

Revising: Part 3, Conciseness and Simplicity

Our classes on writing are taken from the online Scientific Writing Resource at Duke University (<http://cgi.duke.edu/web/sciwriting/>). In turn, they credit these two references for most of the main ideas:

- The Science of Scientific Writing, by George Gopen and Judith Swan. American Scientist, November–December 1990.
<http://www.americanscientist.org/issues/pub/the-science-of-scientific-writing>
- Style: Ten Lessons in Clarity and Grace, by Joseph Williams.

Length and complexity alone don't make a sentence difficult to understand: some long sentences are perfectly understandable, and specialized terms may be necessary to explain complex problems. Sometimes short sentences with simple words are more difficult to follow because of the way they are written. It follows that structure of the sentence may be more important than length or complexity.

However, scientific writers sometimes needlessly inflate their writing in length and complexity in an effort to "sound scientific" or convey intelligence. In truth, it takes a deeper understanding to explain a complex topic simply and succinctly. It was best put by Shakespeare: "Brevity is the soul of wit." The best scientists can communicate complicated results to intelligent readers outside their field. Long, complex writing doesn't imply good science.

Principle 1: Prefer simpler words. Omit needless ones.

Ineffectual phrases

If you start to pay attention, you may be amazed at how often you read the words "it should be noted that." Think carefully about what they mean: nothing. See if you can find and cross out the ineffectual phrases in the following sentences.

- Note that in this situation, the difference is not meaningful.
- It is important to realize that this proof applies in other situations as well.
- This so-called difference is unimportant.
- It should be noted that the subject was on time.
- We tested for differences in order to ensure the groups were similar.
- The question as to whether the difference is meaningful is an important one.

Wordy phrases

Can you find a phrase in each of these sentences that can be replaced by a single word?

- This occurred in a large majority of subjects.
- The two tests are in agreement.
- This test has the capacity to distinguish the difference.
- The experiment failed due to the fact that subjects were unavailable.

Complex words

Never use a complex word when a simple word will do.

Bad writers consider long words more impressive than short ones, and use words like *usage* instead of *use* or *methodologies* instead of *methods* without knowing what they mean.

—John Lynch [emphasis added]

This doesn't mean to always use replace complex words with simple ones (though it often does). For example, utilize can carry a sense of employing something not designed for the purpose. It can also mean to use to full potential. Compare the following sentences.

- To compare the treatments, a multivariate ANOVA was utilized.
- The family ran out of wood for the fire, so they utilized old cardboard boxes instead.

Would you choose “utilize” or “use”? Why?

Principle 2: Use simple subjects

Scientific writing abounds with complex subjects. The biggest problem this creates is increased distance between subject and verb (covered in lesson I). Often, science writers want to accomplish too much in a single sentence: define a complex abstract entity (the subject), and then describe something that it does. Instead, it is usually more clear to split these tasks into multiple sentences, some to define the subject and others to describe what it does.

Often complex subjects encapsulate actions in a modifying phrase. Here's an example. Can you underline the subject?

- The sequences that had passed our filtering, trimming, and alignment with ClustalX, were scanned for conserved elements across mammals.

The sheer length of the subject costs the reader energy while waiting for the verb. This underlined subject also includes several actions that aren't verbs in the sentence. To convey these actions in verbs, we can divide this sentence into two; this also enables us to use an appropriate nominalization to summarize the actions of the first sentence, creating a simple subject (alignment) that links backwards. This opens the way for the complex subject (now turned simple) to perform additional actions in an understandable way:

Here's a revision. Underline the subjects now. Which is clearer?

- The sequences were trimmed, filtered, and aligned with ClustalX. The resulting alignments were scanned for conserved elements across mammals.

Principle 3: Use adjectives/adverbs frugally

The repetition problem

Don't use two words when one suffices.

- “interesting and intriguing” finding.
- an “improved and modified” protocol
- or a “new and novel” drug.
- the “new invention”

Excessive hedging

It's good to be humble, but it's easy to go too far. A single hedge should satisfy your urge to cushion your claims. Excessive hedging erodes the confidence of your results. Find the hedges in this sentence.

- We estimated that as much as 12-18% (depending on the tissue) of inter-species differences in gene expression levels might be explained, at least in part, by changes in DNA methylation patterns.

Demeaning adverbs

There is nothing more frustrating than reading a paper that alludes to something “obvious” that you are completely confused about.

Self-aggrandizement

Self-aggrandizement only reflects your methods negatively; good science should speak for itself.

- Here, we describe an exciting new groundbreaking method to...

Name: _____

Which principle do you think you struggle the most with? How will you try to improve your writing?
