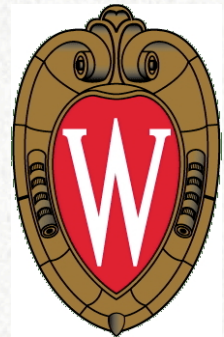


Creating Flow: Sentences

*A writing workshop presented by BACTER
(Bringing Advanced Computational Techniques to
Energy Research)*

University of Wisconsin-Madison

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The logo for BACTER features the word "BACTER" in a stylized font. The letters "B", "A", "C", "T", "E", and "R" are black, while the letters "A", "C", and "T" are red. The letters "A", "C", and "T" are connected at their base by a red, sawtooth-like pattern.

What is flow in writing?

We often discuss “flow” in writing as something we hope to achieve.

But what does flow really mean?

One definition

“Flow is simply writing that moves fluently from one idea, phrase, or sentence to the next. Flow enables the reader to grasp concepts and images along a continuum...”

-- from Julia Purdy, Suite101.com

(http://academicwriting.suite101.com/article.cfm/how_to_make_your_writing_flow)

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Another definition

“Writing with good flow and strong transitions is easy to follow. Each sentence builds on the ideas in the last, and each paragraph has clear links to the preceding one. The reader does not have to work to follow the writer’s train of thought, so the writing doesn’t get in the way of the content.”

-- from the Undergraduate Writing Center, University of Texas
(<http://projects.uwc.utexas.edu/handouts/?q=node/44>)

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Why is flow important in scientific writing?

Because scientific writing includes all manner of specialized terms, difficult concepts and complicated lines of reasoning, it already takes a lot of energy to read.

Why is flow important in scientific writing?

So, don't make readers work any harder than they already have to. Create flow so that they can spend most of their energy on understanding your science, rather than on deciphering your sentences.

So, how can we create flow?

Flow doesn't happen by accident or because a writer has a "gift." It's the result of effort and conscious decision-making on the part of the author.

Flowing sentences

We'll talk about three main strategies for creating flow at the sentence level:

1. Use connecting words
2. Combine sentences
3. Maintain linkage

1. Use connecting words

Connecting words serve flow by telling the reader exactly how two sentences are related; i.e., they provide the transitions between ideas.

Result: therefore, thus, hence

Example: for example, specifically, an illustration

Contrast: but, yet, however, on the other hand

Time: meanwhile, after, later

Sequence: first, then, finally

What connecting word can be added here?

Original: Results showed that the extractable amounts of phenanthrene and pyrene in both soil types increased with increased citric or oxalic acid concentration. Citric acid addition promoted phenanthrene and pyrene extraction to a greater degree than oxalic acid.

One possibility...

Revised: Results showed that the extractable amounts of phenanthrene and pyrene in both soil types increased with increased citric or oxalic acid concentration; **however**, citric acid promoted phenanthrene and pyrene extraction to a greater degree than oxalic acid.

A good use of connecting words

A challenge of using genomics databases is the automated retrieval of relevant data. **For example**, naive approaches to retrieve gene expression studies about 'brain' will fail to find datasets that only mention 'cerebrum' in their descriptions, because free text-based retrieval algorithms generally cannot make the inference that 'cerebrum' is part of 'brain'. **In addition**, using free text for information retrieval can produce false positives due to ambiguity, and false negatives due to synonyms. **For these reasons**, it is valuable to use formal ontologies to describe genomics studies... **However**, tagging studies with terms from ontologies is currently done by human curators.

And how this gets harder to read when they're removed

A challenge of using genomics databases is the automated retrieval of relevant data. Naïve approaches to retrieve gene expression studies about 'brain' will fail to find datasets that only mention 'cerebrum' in their descriptions, because free text-based retrieval algorithms generally cannot make the inference that 'cerebrum' is part of 'brain'. Using free text for information retrieval can produce false positives due to ambiguity, and false negatives due to synonyms. It is valuable to use formal ontologies to describe genomics studies... Tagging studies with terms from ontologies is currently done by human curators.

2. Combine sentences

We're generally taught to keep our sentences as short as possible for clarity's sake. But a longer sentence, if well structured, can sometimes flow better than a bunch of shorter ones.

For example...

Original: The impact of low-molecular-weight organic acids (LMWOAs) on the availability of phenanthrene and pyrene was investigated using laboratory batch assays. Experiments were conducted with two types of soil with different organic contents. The LMWOAs used were citric and oxalic acid.

Combining sentences makes the writing less choppy overall

Revised: The impact of low-molecular-weight organic acids (LMWOAs) on the availability of phenanthrene and pyrene was investigated using laboratory batch assays. Experiments were conducted with two types of soil with different organic contents, **and** the LMWOAs ~~used were~~ citric and oxalic acid.

Here's another possibility

Revised: The impact of the low-molecular-weight organic acids (LMWOAs), citric and oxalic acid, on the availability of phenanthrene and pyrene was investigated using laboratory batch assays. Experiments were conducted with two types of soil with different organic contents.

*In this paragraph, flow is disrupted
in another common way*

Ruminants form the cotyledonary placenta at the feto-maternal interface. Two specific types of trophoblast cells, trophoblast giant binucleate cells (BNCs) and trophoblast mononucleate cells (TMCs), play a crucial role in ruminant placentation. The properties of BNC-specific genes...have been investigated, and TMC-expressed interferon-tau is the molecule for maternal recognition of pregnancy.

First...the topic position

- The start of the sentence is called the **topic position**.
- “The information in the topic position prepares the reader for the upcoming material by connecting it backward to the previous discussion.” (Gopen and Swan, 1990)
- I.e., the topic position should contain “old” information that links backward. The latter part of the sentence should then include new information to be emphasized.

The topic position

When the start of sentences consistently contain new information (rather than linking backward), the reader gets confused, pauses...and the flow stops.

Here's the problem in our current example

Ruminants form the **cotyledonary placenta** at the feto-maternal interface. Two specific types of **trophoblast cells**, trophoblast giant binucleate cells (BNCs) and trophoblast mononucleate cells (TMCs), play a crucial role in ruminant placentation.

***The topic position of the second sentence contains new information about trophoblast cells, rather than referring back to the ruminant placenta*

Here's the fix

Revised: Ruminants form the **cotyledonary placenta** at the feto-maternal interface. In **ruminant placentation**, two specific types of trophoblast cells play a crucial role: trophoblast giant binucleate cells (BNCs) and trophoblast mononucleate cells (TMCs).

Another example

Original: “DNA breaks arise spontaneously or in response to genotoxic events. Cells respond to **double-stranded break (DSB) formation** to prevent chromosomal abnormalities. **The conserved Mre11-Rad50-Xrs2 (MRX) complex** (MRN complex in mammals) is implicated in the DSB response. **It** binds and holds together the broken extremities, thus preventing chromosome fragmentation...”

Notice how this one change links all the sentences better

Revised: DNA breaks arise spontaneously or in response to genotoxic events. Cells respond to double-stranded break (DSB) formation to prevent chromosomal abnormalities.

Implicated in the DSB response is the conserved Mre11-Rad50-Xrs2 (MRX) complex (MRN complex in mammals). **It** binds and holds together the broken extremities, thus preventing chromosome fragmentation...

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Next time...

Writing logically

Creating flow between paragraphs

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