The Craft of Scientific Writing, Ch. 4–9
November 11, 2009

"Powerpoint is a crutch." - Jessica

Casting off the chains of Microsoft Powerpoint, Wednesday's seminar began with a broad discussion of Michael Alley's main ideas in chapter four through chapter nine of his book, *The Craft of Scientific Writing*. The gist of these chapters is language; specifically, they express principles intended to make scientific communication more effective. Nick S. and Jessica L. presented their own perspectives on these ideas to initiate dialogue. Below is a brief summary of their remarks with references to specific pages in *The Craft of Scientific Writing*.

Being Precise

Words with specific meanings are often misused. (e.g. "comprised" vs. "composed") It was also noted that although comprised is rarely used as an active verb, that is its proper usage. *pg. 74*

Avoid synonyms. It is better to repeat a word than to use a purported synonym incorrectly. *pg. 76*

Insure, ensure, assure. On page 80, Alley writes: *"Better yet, by grounding that detail, you insure that your audience understands its importance."* Several individuals argued that he should have used "ensure." Steve W. gave an example to clarify the difference between these similarly pronounced words:

"You *insure* your house, you *ensure* that something will or won't happen, and you *assure* a person."

Precision vs. Accuracy. Be sure to give an appropriate level of accuracy rather than the highest level of accuracy. Rhea noted that Alley used "accuracy" incorrectly with respect to his discussion of the use of large numbers. *pg. 81*

Being Clear

Avoid needless complexity. Examples include overuse of prepositional phrases, long sentences, and complex verbs. For example, *use vs. utilize*; "utilize" means to take something and make it useful. Whereas "use" is more general, "utilize" has a specific usage. *pg. 85*

At this point in the discussion, there was a brief diatribe about the Alley book. Some felt that Alley did not follow his own rules nor did he illuminate the topics for the reader. In support of their argument, they stated that his chapter on "Being Clear" contained numerous complex sentences. Others defended the book as readable, fluid, and replete with examples.

Being Forthright

Avoid pretentious words, arrogant phrases. (e.g., 'As is well known') Nick S. argued that some of Alley's pretentious phrases have their place at times. Regina C. clarified that these phrases should be used with extreme care. Whereas sometimes these phrases may seem very natural to the writer, the reader may be vexed by the topic and ultimately offended by the use of the pretentious phrase. Attention should also be paid to how these phrases (e.g., of course) might appear when translated to foreign languages. *pg. 98.*

Use strong nouns. Here, Al pointed out "a particularly bizarre piece of prose": "*When a noun is strong, it provides one of the five senses to the reader–most often, a visual image."* He asked, how does a noun 'provide' a sense? *pg. 102.*

After discussing chapter six, the discussion leaders moved on to an exercise analyzing four writing samples (see Appendix A for their text). The group divided into pairs to discuss and edit each, and reconvened after ten minutes.

Last week, Steve W. challenged the seminar participants to find examples of bad writing in Alley's book. He asked for volunteers to share their examples and several students replied with reference to the text. This led to a more general discussion of Alley's ability and effectiveness in writing a book on writing. For example, Rhea G. felt that there was lots of excess in the book: too many definitions, too many redundancies, and too many belabored points. Steve W. suggested that it is important to be sensitive to the reader by giving a variety of examples and restating ideas in different words. Overall, the seminar participants appeared to be equally divided over whether Alley's book was a jolly, fluid read or a poorly composed, pedantic collection of truisms. Unfortunately for those in attendance, Norbert U. was not present to break the tie.

Seeing no reason to continue general discussion, Steve W. proceeded to share some Powerpoint slides with suggested edits to Alley's text. Below are some selected examples:

"These rules contain absolutes such as 'always' and 'never.' Worse yet, many of these rules are untrue." could be restated as *". . . many of these rules are bad advice."*

"Unfortunately, the world is not ideal, that. . ." is a bit colloquial for scientific writing, especially for a funding proposal or abstract. Instead, we might write: *"Unfortunately, no data exist to test this hypothesis. Therefore, we have written this proposal for fieldwork to obtain this data in Hawaii."*

"How can one packaged organization work for both a ten-million-dollar grant to consider nuclear fusion with magnetic mirrors as well as a fifty-thousand-dollar grant to study the effects of insects on artichokes." This example suffers from flawed parallel construction. Rather than using *both* and *as well as*, Alley could have used *both* and *and* as correlatives.

"Before someone will give away money, they have to be convinced that the work is important" uses the pronoun *they* with reference to a single individual. Steve W. suggested avoiding the use of a plural pronoun or a pronoun altogether as in: *"Before giving away money, the grants officer must be convinced that the work is important."*

In the course of the discussion, the group learned that *in medias res* means "in the middle of the thing." This came in the context of a warning from Alley concerning starting in the middle of an argument or story.

When the set of examples that Steve had compiled was exhausted, the seminar was adjourned.

References

Alley, M., (1996), The Craft of Scientific Writing. Springer-Verlag: New York, NY, 282pp.

Appendix A

1. Before entering into the problems to be discussed, I need recall only briefly how often the development of physics has taught us that a consistent application even of the most elementary concepts indispensable for the description of our daily experience, is based on assumptions initially unnoticed, the explicit consideration of which is, however, essential if we wish to obtain a classification of more extended domains of experience as clear and as free from arbitrariness as possible. Note: In this passage, "elementary concepts indispensable for the description of our daily experience" probably refers to concepts like gravity, energy, and time. Under Newtonian physics, these concepts had straightforward definitions, but these so-called "classical" definitions were shown to be incomplete or inaccurate in the 20th century.

2. It is impossible to say with much confidence what the atmosphere has been comprised of over the course of Earth's history, but the fact that prior to 2.00 billion years ago all organisms were anaerobic suggests that the presence of free oxygen has not always been the case.

3. NREL's Photoelectrochemical Laboratory is implementing NREL's pioneering work in synthetic hydrogen production from solar energy. Photoelectrochemical devices are comprised of solar cells and electrolyzers to produce hydrogen directly from sunlight in a single step. Efficient photoelectrochemical hydrogen production is a holy grail of renewable hydrogen production. NREL researchers are at the forefront, shedding light on this important research effort.

4. Greenhouse gases are necessary to life as we know it. However, as the concentrations of these gases continue to increase in the atmosphere, the Earth's temperature is climbing relatively high. According to NOAA and NASA, the Earth's average surface temperature has increased by about 1.2 to 1.4^{o}F in the last 100 years. The 8 warmest years on record since 1850 when instrumental records began have all occurred since 1998 with the warmest year being 2005. Most of the recent environmental warming is very likely the result of anthropogenic factors.