The History of Technical Communication and the Future of Generative AI

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Abstract

This article addresses the critical intersection of generative AI technology and Technical and Professional Communication (TPC) practices, highlighting the urgent need for scholarly inquiry into its implications for learning, research, and workplace environments. Drawing on key conversations within TPC history, including iteration and process, theory and agency, actors and activity, and social justice, this article delves into the ethical and social ramifications of generative AI adoption. By revisiting these conversations, and framing current and future work, we aim to showcase the tools and perspectives necessary to navigate the evolving landscape of communication design with a focus on vigilance and justice. Through this exploration, TPCs must consider TPC's ongoing role in ensuring the ethical and inclusive integration of emerging technologies into both scholarly and practical contexts.

CCS Concepts

• **Computing methodologies** → Artificial intelligence; Distributed artificial intelligence; Cooperation and coordination.

Keywords

Generative AI, technical communication, information design, professional communication design, disaster, user experience, social justice, activity, power, process, artificial intelligence, robots

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1 Introduction

Technical Communication scholars and practitioners have long been engaged in critical discussions surrounding the role of technology, including writing technologies, in shaping communication practices in various contexts. With the advent of generative AI, and as this conference call suggests, there is a pressing need to examine how this technology may influence and transform communication practices in learning, research, and workplace settings.

This need to think critically about emerging technologies and the ongoing challenges they pose is especially pointed when considering the potential amplification of inherent biases by generative AI. IBM notes that generative AI "refers to deep-learning models that can generate high-quality text, images, and other content based on the data they were trained on" [64]. Scholars have been trained via a number of systems to research, develop, and deploy content for their fields. They build models for themselves to be proficient and efficient in the development of work they want to research and publish.

Unsurprisingly, there has been an increase in scholarship exploring the future of AI and the work of Technical and Professional Communication (TPC) and User-Experience (UX) [5, 10, 14, 18, 37, 56, 58]. These efforts have provided salient insights into generative AI's impact and potential in our field. Stephen Carradini [9] does an excellent job of breaking down the impact AI is having on our current and future scholarship and notes that we should be aware of the work, even as it rapidly changes. Such immediate change, he notes, "should not stop scholars and practitioners from marking this moment—as short as it may be—and future moments with discussions of where TPC has been, where it is, and where it might be going with AI tools" (p. 8) [9].

These recent studies have made clear, the advent and adoption of generative AI across our various contexts prompts TPC researchers, teachers, and practitioners to (re)examine many of our foundational ideas and assumptions, particularly our understandings of power, agency, and authority. Thus, we hope readers will remember TPC's long history of engagement with emerging technologies. Reminding ourselves of the four "conversations" will, we hope, reiterate our role in and responsibility to ensure that TPC, including our courses, designs, and scholarship, are grounded in vigilance and justice.

To that end, this article will lay out four distinct conversations of TPC that have played a pivotal role in the field's development and

expansion with emerging technologies. The first section will focus on iteration and process; the second section will focus on theory, agency, and power; the third section will focus on actors and activity; and the final section will focus on the social justice turn in our field and its future. In presenting these four conversations from the history of TPC, we will explore the ethical, and social implications of widespread adoption of generative AI in communication design practices. This includes considerations of data privacy, research agendas, curriculum design, and the potential for misuse or manipulation of generative AI content. By revisiting four familiar and important conversations within TPC, we hope to provide a framework of ideas, approaches, methodologies for interrogating generative AI and its potential futures in our disciplinary research, workplace practices, and broader social justice work.

2 Iteration and Process in TPC

Looking back at the history of Technical and Professional Communication, we confront a cornerstone concept shared across TPC and broader writing studies: the process. The process of composing can run parallel to previous models used to generate content. Within this expansive domain, diverse perspectives and frameworks converge to better understand the act of writing. Central to many of these frameworks is the notion of iteration—a recognition that repetition and recursion are inherent to the human act of writing, fostering evolution and growth in both readers and writers. However, the rise of generative AI, promising fewer iterations, prompts us to question its impact on learning and composing.

Janet Emig's seminal work in 1977 ignited empirical inquiry into writing as a cognitive and social activity, shedding light on its unique role in facilitating learning [15]. This early scholarship laid the groundwork for understanding the intricate interplay between the process and product of writing. Building on Emig's insights, Lee Odell and Dixie Goswami advocated for the exploration of writing practices beyond educational settings in 1982, recognizing the multifaceted nature of writing as a human activity embedded in various contexts [39]. This call to broaden the scope of inquiry gave rise to workplace writing studies, offering new avenues for understanding the role of writing in professional domains.

