1 THE ROLES OF WRITING IN KNOWLEDGE SOCIETIES: QUESTIONS, EXIGENCIES, AND IMPLICATIONS FOR THE STUDY AND TEACHING OF WRITING

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For as long as human beings have used it to organize and conduct their activities, writing has played an integral role in the creation, sharing, and contestation of knowledge. Tracing the intertwined history of writing and secular knowledge of civilizations in Europe, the Middle East, the Mediterranean, China, India, and Mesoamerica, and Europe, Bazerman and Rogers (2008a, b), for example, map out the complex ways in which writing has been instrumental to the formation of knowledge institutions, disciplines, and communities. In the last few decades, however, the question about the role of writing in the production of knowledge has gained new salience with the rise of what has commonly been termed the knowledge society, where civic life as well as much economic activity depend on the production and sharing of knowledge. Indeed, according to some estimates, knowledge accounts for about three fourths of the value produced in the knowledge economy (Neef, 1998, ctd. in Brandt, 2005), rendering it "more valuable than land, equipment, or even money" (Brandt, p. 167). And because much of this knowledge is created, shared, inscribed, contested, and used largely through various textual forms, writing has moved centre stage in all sectors of society.

As Brandt (2005) observes in her study of writing in contemporary knowledge-intensive organizations, with its integral role in the production of knowledge, writing fuels the knowledge economy, with written products becoming

"the chief vehicles for economic transactions and the chief ground for making profits or achieving advantage" (p. 180), so that "such high-stakes factors as corporate reputation, client base, licensing, competitive advantage, growth, and profit rely on what and how people write" (p. 174). In short, writing has become an important means of production and as such forms a vital component of the epistemological infrastructure of knowledge-intensive organizations and societies. In Brandt's (2005) words, writing has become "hot property" (p. 167). In addition, as a growing body of research in writing studies indicates, writing is vital to citizen participation in the shaping of public knowledge, in policy deliberation, and in public decision making (e.g., Flower, 2008; Grabill, 2007; Long, 2008). Not coincidentally, as Bazerman (2008) observes, there is "clearly a global renaissance in writing studies at all levels on every continent" (p. 2), reflected in a fast increasing number of writing studies conferences, as well as handbooks of research in rhetoric and writing studies (e.g., Bazerman, 2008; Beard, Myhill, Riley, & Nystrand, 2009; Lunsford, Wilson, & Eberly, 2009; MacArthur, Graham, & Fitzgerald, 2005). As this book demonstrates, this renaissance in writing studies and the growing salience of knowledge in all sectors of society are intimately related.

For writing studies as a discipline that traces its intellectual roots to ancient studies of the rhetoric of civic discourse and thus to 2,500 years of inquiry into human thought and knowledge, the renewed attention to writing as a knowledge-making practice raises a number of urgent questions: What roles does writing play in knowledge-intensive societies? What specific exigencies arise for writing in knowledge-intensive settings? How do rhetoric and writing work to produce, share, question, or advance knowledge in civic, workplace, and institutional spaces whose main purpose either is or depends on the production of knowledge? That is, in what ways is writing epistemic? In turn, these questions have implications for the institutional, organizational, and community environments in which writing happens: How do institutional and organizational contexts constrain, enable, or otherwise shape writing as a knowledge-making practice? Conversely, how does writing as a knowledge-making practice shape institutions and organizations? How do people come to participate in collective knowledge-making endeavors?

This book addresses these questions with the aim to examine, illustrate, and articulate the vital roles rhetoric and writing play as knowledge-making practices in diverse knowledge-intensive settings. The contributions to this book examine the multiple and often decidedly subtle, but no less consequential ways in which writing is epistemic, and they articulate the central role of writing in creating, shaping, sharing, or contesting knowledge in a range of human activities in workplaces and civic settings as well as in higher educa-

tion. The chapters illustrate and conceptualize the ways in which rhetoric and writing work to organize, (re-)produce, undermine, dominate, marginalize, or contest knowledge-making practices in diverse settings, showing the many ways in which rhetoric and writing operate in knowledge-intensive organizations and societies.

To be sure, there has been much important discussion and critique of the construct termed knowledge society, including ways in which the construct has been used to legitimize policy decisions to favor particular economic interests, especially in the commercialization of knowledge over broader public interests (e.g., Delanty, 2003; Peters, 2007; Välimaa & Hoffman, 2008). Our purpose here is not to essentialize or legitimize a particular kind of social formation as "the knowledge society"—quite the contrary: Our purpose is to provide rich accounts of the diversity of knowledge-making practices and the roles rhetoric and writing play in organizing and (re)producing them. We invoke the term here largely to reflect the widespread sense of the growing importance and centrality of knowledge to all human activity. At the same time, we hope to facilitate and inspire continued critical inquiry into notions of the knowledge society as a monolithic or unproblematic formation by providing detailed accounts of the diverse and locally situated practices of rhetoric and writing in the production and sharing of knowledge as well as by addressing such questions as what exigencies give rise to writing; who is invited to participate under what conditions in the discursive practices designed to arrive at truths, decisions, judgments, actions; or how discursive practices are regulated, in whose interests, and with what consequences for diverse participants.

These are consequential questions that not only reflect the centrality of rhetoric and writing to human activity, but also signal the growing need to articulate, reconsider, and reposition writing studies as a discipline in increasingly knowledge- and therefore writing-intensive societies. These questions therefore inspire a second important purpose of the book: to advance writing studies as a discipline dedicated to the study of human thought and knowledge.

Given this dual purpose, the book is organized into five sections. Following this introductory chapter, which functions to situate the contributions in a rich tradition of inquiry into the epistemic nature of rhetoric and writing, section one of the book offers conceptual, methodological, and historical perspectives on the study of writing as an epistemic practice that inform and cut across many of the chapters in the book. Section two examines writing as knowledge work in civic and professional settings, while section three explores the role of writing in the production of knowledge in research environments. Sections four and five address the pedagogical and disciplinary implications for rhetoric and writing studies, with section four taking up questions surrounding the teaching of writ-

ing as an epistemic practice in higher education, and section five addressing the articulation and implementation of writing as a knowledge-making practice in higher education.

