DICTA, DESCRIPTION, AND DIALECTIC: MAKING SENSE OF TECHNICAL WRITING RESEARCH

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This article takes a reflective look at research in technical communication. The project is a daunting one because research in technical writing has proliferated so greatly within the last few years. Even the best summative report we have, Michael Moran and Debra Journet's sourcebook *Research in Technical Communication*, fails to cover the field in several important respects. My intention is not to cover research, but rather to tentatively explore a more basic question: What is scholarship in technical communication and how does this scholarship constitute research?

In many ways, I find it easier to try to characterize the nature of research in a field that is less familiar to me than technical communication. For instance, I can state with confidence that research in the sciences takes two forms: basic research which investigates underlying principles which comprise the knowledge base in a field, and applied research which investigates the application of these principles to practical problems. The problem of "making sense" of this research, though requiring considerable field-specific expertise, is simplified because a standard exists for evaluating the validity of the research: the scientific method. Of course, Thomas Kuhn's work has suggested that communal norms as well as adherence to the method determine the acceptability of scientific research, yet application of standard method is still undisputed as a criterion of validity.

Most of the scholarship that has added to our knowledge of technical writing does not follow a standard methodological approach that a community of researchers has agreed is valid. In fact, much of what constitutes the "knowledge base" in our field can be defined, in Stephen North's terms, as "lore"--the intuitive beliefs of practitioners, that is, teachers of technical writing and technical writers.

In the next few pages, I wish to make a tentative characterization of varieties of scholarship which contribute to knowledge in our field. My investigation suggests that part of our business as scholars and teachers of technical writing should be self-reflective study of both our research and our practice so that we might better understand how they inform one another.

The motivation to make language work in technical settings shapes inquiry in our field to various degrees, resulting in three reporting strategies which I have called dicta, description and dialectic. Each of these strategies contributes to our understanding of technical communication, but scholars' failure to acknowledge that they each have different functions can invalidate research in our field. Let me share some examples of each strategy in its acceptable form, and then explore a few of what I believe to be inappropriate applications.

Dicta

Dicta are those publications which declare rules and standards of correct behavior. Scholars and teachers who write dicta tell us not what technical writing is in practice, but rather what it should be. These declarations are not based upon any empirical study of the effects of technical communication in certain settings; rather they are reflections of what their devotees believe to be community decorum. The best of the dicta are unabashedly aphoristic and nostalgic, the worst strain to appear objective and are oppressively pedantic.

There are two pieces which I regard among the "best" dicta. The first is W. Earl Britton's classic "What Is Technical Writing? A Redefinition." In this work, originally published in *College Composition and Communication* in 1965, Britton declared with panache that the difference between technical writing and literary communication is definite and indisputable:

> Technical and scientific writing can be likened to a bugle call, imaginative literature to a symphony. The bugle call conveys a precise message: get up, come to mess, retire. And all for whom it is blown derive identical meanings. It can mean only what was intended. But a symphony, whatever the intention of the composer, will mean different things to different listeners, at different times, and especially as directed by different conductors. A precise meaning is essential and indispensable in a bugle call; it is not necessarily even desirable in a symphony. (12)

Britton's declaration cleared the air, took a stand, and asked the community to rally behind a claim it can call its own: Technical writing has one meaning; now let us go and teach that.

Britton's definition of technical writing has since been evaluated as a mistaken observation of the way language works. Carolyn Miller and others have rejected this "windowpane" theory of language and reality, questioning the belief that the world is directly observable and that language can

represent it unambiguously. A succession of scholars since Miller have "adjusted" Britton's claim. Carol Lipson and Marilyn Samuels, for instance, argue that the meaning of technical discourse is socially constructed and community specific: technical language can have different meanings in different contexts; meaning is dependent upon a view of reality both proposed in the written text and shared by its readers. But these critiques aside, we can admire Britton because he succeeded in doing what he set out to do: declare a standard that guides social practice; the execution of that standard in prose or its assured reception are immaterial. Britton's article, like the technical discourse he describes, is a "bugle call." The bugle call aims to raise the army; it makes no claim to interfering with their digestion, ending pleasant dreams, encouraging hopes, or inspiring depression, though all these may be meanings the bugle call conveys. The bugle call is a call to rise, no more.