Bill Hart-Davidson notes the importance of using a process to provide feedback on writing. His process of "describe, evaluate, suggest," is a framework used in the application Eli Review, an online system that provides a framework for authors to share texts, offer organized feedback, reflect on the feedback received, build a framework for how the feedback will be incorporated into the text so it can be revised, and then revise the text [22]. It is an organized version of a model that many internalize in their revision process, but to this end, it has been structured to support authors at all levels: K through 12 students, undergraduate students, graduate students, faculty, and industry professionals.

Processes can also be developed and deployed to aid in the creation of a variety of texts or systems. The Agile Software Development Cycle is a process that works to create a system of support and iteration, something that has been incorporated into course design and curriculum design [6, 7, 20]. There is usage of the design thinking process in TPC and healthcare [44, 55]. Such approaches are also being researched to utilize generative AI to create processes and assessment [13, 61]. These processes replicate research methods in a way that supports innovation and repeatability - the foundation of the work many of us do in TPC.

As we contemplate the integration of AI writing agents into our research practices, pedagogical practices, and systems development, we are confronted with a paradigm shift akin to the broader conversation that propelled writing studies to acknowledge the collaborative nature of writing processes [43]. The potential implications of generative AI for the writing process are manifold, with the role of human authors potentially evolving to encompass collaborative endeavors with non-human agents. However, amidst these changes, it is paramount to heed the enduring lessons gleaned from our scholarly inquiries into process: namely, that shortcuts enabled by technology may come at a human cost. The essence of learning lies not merely in expediency, but in the iterative journey of discovery and growth—a foundational process that should underpin our considerations about the design and use of generative AI in our shared work.

As writers, we constantly reflect on our identities and thinking, which often includes considering questions of process. Our focus on iteration and process, then, has us pose some interesting questions about composing with or alongside generative AI. How, for instance, might the processes that facilitate learning and productivity change, as we are able to more fully incorporate generative AI into our workplaces and classrooms? As we entrust generative AI to generate content, how does our understanding of the writing process shift or change? Or, to be more provocative, we might ask: how do we give feedback to generative AI? In short, we know processes and understandings will change as a result of generative AI, and our past inquiries into and understandings of writing as a process will remain of the utmost importance as generative AI's presence becomes even more ubiquitous in our classrooms and workplaces.

3 Theory, Agency, Power

Just as the earlier conversations around process-oriented approaches to writing provide a productive set of ideas and methods for understanding the role of generative AI in supporting learning and for the design of communication, so too might our field's earlier engagement with Theory. And while Theory might not enjoy the reputation it once did or serve as an important methodological frame as often as it did in the past, we suggest Theory might still focus our efforts in thinking about questions related to generative AI and agency, power, and social justice.

While a full discussion of the history and nuances of critical thought is beyond the scope of this paper, what we mean by Theory is the broad and interdisciplinary area of inquiry that "both explains and criticizes existing social inequalities with an eye towards creating possibilities for change. Stated differently, critical social theories aim to reform what is in the hope of transforming it into something else" (p. 5) [24]. Such inquiry has focused, among others, on questions of race [12], gender [8], power [16], the connection between knowledge and politics [30], culture [47, 62], and the legacies of Enlightenment thought [26]. Such theorizing, in the words of Bernard Harcourt, has sought "[t]o turn the contemplative

philosophical tradition into a practice of emancipation. To push thought in the direction of action and toward human liberation" (p. 1) [19].

In fact, as we think about the role generative AI can play in our work, including how its uses and design can be oriented towards social justice, it is important to recognize that the history of professional and technical writing as a discipline is intimately connected to the rise of Theory in academia [64]. Patricia Sullivan and Jim Porter's 1993 piece, "Remapping Curricular Geography: Professional Writing in/and English," offers a "postmodern and/or feminist" model of professional writing influenced by Jean-Francois Lyotard's postmodern theory (p. 411) [52], while Bernadette Longo (1998) suggested "By adding cultural studies to our more scientifically modeled research in technical writing, we can add discussions of power, politics, ethics, and cultural tensions to our understandings of what it is we do when we communicate [35]. With an expanded idea of culture, we can expand our understanding of technical writing practice" (p. 69) [35]. Similarly, in 2001, Bill Hart-Davidson notes, "We need theory. By this I mean that the ranks of working professionals *and* academics in technical communication should participate in activity that makes the core expertise of technical communication explicit" (p. 147) [21]. In examining the way Theory informs discussion about technical writing curricula, Tony Scott (2006) suggests: "we foster ideologically diverse discussions in our curriculums that more critically examine the terms of work in late capitalism—from a civic and labor, rather than exclusively a managerial, perspective" (p. 239) [48].

