

**THE DISCOURSE COMMUNITY IN
SCIENTIFIC AND TECHNICAL
COMMUNICATION: INSTITUTIONAL
AND SOCIAL VIEWS**

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ABSTRACT

Theoretical studies in scientific and technical communication have begun to explore what they call *discourse communities* in the sciences and engineering on grounds that these communities provide the norms and practices for communication in these fields. The theoretical literature on which these studies are based develops two views of what a discourse community might be, an institutional and a social view. The first of these views has been the more influential, but both views may and should be brought to the study and the pedagogy of scientific and technical communication.

Theoretical studies in scientific and technical communication in the past few years have begun to explore the social contexts of communication in the sciences and engineering on grounds that these social contexts provide the norms and the methods and the conventions for communication in these fields [1-5]. These studies are indebted to earlier studies that distinguish the epistemic or disciplinary context of science from the organizational or managerial context of engineering and other technologies [6-10]. They are also indebted to a large body of work in composition research, literary theory, and the sociology of knowledge that establishes the locus of communication in various disciplines and organizations within the *discourse community* (some of this work is surveyed in [1-5]). These two debts come together on common ground, for the theoretical studies to which I refer identify the discourse communities of scientists and engineers with their disciplinary and organizational contexts, respectively, and seek to provide detailed accounts of communication practices within these contexts [1-5].

In this article, I want to offer a characterization of both this institutional (disciplinary or organizational) view of the discourse community and an alternative social view, which I suggest may also be fruitful for the study and the pedagogy of scientific and technical communication. In particular, I want to probe the theoretical underpinnings of the concept of the discourse community as it appears in the work of a figure who has been among the most influential in scientific and technical communication, Stanley Fish [11, 12; cited in 1, 3, 4], and in the equally important but less influential philosophical tradition that derives from Richard Rorty [13, 14] and his critics [15-17]. Fish, I shall argue, provides a theoretical construct that identifies the discourse community with a particular institution, which is both disciplinary and organizational, and with the expertise embodied within that institution. Rorty and his critics, in contrast, provide a theoretical framework that identifies the discourse community with the larger social community and that calls into question traditional notions of expertise associated with particular institutions. I shall argue that both of these views may be fruitful for the study and the pedagogy of scientific and technical communication.

THE INTERPRETIVE COMMUNITY OF STANLEY FISH

In his influential book, *Is There a Text in This Class?*, Fish develops a theoretical construct that accounts, so he claims, for the assumptions and norms that both permit and constrain literary interpretation [11]. This theoretical construct identifies the discourse community - Fish's *interpretive community* - with a particular institution, the institution of literary study, and with the expertise embodied therein. It thus ~~establishes the interpretive community, rather than the literary text, as the locus of authority in literary interpretation.~~

The Interpretive Community as a Disciplinary Community

The interpretive community as Fish describes it is both a disciplinary and an organizational community. It is a disciplinary community in the sense that it provides "the rules of the game" for both interpretation and communication in literary study [11, p. 358]. The interpretive community is the structure of assumptions and norms and practices that govern literary interpretation [11, pp. 317-318]. It is a structure of assumptions and norms "understood to be relevant in relation to purposes and goals that are already in place" [11, pp. 317-318]. This latter stipulation is important, for it insures that any utterance, literary or otherwise, will be immediately heard from the perspective of a "shared basis of agreement" which is "never not already found" [11, pp. 317-318].

The alternative point of view, which places the locus of authority in the literary text, assumes a distance between hearing and understanding an utterance, "a kind of dead space when one has only the words and then faces the task of

construing them" [11, pp. 317-318]. The structure of assumptions and norms that is the interpretive community insures, to the contrary, that any utterance will be immediately heard from the perspective of those assumptions and norms, rather than norms mistakenly assumed to be embedded within the utterance, or the literary text, itself.

