4 The Value of Empirically Researching a Practical Art

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Abstract / Resumen / Resumo

Research on writing, no matter how arcane seeming, is immensely practical, because it lets us know what writing is, what it does, and how we do it. When I started teaching, I drew on the practical craft knowledge I had learned as a young writer, such as precise use of words, conciseness, relevance, selection of poignant examples and details, sequencing of thoughts, playing with sentence rhythms, addressing an audience. But I learned these as much from imitation and personal discovery as from instruction. And on my own I discovered how to locate my imagination and motives, what I had to say and what voice to speak in. Over the last fifty years, however, research has shown me practical aspects of writing now fundamental for my teaching and my own practices as a writer, such as process and revision, collaboration, feedback, genre, intertextuality, resistance and anxiety, identity, transfer, digitality, and lifespan development. Discovering more will further transform our writing practices.

La investigación en escritura, sin importar cuán arcana parezca, es inmensamente práctica, porque nos permite saber qué es la escritura, cómo funciona, y cómo se escribe. Cuando empecé a enseñar, usé los conocimientos prácticos que había aprendido como joven escritor, como el uso preciso de las palabras, síntesis, relevancia, selección de ejemplos y detalles agudos, progresión de ideas, jugar con el ritmo de las oraciones, dirigirse a una audiencia. Aprendí todo esto tanto por imitación y descubrimiento personal como por instrucción. Por mí mismo descubrí formas de identificar mi imaginación y motivos, qué decir y qué voz usar. Durante los últimos cincuenta años, sin embargo, la investigación me ha mostrado aspectos prácticos de la escritura que son ahora fundamentales en mi enseñanza y mis prácticas como escritor, tales como el proceso y revisión, colaboración, retroalimentación, género, intertextualidad, resistencia y ansiedad, identidad, transferencia, virtualidad y el

desarrollo en el ciclo vital. Futuros descubrimientos continua-
rán transformando nuestras prácticas de escritura.

A pesquisa na escrita, embora possa parecer muito arcana,
é imensamente prática, porque nos permite saber o que é a
escrita, como ela funciona e como se escreve. Quando comecei
a ensinar, usei os conhecimentos práticos que havia aprendido
como jovem escritor, como é o uso preciso das palavras, síntese,
relevância, seleção de exemplos e detalhes agudos, progressão
de ideias, brincar com o ritmo das orações, dirigir-se a uma
audiência. Aprendi isto tudo tanto por imitação e descoberta
pessoal quanto por instrução. Por mim mesmo descobri formas
de identificar a minha imaginação e motivos, o que dizer e que
voz usar. Durante os últimos cinquenta anos, porém, a pesquisa
tem me mostrado aspectos práticos da escrita que agora são
fundamentais no meu ensino e minhas práticas como escritor,
tais como o processo e revisão, colaboração, retroalimentação,
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transferência, virtualidade e o desenvolvimento no ciclo vital.
As futuras descobertas continuarão a transformar nossas práti-
cas de escrita.

When I began teaching writing fifty years ago, I thought I knew what writing was, how to do it, and what I needed to teach. Writing, after all, is a practical art, making something out of words to affect the minds of others. Writing is learned through practice and making practical decisions in the making of each text. The teaching of writing aims to help students improve their practices of writing. Advice about writing comes from skilled practitioners who offer practical guidance. Endless interviews with famous writers seek such practical advice to become a writer. We attribute to successful writers the wisdom of effective action, or phronesis, which Aristotle (2000) says only comes from experience.

So why is research necessary from something learned in practical situa-tions, through practice and practical decisions, leading to practical wisdom? It turns out research in writing is immensely practical, helping us see more clearly our practical situations, our practical resources, our practices and prac-tical methods, our practical choices and their consequences. Writing research also has told us more about the practices of our students, how we can help them improve their practical choices, and extend their range of practices. Knowing the right things can help us act wisely, and well-framed research can tell us things which are immensely practical to know. Along with my col-leagues in the growing field of Writing Studies, I have spent the last fifty years discovering practical things that practice alone did not teach me, researching

some things that are useful for helping writers develop, and changing what and how I teach. During these fifty years writing studies has begun to sketch out the picture of how complex and varied writing is and how individual and personal each writer's path of development is. In the following lines I will point to some of the things we have learned and how that has changed our practical actions.