Looking back, then, at technical and professional writing's engagement with Theory–and how that engagement has shaped some of the field's most important ideas and enduring questions–should, we suggest, serve us well today. To give but one example, we might look to Walter Benjamin's concept of aura in the "The Work of Art in the Age of Mechanical Reproduction," which was originally published in 1935. "Aura," according to Benjamin (1965), is "that which withers in the age of mechanical reproduction" and points to "symptomatic process whose significance points beyond the realm of art" (p. 4) [4]. Further, he suggests, "By making many reproductions it substitutes a plurality of copies for a unique existence. And in permitting the reproduction to meet the beholder or listener in his own particular situation, it reactivates the object reproduced" (p. 4) [4]. While Benjamin's nearly century-old observations about the function of art amidst rapid technological change and a rising fascism in his home country might strike us as outdated, careful engagement with Benjamin's concerns might render some important questions for us today, as we chart out potential futures alongside AI, much like we have done in the past [62, 63]. We might ask, for example: should we consider texts generated by AI "reproductions" of previous materials/texts or "original compositions?" If some "aura" is, in fact, lost in the shift from human-composed texts to AI generated texts, how can that aura be named and described? Is there a corresponding "aura" or defining characteristics that mark an encounter with AI-generated writing? How might such an "aura" limit or expand human agency? Too, what new modes of perception, reading, and/or analysis might generative AI need, suggest, or create? Or, perhaps, we might ask, what have humans missed about rhetoric and writing that generative AI now allows us to see?

While a full inquiry into Benjamin's critical meditations on rapid technological change is beyond our purview here, we hope this section, which both reminds us of our discipline's long engagement with Theory and provides a brief example of how Theory can help us formulate questions about power and agency (of humans and AI alike) in a time that seems not unlike Benjamin's own historical moment, reaffirms the fact that we have always been concerned with how writing and writing technologies can reproduce injustice or open pathways towards a more just future. And the body of knowledge called Theory, including its methodologies and objects of analysis, have been part and parcel of those concerns of and commitments to creating a just and equitable future.

4 Actors and Activity

As we continue to investigate writing as a process shared with generative AI, we can lean on previous research on actor-network theory (ANT). Developed originally by Latour to push his field of sociology to center technology use and consider the impacts on society, this thought experiment proposes that nonhuman actors (smartphones, platforms, connectivity) and human actors (people, groups, organizations) have equal agency in any scenario [31, 32]. While we can understand that this position is extreme, it does get us to consider what part our technology plays in our communities and how we ought to be more involved in the deployment of said technologies.

Several researchers in our field have looked at how we can apply actor-network theory to technical communication work [17, 28, 42, 45, 49, 50, 54], not the least of which Spinuzzi, who combined the concept of actors and activity in the recent *Keywords in Technical and Professional Communication* collection [51]. And whilst can all too easily fall into thoughts of dystopian dread and destruction when considering what AI could do to our societies, could our field's application of ANT have any place in these discussions?

At the very least, we can use ANT to help us reevaluate and reconsider our use of these technologies, the agency we surrender to them, and the ways in which we can continue to sit at the helm to guide their use. Looking at examples in real time during disasters and considering what science fiction is exploring in terms of AI can point towards solutions and possible pitfalls. In thinking about our expertise as technical communicators and our understanding of human-computer interaction, our role is to conduct these kinds of analysis and share findings more broadly. Our application of frameworks such as ANT can help us investigate and better understand the use, misuse, and possibilities of artificial intelligence.

Certainly, AI can help us predict weather outcomes, curb natural disasters, and even fight climate change. These are often algorithmically-driven solutions, without need for a rhetorician's care when communicating across systems. However, in those moments when people are in the midst of or struggling through the aftermath of a disaster, that humanity and agency cannot easily be replicated by ones and zeroes. While there are several examples of artificial intelligence use in these moments, we can stick to two simple examples to emphasize the issue of giving up our agency as humans to our robot overlords. For example, perhaps it is unwise to use, much less note that ChatGPT inspired the team to write an email of condolence and solidarity after a mass shooting

[34]. In further consideration, maybe you should not leave issues of bereaved customers to chatbots nor your legal briefs to imaginary robots [40]. And finally, we would encourage failsafes in any system where a lack of humanity could lead to sheer panic and outrage (CDC 2019) [11], such as sending out alerts to the residents of Hawai'i, shouting to them to "SEEK IMMEDIATE SHELTER" because of an "INBOUND" threat of a "BALLISTIC MISSILE" [33]. In such cases, an Emergency Management Agency might want to keep those drills offline rather than trusting systems that take people out of the equation. Keeping the need for human agency at front of mind, we must consider much larger issues of systems, societies, and justice.

5 Social Justice

While generative AI is limited by its inputs and the data that trains the AI, it has an expansive reach for those seeking to develop shortcuts, some of which reproduce a host of inequities. Employers are using it to screen candidates they feel do not meet their standards [29]. UX and product designers are not incorporating inclusive research practices and are still utilizing older, exclusive, and racist practices that are undermining public health [57]. Algorithms are being developed to exploit marginalized communities and advance racism [38]. Generative AI based research is being developed to recognize and study users' emotional perceptions of dark patterns in an effort to influence and exploit behavioral patterns [2]. For every step forward we believe we are taking, there are countless efforts being used to undermine ethical practices around emerging technologies.

