

J. TECHNICAL
THE PLAIN STYLE IN SCIENTIFIC
AND TECHNICAL WRITING*

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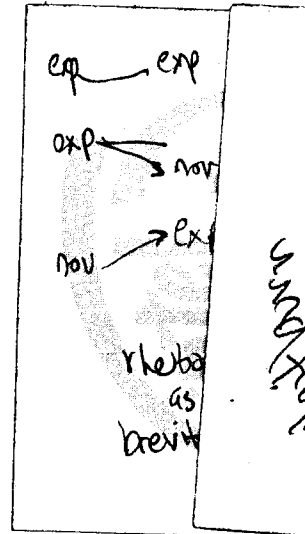
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ABSTRACT

The ornate style practiced before the scientific revolution of the seventeenth century too often led to obscurity and verbal games rather than clarity and the pursuit of truth. In reacting against ornateness, however, scientists developed the ideal of a plain style that is itself problematic. The writer's posture is essentially defensive; he is more concerned with what not to do than what to do in his writing. The practice of amplification, useful for audience adaptation, has been abandoned, and rhetorical devices that promote the personal touch are no longer taught. Recent experiments indicate that classroom exercises involving rhetorical devices can help promote economy and clarity, encourage more personal and aggressive writing, strengthen the idea that writing is an art, and arouse writer and reader interest. The study of stylistic devices in use before the scientific revolution can be fruitful for modern scientific and technical writing.

Plainness is perceived as a stylistic ideal in scientific and technical writing today. In his successful textbook, *Basic Technical Writing*,

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Herman Weisman accurately states: "By tradition technical style is plain" [1] Weisman rightfully finds the source of this tradition in the scientific revolution of the seventeenth century. While the plain style may have emerged as a corrective to certain stylistic abuses, however, it may itself be creating problems for today's writers. In this paper I shall explore the emergence of plainness as a stylistic ideal in our field, the difficulties it may be creating, and some cautious experiments I am beginning in a graduate course, "Technical Writing for Publication," to engage these problems.

ORNATE STYLE

English prose style before the scientific revolution has been ably described by Richard Foster Jones in his noted article "Science and English Prose Style in the Third Quarter of the Seventeenth Century": "this style is characterized by various rhetorical devices such as figures, tropes, metaphors, and similes, or similitudes, to use a term of the period. The sentences are long, often obscurely involved, and rhythmical, developing in writers like Sir Thomas Browne a stately cadence, which, in the studied effect of inversions, is the prose counterpart of Milton's blank verse. The penchant for interlarding a work with Latin and Greek quotations is also apparent. The diction reveals a host of exotic words, many Latinisms . . ." [2] The stylistic ideal was copiousness and ornamentation. A writer was often so caught up in verbal exuberance, so delighted with word play, that he seemed more intrigued with rhetorical devices than the search for truth.

Perhaps the work which best exemplifies the ornate style of the late sixteenth and early seventeenth centuries is John Lyly's *Euphues: The Anatomy of Wit*. A sentence from *Euphues* can suggest the extent to which the work is imbued with rhetorical devices. Lyly writes: "As therefore the sweetest rose hath his prickles, the finest velvet his brack, the fairest flour his bran, so the sharpest wit hath his wanton will and the holiest head his wicked way." [3] The whole sentence is a simile, comparing the flaws in roses, velvet, and flour with the imperfections of man. The three phrases "the sweetest rose hath his prickles, the finest velvet his brack, the fairest flour his bran" are parallel with an ellipsis, an omission of "hath," in the second and third. Lyly also uses an example of asyndeton, an omission of the conjunction "and" between the last two phrases. In the remainder of the sentence, "so the sharpest wit hath his wanton will and the holiest head his wicked way," the words "wit" and "head" are examples of synecdoche, a

figure in which the part stands for the whole, and the words "wanton will" and "wicked way" are examples of alliteration. Numerous other examples of rhetorical devices can be found in sentence after sentence of *Euphues*. Such devices were catalogued in works on rhetoric toward the end of the sixteenth century. Among these works are Thomas Wilson's *The Arte of Rhetorique*; Henry Peacham's *The Garden of Eloquence, Conteyning the Figures of Grammer and Rhetorick*; and George Puttenham's *The Arte of English Poesie*.