What I Learned from Experience as a Writer

Don't get me wrong: some basic truths are shared by most who have gone through traditional education, and these truths formed the basis for my early certitudes. Writers need to know the basic symbols and how to encode them and arrange them in recognizable ways. Alphabet, handwriting (and increasingly keyboarding), grammar, syntax, and basic organizational coherence have long been taught and are all needed in at least a practical way. I had been fortunate in having gone to schools that had offered many opportunities to write in most subjects at every level from elementary through university. I learned what my schooling had to offer, meeting the expectations and going beyond, as my experiments in pushing the boundaries were generally accepted and even at times encouraged. I not only wrote complex sentences with few grammatical, syntactic or spelling errors, I played games with writing and explored meanings that writing made possible. I wrote long essays about writers, managed to write with some originality and wit, and wrote some fiction and poetry published in small journals.

In the course of my writing I had learned to pay attention to the kinds of things writers often pay attention to as part of craft knowledge: precise use of words, clarity, conciseness, relevance, selection of poignant examples and details, sequencing of thoughts, playing with sentence rhythms, finding ways to reach audiences. I learned these in a practical way, working on each text I wrote, occasionally getting useful feedback that let me look a bit more deeply, or taking inspiration from writers I admired. Very rarely, though, did any of my classes or teachers explicitly touch on these things, which they typically attributed to individual talent, as something not to be taught.

I also recognized, as many writers do, the importance of creativity and novelty, in having something new to say in new ways that will excite the imaginations of readers. So discovery of what I had to say, what I came to observe, what thoughts I developed was something I cultivated. Locating my internal voice, exploring the unknown, seeking the wellsprings of imagination or the muse was something of an individual quest, though of course shared with others who already fancied ourselves as writers. While I spontaneously

imitated writers who moved me, the discussion of literary examples in literature classes positioned us students as readers rather than writers. Further, these arts of writing were mostly associated with "creative writing": poetry, fiction, literary essays. The rest of writing was not considered worth much thought or effort.

So by most common understandings I was a pretty good writer by the time I started teaching. And I had worked hard over a couple of decades to get good at it. I certainly knew a lot more about writing than the young children in my initial first and third grade classes, or a few years later, the first-year college students. The main challenge in teaching, I thought, was to articulate what I knew in a practical way and reach the students, especially students who had not had such fortunate educational experiences as I had. Writing to me was knowing the school basics and then having creativity and something to say, and having lots of practice. Even more, I thought that writing was a single set of skills applicable in all circumstances. In holding these beliefs, I was not different from many other people then and still now who are writers and who even teach writing or make decisions about how writing should be taught.

The Search to Know More

But some of us came to believe that we needed more than that, and we set out to learn more about writing and writers through research. Over the ensuing decades my research has been driven by questions that arose in my teaching. At first the research was very close to the classroom and the academic situation, but as the questions became more fundamental, they led me out into the far corners of human practices of writing. Other researchers had different questions, investigated in different ways, and elaborated different concepts, but they almost always were driven by the same motives of helping our students develop as writers. This communal work enriched my understanding of writing, what I needed to teach, how to go about teaching, and what challenges my students addressed. This work also influenced my understanding of my own writing and development as a writer, what I wrote about, and how I went about writing.

The research of all of us engaged in the endeavor also influenced how the field understands writing and how we teach it. Some of these changes have been consciously enacted by teacher researchers. But other parts of the research have influenced the practices of the field more subtly, working into syllabi, textbooks, and professional standards, and into everyday beliefs about writing, though the research may not be explicitly recognized. Thus teachers

and writers who are not aware of research may nonetheless incorporate the findings and concepts. So research has turned out to be quite practical, even though the impact is far from complete or universal, and although our knowledge still remains limited.

