his text had been AI-generated, though the true figure was 100 percent. Zero percent was the baseline of complete authorial control and revision—bespoke text, and what authors created prior to the availability of generative AI tools. The class discussed what it meant to use 25 percent as a measure of AI text production, defining it as providing minimal structural help but adding, changing or drafting a quarter to a third of the text. The class defined the 50 percent threshold as the human author providing some minimal parameters and making changes to sentence structure and order, and leaving some of the AI-provided sentences largely intact surrounded by human-authored text. At 75 percent, students defined the text as largely generatively algorithmically structured with human authorial interventions where the provided text was unclear, vague, awkward, or just wrong (as described in the description of an AI “hallucination” below). Jeffrey was working at 100 percent AI generated, which he and others defined as having no human intervention besides providing chatbot prompts, and this usually resulted in the least readable and least convincing texts. However, Jeffrey’s persistent re-submission of outputs as inputs, moving from platform to platform, and the addition of asking for the output in first person resulted in an awkward but universally mislabeled “human” production. This mislabeling indicates there are ways AI produced texts evade detection. As the technology improves, predictions are that errors and erroneous information—hallucinations—will likely decrease, which has already been borne out in the results of ever-increasingly sophisticated output from freely available AI chatbots.

Another remarkable incident occurred when Olivia discovered an AI hallucination while working with ChatGPT. The AI erroneously claimed that a medieval French philosopher named Franciscus Niger had been the first to document the myth that the Moon is made of cheese. Despite Olivia’s diligent research, she was unable to find any credible reference to such a figure. Franciscus Niger, it turned out, was a fictional character generated by the AI.

Olivia, an assiduous and ethically driven student, invested significant time into probing ChatGPT for inconsistencies, and she ultimately uncovered this significant error. Although she initially expressed reluctance to use AI for academic work, she embraced the opportunity to expose its limitations. Her experience mirrors broader concerns expressed by students like those in John’s forthcoming



study—students who are apprehensive about generative AI’s potential to facilitate academic dishonesty while simultaneously undermining their own hard work.

Olivia’s encounter with the Franciscus Niger hallucination sparked a deeper inquiry into AI reliability, prompting students to question where else the AI might have gone wrong. Olivia’s unique perspective contributed significantly to the class discussions, and her proactive approach led her to contact the Purdue archives about preserving the class report. On the last day of the semester, just as the class was winding down and reflecting on its experiences with generative AI, an email from the archivist confirmed the report would be archived—a testament to Olivia’s initiative, as well as the interest in recognizing 2023 as the year of generative AI’s emergence as an important disruptive technology, worthy of capturing students’ concerns and attitudes towards the new *technê*.

The report is available through Purdue’s digital archives, allowing both on-campus and global access. The document will be persistently findable, ensuring its contributions to discussions on ethical AI use remain accessible to a wide audience. As we reflect on this age of (mis)information, we must ask ourselves: does something truly exist if it cannot be found?

## History Redux: AI & Rhetoric Intertwined

Rhetoric, artificial intelligence, and automation have been deeply intertwined from the late 20th century into the 21st. The roots of rhetoric—an ancient *technê* for communication, argumentation, and persuasion—are closely linked to mechanistic views of language, a connection explored by Walter Ong in his studies of Ramus (1958, 2004) and the shift from medieval to early modern rhetoric. More recently, Lynette Hunter’s “Rhetoric and Artificial Intelligence” (1991) traced the rhetorical grounding of AI, positioning it as a technological resource integral to persuasion. Hunter’s historical analysis demonstrates rhetoric’s long-standing relationship with AI, independent of the distinctions between functional rhetoric and its romanticized forms.

Technology, especially digital technology, has profoundly shaped rhetoric and literacy. Since Ong’s *Orality and Literacy* (1982), scholars have examined media’s implications for argumentation and persuasion. Hunter’s work provides a historical foundation for understanding rhetoric and AI at the dawn of the networked digital age. She explores how rhetoric transformed during the 16th and 17th centuries, when logic was separated from rhetoric, leading to an emphasis on pure reasoning (1991). This shift pushed rhetoric toward mere ornamentation, yet it remained essential for persuasion. Ong’s studies of Ramus remain instructive here.

Hunter argues that AI’s development, grounded in formal logic and heuristic procedures, mirrors Aristotle’s distinction between logic and dialectic. While AI has significantly advanced rhetorical strategies, it has largely overlooked “stance”—the dynamic relationship between rhetor, audience, and text (1991).

Modern science, with its focus on rationality, often frames rhetoric as unnecessary, aligning with Aristotle's "demonstrative" argument, which dismisses persuasion in favor of self-evident reasoning. Empirical bias isolates rhetoric from its social and contextual foundations.

AI's focus on problem-solving and knowledge representation within isolated systems limits its ability to engage with context—central to rhetoric. By prioritizing exact representation over persuasion, AI denies the necessity of rhetoric in navigating uncertainty. Instead, Hunter suggests that AI should acknowledge its limitations and contribute to evaluating the multiple realities shaped by modern technology. Ultimately, her work underscores the importance of integrating rhetorical awareness into AI, allowing for a more nuanced understanding of its role in shaping discourse. Recognizing rhetoric's complexity may better equip AI to address ethical and communicative challenges, or will continue to define its limitations.

As early as 1991, scholars recognized context as key to AI's development. That demand for contextual understanding remains, yet generative AI in 2025 performs remarkably well despite limited context. The intersection of Platonic and Aristotelian rhetoric with AI expectations reveals rhetoric as *technê*—a structured, almost algorithmic set of principles designed to persuade. AI's reliance on probabilistic word prediction exposes rhetoric's foundational mechanisms: increasing the likelihood of convincing an audience of credibility, authority, and emotional connection, even when the "author" lacks corporeal existence. One can almost hear Roland Barthes' (1967) sardonic laugh in response to his famous essay *The Death of the Author*.

Attila Hallsby's "A Copious Void: Rhetoric as Artificial Intelligence 1.0" (2024) moves beyond the "stochastic parrots" critique (Bender et al., 2021) to examine the conceptual void between human authorship and AI-generated text. Hallsby argues that rhetoric and AI share core concerns: managing information overload, addressing social inequalities, and mitigating biases. Despite their historical separation, both disciplines navigate similar challenges.

The shared terminology of "stochastic" and "artifice" further highlights their connection. In ancient rhetoric, "stochastic" referred to probabilities and everyday occurrences, while in AI, it describes the structured randomness of algorithms. Similarly, "artifice" encapsulates both skilled invention and deception, reflecting AI's dual role as a tool for creativity and misinformation. This overlap underscores the ways AI, like rhetoric, relies on probabilistic construction and strategic persuasion.

Hallsby introduces the concept of "zero-agency" to describe AI's oscillation between presence and absence in rhetorical action. Such action parallels how rhetorical agency emerges not solely from an individual but from the interplay between text and context. AI can empower or disempower, manipulating data and representation. It extracts information from marginalized communities without consent while simultaneously excluding their vernaculars from AI

models. Agency, in this sense, becomes a function of access and control.

The article further argues that rhetorical tropes function similarly to algorithms: both establish rule-like structures that generate meaning. *Copia*, the rhetorical trope emphasizing abundance, reflects AI's vast data processing capabilities—both illuminating and overwhelming. Hallsby's analysis positions rhetoric as an underlying framework within AI, a conceptual bridge for understanding its potential and limitations. The "copious void" metaphor captures AI's dual nature: an expansive source of possibility and a space of overwhelming complexity.

Hallsby's work benefits from 43 years of technological advancements since Hunter's analysis, particularly the widespread adoption of generative AI chatbots. However, to fully explore agency, we turn to Carolyn R. Miller's "What Can Automation Tell Us About Agency?" (2007), which examines rhetorical agency in the context of automation. Positioned between Hunter's and Hallsby's work, Miller's research offers crucial insights into how automation reshapes rhetorical action.

Miller explores the tension between human rhetorical agency and automated assessment systems in education. While such systems are praised for efficiency and consistency, they struggle to capture the nuances of human communication, including creativity and emotional resonance. She argues that rhetorical agency is not an inherent trait of the speaker or writer but emerges dynamically through interaction with an audience. Agency, she suggests, functions as the "kinetic energy of performance," reliant on mutual attribution between rhetor and audience.

Surveying instructors of writing and public speaking, Miller found widespread skepticism toward automated assessment's ability to evaluate communication effectively. Instructors emphasized the importance of a live audience, particularly in public speaking, where engagement is central to rhetorical agency. She contrasts writing and speaking along performance and interaction dimensions: speaking is inherently interactive, requiring real-time feedback, while writing is temporally dislocated.

These insights raise critical questions about whether agency can be attributed to machines. Automated systems challenge our traditional understanding of rhetorical agency, pushing us to reconsider how meaning and persuasion emerge. Miller ultimately concludes that agency, though constructed, is essential to meaningful work. It is an attribution granted by one agent to another, carrying moral and pedagogical significance. Recognizing co-construction, educators must remain committed to fostering rhetorical agency, even (or *especially*) in an age of automation.

Miller's exploration aligns with the broader concerns of this book: the ideological construction of agency, its evolving meaning, and its role in defining work. Autonomy remains a crucial element of meaningful labor—determining what work is valued, how it is accomplished, and what tools are deemed necessary. As AI reconfigures work, these questions become increasingly urgent.

Alain de Botton offers a striking historical contrast between coercion in early industry and contemporary forms of motivation. In the past, productivity was

enforced through brute force. By the early 21st century, however, many jobs relied on satisfaction rather than obedience:

In the earliest days of industry, it had been an easy enough matter to motivate a workforce, requiring only a single and basic tool: the whip. Workers could be struck hard and with impunity to encourage them to quarry stones or pull on their oars with greater enthusiasm. But the rules had had to be revised with the development of jobs—by the early twenty-first century comprising the dominant sector of the market—that could be successfully performed only if their protagonists were to a significant degree satisfied rather than resentfully obedient. (de Botton, 2009, p. 32)

Creativity, initiative, and ambition are integral to meaningful work. The historical evolution of agency illustrates that while agency is socially constructed, it is no less real. Understanding its changing definition over time is essential, particularly as AI challenges long-held assumptions about autonomy and decision-making.

As workplaces become increasingly automated—not just in physical labor but also in mental and organizational processes—many who once believed themselves impervious to automation now face uncertainty. These concerns are not unfounded; AI-driven mass layoffs are already occurring. However, the best workplaces will integrate AI thoughtfully, just as digital technology in the 1990s and 2000s reshaped productivity and engagement. AI will redefine meaningful work, just as past technological revolutions did.

Hunter, Hallsby, and Miller document rhetoric's deep engagement with automation and AI, revealing its long-standing role in shaping technological discourse. Their work underscores the necessity of continuing to advocate for meaningful work in an AI-driven world. Feenberg's *right of refusal*—the rejection of certain technologies—remains a powerful stance. Yet outright refusal is an abdication of engagement. To ignore AI is to forfeit before the game begins. The challenge ahead is not just resisting automation but shaping it to preserve and enhance rhetorical agency—however constructed, partial, incomplete, and alienated our labors are in the latest round of late capitalism's post-industrial shenanigans.

## Chapter 2. Bridget Johnston

Bridget Johnston started her career in Chicago at a high technology firm but then left when offered an irresistible opportunity at the Children’s Museum of Indianapolis. At the museum, she designed and tested numerous displays and installations, some of which successfully went on national tour. This experience supported Bridget’s development of her proficiency designing durable and usable interfaces used by humans in very demanding contexts. The most memorable display story (unfortunately not included in the interview itself) was one that incorporated computers intended for use by 7 through 12-year-olds. She spoke in detail about how home computer equipment failed—failed miserably—very quickly in the unique and intense environment of its deployment. Unforgettably, she described a youngster standing on a keyboard and kicking a joystick controller. Deadpan in her delivery she quipped, “That interface was not appropriate for the context of use.” With her team, she created appropriate interfaces that survived on national tour, and she learned first-hand lessons about designing the user experience.

Bridget’s career at the museum was highlighted by national and international visits with artists whose work has been displayed in Indianapolis. If she wanted, she could still be at the museum, but instead chose a riskier path.

She joined Indianapolis-based Pattern89, a startup best described as artificial intelligence-based predictive marketing for digital advertisements whose clients include Facebook, Instagram, and Google. It is recognized as the first and leading artificial intelligence tool for marketers. While at Pattern89, she hosted an important early conference at Indiana University focused on artificial intelligence. As she notes in the interview, at that early moment in its development, she saw AI as a transformative technology with great potential. Pattern89 was acquired by a larger company that licenses media content—referred to throughout by the pseudonym ContentLib—where she posted insightful blog entries about her daily use of AI and how image generation and stock images are enhanced with traditional and generative AI.

Traditional AI supports image findability and searchability via image recognition, rather than being limited to metadata and image tags. Bridget has been engaged with agentive-aided research from its very beginnings, and indeed, has been a force for ContentLib’s international success and industry leadership. As the interview details, her insistence on traceability of intellectual property rights distinguishes Pattern89 and ContentLib’s business model from “open” image libraries and image creation engines (those generally scraping publicly available images without regard for copyright protections). In short, Bridget’s ability to see around corners allowed Pattern89 to offer the first copyrightable images created by generative technologies that any of us have heard about. Because artists/creatives are paid for the images incorporated into the generative database and sign rights over to Pattern89/

ContentLib, its output is copyrightable. This is a significant innovation and contributed to the rationale for ContentLib's acquisition of the startup.

At the time of the interview, Bridget was a senior employee at ContentLib. Again, she could have stayed and been well-rewarded in the C-suite of the organization. Instead, she left and joined a new startup still under venture capital support. Bridget Johnston is a serial innovator and artificial intelligence pioneer, and we are both grateful and humbled that she agreed to join our endeavor as interview participant.

Throughout this interview, we (as interviewers) were struck by the focus she has on ethics, team building, diversity, and social justice coupled with her vision in realizing, over a decade ago, the potential of this nascent technology to first become a disruptive emergent technology and, in 2023, a dominant and ubiquitous point of discussion for investors, technology users, and businesses. Bridget's attention to many facets of the technology make the interview complex as well as nuanced and best understood in context.

## Overview of Interview

In a recent interview, Bridget discusses her day-to-day role at ContentLib, where she works closely with content creators and artists to integrate new technologies into the creative process. At the two-minute mark, she describes her responsibilities as a liaison between creative professionals and emerging tech, particularly in ensuring that the tools developed by ContentLib help unlock new creative potential for artists.

By the eight-minute mark, Bridget shifts to her current focus, which centers on collaborating with creatives to explore the ways artificial intelligence (AI) can empower them. Her work involves identifying how AI can become an ally in the creative process, rather than supplanting the human. She highlights the importance of making these tools accessible and effective for people whose primary focus is artistic creation.

At nine minutes, Bridget highlights the challenge of communicating with people unfamiliar with AI and its complexities. Many still view AI as intimidating, and her goal is to demystify it. This involves explaining how AI works in a clear, simple manner, showing how it enhances creativity rather than serving as a purely technical solution.

The discussion at the 11-minute mark moves to the future of AI and how it is set to transform industries. Bridget is optimistic, envisioning a future where AI integrates seamlessly into creative workflows to amplify human ingenuity. She believes this transformation will not only change how content is produced but also spark new forms of artistic expression and collaboration between humans and AI.

At 15 minutes, Bridget shares insights into how generative AI has already started to impact content creators across various media. While its adoption is

still in the early stages, many creators are recognizing its potential to push creative boundaries, explore new styles, and deliver content more quickly. Bridget believes AI will soon become a standard tool in the creative process.

By the 20-minute mark, she identifies the most useful aspect of generative AI: its ability to automate repetitive tasks, allowing creators to focus on the more imaginative parts of their work. AI is not about replacing creativity but rather freeing up time for deeper, more innovative thinking.

At 25 minutes, Bridget explains how AI can enhance, rather than steal, jobs. She emphasizes that AI can take on tedious tasks like editing or organizing content, enabling creatives to dedicate their time to more visionary and fulfilling projects. This shift will result in more meaningful creative work and greater satisfaction for artists.

However, at 30 minutes, Bridget acknowledges the challenge of getting people to embrace AI. Some are hesitant due to fears of job loss or a lack of understanding. Bridget believes the solution lies in education, open dialogue, and demonstrating how AI complements, rather than competes with, human creativity.

At 39 minutes, Bridget turns the discussion to biotechnology, particularly organoids, which she identifies as the next major innovation. She expresses excitement about how biotech breakthroughs could impact not only healthcare but also other fields, including sustainability and ethics.

By 42 minutes, the conversation becomes more philosophical as Bridget reflects on how humanity can rebuild a sustainable future on a planet facing environmental degradation. She believes AI and creative problem-solving will be critical in addressing these global challenges, helping to create new ways of living and working that are more harmonious with the planet.

At 47 minutes, Bridget offers advice on calculating risks when pursuing an exciting opportunity. She suggests balancing enthusiasm with practical considerations, encouraging creators to take risks but to assess the long-term impact and sustainability of their ventures.

As the interview nears its end, at 54 minutes, Bridget shares her thoughts on what is next for her. She is excited to continue working at the intersection of technology and creativity, with plans to deepen her collaboration with content creators and expand ContentLib's AI capabilities to serve a wider creative audience.

## Bridget Johnston Interview

**Bridget Johnston 02:00.** In my day-to-day role at ContentLib, I manage content marketing for the ContentLib blog, but we also do a lot of other things, including publishing white papers, eBooks and [other] things like that. I do a lot of content strategy. With that, we are looking to work with designers, photographers, marketers, any creative across any industry [and] any creative thinker and problem solver. I'm creating content for them, but I'm more specialized in creating



content focused around artificial intelligence. I've been in the AI game for five or six years. I've transitioned my career from museums to artificial intelligence.

I did start with predictive AI and predictive analytics [for] Pattern89, which was a startup that was acquired by ContentLib in August of 2021. [At Pattern89], [I did] trend projections on what's going to be most engaging with audiences online, what image contents, video contents, color palettes, are going to most likely get people to click on an ad, or social post, or purchase something from an ad for example. We were able to make trend projections with 98 percent accuracy on what is going to get people to engage with content online with our predictive AI. That's what I was doing first, and I still do some work with predictive AI and analytics.

But now, with my AI specialty, I'm more focused on generative AI like ChatGPT. To say the least, ChatGPT is probably the most famous and generative AI you know, where you ask artificial intelligence to create something for you to write something, to outline, to research. I'm not necessarily working with ChatGPT although I do use it and I think that it does assist with my writing. But I work with generative AI that is mostly text to image, although I am doing some stuff with text to 3D, and soon enough I expect it to be text to video.

So you go in. You enter some sort of description, whatever you want. [At] ContentLib, we have a generator: an AI image generator. Ours is the first commercially usable one though. Where we're gathering data from the ContentLib library. So hundreds of millions of images, 3D models, video content ... that's what we're training our AI models on. We were the first to allow people to generate something using our generator and be able to ethically use it. Because our contributors, or photographers and illustrators, or videographers, 3D modelers, they all get paid for people generating images that are based off of their work. It's all part of the licensor of ContentLib. Where you're able to license an image, but now you're able to generate an image and license it and use it without any fear of legal repercussions.

So, I do a lot of work around creating content for that. So a lot of thought leadership on how to ethically approach AI. For example, that letter. Are you all familiar with the letter that Elon Musk and all signed saying, "Hey, hey, we need to put a pause on that. We need to put a pause on AI development." I work on thought leadership and response [and] know this is the time to embrace AI. There are already ethical guidelines in place from UNESCO. You know, even if you're just getting started with an AI philosophy for your business with looking for the right AI tools to implement, there are already guidelines and best practices in place that people can use. So there's no need to put a pause on this rapidly developing technology that can be a force for good. It, I think, [will] someday be able to cure cancer. I think that we'll be able to have these absolutely world changing developments, thanks to AI. So I talk a lot about why we shouldn't pause that. Of course, there's a vested business interest in ContentLib.

I talk about those sorts of things in AI ethics. I also do a lot of product marketing around our AI products. As you know, like the "resident-in-house" creative person who understands artificial intelligence and how it works, I do a lot of



translating from the super technical side. This plays into the professional writing major, where you're working with data scientists and engineers. You're translating to describe what these products are doing for these creative audiences who are using them. *Solopreneurs* can't always hire a graphic designer and are instead trying to do it all themselves. I'm trying to translate this very technical piece of technology that you can use in your real life in a practical way. I'm doing that kind of work, too. I know that was a very long-winded answer. I did want to give an idea of the predictive AI that I started my career with and the generative AI that I'm mostly focused on now.

**Michael Salvo 08:03.** I don't think you should be apologizing for the answers. This is wonderful. I'm particularly struck by your use of the phrase "communicating with creatives" and going from the highly technical and highly specific work of the data scientists and translating that to a population known for being difficult to communicate technical information.

**Bridget Johnston 08:32.** It can be particularly difficult with AI. The challenge I have always found is that we're getting to the point where people are really starting to talk about, "Will it be sentient?" or "Will it be able to make horrible decisions?" and that is something we have to be conscious of not allowing it to do. Hence, why we should follow the UNESCO standards. I can send you all this information if you'd like to reference it. I also think that there needs to be some sort of government regulation of artificial intelligence. I don't know if you saw that the Biden administration this morning announced that they are looking into regulation of AI. I think that's something that will be important.

Anyway, in communicating with people who were familiar with AI, I feel like a large part of the population were familiar with it from science fiction movies. Things like *2001: A Space Odyssey*, *Terminator*—all these horrible applications are scary. So not only are you translating from a technical perspective to a creative perspective, which is challenging in and of itself, but culturally we're starting to get more open minded about AI. There is a lot of pushback, and there always has been, at least in the last five or six years I've been doing this. People expect something scary, job stealing, or life changing in a bad way. You have to get over those hurdles in that communication as well.

**John Sherrill 10:21.** Since you're dealing with the technical and creative side, one of the things that I was wondering about is how does ContentLib's AI compare to something like Midjourney or DALL-E 2? Obviously, there's an ethical difference, but functionally, what's the difference?

**Bridget Johnston 10:47.** DALL-E 2 is actually created by Open AI, which ContentLib has partnered with. We are using some of their technology to train their models on our data set, the ContentLib library. DALL-E 2, Midjourney, Stable Diffusion, a lot of these generators train off data that is scraped from the web ... which could be anything.

[For] example, there's a lot of unethical data on the web. As we know, there's a lot of information that is racist, sexist, homophobic, whatever you want to call

it. The truth of the matter is a lot of [the] data out there that is scraped from the web takes into account all of that. You can start to generate some things that aren't good. At least with our [AI], there are some safety protocols. We've worked on removing all indicators of race, religion; things [that are] visual indicators for people. So say when you generate a doctor, it's not going to just generate a White guy. [W]e have been able to create ours in that it is inclusive of anyone who can be a doctor. Age, gender, race, whatever ... there aren't going to be any biases in that regard. Whereas something like Midjourney, because it's collecting everything from the web, they don't have the safety protocols in place where ContentLib has been very intentional about that.

And then, just the ethical sourcing too. I'm sure you've seen a lot of news about lawsuits. There's tons of legal battles going on like "does this steal from people" [and] "does this steal from creatives?" I honestly do think that you could make an argument either way. I have been able to feel comfortable and confident in pursuing AI and my career at ContentLib because we do compensate [creatives]. You know, if you opt in to allow our models to train on your content, you're going to get paid. I think that's the only way to do it. I think we're going to see a lot more of that in the future. So the ethics behind that are solid. It's not stealing from anyone, I would argue; precisely because people get compensated and that's [what] sets us apart.

**John Sherrill 14:35.** So it's primarily in the training data rather than the interface or function?

**Bridget Johnston 14:44.** Because of the compensation part of it ... with the interface, you are able to license any image that you generate from ContentLib and just use it for whatever purposes you need, which is a huge benefit. Adobe announced that they are creating an AI generator [that] works the exact same way as ours. It's trained on Adobe Stock. They are compensating people the exact same way and announced it around two weeks ago, but we announced ours in October. So, we were ahead of the curve. I think another big player in the game is following suit because this is the only way to do it. This is the only right way to do it.

**Bridget Johnston 15:50.** Think about AI [as] we're living in a new world. I cannot stress enough. Yes, I realize [I have] been in this world for the last several years but, this technology is a pinnacle to society, like the invention of the internet. Artificial intelligence is arguably one of the greatest inventions within my lifetime [and] it's going to change everything. We are already using it, we have been using it for years. I don't think people necessarily realize that. [For example] their Google Home or face detection on their iPhone, is a form of AI. But it is going to change everything and with that there will be more problems, there will be *new* problems, and there will be new *solutions* to things as well. It is the nature of life [and] I think [once] this new technology gets introduced, there are going to be problems that we can't even fathom in five to 10 years from now. But there will be a whole lot of solutions as well. I brought up curing cancer earlier, LG is one of our partners. They are using ContentLib data to train some of their cancer

detection models. Some of their cancer detection AI data is training [on locating] cancerous cells to the accuracy of a specialized oncology doctor. There are not [a lot] of specialized [oncologists trained for reading images] or as many cancer detection models as we would need but we're able to have AI do it. Then in turn, those oncologists can go do other things—hire, [do] different work, have different focuses like, research, treating patients, [etc.]. It is one amazing solution that AI is bringing to the table. They can focus and it is funny, I said, I had this idea.

**Bridget Johnston 18:33.** I brought it up to my brother in early 2020. He's a medical doctor, a surgeon specifically, and I said, what if we had AI that was able to detect tumor growth, a long time ago in terms of like AI language, or AI timelines. He was like, we will never use that. Doctors will never use that—it is never going to [happen]. So [it] just goes to show how quickly [AI] is changing—well-established in fields like medicine already that have been doing things their ways for a while. But they're all adopting it as well.

**Bridget Johnston 20:38.** I feel like it's at a point where generative [AI] right now is at a point where it can help with mostly brainstorming and idea generation, I think that it can help with photographers. Let us look at product photography, for example. Let us say you sell smartwatches; you can relatively quickly put together some concepts with generative AI. I think that where it's at right now—you can brainstorm some product shots, say, the watches on a wrist, the watches in a box. You can generate and get some ideas and be specific about lighting, different settings, materials. You can brainstorm those aesthetics and see what works best for your brand, goal, and campaign. I think that is the easiest answer, particularly for marketers, photographers, illustrators—you can brainstorm [what is] best. In terms of writing, like ChatGPT, I think that it is something that [people will] need to embrace, to stay current. Same goes for visual generative AI as well. It can help enhance your work. It can help enhance your brainstorming for graphic design and product shots. It can also enhance your work with writing.

The other day, I got an assignment to write a blog post for marketers on what is open-source AI. I asked ChatGPT, can you outline this for me. It spit out an outline [in] 30 seconds. [But] is [it] good [enough] quality to publish? I don't think so. I'm critical of ChatGPT and I can tell when people are just using ChatGPT. I had a writer, I manage writer schedules and things, and I could tell she was using ChatGPT [in this situation]. Then I told her this isn't high quality enough, but it is able to help me and my work. Like "What is Open-Source AI," which I know what it is, but it's nice just to have some guidance and a structure. ChatGPT was able to put that together. Did I use all of what it said? No, I added some sections to it myself. I adjusted some of what it said. But it was able to at least get a good head start on some of that creative brainstorming, some of the things that you can't leave out in that creative brainstorming process or creative structuring process for writing.

**Bridget Johnston 25:12.** I think that we're a bit further out. And one thing I didn't quite say with photographers ... like with product photography,

brainstorming, and things like that, it's good to prepare yourself and have ideas and then give direction. Let's say you're hiring a photographer to do your product photography, you're able to come to [them] and say, "Hey, I like this lighting setup" and give creative guidance, so you get exactly what you want. So I think that it's good for providing direction like that.

One of my good friends at ContentLib—she's an illustrator, and she does freelance illustration and things—[is] having a ball with using generative AI to think up wild, crazy ideas for that creative inspiration. For photographers and illustrators, if you really want something, if you want it done in the best way, if you want creative ingenuity, there are some things that machines will never be able to replace with people. I think some of the quality of nuance, illustration, photography, and things [is that] it won't ever be replaced by artificial intelligence. We'll always need photographers. We'll always need illustrators. Little flourishes that [artificial intelligence] might add here and there, textures, or things like that, only a human [illustrator] will be able to do that in the best quality.

You might be able to say, "Generate a cartoon of a flower vase" but it's just not going to be as good as hiring somebody to do it. Now, if you were hiring somebody to do illustrations for you, you could certainly, at least today ... use a generator, come up with some creative ideas that you like, create a mood board, and share it out with people. But the only way to get exactly what you want, especially if you have a strong sense of creative [or visual] direction, is to work with another human. AI can certainly speed up some processes, [and] help with idea generation. It'll help to enhance work, but not necessarily steal work away. I think that it's going to free people up to focus on higher value work rather than automate all the writing jobs. There are just some things that people will always have to do.

**John Sherrill 28:08.** Yeah, it'll get close enough. And for the low-end market, that may be good enough.

**Bridget Johnston 28:14.** Yeah, I think so. You know, there's some stuff that is culturally, [or] rather annoying, people are using it for. For example, I think it was Levi's, but they wanted to have more diverse models.<sup>6</sup> Instead of *actually* hiring people, they just used AI to generate [models]. I don't know why we would necessarily do that, but we see a backlash in that. I feel like the response to things like that have been hugely negative. It kind of goes back to that "new problems" AI is introducing. There will be backlash, or people asking those using AI to do better. I think that there have been lessons learned from that example ... I don't know, I kind of went off on a tangent there.

**Michael Salvo 29:30.** It's a great tangent.

**Bridget Johnston 29:34.** It's just like such an eye roller. Like come on, guys. Really! There's one thing you could do, that's [like] way better.

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6. For more on this incident, see Weatherbed, J. (2023, March 27). *Levi's plans to use AI clothing models to "increase diversity."* The Verge. <https://www.theverge.com/2023/3/27/23658385/levis-ai-generated-clothing-model-diversity-denim>

**Michael Salvo 29:46.** One of the things that you said—that I keyed in on—is that it frees people up for higher value work. I think that’s a really key part. It also takes a lot of the drudgery out of it. It’s still horrible to look at a blank screen. Even if it’s nonsense, GPT does a good job of giving you something to start with.

**Bridget Johnston 30:11.** Yeah, I agree. And you know what I mean: to take out the drudgery. I know what it’s like for that blog post. I have to write about Open Source AI, what is it? I know what it is. I don’t need to spend an hour of my time being like, “Oh, maybe I should include this” and create it. Just do it for me, because I have other stuff I have to do. And then I’ll get back to this and I’ll base some of my writing on what GPT turned around for me. Not all of it. But yeah, big time saver, for sure.

**John Sherrill 30:53.** Definitely, I think you’ve answered my primary questions. I think Michael wanted to ask a little bit about the industry conference that you hosted.

**Michael Salvo 31:05.** I think that’s where John was trying to start with things that you and I have discussed before. And you brought it up again in talking to your brother about innovation. And you know, for me, I’m very interested in innovation. I’m very interested in helping students when they’re in the classroom, or young professionals to think about how they can think about innovation, how they can think about preparing themselves for a future that’s unknowable. And you very interestingly articulated that future as AI being the most important technical development within your lifetime, as the internet is for me. When I was writing about power generation, I said that everything is just a version of the steam engine until we get to photovoltaic cells. That’s the real breakthrough moment. Also a woman inventor whose work was originally deemed unimportant—Katalin Karikó at University of Pennsylvania (Karikó, 2023). I want to go back to when you started with AI. If you can think about what made you put that industry conference together? What resistance did you overcome? What made you think this really is the big stuff that it’s going to become?