RISE OF THE PLAIN STYLE

The nature of the scientific revolution in the seventeenth century predisposed it against rhetorical devices. Prerevolutionary scientists acquired knowledge through books, and philological training involving Latin and Greek was essential. However, postrevolutionary scientists acquired their knowledge through the observation of nature, and words, associated with the rejected science of the past, became suspect. This skepticism toward language was strengthened by the belief that traditional philosophy — usually linked to Aristotle — tended to concern itself with words rather than realities. The new scientists wanted words to approximate mathematical symbols. Such symbols were to possess no virtue in themselves but stand for quantities and relationships. Nothing was to exist between the mind and its true object; rhetorical devices were not to be an obstruction between observation and description.

Advocates of the new science in the seventeenth century were remarkably sensitive to the problem of style. In his book, Jones writes: "We may say without exaggeration that their program called for stylistic reform as loudly as for reformation in philosophy." [2, p. 88] Francis Bacon is quoted as attacking rhetorical devices because he believes they lead men to "study words and not matter." [2, p. 77] John Wilkins rejects them because they cause obscurity; he describes the ideal style as "plain and naturall, not being darkned with . . . Rhetoricall flourishes. Obscurity in the discourse is an argument of ignorance in the mind. The greatest learning is to be seen in the greatest plainnesse . . ." [2, p. 78] John Webster suggests that subjects like rhetoric might be all right "if there were not too much affection towards them, and too much precious time spent about them, while more excellent and necessary learning lies neglected and passed by . . ." [2, p. 82] In his *History of the Royal Society*, Thomas Sprat attacks rhetorical ornament as being "in open defiance against Reason: professing not to hold much

correspondence with that; but with its Slaves, the Passions" He indicates that members of the society are resolved "to reject all the complications, digressions, and swellings of style: to return back to the primitive purity, and shortness, when men deliver'd so many things, almost in an equal number of words. They have exacted from all their members, a close, naked, natural way of speaking; positive expressions, clear senses; a native easiness; bringing all things as near the Mathematical plainness, as they can . . ." [4, pp. 85-86] These ideals became part of the statutes of the Royal Society when they were published in 1728. In Chapter V, Article IV, we find: "In all reports of Experiments to be brought into the Society, the Matter of Fact shall be barely stated, without any Prefaces, Apologies, or rhetorical Flourishes, and entered so into the Register-Book, by order of the Society." [4, p. 84]

PLAINNESS—AN IDEAL TODAY?

Nobody would deny the importance of the stylistic reforms encouraged by the advocates of the new science. Too many men of the time did seem to be caught up in verbal games rather than the pursuit of truth. All too often rhetorical devices did obscure the communication of matters they should have been clarifying. And so many previous thinkers did tend to concern themselves with words rather than realities. But a number of factors suggest that the stylistic ideal of plainness ought not to continue as unchallenged as in the past. Revolutions are typically reactions against excesses, and the reactions are often as excessive as the original abuses. We need to explore the extent to which the attempt of the new scientists to overcome stylistic excesses of the past resulted in excesses of its own. Numerous changes in science and technology since 1700 should encourage us to question whether a stylistic ideal appropriate to the seventeenth century is still viable. Finally, the writing crisis we now confront should lead us to explore all of our traditionally unquestioned assumptions.

A standard approach to style in current textbooks focuses on the avoidance of error. For instance, an ideal like economy is eliminated in a corrected version that follows. Such an approach is extremely unhelpful. A student who grasps its lessons will be better able to revise his work and avoid stylistic problems in the future. But his posture will remain essentially defensive. The advocates of the new science of the seventeenth century so reacted against the excesses of stylistic artistry that a reluctance to use any artistry at all seems to have prevailed ever since. The scientific or technical student rarely

confronts a writing task armed with sufficient stylistic tools to shape his composition aggressively. He tends to be more concerned with what not to do than what to do in his writing. Scientific and technical writing textbooks tend not to drill students in even such basic stylistic techniques as antithesis, climax, parenthesis, and apposition. On the contrary, a student is expected to muddle his way through by stylistic instinct. Such an approach promotes the myth of the born writer.