I will tell this story in the way I know best, around the questions that drove my inquiries and what I learned from others. What I learned started in my puzzling through experiences and practical challenges, leading me to collect information more systematically and reading what others had found. I gradually widened my lens to include research quite different than my own as I started to understand its importance and observe its impact on classrooms quite different from mine. This story will in large part be focused on North America, since there is where my career developed and where teaching of writing has gotten perhaps the most extensive practical and research attention. But my lens widened as my own experience widened and as research expanded in more parts of the world.

First Informal Discoveries

My path in understanding the teaching of writing started when I started teaching first and third grades in 1968. I found that young children even from the most difficult of circumstances could write with engagement and creativity if they were working with forms and stories they were familiar with and excited by. They knew the words, characters, and actions. Writing was an extension of the play they engaged in their own social worlds and imaginations. This led me to practical classroom experiments, inspired by reformist classroom narratives published at that time of ferment in public education. Herbert Kohl's inspiring stories (1967) in particular opened my eyes to the literacy potential of children. Anne Haas Dyson would later (1993, 1997, 2003) examine these processes in a careful ethnographic way, tracing out how the life, relations, play, and media in young students' worlds drove their imaginations as writers.

When I began teaching university writing in 1971, the ferment in the schools extended into the open admissions policy at the City University of New York. Mina Shaughnessy (1977) directed our attention toward what students could do and how they went about it, rather than where they did not meet our expectations. My own research proper began when I wondered why we were teaching writing and why all students were required to take two or three terms of writing, creating the very economic basis of our profession. Looking at the teaching of my colleagues, I saw there were many different kinds of things we could teach, from formal correctness to

personal discovery, from business memos to literary production, from mental health to academic success. While all aims had value and were part of writing, I realized the college writing requirement was foremost to support academic success. While I knew what kind of writing I was asked to do in my particular major at a cloistered elite private university, I could not assume that that was the writing being asked of my students at an urban public university specializing in business. When I surveyed the teachers across my university about what they assigned and what they valued in their courses, I found that almost all writing in all subject areas beyond first year composition was based on reading materials associated with their subjects: book summaries and reports, analyses of texts, reviews of literature, or loosely defined research or term papers. This led me to develop my pedagogy based on writing about sources (Bazerman, 1981a), later associated with intertextuality when that term began circulating in US academic circles (Bazerman, 2004).

From Classroom Praxis to Research—Disciplines, Genres, Intertexts, Activity Systems

The prominence of disciplinary literature in academic writing also attuned me to the different kinds of writing in different disciplines (Bazerman, 1981b), differences I was soon to characterize through Carolyn Miller's (1984) theorization of genre. To understand more the formation and implicit logics of academic disciplines I began to look in greater detail at research articles in sciences, which I found to be far from a stable single thing (Bazerman, 1988). It was historically evolving, flexible, aimed at changing intellectual projects, and situated within social structures. It engaged with different kinds of evidence, methods of data gathering and analysis, ideologies of disciplines, systems of activity and other particularities. Growing understanding of scientific genres led me to consider the genres of other academic areas and the genres of classrooms, how they are embedded within social systems, and how historically writing practices have emerged to embody particular ideologies, practices, relationships, and goals. Simultaneously other researchers, such as Paul Prior (1998), David Russell (1997) and John Swales (1998), were exploring how writing engaged academic activity networks and influenced by interacting genres. But it also led me outward to consider the genres and activity systems in society beyond academia, as also was being examined by such scholars as Carol Berkenkotter (2008), Berkenkotter and Ravotas (1997) Lucille McCarthy (1991), Graham Smart (2006), Dorothy Winsor (1990, 2012), and Joanne Yates (1989).

