Fluff in Scientific Writing

Celia M. Elliott
Department of Physics
University of Illinois at Urbana-Champaign
cmelliot@illinois.edu

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Four kinds of "fluff" are found in bad science writing:

1. Redundancies.
2. Pointless modifiers.
3. Tautologies.
4. Generalities that sound important but contain zero meaningful content.

Today we'll learn how to identify and eliminate fluff.

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Fluff Type 1: redundant words and wordy phrases

Some fluorophores appear green ~~in color,~~ while others appear red ~~in color.~~

Temperature varies with pressure, ~~and vice versa.~~

The results ~~tend to~~ suggest...

Given ~~the fact that~~ $\tau_\alpha = \sigma q_\alpha \int n(s)ds$ ...

The samples were immersed in acetone and mechanically agitated ~~in order~~ to remove surface debris.

"Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts." W. Strunk Jr. and E.B. White, *Elements of Style*, 3rd ed. (Needham Heights, MA, Allyn & Bacon, 1979), p. 23.

Good advice for your figures as well as your text.—*cme*

Refer to Ms. P on "in order" (q.v. http://people.physics.illinois.edu/Celia/MsP/InOrder.pdf).

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Replace Type 1 fluff with simple words

due to the fact that	**because**
on the order of	**about**
in the near future	**soon**
a very limited number of cases that	**few**
it appears to be indicated that	**apparently**
in spite of the fact that	**despite**
subsequent to	**after**
at the present time	**now**
in consequence of this fact	**thus**
as contrasted to	**versus (or vs.)**
in combination with	**with**
ascertain the location of	**find**

"An expression that is especially debilitating is *the fact that*. **It should be revised out of every sentence in which it occurs.**" W. Strunk Jr. and E.B. White, *Elements of Style*, 3rd ed. (Needham Heights, MA, Allyn & Bacon, 1979), p. 24. [emphasis added by cme]

Scientific Style and Format, 6th ed. (Cambridge, Cambridge University Press, 1994) has three ***pages*** of examples of common superfluous words that should be avoided in scientific writing. Read and be amazed.

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Fluff may cause confusion

…an electron whose spin is aligned with the two other electrons on either side of it.

Are we talking about three electrons here, or five?

The self-gravity of the cloud will collapse the ~~cloud~~ core ~~to smaller dimensions~~.

In this universe, things don't usually "collapse" to larger dimensions (and they don't get *times smaller*, either, but I digress).

Superfluous words not only take up space (and inflate page charges), they also frequently confuse or confound the reader.

Removing fluff should make your writing more concise, direct, and easy to understand.

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Beware of introductory fluff

~~It was discovered that~~ some cuprate-perovskite ceramic materials have critical temperatures >90 K.

~~It is interesting to note that~~ the width of the stripe-shaped bubbles ~~practically~~ does not depend on the lateral size of the nanodots, coinciding with the width of the infinite strips generated in the film.

"A phrase such as 'it is interesting to note that' adds no information and only delays getting to the point of the sentence." Style Manual Committee, Council of Biology Editors, *Scientific Style and Format*, 6th ed. (Cambridge, Cambridge University Press, 1994), p. 123.

In general, get rid of "It is" and "It was" (and "There is" and "There was") openers. Make the subject of the sentence the subject, put it first, and use an active verb. Your readers will rise up and call you "blessed."

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Fluff Type 2: pointless modifiers

Careful temperature control is needed to …

Is *careless* control really an alternative?

Permanently remove *basically* and *essentially* from you lexicon

The transverse deviations and small kicks are ~~essentially~~ ignored for the subsequent simulations.

Are they ignored some of the time but not all of the time? Are some random ones ignored?

Instead of using pointless modifiers, quantify or give an example.

Your idea of "careful" temperature control ($\pm 0.05^{o}C$) may not be the same as what a reader thinks. Tell him or her ***exactly*** what you mean.

"Basically" and "essentially" have become the scientific equivalent of "y'know, like." They are basically overused and essentially just represent meaningless clutter.

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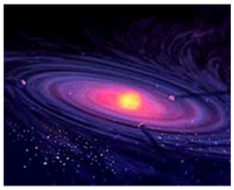
Fluff Type 3: tautologies

A tautology is using different words to say the same thing, although the repetition does not provide clarity; circular reasoning.

A circumstellar disk is *a disk around a star*.



A circumstellar disk is a flattened torus, wafer, or elliptical cloud of dust particles, ice, and ionized gases that orbits a star.

If you are going to define or give an example of something, make sure your clarification actually ***adds*** something that the reader did not already know.

If it doesn't, it's fluff.

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Fluff Type 4: meaningless generalities

"The research will also serve technological purposes, such as fabrication of mesoscopic devices, and contribute to meeting some goals of quantum information to revolutionize the Information Age."

"In order to sustain technological progress, a new generation of engineers has to be trained in the areas of current technological frontiers."

"The new information will benefit researchers in many different fields who are studying many different aspects of RNA or DNA."

Writers are most often tempted to put generalities in the abstract or the conclusions section of a paper or proposal to indicate the wide applicability and stunning significance of the work being reported.

Avoid this temptation. Such broad, overly general, contentless statements make the reader question the author's impartiality and wit.

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No fluff. Never.

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