The Metaphysics of Information Quality: Comments on Producing Quality Technical Information

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"A well-made traditional style guide...masquerading as a quality system"

Abstract

The expressed promise in the title of Producing Quality Technical Information is that following its prescriptions will yield "quality" technical information. This commentary asks what the term quality means here and whether the manual delivers on its promise. In other words, which of the several senses of quality is intended in the title, and the does the publication deliver as promised? That is, which of the major quality schemes corresponds to the rationale of the text: legalistic quality, in which quality is conformity to a long list of detailed regulations and specifications (as in ISO 9000); principle-based quality, in which quality is the result of working according to a small set of broad precepts; or mystical quality, in which quality is an indefinable property or spiritual construct, toward which virtuous people should aspire.

I.7.5 Document analysis—*human factors*
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Preface: Is Good Style High Quality?

If an instruction uses *it's* where it should have used *its*, and no one has trouble following the instruction, is the technical information low in quality? If a draft manual uses *he* and *his*, instead of gender-sensitive language, would the need for quality justify delaying the printing of the document to correct the pronouns? And what if such a delay would also postpone the shipment or installation of the associated software? Or, to pose a more contemporary question, would it increase the chances for an accurate translation if we put the illegal hyphen in *pre-test*?

These questions matter, because they place the issue of style in the context of business. When technical information is part of a commercial product, then we must interpret the editorial standards applied to that information from a business perspective. In evaluating the quality of a company's customer literature, for example, the first question is not "What punctuation rules do you use?" The first question is "How's business?"

Standards: Producing Quality Technical Information

IBM's 1983 manual *Producing Quality Technical Information* is well written, modular, engagingly presented, efficient in its selection of topics, and well supported with apt examples. It is so clear and useful that, like Ecclesiastes the preacher, one concludes there has been in the interim too much making of unnecessary books. (It is also wonderfully nostalgic, using for one of its examples the changing of the spherical element in a Selectric typewriter.)

If it can be faulted, it is for failing to cite or acknowledge the several non-IBM writers (like me) and researchers whose concepts and terminology are embedded in its pages. Indeed, the original corporate publication does not even highlight the IBM authors and editors themselves. This is no doubt a deliberate policy choice. First, the lack of named authors gives the publication an institutional, rather than a personal, aura; it is a corporate work, putatively reflecting a broad consensus, rather than a set of directives and preferences by particular individuals. (Many technical professionals persist in believing that style is a personal choice, rather than a defensible standard.) Second, the absence of citations and footnotes keeps the document looking non-academic; it is a business publication, meant to provide practical tools, rather than an intellectual exercise by persons with an unusually intense interest in technical language.

Upon reflection, though, these small shortcomings prove to be important in assessing the value of the work. When, for example, writers and editors are urged to avoid paragraphs with more than "a dozen lines" (note the friendly tone of dozen), they are entitled to ask: Why a dozen? Or, in another instance, they may ask what research supports the claim that a task-oriented manual is higher in quality than an alphabetically organized reference manual?

Because the document purports to be a set of quality standards (as opposed to a more traditional list of pointers and tips for writers), its readers are entitled to challenge the authority or warrant for these claims. If the title were different—if it merely offered principles of clear, effective, readable, even "professional" writing— the issue would go away. This would be merely another of the thousands of books and articles on clear technical and business writing. But, given the promise in the title, that the results will yield "quality" technical information, we are entitled to ask what the term *quality* meant (or means) and whether the manual delivers on its promise. In other words, which of the several senses of *quality* is intended in the title, and the does the publication deliver as promised?

Context: Quality and the 1980s

Quality was one of the central business research themes in the 1980s and early 1990s. American industry, which had invented scientific management and quality control, was shocked by the rise of Japanese industry (especially automobiles and electronics). The prevailing hypothesis was that American products were being done in by Japanese products of much superior quality, which led to a full-scale attempt to import Japanese management methods into the United States.