The social embedding of genres became absolutely convincing to me as I realized how many genres arose out of letters; letters supply explicit social markers of location and interaction until genres become so recognizably typified that they offered a virtual location for the activity systems that came to rely on them—such as financial instruments, legal documents, corporate communications, or scientific articles (Bazerman, 2000). Paradoxically this inquiry into the social embedding of genres emphasized genre as flexible, mutable, and historically evolving rather than fixed and stable. This implied that it was as important to make students aware of underlying functions, motives, and rhetorical and inquiry dynamics of genres of particular sedimented genres they were being asked to write at the moment, and not just the formal characteristics.

One aspect of the communicative systems of genres was that texts existed in relation to each other and referred to each other in systematic ways, creating a virtual geography of texts—what we would come to call the intertext. Berkenkotter, Huckin and Ackerman (1991) examined how a graduate student's disciplinary growth was tied to how the student positioned himself with respect to his field's professional literature, and Devitt (1991) examined how professional genres of writing of tax accounting systematically used and referred to the tax code. I also started elaborating how scientific writers positioned their work in relation to prior texts, creating coherent narratives that pointed toward their own next steps (Bazerman 1991, 1993) and how texts were related to each other in systems of genre (Bazerman, 1994). I would later continue looking into how engagement with professional literatures provided spaces for student intellectual growth (Bazerman, Simon, & Pieng, 2014).

This vision of how writing was a form of participation in a social system built on texts in organized relation to each other highlighted the importance of teaching students to work with a variety of genres that foregrounded intertextual relations. Nancy Nelson Spivey (1984, 1990; Nelson & Calfee, 1998) and others began to research more systematically how students learned to write papers of synthesis and how members of disciplines located their work within the literature and knowledge of their fields (Halliday & Martin, 1994; Swales, 1981, 1990). This research and related theory pointed to the importance of helping students position their thinking and arguments within the knowledge and texts of their fields as well as the practices of producing, using, and thinking about evidence within the thought and expression styles of their fields (see Fleck, 1979 for an elaboration of thought styles and thought collectives). In my own writing as well, I became ever more aware about the evolving structures of texts in a field and how new texts could advance discussions and knowledge-making within intertexts, through strategic constructive interventions.

This research into how writing was embedded within the particularity of social formations and literature also highlighted that schooling itself offered a particular set of writing situations for students to learn in. In a very real sense, we were not teaching writing in general, but only writing for school (Beaufort, 1999; Dias et al., 1991). We then would need to make the case about how writing in school might prepare students for writing in different situations or how it was failing to do so (Brandt, 2001). Understanding the activity system of classrooms became important to understand how the classroom defined writing activity. Assessments, whether local, statewide or national were also highly influential in what was valued and taught in writing classrooms (Bazerman, 2003; Hillocks, 2002). The identities, motives, experiences, and writing knowledge students brought to the classroom and how well they felt empowered to use those resources also influenced how well their writing was valued in school contexts, and how meaningful writing was to be for them (Heath, 1983; Smagorinsky, 1997; Villanueva, 1993). Further, understanding how these identities, motives and experiences aligned with and grew in relation to academic writing identities, motives, and experiences helped us support students' meaningful participation in the worlds of academic writing (Caroll, 2002; Castelló Badía & Donahue, 2012; Poe, Lerner, & Craig, 2010; Thaiss & Zawacki, 2006).

These lines of research helped deepen some themes in my teaching from the beginning. As I became familiar with the variety of students in my classes, I recognized the range of experiences, identities, and affiliations they brought with them, as well as the personal curiosity, puzzles, and even troubles they brought with them that would be expressed through their writing and would drive their intellectual inquiries (Herrington & Curtis, 2000; Sternglass, 1997) and engage them in meaningful academic writing. Further, as I and others began to engage with international colleagues we became ever more aware of the particularity of our educational systems and how writing was situated within it (Bazerman & Baltar, 2010; Bazerman, Bonini, & Figueiredo, 2009; Bazerman et al., 2010; Bazerman et al., 2012; Bazerman & Moritz, 2016; Bonini, Figueiredo, & Bazerman, 2009; Plane et al., 2016; Thaiss et al., 2012).