In pursuing these aims, the chapters in this book draw on rich traditions of scholarly inquiry into the epistemic nature of rhetoric and writing, extending from the important roots of this inquiry in classical rhetorical studies of civic discourse. These roots have resurfaced most poignantly perhaps in the debate about the epistemic nature of rhetoric initiated by Scott (1967, 1976, 1993) in the context of the larger rhetorical turn in academic inquiry across disciplines (Simons, 1989, 1990), and they have continued to pervade the intensive research efforts that have shaped rhetoric and writing studies as a discipline over the last 50-60 years. Before we introduce each of the sections in this book, therefore, we begin this chapter by briefly revisiting some of these traditions. Although an exhaustive review of that long line of inquiry is beyond the scope of any single chapter, our purpose here is to situate the contributions to this book in these rich traditions to provide some of the historical and theoretical context for the ways in which the chapters in this book work to tease out the complex, diverse, and locally situated ways in which rhetoric and writing work to produce and share knowledge in knowledge-intensive societies.

TRADITIONS OF INQUIRY INTO RHETORIC AND WRITING AS KNOWLEDGE-MAKING PRACTICES

The history of rhetoric and writing studies traces a persistent and restless curiosity in the relationship between writing and knowledge, a curiosity that—like the field itself—has important roots in classical studies of rhetoric. Indeed, long before the current renaissance of inquiry into rhetoric and writing, the link between rhetoric and knowledge was a vital concern in rhetorical study in classical Greece and Rome, where rhetoric emerged as a theory informing the education of citizens for participation in the civic life of the polis—its political, legal, and other institutions. Participation in these institutions naturally raised questions of deliberation, knowledge, argument, and persuasion—ways in which participants would generate the knowledge needed to arrive at truths and decisions.

Articulated early by Plato, at the heart of this concern with rhetoric as a theory of civic discourse was the question of rhetoric's role in the production of knowledge: Do truths exist independently of human beings as fixed certainties waiting to be discovered, with rhetoric's role as a supplementary art of presenting those truths persuasively and effectively, or does rhetoric have a

constitutive role, a productive force? That is, does rhetoric work to constitute, shape, enable, constrain, challenge, and contest knowledge? Is knowledge rhetorical—the product of human sociality—always contested, contingent, socio-culturally situated, resulting from advancing, defending, contesting knowledge claims based on arguments and evidence whose acceptability depends on the practices, values, and standards of the communities, institutions, and organizations whose work they do?

As Nelson and Megill (1986) observed, the way this question is debated is itself highly socio-historically situated: In much debate over the centuries, the rhetorical nature of knowledge production tends to be questioned or denied at points and locations in human history when societal conflict, turmoil, and decline feed a quest for certainty—for certain truths to re-establish a dominant social order. Such processes of reasserting certainties in the interests of ensuring a dominant social order naturally depend on the denial of the rhetorical nature of knowledge production, that is, on the denial of its contestation, contingency, and situatedness. Thus, Nelson and Megill situated Plato's ambivalence toward rhetoric at a time of turmoil in the Greek polis, and they situated the later enlightenment quest for certainty through reason, demonstration, and empiricism, or as Nelson and Megill put it, "the enlightenment dream of a single, certain, natural, and rational order authoritative for everyone" (p. 28) at a time of instability and unrest in Europe.

Despite these socio-historically situated ups and downs in the debate about rhetoric's role in the production of knowledge, rhetoric's epistemic role has been examined tenaciously over the centuries. Most notably in early rhetorical theory, Aristotle, in his *On Rhetoric: A Theory of Civic Discourse,* defined rhetoric as "an ability, in each [particular] case, to see the available means of persuasion" (Aristotle, 2007, [1355b]). As Kennedy remarks in his 2007 translation of Aristotle's *Rhetoric,* the word to "see" in the original Greek is theōrēsai, meaning "to be an observer of and to grasp the meaning or utility of" (p. 37), a word that is related to the noun theōria, the ethymological root of theory. As such, rhetoric was understood early on as involving the study and understanding of discursive practices in particular social situations. For our purpose of tracing the link between rhetoric and knowledge, two points about this early understanding of rhetoric are important. First, rhetoric, according to Aristotle, is generative—a point that was developed in great detail by Enos and Lauer (1992) in their examination of the use of the term "heuristic" (heurein, heuresis, meaning to find out, discover, invent) in Aristotle's *Rhetoric.* As Enos and Lauer showed, Aristotle saw rhetoric as about finding [heurein] or generating what he called entechnic or artistic proofs, that is—roughly—the necessary arguments, evidence, credibility, and emotional appeals for the construction of probable truths, judgments, and de-

cisions in a particular situation with a particular audience. In Enos and Lauer's words, "Aristotle used the term heuristic to capture the way meaning is co-created between rhetor and audience ... in constructing probable knowledge" (p. 79). Accordingly, Enos and Lauer emphasized, "for Aristotle, rhetoric was concerned with conceptualization through discourse" (p. 80).

This notion of rhetoric as generative or productive of conceptualization, understanding, and knowledge was further extended by Atwill (1993) in her careful re-reading of Aristotle's *Rhetoric* from a knowledge production perspective. As Atwill pointed out, Aristotle categorized rhetoric as one of the technēs, that is, one of the human modes of inquiry that are concerned with making or producing something (e.g., architecture, medicine, engineering, poetics). That is, for Aristotle, rhetoric was concerned with productive knowledge, which he understood, in some ways, as different from disciplines concerned with theoretical or interpretive knowledge, epistēme (e.g., philosophy, mathematics), and disciplines concerned with practical knowledge, that is with acting, (e.g., political science, ethics, etc.). Although Aristotle reserved the term "episteme" for what he identified as interpretive knowledge, Atwill showed that early on, rhetoric was seen as a kind of productive knowledge, that is, knowledge generated to produce certain outcomes, such as judgments in courts and elsewhere, truths and decisions in policy deliberation, or value statements in ceremonial events.