The interpretive community also governs communication in literary study. If, as Fish argues, an utterance is always immediately heard from the perspective of the assumptions and norms of the interpretive community, then communication in literary study must always be persuasive rather than demonstrative. Such communication is persuasive because "prejudicial or perspectival perception is all there is," and, given "a number of equally interested perspectives," the purpose of communication must be to "try to persuade others to our beliefs" so that "they will, as a consequence of those beliefs, see what we see" and so constitute a text in the same way that we do [11, pp. 365-366]. Such communication cannot be demonstrative because demonstration assumes, mistakenly, that we can be purged of our prejudices and perspectives "so as to see clearly a text that is independent of them," which it is not [11, pp. 365-366]. Insofar as it is identical to the structure of assumptions and norms that govern interpretation and communication in literary study, ~~the interpretive community is a disciplinary community.~~

The Interpretive Community as an Organizational Community

The interpretive community is also an organizational community in the sense that it governs practice, not, however, the practice of literary interpretation but the common practices of the particular organizational units that constitute the community. The notion of the interpretive community has no consequences for the practice of literary interpretation, Fish argues, because one has no choice except to function within the structure of assumptions and norms that he has described. One cannot "be forever analyzing beliefs, without ever being committed to any," and to be committed to any beliefs is to function within the structure of assumptions and norms from which that belief derives [11, p. 370]. But the notion of the interpretive community does have consequences for the common practices of the organizations that constitute the community because it addresses basic issues of concern to the community as a discipline, issues such as the status of the text, the source of interpretive authority, and the like [11, pp. 370-371]. As a result, the notion of the interpretive community earns its proponent a hearing and candidacy for "the profession's highest rewards" [11, pp. 370-371], just as theory generally earns its proponents publications, promotions, and all of the other rewards (and abuses) that the community, as an organization, bestows upon its members [12, p. 125]. However, the notion of the interpretive community apparently has no consequences for practical life beyond or outside the institution of literary study, construed as either a disciplinary or an organizational community.

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read

The Locus of Authority in the Interpretive Community

By identifying the interpretive community with the institution of literary study in both its disciplinary and its organizational senses, Fish also, though implicitly, identifies it with the expertise of members of that community. The title of his book illustrates the shift in the locus of authority in literary interpretation from the text to the interpretive community. The title, *Is There a Text in This Class?*, is drawn from an anecdote about a student who asked the question of a professor (Fish's colleague) [11, p. 305]. The professor's reply—"Yes, there is a text in this class; what's more, it has meanings; and I am going to tell you what they are"—illustrates the traditional reliance upon the authority of the text and of the literary critic as the interpreter of that text [11, p. 371]. Fish does not say what his own reply might have been, but it would probably be something like the following: "Yes, there is a text in this class; what's more, it has meanings; and I am going to tell you the rules of the game by which you may create those meanings and try to persuade others to see them as you do." This reply (illustrated in Fish's own practice [11, pp. 322-327]), suggests that the institution of literary study retains possession of expertise in literary interpretation, even as the locus of authority shifts from the literary text to the interpretive community.

THE INSTITUTIONAL COMMUNITY IN SCIENTIFIC AND TECHNICAL COMMUNICATION

Based upon the work of Fish and related work in composition research, literary theory, and the sociology of science, several recent studies in scientific and technical communication have begun to explore the social contexts of communication in the sciences and engineering [1-5]. These studies identify the discourse community with particular institutions, either disciplinary or organizational or both, and they show how these institutions govern practice, including communication practices, and provide the locus of authority in these fields.

Miller and Selzer, for example, seek to explain "how working engineers and managers employ the conventions of identifiable discourse communities when they write reports, proposals, and other on-the-job documents" [1, pp. 310-311]. They explain these conventions by way of their analysis of three "special topics," or sources of argument and persuasiveness, in engineering reports: genre-specific, institution-specific, and discipline-specific topics [1, pp. 311-316]. Similarly, Paradis, Dobrin, and Miller seek to discover what motivates research and development employees in a particular organization to write and edit their internal documents and how their work environment influences them to do so [2, p. 281]. They emphasize the importance of "a larger social process," that is, the disciplinary and organizational processes, by which scientists and engineers

"create and maintain significant professional relationships with colleagues" and by which they "fit themselves into the work community" [2, pp. 281-282, 299-300].

