

Chapter 21. Following Rhetorical Innovators: Why Were They Writing That Way?

Shaping Written Knowledge revealed some outlines of change in scientific writing and had started to identify how individual choices influenced emergent textual patterns and social communicative systems. The book also gave evidence of how the emerging genres and systems influenced the behaviors of individuals, but variously in different fields and at different moments, filtered through individual perceptions. One prominent piece, however, remained missing: how and why the modern system of text reference and citation arose.

Additionally, through writing the book I had become intrigued with innovative individuals whose writing did not quite fit within the genre expectations of their time, yet who often influenced both the content of the science and the ways scientists would later come to write. Because forms of writing embodied ways of thinking and acting, the development of these innovators' understanding of writing could be revealing for the implicit assumptions of those who later followed their lead, as I had seen in the case of Newton. I came to think of these unusual scientific writers as strategic research sites because they could make visible tensions, processes, and dynamics that might later become hidden, submerged in taken-for-granted practices. Their innovations suggested a felt need to produce atypical texts arising from alternative visions of the possibilities of knowledge.

Finally, I wanted to begin specializing in a narrower domain of science, so I could follow the scientific developments along with the players, the social networks, and communicative systems in the field. As I surveyed the various fields of physics with which I was most familiar, electricity seemed a good bet. Electricity had a long history, explored since the ancient world and emerging as an increasingly important area from the eighteenth century until today. Yet initially only static charges and lightning were noted in nature and they were considered distinct phenomena, having little to do with each other. What we commonly recognize as electricity in the modern world is literally a generated phenomenon, visible through human agency by means of humanly constructed devices. Further, our knowledge of electricity grew in relation to human devices and applications. That knowledge in turn allowed us to produce more devices and more uses, and is the basis for the electronic revolution of recent decades. What we have come to know of electricity is because humans have made it, relying on our growing collection of representations through scientific publications, engineering designs, and financial systems. That is, we didn't come to know electricity until we could produce it and then come to know and report in our scientific publications what nature would actually do when we twisted its tail. We couldn't make nature do

things it wouldn't do, but we could make it do many things that would not happen without our intervention.¹¹

These three motives came together in my next project.

Joseph Priestley and Referencing the Literature

As I started to look into the history of electricity, I came across mention of Joseph Priestley's *History and Present State of Electricity*, first published in 1769. This book was the first work in English that resembled a review of prior research, though a few years earlier a shorter, less detailed list of previous work had appeared in German. Priestley's book seemed a rather odd work including, in addition to a discussion of prior findings and theories, a section on history of electrical machines and devices, a discussion of how to recruit neophytes into the field, a list of electrical parlor tricks and diversions, a series of open research questions, and narratives of Priestley's own experiments and inquiries. This apparent miscellany under one set of covers led me to wonder what he could have been thinking in putting such an odd-seeming collection together and what that might have to do with his comprehensive discussion of all the prior literature. In order to pursue the logic of this collection, I returned to a mode of inquiry I had adopted in my unpublished study of Nabokov (see Chapter 17) in interpreting a later work on the basis of the concerns developed in the corpus of earlier work.

Earlier in his career, Priestley had lectured on rhetoric and published a *Course of Lectures on Oratory and Criticism*, so I suspected he would be reflective and intentional about his writing. His lectures on oratory relied on an associationist psychology which included experience of the world as an essential component. It was no surprise, therefore, that he would put a lot of weight on increasing material experience and empirical inquiry. To understand his vision as a writer I found I needed to enter into his wide-ranging millenarian enlightenment vision revealed in his many books on many subjects.

The more I found out about Priestley— as a radical defender of liberty who migrated to the early United States, as a dissenting Protestant preacher, as an educator and head of a dissenting academy, as an historian who reputedly invented the timeline, and as author of many publications on many topics—the more curious I became about his ideas about writing. He saw that the improvement of life depended on our listening to the collective wisdom of mankind. He believed that scientists needed to aggregate and make sense of all the prior work including the material conditions under which the work was produced (thus the concern for electrical devices) in order to know where to take up and how to carry on the work. His attentiveness to prior literature and the historical emergence of

11. The imprecise attribution of twisting the tail of nature to Francis Bacon, nonetheless captures his gist (Merchant, 2006).

knowledge through communal practice, implicitly brought into science his social millenarian vision of improving the world through collective endeavor. He consequently recommended that science should be written as transparent discovery accounts, including all decisions, wrong turns, and failures—in order to make one's work and reasoning available to others who would continue investigations. The field also needed to recruit new investigators and educate them, as well as to gain the support of broader publics to be made aware of the phenomena, even if only through parlor tricks. By tracing through Priestley's expanding vision of the social world and the role of communication in it, I came to appreciate the sophisticated rhetorical thought expressed in his scientific work, far beyond what he had presented in his early lectures on oratory. This placing of his later work within his emerging thinking throughout his career also made more evident to me that a writer's rhetorical project, rhetorical understanding, and specific rhetorical designs developed within the writer's changing understanding of the world and society (Bazerman, 1991c).