In addition to the focus on rhetoric as a generative and productive force in Aristotle's definition of rhetoric, his definition of rhetoric as requiring the study of discursive practices "in each [particular] case" holds another important insight that has continued to inform the current study of the link between writing and knowledge: Rhetoric and writing are highly social practices, which are locally and socio-culturally situated as they are developed by communities over time, and, as such, they are specific to the particular socio-cultural and economic locales in which they originate and whose work they accomplish. Concerned with the instruction of his students in the participation in Greek civic life, Aristotle, for example, developed early notions of genres as repeated practices shared by a body politic—practices that do the work, including the knowledge work, of the city state's institutions. For example, Aristotle described forensic rhetoric as the discourse of the courts focused on the production of court decisions, deliberative rhetoric as the discourse concerned with the production of policy decisions, and epideictic rhetoric as discourse focused on the production of values in public ceremony.

Although concerns about its epistemic nature have surfaced regularly in scholarly inquiry into rhetoric (although perhaps not always articulated in such terms), what brought the debate about the epistemic nature of rhetoric to the forefront of contemporary research and inquiry in rhetoric was a debate around

rhetoric as epistemic initiated by Scott (1967, 1976, 1993) in the context of what has become known variably as the linguistic, interpretive, and rhetorical turn in the social and human sciences (Simons, 1989, 1990) or the rhetoric of inquiry (e.g., Lyne, 1985; Nelson & Megill, 1986). Captured by the 1984 Iowa Symposium on Rhetoric and the Human Sciences and the 1986 Temple University follow-up conference, the rhetorical turn united scholars who had come to understand "reason ... [as] inherently rhetorical" (p. 13). As Simons (1990) articulated the realization at the heart of this shift in academic knowledge production, "virtually all scholarly discourse is rhetorical in the sense that issues need to be named and framed, facts interpreted and conclusions justified ..." (p. 9). That insight into the rhetorical nature of knowledge was not limited to scholars in rhetoric and writing studies, but extended far beyond the boundaries of rhetoric, with scholars from a wide range of disciplines studying the discursive construction of knowledge in the social and human sciences, such as Foucault (1972) or Geertz (1973), Nelson, Megill, & McCloskey, (1985) and Brown (1987) as well as in the natural sciences, such as Kuhn (1972) and Feyerabend (1975).

In the context of this larger movement toward a revived rhetorical understanding of knowledge, Scott (1967), drawing on his analysis of rhetorical scholarship around the link between rhetoric and knowledge, famously declared, "in human affairs, then, rhetoric ... is a way of knowing; it is epistemic" (p. 17), arguing that "truth is not prior and immutable but is contingent.... it is in time, ... [and] rhetoric ... [is] not a matter of giving effectiveness to truth but of creating truth" (p. 13). In other words, rhetoric's function is not simply to dress up and effectively convey some prior truth, but its role is in the creation and contestation of understanding and knowledge itself. This articulation of the epistemic nature of rhetoric opened up a set of new implications and questions for studying the link between rhetoric/writing and knowledge and raised new ethical concerns. As Scott (1976) emphasized, for example, in a world of competing, contingent, and situated knowledge claims, enlightenment-like claims to universal, stable, and certain knowledge are untenable. Rather, according to Scott (1976), knowledge claims must be rhetorically established and negotiated, requiring a greater need for the appreciation of different ways of knowing as well as a responsibility to participate in the negotiation and repeated renewal of circumstances and norms under which knowledge is created. Accordingly, as Scott (1993) urged, "we must see truth as moments in human, creative processes, and we must see rhetoric as finding its being in those processes and those moments" (p. 133).

Indeed, inquiry into human processes and moments of knowledge creation, especially in research, including in the human, social, and natural sciences, has

become an important area of scholarly inquiry in rhetoric and writing studies, giving rise to a broad spectrum of research into the rhetorical construction of knowledge across the disciplines, whether that was the rhetoric of the natural sciences (e.g., Bazerman, 1988; Ceccarelli, 2004; Graves, 2005; Gross, 1990; Harris, 1997; Segal, 2005) or the social sciences and humanities (e.g., Bazerman, 1988; Brown, 1987; McCloskey, 1994). Importantly, as this work in the rhetoric of the disciplines has shown, rhetoric and writing are not merely complementary to, but constitutive of disciplinary knowledge production at all stages of inquiry regardless of the particular discipline. Accordingly, that constitutive role takes on many forms. It surfaces in the construction of knowledge claims, for example, in the form of complex social interactions involved in arguing for one of many possible interpretations of data generated by experiments or other forms of inquiry (e.g., Hyland, 2004, 2009; Myers, 1989). As well, as Bazerman (1988) demonstrated early on in his detailed historical analysis of the evolution of the scientific article in the *Philosophical Transactions of the Royal Society*, the very standards for how experiments are to be conducted, for example, and for what constitutes acceptable accounts of scientific investigations and knowledge claims were negotiated over time through writing.

These conceptual concerns about the rhetorical nature of knowledge production have infused the study and teaching of writing from the earliest days of process theory in the mid-1960s to the chapters in this book. Writing studies scholars have long sought to understand how the activity of writing is related to the production of new conceptions and perspectives: what can and cannot be known; how do we come to know; how do we decide on acceptable or less acceptable ways of knowing; what or whose knowledge is acceptable or not?

When contemporary researchers and teachers of writing first shifted their gaze from the written product to the writer's process, the heuristic power of writing seemed obvious: knowledge is not merely expressed in writing, it is created by writing. The very act of composing encourages and extends the possibilities for thought.

That understanding prompted calls in the 1970s for writing to be employed across the curriculum as a means to engage individual students in the intellectual work that writing promotes, and it led to writing-to-learn theories and pedagogies (e.g., Emig, 1977) and the writing across the curriculum movement (e.g., Gray & Myers, 1978). However, that attention to the full curriculum, combined with research into workplace writing, soon made two things abundantly clear: first, writing is deployed quite distinctly in different disciplines and organizations, and, second, knowledge production through writing is not the result of individual contributions, but, rather, a collective and ongoing effort made possible, in large part, by writing itself. Moreover, as research through

the 1980s revealed, the differences in writing from one group to another are in fact calculated and strategic adaptations in writing forms and practices that are designed to produce the sort of knowledge required by specific collectives. It is not just that biologists have a different vocabulary than economists or social workers or physicians, it is that each of these groups exploits the infinite malleability of language in order to generate and promote the knowledge and ways of knowing that advance their work.