Other recent studies provide more general characterizations of discourse communities in the sciences and engineering and show how these communities govern practice and provide the locus of authority in these fields. Drawing upon work in literary theory primarily, Samuels identifies "collaborative learning, organizational behavior, and corporate mythology" as elements of "the communities of discourse and of inquiry in . . . educational and professional institutions" [3, p. 64]. Drawing upon work in linguistics and composition research, Freed and Broadhead show how discourse communities generate the institutional norms that govern practice, including communication practices [4]. These institutional norms "govern rhetorical decisions designed to make a text adhere to accepted practices within a company, profession, discipline, or the like" [4, pp. 156-157]. Finally, reviewing work in the sociology of science, Lipson places the locus of authority in the "strong professions," such as science and law, within the professional community and identifies as the most important feature of the community its "autonomy in determining who can practice and what the requirements, standards, and conditions for practice are" [5, pp. 8-15].

CONVERSATION IN THE PHILOSOPHY OF RICHARD RORTY

In contrast to Fish, Rorty and his critics provide a theoretical framework that identifies the discourse community with the larger social community and that questions the traditional notion of expertise associated with institutions. The discipline of philosophy in particular. Rorty's view of philosophy calls into question the epistemology and the notion of expertise upheld within traditional philosophy and sets in their place his concept of conversation as the social practice of discoursing and knowing in an interdisciplinary context in which philosophers function not as privileged experts but as ordinary participants.

Critics of Rorty's view of philosophy as conversation object that his view does not take adequate account of the program of social reconstruction that is prominent in his sources, most notably John Dewey. Considered as a whole, the philosophical tradition that derives from Rorty (and ultimately from Dewey) provides a theoretical framework that identifies the discourse community with the larger social community between and beyond particular institutions and that renders its members ordinary participants.

Rorty and the Deconstruction of Philosophy

In his book *Philosophy and the Mirror of Nature*, Rorty seeks to deconstruct traditional epistemology and traditional notions of expertise and set in their place his view of philosophy as conversation [13]. Specifically, he seeks to

deconstruct philosophy's traditional theory of representation and its claim to privileged representations. According to Rorty, traditional philosophy holds that the mind is able to accurately represent, or "mirror," what is outside it and that philosophy's central concern is to understand how the mind is able to construct such representations and so to understand the possibility and nature of knowledge itself [13, pp. 3, 12-13]. Because it claims this special understanding of the mind and of the nature of knowledge, philosophy as a discipline possesses "privileged representations" and so is "foundational" with respect to the rest of culture, for "culture is the assemblage of claims to knowledge, and philosophy adjudicates such claims" [13, pp. 3, 170]. Rorty deconstructs traditional notions of the mind and of knowledge and the privileged representations claimed by traditional philosophy and suggests an alternative "epistemological behaviorism" that explains knowledge "by reference to what society lets us say" and "what it is good for us to believe" [13, pp. 174-176].

In place of traditional philosophy, Rorty offers his concept of conversation, which he explains behavioristically as the social practice of discoursing and knowing in an interdisciplinary context in which philosophers function not as privileged experts but as ordinary participants. As the social practice of discoursing and knowing, conversation is the social discourse that justifies or validates knowledge. Conversation is "the social justification of belief," the "justifying and being able to justify what one says" [13, pp. 170, 389-390]. It is the bond that unites the various discourses that occur between and beyond disciplines, and as such it is "the ultimate context within which knowledge is to be understood" [13, pp. 317-318, 389-390].

This social practice of conversation Rorty places within an interdisciplinary context between and beyond disciplines. Borrowing the language of Thomas S. Kuhn's *The Structure of Scientific Revolutions*, he distinguishes between normal science and normal discourse, which occurs within a "disciplinary matrix," and revolutionary science and abnormal discourse, which occurs outside a disciplinary matrix, between disciplines or at the boundaries where disciplines "blur and shift" and form themselves anew [13, pp. 317-318, 322-333, 392]. In this latter interdisciplinary (and even extradisciplinary) context, conversation is not epistemological but hermeneutic. Epistemology views participants as "united by mutual interests in achieving a common end" [13, pp. 317-318]. Hermeneutics, in contrast, views participants as "persons whose paths through life have fallen together, united by civility rather than by a common goal, much less by a common ground" [13, pp. 317-318].