Britton himself cites the simplicity of his argument as its greatest virtue:

> Objection may be raised to this distinction between the two kinds of writing because it makes for such large and broad divisions. This I readily admit, at the same time that I hold this feature to be a decided advantage, in that it removes the difficulty that usually arises when technical writing is defined by its subject matter.
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> Emphasis upon engineering subject matter in technical writing, for example, has implied that engineering has a monopoly on the form, and that a PhD dissertation in linguistics or even certain kinds of literary criticism and a study of federal economic policy are other kinds of writing. . . . [B]ut all will have in common the essential effort to limit the reader to one interpretation.
>
> It seems to me that this view not only illuminates the nature of technical writing but also emphasizes the kind of training required of our schools. (12-13)

Here Britton makes his aims perfectly clear; he is establishing dicta that we can follow in our teaching in an orderly and coherent way. His purpose is to display an unambiguous perspective.

Walter James Miller's elegant piece "What Can the Technical Writer of the Past Teach the Technical Writer of Today?" is another successful example of scholarly dicta. Miller demonstrates through example that technical writing is better if it conveys the author's personal engagement with the subject matter, revealing the man (or woman) behind the

communication. In quoting selections from the writing of twelve "technical professionals" from Vitruvius, the Roman architect, to Arthur E. Raymond, the Vice-President of Douglas Aircraft, Miller argues that along with logical form, organization, and scientific approach, personal commitment is a tradition in technical communication that writers and teachers ought to promote:

> I think the classics are reminders that even technical writing can be energetic, rhythmical, metaphoric without departing from scientific validity. This is important in a day when technical writing has lost so much of the art of connotation which in good writing must reinforce the science of denotation. . . .
>
> No one who has ever dipped into the classics of technical writing can have much patience with [the claim that technical writing is impersonal]. And anyone who swears by this impersonal approach has voluntarily converted himself into a timid, inhibited, colorless hack, and has resigned from the human race. I should say, in my opinion he has resigned from the human race. But didn't you know it was my opinion? (215-216)

Like Britton, Miller advocates a personal perspective on the aims of technical communication. Both of these teachers deliver dicta with grace and style, never suggesting that they reflect meticulous study of the discourse, or conclusions inductively derived, but rather pointing to standards that comprise the professional ethos of those who practice and teach technical communication. Lesser examples of this genre attempt to substantiate dicta on invalid grounds. Two unfortunate examples, in my view, are John Walter's "Technical Writing: Species or Genus," published in 1977, and Mary Fran Buehler's "Rules That Shape the Technical Message," which appeared in 1986. Walter's piece is displeasing because it presents dicta disguised as empirical research, while Buehler's piece offends because it makes a specious claim to logic.

Walter opens his article saying that he will "try to explain" why he "thinks" technical writing is a "species" rather than a "genus" of writing. His thoughts are reflections upon research he conducted in 1953 with Gordon Mills where they identified "technical writing as having five characteristics" (243). The research cited consists of an analysis of writing samples from three hundred industries and government agencies. The article says nothing about how these data were collected or what procedures were employed to assure some consistency of analysis that would allow fruitful comparisons. Walter does, however, make brief mention of his original technical report on this research, which the reader must trust provided this information.

In an effort to demonstrate that technical writing persuades through accurate reporting of fact rather than through rhetorical strategies, Walter claims that the writing he studied contained:

> . . . a high frequency of occurrence of certain rhetorical modes: definition, description of both processes and of mechanisms, and analysis of data, including classification, partition, and interpretation. We found little or no narration, no dialogue as I remember, and little argumentation in the usual sense, although almost every factual presentation was intended to persuade its readers that the facts presented were reliable. (244)

This claim appears to be backed by research, but no measurable data are presented to support the conclusions drawn. Walter treads on even shakier ground when he claims:

> We found no documents in which an author simply presented his thoughts and speculations on a subject; if an author's 'thoughts' were presented, they were judgments based on facts derived from his work or the work of others. (245)

The truth claims implicit in this statement are clearly misplaced. The statement is an example of what Susan Wells has called "derationalized discourse." Such discourse makes an argument based upon unexplained terms presumed by the author to be rationally defined. Walter leaves unexamined the question of what kinds of discourse he or others might agree constitute a "presentation of 'thoughts'" or "facts" or "judgments," terms with meanings he accepts as stable and which other scholars certainly have variously defined.