Of course, despite all the talk, no one was quite sure what the word meant. After the 1980s, we began to see discussions that asked, What is quality, anyway? Ever since Garvin's important paper in the *Harvard Business Review* (1987), nearly every treatment of the subject has addressed three or four models and eight to ten dimensions. For example, Reeves and Bednar (1994) group definitions into four categories: excellence, value, conformance to specification, and meeting expectations. Similarly, Spencer (1994) organizes definitions of quality according to the underlying organization theory of the authors: mechanistic, "organismic," or cultural.

This problem of definition would not have been so important if quality were just fashionable jargon, like proactive or empower; business discourse has always been vulnerable to changing fashions of vocabulary. But quality was and is a serious term, the principal interest not only of journalists but also of academic business scholars. One is entitled to ask: What do quality researchers study?

Reeves and Bednar expressed their conclusion in delicate academic prose. "The complexity and multiple perspectives historically associated with the concept of quality have made theoretical and research advances difficult. The search for a universal definition of quality and a statement of lawlike relationships has been unsuccessful (p. 441)."

In other words, *quality* is too broad, soft, and

diverse a notion to be the independent variable in a formal study of business performance. The term is so ambiguous that we cannot answer such basic questions as whether high-quality publications cost more or less than low-quality publications. Moreover, as a general term, it is probably too vague to be the subject or predicate in any testable proposition. Even quality gurus have long known that its definition is a muddle. (At a conference in New York [December 1, 1995], I heard Peter Senge observe that W. Edwards Deming himself had abandoned the term in the last few years of his career.)

Quality as Virtue

From today's vantage, it is hard to avoid comparing quality discourse to metaphysical or religious discourse, with quality roughly equivalent to virtue. Everyone, especially technical communicators, has been exhorted to achieve, pursue, or (in some cases) love quality. If they fulfill that obligation, according to the methods of their particular preacher of quality, they will achieve a state of grace. And depending on the theology of the preacher, that state of business grace will lead either to profitability, long-term survival, or, at least, a profound sense of having done what is right. That is, life, immortality, or self-rewarding virtue.

That there is no clear, "lawful" connection between quality practices and any of these outcomes merely underscores the "faith-basis" of the idea. The 1990s troubles at Nissan did nothing to shake faith in Deming or Ishikawa. That is because, indeed, their respective notions of quality were sufficiently complex that no one could ever satisfy them all. Thus, as in most religions, when the innocent appear to suffer, there must be a sufficiently weighty list of requirements so that no one satisfies them all, so that no one can be truly innocent. For example, Roberts and Sergesketter (1993) remind us that "tools and techniques for quality improvement are useful only if the organizational culture is sound (p. 121)." So, even if there is a truly virtuous individual technical communicator, then we insist that quality (virtue) can be achieved only by the entire (total) community—which, of course, never happens.

Quality models and systems (*theory* seems too powerful a word) also resemble religious systems. Like the great religions of the West, quality schemes fall into three broad categories:

- Legalistic, in which quality is conformity to a long list of detailed regulations and specifications (as in ISO 9000; see Schmauch, 1994)
- Principled, in which quality is the result of living according to a small set of broad precepts (as in Deming; see Walton, 1986)
- Mystical, in which quality is an indefinable property or spiritual construct, toward which virtuous people should aspire

Legalistic Quality Schemes. Legalistic quality schemes are the oldest. They derive from a mechanistic view of the organization, and are sometimes called "Tayloristic," for Frederick Winslow Taylor, the inventor of scientific management. The rationale for such schemes is that workers, such as technical writers, are parts of the manufacturing machine, albeit less reliable than drill presses. By arranging people just right, and by prescribing exactly how they should work, one achieves the most perfection (the least "variability," as Deming would put it) and, incidentally, the lowest production price for any set of tolerances.