Throughout the 1990s, equipped with this recognition of the socially and culturally situated nature of writing, writing studies researchers fanned out across various fields of human activity to document the ways in which texts and writing practices have been tailored to produce particular knowledges, the effects of that tailoring, the community-specific methods for introducing newcomers to textual practices, and the consequences for individuals and collectives of participation in those practices. Before considering these new explorations of the writing-knowledge link, it might help to review what we have learned from over four decades of writing studies research.

Rohman (1965), in the article usually credited with the first reference to writing as a "process," argued that writing preceded thinking and should not be confused with thought (p. 106). Nonetheless, process theories of composing that developed over the late 1960s and into the 1970s foregrounded the heuristic power of writing—that is, its ability to generate or "discover" ideas—and discounted the prevailing notion that writing expressed knowledge already formed in the mind. One of those theories—often referred to as "expressivism"—grew from pedagogical approaches that countered the earlier current-traditional focus on correctness and form. The chief proponents of this approach (e.g., Coles, 1978; Elbow, 1973, 1981; Macrorie, 1970; Murray, 1968 1980) situated the writer at the centre of the composing process and stressed the notion of "voice," generally conceived as the unique expression of an individual identity. Despite later critiques of the "authentic self" at the heart of expressivism (e.g., Faigley, 1992), the idea that the act of writing allows writers to make new meanings, to link previously separated concepts, and to know a topic in a different way has remained a central tenet of writing studies.

Writing and knowledge-making were also central in cognitive process theories of writing—theories that borrowed heavily from cognitive psychology for both research methodologies and theoretical antecedents. Cognitive theorists (e.g., Bereiter & Scardamalia, 1987; Flower & Hayes, 1981) offered a complex and dynamic picture of the individual's composing process—a picture that focussed mainly on the mental or intellectual steps that made text production possible. A central feature in cognitive models was what Flower and Hayes (1981) referred to as the "text produced so far," which served as a prompt for further idea generation.

As the writer produced ideas in language, those ideas in turn inspired new ideas. Later developments in research and theory led to a rejection of the cognitive model of composing—mainly on the grounds that it ignored context and posited a fixed, mechanistic view of human mental activity, but much of the empirical evidence from studies of this era is difficult to reject: the cyclical movement between mental representations in the mind and symbolic representations on the page is generative and clearly heuristic. Writers do not simply transcribe ideas; in their effort to make meaning, writers generate ideas, and they challenge, rethink, extend, and revise them. Writing leads to new and different knowledge.

The next breakthrough in our understanding of the relationship between writing and knowledge occurred when researchers began to recognize that individual mental and scribal activities are inseparable from—and, in fact, deeply shaped by—the social or cultural contexts within which writers work (e.g., Knoblauch, 1980; Selzer, 1983). In the same way in which the languages we acquire exist long before we are born, so do the discursive practices of the disciplinary, workplace, or civic settings long before people enter them. This expanded research focus in writing studies corresponded with the larger "discursive turn" in contemporary intellectual debate mentioned earlier: the contention that what we know about the world is the product of our signifying practices—our discourses—and that "reality" is a provisional truth constructed, temporarily maintained, and eventually changed by the dialectical action of rhetoric—that is, by the ongoing interactions between and among different perspectives and beliefs (e.g., Bazerman, 1981, 1988; Berlin, 1987, 2003; Faigley, 1992). This rhetorical dynamic, according to social (or social-epistemic) theories of the writing-knowledge relationship, is as true for aesthetics as for astrophysics. Within any field of human activity, the dominant beliefs, values, facts, and theories are held in place by a dialogue among members of the collective, and challenges to dominance are essential if new knowledge is to be made. Thus, collectives create communal discourse strategies designed to produce the rhetorical friction that makes new knowledge and new ways of knowing. As a result, we get parliaments, senates, law courts, medical rounds, newspaper editorials, public debates, scientific conferences, academic journals, and other forums for the exchange of views.

As noted above, a critical point in this conception of the writing-knowledge link is that these collective discourse strategies are culturally and socially situated—that is, they vary from location to location or from field to field in ways that are deliberately (though rarely self-consciously) designed to produce particular kinds of knowledge and, conversely, to prohibit or reduce the likelihood of other kinds of knowledge. So, for example, hearsay evidence is inadmissible in court; Robert's Rules govern what can be said, by whom, and when in governance forums; and scientific disciplines impose strict regulations on the nature

and provision of evidence. The rich body of research on workplace writing that began in the early 1980s (e.g., Bazerman & Paradis, 1991; Knoblauch, 1980; Odell & Goswami, 1982, 1985; Selzer, 1983; Smart, 2007; Spilka, 1993; Winsor, 1996, 2003; Zachry & Thralls, 2007;), as well as research on rhetoric in the disciplines, offers detailed reports of the complex ways in which organizations, disciplines, corporations, and other collectives develop, regulate, protect, and adjust discourse strategies to meet their knowledge ends.

One of the contemporary strands of writing studies that has been particularly concerned with the writing-knowledge connection is rhetorical genre studies (e.g., Artemeva & Freedman, 2006; Bawarshi & Reiff, 2010; Bazerman, 1988; Bazerman, Bonini, & Figueiredo, 2009; Bazerman & Russell, 2003; Coe, Lingard, & Teslenko, 2002; Devitt, 2004; Freedman & Medway, 1994; Miller, 1984; Schryer, 1993), which assumes that these repeated discourse strategies—or genres—maintain stability in the production of discourse and (thus) knowledge by typifying or standardizing key components of the rhetorical situation: the moments at which discourse is called for or elicited (the exigence, or need); the appropriate textual format and content for the response to each exigence; the roles and relationships played out by community members in the performance or enactment of the genre; and the consequences or outcomes of the genre. A discourse strategy that becomes a genre has been successful at reproducing the ways of knowing and the knowledge valued by the collective. As Giltrow (2002) has argued, such genres are sometimes explicitly controlled through what she calls "meta-genres," which are themselves discourse strategies that are manifest in such texts as guidelines, policy statements, style guides, and other regulatory texts. Meta-genres provide writers with "a kind of pre-emptive feedback, ... ruling out some kinds of expression, endorsing others" (p. 190).

