

Reading Science: Critical and Functional Perspectives on Discourses of Science,

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Reading Science: Critical and Functional Perspectives on Discourses of Science, Martin, J. R., and Robert Veel, eds., Routledge, London, 1998, 368 pages.

This twelve-chapter book on scientific discourse is based on an invitational workshop in July 1994 when Charles Bazerman and Jay Lemke were visiting Michael Halliday, J. R. Martin, and their colleagues at the University of Sydney in Australia. It is billed as a recontextualization of Halliday and Martin's functional linguistic perspective with respect to the work in rhetoric and critical theory. I was disappointed to find that Halliday dominates the discussion and there is relatively little intellectual cross-fertilization from Bazerman and Lemke; whereas all but one of the authors (Cranny-Francis) refer to Halliday, only about half refer to each of Bazerman or Lemke. In fact, this oneness is seen even among the "big three," for Halliday does not refer to Bazerman and Bazerman does not refer to Lemke.

Although this book should be of interest to anyone interested in scientific discourse, its greatest strength and its greatest weakness is the fact that it is submerged in the work of Halliday. Like its companion volume, *Writing Science: Literacy and Discursive Power* (1993), it is a "must read" for anyone whose language training is based on the functional linguistics work of Halliday and Martin, for this is an excellent and rich extension of the Hallidayan analyses to a wide range of scientific discourses (including the language of school textbooks, popularizations, science fiction, and the language of technology and industry) and represents the perspectives of a variety of authors. However, for a reader with a more mainstream training in linguistics, such as myself, the idiosyncratic and sometimes inconsistent use of standard technical terms like grammar, metaphor, and semantics can become a serious obstruction and source of frustration.

Since most readers are familiar with the work of the "big guns," I will begin, rather, with the eight chapters by less well-known scholars of the Australian community.

All of them are valuable in their own right, but their relevance to *Technostyle* readers varies. Probably the least relevant would be P. Wignell's examination of the discourse of social sciences, which concludes, not surprisingly, that it is a synthesis of the discourses of the humanities and science; C. Matthiessen's exploration of how the construction of "mind" in mainstream cognitive science derives from our everyday folk model of people sensing; and F. Christie's analysis of primary school texts. More interesting, though still somewhat peripheral for technical communication, are the two chapters that use the perspective of critical theory. G. Fuller offers a close examination of Stephen Jay Gould's "Life's Little Joke" and argues that in popularizing science, Gould does not make science more accessible to the general reader, but rather translates science into another special discourse, that of the liberal humanities, so that the domination of science is replaced by the domination of the liberal humanities. A. Cranny-Francis discusses the evolution of science fiction with reference to the social context in which it was produced and argues that by fetishizing science and technology, science fiction shows that the nature of a society is a function of its industry.

Probably more central to the interests of *Technostyle* readers will be the three chapters that focus more directly on the discourses of science. First, D. Rose's very interesting chapter, "Science Discourse and Industrial Hierarchy" traces the increasing abstraction of events and subjectivity as one moves up the scientific/industrial hierarchy from the simple commands of workplace procedures through the various levels of Australian industrial/scientific education, to the specialist discourses at the post-graduate level. Then, P. White, focusing on terminology, examines the differences between technological and scientific lexicons, particularly with respect to their taxonomic organization of knowledge in his "Extended Reality, Proto-nouns and the Vernacular: Distinguishing the Technological from the Scientific." Finally, R. Veel, the co-editor of the volume, in "The Greening of School Science: Ecogenesis in Secondary Classrooms" argues that the language of environmentalism is different from the language of traditional science because it combines the linguistic resources of traditional science with the humanities-style rhetoric and visual images to construe new meanings. Although I was glad to see that he stresses that the linguistic elements of environmentalism are the same as those of other academic disciplines, I was troubled by his suggestion that environmentalism uses visuals in a different way than do other disciplines and I found it confusing to lump together as "linguistic building blocks" the to my mind disparate "genre of report," "cause and effect," and "lengthy nominal groups."

And now we can turn to the “big guns.” Charles Bazerman, in “Emerging Perspectives on the Many Dimensions of Scientific Discourse,” argues, not surprisingly, for a genre approach to scientific discourse because it allows a synthesis of social and textual concerns. Most of this chapter is taken up with a critical review of what he considers key contributions to the study of the language of science—the work of Latour (*Science in Action*, 1987), which he calls “power semantics”; Myers (*Writing Biology*, 1990), which he calls “cooperative pragmatics of intellectual agonism”; Halliday and Martin (*Writing Science*, 1993), which he calls “grammatical semantics”; and his own research, which “cuts across these other three lines of work” (p. 23). Whereas Halliday and Martin focus on the text, Latour and Myers are more concerned with “things that happen beyond the edge of the paper.” Jay Lemke’s chapter, “Multiplying Meaning: Visual and Verbal Semiotics in Scientific Text,” analyzes how verbal text and mathematical and visual-graphical media interact in scientific discourse. For advocates of the Hallidayan model, this provides an interesting application to the analysis of multimedia texts. For readers who are not familiar with the literature on graphics, it can serve as an excellent introduction, but for those who do know the more recent literature on graphics in technical communication, such as Kress and van Leeuwen (1996), Schriver (1997), and Kostelnick and Roberts (1998), there is little that is new.

The central chapter of the volume is, of course, Halliday’s “Things and Relations: Regrammaticising Experience as Technical Knowledge,” which takes off from the issues raised in *Writing Science* (1993). Ostensibly his big question in these 50 pages is “How does the language of science reconstrue human experience?” However, the most specific focus is on how nominalizations function in scientific texts to enhance the fuller use of the theme (theme/rheme) and information (given/new) systems. He shows how in scientific discourse something will first be presented in clausal form and then when this something is brought into the discourse again, it will be nominalized. He also notes that in scientific discourse the nominal groups allow for a very high density of lexical matter. In more traditional linguistic terminology, this is the same as saying that NP’s allow multiple embeddings, something that is learned in the first few lessons of syntax. Then, to identify the different kinds of metaphorical shift that take place, he analyses 13 types of “grammatical metaphor” he has found in scientific discourse. While his observations about science discourse are both interesting and correct, a number of problems do come to mind. First, the linguistic features that he says are characteristic of scientific discourse are simply the general language resources of English and so certainly don’t define or distinguish scientific discourse. In fact, they are also characteristic of academic discourses generally and of the non-academic discourses of advanced writers. Second, are his observations equally

applicable to all scientific disciplines and to all types of science discourses (journal articles as well as proposals as well as textbooks)? Third, it would be useful to know what specific types of scientific discourse he has examined. For example, when he claims that constructing a scientific theory is an “exercise in lexico-grammar,” how does he account for the place of mathematics in the construction of many important scientific theories?

Martin’s contribution is the introductory chapter, which notes that the four themes of the book are recontextualization, semogenesis, intertextuality, and hegemony. Of these, I would like to focus on the final one, simply because I find his references to it particularly troubling. How are we to construe claims such as “technological control of the environment lies at the heart of capitalism” (p. 11). Why capitalism? Are we to believe that capitalism has some sort of monopoly on technological control of the environment? This makes me think about the new dams in China and what the U.S.S.R. did to the Aral Sea. Similarly: “Challenging the power of science discourse is tantamount to challenging the distribution of economic and governmental power in the society as a whole, so woven is it into the fabric of western hegemony” (p. 11). One wonders whether it is also tantamount to challenging the distribution of governmental power in communist and other “non-western” regimes. If so, then I wish he had deleted “western.”

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