Style in Scientific Writing (an oxymoron?)

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The commonly accepted wisdom holds that science writing doesn’t have a style (the most appropriate style being one that is invisible) or that if it does have a style, it exhibits all the flaws one associates with dense, self-involved, and jargon-ridden prose.

We’ll discuss what’s wrong or misleading with this commonly accepted wisdom. There is in fact a science to writing about science well. In particular, we’ll discuss practical stylistic strategies that help you revise your own prose.

Gopen and Swan: “The Science of Scientific Writing”

Our guide for this discussion is a justly well-known article by George Gopen and Judith Swan, “The Science of Scientific Writing.” A link to a pdf version of this article is on the workshop website. I’ll include it here as well:


http://www.americanscientist.org/issues/feature/the-science-of-scientific-writing/1

What I especially like about this article is that it takes a reader-oriented perspective on style. That is, we can learn how to write effectively by understanding how readers process information. This approach is very compatible to our workshop, in that throughout we have stressed the need for prose that is reader-oriented, not writer-oriented.

The following pages include two documents related to the Gopen and Swan article:

- A summary of the article
- Everyday examples (Jack and Jill do Gopen and Swan)

Richard Lanham’s “Paramedic Method”

An addition resource is the “paramedic method” developed by Richard Lanham in his short book Revising Business Prose. Lanham’s “paramedic method” (quick sentence first-aid) addresses what he sees as a common ill in writing done in organizations and bureaucracies: “The Official Style.” Whenever we try to inflate our prose to make it sound important or official, or pad it with pretentious material, we are writing in the official style. Weak “to be” verbs and plenty of prepositional phrases and noun strings are common symptoms. Lanham offers a very useful and flexible strategy for revising your way out of the official style. Although Lanham’s work does not address scientific writing per se, his approach is quite congruent with the strategies suggested in the Gopen and Swann article.

Check out the helpful summary of Lanham’s paramedic method at the Purdue University On-line Writing Lab (OWL):

http://owl.english.purdue.edu/owl/resource/635/01/
A Summary of "The Science of Scientific Writing"

This summary of George D. Gopen and Judith A. Swan, "The Science of Scientific Writing", American Scientist 78(6) 550-558, November-December 1990 is copyright 1994 by Lawrence A. Crowl, Department of Computer Science, Oregon State University, Corvallis, Oregon, 97331-3202, USA. All rights are reserved.

Expectation

The meaning of any prose is not that which the writer intends, but that which readers interpret. Readers interpret prose more easily and more uniformly if information is placed where they expect it. When readers' expectations are met, they are more likely to get the "correct" interpretation.

Furthermore, by working to meet readers' expectations, writers can identify logical gaps, insert missing information, and improve the prose substantively.

Function

Readers expect each unit of discourse (sentence, paragraph, section) to serve a single function. When a unit serves more than one function, readers become confused about the point of the unit. To avoid confusion, make each unit of discourse serve a single function.

Action

Readers expect the action of a sentence to be in its verb. When it is not, they find the text dull, boring, and confusing. To keep the reader interested, place the action of a sentence in its verb.

Readers interpret any information between the grammatical subject of a sentence and its verb as an unimportant interruption. To avoid a loss of information, follow a grammatical subject as soon as possible with its verb.

Topic

The topic position in a unit of discourse is the beginning of the unit. Readers expect the topic position to provide one of three kinds of information:

• focus: the person, place, thing, or concept that the story is about,
• linkage: looking back to define relationships between past information and upcoming information, and
• context: looking forward to establish relevance of upcoming information.

To avoid confusing the reader about the focus, relationships, or relevance of one unit of the prose to others, place focus, linkage, and context information in the topic position.

Stress
Stress positions are at points of syntactic closure, e.g. the ends of clauses, sentences, and sections. Readers need and expect closure; when they receive it, they assign extra emphasis to information at those positions. In other words, the syntactic structure of the prose stresses certain information. If the important points of the material do not appear at stress positions, the reader will not perceive the important points. To help the reader get the "correct" interpretation, ensure that the relative emphasis of the material matches the relative emphasis of the structure.

When there are fewer stress positions in a sentence than candidates for stress, the sentence becomes hard to read. To make the sentence easier to read, introduce new stress positions by introducing clauses. Clauses are marked by “:” or “;” and should be structurally the same as sentences, i.e. they have both a subject and a verb.

Flow

Readers interpret prose more easily when it flows well, from old information to new information, from context to conclusion. To provide good flow, place old information in topic positions, and place new, emphasis-worthy information in stress positions.

Logical Gaps

New information that occurs in a stress position and is not subsequently used may indicate a logical gap in the prose. Ensure that new information in a stress position is either a final conclusion, or is used subsequently as old information.

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JACK AND JILL DO GOPEN AND SWAN

Implementing key strategies from Gopen and Swan’s “The Science of Scientific Writing”

Whose Story Is This Anyway?

Jack, after three years of uncertainty, after the engaging and disengaging, after their working through the difficulties caused by the death of her father and the divorce of his parents, finally and conclusively came to love Jill with all his heart.

Jill, after three years of uncertainty, after the engaging and disengaging, after their working through the difficulties caused by the death of her father and the divorce of his parents, finally and conclusively came to be loved by Jack with all his heart.

The Message at the Syntactic Core

Although Jack never said he loved her, Jill could see it in his actions.

Although Jill could tell from his actions that he loved her, Jack never managed to say it in words.

Jack never said he loved her, but Jill could see it in his actions.

Subject / Verb Proximity

The combination of Jack’s confidence in understanding situations and his unwillingness—or perhaps inability—to step forward and be assertive was completely new to Jill.

Completely new to Jill was the combination of Jack’s confidence in understanding situations and his unwillingness—or perhaps inability—to step forward and be assertive.

Stress Position

Jack has fallen in love with Jill because she completely understands his passion for raising fox terriers.

Because she completely understands his passion for raising fox terriers, Jack has fallen in love with Jill.