In this interdisciplinary context of conversation, philosophers necessarily function not as privileged experts but as ordinary participants. In this context, the purpose of philosophy can no longer be to provide "foundations" for the rest of culture but can only be "to keep the conversation going" because "the hope of agreement is never lost so long as the conversation lasts" [13, pp. 317-318, 377-378, 393-394]. In the context of traditional epistemology, the

philosopher is a privileged expert, "the cultural overseer who knows everyone's common ground" [13, pp. 317-318]. In the context of conversation, the philosopher is "the informed dilettante, the polypragmatic, Socratic intermediary between various discourses," the kibitzer, the ordinary participant whose primary purpose is to keep the conversation going [13, pp. 317-318, 392-393].

Rorty's Critics and Social Reconstruction

Rorty's critics object to his statement of philosophy's purpose because it does not appear to take adequate account of the program of social reconstruction prominent in his sources. In his more recent book, *Consequences of Pragmatism*, Rorty emphasizes his debt to pragmatism and to Dewey in particular [14, especially pp. 160-166]. But Rorty's critics, even when they applaud his deconstruction of traditional philosophy, nonetheless object that he does not recognize the task of social reconstruction that pragmatism, and Dewey in particular, leaves for philosophy after the deconstruction [15-17].

Bernstein argues, for example, that Rorty leaves unanswered several of Dewey's questions: "What are the social practices to which we should appeal? How do we discriminate the better from the worse? Which ones need to be discarded, criticized and reconstructed" [15, pp. 767-769]. Campbell similarly points to Dewey's call for "criticism and evaluation to reconstruct our intellectual and social structures," for "a method, cultivated by philosophers, for dealing with the problems of men," and for "social action directed at attempts to ameliorate critical social ills" [16, p. 176]. Finally, in *The Necessity of Pragmatism*, Sleeper objects to Rorty's "insouciant reductionism" and applauds Dewey's attempt "to transform the culture that is decaying around us" [17, p. 1].

These critics suggest the need to set Rorty's concept of conversation the social practice of discoursing and knowing in an interdisciplinary context within a still larger social context. Nonetheless, they do not vitiate Rorty's suggestion that even (and especially) within this larger social context philosophers are no longer privileged experts, but ordinary participants. Considered as a whole, this philosophical tradition provides a theoretical framework that identifies the discourse community with the larger social community within which philosophers are (merely) ordinary participants in a conversation.

THE SOCIAL COMMUNITY IN SCIENTIFIC AND TECHNICAL COMMUNICATION

A few studies in scientific and technical communication, most of them from the field of speech communication, explore the problems inherent in communication in the sciences and engineering within the larger interdisciplinary and social context identified by Rorty and his critics. These studies suggest the difficulty of building and maintaining a discourse community, of keeping the conversation going, across the boundaries that separate particular institutions,

whether disciplinary or organizational, both from each other and from the public. They also point to the (perceived) loss of expertise that, apparently inevitably, accompanies a departure from one's own disciplinary or organizational community.

Lyne and Howe illustrate the problem of communication across the boundaries that separate disciplines from each other and from the public and the loss of expertise that accompanies departure from one's own community [18]. They show how the paleontologist Stephen Jay Gould rejected Darwinian evolutionary theory in favor of his own theory of "punctuated equilibria" as an explanation of the gap in the fossil record and how, in turn, biologists rejected Gould because he was unfamiliar, so they claimed, with the relevant literature and standard definitions in biology [18, pp. 133-140]. They also show how Gould was subsequently appropriated by scientific creationists who found in his rejection of Darwinian evolutionary theory support for their own theories [18, pp. 140-141]. They conclude that "distinct fields of discourse complicate communication *within* the sciences" and that expertise depends not only upon "a scientific writer's position within a field of knowledge" but also upon readers' "different interpretive frameworks" [18, p. 133].