Learning from Others about the Psychology of Process

Inquiries into the social location and activity of writing occurred alongside inquiries into the internal psychological processes carried out by others (Bereiter & Scardamalia, 1987; Emig, 1971; Flower & Hayes, 1977, 1981; Hayes & Flower, 1987; Kellogg, 1994). This psychological research brought attention to the complexity of processes and how processes affected the outcomes of

writing products. I began looking more carefully at my own processes and the processes of my students, which confirmed to me the complexity and variety of processes. I also changed my own writing practices to pay more attention to processes, make them more orderly and self-conscious, and make choices about them. I moved from a single draft writer to one that worked on different kinds of concerns at different moments, in preliminary documents, multiple drafts and other related texts. In this light I also found very illuminating the psychological research on working memory and cognitive overload (Kellogg, 1996; Klein, 1999) that suggested that writers could only maintain focal attention on a limited number of problems at a time, and, if they had to expend much effort on basic transcription, they would not have sufficient cognitive resources to attend to higher order issues such as content development, organization of text or attention to audience needs. Conversely, if they were focusing on these higher order issues or learning new skills some of the lower order skills may temporarily deteriorate.

Such findings reaffirmed that it was more effective to focus only on a few issues at each stage of drafting, often leaving lower order editing tasks to later iterations. The confidence of knowing that there will always be a chance later to work on coherence, sequencing, and the language could free up working memory in earlier stages to think about social motives and purposes and to locate and develop the ideas and content to be addressed. In my teaching I focused more on the early stages of process, attending to invention, brainstorming, and drafting, as recommended by process scholars—but also tying these to information gathering, analysis, and reasoning. I also became more explicit about drafting, revision and proofreading—to help students to identify the kind of work to focus on at each moment and to decrease premature concern and anxiety about these later issues while they were still first formulating ideas, plans, and communicative strategies. I also was more attentive to variations my student reported about the ways they worked. While I did not take their reported habits as absolute and unchanging, I took seriously their current practices as places they could grow from, rather than to be uprooted and replaced. Developing process was less a prescription or formula than a discussion to help students elaborate their own best ways of addressing tasks and doing the work. In line with making students more conscious, planful, and intentional in their processes, I became interested in the research others were doing on metacognition and reflection (Taczak & Robertson, 2017; Yancey, 2016).

Interest in developing ideas, creativity, and purposes led me to take interest in what colleagues were exploring in meditation, journaling, sources of emotion, embodied cognition, and flow. Some classroom studies confirmed

that such practices seemed to help writers identify states of focused attention on writing—what we might call "getting into the right frame of mind" or "locating the mental writing space." (Moffett, 1981; Perl & Egendorf, 1979; Rohman & Wlecke, 1965). The usefulness of this approach led me look outside of composition practice and research to find illuminating accounts of what kinds of processes we were trying to work with and how we might best release them. The psychological theories of Vygotsky (1986), and Festinger's (1957) ideas of felt difficulty and cognitive dissonance seemed to articulate some of the processes I experienced and were useful in helping students articulate their emerging thoughts and writing plans. Mihalyi Csikszentmihalyi's (1996) work on flow also helped identify target states of maximal creativity.

Providing an even more concrete sense of internal process was the emerging neural science on cognitive networks and the neurological organization of brain and mind, particularly as synthesized and elaborated by Damásio (1999, 2012), Edelman (1992), and Ramachandran (2011). This work highlighted that emotions and intuitions represented summative syntheses and action-oriented choices based on total experiences and knowledge, and that emotional embodied responses often preceded conscious awareness. Related to that was the way the neural networks were activated and reorganized themselves in relation to current perceptions and activity. Conscious awareness and rational calculation of these emotions and impulses often followed afterwards as we noticed what was happening to us and where our impulses were leading us.