Following the summary of research, Walter goes on to claim that he believes his results still hold true today. Dropping this topic, he then introduces four "fundamental elements," not investigated by his previous research, that "it seems" to him "tend to differentiate technical writing from other types of exposition" (247). The odd juxtaposition of research with conjecture here seems particularly strange given Walter's approving assertion about the absence of opinion from argument in technical discourse. The disjunction of "fact" and "opinion" detracts from a piece which otherwise readers would be prepared to accept as dicta, pure and simple.

Buehler's "Rules That Shape the Technical Message" presents three categories of rules that she claims are characteristic of technical communication: fidelity, completeness, and conciseness. Lest she be accused

of failing to follow the "completeness" rule she advocates, Buehler offers the following justification for her limited study:

> It is beyond the scope of this article to explore the complicated interweaving of rules in technical communication, the hierarchies of rules, and their sources of authority. Instead, I have emphasized what I believe to be characteristic rules of technical communication: the rules of fidelity, completeness, and conciseness, which can be traced to positions set forth by Francis Bacon and the Royal Society of London. (130)

The caveat is sensible and responsibly acknowledges the limited source of authority for her claims. However, she chooses to gird the claims by borrowing the misplaced authority of formal logic. This results in some fairly ridiculous rule statements, which are not only logically indefensible, but also terminologically vacuous. For example, here is Buehler's fidelity rule:

> If we wish to communicate technical information truthfully,
> then our message should be faithful to our observed or conceived reality. (131)

The statements express a tautology. The former statement is not a condition of the latter claim. Furthermore, the statements assume the community's agreement about what constitutes truth or reality, and with that assumption in question, the rule is virtually meaningless.

Dicta, I believe, contribute to the knowledge we share in our field when they convey specific information about values a community advocates and when they lay no claim to derivation from scientific study or formal logic. By themselves, dicta display very little of the motivations and assumptions that underlie technical communication, but without knowledge of them, writers attempting to enter the discourse field would be much at sea. Dicta chart a course for a safe landing in certain ports.

Description

Description reveals what patterns characterize a variety of discourse as it is practiced, whether these patterns are admired or shunned by practitioners. Description helps us understand the components of technical communication and how they function. By and large, the best descriptions are those which make claims within the limits of the research method they employ. But some descriptions, validated by no accepted research method, are valuable simply because of the questions they raise. I will cite here

representatives of two varieties of this genre frequently addressed in the literature: textually-based description and context-oriented description.

Textually-based description of technical communication has often coincided with prescription. Given the generally pragmatic goal of most research in technical communication to improve the effectiveness of this discourse in the workplace and its teaching in the classroom, the marriage of description and prescription is not surprising. The best examples of technical description to date define a workable relationship between its primary goal to describe and a secondary goal to suggest applications for practice. Among the researchers who have achieved this goal are Robert de Beaugrande, Michael Jordan, and Michael Hoey.

In a study of information structure in technical communication, de Beaugrande demonstrates how "[g]rammatical features guide the sorting of information in various ways" (326). Through numerous analyses of the information structure of technical texts, he shows the manipulation of information structure to correspond with audience concerns. De Beaugrande concludes that the information structure of technical texts can indeed be described and that descriptions of the structure of successful texts can be object lessons for the classroom.

Jordan has described how associated nominals achieve coherence in technical discourse and has suggested how to teach students to re-enter nominals in their discourse; the re-entry technique maximizes coherence while satisfying demand for "'color and variety'" ("Some Associated Nominals", 261). Both Jordan and Michael Hoey have produced excellent textual grammars of technical communication based on a theory of clause relations. Hoey's *On the Surface of Discourse* is a clear-headed exposition of clause relations and how they are signalled; it demonstrates macro discourse patterns such as problem-solution, matching relations, and general-to-particular patterns. Jordan's *Rhetoric of Everyday English Texts* invites students to examine the functional metastructure of numerous prose texts, thereby developing analytic reading skills that may help them write prose which conveys information more directly and clearly. Both of these researchers have asserted the success or failure of technical texts based upon linguistic features which they believe to convey rhetorical function in the context where the writing is presented. Scholars who doubt that textual structure alone influences comprehensibility and interpretation may disagree with this approach. However, it is difficult to dispute that such functional descriptions are contributing considerably to our knowledge of linguistic conventions for rhetorical function. And prescriptive measures based upon careful observation of successful texts are defensible on these grounds.