Most significantly perhaps, this tradition of research has come to understand rhetoric and writing as a social practice—as constitutive of human activity and thus of the work, civic, and personal lives of people, as well as the educational, social, political and economic institutions of communities and societies. In *Writing Selves/Writing Societies,* the first book in this WAC Clearinghouse & Parlor Press series on Perspectives on Writing, Bazerman and Russell (2003), for example, bring together writing studies researchers whose work shows how writing organizes human activity and produces outcomes that are valued by institutions, organizations, disciplines, communities—whether they are educational or government institutions, health care providers, national banks, or community think-tanks. Continuing this line of inquiry, the chapters in this book draw particular attention to the role of writing as an epistemic practice in the production of these outcomes as well as in the production of knowledge as a particular kind of outcome itself. As such, they draw extensively on theories of genre (either implicitly or explicitly) as

a productive, constraining, constitutive, and regulatory force in human activity as demonstrated richly by the work gathered in *Genre in a Changing World* edited by Bazerman, Bonini, and Figueiredo (2009), the second book in the series.

Given these kinds of concerns at the centre of attention in genre studies, this strand of writing studies has also brought critical perspectives on discourse and knowledge production to the foreground. Although most genres are flexible—and necessarily so, if change is desired—the fact that it is possible to discern patterns in a collective's discourse strategies raises certain critical questions: What knowledge is afforded and constrained by a collective's discourse regulations? That is, what can and cannot be said and known? Who is allowed to or called on to speak, and who is not? How flexible are the conventions inscribed in genres, and who has licence to alter them? Does the knowledge afforded by a particular genre benefit some members of the collective over others? One collective over another?

Finally, recognizing that specialized discourse practices are rarely explicitly taught, writing studies researchers have a tradition of investigating the process whereby a collective's new members learn to participate in the community's knowledge-making activities (e.g., Berkenkotter, Huckin, & Ackerman, 1988; Casanave & Li, 2008; Dias, Freedman, Medway, & Paré, 1999; Dias & Paré, 2000; Freedman, 1987; McCarthy, 1987; Prior, 1998; Winsor, 1996). That work has demonstrated that discourse conventions are not merely etiquette; rather, they are deeply transformative for both individuals and collectives, influencing identity, epistemology, ideology, even ontology. In other words, participation in a community's knowledge-making practices does not just produce knowledge; it produces ways of knowing, ways of seeing, ways of believing, ways of being.

As the contributions to this book show, these multiple traditions of inquiry into the epistemic nature of rhetoric and writing are vital to helping us understand how knowledge is produced discursively; at the same time, the contributions to this book replenish these traditions by examining the new complexities, functions, and roles of rhetoric and writing in knowledge-intensive endeavors, as we illustrate in the following overview of the book.

CONCEPTUAL, METHODOLOGICAL, AND HISTORICAL PERSPECTIVES ON STUDYING WRITING AS AN EPISTEMIC PRACTICE

Grounded in these extensive traditions of inquiry, section 1 offers conceptual, methodological, and historical perspectives on the study of writing as an epistemic practice that inform or cut across many of the chapters in the book. In chapter 2, Catherine Schryer offers methodological considerations, arguing that

Rhetorical Genre Studies (RGS) offer an ideal approach to studying how writing produces knowledge because of how and where RGS locates itself theoretically and methodologically: first, it positions itself between texts and the worlds they construct, looking both ways, and seeks to understand how knowledge is produced through the operation of those texts in their worlds; second, it works at the borders of writing studies and the fields whose writing and knowledge-making practices it seeks to understand. Finally, Schryer argues that a variety of contemporary theories from linguistics, sociology, and psychology offer strong conceptual support to an RGS approach to the study of writing as knowledge work. In the next chapter, Janet Giltrow offers an extended example of the conceptual power of genre that Schryer (this volume) describes. By analyzing the rhetorical history of an 18th century trader for the Hudson's Bay Company, her study shows how genre knowledge and genre learning emerge through social interactions in the overlaps, or "interstices," as Schryer says, of "multiple scenes of activity," including—in Giltrow's study—science, travel, and trade. And as Giltrow notes, this versatility of genre—its local situatedness in multiple activities raises questions for the ways in which we understand the role of genre and genre knowledge in digital environments, especially for trends in the design of digital environments to focus on reproducing what are perceived to be standard features or conventions of genre. Extending Giltrow's considerations about writing and knowledge in digital environments, Charles Bazerman, in the next chapter, urges us to take a step back from immediate concerns over multimedia writing and persuasive screen design that have occupied the centre of attention in writing studies scholarship. Instead, he argues for a deeper look at how technologies affect human sociality—opportunities to connect in meaningful ways for deeper sharing of knowledge and deeper cooperation. Tracing the impact of digital technologies on various institutions of knowledge and cultural production, Bazerman warns that technologies tend to be first deployed by established social systems, which means that technologies tend to be designed to facilitate existing work that reproduces the economic interests of those systems and the social relations of power that maintain those interests. Much is at stake, Bazerman reminds us. In academic publishing, for example, the question is one of monopoly control by elites over often publicly funded knowledge versus the free flow of that knowledge "for the good of all."