(People who think this way—like early ISO 9000 enthusiasts—often express the notion that, given the right procedural documentation, one can replace the entire workforce without a noticeable change in performance or quality.)

Until the 1970s, quality assurance and quality control were engineering problems. QA and QC specialists set acceptable performance thresholds and tinkered with the organization to reduce defects and problems. Typically, like traditional technical editors, they were involved at the end of the process, operating through inspections; often they were at open war with the manufacturing managers, whose goals were to meet production quotas, not to shut down their lines and pursue "remedial interventions."

The most widely used quality standard today—ISO 9000—is the descendant of these schemes. Although ISO 9000 is not a legalistic quality scheme in itself, it requires all firms who wish to be ISO certified to have in place a fully documented quality control system of that legalistic type. Unlike the Total Quality Management school, ISO 9000 still considers quality assurance a separate function in the organization, carried out by specialists. It requires, for example, that every procedure be documented and that the documents be maintained. Consider this example from ISO 9001:

4.5.2 *Document changes/modifications*
Changes to documents shall be reviewed and approved by the same functions/organizations that performed the original review and approval unless specifically designated otherwise. The designated organizations shall have access to pertinent background information upon which to base their review and approval. Where practicable, the nature of the change shall be identified in the document or the appropriate attachments.

A master list or equivalent document control procedure shall be established to identify the current revision of documents in order to preclude the use of non-applicable documents. … Documents shall be re-issued after a practical number of changes have been made.

Note that legalistic quality assurance schemes advocate meeting the specifications, not exceeding them. Making a thing "too good" raises product cost and may lower its competitive advantage. There is no cult of continuous improvement; indeed, there may be sanctions against exceeding tolerances and surpassing requirements.

Principled Quality Schemes. These legalistic quality schemes, like religious orthodoxies, promise redemption only to those who do everything right, and who also document what they have done. In contrast, principled schemes replace thousands of pages of legalistic quality regulations with short lists of precepts and maxims.

The main prophets of this latter-day quality religion—Philip B. Crosby, Armand V. Feigenbaum, Joseph M. Juran, and especially Deming—began their careers as orthodox, legalistic quality assurance engineers. But, at a certain point, they began to regard the quality legalists the way early Christians regarded the Pharisees: as faithful to the letter but not to the spirit of the "law." (Examples of this principled approach to writing can be found in Williams, 1990, or Hirsch, 1977.)

Motorola's Robert Galvin (quoted in Roberts and Sergesketter, 1993, p. 6) published his new vision of quality in a work called "The Welcome Heresies [sic] of Quality." In this deliberately irreverent work, he classifies old quality thinking as "ot," for Old Testa-

ment and new ideas as "NT," or New Truths. For example, in the ot, "quality control is an ordinary company and department responsibility." In Galvin's NT, "quality improvement is not just an institutional assignment, it is a daily personal priority obligation."

The more irreverent the quality prophets, the better. When Deming talked about statistical methods, only the engineers became excited. But when he lobbed counterintuitive observations, everyone noticed. For example, when he observed that performance appraisal and merit pay were "Deadly Disease No. 3," that "the effects of these are devastating—teamwork is destroyed, rivalry is nurtured. Performance ratings build fear and leave people bitter, despondent, and beaten" (Walton, 1986, p. 36), even the prestigious management consulting firms became defensive about their much-vaunted compensation schemes.

Deming was the best at blessed-are-the-meek-type maxims. His famous Point 10 is to "Eliminate slogans, exhortations, and targets for the workforce. These never helped anybody do a good job (Walton, p. 35)." In one breath, he discounted Management-By-Objectives and all other forms of quotas and targets. He also delighted in scoffing at conventional wisdom and arguing that traditional rules needed rethinking. For example, it would surprise all those professors who espouse his methods to learn his position on grading:

> People ask how I grade my students. I give them all 'A.' How do I know who will be great? They may turn papers in, I don't care when. Some of the papers are good enough, more than good enough, to be chapters in a book. I give my students no time limit. Not forever. . . Only one student has ever failed me. ... I gave him an 'A.' He never delivered. One failure in all those students. Pretty good record, I'd say. . . (Walton, 1986, p. 37)

Counterintuitive maxims and aphorisms are an important part of the principled approach to quality (note Hirsch). Roberts and Sergesketter (pp. 118-121) list dozens of contrary-to-popular-belief notions, such as
• Higher quality does not always cost more.
• Any attempt to set minimum standards discourages improvements.