Other studies suggest the difficulty of keeping the conversation going across the boundaries that separate organizations. For example, I note elsewhere the problem of communication across the boundaries that separate organizations from each other [19]. I point out that, in the debate between the government and the automotive industry on the issue of benzene and other emissions from gasoline marketing operations, the two parties disagree in their interpretation of the scientific data base and do not even agree that there is a problem [19, p. 38]. Farrell and Goodnight illustrate the problem of communication across the boundary that separates organizations from the public [20]. They cite the failure of technical reasoning and technical communication between experts and the public in the aftermath of the accident at Three Mile Island, and they attribute this failure to a lack of actual consensus within the technical community: "The insulated terminology, limited inference structures, sanitized language, and complicated divisions of status and authority within the nuclear power community worked at cross purposes with the perceived need to make timely, clear statements guiding public action" [20, pp. 295-296].

CONCLUSION

Studies in scientific and technical communication that identify the discourse community with particular institutions, either disciplinary or organizational, suggest the utility of studying, and teaching, the assumptions, norms, and practices, including the communication practices, of these institutions. For example, researchers in scientific and technical communication might study established principles of readability such as the use of headings or topic sentences as they apply to scientific journal articles, and they might study variations and

deviations from these principles such as the omission of headings and other formatting devices in a journal such as *Physical Review Letters*. On the basis of such research, teachers will need to decide whether to introduce their students to the established principles or the variations and deviations or both, and they will need to decide what advice to give their students with respect to these principles and these practices. Researchers might also study more substantive aspects of scientific journal articles such as the criteria or standards of evaluation that apply to different kinds of research. They might note, for example, that major research such as the recent report on a supposed fifth force in physics (a force that counteracts gravity) upholds both explicit criteria such as the sensitivity of an experiment or its statistical consistency with other experiments and implicit criteria such as the application of the experiment to a question of immense importance in physics [21]. Teachers will need to introduce their students to both these explicit and implicit criteria.

In contrast, studies in scientific and technical communication that identify the discourse community with the larger interdisciplinary and social community suggest the need to study, and teach, modes of communication that cut across the boundaries that separate disciplines and organizations from each other and from the public. For example, researchers might study the organizational or social criteria that apply to research when it is reported in an applied research journal or in a proposal to the National Science Foundation. They might note the importance of cost or performance criteria in a report on possible aerodynamic applications of the principle of the fifth force in an applied research journal or the emphasis on utility or safety criteria in an NSF proposal. Further, they might note in either instance the blurring and shifting of the discipline of physics into newer disciplines such as science and technology policy studies or decision sciences and the spilling over of all of these disciplines into the social community if and when criteria such as performance or safety become public issues. Again, teachers will need to introduce their students to all of these disciplinary and interdisciplinary and extradisciplinary concerns.

Studies such as these, both actual and potential, suggest the need to teach students not only to communicate within the context of several discourse communities but also, and especially, to develop the ability to step outside the boundaries of particular discourse communities and to participate in conversations with others on problems of mutual interest and concern. The communication problems that I reviewed in the previous section suggest a need, in some measure, for the educational and professional experience that prepares scientists and engineers to think and to communicate within the context of some institutional community but that renders them at best uneasy and at worst helpless and confused when they step, as they must, outside that community. For this reason, I suggest that both institutional and social views of the discourse community may and should be brought to the study and the pedagogy of scientific and technical communication.