WRITING AS KNOWLEDGE WORK IN PUBLIC AND PROFESSIONAL SETTINGS

Public access to knowledge, and, indeed, public participation in the production of knowledge that shapes consequential public decisions, is the subject of

more detailed attention in section 2, which examines the vital roles writing plays in the construction and shaping of knowledge in public and professional settings. In public life, writing studies research, continuing a 2,500-year tradition of inquiry into civic discourse, has continually shown the central role of writing and rhetoric in organizing and (re)producing the activities of communities, including the ways in which citizens develop the understanding and knowledge necessary to deliberate and make decisions about public life, the ways in which they claim their roles as participants, or the ways in which those roles are regulated and constrained. As the chapters in this section confirm, writing is vital to citizen participation in the shaping of public knowledge, in policy deliberation, and in public decision making with new exigencies and challenges arising in the contexts of environmental crisis (Wegner and Spoel), digital network technologies (Hart-Davidson and Grabill; Rife), and globalization (Rife).

The role of writing in the construction of public knowledge as motivated by environmental crisis is the focus of attention in chapters 5 and 6. In chapter 5, Philippa Spoel and Chantal Barriault analyze the rhetorical model of public engagement in the construction of risk knowledge deployed by a study assessing the environmental risks of mining-related soil contamination in a Northern Ontario community. Although the study is promoted by the Canadian government as a model for community involvement in the assessment of risks, Spoel and Barriault's insightful analysis reveals that the mining-company-funded study uses a model of public engagement that amounts largely to a well orchestrated public relations campaign designed to produce the assuring illusion of public participation in the construction of risk knowledge, while effectively limiting public participation through an information transfer model. In this model, for example, the public advisory committee is separate and subordinate to the technical committee, web sites—as Bazerman in this volume would predict—serve as one-way channels of information flow restricting public debate and participation, and open-house forums and their agendas are controlled by those in charge of the study. Ultimately, here, risk communication works to reinforce a hierarchy between "expert" and public knowledge, to ensure the credibility of the company as "open" to public participation, and to manage the public response, leaving little room for shared knowledge and decision making. By offering alternative models for public participation in the construction of environmental risk knowledge, Spoel and Barriault illustrate how vital an understanding of the epistemic nature of rhetoric and writing is for citizens to ensure their participation in the construction of knowledge, such as here about the risks posed by soil contamination for the public food supply, risks that affect them in most immediate ways.

The struggle of citizens to ensure their participation in public knowledge and decision making processes is also at the heart of Diana Wegner's chapter,

which analyzes the activist identity work an environmentalist group performs in order to ensure its participation in environmental decision making about development projects in a community in British Columbia. Specifically, Wegner examines the paradoxical situation of activist groups having to engage in and to some extent reproduce dominant discursive practices, in this case of the city government, while simultaneously engaging in the activist discursive practices that are vital to their transgressive identity. The chapter's detailed analysis of the discursive practices of the group provides nuanced testimony to the intricate relationships between discourse, identity, and knowledge, showing how identities are not only discursively produced and challenged, but also how discourses, e.g., that of the city government, inscribe a limited range of identities that allow for participation in public knowledge and decision making about the environment.

In chapter 7, Martine Courant Rife directs our attention to the role of writing in the production of legal knowledge for a judicial opinion that itself has wide-ranging implications for the degree to which the citizens of a country are able to share and draw on existing knowledge in their writing in order to build new knowledge. Drawing on the landmark Canadian Supreme Court case CCH Canadian Ltd. V. Law Society of Upper Canada (2004), Rife shows how writing works to shape knowledge used to inform the judicial opinion. Specifically, as Rife shows, Judge McLachlin's reliance on new forms of intertextuality and remixing of judicial opinions and laws in other international jurisdictions enables her to arrive at a judicial opinion that allows her to meet the needs of Canadian citizens for the sharing and fair dealing in knowledge and cultural production needed for innovation and new knowledge production, while setting a significant example for fair dealing in copyrighted work worldwide. Given its focus on copyright and fair dealing, however, the chapter shows not only how writing shapes legal knowledge, but also how legal writing, in this case, the judicial opinion, shapes the ability of millions of citizens to draw on existing knowledge in their writing to produce new knowledge.

In the last chapter in this section, Bill Hart-Davidson and Jeff Grabill offer this succinct summary of the book's and in particular this section's main thesis: "the activity of citizenship, as well as the activity of professionals working in organizational settings (including technical writers), is knowledge work that is either supported by writing or embodied as writing." To support that claim, they consider the knowledge/writing work done in a variety of different public and professional settings—settings shaped by or consisting of digital technologies—and raise critical issues about how writing researchers and teachers can support such work and facilitate the meaningful connections for knowledge work Bazerman calls for earlier in this volume. As they demonstrate, new tech-

nologies and new textual practices are changing the ways in which knowledge is produced, disseminated, and applied.

THE ROLE OF WRITING IN THE PRODUCTION OF KNOWLEDGE IN RESEARCH ENVIRONMENTS

Like public and professional environments, research environments "run on writing, in myriad, constantly-changing genres and media" (Bazerman & Russell, 2003). In academic contexts, disciplinary and interdisciplinary knowledge is created, shared, advanced, contested, revised, and recognized largely through writing. Not surprisingly, writing constitutes much of what researchers do, from the research funding proposals that make research possible in the first place to the peer-reviewed journal articles, book chapters, book reviews, conference presentations, books, peer-reviewer reports, and more that organize and produce the work of research and ensure its contribution to the larger collective ongoing knowledge-making endeavor. In the first chapter in this section, chapter 9, Heather Graves goes to the heart of the question around the rhetorical nature of scientific knowledge production, producing a detailed account of how rhetoric contributes to the construction of scientific facts. Drawing on examples from her studies of rhetoric in experimental and theoretical physics, Graves takes the question of rhetoric's role in scientific knowledge production a step beyond epistemological questions, arguing that rhetoric not only has an epistemic role, but indeed an ontological one. As her analysis of an experimental physics case shows, for example, the reshifting of an argument through the rhetorical figure of metonymy in ways that are acceptable to the physics community makes the difference between whether a claimed method for producing a particular silicon thin film is believed to exist or not.