Numerous changes in science and technology should also encourage us to question approaches characteristic of the stylistic ideal of plainness. These changes have often involved an increase in complexity, and compounding this complexity has been the extraordinary development of scientific and technical jargon. Yet coincident with these developments has been the growing need by scientists and technologists to address such nonexperts as government representatives, foundation representatives, supervisors, colleagues from other fields, laborers, and the general public. My own experience in industry has convinced me that audience adaptation is the most serious problem in our discipline. Scientists and technologists need considerable practice in developing alternative ways of expressing the same materials. Such practice was common for students before the scientific revolution of the seventeenth century. They often learned to vary a theme by as much as a hundred to two hundred different ways. They strove to amplify their writing through comparison, example, description, repetition, paraphrase, and digression. But the resulting excesses of expansion led advocates of the new science to condemn techniques of amplification as working against plainness, more specifically, brevity. Such a condemnation seems to have been to the detriment of modern scientific and technical writing style. Practice in expressing the same content in alternative ways does not necessarily preclude brevity; as Erasmus suggested in the Renaissance, no one can better achieve brevity in his style than he who knows what words and figures to choose from among a great variety. Modern scientists and technologists have simply not had the practice to enable them to attain the ideals of economy and simplicity possible through training in techniques of amplification.

Lastly, the plain style also militates against rhetorical devices that might better enable a writer to communicate his personality. In a previous paper, *Personality in Scientific and Technical Writing*, I stress the importance of the personal touch [5]. Many of the students in our technical writing classes will be largely involved in scientific and technical communication that involves the adaptation

of a message for an audience relatively unfamiliar with the subject being presented. They will be educating students, helping to create public awareness, persuading a supervisor, or addressing a group of employees. These are serious activities, and we should make our students aware that the personal touch can often help them attain their ends. The personal touch arouses interest, and interest sharpens awareness and understanding. Rhetorical devices are one means of attaining the right personal touch. For instance, such devices as irony, hyperbole — the use of mock exaggeration, and litotes — the use of mock understatement — might be used to humorous effect in non-specialist communication. Again, one seeks in vain for information about such devices in technical writing textbooks, and the ideal of the plain style seems at fault.

RECENT EXPERIMENTS

For some time, then, I have been troubled by the inadequacy of the stylistic tools I have been providing my students. Their work tends to lack artistry in its smaller units, and their resulting stance toward writing tends to be overly passive. They have extraordinary difficulty adapting abstruse information so that nonspecialists can understand it. Few of them know how to take advantage of stylistic techniques to help them let their personalities through. In an effort to begin engaging these problems, I have tried some cautious experiments in a graduate course, Technical Writing for Publication. The students in this course come from all the various fields with graduate programs in the university — oceanography, chemistry, architecture, agricultural economics, wildlife and fisheries, parks and recreation, education. In addition to presenting them with the standard materials in scientific and technical communication, I have been giving them a few exercises involving various rhetorical devices. I frankly inform the students that our exercises are experimental.

The results have been encouraging. A few examples can serve to illustrate the kinds of things the students are doing. For instance, almost all textbooks in scientific and technical writing have a section on parallelism. In line with the tradition of the plain style, however, the stance tends to be defensive. If a student finds himself with a series of some kind, he should be careful to make the elements of one member of the series parallel with the elements of the other two members of the series. I have tried to change this procedure by giving my students exercises in which they aggressively work toward parallelism. As part of one such exercise, a student in oceanography wrote the following passage:

The Polychaeta exhibit every feeding type known. Some burrow through the sediments ingesting all material in their path and digesting any available organic matter; these are the nonselective deposit feeders. Some burrow through the sediments testing the material before them and selecting only those choice morsels which meet their criteria as food; these are the selective deposit feeders. Some lie in holes, burrows, or tubes and strain particles of organic material from the water using tentacles and/or mucous nets; these are the suspension or filter feeders. Some aggressively attack and devour prey, often even their own kind; these are the predatory carnivores. Some eat only the remains of dead animals; these are the scavengers. Some may combine many or all of the previously mentioned methods, depending upon circumstances; these are the omnivores.