**Bridget Johnston 32:48.** Yeah. I did pull some links here for you all earlier. I’ll send you the press release to that conference. Some action items, and then a bit of a preview for the conference here. For this conference in particular, I was the sole marketer for this AI startup. And this was all starting in like, 2017, 2018, I think, is when I started at Pattern89. It was just like, some sci-fi stuff, you know, nobody was really talking about it really. Now everybody is and everybody wants a piece of it, but back then it was very, very difficult to get people on board. But of course, we were a high-growth startup that I was responsible for, or, marketing was responsible, as in myself, and my intern, Hannah, who now works at ContentLib. But we were the only ones responsible for like 50 percent of our company revenue that had to come through marketing. So it was pretty high, and my most stressful job to date. But anyway, one of the challenges that I found was that in a world when ChatGPT didn’t exist, AI really wasn’t really a thing yet. I could foresee that it was going to be a thing, hence why I left museums to go into it. But, there were just so many

challenges around talking about AI. And then, you know, it's like, yeah, this may be cool, and cool to play around with, but my main focus at that time was like, "Okay, but how do we get people to spend money on it? So how do we grow this business?" And so I was looking towards R. J. Taylor. He was our CEO, he's a great mentor of mine and he founded Pattern89. He and I kind of put our heads together and we were like, "Okay, well, you know, the only way to let people really market towards marketers is to get industry leaders on board and get them talking about it." So, we partnered with Indiana University School of Informatics down in Bloomington to put on a one-day conference where we brought in some academic leaders from that school as well as some business leaders in technology to speak. And we brought in some of our clients as well, but opened the invitation to other leaders within the marketing and advertising industry throughout the Midwest, where they could come down to the AI executive summit: High level people that we needed to buy in, for artificial intelligence use in everyday applications with their teams. So what we did, and I actually had Hannah send me a bunch of materials that we put together, because it feels like it was a lifetime ago. This was in February of 2020. A lot has happened since then. But she actually saved everything that we worked on. I was reviewing that earlier today. We were able to get people in academia, as well as within business, give talks, work on panels explaining how you can actually use it in your day-to-day life and in your day-to-day work. That was our main goal. And it addressed the problem, which was the core for me: "how do we build revenue?" How do you get people to buy into artificial intelligence and see its value and see that you can use it every day, and it's going to save you time, it's going to enhance your work. So yeah, it goes back to that idea of freeing people up for higher value work. Does that answer your question?

**Michael Salvo 36:59.** It does. It's risky. I mean, I remember when we were talking about how you're moving on from museum life, and if I'm remembering correctly, and I may be embellishing, but you saying, "I could stay here for the rest of my working days. I've made a good home here. And they like me, and I'm moving up, and I can stay here. But I don't want to." Making that move, you went to Pattern89, which was life changing. I remember then, you talked to me, it was like, well, we're getting acquired. I can't tell you who by.

**Bridget Johnston 37:48.** Yeah, there were like two weeks I really did worry about my future. But then I realized there is some common [value] and somebody else sees value in this. So yeah.

**Michael Salvo 37:57.** To me, it just speaks to your ability to see beyond the horizon. And as, as you're saying, there are so many people now who are jumping into AI. You know, we have the moral panic folks, talking about AI and writing instruction, and they're wringing their hands. And it's like, we've been talking about this coming. John especially wrote his dissertation in part about the coming revolution. It's just the newest technology. You know, my parents are fine with the fax machine, but email still baffles them sometimes. Right? Because they were comfortable with that technology. That conference is a big part of you taking



people who are supposed to be comfortable with technology and convincing them to be comfortable with this new technology.

**Bridget Johnston 38:41.** Yeah, that was definitely a big goal of the conference. You know, because you need—especially with business—you need that leadership buy in. If the CMO or the CEO gets excited about AI, you know, that's great for us as a small business. I guess I would say, at this time, it's about damn time they did. But yeah, it's always been interesting. And you know, there's always going to be something new. I don't know. Are you all familiar with organoid intelligence at all?

**Michael Salvo 39:17.** Go on.

**Bridget Johnston 39:20.** Yeah, I just sent you an article.<sup>7</sup> I talked to my brother a lot about this, actually, I think that this could be like the “next, next” big thing. Basically, with AI, there's limited computing space. But there is—I forget where the research is out of—but I did just send you an article for it. They're growing brain cells, replicating brain cells and growing them where cells are the ones computing. So you know, the human brain. It's limited in size because of our skulls and whatnot. But right now, they're trying to figure out a way to create something with unlimited computing power made of human brain cells. They've already taught it how to play Pong. That was one of the big things—the little brain cells in a dish—know how to play Pong and play it well. But I think this is something [that] there will be ethics involved with it [being] artificial intelligence. But we are moving away from computers, as we know them now, to biotechnology, where we're integrating a lot of what we learned from artificial intelligence into creating systems and having systems run off actual brain cells.

**Bridget Johnston 41:21.** I feel we got this because of AI and artificial intelligence. We're trying to find ways to make it more efficient and not as limited as it is. Feedback loop indeed. But I think that [it] might be the next big thing. I don't know—that [is] what my gut is telling me.

**Michael Salvo 41:52.** I love it because that gives us something to think about, like if AI scares you wait until you hear about bio-computing.

**Bridget Johnston 41:57.** Some people online are having conversations, “Are these like cells in a petri dish right now? Are they human? Do they have rights?” You start to even introduce those questions.

**John Sherrill 42:15.** [Comment inaudible.]

**Bridget Johnston 42:30.** I don't know—new problems, new solutions, new scary things, but hopeful things, too. I think all this brings into play.

**Michael Salvo 42:44.** I mentioned the other project that I'm working on. That that project is about hope, about how you reconstruct a viable future on a damaged planet. The research you are talking about is about getting us to think about what we do now in order to make better futures possible.

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7. “How to Use Generative AI for Real Work” <https://www.bridgetjohnston.com/work-samples>

**Bridget Johnston 43:41.** I think ultimately we will be looking for solutions to problems like climate change—waste management, sustainability, things like that. I like to believe that ultimately people are looking for good—trying to do good beyond surviving in this capitalist system that we live in.

**Michael Salvo 46:17.** What advice do you have for someone who is either early in their career or faced with making a big choice? Do I stick in this safe environment or do I take this risk? Or if someone's trying to decide what [path they are going to take]? Focus on what they will likely concentrate on as an early career professional? How did you sort it out? How do you think about that? If you were advising your intern, saying, here's a good route for you?

**Bridget Johnston 47:11.** I would say always stay sharp, always try to do the new thing—if you can. There were some critical times in my education [and] in my career, where I've made a choice to pursue something that I would not have necessarily done. For example, I don't remember the exact class [or] the number. But [the] class where we [built] web pages—that was like a key [for me]. [It] was a key change—[a] key point in college. I was like, “wow, this is fascinating” and “well, it's too late, because I have to graduate early.”

I don't know why I was like that, but I just was at the time. I was like, I must be done with school, and I must start my career. It's too late for me to go and study computer science at this point. But I got an interest in this area and started pursuing it on my own. [The subject] was viable, and the world looked at technology a little differently. It seemed economically viable, because [at the time] we were getting hit with all these layoffs in technology, things aren't doing the greatest. It [ended up being a] great long-term investment. [It] seemed kind of a good, economically viable way to go. It was also interesting [to me]. I've always been interested in trying to keep on the cutting edge of things. So, there was that. Then my old boss had approached me about Pattern89. It was at a point in my life where I had learned what I was going to learn at the museum and I love the Children's Museum of Indianapolis, it [was] great. I would have been doing cool cutting-edge things for a museum. But not necessarily cool cutting-edge things in the world of technology, and the AI [offer] seemed too good [to] have a chance to pass up learning this new technology. At [this] time, I was [also] like, “I don't know, if we're going to have it actually pay off.” It felt like a risk leaving that museum that I loved and gave me so many wonderful opportunities to pursue. I [thought it] was a good risk to take, at that time in my life—everybody in my family was doing well, everybody was healthy, everything was fine, [and] I had a good safety net built from the museum. So, it was a calculated risk, [but] I took it.

I would say to students—if you can calculate a risk, if you're excited about something, if you really truly believe it—[do it]. I have said that it would be kind of hard for me to rejoin a startup again. After I did it once you always worry if lightning can strike twice. But I really had this gut feeling about Pattern89. Now I say I would join a startup if I had that [same] feeling. If you have that feeling, and if you feel like you can take a calculated risk to the point where you join a startup



or something like [it]—do it. But only do it if you believe in it. I like looking back to that college class. I believed in it, I bought into it, I was excited about it. There have been some points in my career [and] in my education, where you get that gut feeling that something is good, and you should pursue it. Then if it is a career change or something, calculate the risk associated with it. If you feel like you can do it, go for it. You can always go and do something else if it doesn't work out—[I say that] from a position of privilege. I was able to build an economic safety net for myself from working at the museum and have those years of experience. So, I would say look at the risks. If you feel excited about something if you truly believe in a field or a technology or something [along the lines then] pursue [it]. Even if it is a higher risk thing—like joining a startup. If you truly believe in it, you truly believe it can work, I think you should try it. Don't be scared of something new, weird, and fantastical sounding like artificial intelligence. That all goes into that risk calculation part. But [AI has] caught on now—as crazy as it was five or six years ago.

**Michael Salvo 51:52.** And that's the problem with hindsight, right? You don't know what's going to hit?

**Bridget Johnston 52:00.** I could have felt that way about something that may not have been successful. I feel like with AI, it worked out well. There are all kinds of industries who are incorporating it into their daily work practices.

**Michael Salvo 52:19.** What were you expecting me to ask about that I didn't?

**Bridget Johnston 52:25.** I wrote this book all about practical use of AI, explaining what it is and how to pursue it ethically, and how to use it in daily life as a creative person, and as a problem solver. Whether you're a graphic designer, project manager or writer, [how AI supports your work]. It's coming out soon and I want to share it because I feel like it summarizes a lot of these ideas.

**Michael Salvo 53:11.** I'm going to have a lot of reading to do.

**Bridget Johnston 53:36.** That was one of the things when I saw Elon Musk sign that late letter. I was immediately suspicious. Then, I was like, "wait a minute"—I feel that the letter in particular, [all] these people who signed it—a lot of them do have vested business interests. Because it's one, I think, it is a direct attack on Open AI—who [also] created DALL-E and ChatGPT. It's all these other big dogs and in Silicon Valley being "wait, wait, wait, wait, wait, we need to catch up here—we need to we need to do something about this."

[54:00 Michael and John respond to Bridget's comments about working with the artist Jamel Reynolds, who uses generative AI to produce artwork. From 55:02 to the end, Bridget talks about what she will be doing for Jamel Reynolds.]



# Chapter 3. Understanding Bridget and Kate

## Bridget's Interview in Context

In the summer of 2023, artificial intelligence (AI), specifically generative AI, was ubiquitous in the news and in conversations. While our research for this book had long been in progress, the release and widespread use of generative AI tools—particularly the accessibly-interfaced OpenAI tool ChatGPT—accelerated interest and development. The interviews presented here are based on a recorded transcript, aided by AI transcription tools for accuracy. Open AI, and popular discussion of the tool, made for interesting context and shared cultural touchstones. This text intends to propel and refocus discussion of artificial intelligence not just on threats, problems, and shortcomings, but promises and hopeful developments.

The interviewee, Bridget, highlights the transition from predictive AI to generative content and underscores the importance of well-curated data in AI applications, which enables ownership and copyright control over AI-generated artifacts. The current landscape of technology and work present several key concepts that demand attention. Thought leadership plays a significant role in shaping the direction of innovation, especially in the realm of artificial intelligence (AI). From predictive to generative AI, the possibilities are expanding rapidly. This expansion, however, raises important ethical questions, particularly regarding the control of inputs and the potential consequences of AI in the workforce. Instead of focusing solely on job loss, we must consider the emphasis on tasks that were previously impossible without automation. By using AI, Bridget amplifies the writing and design output of a small team. Advanced image processing makes it easier than ever to communicate among experts and share ideas with higher fidelity than previously possible. But more broadly, as Bridget references, new forms of scientific analysis and drug research are on the horizon. AI provides an avenue for redefining what's achievable.

A highly accomplished individual, Bridget's journey is the black swan story (Taleb, 2016), the unicorn (Mollick, 2020)—the one-in-a-billion match between preparation and need. Yet success is contingent on opportunity matching experience and the rhetorical dimension of increasing the probability of recognition of the match cannot be overlooked.<sup>8</sup> Yes, Bridget possesses that magical Bridget-ness that makes her the unicorn, the black swan, but in presenting her story, we hope to capture technical, social, and attitudinal elements that help her stand

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8. Michael hopes to be recognized as an emotionally intelligent elephant, or perhaps a gray rhino (Wucker, 2016) or really more as a silverback gorilla, as a senior academic, while John is much more comfortable with navigational metaphors like *metis* as an avid backwater kayaker—better certainly in the mitten than 115° F desert heat.

out. We try to highlight these moments and recommend ways of emulating and preparing for similar watershed moments; pointing to the variables that distinguish the disruptive opportunities from more evolutionary change, allowing the professional to anticipate shifts in paradigm as well as emergent trends. Her journey exemplifies adaptability, innovation, and an enduring commitment to pushing the boundaries of knowledge and technology.

Adapting to change has become an essential aspect of our professional lives. We need to recognize the changes that are on the horizon and actively participate in making them. While some might associate seniority with resistance to change, it's essential to understand that experience can also be leveraged to lead change effectively, as our third interview with Terry similarly reinforces. Diversity, both in the data and within our teams, also strengthens responsive and adaptive capacity. Change requires diversity of thinking, experience, and identity. We see a clear example of this in Bridget's reference to both the careful selection of training data for ContentLib's AI model—helping to prevent biased image generation, juxtaposed with the contrasting example of Levi's AI-generated diverse models. Had Levi's developed a working relationship with a diverse model pool, perhaps they could have ethically used generative AI in ways that resonated with customers. Both illustrate the importance of representative datasets. Although not mentioned explicitly in the published transcript, remarkably, Bridget's analytics team is gender balanced and, while striving for other forms of diversity, reflects the team's appreciation of different ways of knowing and range of experience—the ways the team members see the world differs and so their interpretations of opportunities, frameworks, roadblocks, and warnings all must be communicated to each other and discussed. Recognizing diversity as a source of strength allows the team to address the varied needs of diverse clients and anticipate the weaknesses of solutions derived by monocultural competitors (Joshi & Roh, 2009; Rowlett et al., 2023).

Gender parity and identity parity are vital aspects of creating diverse teams, and this diversity often leads to richer outcomes. As Kate describes in her interview in the next chapter, it is also essential for managers to use AI-driven tools ethically in diverse teams to avoid recreating existing patterns of marginalization and discrimination. Artificial intelligence plays a pivotal role in saving time and making the impossible possible. It's crucial to remember that AI doesn't replace humans but complements their abilities, offering a multitude of options and enhancing brainstorming. However, AI has the capacity to be used carelessly by managers, and in ways that make contract workers and employees feel pressured and scrutinized through automated evaluations.

In this context, we can draw a parallel to the field of brute force genomics, where AI doesn't eliminate creativity in drug discovery but allows for the testing of every possible chemical construction's potential usefulness. While hiring a large staff may not be feasible, employing AI backing can make it appear as if a small team has the capabilities of a much larger one. AI's primary focus is on enhancing the value of human work and creativity, enabling us to excel at what

we do best. The ethical basis of trusting a database lies in controlling and cleaning the dataset, engaging in arbitration and auditing as opposed to opting for a more “open” approach. This control ensures the content’s reliability and even opens new possibilities, such as copyrightability of the outcomes, which could be an unintended consequence. As we explore these concepts, we must also consider the Latourian black-boxing phenomenon that arises as a consequence of cultural acceptance and utilization, ultimately shaping the way we perceive and interact with technology (more on this in Froth & Blackboxing).

The first interview explores how technology is reshaping the modern workplace, emphasizing thought leadership in AI, the ethical considerations surrounding it, and the transformation of the workforce. It highlights the importance of adapting to change, the value of diversity, the role of AI in enhancing human capabilities, and the significance of controlling and cleaning data, as illustrated by ContentLib’s ability to generate copyrightable images. For Bridget, one realm for ethics considerations is the data used to base prediction or generative output: both require well-sourced and scrubbed data that is highly and closely curated to ensure the inputs reflect the desired parameters for outputs. Unlike an open AI system (for instance, OpenAI which scours the web for publicly available texts) control of the inputs allows for ownership. That is, owning all the data inputs and the algorithms means the organization claims ownership of the outcome. ContentLib sells the ability not just to create AI generated images but to own and distribute the outcome of images produced. The model of closely controlled inputs allows for copyrightability—legal and financial control of the outcome of the algorithms. Legal recognition for the outcomes of generative AI is a significant advantage in the financial longevity of artificial intelligence technologies and presents interesting new considerations for intellectual property law (see Reyman, 2010, esp. Chapter 8). These discussions lead to a deeper understanding of how technology and innovation are reshaping our world, ultimately affecting cultural acceptance and utilization.

The interview also stresses the value of AI as an enhancement to human work, especially in terms of data analysis, cost-efficiency, and productivity. It encourages young professionals to embrace change in the workplace, emphasizing the importance of diversity in data, teams, and approaches to yield better results and problem-solving. Ethical considerations, such as fair compensation for content providers and copyrightability of AI-generated outcomes, are central to the discussion, aligning with the idea of Human-Centered Artificial Intelligence. The interview underscores the transformative potential of AI as a collaborative human-digital tool that augments capabilities, enhancing productivity and decision-making.

Bridget led the discussion in many fruitful directions, and we, John and Michael, followed her by presenting our dialogic analysis in the order she articulates themes and ideas in the interview—interjecting our questions and responses as well as occasional requests for clarification and further explanation. Under the heading of thought leadership, Bridget described organizing an industry-academic conference a decade ago, bringing together companies developing earlier versions of artificial

intelligence with academic researchers. This first interview covers early development of artificial intelligence, but quickly, as Bridget narrates the industry-academia conference she led at Indiana University in Bloomington, demonstrating her leadership. At the time, attention was on predictive AI—where Bridget’s graphics work began. Predictive AI includes using patterns to forecast future results, anticipating user needs, and suggesting content for marketing and web navigation. The recent shift is from a focus on predictive to generative AI content.

During her interview, Bridget consistently talked about the value and importance of defining meaningful and rewarding work with AI, both for her and her work team. Quite explicitly, she asserts that much of her work in analytics would simply not be possible without the assistance of her digital tools. Though we have redacted Bridget’s discussion of this point for privacy reasons, suffice to say that in many small businesses, a pair of people (or even an individual) may be responsible for the majority of revenue. In such contexts, AI-driven tools can significantly alter workloads, speed up routine tasks, and allow employees to prioritize other work. Furthermore, Bridget’s organization—working on the slim profit margins that are standard in the internet age—simply cannot afford large teams performing the kind of work AI routinizes for her. She has the capacity to perform the kind of data analysis and content production a team of 10 or 12 would have been needed for just a few years ago. Human labor is simply prohibitively expensive for some applications.

The interview also counsels young professionals to accept change as a constant in the workplace. Recognizing that change can be disruptive, there are patterns that can be seen, anticipated, and responses proactively planned. For Bridget, the newest members of the team need to be aware of change, what is likely altered, and how they might best prepare for these changes to job responsibilities, focus, and organization goals. Then, with growing experience and awareness, she expects mid-level practitioners to participate and articulate the impacts of emerging transformations, suggesting and participating in the design and alteration to approach and focus. Finally, with experience and seniority, participation and anticipation of change becomes expected and leadership requires looking around corners and beyond the horizon to not only anticipate but to maintain readiness for change. Not to anticipate the implications of change has built-in consequences: failure of imagination results in less competitive, less effective teams in the long term, and Bridget sees these consequences as the responsibility of senior leaders. Articulating potential change can take significant resources: not betting on a single inevitability but retaining flexibility and formulating ranges of outcomes and responses to hedge but also remain humble in the face of inevitable if not wholly predictable transformation. Here again rhetorical preparation is invaluable: judging outcomes as more and less likely while meaningfully persuading others to envision and prepare for likely outcomes of change.

The constant theme of change throughout Bridget’s interview should come as no surprise. We are writing this book in a time of rapid technological and

social change in relation to generative AI. In the next section, we situate Bridget's interview in a particular time and context, as well as our analysis at the time of writing. We then historicize this current techno-cultural moment through Latour's *Pasteurization of France* as well as a brief history of AI and related ethical and labor issues. We discuss Latour, the cultural froth, and blackboxing in more detail below.

## Recontextualizing Early AI discussions

Reflecting on Bridget's interview, it is worth recontextualizing the moment. It struck us how early all three interviews were in the public's understanding and reaction to generative AI. At the time, much of the discussion centered around concerns about artists' work being used without consent to feed image generators. While that conversation remains relevant, it seems the focus of concern has shifted. People both seem more comfortable seeing AI-generated images and text and have become more adept at identifying AI-generated content, even when it doesn't exhibit obvious flaws, such as unrealistic features like the infamous "seven-fingered" hands.

The technologies and the organizations behind generative AI have moved swiftly, developing more powerful and ever-larger language models. The outcomes have steadily improved, after an initial dip when massive numbers of new users flooded publicly available chatbots and decreased their effectiveness temporarily. Interestingly, many of the problems captured in our conversations may no longer be relevant by the time of publication, but they may be of historical interest, and problems will still be evident. The nature of the problems will change, but the complicated, layered, and anxious relationship between people and our technologies remain: that is, the expression of the problems will likely change many times over. But tension between technological artifacts and their application in work contexts will likely remain precisely because work is contested space. Workers will avoid work while managers attempt to maximize productivity: artificial intelligence, traditional or generative, will not solve underlying problems of power and wealth inequality. They may, however temporarily, make these conflicts more perceptible, perhaps even for a period of time make distinctions between powerful and powerless stark. And new stasis will emerge, however briefly. In moments like this it is valuable to remember that the disruption to work has many historical precedents. For instance, the *New York Times* reported that:

Americans in "farm occupations" go back to 1820, when they were reported at less than 2.1 million, or about 72 percent of the American work force of 2.9 million. By 1850, farm people made up 4.9 million, or about 64 percent, of the nation's 7.7 million workers. (AP, 1988)

Similarly, the Bureau of Labor Statistics reported change to factory work in the

later shift from industrial to postindustrial manufacturing:

At the turn of the century, about 38 percent of the labor force worked on farms. By the end of the century, that figure was less than 3 percent. Likewise, the percent who worked in goods-producing industries, such as mining, manufacturing, and construction, decreased from 31 to 19 percent of the workforce. (Fisk, 2001)

38 percent worked on farms at the turn of the 19th to the 20th century, while at the dawn of the 21st, less than 3 percent worked the land. And manufacturing employment halved in that same timeframe. It is not yet clear if AI will be as disruptive to labor trends and working conditions in the 21st century as the shift away from agriculture to factory work and from factory work to service work from the late 19th into the early 20th and on into the 21st century. But many are worried, some even alarmed. One current student in Michael's class likes to talk about the "carnage" at her summer internship where half of her colleagues were let go during her first summer of work with AI being blamed for the layoffs. There are similar pressures being exerted on secondary education and especially humanities programs yet the worries for the shift and the early movers towards lightening the labor costs for literate activity—everyone from technical communicators to science writers to copy editors—is palpable. Evidence for the need to reduce these labor costs is scant. Instead, moves made by those already skeptical of their investments in literacy work: the scribes of the postliterate age, the literate in a culture of secondary orality, remain valuable if not valued and are often the victims of opportunistic expressions of power.

In clearer terms, allow an analogy. There is no less need for effective journalism today; indeed, we see in the absence of the fourth estate the very need we have for journalists as well as the corporate and powerful interests benefitting from the lack of authoritative investigative media in an age of dis- and mis- information. Journalism was emptied of its labor and consolidated. So too technical writers and writing instructors may find themselves displaced, but it isn't because of a lack of need for their skills due to AI. "Never let a good crisis go to waste." Whether attributed to Machiavelli, Churchill, or Rahm Emmanuel, the ability to lay off workers is not the same as not needing those workers' skills, and the froth of AI development may create opportunities for change.

Throughout the exchanges with our interlocutors, Kate, Bridget, and Terry articulate opportunities to do things never before possible and projects that can be pursued because of labor savings and cost shifts. At no point do any of these experts, and also *managers*, recommend reductions in employees but expansion of capabilities.

Intelligent agents save time and make what was once impossible possible. Automated agents make repeating actions easier to manage through routinization. John has described the value of generative AI creating a draft of a "bad news" email for



students not completing written assignments: generative AI allows for quick drafting of factual emails to students without getting mired in emotional response. Rather than enduring the stress created by triple-checking for accuracy and clarity while simultaneously processing the emotions of both parties, the base email can be fact-checked and edited with less stress. Similarly, routine responses to queries from colleagues can be customized to contain appropriate levels of small talk which neither Michael nor John tolerate well. Personal preferences should drive useful applications for AI. Brainstorming activities can yield a wider variety of possible starting places, addressing the fear of the blank screen—horror vacui—that bother some creatives. Copy editing is the bane of others. Dozens of possibilities to drive intelligent agents and the application of AI in writing should be made by those working with the tools. The driving force should be personal choice, emphasizing autonomy, and the amount of assistance will be driven by the demands of those individuals' workplaces. Casual users may rely almost entirely on generative assistants, but this would be unacceptable for experienced practitioners of writing as well as in other fields of professional endeavor, as the recent SAG-AFRA strike demands make clear. The distinction between professionals who write and writing professionals. Specialists in the nuances of the written word, sufficiently experienced to address novel situations outside the ken of artificial agents, will continue to be in demand, although the value of their expertise may continue to be overlooked. And it is that activist positioning that will distinguish effective professional scribes from their counterparts in the age of secondary orality that Ong (1982) anticipated so effectively.

In other words, AI should not replace human beings in workplaces nor reduce remuneration. Automation may have reduced the sheer numbers of workers at a variety of workplaces over time, but as generative agents become commonplace as assistive, AI should be recognized as tools for improving human satisfaction with meaningful work. Furthermore, advances and changes to these artificial agents must be driven by those most directly impacted, as the development and maturation of user-centered and participatory design strategies continues. This is where people's efforts have the potential to yield the best results, not by resisting AI but participating in the creation of meaningful involvement in the development of artificial intelligence. We are not arguing that reductions in workforce aren't happening. Rather, that *how* the reductions are happening, *who* is involved, and what *meaningful* automated work looks like are of greater concern within the estimated lifetime of readers, as these are explicit management decisions with ample room for participatory dialog.

We have yet to fully understand what intelligent agents allow us to do—things we deem impossible or too expensive now. Bridget talks at some length about how her team “onboards” new members, but how she and her organization functions remains tightly constrained by economic limits. Image sales are bound by razor thin profit margins. With assistive artificial intelligent agents, she can multiply both the labor of the least experienced members of her team as well as create ways of measuring the value of that time.

Time and again, Bridget returns the conversation to ethics. Perhaps by design, or perhaps as an unintended consequence, the ethical decision to pay providers appropriately for their content yields the benefits of copyright-ability of the outcomes of generative AI. Following Shneiderman (2022), it builds on the best of human collaborative and collective work, allowing us to articulate a *Human-Centered Artificial Intelligence*. Ethical considerations are present in all three interviews within this book, and are foregrounded in conversations surrounding this moment of AI development, as intended and unintended consequences emerge. Yet often, the conversations are not entirely new. We turn here to another historical moment of significant techno-cultural change to illustrate: pasteurization—before we provide a brief history of AI’s development through the lens of professional writing, extending Bridget’s brief history of her involvement in AI development.

## Froth and Blackboxing

Latour’s 1993 *Pasteurization of France* effectively emplaces readers in the context of the spreading acceptance of the process invented to keep milk and other consumable liquids free of pathogens. Completely unremarkable today, Latour narrates the fraught possibilities for the technology. Competing processes, different cultural stakeholders, acceptance of new processes and technologies, fear of the unknown and change all result in what Latour names the cultural froth surrounding the acceptance of the pasteurization process as it spreads across France, then Europe, and eventually globally. In this book, the froth surrounding artificial intelligence has obscured some of the technology’s usefulness and its underlying helpfulness. Certainly, the dangers and concerns surrounding artificial intelligence, particularly the less transparent developmental details of machine learning and misuse of copyright protected source texts need to be considered. Yet many concerns are, like those surrounding pasteurization, genomics, the internet, Wikipedia, irradiation of food for preservation, part of the cultural froth and reactionary response not to real dangers but to the froth of change. Latour also developed the idea of blackboxing technology, most clearly expressed in *Pandora’s Hope* (1999, p. 304) in which technology becomes increasingly invisible and unremarkable—like pasteurization today. We take safe milk (even shelf stable milk, which is far beyond Pasture’s wildest dreams) for granted and wince when we let a container of milk spoil in the refrigerator. Someday soon, artificial intelligence will drive many of the technologies we take for granted and only be noticed when design or technical failure make the artifact appear anew before us, to look at rather than through it, and realize how many layers of technological tradition we take for granted every moment of our complicated, agent-supported, electronically-mediated, fossil-fuel-dependent lifestyles.

Bruno Latour’s concept of blackboxing describes how technologies, once established and widely accepted, become opaque—users take them for granted,

ignoring the complex social, technical, and political processes that created them. When a system works, its inner complexities become invisible; only failure or controversy forces people to reopen the black box and examine its mechanisms.

AI, as a black-boxed technology, operates through hidden layers of algorithms, training data, and corporate interests that shape its outputs. While AI appears seamless, its decision-making is not neutral—it reflects biases, labor conditions, and power structures embedded in its design. Opening AI's black box requires interrogating its data sources, exploring ethical implications, and articulating economic consequences, making transparent who benefits, who is excluded, and how control is distributed. As AI reshapes work and identity, dismantling its opacity requires explanation & narration, stakeholder & resource identification, as well as democratic oversight to ensure it serves society rather than entrenched power. Clay Spinuzzi's *Network* (2008) offers an expanded explanation of blackboxing (pp. 50-54 and throughout); we include a summary here for clarity.

## History, Equity: Early Provocations

The conversation with Bridget provides an opportunity to revisit the history of AI: at least through the lens of professional writing and literacy. Although the term “Artificial Intelligence” was not coined until the mid-20th century, the seeds of AI can be found in literature, including Samuel Butler's 1872 novel, *Erewhon*.

In *Erewhon*, Butler explored the concept of sentient machines long before the formal inception of AI. His novel featured a civilization where machines were considered dangerous and were confined to “the museum.” This early science fiction work hinted at the moral and societal dilemmas that AI would later confront. In 1955, John McCarthy drew together a community of inventors and programmers that formed the founding community of artificial intelligence. McCarthy developed the Logic Theorist, an early AI program capable of proving mathematical theorems. This was a significant milestone, demonstrating that machines could replicate human problem-solving skills. McCarthy's work on the Logic Theorist showcased the potential for AI to handle complex tasks through symbolic reasoning. The formal history of AI began in 1956 at the Dartmouth Workshop (Solomonoff, 2023), where McCarthy brought together experts to explore the possibilities of creating intelligent machines. McCarthy's work extended and formalized the discussion of AI, building upon the ideas and concepts presented in early science fiction. Not long after McCarthy's coinage, Carl Whithaus articulates the early history of computer aided instruction, prior to the Burns' oft-cited “first” dissertation in computers and writing research. Whithaus (2004) points to Computer-Aided Instruction (CAI) and Human-Computer Interaction (HCI) as precursors to artificial intelligence, defining the important oscillation of attention between computers as computation devices and as media for communication.

The history of artificial intelligence technologies and technical communication and computers and writing research is closely intertwined. This brief

overview of the history of the field is biased to issues of machine intelligence; for a thoughtful history of technical communication, see Bernadette Longo's *Spurious Coin* (2000). If we start as far back as Plato and Socrates, it is the technology of writing itself that is viewed with suspicion, producing the "appearance if not the reality of wisdom" in students (Plato, 274-279b). Rather than repeat this age-old criticism, the history of written texts is one of a shift from, in Ong's famous articulation, oral to literate culture (1982). For Ong, the shift to multi-modal literacies ushers in a new age, one of secondary orality, in which scribes retain ancient knowledge—literacy and the code for writing rhetorical incantations. Gregory L. Ulmer declared, under the spell of Jacques Derrida, that we were in an age of *electracy* (1994). Whatever the preferred moniker, it is valuable to remember that the emergence of generative AI is not unprecedented or unexpected or, really, much of a surprise for those of us who witnessed the early age of the internet and the world-wide web. Each technology disrupted the previous technological order, but we have been witnessing a slowly unwinding change to the modern literate order at least since Ong's secondary orality in the mid-20th century and the advent of mass broadcast culture in the form of radio, film, and television.

Further, technology-driven history is technologically deterministic. Artificial intelligence applications are not driving the historical changes. Rather, people and organizations with invested interests (money) are pushing technological change. Focusing on technologies as agents of change obscures technology's human origins. Technological determinism occludes power, making it difficult to unravel the dynamics that make people feel subjected to technology rather than allowing the recognition of oppression. Techno-oppression is simply oppression: the same process of humans subjugating other humans. By recognizing how technologies are developed and unmasking the all-too-human processes of diminution of individual agency: these critical engagements with technology can at least reveal the human origins of technologies that sometimes feel inevitable and irresistible.