Our field faces the challenge of addressing material disparities and inequities exacerbated by its practices. A renewed urgency for meaningful change and social justice, particularly in advocating for the marginalized and harmed by these dynamics, has been called for by many scholars.

Rebecca Walton's scholarship emphasizes TPC's role in combating forms of oppression through strategic communication. In their exploration of justice-oriented approaches to technical communication, Walton, along with Kristen Moore and Natasha Jones (2019) [60], underscore the ethical imperatives inherent within our profession. They challenge us to critically examine our privileges and responsibilities as communicators in an increasingly digital landscape.

TPC scholars have also shown how AI systems can replicate and reinforce biases present in training data, leading to discriminatory outcomes in decision-making processes [53]. Consequently, the call to be vigilant and to work toward justice is becoming a common cause for those entering the field and a call we all must amplify [36]. So, any inquiry into generative AI should seek to better understand how such technologies impact marginalized communities and exacerbate inequities in access to resources and opportunities, all with the goal of creating more inclusive systems and designs.

There is other extensive work being done to aid in turning TPC towards pathways of inclusion. Godwin Agboka (2014) offers decolonial approaches to how researchers engage with post-colonial, developing, and disenfranchised spaces [1]. Akshata Balghare (2022) reflects on struggles navigating the US healthcare system as an international student and recommends using a participatory design approach that incorporates simplified language to improve healthcare communication to minimize health conditions [3]. Other texts explore the ways in which TPC has been used for justice via the environment [46], accessibility [41], research and pedagogy [27], and design [25].

Even with inclusive frameworks and inclusive scholarship in the field, we must be vigilant. Scholars from all over TPC are trying to advance the field via inclusive practices, but gaps exist so long as we do not revisit the past to amplify the work we have yet to do.

6 Looking Back to Move ahead

In the process of writing this piece, our friend, mentor, and colleague (and lead author on this piece) Bill Hart-Davidson passed away suddenly. As a result, we questioned whether or not we would be able to finish this piece without Bill's guidance and camaraderie. Indeed, without Bill's thoughtful questions and willingness to tackle difficult problems, this piece would never have seen the light of day. To us, this piece–including Bill's willingness to facilitate the writing process–is yet another example of the fact that Bill's expansive intelligence was matched only by his limitless kindness. And his commitment to creating a just and better future was amplified by a contagious optimism and his resilience [23]. So, to both conclude this piece and to pay tribute to our dear friend, we want to revisit two ideas that Bill and his many fellow-travelers have been making for a long time.

First, as we hope the foregoing pages make clear, technical communication teachers, researchers, and practitioners have a set of ideas and a history that is both deep and wide. This fact, we hope, should serve as something of a salve to the uncertainty caused by the rapid ascent of generative AI. As a result, we want to echo something that Bill–and others–said back in 2011: "Writing teachers and researchers should not fear the coming swarm. As we engage these bits of code to do what is operationally necessary, we will have an expanding scope of rhetorical action to investigate, embrace, and yes, teach" (p. 334) [59]. Inquiring into the expanding scope of rhetorical action means recognizing that the future poses important questions for us to consider today. It also means that grappling with those questions will require simultaneously looking towards the future and excavating our past. In that way, we argue that TPC is well-positioned to continue its good work of tackling wicked problems.

Perhaps looking back to TPC's earlier conversations about process, theory, actors/activities, and justice all lead to another proposition advanced by Hart-Davidson and others:

> [Y]ou should be building robots. Robots need direction. Someone who knows writing practices and how they work in social structures must be the brains that set them in motion, tell them how to listen and how to respond, tell them when they are going too far and when they could be doing something more. (p. 334) [59]

If we substitute "generative AI" for "robot," then we argue the claim holds true today. To be clear, we hope that the conversations outlined above not only lead us to more thought-provoking inquiries into the effects of generative AI on writing and the work of writing

or to the development of more streamlined processes in the workplace, but to the design, production, and deployment of AI capable of helping others realize their potential and/or creating opportunities for individuals and communities to thrive. While there is room for us to provide more case studies and practical applications that explore challenges and successes, the few listed above provide a small glimpse of such potential. Understanding AI's history within TPC (iteration and process; theory, agency, and power; actors and activity; and social justice) can provide the fulcrum for an ethical exploration of what is to come.

Perhaps what TPC has done in the past will help to ensure a future with robots whose expansive intelligence is matched only by their limitless kindness. Perhaps we can imagine a future alongside robots whose commitment to creating a better future is amplified by a contagious optimism.

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