Like textual descriptions, the best available context-oriented descriptions most often have a dual function: they supply valuable data on the ways technical discourse relates to its environment and they articulate research methods for exploring that relationship. A study by Lee Odell, Dixie Goswami, and Anne Herrington, for instance, demonstrates a research technique to disclose the tacit information writers employ when composing to different audiences and at the same time reveals the character of information so gathered. The research technique, called the "discourse-based interview," involves presenting a writer with a text which he or she has written, focussing on a particular linguistic expression (for denying a request, for instance) and asking the author whether he or she would accept another expression in its place or choose to delete the expression altogether. Substitute expressions are derived from other texts the subject has written and thus represent alternatives this writer might have chosen. The author's responses to these queries reveal explicit correspondences between linguistic choice and contextual factors.

In an ethnographic study of writing in fifteen Minnesota corporations, Robert Brown and Carl Herndl have established a way to investigate patterned behavior among writers in industrial settings. Focussing on writers' use of superfluous nominalization, they interviewed workers and managers in two corporations with "different management styles and products" (14) to determine the setting for this linguistic behavior. From interviews with managers and writers in their respective groups, the researchers identified eight "central peers," people who are recognized as good writers, and twenty-six "other guys," people good at their jobs who are not the best writers. They analyzed at least four pages of writing from each subject and determined that the "central peers" used fewer superfluous nominalizations than other writers. Furthermore, they examined the interview data to determine if another variable might be correlated with this feature and discovered that superfluous nominalization also related to job insecurity, or more specifically, with projected change in a job, whether "imminent or recent, real or imagined, dreaded or eagerly anticipated" (17).

In another ethnographic study, Greg Myers examined successive drafts of two biologists' proposals to funding agencies (NIH and NSF), including drafts responding to comments of reviewers. His research method involved comparing changes in the drafts and categorizing them "by what seemed to motivate them and not[ing] especially those that seemed to indicate the writer's self-presentation or relation to the research community" (221). Repeated readings and categorizations provided an internal check of his review procedure. Myers' analysis of this documentation revealed that the

"proposal-writing process shapes both the writers and, to a lesser degree, the discipline" (237). Both writers, through employing different tactics, worked hard to relate their research to the "consensus in the field" (234).

Some researchers who have investigated the relationship between text and context have taken a phenomenological approach, relying on holistic observation of specific situations. Janice Redish, for instance, characterizes the influence of a government bureaucracy on linguistic choice based upon her extensive experience in consulting with government. Redish's judgments are valuable starting points for empirical investigation of bureaucratic writing. She suggests that eight factors contribute to the peculiar complexity of bureaucratic writing style: adherence to legalistic language, desire to convey the "impersonal" ethos of government, "institutional inertia" or resistance to change, slavish reliance on "traditional models," belief that the style promotes "social prestige," pressure to meet deadlines, inefficiency and lack of coordination in the "review process," and "lack of training" (166). These factors taken together form an "interpretation" of the context for bureaucratic writing: they posit an environment which directly interferes with the presumed function of organizational writing to communicate information so that it can be used efficiently. This interpretation is an argument for proactive measures toward modifying a discourse context to produce better writing; the stance is justified by the extensive personal observation of an informed participant-observer.

Case studies of the writing process in the workplace are also delineating new research methods while revealing new findings. In a study of the composing processes of an experienced engineer, Jack Selzer collected all materials that contributed to several of the engineer's completed written products and tape-recorded his responses to written questions before and after each session. Selzer also made personal observations of the writer composing in the workplace to assess the influence of the work environment. He found that this engineer, a skillful writer, spent extensive time outlining and planning and minimal time revising his work. These findings troubled many composition experts who advocate exploratory methods of planning, who shun outlining, and who insist that revision is an essential element of effective composition. Selzer modestly admits that no general conclusions can be drawn on the basis of a study of one writer; yet he asks writing instructors to re-examine the role of invention in technical discourse and to acknowledge that invention may involve "heavy use of previously written documents and graphics, especially ones composed by the writer or his co-workers in earlier stages of a particular project. . . ." (185). This study invites teachers to test their assumptions about the writing process against the actual practices of competent writers in the workplace: Its findings and

method have inspired a number of follow-up projects, including much needed work on the processes of collaborative composing (see Allen et al., Couture and Rymer, and Ede and Lunsford).