That word *irresistible* has two interwoven meanings when it comes to technology and seem particularly apt when discussing artificial intelligence technologies, generative and otherwise. Humans seem drawn to them; they are fascinating. We are dazzled. And in this way they are simultaneously seductive, and in Richard A. Lanham's (1993) phrasing, we look through these technologies and see the world anew. This powerful lens-making and altering ability of emergent technologies make them powerful in that humans seem unable to resist their allure as powerful tools, and in doing such we anthropomorphize them, welcoming them into our lifeworlds. In Freire's phrasing, we adopt new technologies and integrate them into our routines (Freire & Macedo, 2000). And that irresistibility, that enthrallment, with emergent technologies leads to the second meaning of irresistible. Second, it seems both inevitable and unavoidable that this configuration of affordances in this particular configuration is a natural expansion of existing technology into the future—giving agency to

artifacts where effective design is the expression of obscured power. Effective design appears both natural and an extension of the status quo into the future; each version is the same, only better. Such inescapability carries with it a feeling of inevitability. Its face is the irresistible march of progress. And it is the attendant sense of technological inevitability that short-circuits agency. Resistance and, more productively, engagement is most certainly not futile. Indeed, engagement and productive confrontation are the only means of meaningfully rearticulating technological change. As Feenberg has written in so many places, none as clear and powerful as in *Transforming Technology* (2002):

[T]he real issue is not technology or progress per se but the variety of possible technologies and paths of progress among which we must choose. Determinists claim that there are no such alternatives, that technological advance always and everywhere leads to the same result. This view is increasingly contested by students of technology. But if alternatives do exist, the choice between them will have political implications. (v)

What does this have to do with the field of technical communication or the computers and writing community, the scholars investigating literacy in the age of artificial intelligence? Everything and nothing. Technical communication and, as Kate describes their development, subsequent titles, categories, and career descriptions are attendant professionals tending to the creation, development, and deployment of technologies both locally and globally. Effective design masks the made-ness, the human-ness of technological artifacts and critical engagement and deconstruction allows eyes to see beyond the sleek façade of successful technologies.

Engagement is a first step towards calls for social justice at the heart of recent developments in the literature of the field of technical communication (Jones, 2016). Technological engagement is one facet of the quest for equity. Another facet is articulating the resources consumed in maintaining artificial intelligence technologies. In the Introduction, we articulated examples of emergent participatory opportunities for realizing social justice through critical application of AI, and in the Conclusion we examine photography as an example of black-boxing over multiple technological shifts. Here, we summarize a history of AI development in relation to the intertwined disciplines of rhetoric, writing, and technical communication. The right to resist finds footing in the everyday work of those who shape, document, and challenge technological systems—technical communicators, rhetoricians, and writing researchers. These fields help surface the human decisions embedded in technological artifacts and call attention to the power structures they encode. We appreciate the principled stance of refusal articulated by Jennifer Sano-Franchini et al., in *Refusing GenAI in Writing Studies* (2024), but question its long-term viability. Technologies are rarely born

democratically, as history reminds us. Generative AI is already in our classrooms. Refusing it entirely risks abandoning students to corporate narratives. Instead, we should teach students to see through the user-friendly veneer to the politics beneath (Kemp, 1987; Selfe & Selfe, 1994).

Automation redistributes, not eliminates, labor—and often in ways that disempower workers. This is a question of power, not just technology. Refusal alone cannot address technopower.

We deeply value the work of Sano-Franchini et al., and the ARG AI Discord (Messina et al., n.d.), and agree with much of their critique. But refusal risks foreclosing necessary inquiry. Intellectual solidarity includes dissent. We believe in equipping students to interrogate and repurpose these tools—not to reject them outright. We turn to how histories of rhetoric and writing—especially those concerned with technology—offer tools for tracing AI’s development and imagining its future.

## Probability: Available Means of Persuasion

This section opened with reference to Plato and, depending on your perspective, his teacher or his *character* Socrates. Either moniker reveals a stance, and either an attempt to engage a critical view or invite (neo-)Platonists. Either is a choice meant to address an audience and to articulate the available means of persuasion. Referencing this Aristotelian definition raises the probable nature of inducing agreement and the indeterminacy of meaning. Since language is symbolic, there is slippage between thought, symbol, word, and meaning. Enter Kenneth Burke (1969).

Another powerful tool that has arisen simultaneously with generative artificial intelligence is corpus analysis. In its most powerful applications, a corpus (Poole, 2016) can point to more effective means of persuasion. Bradley Dilger’s CROW undergraduate repository has more than passing resemblance to the kind of ensemble we describe here, although designed to address different research questions. See the CROW website for more<sup>9</sup> and in particular Michelle McMullin et al. (2021) on iterative persona.

Generative AI works, literally, by articulating every possible word that might make sense and then selecting the most probable word that through prompting the user finds acceptable, and running that probability analysis recursively until it has strung together enough words to meet the requested prompt’s parameters. This description utilizes technical and machinic language purposely as many descriptors use humanizing and anthropomorphizing language to describe processes of choice and composition. Generative AI technologies do not compose or create: they collect possibilities and locate probabilistic analyses of language output. According to Nupoor Ranade and Douglas Eyman:

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9. <https://writecrow.org/>



The architecture of generative AI ... comprises three main steps, encoder input or prompt, a transformer model, and a decoder. First, a text prompt is input into a text encoder that is trained to map the prompt to a representation space. Next, an algorithm called a model maps the text encoding to a corresponding pattern that it was trained on to capture the semantic information of the prompt .... Finally, a decoder generates text based on the sequence of words that appeared in the training data for a similar purpose and context .... (2024, 2)

Ranade and Eyman similarly use mechanical descriptors to emphasize the clockwork actions of the database analysis and data swapping. The machine is not writing. But the computing machine is performing technical aspects of rhetorical activities: the prompt receives a response that articulates the most likely means of persuasion. Millions of times per second.

Revising the prompt to provide not one but multiple available means of responding reveals just how Aristotelean and rhetorical generative AI is programmed to be. Upon prompting, the system generates numerous possible responses and selects the most likely: word by word, the database gestures towards the available means of persuasion. Ask for numerous possible responses and the AI system will deliver multiple possible utterances of decreasing likelihood, a measure ascertained from its algorithmic analysis. If asked, it reveals its rhetorical core by delivering probabilistic responses and exhaustively, flawlessly articulating available means of persuasion. These responses are only as good as the database of texts it has to compare to new possible utterances, new potential texts. As Daniel Liddle aptly asserts in “Talking About Tech Comm: Stochastic Publics with Jamie Littlefield,” while describing critiques of LLMs and ChatGPT in particular, “ChatGPT is probably somewhere in between fact and bullshit. It’s *flawed*, but powerful. It’s probabilistic, but it’s also useful” (2025).

Here it is valuable to mention how intellectual property owners fought back against the use of their IP in the model, reducing how large the LLMs could become (Mangan, 2024). Schoppert (2023a, 2023b) has published extensive lists of pirated ISBNs included in LLMs and made these available for publishers to see, bringing suits as appropriate, and ChatGPT experienced an immediate decrease in accuracy once these titles were (however partially) removed from the database. In effect, it removed potential means of persuasion (see also Cooper et al., 2025).

Ranade and Eyman begin their introduction with Burns’ 1983 note on AI in Composition, mentioning his invention programs TOPOI, BURKE, and TAGI, bemoaning the state of computing power and expense of memory—both RAM and disk storage. Burns’ “note” concludes with a quote from Hofstadler about the direction of AI research that emphasizes the *simulated* features of human consciousness and reemphasizing the artificial nature of AI. Further, Burns’ attention to the rhetorical nature of “writing must mix knowledge products with linguistics



processes.” Burns underscores the humanistic focus of AI research in writing as far back as 1983, concluding:

I, for one, believe composition teachers can use the emerging research in artificial intelligence to define the best features of a writer’s consciousness and to design quality computer-assisted instruction—and other writing instruction—accordingly. (Burns, 1983)

Here, as elsewhere, the emphasis is placed on pedagogy and writing for academic purposes. Meanwhile, technical communication research was working to distinguish itself as outside secondary education, articulated as workplace writing, as Lee Odell and Dixie Goswami’s *Writing in Nonacademic Settings* would be published in 1985.

## Articulating Machine Learning: 1970s and 1980s

During the 1970s, AI research expanded into the development of expert systems. These systems employed knowledge bases and inference engines to mimic human expertise in specific domains. Dendral, created by Edward Feigenbaum and Joshua Lederberg (National Library of Medicine, n.d.), was one of the earliest expert systems, designed to analyze chemical mass spectrometry data. Expert systems represented a crucial step in applying AI to practical problems. Late in the 1970s, Burns’ oft cited dissertation appears and, although CAI is used in the title, his argument can be readily understood as a precursor to contemporary artificial intelligence. Burns’ 1979 attention to pedagogical applications defines the approach computers and writing scholars develop to literacy teaching using computational resources for writing.

The 1980s witnessed the emergence of neural networks and the connectionist approach. Researchers like Geoffrey Hinton and Yann LeCun (Bengio et al., 2021) laid the groundwork for deep learning, a paradigm that emulated the way the human brain processes information. McCarthy’s influence extended to this era as his earlier work on AI inspired the pursuit of more human-like learning in machines. Simultaneously, the field of composition blooms into a viable subdiscipline of English with renewed attention to rhetoric in the late 20th century and the emergence of the postmodern as James Berlin’s work indicates. Gail Hawisher and Cynthia Selfe begin publication of *Computers and Composition* in 1985 (now *Computers and Composition: An International Journal* published by Elsevier). This history, without the focus on artificial intelligence included here, is available through Hawisher et al. (1996). Twenty-first century histories are emerging, with the inclusion of web-based journals—in particular *Kairos*—and the awkwardly if accurately named requirement for “born-digital” text. Histories for web journals are available, including the *in media res* version of *Kairos*’ own history. See Cheryl Ball and Eyman (*The Kairos Book*, forthcoming, in perpetuity).

## Artificial Intelligence at the Dawn of the World Wide Web: 1990 to 2010

AI historians like to assert that the 1990s and early 2000s marked the resurgence of AI, in part due to advancements in machine learning and the availability of massive datasets and the emergence of big data research. But everyday users will remember establishment of the first generation of the World Wide Web and then Web 2.0 when URLs in television commercials and movie screens first started appearing. This period saw the development of practical AI applications, including computer vision, speech recognition, and recommendation systems that drove early versions of Amazon's recommendation engine, which suggested other titles in books, music, and movies (Smith & Linden, 2017). Visions of intelligent machines began to take shape as AI applications became integrated into daily life.

Deep learning saw rapid progress in the 2010s. The advent of deep neural networks allowed machines to tackle complex tasks, from image and speech recognition to natural language processing (Ha & Tang, 2022). These advances have led to breakthroughs in autonomous vehicles, healthcare, and more, further fulfilling the goals of early AI pioneers. For techno-rhetoricians, it was the syntactic web that held the most promise (Robie et al., 2002) for the syntax ushered in the possibility of rhetorical mark-up, or persuasive digits. In the early 2000s, the internet shifted heavily towards Wikipedia's gift economy and it seemed that donated labor might negate the need for artificial intelligence, or at least nullify any demands for generative AI even before predictive AI hit its stride (Shirky, 2009).

## Emergent Issues: 2010-2020

In the 20-teens, predictive AI was a quieter revolution driving developments in e-commerce and increasingly efficient online development, displacing the human labor with digital, or at least the appearance of slick technological magic that elided in the hidden back-room digital sweatshops represented by digital Turks (Pittman & Sheehan, 2016). Again, digital ethics (Reyman & Sparby, 2019) becomes a concern not only because of unpaid or poorly paid labor displaced to poor places but the emphasis on digital haves and have-nots, an increasing gulf between those in the privileged world and those laboring as *Postindustrial Peasants* (Leicht & Fitzgerald, 2007).

The post-industrial peasant is a worker in an economy transformed by automation and AI, where traditional employment declines, and economic survival requires adaptability. Unlike the industrial-era worker, who relied on a stable wage, today's laborer assembles a portfolio lifestyle—a mix of gig work, freelancing, cooperative ventures, and bartering, much like historical peasants who farmed, crafted, and traded to sustain themselves. Wealth is no longer solely income but about autonomy, resilience, and access to shared resources.

This shift carries risks. Consumer debt replaces wage growth, masking the erosion of middle-class prosperity, leaving many with the illusion of security but little ownership. Venture capital-backed platforms dominate the gig economy, extracting value from workers while offering little protection or stability. While digital technology enables peer-to-peer cooperation and new economic relationships, benefits are unevenly distributed.

The challenge is to counteract precarity by fostering community-based alternatives—platforms owned by workers and users rather than corporations. Without such models, the post-industrial peasant is left in digital serfdom, dependent on algorithms that dictate wages, work, and access to resources. Any sustainable future balances efficiency with economic security to ensure prosperity beyond technological dependence.

As automation and AI redefine work, Universal Basic Income (UBI) emerges as a potential safety net for the post-industrial peasant, a worker navigating economic instability through fragmented income streams. UBI, an unconditional cash stipend for all, could mitigate the precarity of gig-based and freelance economies, offering a baseline of economic security amid declining full-time employment.

Historically, peasants survived through a mix of labor, barter, and subsistence activities, relying on community structures for resilience. Today's post-industrial peasants—task-rabbits, digital freelancers, Airbnb hosts—similarly patch together incomes, but lack traditional support systems. UBI could act as a modern commons, providing a buffer against algorithmic wage volatility and platform monopolies.

Yet, without structural reforms, UBI risks becoming a subsidy for precarious labor, propping up exploitative digital economies rather than empowering workers. If AI-driven efficiency leads to job scarcity but productivity gains remain concentrated among tech elites, UBI may function as a poverty management tool rather than a pathway to shared prosperity. Challenges remain in pairing UBI with worker-owned platforms, cooperative models, and digital commons, ensuring that economic independence isn't reduced to mere consumption but fosters autonomy, skill-building, and collective agency. Where livelihood is redefined beyond employment, and self-worth emerges from creative contribution, shared prosperity, and communal resilience rather than market validation. As career-driven identity fades, new forms of meaning take root—through craft, collaboration, and mutual aid—allowing individuals to engage in purposeful work.

As AI evolves, the ethical implications of its widespread use become increasingly apparent. The need for responsible AI development underscores the importance of considering the impact of AI on society. Early visions for AI have, in part, given rise to discussions surrounding AI ethics, regulation, and transparency. The UNESCO interests in AI ethics attests to widespread concerns (see below for extended discussion of UNESCO and AI).

AI powers virtual assistants, autonomous vehicles, healthcare diagnostics, and financial algorithms. Symbolic reasoning and neural networks continue to shape the field. Machine learning, natural language processing, and reinforcement learning are at the forefront of AI research, enabling machines to learn from vast amounts of data and adapt to new tasks. The history of AI reflects influence of early science fiction and pioneering AI researchers contributing to the development of intelligent machines that continue to shape our world, prompting discussions about ethics, responsibility, and the societal implications of AI. ArsTechnica, among others, assert connections between fictional sources and subsequent development (Foresman, 2016).

## Current Issues in Artificial Intelligence: 2020-and Beyond

The intersection of artificial intelligence (AI) and ethics has undergone profound transformation from the late 20th century through 2025, reflecting both the significant impact of AI on society and the pressing need to address its ethical dimensions. Dustin W. Edwards (2021) maps the infrastructural implications of networked technology which, together with artificial intelligence, inform the present concerns with the environmental, social, and technological faces of technological development.

In the early 2020s, ethical AI ascended to prominence for governments, organizations, and the tech industry at large. The European Union pioneered the globe's inaugural comprehensive AI regulation, a groundbreaking initiative emphasizing ethics and transparency formally proposed in 2021 and enacted in 2024 (Artificial Intelligence Act, 2024). Major tech conglomerates, including Google and Microsoft, made unequivocal commitments to AI principles, affording top priority to fairness, accountability, and transparency. AI ethics research continues developing with explicit focus on algorithmic fairness, the elucidation of decision-making processes, and the mitigation of inherent biases. Hart-Davidson (2018) trailblazes with concerns with robotic writing and technorhetoric, among others.

The ethical challenges posed by AI extended their reach to encompass military applications, with a notable emphasis on autonomous weapons (Ridolfo & Hart-Davidson, 2023). The creation and deployment of lethal AI systems ushers in concerns about accountability, compounded by the potential for AI to independently make life-and-death determinations, circumventing human intervention. This ignited global discussion concerning the need for international accords to regulate and govern autonomous weaponry, thereby preventing the unchecked proliferation of these technologies and the ethical dilemmas they entail. AI's potential for facilitating environmental and social well-being assumed greater prominence. AI was harnessed to model climate change, coordinate disaster response efforts, and underpin sustainability initiatives. The ethical considerations surrounding these applications were multifaceted, particularly

regarding the judicious and responsible use of AI for addressing pressing environmental challenges. These considerations mandated a harmonization with global sustainability goals, fostering an ethical imperative to align AI-driven solutions with the broader mission of environmental preservation. Nothing makes this clearer than lethal innovations on the battlefield in Ukraine as this is written (Burgess, 2024).

UNESCO's ethics statement on artificial intelligence (2022) underscores the importance of ethical AI development and use. It emphasizes principles that prioritize human rights, justice, and fairness in AI systems. The statement calls for AI that respects the dignity and freedom of individuals, ensuring non-discrimination and inclusivity. It advocates for transparent and accountable AI, where users understand how decisions are made, and developers are responsible for the technology's consequences. Human-in-the-loop design remains central to this goal. Furthermore, the document highlights the necessity of considering AI's societal and environmental impact, calling for sustainable and environmentally friendly AI applications. UNESCO's statement promotes international cooperation and the development of AI in line with global ethical values. It encourages research and education to enhance AI ethics, equipping individuals with the knowledge and skills to navigate AI-related ethical challenges. UNESCO's statement serves as a crucial guide for ensuring that AI benefits humanity and adheres to ethical standards. The UNESCO standards provide a roadmap for creating ethical AI that incorporates human values.

AI's relentless impact on the workforce engendered deliberations on the ethics of automation and the attendant specter of job displacement. Ethical considerations spanned retraining and upskilling the workforce, ensuring a just and equitable transition to an AI-augmented job market, and the imperative of addressing and mitigating social inequalities that AI might inadvertently exacerbate (Howcroft & Taylor, 2023). However, both Bridget's and Kate's testimony emphasize how AI streamlines existing processes and allows for attention on new and emergent challenges. Processes and goals once thought out of reach and too expensive (in human labor hours) become routinized and integrated into the working world of these professionals through AI-enhanced automation. What would once have taken teams of people weeks to complete now takes a small team hours—but these emergent practices would have been deemed much too resource intensive just a few short years ago. These tasks would have been left undone, further differentiating exemplar organizations from their competition and increasing per-employee productivity.

Ethical concerns remain dynamic, inextricably intertwined with the trajectory of AI's advancement. The global community has unequivocally acknowledged the imperative of establishing and upholding ethical guidelines, regulations, and best practices, all geared towards assuring the conscientious and beneficial use of AI as demonstrated by the UN's statement on the ethical development of artificial intelligence. AI ethics and energy consumption are likely to remain at the

forefront of discussions and initiatives as developers and users together grapple with challenges posed by AI.

Automation, driven by the advancing realm of artificial intelligence, is a dual-edged sword; it can address the work that is unachievable due to the prohibitively high cost of labor while also fostering new opportunities that wouldn't exist without it.

Complex, repetitive tasks that once necessitated human intervention are now efficiently handled by machines. This shift has proven especially beneficial in industries where the cost of labor was a significant barrier to achieving certain work objectives. Automation offers a practical solution, significantly reducing expenses, while enhancing productivity and precision. This transition, though accompanied by concerns about job displacement, has the potential to usher in new work prospects, primarily focused on maintaining, monitoring, and enhancing automated systems. Furthermore, the synergy between automation and artificial intelligence has enabled the execution of intricate data analysis, forecasting, and problem-solving tasks that were previously beyond reach. It has allowed for the development of systems capable of processing immense datasets, offering insights, and facilitating the emergence of groundbreaking applications in a variety of fields such as healthcare, finance, and environmental sustainability.

Ultimately, the true value of AI lies in its ability to focus on repetitive and data-driven tasks, thereby allowing humans to concentrate on what we do best—using our creativity and problem-solving skills. In this partnership, AI becomes a valuable tool that enhances human potential, streamlines processes, and elevates our ability to tackle complex challenges. Considering the emergent legal and ethical contexts of AI use, it is worth highlighting here that ContentLib made intentional, structural choices about how to compensate stock photographers, as well as how to license stock content, in order to create infrastructure that enabled a more ethical approach to generating images. Stock photography—the commodification of technically sound images—has not been a steady single-source income stream for photographers since approximately the mid-1970s. Yet, ContentLib affords a model of image generation that contrasts many of the legal and agentive critiques of generative AI models as inherently extractive and exploitative. Though corporate rather than community-owned, it demonstrates the potential for more ethical participatory implementations of generative AI in the current moment.

## From Stock Images to Security

Bridget's words focus on numerous big-picture issues and the values underlying her professional development intertwined with AI's emergence. By offering a brief history, summary of themes, and focused description of ethical and social issues raised here in the interstitial analysis, we highlight important elements. In the next

chapter, Kate Agena's interview, we introduce the tools and procedures she and her team at McAfee have developed to support and streamline work processes. Kate's focus on current AI applications contrast with Bridget's long-range expert vision, and illustrate what is already being done in leading organizations.



## Chapter 4. Kate Agena

### Dr. Kate Agena: Two Decades of Leadership & Innovation

An accomplished writer, holding a Ph.D., and boasting a rich tapestry of professional experiences spanning two decades, Kate Agena embarked on a remarkable journey through the realms of technical communication and information architecture. Her career's evolution reflects a commitment to craft and a dynamic response to the shifting landscape of written communication into new media.

Kate's journey began as a technical writer within a multinational usability laboratory, a role that demanded precision, clarity, and an acute understanding of complex technologies. Her ability to distill intricate information into comprehensible language served as the foundation for her distinguished career. Subsequently, she worked with independent contracts, where her expertise crafting technical content found a niche across organizations. This period allowed her to hone her skills, adapt to various writing styles, and embrace the challenges of different clients and projects. And to explore the promises and perils of artificial intelligence.

Her journey led to a prestigious position within a prominent international security software corporation. Here, her role transformed into a dynamic balancing act, as she was entrusted with harmonizing algorithmically-generated text with human-authored content. Her responsibilities span a spectrum of documentation, from support instructions that guide users through sophisticated software, to in-house technical materials that empower internal teams, to the persuasive delicacy of marketing writing that communicates the value and capabilities of their products. Throughout her career, she has borne witness to the evolving nature of her field. What began as "technical writer" has metamorphosed into "document specialist," "usability engineer," and "experience architect." Her adaptability and foresight have enabled her to embrace each evolution and remain at the forefront of this dynamic discipline. Her capacity to anticipate "whatever is next" and adapt to it is a testament to her enduring relevance and innovation in the field of professional writing.

In summary, this highly qualified and experienced professional traversed a remarkable path from technical writing to an eclectic array of roles spanning information architecture and documentation. Her journey epitomizes the adaptability, versatility, and enduring commitment to crafting impactful, user-centered content that positions Kate Agena to take advantage of opportunities available in the emerging age of artificial intelligence.

### Kate Agena Interview Overview

In this interview, Kate Agena, with a Ph.D. in rhetoric and composition with a focus on technical communication, walks through her career journey, touching

on her roles at IBM, McAfee, and her experiences working with AI-driven tools. Known for her clear, logical thinking, Kate reflects on her technical writing background, emphasizing how it has influenced her structured approach to problem-solving and innovation.

The interview begins with a brief introduction to Kate's career start at IBM, where she first worked on product usability and then moved into artificial intelligence (AI). IBM, a pioneer in usability as well as many technology fields, shaped her early professional experience. The hosts note how Otter is using AI to transcribe audio into text—an example of AI's practical applications—which Kate picks up and weaves with her own biography. Kate briefly touches on IBM's role in AI development, providing historical context.

By 3:30, Kate shifts the conversation to her last project at IBM before moving to remote work. She worked on IBM's Internet of Things (IoT) platform, specifically TRIRIGA, which focuses on managing information flows in organizations. Her transition from IBM to Wipro, where she helped drive design thinking and introduced Markdown for documentation, further illustrates her ability to combine technical expertise with design-driven approaches to enhance workflows.

At the seven-minute mark, Kate discusses her transition into content design at McAfee, moving from information development into a more customer-focused role. She highlights how McAfee prioritizes high-quality customer-facing writing and how the company has integrated new AI tools, such as Writer, to streamline content creation. Writer, a tool that uses AI for enhancing written material, has been a key component in improving content across platforms at McAfee.

By the 14-minute mark, Kate addresses the challenges of building trust with an audience skeptical of the promises made regarding AI tools like Writer. She explains how McAfee uses the tool to clean up blog posts, providing consistency site-wide and even utilizing plugins for Chrome, Word, Outlook, Figma, and generative AI. This integration into various platforms shows how AI can streamline processes, but Kate stresses that education and communication are critical in getting people to trust and adopt these technologies in meaningful ways.

At 20 minutes, Kate expands on how McAfee uses AI to educate teams and maintain consistency in messaging. She shares a practical example of using AI to craft mission and vision statements, demonstrating its value in cross-company communication. AI's role in helping companies communicate their core values consistently underscores its potential beyond traditional content creation.

Kate gives a more detailed breakdown of how Writer functions within McAfee's workflows at the 25:00-minute mark. She highlights how Ditto, a plugin in Figma, is used for managing content strings and discusses the security and privacy concerns that arise when integrating AI into organizational systems. Despite these challenges, Kate sees AI as an invaluable tool in improving the overall quality and consistency of company messaging.

By 31:00, the conversation moves toward improving writing prompts, where Kate explains how getting better at generation cues can enhance the effectiveness

of AI tools. She emphasizes the importance of eliminating fear-mongering language and rewriting core statements, which requires skillful use of AI.

Kate introduces Acrolinx at minute 37 of the transcript, which McAfee uses to assign a quality score to content, further refining the feedback loop for writers. This tool enables her team to push back on poorly written content, challenging writers to improve, and ensures a high standard of innovation, choice, and decision-making across the company's written outputs.

At 42 minutes Kate describes the important role of decision-making processes, and considering how to determine whether an AI or any technical trend is worth pursuing. She looks to the future of content design and predicts a deeper integration between content and UX design. As AI advances, Kate sees the potential for more AI-driven roles to enhance creativity and innovation, freeing content designers from repetitive tasks.

At 48:00, Kate reveals the behind-the-scenes efforts to map out content journeys. She touches on service design and how it has informed and impacted her work, helping to articulate problems more clearly and invent creative solutions. She also discusses how marketing and other departments influence content strategies and how neologisms—new terms—emerge from these efforts, reflecting the evolving nature of AI and content design.

The interview concludes at 1 hour and 2 minutes, where Kate shares her vision for the future of content design. She emphasizes the importance of consistent team structures, with dedicated teams for marketing, support, and partners, all working collaboratively. She also highlights how AI, particularly tools like Writer, will continue to remove the drudgery from content creation, allowing designers and writers to focus on more meaningful, high-level work. Finally, Kate explains the nuanced difference between UX and content design, noting that while both are essential, content design plays a unique role in shaping the user experience.

## Kate Agena Interview

**Michael Salvo 00:14.** It's been enlightening to hear what people are doing at their workplaces with AI and how long it has taken them to get to where they are. One of the things that I'm really interested in—and I've told you this—is the progression that you've made from a usability lab at a major international, digital firm and then to a security firm. The last time we spoke, you were talking quite a bit about how AI was helping you generate text, and [how] the people that you were working with were generating text automagically. And that's becoming more widespread.

We [also] want to let you know that we are happy to make you as anonymous [or] as public as you would like. We'll keep in touch with what we are doing. We'll be using Otter.ai to convert the audio into text. We are grateful for your time, and for you talking about your expertise. We respect a great deal of the work that you've done. With that, I'll turn it over to John.

**John Sherrill 03:00.** I've done a bit of googling about you. Could you tell us a little bit about what you do? What your average day looks like, in relation to your work and how AI fits into that?

**Kate Agena 03:22.** Right now, like at McAfee ... and not the history so much?

**John Sherrill 03:28.** I don't know much about your history. So if you can give us an abbreviated version of [it].

**Kate Agena 03:34.** So I started at IBM in 2005, still doing my dissertation. I worked primarily in, like Db2 kind of stuff ... so it's z/OS, green screen, which obviously [does] not [have] a lot of visuals there [Author note: Kate is describing here database management systems that were transitional between legacy systems and newer systems that emerged in the early 2000s. z/OS was significant in part because it was not a 32-bit system, but a 64-bit operating system which enabled using up to terabytes of RAM]. We were doing documentation and helping some with the words that they put into the interface to make sure that people can navigate when you don't have a GUI [Graphical User Interface].

Initially, I was doing documentation. [At that time,] the interesting thing at IBM was DITA [Darwin Information Typing Architecture]. XML [Extensible Markup Language] had just become an OASIS [Organization for the Advancement of Structured Information Standards] standard that the same group that I was in (at the same lab that I was in) had created. And so, we were doing a big push on the transition to DITA. [Author note: Professional and Technical Writers often use DITA and XML to build modular, topic-based documentation. This form of structured authoring supports consistency, reuse, and efficient publishing across multiple platforms.]

When I started, we were already using DITA, so I never really had to do any of the old stuff. There was a whole year to two years of education on how to do topic-based writing to change everything old into DITA. So that was the main focus at the beginning. Then I spent a year as a project manager for the development team, which was really interesting to see the other side, but words are definitely my thing. So I came back, and I was looking to leave the Bay Area. I was just looking for an opportunity to move internally in IBM to another project that would allow me to go remote. IBM had bought this company called TRIRIGA, which does facilities management, and integrated workspace management solutions, they're called IWMS. When that company came on, I was brought in to help them learn the IBM way. They had two writers and I worked with them, and we eventually built up a bigger team. With that product, we were also doing documentation through Drupal pages and releasing notes in Word: various ways that we were doing writing. That product was more interesting because by then we'd moved from the user technology group that I originally started in, which was basically the writing group, but it was also kind of the only usability-oriented group in IBM very much focused on writing. It was a technical writers' group that went away, and I was then part of Watson Internet of Things (IoT). And so TRIRIGA is considered an IoT product, even though it didn't have a lot of *things*.

But it had the potential to have sensors. For facilities management, you could have sensors around an office that would produce heat maps. For example, now, with a pandemic, when companies are trying to get rid of offices, that data would tell them, “Okay, you can get rid of 50 percent of your office space and have no trouble.” So it was intended to work like that.

We were always concerned about privacy issues on the writing side, and I’m not sure anyone else was. But it was an IoT product, and that was [on the road] toward AI. And then that group stopped being called Watson IoT and became AI apps. It was then considered an AI app, although again, it didn’t have a lot of AI behind it. That was the last product that I worked on at IBM as well. By the time I left, my team had been moved from IBM to a company called Wipro. We were full-time employees of Wipro, but Wipro was contracted to do the IBM development. It was called an IP partnership. So Wipro owned the new IP, and IBM owned the old IP and then we worked together to build from there. And that’s when design came along.