- Employees should not be encouraged to look busy if they have nothing to do.
- Inventories are a necessary evil.
- Selling people what they do not want will not help the company.

It is also important to the principled school that quality not be a separate function, imposed on a mechanized work force, but rather a way of corporate life. (In this view, there would be no continuing clash between writers and editors; there would be no editors.) For it to work, everyone has to commit. In his introduction to Ishikawa's What Is Total Quality? (1985), the translator David Lu raises the issue of human relations and quality:

> We must take Dr. Ishikawa's criticism of our continued reliance on Taylorism seriously. Managers and engineers establish work standards under Taylorism, and the line workers simply obey the commands. Have we not treated our workers for too long as exchangeable and expendable commodities? It is dehumanizing both for the workers and for those who oversee them, and it creates cause for labor unrest and dissension. In its place, Dr. Ishikawa speaks of respect for humanity and of treating each worker as a whole person. (p. iii)

In the same work, Ishikawa takes up the assault on Taylorism. "There are many reasons for the failure of America's Zero Defects Movement, one being that the movement was made into a mere mental exercise that used people as machines and disregarded the fact that people are people (p. 15)." This criticism may be extended to those companies in which technical communicators are mere line workers, creating small articles to defined templates.

Teamwork and trust are part of "culture," another way of separating the principled school from the legalists. Without the right culture, TQM does not happen. The discussion of culture brings out the evangelist in this group. The popular Steven Covey (1992), who is also a minister, is lifted to metaphysical heights: "Total Quality on an Interpersonal Level means making constant deposits into the emotional bank accounts of others. It is continually building good will and negotiating in good faith, not in fear... A corporate culture, like the human body, is an ecosystem of interdependent relationships, and these must be balanced synergistically and based on trust to achieve quality (p. 10)." Indeed, one often gets the feeling that implementing TQM requires a religious conversion. Robert Galvin speaks of "that initial profound buy-in (p. 6)."

Principled quality experts are always on the verge of spiritualistic outburst. As they talk less about methods and systems and more about community (culture), trust, and total commitment, they begin to sound like New-Agers. In many cases, most notably Covey and Deming, their students come to love them and act as though intoning their names and reiterating their loyalties will, in itself, lead to the redemptive grace of quality.

Mystical Quality Schemes. There are also outright quality mystics, those who believe Platonically that quality is a kind of essence (Greek: aretê), indefinable, without matter or attributes, but nevertheless accessible to human beings through intuition. Interestingly, the most cited advocate for this view is the technical writer Robert Pirsig, author of two eccentric philosophical novels. In *Zen and the Art of Motorcycle Maintenance*, Pirsig (1974) bemoans the loss of quality in American goods and services, which he attributes to a loss of philosophical commitment to excellence, to doing things and making things as wonderfully as possible. He argues, moreover, that we all know what quality is and that it is by its nature indefinable, "ahead of definition … as a direct experience independent of and prior to intellectual abstractions (p. 73)." That is, quality is available through meditation on its meaning!

The Metaphysics of Quality

Quality schemes, then, are more like religions than sciences. Sentences containing quality as a subject or predicate are typically unfalsifiable. That is, any promises and predictions associated with quality are unenforceable.