Good descriptive research--whether textual analysis or interpretation of communication contexts--responsibly reports what is observed and invites and directs further investigation. Inadequate descriptive research fails in these important respects. Just to warn of the dangers I believe to be out there, I will cite two failed cases. The first is easy to excuse as a pioneer effort: Edmund Dandridge's "Notes toward a Definition of Technical Writing." This piece reports a stylistic analysis of technical "articles rang[ing] from full-blown formal reports to articles from professional and trade publications such as *IBM Systems Journal, Westinghouse Engineer,* and *Computers and Automation*" (17). Selections from these journals were compared with articles from non-technical journals such as *Saturday Review, The Atlantic Monthly, AAUP Journal, Smithsonian*, and *Newsweek*. Dandridge compared samples of fifty consecutive sentences from each article and concluded that, among other things, technical writing contains "fewer words," "more paragraphs," "fewer sentences per paragraphs," and a "greater number of simple sentences" (20). Although he is careful to limit his conclusions to his sample set, he nevertheless observes that "the assumption that technical writing is, generally speaking, less complex stylistically--and therefore probably more direct--than nontechnical, nonfiction material seems to be tenable" (20).

One hardly knows where to begin in trying to make sense of Dandridge's data; the questions about methodology are so compelling: Why categorically assume that articles in *Smithsonian* and *Newsweek* are non-technical? What relevance does purpose and audience have to selection of the samples and why are these factors not accounted for in the study? What statistical significance can be demonstrated in the results? And further, what real implications do the results have? Dandridge's study is an unfortunate application of a research method that does not match the complexity of the problem.

A more recent example of inadequate description is more sophisticated in its experimental design, but equally problematic. Donald Yarbrough and Ellen Gagné's "Metaphor and the Free Recall of Technical Text" reports an empirical experiment in which subjects were asked to recall in writing the substantive content of texts. The researchers compared subjects' recall of a text containing metaphors with texts which explained events literally. One immediately sees a problem here in that one may seriously question what can be reliably regarded as <u>not</u> metaphorical.

Further questions arise when one examines the target passage tested, a portion of which appears below with "literal" and "metaphorical" alternatives in parentheses:

> Production reactors (make) (are sorcerers who conjure up) more fuel than they consume. They would make it feasible (to utilize enormous quantities of) (to pull the strands of) low-grade uranium and thorium ores (dispersed in the rocks) (from the tapestry) of the earth as a source of low-cost energy for thousands of years. . . . (84).

After analyzing independent raters' evaluations of students' written protocols, the experimenters concluded that students "recalled better [the target paragraph, in both its literal and metaphorical forms] when the other paragraphs in the passage contained no metaphors" and that the "lowest overall recall was for information proximate to the metaphors in the metaphoric context" (87).

Just a glance at the target paragraph should make the experimental results appear unsurprising; no effort was made to assure that the metaphors had a thematic consistency which could help the reader develop a coherent message. Personally, I find the metaphors distracting and awkward, totally unsuited to the explanatory style and function of the paragraph. The authors admit these problems, but then try to explain students' difficulty in recall by traversing into territory their experiment clearly does not cover. They offer this interesting explanation of how their subjects probably processed the metaphors:

> [One] explanation is that the semantic information was extracted from the metaphor in its context at the time of reading; that the experience of having read a metaphor and extracted the semantic information was stored separately from the semantic information; and that at recall the text was recalled/reconstructed independently of the surface form of the metaphor. (88-89)

What possible real-world observations justify this fanciful interpretation? How do these researchers, or any researchers other than neuroscientists, know what a reader stores or interprets and when, given the very sketchy circumstantial evidence provided by written recall of what was read? Empirical field testing of this sort is unlikely to reveal anything significant about language's symbol-making capacities. Our descriptions, I believe, should remain in the domain of what we see and understand: language in use. When we attempt to explain cognitive processing, we not only employ inappropriate methodology, but we also take the focus of our research away

from language--the true area of our expertise. Good description of technical texts or their contexts stays within that domain and respects the complexity of its task.