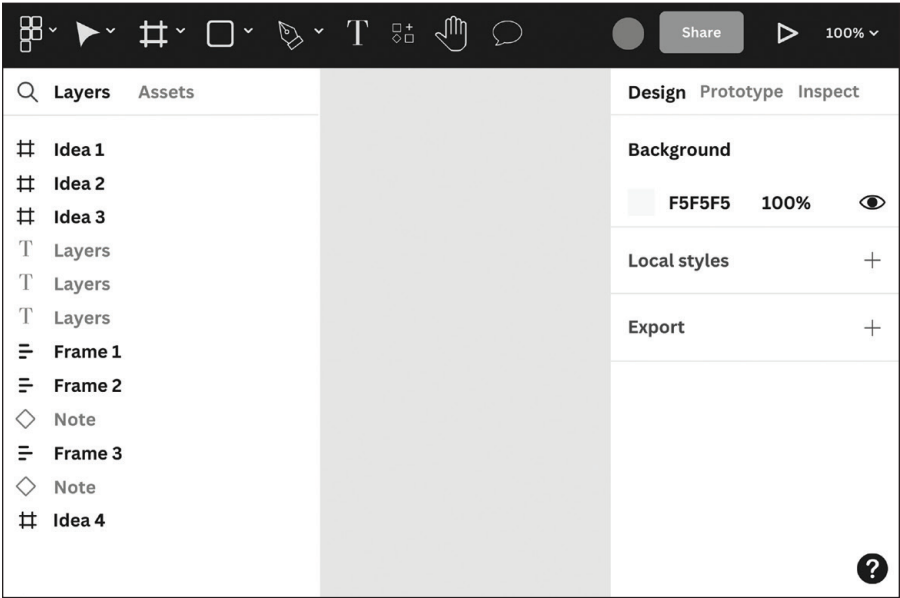
So IBM did a huge transformation to be a design-driven company. Information developers became content designers [broadly defined, a transition from technical documentation towards user experience and consistent messaging], which was a bit of a rocky move because we had 70-page release notes that were highly used. We were told, “Just don’t do those, now you do content design, so only do content design. If it’s not content design, if it’s technical writing, don’t do it.” So don’t do the release notes, don’t do support docs, tell somebody else that they have to do those. Also with Infocenter topics, try not to do them. So part of that process was trying to move from DITA to Markdown [a simplified markup language] so that developers could write documentation. All the internal tools that build an info center then could [be] use[d to] build a combination of DITA, and Markdown so that it was possible for developers to update Infocenter topics using Markdown. We didn’t switch completely to content design, but we did start designing our apps. The mobile app version and the desktop apps, which did not get much design right before I left, they finally redesigned the admin console. But other than that, it would have taken five years or so to redesign that product. The mobile apps included features like a reservation tool which allowed users to book spaces in the facilities, similar to how you’d use Outlook to reserve a meeting room or similar spaces. That and other tools were included as mobile apps, and those were created by designers that were brought in. For those, we could do content design. I led my team through that transition from info development to content design. I really wanted to do only content design because that really matches who I am and what I’ve always been interested in.

Since Purdue, I’ve been interested in the visual design aspects and visual rhetoric and digital rhetoric in general. That just felt really like where I needed to be. I looked for a new place, and I ended up at McAfee. At McAfee, I’m part of a design organization [and] now we have a chief design officer. We’ve only had her for a few months, but it’s a big, big, big shift. We are going through a huge shift in the culture of the company right now to be a lot more design-focused.

They're recognizing that design is important, and a big, big place that we're failing right now. Now I have five content designers on my team—I had four when I started, and that was November 2021 when I joined—I have five content designers embedded in design pods. They each have their own teams that have a researcher, designers, and a content designer who work with product managers (PMs) on whatever they need to be doing. My day-to-day is now more than ever building cross-functional relationships. I'm particularly concerned right now with the quality of customer-facing writing across McAfee. Basically, I would say my team is the only team of true writers in the entire company. Maybe one of the blog writers you could call a writer. But there is not a unified voice for McAfee. So that is one of the reasons that I wanted to bring AI in (so we can talk about that too).

**John Sherrill 12:18.** Interesting. So AI as a standardizing feature.

**Kate Agena 12:24.** Correct. I actually brought up a few screens that I can share to show how we are using it. Okay, this is Writer, the main way that I'm bringing AI in at McAfee. In terms of writing at IBM, I wouldn't really say we used AI, the only thing you could maybe call AI is Acrolinx which is a very advanced grammar spelling style checker. When you get Acrolinx it takes like six to nine months to do the setup to get it to your organization's requirements. It is pretty advanced, it is pretty good, and it is pretty annoying. It tells you that every single sentence you write is too long and there's just like no way to get around that. So Writer is a new tool that has a generative AI portion.



*Figure 4.1. An anonymized version of the interface Kate is describing of an artificial intelligence tool Writer used by her team at McAfee. Image created by Teah Byford. Image used with permission.*

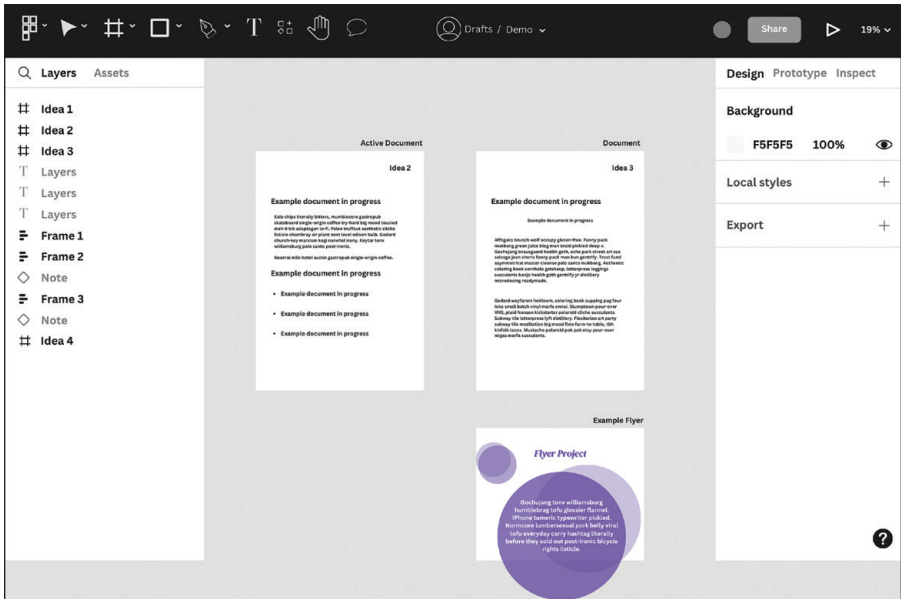
So it does two different things. One is suggestions that is more like, Grammarly or Acrolinx, it tells you the number of words, characters, average sentence length, reading time, and grade level which is incredibly useful. But then, it also breaks down suggestions into spelling and grammar terms like: style, clarity, delivery, and inclusivity which is really nice, because they have their own stuff set up. Then you can add to it if you want to have additional terminology that you want flagged. So what I plopped in here is the latest blog post from McAfee, not written by my team. We don't do [the] blog posts. So this is published, and if you plop it into Writer, here's what it says. So for example, for our em dashes, we put spaces on either side of them. One that really bothered me—"Whether it's 'indeed'"—doesn't really fit our voice and tone. As I read the blog article, I thought I wasn't going to put it in but checked to see if I could add it ["indeed"] to terms we can't use. But it ["indeed"] was already there, stating "don't use it." So, if our blog writer would use Writer, they could clean all of this up. Even stuff like here [points to a section of the article], there's no comma before "too." [Because consistent use of punctuation is part of a consistent voice, a consistent style.] And, one of the things that's really important with McAfee is getting people's trust. And, how do you get people's trust if you don't have a consistent voice? You don't have quality writing? If you go to our blog about, something like "how to spot a phishing email," well, if there are grammatical errors and stuff that is poorly written, those are some of the first things they say about how to spot a phishing email. And then our emails have similar stuff in them. So that's one of the reasons it was really important to find a way to influence across the organization, instead of just my little section.

At the time, I was really trying to get this done. I was reporting directly to the COO (chief operating officer) and I proposed that we would have a content Center of Excellence or, content counsel, or something like that. And he said, get more creative. That's where I decided Writer came in, so that's my solution. I can show you some of the things that Writer does and how we use it. First of all, I'll show you the setup. So we have this terminology database that we put in all of this stuff. For example, you can put in "feature names" and it'll check that people write the feature names correctly because that's one of the things people mess up all the time. There are maybe old feature names that we change, so it'll flag them. We can put in anything. So I tend to, as I'm reading stuff that McAfee has put out, if I see something that bothers me I just go in here and I add it. You can set it up that way. It has plugins for Chrome, Word, Outlook, and Figma. Writer also has generative AI.

So, this is used a lot less by my team than it will be by marketing. They can use it to create blogs—one of the features that they're just crazy about—called Recaps. They make videos for YouTube, and you can use Recaps—give it the YouTube URL—and it will summarize that video and provide the main points.

I think you can decide how long you want the summary to be: if you want a super short summary, or if you want a longer summary, you can tell it all of that. And it does a really, really good job. People have been impressed with that.





*Figure 4.2. An anonymized mockup of the Writer tool used for creating consistent language across blogs and other social media across the organization that Kate Agena describes in the interview. Image created by Teah Byford. Used with permission.*

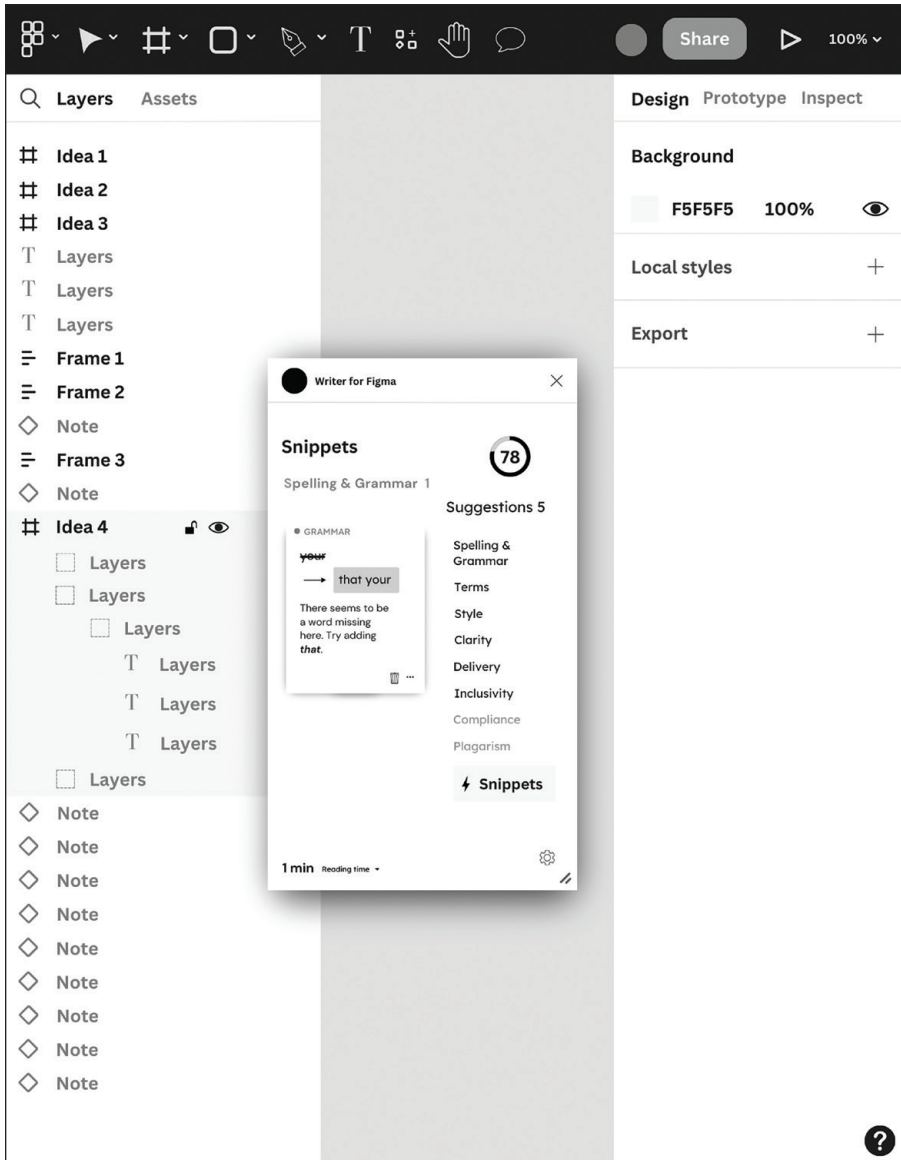
As you see, it can generate blog headlines; it can do email, e-commerce marketing emails, and email subject-line generation. You can put it in a blog post and say “create for me” for LinkedIn, Facebook, Twitter—and it’ll create all of those for those specific social media.

So that’s pretty exciting! It has quite a few different things that you can do. For my team, the way that we use the generative stuff is more using “Ask Writer anything.” And that’s more like ChatGPT. So you can just put in any prompt that you want to put in—we use it a lot to say, for example, “Give me ten different versions of this!” Just to generate different ideas for something that we’re writing.

And then, next I want to show you in Figma ...

Okay, now I will share the other screen. One of the things I’ve learned from years of working from home is to only share the window that you want to share. (Everyone laughs)

**Kate Agena 21:09.** Okay, so this is Figma (Figma Homepage is screenshared). So this demo file has been released long ago as part of our product. In our product, this is really what my team does. Once I’m in here, I go to plugins, and I can run the right or ... plugin should be coming. Okay, so once you’ve got the plugin running, you select what you want it to check. (Kate runs an automated check for consistent usage of hundreds of grammar and stylistic features across hundreds, potentially thousands, of documents).



*Figure 4.3. An anonymized mock-up of the Writer plugin for Figma, an artificial intelligence-based tool used at McAfee as described by Kate Agena. Image created by Teah Byford. Used with permission.*

You get that same [“Oh, it’s doing pretty good.” Okay, that was good spelling and grammar two things.] See, this is the thing okay, they want us to say [“request ‘that your’ info be removed”]. This is one of those things IBM would definitely want me to put “that your” because it’s easier for translation. So that’s not a bad

one. Let's check this one (screen shows grammar suggestion: "Who's collecting -> Who collects"). Let's check this one ["Who's collecting my personal data online?"

It's suggesting "Who collects."] Okay, so you check it and if you don't want it, you can ignore it. See, we've got ["What could happen," and yes, we'd probably want to change to "What might happen."] So it tells you those kinds of things. It also has a thing for Snippets—which we don't have set up yet—but we're going to put in the value props for different products. So you can just quickly grab [and you can] put in a set of text that you would want to use frequently. Then you can just copy it out and paste it in. So for us, we're using it more like Grammarly really, but with the company's specific style checker. Then if we want to use it to generate something, we would have to copy and then paste it into a Google Doc (or something like that), and [afterwards] we can run Writer on it. So that's basically how we're using the AI right now on my team. But primarily in a lot of ways, I'm using it for the cross-company consistency, and using it to educate. [I haven't done it yet that much, but in the terms, whatever pops up—so if I go to this clarity one, this "Switch to active voice" (in the Writer extension) if it's for a term I put that in myself—we can educate writers about how they're using the terms and why they should or shouldn't use the term by what we put in here.] So that's basically the idea.

**Michael Salvo 24:28.** What I really appreciate about what you've done with that walkthrough is you demystify it. It's not magic. And the other thing that's so powerful in what you're talking about is that it automates so many things that are a pain for us as document managers. [These things] are huge for improving our ethos.

**Kate Agena 25:17.** Exactly. And we do use it for some other fun things. My team has been deciding on our mission and vision statements. We spent time on a whiteboard. And we put up stickies with a whole bunch of different ideas and voted on them. Then one of my team members took them and is [currently] using AI to help generate what the actual mission and vision statements could be (and different versions of them too), so we can look at and vote on them, and it's fun. He's been using AI more than most of my team members, and is really trying to find use cases where it can save us time. And he has said that sometimes, you know, he'll use it, and something that normally would have taken him 30 minutes might get done in five minutes.

We do have another tool—that I wouldn't really call AI—called Ditto. What it does is it manages the strings. You run it as a plugin in Figma, and it basically finds all the text strings. You mark them, and it generates an ID for each one of those. What engineering then pulls is the ID for the string, not the words. So before, engineering was copying and pasting our words into, [for example], a JSON file [JavaScript Object Notation, similar to XML] with a string ID that they created. Now, we're creating those string IDs, and we're creating that JSON file using Ditto. That way, they can build it using those IDs, and we can keep editing. And [once they're done], they just pull the JSON file that's updated, and it'll build the app with the corrections that we've made. That means [our team] doesn't have

to be done before engineering can build (and we don't have to trust that they copy stuff over correctly). It can do a few other things because it can find similar strings. It can say, "In this file, you said, 'oops, something went wrong four times,' and [in this one] you wrote, 'something doesn't look right' once." [Ditto] can figure out that those mean the same thing, and say, "do you want to make all of those the same?" And you can create components for [your] normal error state.

**Michael Salvo 27:54.** Wow.

**Kate Agena 27:56.** That one saves a lot of time, especially if you're changing something over and over. Because we have this sign-on screen that [is] terrible, because it says the heading is like, you know, "sign in to your account," which "sign in" does not have a hyphen; and then the subheading says "Choose your sign-on method," so it does have a hyphen. And then there's a CTA [Call to Action]—like five different versions—and some need hyphens and some don't. The screen ended up without the "Choose your sign-in method," hyphen. And it's used over and over. There was one time somebody had to change it 50 times in a Figma file. With Ditto, even without having it functioning yet, with engineering, you could get in there and find them all quickly. And [with] one click, change them—which is not that different [from] a search and replace. You could have done that before with a decent search and replace tool. But it's still really useful.

**Michael Salvo 28:58.** Do you find that you have better communication and less friction with engineering and programming because you can do that sort of [stuff] quietly behind the scenes with [the] tool?

**Kate Agena 29:12.** Not yet because we don't have it working yet, [but] that is the hope. The reason we don't have it working yet is because we don't have design best practices and our Figma files are beasts, and it crashes. So until we restructure the Figma files, it won't really work.

**Michael Salvo 29:33.** So this is the goal.

**Kate Agena 29:35.** This is the goal.

**John Sherrill 29:36.** Oh yeah. That sounds lovely. I was just working on something like that earlier today where I was replacing hyphenated versions. I'm also curious, given the sort of high-security work that you're working with; have you encountered any challenges in using Writer from that standpoint of privacy and security?

**Kate Agena 30:10.** Good question. McAfee is very difficult to get tools like this approved to use. So for example, we cannot get Grammarly because Grammarly takes your strings, and it runs them on their servers, and then deletes them eventually. But Writer does not do that; they never save your strings. So that's one of the reasons that we could use Writer but we couldn't use other AI tools.

**John Sherrill 30:41.** Gotcha. My brother runs a web development company, and they work primarily with credit unions. So that's often a major restriction in what tools they can use.

**Kate Agena 30:55.** Right. Yeah, a lot of those restrictions are because of our partners, not necessarily because of us. To be honest, our own internal security

[is] nothing compared to Wipro's, for example. On Wipro computers, you couldn't do your own work on a Wipro computer. And you certainly could not send anything to IBM, even though you needed to deliver it to them in order for them to put out the software.

**John Sherrill 31:22.** So speaking of challenges, what other challenges are you encountering with integrating AI into the work you're doing?

**Kate Agena 31:31.** We're still in that hazy area where they say it can do so much, but you use it and you say, "That's crap." Then you say, "Okay, so I'm supposed to get way better at writing prompts." Well, how good can I possibly get at writing prompts? You know, and people have found, like our marketing writer feels [that] by the time he puts enough into the prompt, he could have just written it himself. So we're finding the kind of Grammarly part to be really useful. But the generative part for a good writer still is not useful. Maybe for somebody who isn't really a writer, it could be useful. But maybe not. I would think they'd be even worse at putting the prompts in, [especially] if you don't know what the important points are. The generative part helps with brainstorming. But to be honest, a lot of times, I'll put something in thinking, "Oh, this is going to really give me some idea." And it doesn't give me anything better than what I'd come up with myself.

**John Sherrill 32:46.** That largely mirrors my own experience.

**Kate Agena 32:49.** Others in the organization feel the same. The guy that runs the blogs is pretty helpful because one of the things they're doing is they have a lot of old blog posts. And those were mostly written by agencies. So one of the things they want to do is "freshen up" the language, which we did. We had a brand refresh last year, about the time I joined at the end of 2021 and we changed the voice and tone to be "Now we are the encouraging ally." Before that, I think we were the threatening fearmongers, so it's a pretty big shift and the blog also needs to reflect that.

They have these hundreds of blog posts—but to be honest, I don't know why we need to have all those hundreds of old blog posts—but they seem to think that it has Google hits and therefore it's good. [Our marketing manager] wants to run those through the Writer's rewrite function that I didn't show you. There's a feature where you can highlight text and choose rewrite. It then gives you "Do you want to rewrite it to be shorter ... to simplify it, to enrich it, or to polish it?" It gives you different versions based on those. My experience with it is that it does things pretty terribly, so I'm not sure how well he's going to get that to happen. But just in terms of somebody trying to rewrite it, they could just run the suggestions on it (at least they would find some things to update) and get rid of some of that fear-mongering language pretty easily.

**Michael Salvo 34:36.** Let me ask a follow-up question. You mentioned the role of AI, and you described it as "fun" when you were rewriting the mission and vision statement. That can be a fraught process because politics gets involved, people want their important things, and it's an opportunity for them. John had a similar situation that he described writing to students who were looking for grade

changes. I don't know if you remember this part of your life when you were a student, but what the AI allowed him—and I think what you're describing—is that it took some of the emotional aspects out of it and could give you some starting text. Do you think that that describes this case?

**Kate Agena 35:34.** Yes, in that particular case, my team is pretty aligned. It's my little team, so it wasn't an issue. But for example, in that blog post that I showed you from Jas, who's in charge of the blogs. He has a lovely British accent and his writing shows all of that. I don't think he would be offended by me saying, "You know what, Jas, your voice is not McAfee's voice, and this will help you adjust it." However, there was a blog post from the highest product leader, and it's full of stuff. English is her second language. She's not a writer, but she writes blog posts. She gives them to Jas, and I think Jas just publishes them. I think for me to want to approach her about the quality of her writing, having a tool like Writer is really useful because these are the McAfee guidelines. This can help you fit your writing to McAfee's guidelines and fit McAfee's voice and tone instead of, "I saw your blog post, and it has a whole bunch of errors in it, and could you please use this?" It also gives Jas a way to push back. Acrolinx was kind of nice in that way because it offers a quality score. So you can make a rule that says you can't publish something that's below a certain score.

**John Sherrill 37:12.** So the guidelines are still about workflows and communication, consistency, and branding, yes?

**Kate Agena 37:20.** At IBM there was a rule like that, but it wasn't enforced. Writer doesn't have that, but it does have a score. However, the score is determined by whether you read the suggestions. Let's say it gets to 100, and 100 is a perfect score. Let's say you have 14 suggestions, and it takes you down 14 points. So you read a suggestion, if you accept or ignore it, you get the point back. But, if you just completely ignore it and don't show that you chose to ignore it, then the score doesn't go up. So basically, it just ensures that people are using the tool. There is also a reporting feature where I can see how many suggestions have been made to a person, how many they accepted, how many they purposefully ignored, and how many they didn't respond to. So that's an interesting aspect. My support leader really wants the Acrolinx way because she's much more of a micro-manager. She wants to see that for each of her writers, she wants those numbers even when they are not good data; she wants to see that her writers are all using the feedback. For me, it's useful in that I can tell who in the organization is using it, and if they're really using it or not using it. That to me is already enough info.

**Michael Salvo 39:00.** It is a tool that I think is appropriate in an age of remote work. But also, I see ways in which it can be abused, overused, over-relied on. But I think in the right environment, it can be useful.

**Kate Agena 39:25.** Right. One interesting thing is that, one of the blog writers that actually writes most of the blog posts—they don't have his name on them, but he writes most of them—is a contractor. And he's contracted for 40 hours a week. And his boss, the Head of Brand, said to me: "Is he going to like this? Or, is

he going to feel [that] this is a way to get rid of him if you [have] a way to get his work done more quickly?”

And, I said, “Well, I think he’ll still have to do plenty of work. But, hopefully, he can do it better.”

**Michael Salvo 40:03.** Well, and also focus on things that are ... [Salvo considers his words]

**Kate Agena 40:07.** Exactly, exactly! The AI takes care of the lower-level things so that you can actually put your work into the things that take higher thought.

**Michael Salvo 40:15.** Yeah. Thank you for finishing that. The words were failing me. And John, I interrupted you to bring us back to the mission statement drafting.

**John Sherrill 40:27.** I was just going to—I guess it was more of a comment than a question—but, thinking about the string identifiers. There’s a lot of overlap there, in terms of going back through the old blog posts: even if it doesn’t do a great job of making suggestions, simply identifying places where that would need to be updated is itself a time saver.

**Kate Agena 40:57.** Right, absolutely. Imagine that you spend a whole day going through old blog posts, you’re going to, you know, not be seeing anything by the end of the day.

**Michael Salvo 41:34.** Well, one of the things I am really interested in is innovation. And choice, and decision-making. You know, you talked about being driven by visual rhetoric, and having an interest in design. And so it seems natural to you to have ended up where you are now, right? But you’ve also taken some big chances, and left firms, joined other organizations at interesting times; you’ve also had some interesting side projects.

How do you think about—when you make a decision—what is worth pursuing with innovation, and how do you think about the future?

**Kate Agena 42:31.** For me, I see the things that I’ve been part of as kind of new movements—I mean, DITA was a completely new movement that became the industry standard, and content design is becoming the industry way to create content in design. And now bringing on AI, I feel like, they were waves that were coming. And it’s, you know, do you want to catch the wave or not? And I prefer to catch the wave as much as I can. I do feel, as I’m getting older, that it feels more of a challenge. You know, there’s so much with this AI stuff to dig into, and I don’t really feel up to the “real work” of getting into all of that and thinking about all the ways we could do it.

**Kate Agena 43:28.** But also I have an [organization] now. And I have at least two people on my team that are very interested in it. One who’s really interested in figuring out all the different use cases and testing them out. And another who’s also really interested in [“What does this mean for our field in the future?”] He’s going to a conference in Montreal in a week or two. He’s gone. He left ... Wednesday. I don’t know when the conference is, but I think it must be next week. I think it’s called the World AI Summit. He signed up for it in November, and I imagine



how much has happened since he signed up for that [event]. That will be interesting for him to come back and see what he learns at the World AI Summit. I just feel like these are waves that are coming, and I'd rather be on the cusp of them than waiting. For me, the most exciting one is the content design one, [because it just fits with everything I am] and I just see so much potential for it. Right now, it still follows the old trope of the "same thing that we've always done with technical writers." You know, they are under-resourced [and] there's so much that they can do that they're not allowed to do. Basically, in a good situation, you have four designers to one content designer. How can you possibly do content lead design, with a 4:1 ratio? But content really leads the experience, so why are you having a designer do wireframes before you have the content designer come in? You should have a content designer decide what moments of content we need and what interaction, and [then] a designer takes that and puts it onto screens. But when you're 4:1, you can't do that. So that's what I'm really pushing toward, and it's pretty exciting. There are companies [like Asana I talked with recently.] Asana has two content designers. In the entire company ... two content designers. They're both former content design managers from Facebook, but [only] two content designers [with] five product pillars.

(Salvo reacts: "Wow")

You know, so that still exists. Then on the flip side of that, you have Facebook that went crazy and had like 30,000 content designers, and now has laid off 10,000 of them. So, the industry is all over the place, but what's considered a good ratio is 4:1, which is pretty much what I have. It's not enough that you can do content-led design [—it's getting there though—] and having Writer on board helps, because we can automate some of the quick checking. We can prioritize stuff and say, ["you know what, designers, PMs, you're going to put content in on this product that doesn't matter as much, and we're just going to check it." And "this other product that we think content is really important for—this is a high-priority project—we're going to do a content journey that can lead to the design."] That's actually something we're starting, right now. Because they've figured out that dark web monitoring is used by a ton of people. And we haven't given it any attention in years and years. It's not really designed, at least according to our current standards of design. So they want to do a lot of work on it, suddenly. The product manager has been working with my content designer on all of the identity products for a while, and recognizes that he's really sharp and offers a lot. So, the PM actually has requested that he could work with my content designer to do that mapping out of "What are these moments of truth." So somebody gets dark web monitoring, and maybe a little bit later they need some education. So they get a reminder of "What's this for? What's it all about?" because they don't even understand what the dark web is. When is the right moment to get them to understand that? Then they get some kind of notification of a breach. How do we really get them from, "they signed up for dark web monitoring" to "they've actually acted on a breach?"

**Kate Agena 48:36.** And so what are all these moments in that process? The goal is that my content designer is going to map out that content journey. And we're going to then take that design, overlay it, and see what steps need to happen in between, which is pretty exciting. We're trying to get a handle on other channels. So emails ... we don't have control over them. They're triggered by who knows what, and they're written terribly. And they are triggered through this process. There's also push notifications and SMS. If you're on a PC and GM messages, they are these little pop ups on the lower right-hand corner. So all of those things have not been controlled by design. They're controlled by retention marketing or various marketing groups ... maybe growth marketing. They tend to cross-sell [and] upsell. You know, you're doing something and then suddenly they tell you, "You need to buy something." We're trying to get a handle on (and also map those) [processes]. So we're doing journey mapping with the channels, and the goal is to orchestrate it so that everything actually makes sense.

**John Sherrill 50:01.** I'm not at all surprised that marketing is in charge of the little pop ups. I use Avast personally, but it's only gotten worse with time.

**Kate Agena 50:11.** Oh yeah, we have several people from Avast, and our customer lifecycle manager is from Avast. She has brought a lot more journey mapping and a lot of service design principles. We've done service design training. The service design blueprint has the, "what's the 'face-to-face' with the customer" and then all the other layers that happen. So like what's happening behind the scenes? All of that.

Our customer lifecycle manager always says that Avast is great. It's probably not that great either, but at McAfee ... I think the thing we are known for is annoying messaging. So the goal is to try to get a handle on that, because right now we don't own it.

**Michael Salvo 51:07.** So before we lose you—and this is so exactly what we're getting at and why you're perfect for us to talk to here—you talked about journey mapping, which I recognize as an element of experience architecture and working in that realm. You brought up service design, I know it through the NHS [National Health Service] in Britain. The whole thing is, they don't care about the institution. What they want is when a person arrives at a hospital, how do you get that person to their specialist on time to get the care that they need? So it's different. It's not user centered. It's a different way of thinking about the experience. I know some of it is new to you, but can you talk a little bit about how that's impacted the work that you're doing?

**Kate Agena 52:18.** So the service design thing has been useful primarily for us in helping cross-functional people understand that this is one experience. So to the customer, this is one experience. Inside McAfee: you are marketing, you are growth marketing, you are retention marketing, you are whatever; but you are a PM for this feature and you are a PM for this feature, and you don't care about how they touch each other. You get some big idea. And you say, "oh, we should do this." Well, if you do this, but not everybody else does, it doesn't necessarily

help. If retention marketing puts in 50 gazillion NGM (Next Generation Messaging) messages, and then a different retention message marketing person puts in 25 more—without looking at the first set. Then we found that in the HP trial journey—it's like if you go to Best Buy and you buy an HP laptop, McAfee comes installed. And there from like, 2020 to 2021, or I don't know if it's 2021 to 2022, the amount of messages you got in 30 days—it must have [gone] up like five times or something. It was ridiculous. And depending on some bugs in the triggering, some people were getting as many as 25 messages a day. And it's all because they're not orchestrating: everyone is working in silos instead of understanding that this is one journey that we are all contributing to, you don't have your own journey. There's a user journey. It's *their* journey. It is not our journey. So that's really what service design has been the most useful in—just changing the culture and providing a way for people to see that. And so we're getting into the point where we're building a lot more journeys and seeing what those look like. And that's really the way to get through to people to say, “look, this thing that *you're* doing to meet *your* numbers is hurting overall, even though you think you're meeting your KPIs (key performance indicators).”

**Michael Salvo 54:51.** But that's an incredible change and observation, to have 25 messages come through in a day.

**Kate Agena 55:00.** The only way to find that really was to do that messaging [and] actually try it out.

**Michael Salvo 55:07.** Unbelievable. John, did you have anything that you were wanting to ask?

**John Sherrill 55:15.** I am fascinated. I'm learning a lot of new terms as well.

**Kate Agena 55:24.** Yeah, it's the first year—or, year-and-a-half after I really made the switch to content design—I just bought every book on content design. I know who all the people are in content design now, and it's not a very academic set of people at all. But there is a group that are considered to be the “thought leaders” in content design. To be honest, in most of the stuff I read, nothing was new; it was more a matter of understanding the language that these people are using and how they see this field.

For instance, there were some tools that were useful, and some new heuristics, things like that. But for the most part, there's not much new in the books. In design, I can still learn new stuff, you know—in design theory. But in content design, to be honest, there wasn't that much that was new. But, it was still super important to me to read all the books and listen to the podcast so I would understand what this field considers itself to be.

**Michael Salvo 56:38.** Right. That's consistent with what we have done with SMEs [Subject Matter Experts] over a long period of time: to know your audience. And so that's consistent. Okay, making sure I understand. Before we let you go, thank you very much. The other thing is, you did a great job—you had much more structure and presentation for us than I had anticipated. Is there anything that you prepared that we didn't get to that you really want to say?

