

# Undergraduate Research in Ecology and Evolutionary Biology

## Editing: Rules and Guidelines

### 1. Editing for Logical Flow



Lecture 4: 21 October 2013



# Revising for flow: logic

196 *Revising*

This is not a terrible sentence, but it can be improved by moving the action from the studies ("Studies show") to the organism involved, the rat:

Rats vary their activity levels predictably during the day (Hatter, 1976).

The revised sentence is shorter, clearer, and more interesting because now an organism is *doing* something. Along the way, a prepositional phrase ("on the rat") has vanished. Alternatively, one could include the researcher in the action:

Hatter (1976) showed that rats vary their activity levels predictably during the day.

Similarly, redirecting the action transforms

Increases in salinity increased larval growth rates in Experiment I, but not in Experiment II.

into

Larvae grew faster at higher salinities in Experiment I, but not in Experiment II.

Be a person of few words; your readers will be grateful.

## REVISING FOR FLOW

A strong paragraph—indeed, a strong paper—takes the reader smoothly and inevitably from a point upstream to one downstream. Link your sentences and paragraphs using appropriate transitions, so that the reader moves effortlessly and inevitably from one

*Revising for Flow* 197

thought to the next, logically and unambiguously. Minimize turbulence. Always remind the reader of what has come before, and help the reader anticipate what is coming next. Consider the following example:

Since aquatic organisms are in no danger of drying out, gas exchange can occur across the general body surface. The body walls of aquatic invertebrates are generally thin and water permeable. Terrestrial species that rely on simple diffusion of gases through unspecialized body surfaces must have some means of maintaining a moist body surface, or must have an impermeable outer body surface to prevent dehydration; gas exchange must occur through specialized, internal respiratory structures.

This example gives the reader a choppy ride indeed, and cries out for careful revision, not of the ideas themselves but of the way they are presented. In the following revision, note the effect of two important transitional expressions, *thus* and *in contrast to*. The first connects two thoughts, while the second warns the reader of an approaching shift in direction.

Since aquatic organisms are in no danger of drying out, gas exchange can occur across the general body surface. Thus, the body walls of aquatic invertebrates are generally thin and water-permeable, facilitating such gas exchange. In contrast to the simplicity of gas exchange mechanisms among aquatic species, terrestrial species that rely on simple diffusion of gases through unspecialized body surfaces must either have some means of maintaining a moist body surface, or

must have an impermeable outer body covering that prevents dehydration. If the outer body wall is impermeable to water and gases, respiratory structures must be specialized and internal.

In the first draft, the reader must struggle to find the connection between sentences. In the revised version, the writer has assisted the reader by connecting the thoughts, resulting in a more coherent paragraph.

Here is one more example of a stagnating paragraph that carries its reader nowhere:

The energy needs of a resting sea otter are three times those of terrestrial animals of comparable size. The sea otter must eat about 25% of its body weight daily. Sea otters feed at night as well as during the day.

Revising for improved flow, or coherence, produces the following paragraph. Note that the writer has introduced no new ideas. The additions, here underlined, are simply clarifications that make the connections between each point explicit.

The energy needs of a resting sea otter are three times those of terrestrial animals of comparable size. To support such a high metabolic rate, the sea otter must eat about 25% of its body weight daily. Moreover, sea otters feed continually, at night as well as during the day.

The following transitional words and phrases are especially useful in linking thoughts to improve flow: *in contrast, however, although, thus, whereas, even so, nevertheless, moreover, despite the, in addition to.*

**Repetition** and summary are also highly effective ways to link thoughts. For instance, repetition has been used to connect the first

two sentences of the revised example about sea otters: "To support such a high metabolic rate" essentially repeats, in summary form, the information content of the first sentence. Repetition is a particularly effective way of linking paragraphs; in reminding the reader of what has come before, the author consolidates his or her position and then moves on. Use these and similar transitions to move the reader smoothly from the beginning of your paper to the end. Be certain that each sentence—and each paragraph—sets the stage for the one that follows, and that each sentence—and each paragraph—builds on the one that came before.