Dialectic

The final variety of research in technical writing that I wish to assert can contribute to knowledge in our field is "dialectic." Dialectic shakes us from complacency; it asks us to mistrust our consensus, to strip our study of language of its dependency on community affirmation. In short, it tells us to get back to the drawing board.

I shall discuss here two good examples of dialectic in our field. The first is Carolyn Miller's much-cited "A Humanistic Rationale for Technical Writing." In this piece, Miller responds to the claim of literature faculty in her department that technical writing is not humanistic study. She strongly contends that the teaching of technical writing can be humanistic if we abandon the belief that technical writing efficiently conveys reality; such a view asserts a propagandist role for technical discourse, limiting it to "an efficient way of coercing minds to submit to reality" (610). She argues that the teaching of technical writing will become humanistic when teachers begin to "[trade] our covert acceptance of positivism for an overt consensualist perspective" (616). Entering into a dialectic with Britton and others who assert the dicta that technical writing is objective and should have only one meaning, Miller counters:

> To continue to teach [this], to acquiesce in passing off a version [of experience] as an absolute, is coercive and tyrannical; it is to wrench ideology from belief. Much of what we call technical writing occurs in the context of government and industry and embodies tacit commitments to bureaucratic hierarchies, corporate capitalism, and high technology. If we pretend for a minute that technical writing is objective, we have passed off a particular political ideology as privileged truth. (616)

Like Britton's, Miller's piece is a rally of sorts, but she does not assert a dictum, a standard which we should agree upon; instead she invites us to recognize our standards for what they are: rules for behavior that have a certain utility, rather than an absolute claim to truth.

In "What's Technical about Technical Writing?," David Dobrin challenges us to rethink our disciplinary identity. He refutes the notions that technical writing can be defined as such because of its peculiar linguistic structure and that it is technical because it is guided by the scientific method.

He claims the latter belief to be an epistemological fiction which relies on the authority of science to assert that the world presented in technical discourse is uninterpreted and objective. He promotes an alternative view of technical writing, claiming that "[w]hat is technical about technical writing is technology, to the extent that technology defines certain human behaviors among certain human beings and defines a group" (242). Technical writing then does not objectively reveal the world of technology, but rather it is the medium through which we access it:

> Technical writing is writing that accommodates technology to the user. (242)

This definition puts an overt focus on the rhetorical character of technical discourse; it has a function to motivate one's use of and accommodation to technology. Its function is to be useful, not to reveal truth. An engineer citing reasons for choosing one manufacturing process over another selects detail that will persuade an audience to elect one technological solution and accommodate themselves to that choice. The engineer's selection of detail is not based on disinterested observation of reality, but rather a pointed expression of an argument which achieves a desired end.

Work like Miller's and Dobrin's keeps us honest as teachers and scholars, but at the same time dialectic can dissolve into self-indulgent critique. When scholars make their personal statement of position more important that reasoned argument, dialectic becomes a showcase for individuals, rather than a forum for free exchange. Rather than sling arrows at colleagues here who have resorted to this tactic, I suggest that we learn a lesson from associates who do work in literary criticism and not let our dialectic become a personality parade.

Conclusion

My review of three varieties of research in technical writing, dicta, description, and dialectic, is far from complete. As I stated earlier, my intention was to show how these three varieties are needed, rather than to be complete in representing research to date. Technical writing, like composition, is an emerging field. Many scholars are building upon one another's research, but many more are yet discovering points of entry--places to start looking at the variety of language we study. Our statement and restatement of dicta articulate the standards from which we operate as teachers and writers of technical discourse. Descriptions reveal discourse in action and help us understand what comprises its production and reception. Dialectic discussions challenge us to examine our assumptions in the process

of building a case for making them; they help set our scholarship on a truer course. All these contributions have their place and their utility; it is our job to make use of them responsibly, avoiding the temptation to stretch each mode of argumentation beyond its rational intent. With this conclusion, I invite others in our profession to reflect upon the nature of scholarship in technical writing; our collective vision will assure the graceful emergence of a respected field.

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