**Kate Agena 57:11.** No, I just pulled up a couple things quickly this morning. (Laughs)

**Michael Salvo 57:17.** And so, one of the things that we've got someone, I don't know, if you had a chance to read over the proposal? We spoke to someone who's got lots and lots of experience and has done lots of AI-adjacent work in a more technical field. Another person has done a lot of visionary work, and moved the organizations that she's part of towards preparing for AI—long before this current flood of information.

And, you really bridge those two experiences and the work-a-day. The examples that you gave are invaluable. I think a lot of people at this point are going to have the question: "Okay, what does this look like to me on a daily basis?" And you really hit that in a really beautiful, clear, and accessible way. And we couldn't be more grateful for what you've put together—so thank you so much. And, you know, you talk about not being a teacher anymore, but, you are, and you did that in what you presented to us today. So, we are hugely grateful. And thank you so much.

**Kate Agena 59:05.** You actually just made me think of something else that's super useful that I could show you: one of the reasons that we love the idea of Writer, is you can have teams. So, right now I just have McAfee. But, I can have another team for marketing, and another team working as support, for example. So, we could have product marketing and support.

And unfortunately, I wish that it was you could have one, core set of terminology and set of rules and then you could tweak from there and say like, "use the default unless there's a conflict in marketing or support." But it doesn't work that way. For now, we just have one team because until we get it tweaked to where we are happy with it, I don't want to copy it to a second team and then start making changes.

But it does have that ability which is useful, because our support team likes to talk about things in a different way than product talks about them. And, marketing talks a little bit differently.

But, there's another use for that. That would be, we could add a team for a partner. So for example, we have partners that take our mobile app, and basically white label it. So it looks like it's a mobile phone company's app. But it's actually our app, but it's in their voice and tone and has their visuals [in character]:

So, their voice and tone is very, like we're very chatty. You know, we're like, Hey, how you doing?

So their voice is very—they're very down to business—

And so we could create another team and put in their style guide. And they also do weird things like they put a period at the end of their headings. So we could change the style guide for their voice and tone. And then take the copied, you know, we start with our Figma files, and then we make a version for them, that has their voice and tone.

Imagine that you could just copy those Figma files to the file for them, run Writer for their team, and it would flag those things. For instance, they hate the word “protections,” and we use it all the time. So, it would flag all of those things—and then using Ditto, you could change all of them at once.

It’s super useful for things like that—otherwise, it takes a human being really having to understand the set of terms in their head, and then going through all the back and forth with the writers from the other company to make sure that everything fits their guidelines. And so that’s a super big time saver for writers.

**Michael Salvo 1:01:49.** And that’s what I keep hearing, from you and from others, [which] is that it takes a lot of [the] drudgery away. Even though you will have individuals—like you mentioned someone who is like, “Will this person fear that we’re trying to take their job, or job security away?”—and it’s not that at all—we’re trying to make your working life better: more sustainable, more rewarding, more challenging. And challenging in a way that your organization is going to benefit from.

**John Sherrill 1:02:23.** I couldn’t have said it better myself.

**Kate Agena 1:02:29.** And I thought of one other thing worth mentioning: titles in content design. So it’s always a super big topic. So there were UX (user experience) writers; what’s the difference between a UX writer and a content designer? What is the difference between a content *designer* and a content *strategist*? So for a long time, they moved away from UX writer to content strategist for the usual reasons that we moved from technical writer to information developer. And then you moved from content strategist to content designer, because you want to be in on it from the beginning of the actual [work with the designers, rather than just ideas]. That’s why, for the most part, we’ve ended up with content designer. But I [also] found that there are people who are branching out and saying, “We’re going to have multiple content roles.” So we have content designers that work with the design teams; but we also have content strategists that work on that content strategy, which is an entirely different thing than content design.

And now we’re seeing more content architects, which I think is really interesting. And to me, that’s an interesting role for this [work] if we’re talking about orchestrating different channels and content that comes from different cross-functional groups. That’s where, to me, a content architect could come in and be [the] one that understands all the different pieces, and how they’re supposed to fit together—which is different from content strategy and content design. I think that’s really interesting right now.

**Michael Salvo 1:04:04.** That is hugely interesting. We’ll be in touch soon.



## Chapter 5. Systematic Invention and Incremental Change

The two preceding interviews featured professionals whose careers shaped AI. In the previous chapter, Kate described how she uses generative AI in an average workday among a team of content designers and writers, highlighting Writer’s affordances as a generative tool while also describing its limitations as a replacement for human-authored content. In Chapter 6, Terry describes his experiences working in a high-technology environment of a different sort: advanced manufacturing. While Kate and Terry work in very different domains—digital content design and medical manufacturing—they describe surprisingly consistent themes when it comes to how generative and traditional AI technologies are integrated into professional writing and production workflows. Neither interviewee paints a picture of AI arriving suddenly to overhaul systems. Instead, they show how AI is gradually incorporated into legacy infrastructures, augmenting the capabilities of already lean teams (see Johnson et al., 2018).

This interlude chapter explores parallels between Kate’s and Terry’s interviews to thematically highlight what AI looks like in everyday professional writing contexts, and to contextualize the nature of Terry’s workplace. Contrasting the previous interviews’ focus on digital texts, we take time here to trace histories of tangible technologies. Specifically, we historicize bicycles and cameras, to ground the metaphors we use to understand generative AI, and to situate readers in contexts of manufacturing and the automated production of physical products. Across all three interviews, AI is not a sweeping disruption but a set of targeted interventions: tools that streamline existing processes, automate the tedious, and support quality and consistency across complex systems. Rather than reinventing the workplace, AI here is a companion to maintenance and small-scale optimization. For Kate, generative AI entered the workflow through tools like Writer, where it helps content teams brainstorm ideas, generate draft subject lines or titles, while Ditto helped enforce consistency across hundreds of pieces of documentation. In rhetorical terms, generative AI supported invention—the generation of possibilities that can then be refined by human writers. The ability to save even 15 to 30 minutes per ideation task adds up when multiplied across a content team managing messaging for a global company. However, as Kate is quick to point out, AI is less effective at composing long form content without significant intervention. The team still relies on human writers as content designers to effectively draft and revise final deliverables. But again, AI-based tools saved time and tedium by identifying and suggesting edits across hundreds of documents, potentially composed by dozens of human authors over time. It would be tedious for human authors to review hundreds of blog posts in relation to style guides to ensure consistent usage. As Kate described, advanced find



and replace tools with appropriate pattern matching could accomplish similar results, but would require technical expertise and extensive testing of expressions in order to catch any special cases. Instead, traditional AI as well as specialized LLM systems, developed for particular tasks, make converting proverbial needles in a haystack into usable hay a routine task for small teams.

Similar themes were apparent in Terry's interview. Kate emphasized that generative AI augments her team's capacity—it does not replace writers. Her team remains responsible for the quality and coherence of the company's messaging. Similarly, Terry describes a production and analysis environment that is already highly automated by traditional robotics and software systems. That is to say, in an automated manufacturing environment, human workers were in many cases already replaced with robots at scale decades before generative AI was a consideration. Even simple robots are more than capable of performing repeated tasks precisely and accurately, and can perform complex procedures with relative ease. Terry manages the customization of millions of medical testing kits, with machines assembling the most common configurations (the top 20 percent of test kits), and human workers collaborating with machines to assemble most custom kits. AI, in this context, holds potential to help with the computational challenges of tailoring solutions to unique client needs and improving the efficiency of lean teams—but it has not yet been deployed in these roles at Labcorp, Terry's employer. Still, Terry sees the value of AI for streamlining decision-making across thousands of product permutations and offers valuable insight into AI's potential. Efficiency, in this light, is not a matter of shrinking headcount—it's about helping small teams manage increasingly large and complex information systems. Throughout Kate and Terry's examples, the value of AI lies in its ability to support human expertise, not supplant it. Perhaps even more importantly, Terry describes challenges associated with improving the design of large-scale automated systems. Terry's experience grounds speculation and theory-building about AI's potential impact on manufacturing and related fields in current realities of the manufacturing industry. Bridget, Kate, and Terry all work with systems that operate at a large regional or even global scale, but Terry's experience foregrounds the complications involved with managing physical rather than virtual automation.

Both Kate and Terry describe the difficulty of updating legacy systems. For Kate, the problem is often one of maintaining the usability and relevance of old content—updating blog posts that still rank well in search, or configuring new platforms to maintain consistent brand voice across teams. For Terry, the issues are deeper and more structural. Labcorp's systems span decades of internal customization and vendor-specific software, as well as production and testing facilities around the globe (with their respective employees), all of which make transitions to new tools slow and complicated to implement. Both cases suggest that AI integration is not plug-and-play—it requires thoughtful attention to system compatibility, documentation, and human knowledge transfer. Terry

describes a moment in which Labcorp was forced to make a difficult decision regarding how and where to open a new facility—develop a new production site in Belgium for greater output and potential revenue, with the associated risk of developing a new system across the Atlantic; or open a smaller facility in the US using a tried and tested system, while perpetuating the limitations and challenges of Labcorp’s existing infrastructure? Such problems have not arisen as a result of AI, nor are AI-based systems likely to solve these problems. This context grounds conversations about AI in realities of automated workplaces.

Despite the differences between Kate and Terry in domain and the level of AI integration at their respective workplaces, both professionals manage teams responsible for producing tailored outputs at scale. Whether it’s written content for global audiences or customizable test kits for medical use, Kate and Terry must coordinate internal systems, external expectations, and logistical realities. Their teams are small relative to the scope of work they manage, and both see AI as a way to help them keep quality high and results consistent at scale.

Before moving into Terry’s interview, we return here briefly to differences between traditional AI and generative AI. The distinction is important to keep Kate’s description of Writer to brainstorm ideas distinct from the pattern recognition of traditional AI incorporated in Ditto, and the potential for computational optimization (also traditional AI) Terry describes. One way to remember such distinctions is through the metaphor of invention. As rhetorical scholars have long noted, invention refers to the identification of possible means of persuasion or problem-solving in each context. Generative AI, true to its name, supports invention by surfacing possibilities. This capacity has led to critiques of generative AI as a “bullshit generator” and stochastic parrot (Bender et al., 2021; Gorrieri, 2024). Although these are apt descriptors for generative LLMs we trace our initial encounters with generative AI through two different technology histories: CAD modeling and photography. We reflect on our initial encounters with generative AI—as part of the CAD modeling invention process for industrial fabrication—and how modern photography workflows might offer a glimpse into future writing processes and AI-driven interfaces for media production. We then present metaphors rooted in analog machines—like bicycles and gym machines—to help us critique popular assumptions about automation. Before transitioning to our final interview chapter, we take a necessary historical deep dive into photography’s shift from analog to digital, and racism entangled with automated development processes during that transition.

## Precursor Disruptive Technologies: CAD Modeling & Photography

Our conversations about generative AI and its potential impact on technical and professional communication emerged from encounters with Autodesk’s *Project Dreamcatcher*, an experimental generative design platform launched in

the mid-2010s. Project Dreamcatcher could generate thousands of potential 3D CAD models for a given design problem—far more than a human designer might develop manually. It then narrowed those possibilities to a manageable set based on designer selections, and designers could then further develop or combine elements of the generated designs. The goal was not to replace human designers but to extend their capacity for invention using cloud computing. Generative AI, as its name suggests, is good at generating multiple possibilities quickly and computing the available means of addressing mathematically constrained problems.

As Project Dreamcatcher showed (and as we described in Sherrill & Salvo, 2022), sometimes the results exceed the imaginations of designers, and at other times results technically meet defined parameters but are immediately rejected. Understanding generative AI's affordances and limitations provides context for Kate's use of Writer. Writer could generate lists of potential titles or subject lines efficiently, while human authors rejected many of the generated outputs, just as with brainstorming processes. Expectedly, Writer was less useful for generating longer form content without extensive prompt engineering. In most cases, it was faster and easier for a human to write longer texts, reflecting our own experiences writing with generative AI. This should come as no surprise given the purpose of generative design systems launched prior to ChatGPT. Having said that, Project Dreamcatcher was marketed with a second automated design step in mind: topology optimization.

Topology optimization is a mathematical process of incrementally refining designs to reduce material usage while preserving strength. A biological analog for the process might resemble the evolution of bird bones to be optimized for flight with the necessary tradeoffs (i.e., design constraints) of affording survival across varied conditions. The result: bird bones are largely hollow, and therefore lighter, while maintaining sufficient strength, yet still recognizable as bones. Applying this approach to industrial manufacturing, a designer might not notice the impact of shaving a few grams from an individual part, but when repeated across hundreds of components in a car or aircraft, those marginal gains add up. Similarly, optimizing assembly time by tenths of a second per medical kit might seem negligible, but scaled across millions of units, the time and cost savings become substantial.

This combination of invention and refinement reflects the hybrid nature of AI integration in both Kate's and Terry's work. In content design, AI might generate lists of title ideas or flag inconsistencies, saving writers from tedious tasks. But refinement—editing, aligning with tone, meeting user needs—largely remains the work of people. In manufacturing, future applications of generative AI may identify promising configurations or optimize decision trees, but the systems themselves are still anchored in human expertise and institutional knowledge.

Traditional AI plays a role as well. For Kate, the proverbial needles in the haystack were phrases that didn't align with company style guides and therefore needed correction. For Terry, one problem involves identifying combinations of needles that are likely to create a haystack on the assembly line: particular combinations

of kit contents can cause substantial backups and delays. To address this problem, Terry recognizes that advanced computing can analyze millions of potential parts combinations that might delay the assembly of custom kits. Although generative AI could play a role in creating plausible combinations of parts to virtually test, this is likely a task for traditional AI rather than generative AI.

Both Kate and Terry illustrate a future of work where AI participates in collaborative systems without dominating them—again representing Knowles’ ideal of machine-in-the-loop systems (2024). Whether it’s sorting through thousands of blog posts or managing the combinatorial haystack of product variations, AI helps make overwhelming tasks tractable. But it also requires labor—technical labor, rhetorical labor, and managerial labor—to function responsibly and effectively.

Taken together, Kate and Terry offer a grounded perspective on what AI means for professional writing in the workplace. Not a wholesale transformation, but a set of careful, iterative adaptations. Not a substitution of human intelligence, but an augmentation of human coordination. And not a utopian vision of frictionless automation, but a realistic acknowledgment of the time, expertise, and care required to make AI useful across complex, human-centered systems.

## Photography Disrupts Itself

Throughout the book, we refer to a metaphor of photography and draw parallels with writing in the age of generative AI. In doing so, we extend an argument that began as a presentation for the 2023 Conference on College Composition and Communication about the potential for LLMs and other forms of generative AI to shift from command line interfaces towards a GUI more similar to other forms of digital media production (Sherrill, 2023), as well as student encounters with generative AI in an advanced writing course (Salvo, 2023). As anticipated, interfaces for prompting generative AI systems have already begun this shift. ChatGPT’s latest update, Canvas, resembles a WYSIWYG approach with improved usability and targeted editing of generative output via a pop-up menu with shortcuts (OpenAI, 2024). Compare in Figures 5.1-5.3 the interface for ChatGPT Canvas, the interface for Capture One (a professional photo editor), and the slider-based GUI that John envisioned for ChatGPT in his 2023 presentation.

As such, we conceptualize writing (like photography) as a workflow of rhetorical decision making by human designers using semi-automated tools to produce modular drafts that can be extensively and algorithmically reworked. In doing so, we are also implicitly situating written text alongside other forms of generative AI output such as audio, video, images, 3D models, etc. That is, although writing allows for knowledge creation and metacognitive reflection in ways that are often distinct from other forms of media and communication, writing is a form of digital media (drawing from Lev Manovich’s definition in *The Language of New Media* (2002) that can be algorithmically generated, and we treat it as such throughout the Conclusion.

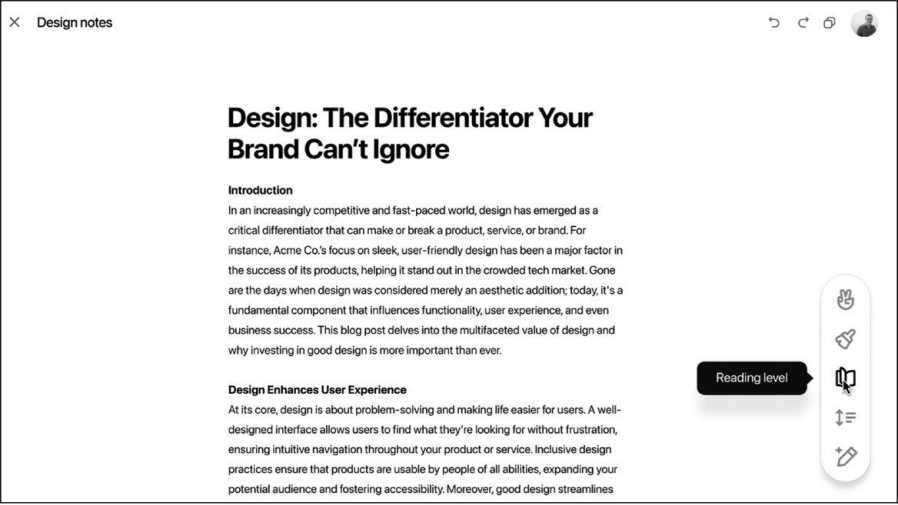


Figure 5.1. A sample image from ChatGPT's Canvas interface, with notes on Design as the differentiator.

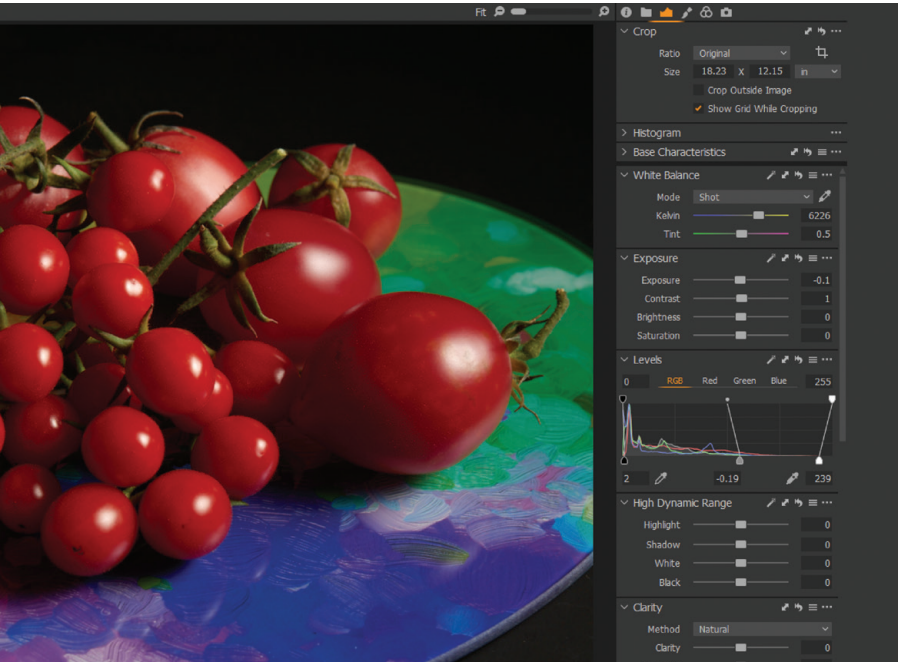
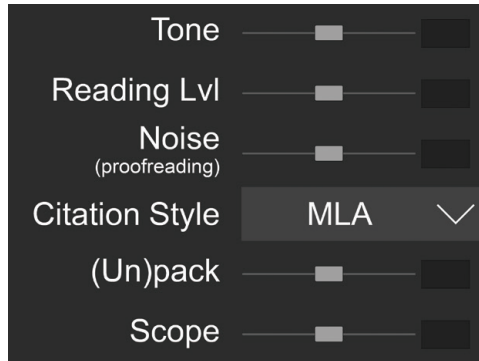


Figure 5.2. A picture of tomatoes in Capture One photo processing software used as color saturated example to illustrate the ways automation and AI are used in routine image formatting. Interface for the exposure adjustment panel is shown.



*Figure 5.3: Mock-up of a hypothetical slider interface for writing with generative AI, modeled after the conventions of image processing software.*

We, as teachers of technical communication, composition, and other disciplines, have encountered the emergence of similarly transformative/disruptive tools before. WYSIWYG (what you see is what you get) interfaces emerged for web design in the early and mid-2000s, and steadily improved with time. However, as the code generated by such interfaces also improved, they made it harder to identify whether students had generated their own HTML and CSS code, or had relied on the automated tools to generate reasonably usable output. Because source code for websites is readily viewable in any browser, it was similarly challenging to detect plagiarism: despite teaching ethical best practices, students could take inspiration from source code, or copy-paste with minimal editing to disguise the original source. Institutional systems for addressing plagiarism, still rooted in analog writing pedagogies, often lagged behind newer tools and failed to address teachers' concerns. Consequently, when teaching web design (whether via hand coding or even via WYSIWYG content management systems like Wix and Squarespace), documenting students' rhetorical decision making was foundational. Audience analyses, design plans, paired coding, distribution plans, revision plans, peer feedback, usability evaluations, and designing personally meaningful projects all played important roles in enculturating accountability as part of the learning process and are integral to producing professional content.

"Explain how it works and why you did it that way," live, in front of an audience, remains an essential pedagogical tool. At the time Wix and other tools became publicly accessible, diehard DIY-OR-DIE proponents of hand coding argued that automated tools such as Wix failed to teach students important rhetorical skills and foundational web design concepts rooted in code, while many in the fields of composition and technical communication championed the accessibility of WYSIWYG tools for first-year students and the ease with which students could engage authentic audiences outside the classroom via the web. Over time, WYSIWYG tools improved, and new tools emerged—such as Markdown, offering an experience closer to hand coding with broader accessibility. Michael and I



see value in all of these approaches, having lived and taught through that particular period of development and ensuing pedagogical discourse. To be clear, we do not conceptualize writing as being the same as all other forms of media production, rather, that understanding writing as inherently distinct can be limiting and at times problematic. As one example, compare my (John's) typical photography workflow with my typical writing workflow:

**Photography workflow:** take some notes, capture a few hundred images in which I make decisions about composition, subject, focus, etc., and allow the camera to automatically adjust certain settings within defined constraints. Import the RAW<sup>10</sup> files into Capture One for processing and export.

At times, I (John) might do some additional retouching or compositing in Photoshop, depending on the situation. I'm not doing that photographic editing work via command line, I'm using sliders and dials. The base image is already made, but I can make significant adjustments. To get to that base image, I had to make choices as a photographer about subject, composition, exposure, and other camera settings. Sometimes, it's important to manually dial in each setting, be it for consistency, to get a specific exposure, or to create a specific visual effect (e.g., shutter drag or intentional camera movement). At other times, that mental labor isn't as critical, and the camera does just fine deciding for me how to expose the frame or adjust the shutter speed to freeze motion. But even when the camera automates parts of the process, I still have options for making radically different final images from the same base file.

**Writing workflow:** take some notes on paper or plaintext, either A) type a rough outline or some extended "chunks" of main points in plaintext that can be further developed or B) speak and record myself and then generate an initial transcript (still plaintext) or C) ask ChatGPT to extend or connect chunks of text. Import the plaintext version into Microsoft Word or Google Docs for revising. Extensively rework the initial draft, making choices about arrangement, focus, etc. while also making use of automated tools like spellcheck, Grammarly, or ChatGPT.

Depending on the rhetorical situation, I might do basic formatting in Word or Google Docs and call it a day. But in a professional setting I might import the text into InDesign for page layout, generate an HTML version or import the text into a content management system (CMS) like WordPress or a system for structured authoring (where the text could be further transformed), or another specialty program. With each layer, I move further from the unformatted plaintext draft which offers minimal automation between my choices as a writer and the text I produce, to increasingly automated tools. Sometimes, even sitting at a computer feels like too many layers of automated mediation to start with, so I write by hand or dig out a manual typewriter from my closet to hammer out lines of text. Many times, the

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10. RAW files provide the most data from the camera's sensor, uncompressed and unprocessed. RAW files are loosely equivalent to undeveloped film and allow for a wider range of image adjustments than compressed formats like JPEG.



mental labor of spelling, editing, and formatting are less critical for me to make choices about, and spellcheck or ChatGPT handles that level of automation just fine. But even when those tools make automated decisions, I still have options to transform the text to make radically different texts from the same base file.

For many photographers, the appeal of shooting film in a digital age is that it slows down the photographic process. It requires the photographer to make conscious choices, which are also often tactile by nature of being analog—turning the aperture ring, adjusting the shutter speed dial, manually bringing the frame into focus through the viewfinder by turning the focus ring, hearing the distinct “ker chunk” of the shutter release mechanism, and advancing the film. Though fully mechanical manual<sup>11</sup> cameras are coveted to the point that some sell for thousands of dollars (more than some modern digital cameras), on average, many film photographers still shoot film cameras from the 1970s or 1980s that offer the choice of using some automated assistance, e.g., an indicator light to suggest exposure rather than relying on years of experience or a separate light meter (or equivalent app). Similarly, though some DIY-or-die photographers develop their own film, many still prefer the relative convenience of mailing their film to a lab and receiving digital scans as well as physical prints. There are still photographers with the necessary technical expertise and resources to work with photographic plates, cyanotypes, and other historic analog processes, but they are comparatively rare. For most modern photographers, such techniques might have been covered in a classroom lesson in much the same way that writing students might be exposed to a dip pen or a typewriter, but on average would not make their own iron gall ink. However, modern digital photography classes do assign work that requires students to manually adjust settings in order to understand the exposure triangle and how various camera settings impact the resulting images—the automated camera still affords manual control when needed—an important point which we will return to in our discussion of ethical considerations, as photographers, much like writers, must make careful rhetorical decisions about how they represent reality and communicate with audiences, and must consider the impact of their choices alongside automated decision-making. To have greater rhetorical agency, beyond framing and filters or “good enough” images, photography students must still learn the foundations of how each camera setting impacts the captured image. To move beyond shooting 100 images and getting lucky with one or two better captures, photographers must develop technorhetorical skills. Similarly, generative AI generates rhetorically adequate texts under average circumstances, and occasionally generates something that exceeds expectations. Synthesizing the best parts of generative output can be productive, but technorhetorical expertise

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11. It is worth remembering here that mechanical “manual” cameras represent over a century of technological advances in automation. Compared with other methods (e.g., portraits, sketches), even daguerreotype images were capable of automating the process of creating an accurate depiction of reality.

allows users to make the most of AI-driven tools—as we have seen in our interviews with Bridget and Kate.

## Bicycles and Physical Impossibilities

As we have encountered in our own teaching, as well as published research, students on average recognize the importance of using writing skills and automated tools in ethical, expert ways. They understand that the ability to do so requires thoughtful decision-making about how to incorporate automated tools effectively, and that developing such an awareness—*praxis*—comes with practical experience informed by theory. Andelyn Bedington et al., in “Writing with generative AI and human-machine teaming,” provide a relevant example, sharing undergraduate students’ reflections on their interactions with AI in a writing course.

I was initially worried that AI would be like a car, removing all exercise for me as a writer and thus not letting me develop and exert myself. But now I see AI as a bicycle. Just as a bicycle can take me farther than if I walked but it still is my exercise that is shaping the experience, so now do I see how AI can improve my writing without replacing the mental exercise of the writing process. Writing with AI still requires exercising knowledge and skills, just as a bicycle does, and provides endless room for improving on those skills and developing that knowledge. (Bedington et al., 2024, p. 8)

This bicycle metaphor is useful for understanding AI in relation to writing.

Much like machines in a gym guide novice users to understand how proper form feels with less risk of injury due to improper form, they allow users to go further faster than manual exercise alone. Walking into a small gym that has only a multipurpose exercise machine, free weights, and a bench can be as intimidating as staring down a blank page. Even dedicated machines can be intimidating to use for the first time in front of spectators. But compared with dumbbells, most machines include at least basic illustrated instructions for proper use. With minimal instruction, exercise machines help users safely develop foundational literacies, building muscle memory and recognizing proper form through repetition while avoiding major injury. They are machines that quite literally support learning through labor, but still require human input. The machines provide a physical template for proper form. Users not only see illustrated instructions or a model of form—similar to reviewing examples of a particular written genre—rather, the machines constrain how the user moves, while requiring considerable exertion. Over time, the amount of exertion required can also be adjusted as the user gains muscle. As users gain confidence and skill, they may find the machines limiting, or may grow tired of waiting for others to finish their sets on a limited

number of machines. Instead, gym-goers might use more abundant free weights, informed by a quick YouTube tutorial on their phone and equipped with practiced knowledge of which muscles will feel each exercise. But even users with years of experience in weightlifting and exercise may still prefer the mechanical support of a leg press to manual squats, or the consistent and controllable pace of a treadmill, as much for safety as efficiency. However, as many viral videos show, even with the simplest of gym machines and accompanying illustrated instructions, people sometimes use the constrained machines in creative, novel, and unintended ways. Like exercise machines, generative AI tools afford structured, guided experiences that can help writers build foundational skills and confidence—especially when they’re just starting out or facing a daunting task. These tools constrain and support, allowing users to experiment with form and technique, or offsetting the mental labor of editing sentences and facing down a blank page. But just as with gym equipment, users can misuse or over-rely on AI, which raises concerns about authenticity, agency, and rhetorical awareness.

Wiebe Bijker’s work on the *Social Construction of Technology* (SCOT) approach, particularly in *Of Bicycles, Bakelites, and Bulbs* (1999), argues that technology evolves through social negotiation rather than inevitable progress. His reflections on the bicycle reinforce the idea that users actively shape technological development, challenging the notion that innovation is driven solely by engineers or market forces. The bicycle, in his analysis, was not simply invented and adopted; it was contested and redefined by different social groups, including safety-conscious users, women advocating for mobility, and manufacturers responding to shifting demands.

Bijker’s insights anticipate later discussions about user-driven innovation, participatory design, and democratized technology. His work highlights how everyday people influence technological change, a perspective that resonates with modern developments like open-source software, personalized fabrication, and digital hacking cultures. He identifies the active role users play in modifying and repurposing technology to fit their needs, rather than passively consuming pre-designed products.

The democratization of photography through Kodak offers another example of user-driven technological transformation (which we revisit in the section No Neutral Grey). When George Eastman introduced the Kodak camera in 1888 with the slogan “*You press the button, we do the rest,*” he removed significant technical barriers to photography, shifting image-making from a professional craft to a mass cultural practice (Eastman Kodak Company, n.d.). Much like the bicycle’s transition from an elite innovation to a universal mode of transportation, Kodak’s accessible cameras redefined who could participate in photography. This shift allowed ordinary people to document their lives, shaping visual culture in ways previously restricted to professionals.

Both the bicycle and Kodak photography exemplify how American consumer culture eagerly adopts technologies that enhance individual agency. These

innovations were embraced not just because they were practical but because they empowered users, granting mobility, self-expression, and new forms of participation. Bijker's framework for understanding technological change—emphasizing user agency, social shaping, and interpretive flexibility—remains relevant today. From the rise of smartphones and social media to decentralized finance and AI tools, technology continues to evolve through a process of negotiation between designers, markets, and users. His work reminds us that technology is not just something we inherit but something we collectively shape. This ongoing negotiation between users and technologies is especially visible in education, where questions of agency, expertise, and effort are central. Just as past innovations like the bicycle or the camera reshaped cultural expectations around mobility and expression, generative AI challenges how we understand learning, authorship, and cognitive labor.