Judicious use of the semicolon can also ease the reader's journey. In particular, when the second sentence of a pair explains or clarifies something contained in the first, you may wish to combine the two sentences into one with a semicolon. Consider the following two sentences:

This enlarged and modified bone, with its associated muscles, serves as a useful adaptation for the panda. With its "thumb," the panda can easily strip the bamboo on which it feeds.

The reader probably has to pause to consider the connection between the two sentences. Using a semicolon, the passage would read:

This enlarged and modified bone, with its associated muscles, serves as a useful adaptation for the panda; with its "thumb," the panda can easily strip the bamboo on which it feeds.

The semicolon links the two sentences and eliminates an obstruction in the reader's path. Similarly, a semicolon provides an effective connection between thoughts in the following two examples:

Recently we demonstrated the rapid germination of radish seeds; nearly 80% of the seeds germinated within three days of planting.

Recombinant DNA technology enables large-scale production of particular gene products; specific genes are transferred to rapidly dividing host organisms (yeast or bacteria), which then transcribe and translate the introduced genetic templates.

## REVISING FOR TELEOLOGY AND ANTHROPOMORPHISM

Remember, organisms do not act or evolve with intent (pp. 9–10). Consider the following examples of teleological writing and learn to recognize the trend in your own work:

Barnacles are incapable of moving from place to place, and therefore had to evolve a specialized food-collecting apparatus in order to survive.

Squid and most other cephalopods lost their external shells in order to swim faster, and so better compete with fish.

Aggression is a directed behavior that many sea anemones exhibit to promote the survival of an individual's own genotype.

Revise all teleology out of your writing.

Also beware of anthropomorphizing, in which you give human characteristics to nonhuman entities, as in this example:

The existence of sage in the harsh climate of the American plains results from Nature's timeless experimentation.

Again, this conveys a rather fuzzy picture about how natural selection operates. The author would be on firmer ground by writing something like

Sage is one of the few plants capable of withstanding the harsh, dry climate of the American plains.

## REVISING FOR SPELLING ERRORS

Misspellings convey the impression of carelessness, laziness, or perhaps even stupidity. These are not advisable images to present to instructors, prospective employers, or the admissions officers of graduate or professional programs. Using a spelling-checker computer program will save you from misspelling many nontechnical words, but it won't catch such spelling errors as "is" versus "if," or "nothing" versus "noting," and it is unlikely to be of much help in screening technical terms for you. Use the computer for a "first pass," but use your own eyes for the second.

It helps to keep a list of words that you find yourself using often and consistently misspelling. *Desiccation* was on my list for quite some time; *proceed* and *precede* are still on it. When in doubt, use a dictionary. And if you add technical terms to your computer program's dictionary, be careful to enter the correct spellings.

A few peculiarities of the English language are worth pointing out:

1. *Mucus* is a noun; as an adjective, the same slime becomes *mucous*. Thus, many marine animals produce mucus, and mucous trails are produced by many marine animals.
2. *Seawater* is always a single word. *Fresh water*, however, is two words as a noun and one word as an adjective. Thus, freshwater animals live in fresh water.

And don't forget to underline scientific names: *Littorina littorea* (the periwinkle snail), *Chrysemys picta* (the eastern painted turtle), *Taraxacum officinale* (the common dandelion), *Homo sapiens* (the only animal that writes laboratory reports).

# Constructing Powerful Sentences And Paragraphs

From: Hofmann A.H. Scientific Writing and Communication.

→**GOAL:** authors should guide and influence readers.

Tactics:

- Grammar, conciseness (already done)
- Sentence structure
- Paragraph structure

## **Establish importance: Word location (power) within a sentence .**

### ***Example***

- a***      Although vitamin B6 seems to reduce the risk of macular degeneration, it may have some side effects.
- b***      Vitamin B6 reduces the risk of macular degeneration, but it may have some side effects.
- c***      Taking vitamin B6 may have some side effects, but vitamin B6 also reduces macular degeneration.
- d***      Although taking vitamin B6 has some side effects, vitamin B6 reduces macular degeneration.

Which is most powerful?? Why??

In general, the end position in a sentence is more emphasized (powerful) than the beginning position.

## **Organize your paragraphs.**

### Power positions:

- First and last sentences.
- Usually, the first sentence introduces the topic of the paragraph and gives the reader a direction of where the paragraph is going....  
.....or it can also be a transition from the previous paragraph.
- The last sentence may be used to summarize, draw a conclusion, or emphasize something of importance.