Von Guericke's World

Priestley's decisions as a writer showed me that reconstructing innovative writers' developing perceptions of the social and material worlds they were writing in can provide a way to analyze the social and epistemological consequences for those who adopted their innovations. These stories of the development of writers' consciousness revealed how rhetoric was closely tied to evolving visions of the world. This is an issue I pursued in my next project on electricity examining a seventeenth-century German Catholic scientist.

All my studies to this point had been about writing within the main line of modern science, particularly within the British Protestant tradition. All the writers I had studied, no matter how idiosyncratic, spoke within and to this tradition. But I was curious what empirical investigation might look like and mean if it were pursued within a different tradition and a different form of consciousness. This curiosity led me to the electrical discoveries of Otto von Guericke, who is credited (within that mainline tradition) as having discovered electrical repulsion. But was that how he saw his work? He was working during almost the exact same years as the founding of the Royal Society and its journal, but he was part of the Continental Catholic intellectual tradition which had different assumptions, including that the divine still actively intervened in the world, so that the age of miracles was still with us. Von Guericke's purposes, his role as a knower, the genres in which he presented his discoveries, the social networks he distributed them in, the meaning and interpretation of what he found, and the social value of the discoveries differed greatly from those of his British contemporaries. As I documented in my study (Bazerman, 1993e), he as a *magus* was demonstrating his powerful knowledge of the inner secrets of the universe, establishing his authority as a political and social leader.

Thinking myself back into van Guericke's mental frame drew on my experiences in historical literary studies that had attuned me to other cultural worlds, as it was so different from the scientific world view I was familiar with. Dealing with von Guericke's Latin text was also a challenge until I discovered by tremendous luck the manuscript of an unpublished translation in an archive I had been using, the Burndy Library. As far as I know this was the only extant copy of the only translation. In this, as in some other studies, the archivists and librarians of collections I worked in were of tremendous help. Asking the right questions of the right persons to find out where to look at the right moment is a kind of hidden writing skill that I continue to work on. Then, once I had all the archival pieces in place, I had to narratively represent this unfamiliar ideological life world, just as I had learned to characterize the imaginative worlds of poets like Wordsworth and Milton.

Two Other Innovative Writers

My planned next step for a book on the textual emergence of electricity was going to be a chapter on Edison, who brought electricity into everyday life through material production. In the next chapter I will describe what happened to that project once I started to look into the Edison archives. In the meantime, other opportunities allowed me to continue examining questions of writing innovation.

A conference on the rhetoric of economics in 1991 gave me the opportunity to look at a contemporary of Priestley who had an equally broad intellectual scope. Ever since I had learned that Adam Smith, now viewed as the founder of scientific economics, had published a rhetoric early in his career I was curious about a potential connection with his *Wealth of Nations*. He was a puzzling figure to many because of the contrast between his *Theory of Moral Sentiments* and the seemingly antithetical *Wealth of Nations*, which was his next and final work. As I looked into all his writings across his whole career, however, I concluded he was engaged in a rhetorical project and vision that extended far beyond the economy or even moral philosophy. He was concerned with how social order was possible in a post-hierarchical, post-monarchical, post-religious world; he saw the problem largely as one of social communication.

Smith's *Theory of Moral Sentiments*, as with the theories of the other Scottish moralists, asked us to see ourselves as other might see us (as Robert Burns memorably put it), if they knew the situation as well as we did—and acted accordingly. He saw this refined self-knowledge, however, available only to those who had the education and leisure to do so. He understood, moreover, people were constrained by their interests and class experiences, as well as an impulse to admire those they considered more elevated than themselves—that is, the nobility, the wealthy, and the powerful. He also saw people driven by anxieties and uncertainties, seeking certitudes of unifying beliefs. Thus, his vision of

human betterment called for means to coordinate among people of different interests, desires, perceptions, and ideologies. Seeing economic exchange as a common means to coordinate among others, he argued in *The Wealth of Nations* for government policies that would facilitate markets (while still constraining the rent holders or capitalists, whose interests did not coincide with society as a whole). Long before Smith had gotten to these two books at the end of his career, however, he had pondered the psychological and communicative bases of social order in his works on rhetoric, the history of science, the nature of invention to improve life, the role of philosophers as inventors, and jurisprudence to ameliorate relations among people.

As I entered more deeply into Smith's texts, starting with some of his earliest, which were as explicitly rhetorically reflective as Priestley's, I was even more challenged in laying out the parameters of his copious mind and his understanding of the communicative universe. I had to explain an unfolding coherence in his views, which he himself was concerned with, along with how he saw this coherence contributing to the betterment of society. To be explicit, Priestley Smith's changing views of society and the social order went hand-in-hand with his changing views of how he could best intervene as a thinker and writer. These views were both explicitly elaborated in his texts and implicitly changed his views of the social world he was communicating in—thus transforming his rhetorical strategies to communicate with and contribute to that social world. His evolving understanding of the social world drove his rhetorical innovations. With both Priestley and Smith, I wound up telling a different kind of story than was typical: a phenomenological reconstruction of how the authors saw the societies they lived in, their roles in it, and how they framed their rhetorical projects to speak to that perceived social world (1993g).