Critics of generative AI have referred to a gym metaphor as well. Some writing instructors argue that using ChatGPT in the classroom is equivalent to having a robot substitute go to the gym. Encountering arhetorical use of automated tools can certainly feel this way, as we acknowledge in our dialog about our own teaching experiences. In one extreme example, Victoria Livingstone wrote a *TIME* article titled, “I Quit Teaching Because of ChatGPT” (2024). In her article, Livingstone quotes Ted Chiang's metaphor, “Using ChatGPT to complete assignments is like bringing a forklift into the weight room; you will never improve your cognitive fitness that way” (Livingstone, 2024; Chiang, 2024). Livingstone argues, much as we do, that the challenge of implementing generative AI into classrooms is that novice writers may not be able to distinguish between writing produced by experts and writing that appears expert—much the same way that a novice gym-goer may not be able to distinguish between proper form and someone sweating profusely and performatively grunting with each lift of large weights (or WYSIWYG-generated code vs. hand coded text). However, we diverge from Livingstone and Chiang in how we conceptualize the load sharing between gym-goers, exercise machines, and generative AI. In his *The New Yorker* article, titled “Why A.I. Isn't Going to Make Art,” Chiang summarizes his argument as follows:

The companies promoting generative-A.I. programs claim that they will unleash creativity. In essence, they are saying that art can be all inspiration and no perspiration—but these things cannot be easily separated. I'm not saying that art has to involve tedium. What I'm saying is that art requires making choices at every scale; the countless small-scale choices made during implementation are just as important to the final product as the few large-scale choices made during the conception. It is a mistake to equate “large-scale” with “important” when it comes to the choices made when creating art; the interrelationship

between the large scale and the small scale is where the artistry lies. (Chiang, 2024)

As we will discuss in more depth later in this chapter, such marketing strategies are centuries old. Kodak made similar promises with its “You press the button, we do the rest” slogan (Eastman Kodak Company, n.d.). Where we diverge from Chiang is in our understanding of automated choices (and the fact that we are concerned with writing for the workplace rather than producing art). We argue that automating rhetorical labor, identifying and choosing the available means of persuasion, is not inherently antithetical to artistry or literacy learning, but should be used responsibly—which requires technorhetorical literacy. Challenging to teach, undoubtedly, but historically not an unfamiliar problem for the fields of composition and technical communication. It is fair to argue that few, if any, award-winning photographers have become accomplished artists through letting the camera automate every decision other than where to point the lens and when to trigger the shutter. But particularly in the context of the workplace, automatic decision-making is foundational. Few would argue that award-winning photographers never trust the camera to make automated decisions strategically, much as Chiang doesn’t believe “that art has to involve tedium” (2024).

To draw upon another metaphor, consider here the appeal of mass-produced chicken stock. For an annual holiday meal, a home cook might make a delicious chicken stock from scratch, carefully selecting and preparing every ingredient and spending hours tediously simmering the broth while tasting and adjusting at each step. The resulting stock might make deliciously artistic gravy, mashed potatoes, and stuffing (if one considers stuffing delicious, that is)—elevating these dishes for a special occasion. But on an average Thursday night dinner, readily available store-bought stock balances flavor, time, and effort to create a meal that is satisfactory and often still much better than faster fully “automatic” microwaveable options.

Generative AI is not producing Michelin Star quality stock, and likely never will, even as it improves. At its current best, generative AI’s output resembles Campbell’s, and occasionally produces output equivalent to an organic “private label” premium quality canned soup or stock, but can metaphorically create varieties not profitable for mass production. By the same rationale, businesses hire photographers to produce art when needed, and sometimes to produce stock photos that otherwise don’t exist. But when stock photographs or bulk-processed headshots *satisfice*<sup>12</sup> (Simon, 1956, 1997), “stock quality” holds considerable value—Bridget’s interview is testament to this. Award winning chefs will continue to produce deliciously nuanced stocks from scratch and charge a premium price

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12. A combination of “satisfy” and “suffice” to describe decision making, as developed by Herbert Simon in *Administrative Behavior* (1997), but coined in a later paper, <https://psycnet.apa.org/doiLanding?doi=10.1037%2Fh0042769>

for their expert labor, perhaps even exploring new ideas from the unexpected output of generative systems. But that level of decision-making is exhausting, and unsustainable for many people. As teachers, part of our job in the age of generative AI is to highlight the potential impact of automatic and default decisions, much as it has been throughout time, rather than to condemn new tools as inferior to human agents. *Of course* an Olympic sprinter can outrun a novice on a bicycle, but that is not our point. Not every student aspires to be an Olympic gold medalist, nor should that be our sole pedagogical aim; many students just want to reach the finish line ~~without collapsing~~ in a reasonable manner.

These metaphors we have used here, photography, WYSIWYG, bicycling, gym machines, align with Knowles' concept of *Rhetorical Load Sharing* (Knowles, 2024). Each of these metaphors contains a spectrum of automation and human agency, as do additional metaphors described by Anuj Gupta et al. (2024) and Luke Stark's metaphor of "ChatGPT is Mickey Mouse" (2023). For Knowles, ideally, shared labor between humans and automated systems is structured such that humans maintain their rhetorical agency within the assemblage, while strategically using automated tools to do the heavy lifting (whether metaphorical or actual). In the examples described throughout our interviews, the automated systems assist human workers, with people doing the majority of the rhetorical labor. Generative AI extended the work of Bridget and Kate's teams beyond what they could accomplish on their own, but did not replace their rhetorical labor, nor could AI substitute for a human employee. Even in the highly automated setting Terry describes, only a small percentage of the overall work at Labcorp is fully automated. Though the work of assembling medical testing kits is not rhetorical for the employees, and could be considered a human-in-the-loop configuration of load sharing (in which the majority of the load is handled by machine), it demonstrates a similar principle: human hands, one of the body's most nuanced and complexly articulated parts, distinguish workers from machines through a combination of fine and gross motor control.<sup>13</sup> Furthermore, even in the highly automated setting of Labcorp, rhetorically complex communication presents challenges that can only be addressed by humans.

Configurations of rhetorical load sharing can become normalized over time as well, and we return to technological advances in photography to help illustrate this point. At a time when early smartphone cameras began to share resolutions comparable to point-and-shoot cameras, from approximately 2010 (marking Apple's launch of the 5 megapixel iPhone 4) onward, identifying "phone photography" on

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13. Although some machines are superhumanly precise or can perform incredibly delicate operations, few if any are able to move quickly, accurately, and precisely over considerable distance, with the capacity to both support a heavy payload while being delicate all in a single machine. For now, human hands remain complex and difficult to replicate across their entire range of applications, but are replicable for specialized applications (e.g., robotic surgery or pick and place machines).

Flickr was a novel practice.<sup>14</sup> Tags allowed photographers to distinguish images produced on a traditional camera from those shot on a phone. This tagging served multiple purposes, often showcasing that the quality of the phone camera was comparable to that of a dedicated camera, but also highlighting the capabilities of the photographer—even without equipment that had greater technical specifications, the photographer could produce striking photos. Such sharing helped demonstrate that phone cameras could carry a rhetorical load comparable to dedicated cameras. Today, identifying an image as “shot on my phone” would seem strange given that mobile photo-sharing platforms such as Instagram enable users to instantly share pictures from their phone in real-time. Phone photography has become commonplace. However, film photographers often include information about the film and camera they used, as well as notes about their development process, because that metadata is not automatically embedded, nor is film the expected medium for social media posts. Novice photographers who want to be perceived as more skilled will still sometimes note that they shot their images with manual settings, whether on a phone or camera. Similarly, #NoFilter is sometimes used in an attempt to distinguish oneself from users creating comparable output with automated tools—signaling authenticity or greater effort, like calling attention to using manual settings. Currently, the norms of disclosing AI use are still crystallizing across media and fields. However, it is conceivable that in the near future, disclosing the use of generative AI as part of writing workflows may seem as unusual as tagging a photo with “shot on my phone,” while the equivalent of “#NoFilter” for manually typed texts might remain, e.g., #NoGPT. I wrote this sentence, not ChatGPT—but I only disclose that because ChatGPT’s output is capable of being indistinguishable (leaving aside whether “I” refers to John, Michael, or the collective assemblage of ourselves, technological infrastructure, and an editorial team in this instance ...). As new technologies become commonplace, however, it is important to remember that any media filters—mediates—our perceptions. #NoFilter invisibilizes the filtering that cameras always already do. As one example, Michael Bradley’s exhibition of portraits depicting Māori people demonstrates how colonial photographers using wet-plate photographs literally erased culturally significant tattoos (Bradley, n.d.). The chemical process of wet-plate photos captured only hints of traditional tattoos, but juxtaposed with modern digital photos the erasure is starkly clear.

## Metaphors for Writing

Contrasting earlier analog photography, in terms of image quality alone, there is little perceivable difference between the camera built into a smartphone and

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14. The iPhone 4 was only a few megapixels shy of most point-and-shoot cameras at the time it was released. However, it was still well below even older entry-level DSLRs, which had two to three times the resolution depending on the exact model and price. See Diaz (2004) for more.



an image captured on a dedicated digital camera. For everyday applications, the visual difference is negligible. The average phone camera suffices in most situations without additional bulk or equipment, and it would be difficult to tell by sight alone what type of camera produced an image. One might then wonder, what is the value of a professional photographer? Many well-intended relatives at weddings have asked the same question, smartphone or DSLR in hand, often to the frustration of professionals hired to photograph the occasion. When an average person cannot reliably tell the difference between automated amateur output and professional output (or in the case of personal wedding photos, may not care) what is the value of a professional? Similarly, many administrators and colleagues have asked, what is the value of a technical communicator or a writing instructor, particularly now when ChatGPT can do it?

There are technical differences that matter to photographers, just as technical communicators and writing instructors recognize nuances that non-subject matter experts might overlook. If a finished image needs to be printed at a large scale, the subject of the image demands additional megapixels (e.g., product photography), or a telephoto lens is required (e.g., wildlife or sports photography), a smartphone will not do the job. Additionally, dedicated cameras priced for professionals allow for layering additional technology beyond what a smartphone offers, e.g., remote flash triggers, external microphones, synchronization tools, etc. Increasingly, accessories and apps are available to enable smartphones to function similarly, but rarely to the same professional standards. Similarly, generative AI tools cannot yet produce an entire owner's manual for a vehicle, a textbook, contracts, and other forms of writing at scale or with specialized applications. Though automated proofreading tools and generative AI support the work of technical editors for example, such tools do not replace the ability of human editors to recognize nuanced rhetorical situations that can inform the choice of a single word within a text. As Kate explained in her interview, automated proofreading tools help teams collaborate effectively by handling tedious or repetitious work. But they do not understand user needs, and do not anticipate potential issues that may arise from the articulation of a text any more than a camera or a gym machine does—we cannot safely assume that generative AI will not hallucinate dangerous gym machines. Consequently, expert guidance and feedback—and human decision-making—remains important to learning to use automated tools effectively. For all of these technical differences, what distinguishes a professional photographer from someone with a camera, or a technical communicator/writer from someone with a computer, is not just technical proficiency, but the ability to translate user needs into a rhetorically effective deliverable while prioritizing user experience. Authentic encounters and dialog between users and designers, between audiences and writers, are still foundational to effective writing. The ability to understand human experiences, recognizing the humanity of another person, human empathy—though cliché regarding AI and other machines being emotionless—is an important part of the

value of human communicators. Human empathy provides an ethical foundation for participatory design and other methods of communication.

Generative AI, at its best, gives an appearance of understanding, whether that is understanding empathy, logic, rationality, etc., while only ever producing statistically probable results. At the same time, similar to human writers, generative AI often breaks down when responding to “non-default” or novel prompts that fall outside the norms of training data. But unlike human authors, generative AI systems cannot reflect, conduct a post-mortem, or be held accountable for their decision-making process.

The current limitations of generative AI also yield technical differences that are far less nuanced. Although we disclosed earlier that a sentence was typed by a human, generative AI could not write this chapter. It is at times a useful writing assistant, but is not a co-author. As Johndan Johnson-Eilola, Selber, and Eric York similarly concluded in their 2024 *Journal of Business and Technical Communication* article, “When it comes to creating high-quality, consequential instructions, ChatGPT might be better seen as a collaborator than a competitor with human technical communicators” (p. 208). They reached this conclusion because ChatGPT failed to generate safe and effective instructions for a home COVID test, with ChatGPT providing incorrect instructions about nasal swabbing time, no clarification about swabbing depth, and other safety issues. Ultimately, they argued that ChatGPT is useful as a drafting tool when multiple rounds of revision are involved. Generative AI can produce a helpful zero draft to work from. Currently, the technology isn’t capable of replacing a human writer. And LLMs may never be capable of fully automating technical communication tasks such as writing effective instructions, particularly as long as AI language models hallucinate. But the technology is capable of occasionally producing output that at a minimum resembles professional writing, and at best provides generically adequate output for simplified rhetorical situations that are tightly constrained. In other words, in 100 attempts on automatic mode, the generative AI might produce a few reasonably good results, but does not replace a technorhetorically proficient expert.

## AI as Extension of Automation

To be clear, our interview participants all have varying degrees of management experience, and shaped how their organizations adopted automated technologies and AI-driven technologies long before the public release of ChatGPT. Kate and Bridget actively contributed to the development of AI-driven systems within their respective organizations over the past decade. We clarify this here to avoid giving the impression that we think readers should take critiques of AI or other forms of automation lightly, or that developers are inherently aware of systemic issues. We do not believe that people become automatically critically aware simply by using a technology, or even osmotically by building systems, and we recognize that developers with good intentions are constrained by institutional power and their

lived experiences. We trust that our participants recognize their ethical responsibilities as technical and professional communicators when contributing to the design of automated systems, and they made that awareness explicitly clear at times during the interviews.

Having said that, attending to the associated oppressive histories of automation is also an ethical responsibility before we transition into our final interview chapter with Terry. In “This Is Not a Response,” (2024) Casey Boyle alludes to histories of automation and oppressive labor practices when defining the “intelligence” in artificial intelligence. Boyle argues, “It is increasingly clear that what we mean by intelligence refers to the products and processes that humans are paid to do that corporations would prefer to not pay humans to do anymore. Following that, we might think of AI as artificial human labor” (2024, p. 307). Building on this critical definition, Boyle cites Sarah T. Roberts as well as James Brown, Jr. and Gregory Hennis, extending their arguments that “media platforms outsource responsibility to moderators and users.” Boyle clarifies that “AI goes further. If there are humans involved, they become the liability sponge through ‘human error’ so that we never scrutinize the algorithms, models, training. Following that, we might once more reconsider AI as ‘artificial responsibility’” (2024, p. 308).

We would argue that this liability sponge principle applies equally to arhetorical uses of “intelligent” technologies. Critics rightly call out AI systems—including webcams and automatic camera sensors that fail to properly recognize people of color—as racist and oppressive. But the rhetorical framing of such critiques matters. If the system allows users to make adjustments, and users have the technorhetorical knowledge to override or adjust problematic defaults, then it becomes insufficient to critique the technology as racist or oppressive and leave it at that. When systems *don’t* afford user control, or when defaults go unexamined and racist outcomes appear to be baked in, then the responsibility lies not just with the technology or with its user, but with its designers, implementers, and managers. To illustrate this dynamic, we take a technical and historical deep dive into analog and digital cameras. These technologies, unlike most contemporary AI systems, offer more transparency in both their technical construction and their cultural histories. Their longer timelines and documented sociotechnical contexts allow us to articulate how managerial, institutional, and user decisions shape automated systems and their impacts.

Throughout the book, we have emphasized the importance of attending to management practices—human decisions about when, where, and how automation is implemented—as well as user practices when evaluating AI systems. Rather than accept automation’s impacts as technologically determined, we advocate for distinguishing between a system’s capabilities and the choices made about how it is used. This distinction becomes especially urgent when evaluating automated systems that reproduce racist or otherwise biased outcomes.

A key difficulty, however, is that most large AI systems today are opaque by design. Their inner workings are black-boxed, often protected by proprietary

constraints, and in many cases not fully understood even by their creators. While researchers are making slow progress in “circuit tracing” and model interpretability (Heaven, 2025), for now, identifying the causes of harmful outputs—such as racist language generated by LLMs—can feel like debugging while blindfolded. We know these systems can produce racist outputs, often as a direct result of biased training data or inadequate screening of user prompts. Their designers know it too. But diagnosing and intervening in the technical causes remains difficult, especially when the systems are trained on vast, sometimes undocumented, datasets and accessed through commercial APIs.

Given this opaqueness, we turn to photography because it provides a more *traceable* technology. With photography, it is possible to identify how specific design choices (such as exposure defaults, film chemistry, or skin-tone calibration) produce problematic outcomes—and to situate those choices within broader institutional and historical practices. In doing so, we are not displacing critique from AI to photography, but using photography’s more visible lineage to help surface and analyze embedded biases in automated systems.

Like Selber and York, who express caution around teaching “prompt engineering” due to the variability of AI outputs and the lack of meaningful feedback mechanisms (2025), we are similarly cautious about overstating users’ control over the automated output of AI-based systems versus users’ ability to revise, repurpose, or reject AI-generated content. Writing teachers have an ethical responsibility to teach students how to critically work with AI-based composition technologies. Skilled photographers can dial in the camera’s output, often reducing if not eliminating the need for extensive editing, but we recognize that we do not yet have such fine-tuned control over how AI-based systems generate their outputs in every situation. This section focuses on automated systems that, unlike LLMs, afford more transparency and accountability. These cases offer a useful starting point for developing ethical and rhetorical orientations that can be applied—even if only imperfectly—to more opaque systems like generative AI. Photography is a representative anecdote of automation deployed over a long timeline, and one which has been ethically fraught in ways that illustrate some of the current ethical issues with generative AI.

## No Neutral Grey: Inequities in Imaging

In 1888, George Eastman launched Kodak with the slogan “You press the button, we do the rest” (Eastman Kodak Company, n.d.) to encapsulate the idea that amateur photographers could simply push a button and create lasting photographs with minimal effort—much like modern AI marketing hype. New photographers did not need equipment, chemicals, and technical knowledge to develop Kodak film into photos. To consumers, the development process was seemingly automatic: mail in their camera to Kodak, receive photos and their original camera back with a new roll of film inside. By Knowles’ definition, this is undoubtedly

a human-in-the-loop system, though Eastman's slogan disguises a considerable portion of the rhetorical load involved in creating a photo. According to Kodak's history, nearly 140 years ago, "Eastman had a goal to make photography 'as convenient as the pencil'" (Eastman Kodak Company, n.d.). A fitting technological point of reference as the world questions the value of writing drafted by hand, but again, a slogan that doesn't draw attention to the rhetorical agency involved. Compared with a smartphone, the idea of physically mailing an entire camera and waiting days for the results is laborious and slow, but this technological shift opened opportunities for amateur photographers to document their perspectives on the world around them.

Of course, like with other forms of visual documentation, photographers have used cameras to define reality towards a variety of ends, at times challenging the status quo and at others reinforcing oppressive gazes and -isms along the way (again, see Bradley's PUAKI exhibit as example). Photographers, much like writers, make nuanced rhetorical decisions about how to represent the world visually, working with the technological constraints and affordances of cameras, and may retain varying amounts of control over the development, editing, and distribution processes. In the example of Kodak's slogan, the photographer's control over the appearance of an image largely ended at the press of a button. For many amateur photographers, and even professionals working at a large volume, this was the case up until the advent of consumer digital photography in the 1990s. Development labs and Polaroids handled the chemical processing for anyone who chose not to develop their own film and retain the associated rhetorical control. Although there are parallels between the basic process of sending off photos for development and mailing medical samples for testing described in the next chapter, there are also important distinctions between Kodak's mass production and Labcorp's mass *customization* processes. Labcorp affords the modern equivalent of film manufacturers producing film rolls in which individual frames could offer different ISO sensitivities or color balances—as well as precise tracking of individual medical samples for accurate,<sup>15</sup> safe, and auditable testing (equivalent to the ability to track an individual photo throughout the development process and tailor adjustments)—equivalent to mass bespoke photo development.

Historically, the film development process was highly automated for efficiency and profitability, and technicians processing consumer-grade photos did not individually evaluate each and every photo. Rather, they would develop and print entire rolls of film using a few frames as points of reference. As photo developing systems progressed, machines would be calibrated at the beginning of the development process and could develop and print multiple rolls of film before needing adjustment to maintain designated tolerances. This batch processing,

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15. Although racial disparities and biases persist in medical testing and healthcare more broadly, Labcorp is taking steps to address some disparities given the company's capacity for customization. See Rivas, 2024.

when combined with technical limitations of film technology and racist defaults, reinforced existing systems of oppression. Shirley cards (Wessling, 2023) perpetuated systemic biases by leading to photos of White people and people with lighter skin tones being accurately exposed when printed, while printers underexposed and consequently darkened the skin of people of color. Shirley cards were a tool used to calibrate color and exposure settings during the photo developing process to help ensure that printed photos looked like what the photographer saw. The Shirley cards consisted of color swatches and a photo of a White woman. Technicians would receive a copy of the card from a film company, print the same image on their local machine, and then compare the two to determine if the machine needed to be adjusted. However, because the default exposure set by the Shirley card was calibrated for White skin, many technicians never adjusted the calibration for images of people of color (Wessling, 2023).

For our analysis, it's also important to understand the technical limitations of analog film compared with modern digital sensors, and the concept of dynamic range. Compared with the human eye, even the best modern digital cameras do not capture light in the way that the human eye perceives it, particularly in low-light situations. As a simple example, if you are reading this text on a screen with a white background in a dimly lit room, and you were to photograph the screen, it would likely be readable, but detail in the shadows off-screen in the resulting image would likely be lost compared with what you are able to perceive by sight, perhaps even appearing completely black. Similarly, if you were to adjust the camera's exposure settings to accurately expose for details in the shadows, the text on screen might no longer be readable in the captured image, likely appearing brighter than what you perceive, or even being completely washed out and flat white. It is worth noting here that smartphone cameras increasingly enable HDR mode (High Dynamic Range) by default to diminish this limitation of camera sensors. Modern digital cameras have sufficient dynamic range to allow for adjusting exposure significantly after the fact without losing much detail, if the initial capture is reasonably balanced and shot in RAW format. This enhanced dynamic range increasingly enables automatic HDR rendering of images, though the technique can easily yield lighting that appears unnatural. That is, some detail in shadows and highlights can be recovered as long as they are not completely black or white, though color accuracy and some detail may still be compromised in the process. Blown highlights or clipped shadows cannot be recovered (with the growing exception of generative fill where AI estimates statistically probable details). Unlike with AI, these affordances are well-documented, predictable, and can be addressed with relative ease when processing digital photos.

Analog film, however, was less forgiving, with a narrower dynamic range of potential detail being captured in any given scene. The film was manufactured with a specific dynamic range and preset sensitivity to light. Consequently, if the film was manufactured to be sensitive to lighter areas of an image, as was often the case with film marketed to predominantly White audiences, it would not capture



as much detail in the face of a Black person as it would a White person by default. And with Shirley cards (Wessling, 2023) being used as a point of reference, even subsequent changes to the chemistry of film did not fully resolve this bias in the largely automated film developing and printing processes. Thousands of examples of this bias in historical images can largely be attributed to defaults that were part of automated photo developing processes. However, we describe this property of film chemistry to emphasize that the under- or overexposure of skin tones is not technologically determined, nor a fixed racist property of analog film or attributable primarily to Shirley cards, as abbreviated histories of the technology sometimes imply. Historically, photographic development was an entanglement of layers of infrastructure *and* human actors, a process which became more automated over time, and less reliant on chemical limitations, which subsequently shifted the agency (or the liability sponge) of photographers.

In modern digital cameras, most photographers do their own processing rather than sending a roll of film to a lab or sending RAW files to a developer. This is a significant contrast to Kodak's push-button human-in-the-loop system. It was a shift to machine-in-the-loop in which photographers maintain control over the process of developing images from the time they push the shutter-release button until the finished pictures are distributed. If the photographer is shooting RAW files and understands how cameras calculate exposure, even if they mess up the exposure or the white balance in camera for any given shot, they can still reasonably fix the image when processing if the initial capture is within the limits of the camera's dynamic range. Even standard DSLRs and point-and-shoot mirrorless cameras have a decent dynamic range that allows for  $\pm 2$  stops of light (a measurement of how much light enters the camera) to adjust exposure without losing detail. White balance settings, and additional color correction are available even in basic free software. Photographers can easily see where highlights and shadows have been clipped via indicators on screen, and most new mirrorless cameras provide a real-time preview of the exposure before an image is captured. In other words, a photographer would really have to mess up the initial exposure of an image to not be able to accurately depict skin tone with a little adjustment regardless of who or what they're photographing! Exposure is easy to correct as long as the base image is close, and even in complex compositions that might require multiple different exposures of parts of the scene to accurately portray those contrasts, a professional should be able to light accordingly to avoid any need for adjustments after the fact. This is a large part of why even famously experienced photographers such as Annie Leibovitz have been rightly criticized for their pictures representing Black women and people of color—there is little technical excuse for a poor rhetorical choice made by a photographer or editor (Bero, 2022). The camera makes for a poor liability sponge when its inner workings, as well as its affordances and limitations, are well understood.

Even anti-paparazzi clothes that “trick” the camera sensor into exposing for a substantially brighter part of the image aren't foolproof if a photographer has



more than one shot and adjusts the exposure compensation or the camera's metering. That's the exposure part of the issue, and that's often what is most striking when done poorly (e.g., the *Time* magazine photo of O.J. Simpson), because detail is lost or somebody appears much darker or lighter in an image than they would to the eye (Horn, 2016). Issues of automatic exposure (metering, in photographic jargon) are striking, and they're frequently addressed in critiques of automated camera systems that fail to detect people of color (e.g., web cams, automatic soap dispensers, etc.). But then there's also white balance and color correction that can impact how skin tone is represented even when properly exposed.

Personally, when I'm (John) creating a portrait, I err on the side of caution regardless of skin tone because I'm colorblind with about a 40 percent red-green color vision deficiency. I use a color calibration tool—a small card with color swatches that looks much like a Shirley card sans Shirley and with far more color swatches due to better dynamic range in modern sensors—because I can't trust that what my eyes see is going to look the same to someone else. That's not standard practice for most photographers unless they're doing commercial product photography and need to make sure the Coca-Cola can is the correct iconic red. It's not a widespread modern standard in part because calibration cards are relatively expensive tools for being a piece of paper and a plastic case when photographers with normal vision can just eyeball things. The cards cost anywhere from \$50 to over \$100, and their color accuracy slowly and subtly degrades over time. The color card is still a tool, so I have to make adjustments based on my best judgement, and sometimes another set of eyes. But it gives me more confidence that I'm not making someone's cheeks unnaturally green or red because the camera misread their skin tone or the editing software's automatic calculation of "average" was off and I couldn't see it. That's also possible because digital technology allows for easy adjustment and revision rather than having a preset range of options or one default. I can see the adjustments happening in real time, at least to the extent that my eyes can distinguish between the hues, and I can hit "undo" if it's not right. With film, I'd be dependent on the color calibration card and the preset of the film manufacturer to get an image close to being accurate on a first attempt, and adjusting would mean creating another print or more. If that color calibration card were to be skewed towards a default of White skin, rather than color accuracy across the color palette, it would create some of the same racist issues that Shirley cards did for years. As the human in this machine-in-the-loop system, I have an ethical and rhetorical responsibility to be aware of the affordances and limitations of the tools I use, as well as the constraints of my own human vision—non-default in its colorblindness, but also privileged because of my subject position as a White man in the US. And I still have to recognize that "technically accurate" does not mean rhetorically neutral. Conveying a warmer or cooler skin tone still carries rhetorical weight, along with the hundreds of other layers of rhetorical choices that go into creating a photo. For these reasons, I would hesitate to allow generative AI to make choices about skin tones in my

work, particularly when the decision-making that led to the output cannot be traced or predicted.

Sarah Lewis, writing in *The New York Times*, clearly shows how this is an ethical and rhetorical issue that photographers need to understand beyond the technical as a result of the history of photographic technology (Lewis, 2019). “By categorizing light skin as the norm and other skin tones as needing special corrective care, photography has altered how we interact with each other without us realizing it” (Lewis, 2019). And we continue to see this racist default show up in arhetorical automated camera and other optical sensing systems—face tracking webcams, automatic sinks and soap dispensers, video filters, etc., which is also a major problem when it comes to datasets for training AI systems. When developers and designers are still “correcting for” non-White as non-default—when those defaults are racist—the new technology reinforces existing biases. Many of these same biases appear in the training sets used for LLMs and other generative AI systems. As writers, as teachers of writing, and as professional writers constructing environments for producing writing, we are ultimately responsible for the biases that we perpetuate or challenge in our writing.

Photographers and writers must be aware of perpetuating racist defaults as more editing tools become automated by AI, with less authorial intervention being the trend. Teachers of photography and teachers of writing alike share an ethical responsibility to teach students to be aware of the capabilities and limitation of the composition technologies they use, and to be comfortable with manually controlling tools to maintain rhetorical effectiveness. Our concern is when that rhetorical decision making is automated with the appearance of convenience and efficiency—particularly when giving users an illusion of fine-grained control—it can quickly become an ethic of expedience (Katz, 1992). We return to this theme, discussing DMV driver’s license photos as one example, in the final dialog section of the Conclusion chapter.

## Looping in the Humans

What follows in our discussion in the Conclusion, and prevalent throughout our final interview chapter, is also an extension of the argument we made in our 2024 SIGDOC experience report (Salvo & Sherrill, 2024). Management practices are not technologically determined, and we see this clearly when interviewing Terry. The existence of a tool that enables expedient automation does not negate the responsibility of operators, nor managers who are responsible for creating the institutional infrastructure and conditions under which employees operate. There is an important distinction between technologically determined racism and potentially racist management practices, as the former is an easy excuse for the latter. That is why we chose to include a lengthy technical description of dynamic range even knowing that parsing said description would require more effort from readers. The automated metering in most modern digital cameras, optimized to expose for “neutral

grey” by default, is not inherently racist and does not excuse operators or building managers (though some motion-detecting cameras and sensors certainly are racist by design, intentionally or not, this again should not excuse human agents). The automation of cameras often is racist when their operation is arhetorical—either completely autonomous or when it is a human-in-the-loop system with a human just pushing a button—rather than machine-in-the-loop in which the automated system is relegated to an assistant role.

Interestingly, photography is a doubly-disruptive technology. Above, digital photography and emergent AI enhancement tools have disrupted chemical photography and displaced the medium of record. But chemical photography disrupted realistic painting as an historical representational tool in the late 19th and early 20th century. Photographs became the recording technology that, even though manipulable, were taken as verisimilitude. Then moving pictures came to represent “reality.” Whole books (libraries of books) have represented this shift in technology, and the automation of chemical photographic processes and lost photomats (George Eastman Museum, n.d.). Once a ubiquitous site in strip mall parking lots, the drive-through kiosks allowed home photographers to drop off their film and buy new, and return a week later to retrieve developed photographs. If there were any worthwhile images, they could be enlarged and framed and documented moments in American life. Now they are odd cement bumps among aging mall infrastructure, or awkwardly converted coffee kiosks, and even foodie locations one step up from food trucks. The change is striking yet strangely unremarkable in the digital age.

As the next and last interview, Terry has spent decades watching the workplace evolve, from early digitization to the sweeping automation of once-stable jobs. In his interview, he reflects on the disruptions he has witnessed—not just lost roles, but shifts in how labor is valued. Automation, he notes, has stripped away routine, mechanical tasks, yet in doing so, has clarified what remains uniquely human: experience, judgment, creativity, and intuition. While industries have reshaped themselves around algorithms and robotics, Terry sees a paradox—automation has not eliminated work, but instead redefined its essence. He predicts that the new workplaces that emerge will not appear as extensions of past factories and offices, but as dynamic, as yet undefined spaces where human insight complements machine efficiency. Roles once unimaginable will take shape, built on adaptability and ingenuity. For Terry, the future of work isn’t about resisting automation—it’s about recognizing the irreplaceable skills that no algorithm can replicate and building new worlds around them.



## Chapter 6. Terry

This third interview chapter is based on the first interview we conducted, which took place before we had gathered our technological partners and our “ensemble” of humans and robots (Salvo & Sherrill, 2024) to automatically transcribe the interview. Consequently, the structure of this chapter differs from the previous interview chapters, as we relied solely on notes taken during the interview and our recollections, rather than a transcript. The interview is reconstructed but is no more a construction than the previous two. Our participant, Terry, allows for reflection both on a senior strategic thinker’s perspective and a view into healthcare automation and use of AI. Finally, while Terry’s use, integration, and reliance on AI differs from other participants, the themes of ethics, application, displacement, and expertise are all still present in his articulation of AI and machine learning.

Throughout this section, we utilize an extended example, in Burke’s rhetorical language, a *representative anecdote* to help explain complicated systems precisely and concisely (1969). It grew from our experience of explaining concepts to each other clearly and quickly, extending a moment of mutual understanding among Terry, Michael, and John during the interview. We use a pizza metaphor because customizability is the heart of an effective pizza shop and return customers rely on consistency and timeliness to develop habits. We both have noted that the major national chains have adopted similar software for their phone ordering apps, and our readers are likely familiar enough with both the promises and failures of these systems to transfer understanding from the seeming simplicity and ubiquity of ordering pizza to ordering a customizable medical kit from Labcorp. The extended pizza shop references are meant to be clarifying given parallels with user experiences using systems designed for mass customization as well as when producing for mass customization; simply skip them if they are superfluous to your understanding.