These findings from neuroscience seemed to me to give greater warrant to trusting the intuitive writing formulations that arose in my mind as I focused on my writing tasks and to elicit from students their own spontaneous impulses about what they wanted to say and how to go about formulating their ideas, even if they could not offer at first fully rational accounts. The reasoning would follow afterwards as the text emerged, although thoughts, plans, and detailed formulation might need to be adjusted or refined as the text emerged into the light and public space of day. Pressing for fully rational and planned texts before students or myself had located and given some shape to our communicative and meaning impulses could misdirect attention. Impulses may not always be fully formed or informed, but they were the starting point to be worked with, grown, supplemented with new perspectives and knowledge, but not to be readily erased and rarely usefully suppressed.

Locating Psychological Issues within Social

My interest in social location of writing and genres, however, led me to think about how process might be inflected by genre and activity domain. That is,

whether disciplinary modes of thinking were intertwined with disciplinary forms of work and how texts were produced. My analyses of scientific and disciplinary writing had already shown there were differences in reasoning overtly displayed in texts, and which writers and readers would need to engage in within texts; however, I also wondered how these textual forms might suggest different processes of textual creation and perhaps also over time develop different forms of disciplinary thought and perception. If there were such deeper differences this would suggest we not only ask students to attend to textual forms and the way they carried out social relations, but we also help them develop disciplinary ways of thinking. This of course is a more difficult problem to address as it is not determinable just by the texts students wrote, but I kept returning to it through studies of scientific writers, innovators of scholarly writing, and students engaging with disciplinary writing. In looking at the notebooks and drafts of the physicist Arthur Holly Compton early in my research, for example, I found him focusing on specific kinds of issues related to his science, such as precision and relevance of evidence (Bazerman, 1984).

In looking at intellectual innovators who influenced the evolution of scholarly genres like Isaac Newton, Adam Smith, and Joseph Priestley, I found their writing innovations grew out of their changing understanding of their social and disciplinary worlds and the roles and stances they may take within them. In turn, the new kinds of relations and communications they engaged in through their writing also led to further evolution of their thinking with consequences for their future writing. These innovations also carried within them ways of perceiving the world, disciplinary projects, and social interactive roles which in turn became embedded in genres and became standard practices for those that followed (see Bazerman, 2017 for an overview of how I connected social and psychological issues).

Individuals and Collectives In and Beyond the Classroom

Making explicit these underlying ideas embedded in genres was useful in explaining to students why they were being asked to write in certain ways, and even more in helping them freshly examine rhetorical choices and to see their role in shaping communications rather than just reproducing forms (Bazerman, 1981a, 1997). More recently, in looking at student writing in disciplines such as education, engineering, political science, and linguistics I saw the importance of gaining mastery of disciplinary practices of gathering and inscribing data to produce evidence (Bazerman, 2019; Bazerman & Self, 2017; Bazerman, Simon, Ewing, & Pieng, 2013; Fahler & Bazerman, 2019). These disciplinary methods of data gathering and analysis help students internalize disciplinary perceptions

and reasoning and articulate them in their writing; moreover, these methods provide students content to report and reason about in their writing, improving the force of their arguments and the depth of reasoning.

Awareness of the importance of data-gathering and analytic methods appropriate to the different disciplines enriched my dialog with students as they were developing and analyzing evidence, helping them identify resources to create credible claims. I came to view writers as constantly engaged in zones of proximal development as they struggled to say new things and represent expanded realities, and saw my role to provide them clues, handholds, and scaffolds to help them expand their conceptual and communicative powers. I was constantly adjusting my assignments to push students into more challenging spaces and calibrating my comments to provide just enough to carry them forward but not too much as to solve their problems for them or to coerce them into my solutions. Their writing development was in their solving their sequence of writing problems. I also formulated my own writing challenges in this way, to constantly stretch myself into rethinking and expanding what I was doing.