This passage may not be as economical as it might be, but the gains in clarity, emphasis, smoothness, and reader interest strike me as substantial.

If economy is a virtue, a student ought to practice the techniques that promote it. The stylistic device of ellipsis, the omission of a word or words implied by the context, would certainly be one such technique. Yet I have never encountered a mention of this technique in a modern textbook on scientific and technical writing. A student writing about astronomy composed the following two sentences as part of one of his exercises:

Neptune is recognized by a series of alternating, vertically-oriented belts colored green and gray; and Uranus by a sequence of horizontally-oriented green and gray zones.

Galileo was more concerned with the laws of physics here on earth and their relation to planetary movements; Copernicus with the motions of planets relative to one another.

The student effectively takes advantage of the parallelism in two parts of a sentence to omit elements in the second part.

A student writing on education developed the following passage:

We — like our students — must realize that there is more to college than lectures and notes and assignments and tests. We — like our students — must realize that the true test is being and becoming, not remembering and reviewing. We — like our students — must realize that learning is a journey, not a destination.

Only close examination reveals the extent to which rhetorical devices are responsible for the effectiveness of the passage. Within the context of the article in which this passage appears, the parallelism of "We — like our students — must realize that" is not only inherently pleasing but also climactic. The parentheses, the

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interjections of "like our students," distinguish these sentences from others in the article and so add variety. The parentheses also serve to isolate and emphasize "We," which reinforces the meaning of the sentences. The polysyndeton, the repetition of "and" in the first sentence, effectively conveys an impression of multiplicity and boredom. The antithesis in the second sentence, "being and becoming, not remembering and reviewing," strengthens the distinction being made. Furthermore, it is itself strengthened by alliteration. Climax, parenthesis, polysyndeton, antithesis, and alliteration — none of these techniques tends to be found in current textbooks.

Occasionally, a student will experiment to the point of heresy. One of the absolute laws found in textbook after textbook is the necessity of subject-verb-object or subject-verb-complement sentence order, yet a student from parks and recreation included the following inverted sentence in one of her exercises:

Through the smell of good food cooking over a wood fire or the freshness of new mown hay, the sound of an Indian tribal dance or a hoedown in an old barn, the sight of wind filling the sails of a tall sailing ship or woolly balls of fluff being spun to thread on a spinning wheel, the feel of a sheep's kinky wool or the soft smoothness of a ceramic pot, the taste of first run maple syrup cooled on snow or the unusual taste of sassafras tea, living history interpretation communicates with all of the physical senses.

The reaction of the class to the passage was mixed. All seemed to like the structure of the five senses, the move from smell to sound, sight, feel, and taste. Some felt that the parallelism was overdone; others liked it. A few specifically mentioned that they liked the way sound reinforced sense; the alliteration of s's in "the sight of wind filling the sails of a tall sailing ship" does suggest the sound of a whistling wind. None of the students found the sentence obscure as a result of the inversion. In fact, one member of the class believed that the presence of concrete images before the abstraction made the abstraction more clear. It may be that we have become too dogmatic in some of our dictates about style.

THE VALUE OF RHETORICAL DEVICES

My experiment is far from complete. I have been working with exercises involving stylistic devices over three successive semesters, but much more evidence needs to be accumulated. Some things have already become clear, however. Rhetorical devices do promote such traditional ideals in technical writing as economy and clarity.

They encourage a student to be a more aggressive writer and let his personality through in nonspecialist communication. They strengthen the belief that writing is an art that can be learned and not a talent inherent in the genes. They help with invention, the discovery of content. They arouse reader interest. Perhaps I have been most delighted with the fun so many of my students have been having. Most of them attack the exercises with an exuberance that renews my faith in the magic of words. In many facets of our life these days we seem to be reaching back to the past. For instance, we are beginning to run short of energy, and men are turning to windmills again. I have come to the conviction that the past also holds stylistic riches for the modern practice of scientific and technical writing. Adjustments need to be made in the ideal of the plain style passed on to us by the scientific revolution of the seventeenth century.

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