### Interview 3: Terry at Labcorp

In Chapter 6, the third and final interview chapter, we describe our conversation with Terry, a high-level manager at Labcorp. Labcorp is an American company that produces medical testing supplies and is among the world’s leading clinical lab testing providers. Although not a technical communicator by title, in practice, Terry manages teams of technical experts and mediates between a variety of audiences, and he recognizes the value of effective professional writing. Given Terry’s experience, we believe that this third interview will help bridge important conversations about the changing nature of writing in an age of generative AI and generations-old conversations about workplace automation. After all, our work towards this book grew out of conversations about Autodesk’s Project

Dreamcatcher using generative AI to “imagine” (generate) designs that could be fabricated with additive manufacturing techniques, nearly five years before ChatGPT’s public release, in the realm of bicycles, cars, planes, and user experience. With this context in mind, we wish to cue readers’ attention to moments in Terry’s interview which will be familiar to technical and professional writers: discussions of augmenting human labor and the associated challenges with creating and managing consistent communication in collaborative environments, making changes to existing large-scale systems, management practices, and the importance of technical communication in facilitating infrastructural and personnel changes.

Terry’s career, prior to and during his time at Labcorp, has given him extensive management experience and technical expertise in robotic systems and automation. In Terry’s twenty years of experience before working at Labcorp, Terry worked as project manager for an automotive components manufacturing company in Northern Lower Michigan before it was purchased by a major U.S. battery technology company. After that incorporation, Terry worked as engineering manager for the battery tech company, overseeing the production of components and assemblies used in manufacturing across North America.

After several years, Terry moved to a different automation company located just a few miles away, which focused on advanced automation systems. This company produced automated assembly systems for a variety of industries around the world: automated assemblies that were used to manufacture and assemble vehicles, hot water heater tanks, windows, high-end blenders, cereal, and even dental floss containers. In other words, Terry was involved in the development and implementation of automated robotic systems that could produce highly specialized components for niche industries, e.g., a proprietary lead-screw, as well as everyday consumer goods used around the world. Terry advanced from being project manager, to proposal manager, and finally to engineering director, i.e., head of robotics, before he began his position at Labcorp.

Like our other interviewees, Terry’s career has given him insight into managing teams working with specialized systems, and familiarity with the infrastructure that supports and extends the labor of those teams. Terry’s ability to succeed in management roles has depended on his ability to describe, propose, and oversee the development of multi-million dollar production lines, while understanding the complex relationships between the proposed automated systems, human operators, documentation, and the actual material goods that these human-machine systems produce—often within global supply chains. In other words, professional and technical writing is essential to Terry’s work.

A major reason we invited Terry to participate in our research was because of his extensive experience with automated hardware: robots. Bridget and Kate both work for companies providing digital services and software, which have rapidly integrated generative AI and other forms of AI into their workflows. For many professional writers and aspiring students, software (writing interfaces in

particular) and digital production is familiar territory. But when envisioning this book, we knew that many professional writers encounter hardware in their daily work at companies producing physical goods. Further, we understand AI as an extension of histories of automation that predate computers, much as we understand digital writing through a history of analog production. The physicality of the systems that Terry describes play an important role in grounding discourse surrounding AI in *meatspace* rather than in the cyberspace realm of sci-fi and virtual systems. Terry works closely with robotic systems and physical materials such as test tubes and medical samples, drawing attention to the parts of automated systems that interface between digital infrastructures of databases and programmed machines, as well as their associated physical constraints. At the same time, due to the scale of operations at Labcorp—including multi-million-dollar production lines and international operations—Terry’s experiences managing large collaborative assemblages of people and machines parallel many of the experiences Bridget and Kate described standardizing writing and user experiences across teams within large organizations.

Across all three interviews, one clear constant has emerged: for rhetorically complex tasks, as well as tasks that require human dexterity, human labor remains essential in an age of generative AI. Artificial intelligence is best suited to strengthen and extend human work with limited exceptions, one of which we examine in this final interview: automated plasma cutting and assembly of joists in the Pacific Northwest. In particular, this final interview draws attention to relationships among (and distinctions between) AI-based systems, physical labor, and human labor, drawing from Knowles’ concept of *rhetorical load sharing* to situate these sometimes overlapping relationships.

Labcorp is one of the largest suppliers of medical testing kits in the world, providing both standard and custom kits to businesses, hospitals, and individual customers, while also processing and testing millions of samples each year. Our interviewee, Terry, has over two decades of experience in the automation industry—spanning PLC (programmable logic controller), robotics, and automation—and has played a crucial role in managing and improving Labcorp’s automated systems over the past three years. As Terry described, Labcorp is a \$12 billion biotech company. Labcorp succeeds through implementing advanced automation processes that use industry-leading technologies, while also employing human thinking labor in production and testing. This final section describes how Labcorp has automated kit production and testing, illustrates potential opportunities to integrate AI into the process, and highlights practical challenges that limit the speed of advances at an industrial scale.

Listening to Terry during the interview, I (John) scrambled to both take notes and quietly Google terms and many acronyms for the various machines and processes that he encounters daily. Though I was initially overwhelmed with his rapid-fire expertise, Terry’s detailed descriptions were followed with clear explanations of how each system worked in simple terms, as well as an explanation



of why each new layer of information was important to understand. What was initially overwhelming became a testament to Terry's years of experience, and his ability, as he put it, to both "do" as well as "lead and teach." Terry's expertise relied not only on his ability to design and manage advanced automation systems, but also his ability to clearly explain how they work, their limitations and advantages, and *why* they're important. Terry recognizes the importance of this skill, as he explains later in this section regarding training employees who can "lead and teach." As Mya Poe et al., argued in their study of writing instruction at MIT, "Engineers who don't write well end up working for engineers who do write well" (Poe et al., 2010, p. 1). Terry is an engineer who writes and explains well, and as a manager, mentors his employees in how to become better writers and leaders.

## Custom Medical Testing Kits, with Extra Pepperoni

To understand the present and near future of AI applications in optimizing the industrial assembly processes that produce medical testing kits, this chapter uses the familiar metaphor of ordering and assembling a pizza. For both local pizza restaurants and international chains, the ability to offer different combinations of standard ingredients is founded on optimized human labor and appropriately configured pizza assembly stations. There are important parallels regarding user experience, mass customization, and common business challenges between assembling pizzas and the advanced automated assembly of medical testing kits—and subsequent optimization of that process—which we discuss throughout this chapter.

The menu at a typical pizza place has multiple premade options, e.g., Supreme, Hawaiian, Meat Lovers, etc., available in different sizes and priced accordingly. These premade configurations of toppings based on common customer preferences simplify the ordering process for both consumers and workers, and sometimes highlight unique or novel configurations (e.g., a Bee Sting or Taco Supreme). They also streamline the assembly of pizzas and purchase of ingredients by limiting available options. But, most pizza places also offer a "build your own" option, depending on the configuration of ingredients, business model, and restaurant infrastructure. These different configurations afford different advantages and limitations. Pizza by the slice offers far less customizability for consumers, if any, but doesn't require buying a whole pizza if a snack or a quick lunch is the goal. For the business, selling by the slice limits the variability of production and can streamline the production process. Similarly, a "hot and ready" pizza offers customers zero customizability, but offers the advantage of speed to consumers and consistency to the business. It is the mass production of a single pizza variety, albeit with human labor. Of course, there is also the DIY option of making pizza at home, offering the least automation, but the greatest customizability.

An average U.S. grocery store provides all the ingredients necessary for making pizza: cheese, sauce, dough, and toppings. Each of these components are

commonly available in different forms, e.g., shredded vs. block cheese, canned or squeezable sauce, premade dough or box mix, etc., and depending on the size of the store and the exact location, there may be more or less variety of choice, e.g., allergy-friendly, organic, ethically sourced, etc. For the average consumer, making pizza at home requires only a quick trip to one grocery store and a bit of labor in assembling and baking the pizza. But, the pizza can be fully customized to individual preferences and dietary needs.

Of course, when I'm making homemade pizza with anchovies, garlic, and chilies, there's the inevitable problem of what to do with the other half of the tinned fish. Somehow, the pizza never requires a whole container, and I've never simultaneously craved Caesar salad or spaghetti sauce while making pizza. Leftover cheese, pepperoni, and sauce even packaged in bulk don't pose the same issue given their more immediate versatility. Consequently, I often wish that I could purchase just the right amount of anchovies when I do crave them on my pizza. Many pizza places don't offer them on the menu, and I've yet to find anywhere that sells anchovies by the filet.<sup>16</sup> However, appropriately portioned anchovies would convince me to purchase a customized pizza kit. Even at a slightly higher price, avoiding anchovy waste and saving shopping time would add value for me.

In general, sourcing ingredients for a homemade pizza isn't a particularly laborious task, and anchovies are not a popular topping. But for most other applications, kits exist because someone with expertise has saved consumers time by gathering the necessary components and providing instructions or recommendations, offsetting the amount of expertise and labor required from the end user, while still requiring some labor for the actual assembly or use of said components. Kits, by nature, are designed and assembled to suit particular applications. Consequently, premade kits are inherently limited, at times being too specialized or at others too general that they become bloated. No single pizza configuration suits every taste. For someone who does not like anchovies, anchovies included in a kit with more popular toppings might still go to waste.

Ideally, a kit is assembled to suit the needs of a given situation, or at least balances flexibility with specialty to address situations that are likely to arise. Much like standard pizzas, standard kits are easier to mass produce, with their production even being automated. But customized kits can better serve consumers. This is an inherent tension between mass-produced and mass-customized goods: when is good enough actually good enough? This tension reveals a Goldilocks problem of price, components, and other constraints based on circumstances, as well as need. From a consumer standpoint, a customized kit that meets individual needs is ideal. From a user experience perspective, it's important to avoid overwhelming consumers with endless options for customization. Premade kits, much like a Supreme Pizza, serve as a starting point that helps to guide user decision making,

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16. Even if such a market did exist, I'm not sure I would trust a business that sold individual anchovies.

allowing for tailoring for better fit rather than haute couture (from scratch). More advanced users, however, may want the convenience of an assembled kit without the limitations of one that is premade. After all, adding green olives and jalapeño to a Meat Lovers pizza, whether in kit or fully produced form, might offer the best possible user experience afforded by the pizza assembly system. Designing and optimizing industrial assembly systems for mass customization is challenging. As the following interview illustrates, AI is poised to improve the efficiency of automated assembly systems. However, human agents continue to play important roles in designing, configuring, and optimizing these systems, and in addressing associated challenges.

## A Brief Overview of Labcorp's Automated Processes

During our interview with Terry about his work, Terry explained that there are two sides to Labcorp: production and testing. On the production side, Labcorp produces test kits for doctors who are conducting studies, for large biopharmaceutical studies, and for other types of testing (e.g., drug screening centers). On the testing side, Labcorp processes samples that have been collected with the kits (e.g., drug tests, genetic tests, COVID-19 tests, etc.). Labcorp operates on a massive scale. The company offers over 5,000 different tests, with approximately 540 million test kits ordered every year (Labcorp, 2023b). According to a 2019 press release, Labcorp “typically processes tests on more than 2.5 million patient specimens per week” (Labcorp). Terry oversees these largely automated processes. Among these processes, 75 percent of what Terry does involves the automation that builds the testing kits, while the other 25 percent of his time is taken up in the processes of assessing and redesigning automated testing processes.

On the production side, Terry explained that Labcorp runs 800 SKUs (stock keeping units) for test kits at their Indiana location. Of the kits assembled there, 25 of the kits are fully automated. For those automated kits, the process applies custom data from their database of kits and supplies, applies a label to appropriate test tube or other part, and puts the part in the kit. While Labcorp produces a variety of standard test kits, which are uniform across all orders, they do complete custom fulfilment as well. Standard kits and custom orders follow the same basic steps, with fulfilment starting from Labcorp's database. After the automatic part of the process, the order goes to 12 pick cells. There, human operators take the 160 most common SKUs and do more custom labeling for test kits. As Terry described, human operators label, “mostly things that aren't round [so, things that aren't test tubes], for example, urine bags.” That is, solid objects of a standard shape and size are easier to automate, while squishy or amorphous parts are comparatively more complex, making it more efficient for humans to handle.

Within this largely automated system, there are two different subsystems that make production happen: the PLC (Programmable Logic Controllers) robotics side—which is what Terry is most familiar with—and the systems database,

warehouse management, and warehouse fulfilment (that is, tracking and managing where things are in the automated system).

Following production, and after test kits have gone out for use, samples are sent back to Labcorp for analysis. The returned samples must be sorted before testing can take place. Thanks to an automated system, Labcorp has the capacity to process over 15 million samples per year (Labcorp, 2022b, 00:18).<sup>17</sup> Terry drew our attention to a seemingly mundane part of this system: opening 14" x 14" boxes. He explained that there is significant demand for such systems, and that at the time of our interview, only two companies specialized in automatic box opening.

Automated box opening, in addition to being more efficient at opening boxes than multiple human workers, helps avoid cross-contamination and damage to samples. This reduces potential health risks for human workers who would otherwise have to carefully handle thousands of samples each shift.<sup>18</sup>

Though this example at Labcorp is routinized thanks to consistently sized 14" x 14" boxes, the machines used for box opening can be configured to analyze boxes in order to determine their shape and dimensions, optimizing a toolpath for cutting each unique box. Although AI is not required for driving such systems, its potential application brings attention to two important points: 1) AI is an extension of longstanding automation technologies which often shift the labor of mundane, tedious, or repetitive tasks towards more complex tasks. 2) Machine vision and machine learning could be applied to augment such systems, enabling the base robotic systems to handle slightly more complex tasks, e.g., opening boxes that have been deformed or damaged in shipping, but not yet soft bubble mailers or plastic bags that will likely require human dexterity.

In our interview with Terry, it became clear that while AI-based automation systems can be built from scratch, and do open new opportunities (and challenges) for advanced manufacturing and automation, AI is more commonly being used to gradually augment and enhance existing systems. Though some companies are in the process of building AI-driven systems from scratch, for many companies this is not a practical option compared with upgrading their existing systems over time. This is in large part a difference between upgrading software vs. hardware, as well as the scale of operations. One might wonder why some of the issues that Terry describes throughout the following sections couldn't be addressed during the initial design phase, or quickly fixed. However, the systems Terry described are not static, and many automated systems run constantly,

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17. Labcorp provides a virtual tour of its kit production and sample analysis processes on its YouTube channel. Indy Central Lab – Kit Production: <https://youtu.be/HNflxYeb-84> (2023a). Journey of a Sample through Our Central Lab: [https://youtu.be/\\_l5nSzKailY](https://youtu.be/_l5nSzKailY) (2022a).

18. We extrapolated these numbers based on annual processing. If 15 million samples per year evenly divided (assuming a steady rate) is 41,000 samples per day, that yields approximately 1,700 samples per hour assuming 24/7 operation.

24 hours a day/7 days a week, and 365 days a year. Changing any part of the automated system means balancing decisions about potential downtime or reduced throughput during installation against potential gains. Does production halt to make a quick swap while losing hours, or even days of operation? How long will it take to ramp up production from a complete stop? Is it better to slow production while maintaining a steady trickle through the system? Or is it better to reroute some of the production through a different facility? Unlike upgrading software, in which a virtual system can be setup for development before updates are deployed and “go live,” even deploying thoroughly tested hardware requires downtime for installation and troubleshooting. Virtual systems are not infallible, as demonstrated by the recent CrowdStrike update that interrupted computer systems globally (Baran, 2024). While simulation of analog systems is valuable, it cannot entirely prevent potentially catastrophic errors when applied in practice. A key difference is that virtual test builds or prototypes of physical systems cannot be easily replicated and deployed to a new site with a simple click, as is often the case with websites or virtual systems. Instead, implementing changes in physical systems involves more complex and gradual processes to ensure safety and functionality.

From Terry’s perspective, at Labcorp, AI would have the greatest impact on system optimization. In the immediate future, its primary application would be at the database and systems level. In other words, it’s more likely that AI would be used to optimize what goes into bubble mailers than to automate opening them. For now, consistently sized boxes are still the most efficient solution for receiving samples. However, Terry did share with us an example of an optimization problem directly related to hardware, and for which he could foresee AI helping manage.

## AI as Optimization Tool

When producing test kits, each kit (regardless of its contents) is packaged in a white, 7” x 4” box. Like at many automated production facilities, kits are packaged along a conveyor system. Different pieces of the kit are added at each stage of the process, e.g., a standard box is placed on the conveyor, a label is applied, and the box moves along. Further along, a labeled test tube is added to the kit, and so on. In the system packaging the kits, there’s a buffer on the conveyor that holds up to 1,200 kits. The buffer’s purpose is to control the rate of flow of kits through the system, ensuring a smooth production rate as different parts of the system move faster or slower. This buffer is currently optimized via a program running on C# code—a standard piece of software, nothing AI-driven.

Approximately the top 20 percent of kits are fully automated in their production, meaning that machines place the required materials into each test kit box. For the majority of kits, workers transfer the contents of each kit from bin to kit box by hand. However, there’s one current issue with the system that AI could

help optimize. For the top 20 percent of kits, two machines run the same product (“CBD2”) back to back. Currently, the system that runs those two stations assigns almost everything to the first machine, while the second machine is only running 15 percent of that product. To make production more efficient, Labcorp is working with their software vendor to configure that system to set a baseline of 50/50 distribution between the two machines. Though this might not seem like a complicated task, Terry posed a simple question that illustrates the underlying complexity: What if they want to add a third machine to the production line? With the current software, it’s not possible to add machines. Labcorp wants the flexibility to add a machine (or more) and automatically adjust the division of automated labor. Doing so could free up 13 or more hours of time on the line. However, Labcorp’s system for those kits is 20 years old and does not have the capacity to flexibly expand.

## Human Limitations in Automated Systems

Terry recognizes the constraints and challenges of the current legacy system. The current software vendor designed and maintains the software that runs the kit assembly line. Labcorp has tried to hire different developers in the past. But Labcorp would lose access to experts familiar with their 20-year-old system. The vendor has a 20-year history developing and maintaining Labcorp’s custom software. Further complicating the situation, the vendor sometimes pushes back asserting that it is difficult to develop legacy systems customized by Labcorp’s internal programmer. AI could optimize hardware, but implementation would not be plug and play. It would likely require developing entirely new software.

As Terry explained, “What hampers us is that we just put in a new facility in Belgium ... using the same [20-year-old] system.” At first glance, a new facility seems like the perfect opportunity to develop a new, optimized, and fully automated system for preparing the top 20 percent of kits. However, in addition to the time required and cost of developing new software, backwards compatibility plays a role. Any new system would have to work with the current database of kits and parts, as that database is foundational for the entire operation—not just the fully automated systems producing the top 20 percent of kits. Another factor is the risk of putting a brand-new system on the other side of the world. As a concrete example of hamstringing with new systems, Terry described a \$70 million dollar job with the potential to multiply that investment in expected earnings that didn’t work out because Labcorp couldn’t move away from their software vendor. Instead, a \$15 million operation in Ohio proved less risky, being closer to Labcorp’s established operations and the software vendor, albeit with comparatively less potential yield.

At this point in the interview, Michael noted that it was interesting that one of the limitations in all this automation is still the human. An experienced software vendor, and equally experienced internal developer, combined with



a longstanding database significantly limited how Labcorp could develop new operations or upgrade existing systems. One of the ways that Terry personally responds to this challenge is by building the communication skills of employees to avoid siloing tacit knowledge of systems. Communicating knowledge to other employees and creating effective documentation helps make tacit knowledge communal. If only one employee has extensive knowledge of a system or process, and that knowledge is locked away in their mind, that employee potentially limits what the company can do in the future. As Terry explained, one of the challenges is that there are great “doers,” who do exactly what they’re told to do, and who do what’s needed to the required specifications. But often, these employees are “Great doers but bad leaders and teachers.” In response, Terry requires employees in management roles who are “great doers” to spend four hours each week explaining over the phone what they do to gain practice communicating their expertise. This weekly documentation practice helps make knowledge available, shareable, and even *searchable* when written, and allows for action to be taken in the near and long term for strategic development. This challenge of making tacit knowledge explicit and communal shares similarities with the challenges of developing AI decision-making systems. Transparency is key: without the ability to explain the decision-making process, the system cannot be audited or verified.

However, this example of tacit knowledge also shows that human-powered systems are not immune to communication problems. After 20 years of customization and exclusive development, the software running Labcorp’s test kit assembly system could become a black box due simply to employee changeover or a shift to a different vendor. Employees who can share their knowledge effectively and clearly explain the inner workings of automated systems are immensely valuable, and they play a foundational role in maintaining and developing advanced systems. Though generative AI systems like ChatGPT make it easier than ever to communicate complex information with skillful prompting, as the previous chapters have made clear and Johnson-Eilola et al., similarly argued, AI-generated text is not a substitute for effective, rhetorically fitting, technical communication by humans for the use of other humans (Johnson-Eilola et al., 2024). That said, generative AI systems can still extend the communicative capacity of “great doers” if they have the technical expertise necessary to identify technically problematic outputs. However, much like with Poe’s “engineers who write well,” employees who already possess technical *and* rhetorical expertise are better equipped to use generative AI effectively.

Beyond communication challenges, there are practical inefficiencies which Terry identified that AI-driven optimization could more readily address in the kit assembly process. Kits are assembled in first-in-first-out (FIFO) order, meaning that at times, the entire assembly line is held up by a single kit waiting on a specific part to arrive at the work station. This doesn’t create a significant delay on average, but as Terry explained, Labcorp has had days where the entire line was held up—not because of any mechanical problems, human workers, or other infrastructural



breakdowns, but because of the mix of kits that required certain parts. Such delays are a problem of mass customization on linear assembly systems.

Again, imagine your preferred pizza chain. Pizzas run through the oven on a conveyor, baking in the sequence they've been ordered by customers and prepared to bake. Whether a customer places an order for two pepperoni pizzas or 20, the process is efficient because the mix of ingredients remains consistent and the fulfillment time is linear, relative to the volume of pizzas rather than the sequence in which they're assembled and baked. That is, completing 20 identical pizzas takes longer than completing two, but only because there are more pizzas to be made. Similarly, a mix of 10 pepperoni pizzas and 10 chicken pizzas takes a comparable amount of time to prepare as 20 pepperoni because the most popular toppings are within reach of the workers assembling each pizza. The sequence of assembly and baking can be optimized to prioritize pepperoni, chicken, or a mix, but the overall time required remains predictable. However, if a customer places an order for an anchovy pizza, which is then followed by an order of 10 pepperoni pizzas, the anchovy pizza at the front of the line might require a worker to grab a container of (rarely ordered) anchovies from the walk-in refrigerator, delaying the 10 other pizzas waiting unprepared. A pizza chain operating this way wouldn't stay in business long. Instead, another employee might begin assembling the pepperoni pizzas, or prepping base cheese pizzas to be topped. Or to prioritize a higher value order, the single anchovy pizza could be queued last despite being ordered first.

The flexibility of these potential solutions to a pizza jam, in response to unpredictable variance, is an advantage of human assembly. Workers can simply be assigned to different tasks or reconfigure the production process on the fly. This metaphor also helps explain why only the top 20 percent of Labcorp kits are fully automated. That said, Terry has been working towards a solution to the Labcorp equivalent of the pizza pile-up. He's designing what is called a "flex cell" to account for the anchovy pizzas of Labcorp test kits. When a test kit hits an assignment scanner (at the front of the assembly line), the scanner sends the kit ID up to the database. If the database sees demands for parts that are slotted into that flex cell, it sends the part (if it's available, based on the database) in advance before the kit gets to the assembly workstation so that the whole line isn't waiting on that one kit part. Essentially, the flex cell puts the order into a "work in process" status so that when the kit arrives at the workstation, the pre-fetched item can be added to a preassembly collection, what Labcorp and Terry call a "process cup." Each cup can prepare up to 20 items to be placed into custom kits. In terms of the pizza metaphor, if someone orders an anchovy pizza, the ordering system automatically checks the ingredients stock list, and anchovies are placed in a general-purpose cup placed near more popular ingredients, ready to be placed on the correct pizza in the baking cue without delaying any other pizzas. Although incorporating AI is not a requirement for improving the efficiency of such a system, machine learning could help analyze kit combinations and assign weights to

kits that are more likely to cause significant delays or make extensive use of the flex cell to further optimize the system.

Here again, Terry is attempting to optimize the flow of production, balancing the potential downtime to implement such a system with improved efficiency. Unlike a system of human workers, reconfiguring an automated system of hardware would take downtime. Though optimizing the sequencing of kits could help somewhat, it cannot always address backups caused by unpredictable combinations of kit components. Similarly, humans can readily recognize when a slowdown is happening at a pizza place and figure out what caused it, whereas this type of analysis can be orders of magnitude more complex at Labcorp. The scale of customizations is a significant factor, but one which also creates an opportunity for an AI-driven solution, as human workers cannot readily identify in advance which combinations of thousands of items that can be included in thousands of kits are likely to create delays. But a system of flex cells, optimized based on machine analysis of millions of combinations of test kits and their production times, could significantly smooth production flow, recognizing slowdowns and reacting accordingly, at least for automated kits. Beyond reducing delays, these AI interventions would also take stress of tedious prepositioning off human workers and shift the burden on to the automated system.

## A Fully Automated, Dynamic System

Near the end of our interview, Terry briefly described a fully automated system at another company which used machine vision extensively. Though Terry was not certain whether the system yet incorporated machine learning or other forms of AI, machine vision and image recognition are closely related and are increasingly common applications of traditional AI, as demonstrated through Bridget's interview.

Terry's decades of experience in the automation industry make this example particularly significant: this was the closest example of a potentially AI-driven and fully-automated production system that came to Terry's mind. This is not to say that AI is not being widely implemented across a range of industries, but rather to highlight that in most cases, AI is still augmenting existing systems. The previous example of Labcorp's hesitation to build a new system in a different country given the potential risks—resulting in large part from compatibility issues with customized software—highlights the complications that arise when building new systems for a stable company. Terry's expertise and our research suggest that integrating AI into existing systems, rather than the creation of entirely new systems from scratch, is the more prevalent approach. As such, this example serves to illustrate the potential to combine off-the-shelf components with machine learning to build a highly-automated system with minimal human input beyond the initial programming and setup. We juxtapose automated beam production with the necessity for human labor in medical test kit assembly here, in this final interview chapter, to demonstrate a single example of (potentially,

plausibly) AI-based automation replacing human labor rather than the augmentation prevalent throughout our interviews.

The company Terry described manufactures joists for industrial applications in the Pacific Northwest. This context is significant because of frequent earthquakes. In most areas of the United States, floors and ceilings can be connected directly to steel beams or webbed steel structures. Joists can be manufactured from steel (or wood, for primarily non-industrial applications) and then shipped. Buildings in most of the US rarely, if ever, experience potentially destructive vibrations, and thus aren't constructed to withstand earthquakes. However, as Terry explained, in the Pacific Northwest, joists need two inches of wood between the top of the joists and the ceiling. Consequently, construction workers screw materials into wood-topped joists rather than into steel joists directly.

Efficiently creating steel joists with wooden tops requires surprising precision. For the Pacific Northwest, the manufacturing process begins where it ends for most of the country: with a 70-foot steel joist. The joist is flipped into position so that holes can be plasma cut in precise locations. In theory, this might seem like a straightforward process. Simply place each 70-foot beam in exactly the same position each time and cut. Small variations in the precise dimensions of each beam due to manufacturing tolerances, warping during transportation, and the precision of the machine that is positioning the beam all impact the placement of holes. This precision matters though. Computer-controlled plasma cutters can operate with sub-millimeter precision while cutting at temperatures hotter than the sun's surface. Each joist measures approximately 21,336 millimeters, and once manufactured, all joists need to consistently align throughout the construction process.

To ensure the accuracy of each individual cut, the system Terry described was "completely parametric," meaning that it dynamically adjusted to specified parameters (e.g., a beam slightly shorter at one end would still have holes cut in the correct location relative to the shorter length). When entering the work area, each beam would be precisely laser scanned to find the end of the joist and top of the joist. From that point on, everything was dynamically adjusted to figure out pathfinding for the plasma cutter. That is, based on the laser scanned dimensions, the system automatically determined where to plasma cut each hole, the most efficient path for each cut, and each transit between cuts, for every unique beam. Further down the line, a 2D camera would automatically identify and precisely pinpoint the center of the holes, and then translate those coordinates to a robot that screws a screw into each hole. There is an additional complication to contend with: Joists flex based on length. So, the calculations for hole placement were *also* adjusted based on the flex of each joist to accurately position holes and screws for each beam.

This system used commonly available industrial components, such as laser scanners, 2D cameras with machine vision, and plasma cutters, to create a dynamic and efficient solution to address a regional need. Advances primarily in software, rather than hardware, enable creation of more advanced and dynamic systems that enhance the capabilities of hardware that has existed for decades.

Manufacturing joists for the Pacific Northwest is a clear example of an automated system replacing, rather than augmenting, human labor. Though laborious, measuring/sensing, cutting, and fastening screws is tedious and a repetitive task that can be readily automated. These are not highly complex or nuanced tasks that demand manual human labor, and represent the opposite end of the automation spectrum (Armstrong et al., 2023). Perhaps someday, Labcorp will develop a similarly advanced AI-driven system capable of identifying and dynamically placing kit components without human workers for all but the most complex or unusual kits, using a combination of more advanced software and minor changes in hardware. Though that future is closer than ever before with advances in AI, it will likely remain more cost effective to employ humans to label, grab, and pack parts, in addition to the humans responsible for designing, programming, maintaining, and managing automated systems. Regardless of who or what is packaging kits, AI-driven inventory systems will likely yield more efficient packing in the immediate future.

## Summarizing Terry's Interview

Not coincidentally, Michael's power went out during the first 10 minutes of our Zoom interview with Terry. As frightening as automated systems may seem, whether it's their potential to replace human labor or shape our realities, the power can still shut off. The infrastructure for automation, and the human participants involved in creating and sustaining automated systems, still break down. When least expected, things go wrong. In these moments, human adaptability and expertise remain as important as ever. Michael was able to improvise, communicating with me on his phone via 5G connection until he could connect to the video call. In the worst case, even interviewing across the Atlantic, we were prepared to establish a second video call to have everyone in the same meeting across layers of fallible infrastructure.

As demonstrated through Terry's interview, as well as Bridget's and Kate's, AI systems are enhancing the ability of many expert and non-expert workers to produce content and do their jobs more efficiently, both augmenting their labor and at times replacing human labor. But the rhetorically complex ability to analyze and explain problems, to design or articulate fitting solutions, and understand the consequences of the available responses remain important human labor.

At the time of our interview with Terry early in 2023, ChatGPT was still in its initial public release with version 3.5. Now, ChatGPT-4o is available in limited capacity for free, and a paid subscription offers even greater access. By the time this finished manuscript is available, it is plausible that ChatGPT 5 will be public, pending an official release date announcement by OpenAI. With each new iteration, ChatGPT produces better output, despite its inherent limitations as a generative LLM system. It still hallucinates, produces horrible recipes and poems, ignores software versioning when providing troubleshooting guidance, contains

the same biases present in training data, and only ever ultimately produces an average of what it has been trained on. However, out of curiosity, I prompted ChatGPT to address the situation that Michael and I had faced. What to do when the power suddenly goes out before a Zoom meeting?

ChatGPT successfully generated the same steps that Michael and I ultimately worked through. Of course, this is not a particularly novel scenario. Most worthwhile texts on research methods and conducting interviews will explain the importance of having multiple backup methods and recording options. ChatGPT was surely trained on such sources. Most video calling platforms also automatically provide a phone number to participate in a meeting for accessibility reasons. Despite understanding that the training data likely included this information, Michael and I were both surprised that ChatGPT had generated such usable output in the same order we had considered. In discussing this unexpected output, we assumed that although ChatGPT could generate usable output, we knew that it did not actually comprehend the underlying rationale or rhetorical significance of this communication. As a test, we prompted ChatGPT to explain the rhetorical situation. To our surprise, while we know that ChatGPT does not actually understand or comprehend the rhetorical situation, it faked that human understanding surprisingly well, accurately outlining the audience, exigence, and constraints of the situation along with a brief explanation for each. In response, thinking that surely ChatGPT would struggle to explain the “why” behind the list of steps, I prompted, “Why is it important that the participant who lost power communicate that information?” Surprised again by the resulting output, I generated more prompts, hoping to find a clear point at which ChatGPT’s performance deteriorated.