REFERENCES

1. C. R. Miller and J. Selzer, Special Topics of Argument in Engineering Reports, in *Writing in Nonacademic Settings*, L. Odell and D. Goswami (eds.), Perspectives in Writing Research, Guilford Press, New York, pp. 309-341, 1985.
2. J. Paradis, D. Dobrin, and R. Miller, Writing at Exxon ITD: Notes on the Writing Environment of an R&D Organization, in *Writing in Nonacademic Settings*, L. Odell and D. Goswami (eds.), Perspectives in Writing Research, Guilford Press, New York, pp. 281-307, 1985.
3. R. C. Freed and G. J. Broadhead, Discourse Communities, Sacred Texts, and Institutional Norms, *College Composition and Communication*, 38, pp. 154-165, 1987.
4. M. S. Samuels, Is Technical Communication "Literature"? Current Writing Scholarship and Vico's Cycles of Knowledge, *Iowa State Journal of Business and Technical Communication*, 1:1, pp. 48-67, 1987.
5. C. Lipson, A Social View of Technical Writing, *Iowa State Journal of Business and Technical Communication*, 2:1, pp. 7-20, 1988.
6. C. R. Miller, Technology as a Form of Consciousness: A Study of Contemporary Ethos, *Central States Speech Journal*, 29, pp. 228-236, 1978.
7. ———, A Humanistic Rationale for Technical Writing, *College English*, 40, pp. 610-617, 1979.
8. C. Bazerman, What Written Knowledge Does: Three Examples of Academic Discourse, *Philosophy of the Social Sciences*, 11, pp. 361-387, 1981.
9. ———, Scientific Writing as a Social Act: A Review of the Literature of the Sociology of Science, in *New Essays in Technical and Scientific Communication: Research, Theory, Practice*, P. V. Anderson, C. J. Brockmann, and C. R. Miller (eds.), Baywood's Technical Communications Series, 2, Baywood Publishing Company, Inc., Farmingdale, pp. 156-184, 1983.
10. D. N. Dobrin, What's Technical about Technical Writing?, in *New Essays in Technical and Scientific Communication: Research, Theory, Practice*, P. V. Anderson, R. J. Brockmann, and C. R. Miller (eds.), Baywood's Technical Communications Series, 2, Baywood Publishing Company, Inc., Farmingdale, pp. 227-250, 1983.
11. S. Fish, *Is There a Text in This Class? The Authority of Interpretive Communities*, Harvard University Press, Cambridge, 1980.
12. ———, Consequences, in *Against Theory: Literary Studies and the New Pragmatism*, W. J. T. Mitchell (ed.), University of Chicago Press, Chicago, pp. 106-131, 1985.
13. R. Rorty, *Philosophy and the Mirror of Nature*, Princeton University Press, Princeton, 1979.
14. ———, Pragmatism, Relativism, and Irrationalism, in *Consequences of Pragmatism: (Essays: 1972-1980)*, University of Minnesota Press, Minneapolis, pp. 160-175, 1982.
15. R. J. Bernstein, Philosophy in the Conversation of Mankind, *Review of Metaphysics*, 33, pp. 745-775, 1980.
16. J. Campbell, Rorty's Use of Dewey, *Southern Journal of Philosophy*, 22, pp. 175-187, 1984.
17. R. W. Sleeper, *The Necessity of Pragmatism: John Dewey's Conception of Philosophy*, Yale University Press, New Haven, 1986.
18. J. Lyne and H. F. Howe, "Punctuated Equilibria": Rhetorical Dynamics of a Scientific Controversy, *Quarterly Journal of Speech*, 72, pp. 132-147, 1986.
19. J. P. Zappen, Rhetoric and Technical Communication: An Argument for Historical and Political Pluralism, *Iowa State Journal of Business and Technical Communication*, 1:2, pp. 29-44, 1987.
20. T. B. Farrell and G. T. Goodnight, Accidental Rhetoric: The Root Metaphors of Three Mile Island, *Communication Monographs*, 48, pp. 271-300, 1981.
21. P. E. Boynton, D. Crosby, P. Ekstrom, and A. Szumilo, Search for an Intermediate-Range Composition-Dependent Force, *Physical Review Letters*, 59, pp. 1385-1389, 1987.

Other Articles On Communication By This Author

- Historical Studies in the Rhetoric of Science and Technology, *Technical Writing Teacher*, 14, pp. 285-298, 1987.
- Rhetoric and Technical Communication: An Argument for Historical and Political Pluralism, *Iowa State Journal of Business and Technical Communication*, 1:2, pp. 29-44, 1987.
- A Rhetoric for Research in Sciences and Technologies, in *New Essays in Technical and Scientific Communication: Research, Theory, Practice*, P. V. Anderson, R. J. Brockmann, and C. R. Miller (eds.), Baywood's Technical Communications Series, 2, Baywood Publishing Company, Inc., Farmingdale, pp. 123-138, 1983.

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