There will almost certainly never be a satisfying proof of the relative efficacy of any of these schemes. Given the softness of the construct, there cannot be. If people are converted from one school to another, it will be not because of hard evidence but because of the charisma of the preachers and the excitement generated in the seminar-revival meetings. This is because the real function of these quality schemes is not to inform professional conduct but, rather, to take away the chill of professional nihilism, the fear that

there are no predictable input-output relationships between our practices and results.

Loyal Rue (1994) has explored this phenomenon, in which people construct "noble lies" (Plato's term) to chase away the terror of nihilism: the belief that "the universe is blind and aimless; it has no value in and of itself; it is unenchanted by forces, qualities, characteristics that might objectively endorse any particular human orientation toward it (p. 3)." "Noble lies" are used "to unify the group by eliciting conformity with an integrated myth; that is, by bringing individuals to a point where their consciousness is organized by the meanings of the myth (p. 242)." In other words, the particular system of style or quality creates a community of believers, who reinforce each other's conviction that what they do matters.

Producing Quality Technical Information in Context

Producing Quality Technical Information fits mainly into the legalistic style of quality systems; it could be reduced to a checklist (as in its Appendix) with examples (much a like a military quality control standard). Its authority, or warrant, derives from the unchallengeable expertise of its anonymous authors; in this, it is like a scripture. The Before-After examples are presumed to be self-evident improvements. (Of course, the same could be said for Strunk and White, with its charming hodgepodge of laws and maxims.)

But there is no other evidence (beyond self-evidence) that these laws result in some predictable, desirable outcome. And there is no reason to believe that some other rules (like my own favorite, writing periodic sentences [Strunk and White: "Place the emphatic words of a sentence at the end."]) might not produce results that are even more desirable. There is no research to demonstrate that the "After" versions are learned faster by customers or lead to fewer errors. There is no data to demonstrate that the "better" versions are anything more than the preferences of the authors.

In short, *Producing Quality Technical Information* is a well-made traditional style guide, containing advice that is nearly always unimpeachable, but masquerading as a quality system. The title reflects the epoch in which it was written, a time when every

overhead function in American companies was under pressure to justify its budget in business terms, its contribution to the "bottom line." (Some people believe this is still the main problem for the technical communication profession.)

Shortly after the publication of this style guide, IBM led the way in introducing usability as a measurable property of software and publications and, in a historic shift in perspective, the technical writing profession adopted usability as a replacement concept for quality. Now, procedures were said to be clear not if they satisfied some list of style requirements but if they could be followed reliably in a usability laboratory. This was a great leap, for it provided a framework in which technical communicators could show a direct effect of their services on users and customers. For the first time in the study of English style, there was actual experimentation (for example, Wright, 1988), showing that, for example, certain page layouts led to more errors than others. In the mid-1980s, many technical communicators, including me, were saying that poor manuals not only offended the stylistic sensibilities of professional communicators, but also could render even a good software product unusable and lead to its failure in the marketplace.

Usability systems have also tended to fit into the three categories: legalistic testing protocols applied by human factors psychologists; principle-based, maxim-filled systems, like Cognetics' 5Es [www.cognetics.com]; and even mystical models that stress "intuitiveness," "transparency," and other undefined constructs.

Like *quality*, the definition of usability has shifted and mutated so as to make simple propositions about usability unfalsifiable. When I wrote in this journal (1995) that the lust for feature-richness was undermining the two most basic notions of usability, swiftness of learning and reliability in operation, my friend John Brockmann (1995) chastised me by saying that this was not an abandonment of usability but rather a "different" usability. In other words, today's technical communicators tend to call whatever they approve "usable," implying new definitions and associated metrics on the fly. (This is very similar to the process in which new religious denominations are formed.)

Producing Quality Technical Information, then, is a quality standard in name only. It is built on an his-

torically interesting "noble lie": namely, that high-quality companies, that high-quality people, write according to principles accepted in the culture of technical communicators. It is a belief based more on faith than on research, but that fact, in itself, does not deprive it of its spiritual usefulness.

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