“How can the outcomes of the person who lost power be judged or evaluated?”

“How might that person’s actions impact their relationship with the other two meeting participants[sic]?”

In response to these prompts and several others, ChatGPT produced effective output (the full output is available as an appendix). None of the prompts that we had anticipated would pose a challenge did. The AI-generated output was remarkably useful, nuanced, and human. Clearly, the development from 3.5 to 4.0 (according to OpenAI, the “o” is “for ‘omni’”) was a significant improvement. Somewhat frustrated, I finally prompted ChatGPT as follows:

“What questions might ChatGPT struggle to address effectively regarding this particular rhetorical situation?”

In summary, while ChatGPT can provide general insights and suggest possible actions and outcomes, it may struggle with questions requiring deep personal insights, specific technical details, real-time decision-making processes, insider knowledge, subtle

interpersonal dynamics, and subjective interpretations that are unique to the individuals involved in the rhetorical situation.

To elaborate, ChatGPT, much like the very efficient test-tube grabbing robots, struggles with more fluid constructions. For now, humans are still better than the average robot at grasping pliable bags than rigid and consistently shaped test tubes, though specialty applications are an exception. But that is not an inherently bad thing nor something to be feared by default. We, as technical communicators, should remain critically aware of the limitations of AI as well as its affordances. The examples we have described throughout this book show both, but our primary purpose throughout has been to identify the current state of AI's applications in professional writing contexts, and realistically consider what this may mean when preparing future professional writers. A workplace in which the top 20 percent of writing tasks are fully automated does not seem fictional in 2025. The remaining 80 percent of tasks may rely heavily on automated tools to be more efficient, but are made possible through human input and critical decision-making. Inevitably, some of the most complex and nuanced communication tasks will still require fully manual control to construct a rhetorically fitting and effective response.

## 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).<sup>19</sup> 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

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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.<sup>20</sup> 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:

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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 things 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 manslaughter 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.<sup>21</sup> 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

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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.

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# Appendix

**Prompt:** Three people are set to have a conference call via Zoom. Suddenly, the power goes out for one of the interview participants. The conference call cannot be rescheduled. How should this situation be resolved?

**ChatGPT-4o Output:** To resolve this situation, consider the following steps:

1. **Immediate Communication:**
  - The person who lost power should quickly notify the other participants via phone, text, or email about their situation.
2. **Alternative Access:**
  - If the person who lost power has access to a smartphone with a data plan, they can join the Zoom call using their phone. Most smartphones support Zoom, either through the app or a web browser.
3. **Phone Participation:**
  - If joining the Zoom call via smartphone is not possible, the person can call into the Zoom meeting using a phone number provided by Zoom. Every Zoom meeting includes dial-in numbers that participants can use to join the call via audio only.
4. **Delegation of Role:**
  - If the above options are not feasible, the person could delegate their role or presentation to another participant if possible. They should provide any necessary materials and instructions to the delegate before the call resumes.
5. **Record the Call:**
  - The call should be recorded so the absent participant can review what was discussed. Make sure to get consent from all participants before recording.
6. **Follow-Up:**
  - After the call, the absent participant can follow up with the other participants to clarify any points they missed and provide any input or responses necessary.

These steps ensure that the call proceeds smoothly while accommodating the participant who lost power.

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**Prompt:** Every time I make pizza with anchovies, I inevitably have leftover anchovies that I don't know what to do with. I don't want to use them in Caesar salad, and I don't feel like making spaghetti sauce at the same time as I make pizza. How should I solve this problem?

**ChatGPT-4o Output:** Here are some ideas to use leftover anchovies creatively:

**Storage Options:**

1. **Freeze the Anchovies:**
  - Anchovies freeze well and can be stored for several months. Place them in a single layer on a baking sheet, freeze until solid, then transfer to a freezer-safe container or bag. You can then take out only what you need in the future.
2. **Store in Olive Oil:**
  - Transfer the leftover anchovies to a small jar and cover them with olive oil. This preserves them for a few weeks in the refrigerator and adds flavor to the oil, which can be used in cooking.
3. **Recipe Ideas:**
4. **Anchovy Butter:**
  - Mix chopped anchovies with softened butter, garlic, and parsley. Spread it on bread, melt it over steak, or use it to flavor vegetables.
5. **Anchovy and Garlic Bread:**
  - Spread chopped anchovies and minced garlic over slices of bread, drizzle with olive oil, and toast in the oven for a quick and flavorful snack or side dish.
6. **Vegetable Dishes:**
  - Incorporate anchovies into roasted vegetables. They add a rich, savory flavor. Try roasting broccoli, cauliflower, or Brussels sprouts with anchovies, garlic, and chili flakes.
7. **Savory Snacks:**
  - Make anchovy toast by spreading a thin layer of anchovy paste (made from your leftover anchovies) on toast, and top with a poached egg or avocado for a delicious snack.
8. **Soup Enhancer:**
  - Use anchovies to enhance the flavor of soups and stews. They dissolve easily and add a depth of flavor. Just toss a few fillets into the pot as the soup simmers.
9. **Dips and Dressings:**
  - Blend anchovies into dips like aioli or hummus, or add to dressings for a unique, umami-rich flavor.

By using these tips, you can prevent waste and enjoy the rich flavors that anchovies offer in a variety of dishes.

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**Prompt:** Regarding the conference call, how would you describe the rhetorical situation based on the information provided?

**ChatGPT-4o Output:** The rhetorical situation of the disrupted conference call

involves several key elements: the audience, the purpose, the context, the speaker(s), and the exigence. Here's a breakdown:

**Audience:**

*Participants on the Call:* The other two people on the Zoom call who need to be communicated with regarding the sudden absence of the third participant.

*Absent Participant:* The person who lost power and needs to stay informed about the ongoing discussion.

**Purpose:**

*Immediate Purpose:* To ensure the continuity of the conference call despite the disruption.

*Broader Purpose:* To maintain effective communication and achieve the objectives of the meeting without rescheduling.

**Context:**

*Situation:* A planned Zoom conference call involving three participants is interrupted by a power outage affecting one participant.

*Constraints:* The call cannot be rescheduled, and the absent participant needs to find a way to participate or stay informed.

**Speaker(s):**

*Present Participants:* The two people still on the call who need to adapt and manage the situation.

*Absent Participant:* The person who lost power must communicate their situation and find alternative ways to join the call or contribute.

**Exigence:**

*Immediate Exigence:* The power outage creates an urgent need to adapt to the loss of one participant and find a way to continue the call effectively.

*Broader Exigence:* Ensuring that the goals of the conference call are met despite unforeseen technical difficulties.

**Strategies and Adaptations:**

*Communication:* The absent participant needs to notify the others about their situation immediately through an alternative communication channel (phone, text, email).

*Technological Adaptation:* Using a smartphone or dial-in option to rejoin the call.

*Role Delegation:* If rejoining is not possible, delegating responsibilities to other participants.

*Documentation:* Recording the call for later review by the absent participant and ensuring follow-up communication to address any missed points.

This rhetorical situation involves quick thinking, effective communication, and adaptability to ensure that the goals of the meeting are met despite the disruption.

**Prompt:** Why is it important that the participant who lost power communicate that information?

**ChatGPT-4o Output:** It is important for the participant who lost power to communicate their situation for several reasons:

1. **Clarity and Transparency:**
  - Informing the other participants about the power outage ensures that everyone understands why the person has suddenly become unavailable. This prevents confusion and allows the meeting to proceed with a clear understanding of the situation.
2. **Coordination and Adaptation:**
  - Knowing that one participant has lost power allows the remaining participants to adapt their plans. They can decide on alternative ways for the absent participant to join the call (e.g., via phone) or adjust the meeting agenda accordingly.
3. **Professional Courtesy:**
  - Communicating disruptions promptly demonstrates professionalism and respect for the other participants' time. It shows that the absent participant values the meeting and is making an effort to address the issue.
4. **Meeting Continuity:**
  - The absence of a key participant without explanation can hinder the progress of the meeting. By communicating the situation, the participant helps ensure that the meeting can continue as smoothly as possible, with necessary adjustments made.
5. **Decision-Making:**
  - The other participants may need to make decisions about how to proceed with the meeting. Knowing the reason for the absence helps them make informed choices, such as pausing for a few minutes to allow rejoining via another method, or continuing with a different approach.
6. **Documentation and Follow-Up:**
  - If the meeting continues without the absent participant, understanding the reason for their absence helps in documenting the meeting accurately. It also facilitates effective follow-up to brief the absent participant on what was discussed and any decisions made.

Effective communication in this scenario ensures that the disruption is managed efficiently and that the objectives of the meeting are still met despite the unforeseen challenge.

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**Prompt:** How can the outcomes of the person who lost power be judged or evaluated?

**ChatGPT-4o Output:** The outcomes of the person who lost power can be judged or evaluated based on several criteria related to their response and the impact on the meeting. Here are some key areas to consider:

1. **Communication Effectiveness:**
  - *Timeliness:* How quickly did the person communicate their power outage to the other participants?
  - *Clarity:* Was the communication clear and did it provide all necessary details about the situation and potential duration of the outage?
  - *Professionalism:* Was the communication handled in a professional manner, showing respect for the other participants and the importance of the meeting?
2. **Adaptability and Problem-Solving:**
  - *Alternative Solutions:* Did the person attempt to find alternative ways to join the meeting (e.g., using a mobile phone, dialing in)?
  - *Resourcefulness:* How effectively did the person utilize available resources to stay connected or to inform the other participants of their status?
3. **Impact on Meeting Objectives:**
  - *Meeting Continuity:* Did the person's absence significantly disrupt the flow of the meeting, or were the remaining participants able to continue effectively?
  - *Contribution:* Was the person's contribution to the meeting crucial, and if so, were there steps taken to mitigate their absence (e.g., delegating tasks, rescheduling important discussions)?
4. **Follow-Up Actions:**
  - *Review of Meeting Content:* Did the person review the meeting recording or notes promptly after power was restored to catch up on what was missed?
  - *Follow-Up Communication:* Did the person follow up with the other participants to provide any necessary input or responses related to the meeting discussions?
5. **Preparedness:**
  - *Contingency Planning:* Did the person have a contingency plan in place for such disruptions? For example, having important documents or notes accessible offline, or having backup communication methods.
  - *Proactive Measures:* Were any proactive measures taken prior to the meeting to minimize the impact of potential technical issues?
6. **Evaluation Metrics:**
  - *Speed and Clarity of Communication:* How quickly and clearly did the person communicate their situation?

- *Effectiveness of Adaptation*: How well did the person adapt to the situation by finding alternative ways to participate or by minimizing the impact of their absence?
- *Impact on Meeting*: To what extent did the absence affect the meeting's progress and outcomes?
- *Post-Meeting Actions*: How effectively did the person follow up to ensure they were up-to-date with the meeting's content and provided any necessary contributions?

By assessing these criteria, the outcomes of the person who lost power can be fairly judged in terms of their response to the situation and the overall impact on the meeting.

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**Prompt:** How might that person's actions impact their relationship with the other two meeting participants [sic]?

**ChatGPT-4o Output:** The actions of the person who lost power can significantly impact their relationship with the other two meeting participants, depending on how they handle the situation. Here are some potential impacts:

#### **Positive Impacts:**

##### **Trust and Reliability:**

*Timely Communication*: If the person quickly informs the others about their power outage, it demonstrates reliability and ensures that they are seen as someone who communicates effectively even in difficult situations.

*Proactive Problem-Solving*: Making an effort to find alternative ways to join the meeting shows a proactive attitude and dedication, which can build trust and respect.

##### **Professionalism:**

*Clear and Respectful Communication*: Handling the situation with professionalism, including clear and respectful communication, can enhance the person's reputation and strengthen their professional relationships.

*Follow-Up*: Promptly reviewing meeting notes or recordings and following up with contributions shows commitment and responsibility, positively affecting the relationship.

##### **Collaboration and Team Spirit:**

*Delegation and Support*: If the person delegates their tasks effectively or supports the team by minimizing disruption, it can foster a sense of teamwork and collaboration.

#### **Negative Impacts:**

##### **Perceived Unreliability:**

- *Delayed Communication*: If the person fails to inform the others promptly, it may be perceived as unreliable or inconsiderate,



potentially damaging trust.

- *Lack of Effort to Rejoin*: Not attempting to rejoin the meeting or find alternative solutions could be seen as a lack of commitment or resourcefulness.

#### **Professionalism Concerns:**

- *Unclear Communication*: If the communication is vague or incomplete, it can lead to misunderstandings and frustration, negatively impacting the relationship.
- *Poor Follow-Up*: Not following up effectively after the meeting may suggest a lack of responsibility or interest, harming professional relationships.

#### **Impact on Meeting Outcomes:**

- *Disruption*: If the person's absence significantly disrupts the meeting and they do not take steps to mitigate the impact, it can cause frustration and resentment among the other participants.
- *Missed Contributions*: If the person's input was crucial and their absence leaves gaps in the discussion, it may lead to dissatisfaction with their level of engagement.

#### **Long-Term Relationship Effects:**

- *Enhanced Collaboration*: Positive handling of the situation can lead to stronger collaboration and a more cohesive working relationship in the future.
- *Erosion of Trust*: Negative handling, such as poor communication or lack of follow-up, can erode trust and make future collaborations more challenging.

#### **Recommendations for Maintaining Positive Relationships:**

1. **Immediate Communication**: Notify the other participants as soon as the issue arises.
2. **Effort to Rejoin**: Make a sincere effort to rejoin the meeting using alternative methods.
3. **Professional Demeanor**: Maintain a professional tone in all communications.
4. **Thorough Follow-Up**: Review the meeting content and follow up with any necessary contributions promptly.
5. **Contingency Planning**: Prepare for potential disruptions in future meetings to demonstrate foresight and responsibility.

By handling the situation thoughtfully and proactively, the person who lost power can mitigate negative impacts and potentially strengthen their relationship with the other participants.

**Prompt:** What if the person who lost power is more senior in their position than the other participant running the meeting? How does that impact the available responses or evaluation?

**ChatGPT-4o Output:** When the person who lost power holds a more senior position than the other participant running the meeting, this dynamic introduces additional considerations for responses and evaluation. Here's how it might impact the situation:

#### Available Responses:

##### 1. Immediate Communication:

- *Delegate Communication:* The senior person may delegate the task of notifying others to their assistant or another team member if available. This ensures timely communication.
- *Acknowledgement of Authority:* The junior participant running the meeting might feel hesitant to make decisions without the senior person. Clear guidance from the senior person is crucial to empower the junior participant to proceed.

##### 2. Alternative Access:

- *Utilizing Authority for Resources:* The senior person may have access to more resources, such as IT support or alternative devices, to quickly rejoin the meeting.

##### 3. Meeting Management:

- *Empowering the Junior Participant:* The senior person can explicitly authorize the junior participant to continue running the meeting, providing reassurance and authority.
- *Pre-Delegation:* If the senior person anticipates any disruptions, they might pre-delegate certain responsibilities to the junior participant before the meeting starts.

#### Evaluation Considerations:

##### 1. Communication Effectiveness:

- *Leadership in Crisis:* The senior person's response will be evaluated based on their ability to lead and communicate effectively under unexpected circumstances.
- *Clear Delegation:* Successful delegation and clear communication of authority to the junior participant reflect well on the senior person's leadership.

##### 2. Adaptability and Problem-Solving:

- *Resource Utilization:* The senior person's ability to quickly leverage available resources to rejoin the meeting demonstrates problem-solving skills and resourcefulness.
- *Support for Junior Participant:* Providing clear support and instructions to the junior participant shows adaptability and effective management.

### 3. Impact on Meeting Objectives:

- *Minimized Disruption*: The senior person's actions should aim to minimize disruption and ensure that the meeting objectives are still met.
- *Empowerment of Junior Participant*: Successfully empowering the junior participant to take charge can positively impact the meeting's outcomes and the overall team dynamics.

### Relationship Dynamics:

#### 1. Trust and Respect:

- *Role Modeling*: The senior person's handling of the situation serves as a role model for the junior participant, potentially strengthening trust and respect.
- *Empowerment*: Empowering the junior participant to manage the meeting can enhance their confidence and professional growth, positively impacting the relationship.

#### 2. Professionalism and Authority:

- *Reassurance of Authority*: Clear and supportive communication reassures the junior participant of their authority to proceed, maintaining the meeting's professionalism.
- *Follow-Up*: The senior person should follow up promptly after the meeting to review what was discussed, providing any necessary input or decisions.

### Long-Term Effects:

#### 1. Enhanced Leadership Perception:

- *Effective Crisis Management*: Successfully managing the situation enhances the senior person's reputation as an effective leader capable of handling disruptions.
- *Mentorship*: The situation can be an opportunity for mentorship, strengthening the professional relationship between the senior and junior participants.

#### 2. Potential Strain:

- *Miscommunication or Hesitation*: If the senior person fails to communicate effectively or empower the junior participant, it may lead to hesitation, uncertainty, and potential strain in the relationship.

By addressing these considerations, the senior person can effectively manage the situation, ensuring continuity and maintaining a positive professional relationship with the junior participant running the meeting.

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**Prompt:** What about when considering the gender of participants?

**ChatGPT-4o Output:** Considering the gender of participants adds another layer of complexity to the dynamics of the situation. Gender can

influence perceptions, interactions, and evaluations in various ways. Here are some considerations:

### **Available Responses and Evaluation with Gender Consideration:**

#### **1. Communication Effectiveness:**

- *Gendered Communication Styles:* Be aware that communication styles can sometimes be perceived differently based on gender. For example, a woman's assertiveness might be interpreted differently than a man's. Ensuring clear, respectful, and professional communication helps mitigate these biases.
- *Inclusive Communication:* Both participants should be mindful of using inclusive language that avoids reinforcing gender stereotypes.

#### **2. Adaptability and Problem-Solving:**

- *Perceptions of Competence:* There may be biases in how problem-solving abilities are perceived based on gender. Both participants should strive to demonstrate and recognize competence and resourcefulness regardless of gender.
- *Support and Empowerment:* The senior participant, especially if they are male and the junior participant is female, should be conscious of not appearing patronizing while providing support and empowering the junior participant.

#### **3. Impact on Meeting Objectives:**

- *Authority and Leadership:* Gender can influence perceptions of authority and leadership. The senior participant should reinforce the junior participant's authority to continue the meeting, helping to counteract any potential biases.
- *Acknowledgement of Contributions:* After the meeting, ensuring that all contributions are acknowledged fairly regardless of gender helps maintain an inclusive environment.

### **Relationship Dynamics with Gender Consideration:**

#### **1. Trust and Respect:**

- *Equality in Interaction:* Treating each other as equals and showing mutual respect helps build trust, irrespective of gender.
- *Role Modeling:* The senior participant can model gender-equitable behavior by supporting the junior participant's role and contributions.

#### **2. Professionalism and Authority:**

- *Avoiding Gender Bias:* Be mindful of any unconscious gender biases that might affect perceptions of professionalism and authority. For instance, ensure that the junior participant, especially if they are female, is given due respect and authority to manage the situation.
- *Feedback and Follow-Up:* Providing constructive feedback and follow-up that is gender-neutral ensures fairness and reinforces professionalism.

### Long-Term Effects with Gender Consideration:

#### 1. Enhanced Leadership Perception:

- *Promoting Gender Equality:* Handling the situation in a way that promotes gender equality can enhance the senior participant's reputation as an inclusive leader.
- *Mentorship and Support:* Supporting the junior participant, regardless of gender, fosters an environment of mentorship and professional growth.

#### 2. Potential Strain:

- *Addressing Biases:* If gender biases are not addressed, it could lead to strained relationships and reduced trust. Both participants should actively work to recognize and mitigate any biases.

### Recommendations for Gender-Inclusive Responses:

1. **Clear and Respectful Communication:** Ensure all communications are clear, respectful, and free of gendered assumptions or stereotypes.
2. **Empowerment and Support:** The senior participant should empower the junior participant by clearly supporting their authority and capabilities, helping to counteract any gender biases.
3. **Acknowledgement and Fairness:** Acknowledge contributions and efforts fairly, ensuring that recognition is based on merit and not influenced by gender.
4. **Bias Awareness:** Both participants should be aware of potential gender biases and actively work to mitigate them, promoting an inclusive and equitable environment.

By considering these gender-related factors, participants can ensure that their actions and evaluations are fair, respectful, and supportive, fostering a positive and inclusive professional relationship.

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**Prompt:** Ok. Let's assume that in this scenario, the participants are as follows: 1) A senior industry professional who has multiple decades of experience working in advanced automation. He is being interviewed for his insights on and experience with highly automated systems. He has been contacted over a period of several weeks, after the other two participants faced multiple disruptions to their schedules beyond anyone's control, to settle on an agreeable interview date and time, and the interview is finally set. 2) An early-career assistant professor who is doing research on AI as an extension of other forms of automation and emerging technologies within the field of technical communication. He is located in a time zone that is 7 hours different from the other two participants. He is also overburdened with work commitments due to circumstances beyond his control, but is happy to be participating in this research interview since scheduling almost didn't work

out. 3) A full professor with decades of experience who is also researching AI within the field of professional writing in collaboration with the assistant professor. Participant 2 and 3 have known each other for over a decade and written together for over 5 years. He is located in a time zone only one hour different from participant 1. However, his power goes out. All participants are White men.

**ChatGPT-4o Output:** Given the scenario with the specific participants:

1. **Senior Industry Professional:** Multiple decades of experience in advanced automation, being interviewed for his insights and experience with highly automated systems. He has been contacted over several weeks to settle on an agreeable interview date and time.
2. **Early-Career Assistant Professor:** Researching AI as an extension of other forms of automation and emerging technologies within technical communication. Located in a time zone 7 hours different from the other two participants, overburdened with work commitments but happy to participate.
3. **Full Professor:** Decades of experience, researching AI within professional writing in collaboration with the assistant professor. Located in a time zone only one hour different from the senior industry professional. His power goes out during the interview.

#### **Rhetorical Situation Analysis:**

##### **Audience:**

- *Senior Industry Professional:* Main source of insights for the interview, expecting a structured and professional discussion.
- *Assistant Professor:* Engaged in the research process, eager to learn and contribute, but managing significant time zone differences and work commitments.
- *Full Professor:* Experienced researcher, collaborator with the assistant professor, crucial for the interview but temporarily incapacitated due to the power outage.

##### **Purpose:**

- *Immediate Purpose:* Conduct the interview to gather valuable insights from the senior industry professional on highly automated systems.
- *Broader Purpose:* Advance the research on AI and automation in technical communication and professional writing.

##### **Context:**

- *Situational Context:* The interview has been challenging to schedule due to disruptions and time zone differences, emphasizing the importance of making the most of the current opportunity.
- *Power Dynamics:* The senior industry professional's extensive experience and the established collaboration between the professors impact the dynamics and expectations of the interview.

**Exigence:**

- *Power Outage:* The unexpected power outage affecting the full professor necessitates immediate adaptation to ensure the interview proceeds effectively.

**Available Responses:****1. Immediate Communication:**

- The full professor should quickly notify the others about the power outage using an alternative method (e.g., phone, text).

**2. Alternative Participation Methods:**

- The full professor could join the Zoom call using a mobile phone if it has a data connection.
- Alternatively, the full professor can call into the Zoom meeting using a dial-in number.

**3. Delegation and Support:**

- The full professor should delegate any immediate responsibilities to the assistant professor if rejoining is not possible.
- The assistant professor should reassure the senior industry professional that the interview will proceed smoothly despite the disruption.

**4. Recording the Session:**

- Ensure the interview is recorded so the full professor can review it later and provide any necessary follow-up.

**Follow-Up Actions:**

1. After the power is restored, the full professor should review the recording and follow up with any additional questions or contributions.

**Evaluation of Actions:****1. Communication Effectiveness:**

- Timeliness and clarity of the full professor's notification about the power outage.
- Professionalism in handling the situation and keeping everyone informed.

**2. Adaptability and Problem-Solving:**

- The full professor's efforts to rejoin the interview using alternative methods.
- The assistant professor's ability to adapt and manage the interview in the absence of the full professor.

**3. Impact on Interview Objectives:**

- The extent to which the interview goals were met despite the disruption.
- The senior industry professional's perception of the interview process and its professionalism.

**4. Follow-Up and Coordination:**

- The effectiveness of follow-up actions taken by the full professor.
- The assistant professor's support in ensuring the continuity and success of the interview.



**Relationship Dynamics:****1. Trust and Respect:**

- The assistant professor's handling of the situation can enhance trust and respect with both the senior industry professional and the full professor.
- The full professor's timely and effective communication demonstrates reliability and professionalism.

**2. Collaboration and Support:**

- Successfully managing the disruption can strengthen the collaborative relationship between the professors.
- The senior industry professional's experience of the interview process impacts future willingness to participate in similar activities.

**Gender Considerations:**

1. Given that all participants are White men, gender dynamics are less prominent in this specific scenario. However, maintaining professionalism, clear communication, and mutual respect remains crucial for a successful outcome.

By addressing these factors thoughtfully, the participants can effectively navigate the disruption and achieve the interview's objectives, maintaining strong professional relationships.

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**Prompt:** Assuming the meeting went well, what would be the expected outcomes?

**ChatGPT-4o Output:** If the meeting went well despite the power outage, the expected outcomes would include:

**1. Successful Completion of the Interview:**

- *Valuable Insights Gathered:* The interview with the senior industry professional yields valuable insights and experiences regarding highly automated systems.
- *Comprehensive Coverage:* Key topics and questions prepared for the interview are thoroughly covered, providing rich data for the research.

**2. Positive Professional Relationships:**

- *Strengthened Collaboration:* The assistant professor and full professor strengthen their collaborative relationship, demonstrating their ability to handle unexpected disruptions professionally.
- *Reinforced Trust:* The senior industry professional gains confidence in the research team's ability to manage and adapt to challenges, reinforcing trust and willingness for future engagements.

**3. Effective Communication and Problem-Solving:**

- *Prompt and Clear Communication:* The full professor's prompt notification about the power outage and the assistant professor's effective management of the situation highlight their strong communication and problem-solving skills.

- *Seamless Transition:* The transition during the power outage is handled seamlessly, minimizing disruption and maintaining the flow of the interview.
4. **Documented and Reviewed Session:**
    - *Recorded Interview:* The session is recorded, allowing the full professor to review and provide any additional input or follow-up questions.
    - *Comprehensive Notes:* Detailed notes are taken during the interview, ensuring that all important points are captured and can be referenced later.
  5. **Follow-Up Actions:**
    - *Review and Feedback:* The full professor reviews the recording and follows up with any necessary feedback or additional questions, ensuring comprehensive coverage of the interview topics.
    - *Summary Report:* A summary report of the interview is prepared, highlighting key insights and findings, and shared with all participants.
  6. **Research Advancement:**
    - *Enhanced Research Data:* The insights from the senior industry professional contribute significantly to the ongoing research on AI and automation in technical communication and professional writing.
    - *Publication Potential:* The gathered data may form the basis for academic papers, articles, or presentations, advancing the research field.
  7. **Professional Development:**
    - *Experience for the Assistant Professor:* Successfully handling the interview and the unexpected disruption provides valuable experience and boosts the confidence of the early-career assistant professor.
    - *Mentorship and Learning:* The collaboration offers mentorship opportunities, with the full professor guiding the assistant professor through the process and handling disruptions.
  8. **Enhanced Reputation:**
    - *Professional Reputation:* The ability to manage and conduct the interview effectively despite the disruption enhances the professional reputation of all participants.
    - *Networking Opportunities:* Positive interactions and successful collaboration may lead to further networking opportunities and potential future collaborations.
  9. **Future Preparedness:**
    - *Contingency Planning:* The experience prompts the team to develop better contingency plans for future interviews, ensuring preparedness for any unforeseen disruptions.
    - *Improved Technology Use:* Learning from the disruption, the team may implement more robust technological solutions or backup plans to handle similar situations in the future.

**Long-Term Impact:**

1. **Research Impact:** The insights gathered contribute to the broader understanding of AI and automation in technical communication and professional writing, potentially influencing future research and industry practices.
2. **Ongoing Collaboration:** The successful handling of this interview sets a positive precedent for future collaborative efforts, fostering a productive and supportive research environment.

By achieving these outcomes, the meeting demonstrates resilience, effective communication, and strong professional relationships, ensuring the research progresses smoothly and all participants benefit from the experience.

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**Prompt:** What questions might ChatGPT struggle to address effectively regarding this particular rhetorical situation?

**ChatGPT-4o Output:** ChatGPT might struggle to address certain nuanced or highly specific aspects of the rhetorical situation involving the senior industry professional, the assistant professor, and the full professor. Here are some examples of such questions:

1. **Deep Personal and Emotional Insights:**
  - *How did each participant personally feel about the disruption and its impact on the interview?*
  - ChatGPT lacks access to participants' personal emotions and subjective experiences, making it challenging to accurately describe their feelings.
2. **Detailed Technical Knowledge:**
  - *What specific technical details about highly automated systems were discussed, and how do they apply to current industry standards?*
  - Without access to the actual interview content, ChatGPT cannot provide detailed technical knowledge or specific discussions that took place during the interview.
3. **Real-Time Adaptation and Decision-Making:**
  - *What were the real-time decision-making processes and adaptations made by the participants during the disruption?*
  - ChatGPT can speculate on possible actions but cannot accurately recount real-time decisions and adaptations made by the participants.
4. **Personal Relationships and Dynamics:**
  - *How do the long-term personal and professional relationships between the full professor and the assistant professor influence their collaborative dynamics during the interview?*
  - While ChatGPT can generalize about professional relationships, it

cannot provide specific insights into the personal dynamics without detailed contextual information.

5. **Contextual Specifics and Insider Knowledge:**
  - *What insider knowledge or specific organizational contexts influenced the participants' actions and responses?*
  - ChatGPT does not have access to insider knowledge or specific organizational contexts that might have played a role in the participants' behavior and decisions.
6. **Unconscious Biases and Subtle Interactions:**
  - *What unconscious biases or subtle interactions might have influenced the participants' behavior and decisions during the interview?*
  - Identifying unconscious biases and subtle interactions requires a deep understanding of individual psychology and real-time observation, which ChatGPT cannot provide.
7. **Participant-Specific Follow-Up Actions:**
  - *What specific follow-up actions did each participant take after the interview to address the disruption and ensure the interview's success?*
  - ChatGPT can suggest general follow-up actions, but without access to the participants' actual actions, it cannot provide specific details.
8. **Cultural and Organizational Nuances:**
  - *How did cultural or organizational nuances impact the participants' responses and interactions during the interview?*
  - Cultural and organizational nuances require context-specific understanding that ChatGPT might not have without detailed background information.
9. **Impact on Research Trajectory:**
  - *How did the insights gathered from the interview specifically impact the trajectory of the assistant professor's and full professor's ongoing research projects?*
  - ChatGPT can hypothesize potential impacts but cannot provide concrete details on the actual influence on their research trajectory.
10. **Subjective Interpretations:**
  - *What are the subjective interpretations and perceived outcomes of the interview from each participant's perspective?*
  - ChatGPT cannot access individual perceptions and interpretations, making it challenging to provide accurate subjective viewpoints.

In summary, while ChatGPT can provide general insights and suggest possible actions and outcomes, it may struggle with questions requiring deep personal insights, specific technical details, real-time decision-making processes, insider knowledge, subtle interpersonal dynamics, and subjective interpretations that are unique to the individuals involved in the rhetorical situation.





# Artificial Infrastructures

*Artificial Infrastructures* investigates how generative AI is reshaping the work of technical and professional writing across high-technology industries—from image analysis and documentation to medical manufacturing. Building on expert interviews and grounded narrative, Salvo and Sherrill examine the experiences of practitioners who have shaped the development of AI systems and who integrate AI tools into their daily work, illuminating the social, rhetorical, and infrastructural changes that follow. Rather than focusing on dramatic disruptions or utopian promises, *Artificial Infrastructures* attends to ways AI systems are embedded into workflows and reconfigure expectations for what writing and professional communication entail, arguing for a nuanced understanding of co-writing and machine-in-the-loop systems and offering both a critical lens and practical strategies for navigating a rapidly changing technological landscape. Central to this argument is a recognition that management decisions shape how AI is integrated into the workplace and what labor gets displaced. It is a timely guide for readers confronting the question: What now?

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## PRACTICES & POSSIBILITIES

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