The important role of social interaction in the construction of scientific knowledge illustrated in Heather Graves' chapter is the central focus of study in chapter 10. In this chapter, Ken Hyland draws on a corpus analysis of 240 published research papers from eight disciplines as well as on interviews with researchers from these disciplines to propose a taxonomy of strategies for social interaction in research papers. As Hyland's study shows, these strategies—ranging from writer's expressions of stance, such as hedges, boosters, attitude markers, and self-mention to expressions of reader engagement, such as reader mention, directives, or questions—have important epistemic functions as they help writers anticipate possible negative reactions or alternative interpretations of their knowledge claims and to build the social relations that make the negotiation and acceptance of knowledge claims possible. In Hyland's vivid words,

researchers "don't just produce texts that plausibly represent an external reality. They are not just talking about garlic proteins, stress fractures or brains in vats. Instead, they use language to acknowledge, construct and negotiate social relations." Perhaps most importantly, Hyland's study reveals that these strategies for social interaction are culturally constructed, varying across disciplines, with each discipline developing its own norms for what strategies of interaction are appropriate and credible.

One of the most critical tasks faced by all research communities is the socialization of newcomers to carry on and renew the community's knowledge-making endeavors, a process that involves the formation of subject positions or identities capable of participating in the rhetorical practices that sustain these knowledge-making endeavors—a task studied in chapter 11 by Paré and colleagues in the context of dissertation supervision sessions and in chapter 12 by Horne in the context of new members to a research community learning to participate in the discursive knowledge-making practices called inkshedding at the community's conference. Drawing on their analysis of dissertation supervision sessions, Paré, Starke-Meyerring, and McAlpine illustrate how supervisors attempt to locate and align students with the various competing factions of these communities along with their often conflicting epistemological, ontological, and ideological commitments and practices. However, as their analysis shows, much of the identity work during supervision sessions happens without attention to the rhetorical nature of this process, providing few opportunities for students to reflect on what kinds of researchers they are becoming, with what kind of ideological, epistemological, or ontological alignments. Describing a somewhat similarly arhetorical process of new member induction into the knowledge-making practices of a conference, Horne draws on her longitudinal study of the Inkshed community to account for the human experience of learning how to participate in disciplinary conversations whose norms and expectations have become normalized over a long time, but are the source of vulnerability, insecurity, and anxiety among newcomers. As Horne argues persuasively, "the institutional context that does not acknowledge these insecurities is sure to constrain the potential knowledge of its collective, for the link between writing and knowledge is not only theoretical, but also human."

THE TEACHING OF WRITING AS AN EPISTEMIC PRACTICE IN HIGHER EDUCATION

The integral role of rhetoric and writing in the production of knowledge-making practices, outcomes, and identities is not only instrumental to the re-

search function of universities, but also to the teaching of students as gradual participants in these knowledge-making practices. At the same time, the epistemic nature of rhetoric and writing—not only in research but also in civic and professional settings—also raises important questions for how writing might be taught in higher education. In chapter 13, Paul Rogers and Olivia Walling further expand our understanding of the deeply social nature of writing as knowledge work developed in the previous chapters by offering a historical and systemic perspective on writing as an epistemic practice. Drawing on a study of the complex interactions between scientists, government committees, and military officials in the development of French military weaponry in the late 18th century, Rogers and Walling illustrate the systemic role of writing in complex interacting activity systems. As they show, this role is facilitated by writing's ability to coordinate the relationships between people "doing different things" within and across communities, the constraints placed on writing by those communities, and the ambiguity of texts as representational systems, all of which render writing a technology that allows for and participates in the creation of complex systems of knowledge. Importantly, the authors show how their historical and systemic perspective allows them to draw conclusions for the teaching of writing, such as the need for specialized theoretical introductions to the study of discourse and writing as well as the need for embedding writing instruction in the systems of knowledge in which the students are to participate.

These recommendations generated by Rogers and Walling underlie many of the specific approaches to the teaching of writing in higher education developed in the remaining chapters in this section. Doug Brent, in chapter 14, for example, illustrates this systemic alignment of writing instruction in two important ways, first by joining many other writing studies scholars (e.g., McLeod, 2007; Russell, 2006; Walvoord, 1996) in integrating writing instruction, specifically Writing Across the Curriculum, into a system of larger reform movements in higher education designed to facilitate student roles as knowledge creators rather than only recipients, such as the Boyer report movement and in particular the First-Year-Experience or First-Year-Seminar movement. Brent's study shows how the integration of WAC into the first-year experience allowed students to develop a deeper understanding of the social nature of the knowledge work accomplished through writing, to explore existing work less to confirm their preconceived views and more to pursue genuine questions, and to tap more into the social system of knowledge production in the form of libraries, more frequent contact with faculty, and peer collaboration in knowledge production.

Similarly, Anne Parker and Amanda Goldrick-Jones in chapter 15 make the social nature of writing the central focus of their engineering communication

courses and illustrate how students in traditional as well as online teams work to produce a shared understanding of ethical interaction or a "code of ethics" that makes knowledge production in engineering possible. In effect, the students that Parker and Goldrick-Jones studied created a form of meta-genre (Giltrow, 2002) that governed their discourse and knowledge work. As Parker and Goldrick-Jones argue, the assignment they designed provided students "with a glimpse, at least, of what it's like to be part of an ethical 'community of practice'; that is, a group of people who both perform a function and learn together – thus understanding to some extent what it means to participate in a knowledge society."

Drawing on her longitudinal study of novices developing genre knowledge in engineering in university as well as in the workplace, Natasha Artemeva in chapter 16 illustrates persuasively that this genre knowledge—not unlike the genre knowledge of the 18th century Hudson Bay trader described earlier by Janet Giltrow—is composed of complex components learned in multiple activity systems and that the development of this genre knowledge is an ingrained part of students' careers. Importantly, as Rogers and Walling in this section suggest and as Artemeva's meticulous tracing of genre learning through a university-workplace trajectory is able to show, students are best able to begin working with the theoretical knowledge about writing provided in their engineering communication classroom once they have been introduced to the larger systems of knowledge production in engineering over the course of several years of engineering education, making perhaps the third year of engineering programs a particularly opportune time for the integration of engineering communication courses into the curriculum.