Through writing about the unusual figures of Newton, Priestley, and Smith, I was developing a way of telling the story of their growth of consciousness that drove and shaped their writings. I also came to see writing innovation as a deep-seated response to perceived rhetorical problems, seeing communicative situations and tasks in new ways that called forth new communicative solutions. These solutions were grounded in the genres of their time, but they also transformed, hybridized, and re-created those genres to offer new knowledge, relations, and activities. As I reconstructed their evolving phenomenological, action, and writing universes, my own perceptions of the possibilities of writing expanded, although I did not buy into all their views nor did I accept their formal innovations as absolute. Yet I came to appreciate the wisdom in their quests and visions of the world, along with the logic of their rhetorical engagement with knowledge and their audiences. Recognizing how much their evolving rhetoric was grounded in and a response to their vision of what could be accomplished by the written word encouraged me to take further risks in my writing to follow what my evolving research and theory was telling me about how writing could act in the world.

Another opportunity to examine an unusual text came about when Jack Selzer organized a casebook of different analyses of a single unusual article by Stephen Jay Gould and Richard Lewontin that used ideas from the humanities, social sciences, and life sciences to challenge foundational assumptions of evolutionary biology. Selzer wanted the casebook to demonstrate what different kinds of rhetorical analyses could reveal about scientific texts. My contribution analyzed intertextuality, as Gould and Lewontin's article cited an historically deep, interdisciplinary range of sources. I examined all the works cited in the article I could obtain (38 of the 41—including all in English and German), and compared my reading of those texts with how Gould and Lewontin represented them. I also examined the full symposium in which this paper appeared as a challenge to the other papers. I then traced the controversies of the symposium back to some earlier publications in order to understand the rhetorical context of the controversy over the proper approach to evolution.

From the citations and the papers surrounding the article in the symposium, I could see how Gould and Lewontin constructed the literature for the article and how they positioned their argument within that literature. This was not a study of the development of the writer's rhetorical understanding and rhetorical strategies, but only a snapshot of one aspect of rhetorical strategy at one moment to carry the controversy forward, although the article had intertextual backward glances—we might say framed cameos of earlier literature placed in the background of the snapshot, including cameos of the authors' own prior works. I was well practiced in the kinds of textual analysis here, and my analysis largely followed the pattern of following the article sequentially with a focus on the feature of interest to me—in this case the articles cited—as I had initially learned in my undergraduate explications. Even the organizational novelty of breaking up the sequence with some interludes considering contextual issues goes back as well to what I had learned as an undergraduate. There was a lot of information to juggle and keep track of, but I had also done that in a number of my prior projects, and I had developed methods both of record keeping and of mental organization.

The double interpretation of the original articles and then how they were represented in the Gould and Lewontin article added a challenging wrinkle, as I had to form my understanding of these texts independent of Gould and Lewontin's presentation of them, even though I was a disciplinary outsider to the fields of most of the articles. I then used that independent reading to see how Gould and Lewontin were using the literature. While trying to understand technical articles presented some challenges (which required that I read further into those fields and the context of their work), the biggest challenge was getting access to some of the more obscure publications. The most striking thing I learned was the degree of flexibility writers had in constructing the intertext to set the stage for the current argument. While previously implicit in my writing-from-sources pedagogy and explicit in my study of Priestley, this study put in high relief the idea that the meaning of the previous literature was always being renegotiated as the

knowledge of the field moved forward, offering new perspectives and posing new intellectual challenges. This study, moreover, raised the question of what might be the boundaries of accurate and ethical representations of prior work even as earlier work is always open to reinterpretation (Bazerman, 1993f).



Figure 21.1. *Innovative Writers from Early Science— Isaac Newton, Joseph Priestly, Adam Smith, Otto van Guericke.* Photos in the public domain.

The Influence of Location on Writing

I should note that I shifted institutional locations twice in the early 1990s, to the Georgia Institute of Technology in 1990 and then the University of California Santa Barbara in 1994, where I have remained. These moves were motivated by my wife's and my search for positions that would better support our work and held promise of more compatible programs. Dual career moves are often complicated, as ours was, but it had a happy ending. The main consequence for my writing

was increased time for research and international travel. The new positions also increased expectations and rewards for publication, though by this point I hardly lacked for motivation. The other consequence was the intellectual influences and opportunities available at each campus. Georgia Tech supported some of my continuing interests in science and technology studies and introduced me to newer technologies and collaborative technology projects. At UCSB I found a strong interdisciplinary group in interactional sociology which taught me much about method and theory along with some other colleagues interested in the sociology of culture. Then when I was able to move my position from English to Education at the end of the 1990s, I found myself happily within an applied social science department closer to my academic interests, intellectual culture, and practical engagement with students and pedagogy.



Figure 21.2. University of California Santa Barbara, where I worked from 1994-2022.
Daily Nexus file photo.