Combining the importance of disciplinary practices with findings of neural organization, plasticity, and development led me to consider how disciplinary writing might foster long-term cognitive development. Complex activities such as writing draw on multiple capacities that needed to develop in tandem. Different kinds of writing, however, draw on different resources, such as visual memory, numerical and geometric sense, emotional resonance, conceptual reasoning, syntactic complexity, or historical reconstruction. Thus practicing different genres would both strengthen different capacities and strengthen different sets of connections and activations among neural subsystems, so that the entire suite of relevant resources for each genre would be more easily evoked as a package. Entrainment into genres makes them and their associated states of mind and perception more readily at hand, familiar, and easy to reproduce. Creativity, spontaneity, and invention then arise within that genred psychological space or in the hybrid conjunction of multiple previously organized spaces. The idea of threshold concepts highlights an important part of this process in the way that conceptual terms define a complex of perceptions, ways of reasoning, and theoretical structures that take time to integrate intellectually, emotionally, and perceptually (Adler-Kassner & Wardle, 2015; Meyer & Land, 2005).

That writing is a collaborative, interactive process has also been made more evident by research starting with the Ede and Lunsford study (1990); further, the appearances of writing as solely the product of the unfettered individual consciousness are historical, ideological and legal constructs (Woodmansee

& Jaszi, 1994). Since then varieties of explicit collaboration, the processes of collaboration, and how writers participate in collaborative projects have been investigated both in the classroom (Lee & Smagorinsky, 1999; LeFevre, 1987; Syverson, 1999) and in industry (Medway, 1994, 1996; Medway & Clark, 2003; Winsor 1990, 2012). Also, less explicit forms of collaboration such as peer and supervisory feedback (Paradis, Dobrin, & Miller, 1985; Smart, 1993, 2006), reviewing and refereeing (Myers, 1985, 1990), editing, and even ghostwriting (Brandt, 2015) have been examined. Simultaneously studies of intertextuality, genres, community discourses and the social formation of thought have deepened our understanding of how writers are influenced by others. We have come to see that these processes are varied and complex, and the skills necessary for successful collaborative participation are not simple or self-evident. Nor is the distribution of credit and authority. Consequently, collaborative and interactive pedagogies have been implemented. Even sole authored writing is no longer viewed simply as the isolated product of an isolated individual, with consequences for our understanding of writing processes. This awareness has also changed practices of many writers, including myself, to be more intentional in seeking and using collaboration, feedback, and other forms of input from others.

Impact of Changing Technologies

While the major technological conditions of writing and text distribution (inexpensive paper, pen and pencils, typewriters, cheap printing, and manual transmission of paper documents) had been fairly stable from the late nineteenth century until the late twentieth, in the last four decades the successive introduction of word processors, desktop computers, multimedia software, the internet, the World Wide Web, and social media have changed resources, processes, text distribution networks, immediacy, and temporality of interactions available to the writer. From the earliest days of personal computing, researchers have been examining the impact of these technologies of writing, starting with the facilitation of revision and the impact of the screen display (Haas, 1996). The potentials of multimedia, hypertext, and WhatYouSeeIsWhatYouGet (WYSIWYG) display opened up new complexity of expression as well as greater potential for page design (Wysocki, 2008). The changing interactions of email have fostered new genres and new social formations, as well as new rhetorical problems of managing successful interactions (Orlikowski & Yates, 2002; Orlikowski, Yates, Okamura, & Fujimoto, 1995; Spinuzzi, 2008; Yates & Orlikowski, 1992). The internet, while increasing the availability of resources and the immediacy of dense

intertextuality, has raised new issues about search, management, and display of materials and links, and has intensified long-standing issues of citation and plagiarism. As technologies change rapidly, research has attempted to keep up with new directions, and to project what students will need going forward (Bazerman, 2007, 2018).