In the final chapter in this section, Heekyeong Lee and Mary Maguire remind us that questions of identity play an important role in the writing-knowledge equation not only in public settings (as articulated in this volume by Diana Wegner) or in research environments (as articulated by Paré and colleagues as well as Horne), but also in the teaching of writing in higher education. And, as they show, ignoring these questions comes at a high cost to students. Here students from South Korea study in Canadian universities, where dominant discursive practices inscribe identities that may be at odds with those embraced by the students. The personal literacy narratives of two students presented in this chapter illustrate that students understand quite well who they are being asked to be in their writing, but not why, let alone what options they have to negotiate the identities inscribed in the academic discourse they encounter, leading to feelings of alienation and exclusion. Their stories are a compelling argument about the cost of leaving students to struggle with these identity questions, leading the authors to urge a critical approach to the teaching of writing

and language in higher education that explores the links between questions of power, dominance, identity, and alignment in academic discourse and empowers students with diverse identities to "write with authority."

ARTICULATING AND IMPLEMENTING RHETORIC AND WRITING AS A KNOWLEDGE-MAKING PRACTICE IN HIGHER EDUCATION

As the contributions to this volume illustrate, the link between writing and knowledge is a deep and intricate one: indeed, writing is knowledge work—writing and knowledge form an "as" rather than an "and" relationship, rendering writing a vital means of production in knowledge-intensive societies, with high-stakes consequences not only for the direct economic concerns, such as corporate client base or profits, identified by Brandt (2005), but also for the extent to which citizens shape and participate in democratic processes of environmental risk assessment and decision making, the ways in which law shapes the extent to which citizens can engage in the sharing and creation of new knowledge, the ways in which scientific knowledge claims are created and contested or accepted, the kinds of researchers that emerge from doctoral education programs, the extent to which new researchers as well as students are able to participate in and contribute to collective knowledge-making endeavors in academe, public settings, as well as the workplace, and much more.

As societies—citizens, governments, businesses, professionals, and many others—increasingly sense these high-stakes roles of writing in the production and sharing of knowledge, they naturally turn to education and specifically higher education as the institution charged with original knowledge production and the education of knowledge workers and civic leaders. Unfortunately, although writing is a vital part of the epistemological infrastructure of knowledge-intensive societies, the study and teaching of writing are often still absent from university programs in many countries, receive little systematic research-based attention in university or national policy planning, or lack institutional conditions that would allow for the development of vital research capacity in writing studies. Not surprisingly, therefore—and in many ways typical of emerging disciplines, rhetoric and writing studies teachers, scholars, and program directors spend much of their time articulating the role of writing in knowledge production, the insights the discipline of writing studies has produced into how discourse and writing work and how writing is learned, and what roles rhetoric and writing play in the life of higher education institutions themselves. In short, they become change agents (McLeod, 2007; Russell, 2006).

The contributions to this final section, therefore, illustrate and examine some of that vital work involved in articulating and implementing writing as a knowledge-making practice in higher education, for example, in program and curricular development or in the creation of institutional space for critical, research-based attention to writing. In chapter 18, Roger Graves presents a self-study of a program administrator working to articulate the role of his writing studies program to various constituents to secure positions and funds that allow the program to grow, to involve students, and to create institutional and curricular space for the new program.

In the next chapter, Tania Smith offers a case study of ways in which scholarship in rhetoric and writing can inform the work of institutions beyond individual programs. Her case study shows how the genre of a town hall forum served as a boundary event to bridge the deepening divides among faculty, students, and administrators, resulting in new courses, a community service learning initiative, a peer-mentoring initiative, and a part-time senior administrative position to continue the work of bridging administrative and student communities and of involving students as co-producers of institutional knowledge for curricular decision making. Situating the event in higher education reform movements, such as those inspired by the Boyer Commission Report and the Wingspread Statement on Student Civic Engagement, Smith illustrates how scholarship in rhetoric and writing, with its long tradition of studying civic discourse, can inform democratic deliberation and decision making in institutions of higher education, making these institutions working examples of the kind of student participation in knowledge production and civic engagement envisioned by these reform movements.

Margaret Procter, in chapter 20, advances a longitudinal case study of her home institution, the University of Toronto, as what she calls "a kind of display cabinet for structural and theoretical issues likely to be shared by other writing centres in Canada." However, without doubt, the issues will be familiar to anyone working in writing studies anywhere. Chief among those issues, and a source of great frustration to many in university writing centres, is the challenge of convincing administrators and colleagues in other disciplines to base their decision making on research illustrating the central role writing plays in knowledge-making in all disciplines. Procter's case study provides heartening evidence that concerted efforts by writing centre staff can help establish the importance of writing instruction and can even secure long-term and well remunerated positions for writing teachers, but she acknowledges that she and her colleagues have not yet achieved recognition as knowledge-makers themselves, and so are not expected to engage in the research needed to advance the field.

Together, the contributions to this book paint a compelling and nuanced picture of the diverse roles writing plays in knowledge-intensives societies, the exigencies that arise for writing in knowledge-intensive societies, and the ways in which rhetoric and writing work to produce, share, question, marginalize, or advance knowledge in civic, workplace, and institutional spaces. Drawing on diverse theoretical traditions, the chapters also offer important insights into the ways in which we conceptualize the epistemic nature of writing and the implications these have for the study and teaching of writing. What unites the work presented in this book is the recognition that what knowledge is, what counts as knowledge, how we arrive at knowledge, who gets to participate in the production and sharing of knowledge are questions negotiated rhetorically by local communities, institutions, disciplines, or other groups engaged in the production of knowledge.

Most importantly, perhaps, what cuts across all chapters is the realization that in knowledge-intensive societies, we mark an historical moment in the development of writing studies as a discipline dedicated to the study of human thought and knowledge: It is an historical moment in which much depends on the ways in which the discipline finds its curricular and research space in institutions tasked with the production of knowledge. As the contributions to this book testify, we have arrived at a stage in human development where we can no longer afford to produce knowledge without a discipline that offers the research base and theory to allow for rigorous critiques of how our discursive knowledge-making practices enable and constrain what we can and cannot know.

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