These new technologies have impacted all writers and students of writing. Our classrooms themselves are increasingly transformed by these technologies as students compose and communicate with each other within digital environments. So research is absolutely necessary to know where we are, what new resources and practices are available to us, and what kind of texts we need to produce for what kinds of social interactions. This includes the changes occurring within specific domains, such as within scientific or medical or citizen political communication. At the same time, technological novelties have motivated a fresh and more complex reexamination of earlier writing technologies and their impact (Baron, 1999; Baron, 2000; Eisenstein, 1979). Such research can also highlight what elements of our prior knowledge and conceptual understanding of writing are useful for coping with new circumstances and what needs to be changed. This work will necessarily be ongoing to respond to the inevitable transformations yet to come.

Issues We are Just Beginning to Explore

All of the research areas I have discussed still have further to grow; other areas we are barely at the beginning of understanding. Our growing knowledge of writing, for example, has revealed that writing is always potentially fraught with risks, as one explores new areas of perception and thought, articulates new experiences, and asserts identities and beliefs within new or challenging public spaces. Writers are often unsure of how they and their claims would be understood, credible, or significant. They must handle these uncertainties at the same time as working at the far reaches of their skills and thoughts. While there has been some research on writing apprehension (Daly, 1978; Daly & Wilson, 1983) and while I have found the psychiatrist Harry Stack Sullivan's characterization of anxiety useful in understanding and managing my own anxieties and the anxieties of the student writers I work with (Bazerman, 2001; Sullivan, 1953), writing anxiety is a topic we have only begun to explore.

Another area I see us as just beginning to conceptualize and research is how writing develops across the lifespan. While we have had substantial research on writing within different ages and situations across the lifespan, we still have little idea about how a person develops as a writer as he or she moves through the changing situations, demands, and learning supports of a life-

time. We have had a few studies of university to work transitions, and fewer of high school to university, but overall, we have little sense of the complexity and variety of the way writing develops over many years in the particularity of individuals' lives (Rogers, 2010). Some projects are trying to raise consciousness and encourage research in this central issue (see Bazerman et al., 2018; Dippre & Phillips, 2020), but this work is just beginning.

No doubt there are other areas that scholars are coming to understand that have yet to impact my personal understanding of writing, and there may be areas that have so deeply worked their way into my vision of writing that I don't even recognize them or remember what it was like before I became aware of these ideas. No doubt other scholars would tell different stories of what research was most meaningful to them and how that has changed their writing and teaching practices. Yet all would agree that we see writing in significantly different and consequential ways than we did just a few decades ago. I no longer have the confident naivete that I brought to my first year of teaching writing, born of school success and unexamined cultural beliefs; I do now have, however, a much more articulated and precise sense of what I am doing as a writer and a teacher. Research has changed not just our individual visions and actions, but has changed the vision of the field, even for those writers and teachers not particularly attentive to theory and research. Process and revision, collaboration, feedback, genre, intertextuality, resistance and anxiety, identity, transfer, digitality, and lifespan development are now all part of the everyday vocabulary of writing teachers. So to us writing now is a very different thing than it was.

Research on writing, no matter how arcane seeming, is immensely practical, because it lets us know what writing is, what it does, and how we do it.

The more we learn about writing, the more effectively we can do it and the better we can support students in becoming effective writers. Just because some of us as individuals can meet some challenges of writing reasonably successfully does not mean that we understand all of what writing is. Nor does any current competence mean we know what writing might become. Writing is constantly re-forming and expanding through what humans in their collectivity make of this strange practice of making marks on media to convey symbolic meanings. In the last five millennia we have explored and elaborated this invention. Even more, we have built new relations, social groups, institutions, organizations, and activities relying on the communications and records made possible by writing. Through devoting our energies, thoughts, identities, and emotions to constantly evolving practices in these evolving literate forums, we have also transformed ourselves as individuals, as societies, and as a species. What can be more practical than knowing the literate world we are making so we can participate more fully in it?

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