A well written paragraph generally gives an overview first and then goes into detail.

→ the “psychological geography” of the sentence structure is particularly important.



Flow: create linkages.

General



More specific



**Macular degeneration** is affected by **diet**. **One of the diet components** that influences



the progression of macular degeneration is **vitamin B6**. Although **vitamin B6** seems to reduce

the risk of macular degeneration, it may have some **side effects**.

And even more specific

Information at the end position of a sentence is placed at the beginning, or topic position of the next sentence.

Or, even punchier: combine sentences 2 & 3:

While vitamin B6 influences the progression of mac degeneration, it may have some side effects

## Tenses:

Past tense: for observations, completed actions, and specific conclusions.

Present tense: for generalizations and statements of general validity.

A sentence can also have mixed tenses:

Sultan **observed** that certain species of bacteria **respond** to light stimuli.

# Summary of Writing Principles

---

**1. Write with the reader in mind.**

....+ a useful list of tips (we've done some, but not all)

the pattern of protein synthesis in such enucleated eggs is apparently normal.

These examples all demonstrate the infamous comma splice, in which a comma is mistakenly used to join what are really two separate sentences. Reading aloud, you should hear the material come to a complete stop before the words "however," "therefore," and "moreover." Thus, you must replace the commas with either a semicolon or a period, as in these revisions of the first example:

The brain of a toothed whale is larger than the human brain; however, the ratio of brain to body weight is greater in humans.

The brain of a toothed whale is larger than the human brain. However, the ratio of brain to body weight is greater in humans.

→7. And don't forget: *The data are . . .* (see page 11).

## → BECOMING A GOOD EDITOR

The best way to become an effective reviser of your own writing is to become a critical reader of other people's writing. Whenever you read a newspaper, magazine, or textbook, be on the lookout for ambiguity and wordiness, and think about how the sentence or paragraph might best be rewritten. You will gradually come to recognize the same problems, and the solutions to these problems, in your own writing. But don't try to fix everything at once. Whether you are editing an early draft of your own work or a fellow student's work, be concerned first with content. Until you are convinced that the author has something to say, it makes little sense to be overly concerned with how he or she has said it, ~~for the~~

same reason it would make little sense to wash and wax a car that was headed for the auto salvage.

Take an especially careful look at the title and the first few paragraphs. Does the title indicate exactly what the paper or laboratory report is about? Do the title and first paragraph seem closely related? In the first one or two paragraphs, does one sentence lead logically to the next, establishing a clear direction for what follows? Can you tell from the first paragraph or two exactly what this paper, proposal, or report is about, and why the issue is of interest? Or are you reading a series of apparently unrelated facts that seem to lead nowhere, or in many different directions? Does the first paragraph head in one direction, the second in another, and the third in yet another? If so, there is serious work to be done.

Second drafts commonly arise from only a small portion of the first—perhaps a few sentences buried somewhere in the last third of the original. In such a case you must abandon most of the first draft and begin afresh, but this time you are writing from a stronger base. Always leave at least several days to make revisions, and insist that your fellow students give you drafts of their work to look over at least several days before the final piece is due.

Once the piece has a clear direction you can revise for flow and clarity. Does each sentence make sense, and does each lead in logical fashion to the next? Does each paragraph follow logically from the previous paragraph? Does the concluding paragraph address the issue posed in the first paragraph?

If examining a laboratory report, study the Results section first. Does it conform to the requirements outlined in Chapter 3? Does the Materials and Methods section answer all procedural questions that were not addressed in the figure captions and table legends? Should some of those questions (e.g., experimental temperature) be addressed in the captions and legends? Does the Introduction state a clear question and provide the background information needed to understand why that question is worth asking? Does the Discussion section interpret the data or does it simply apologize, and does the Discussion clearly address the specific issue raised in the Introduction?

Only when you can answer "yes" to these questions should you worry about fine-tuning the paper, editing for conciseness, completeness, grammar, and spelling.

For best editing results:

- Use hard copy – and write suggested edits by hand
- Print out at least double-space (why?)
- Be careful → go through the document word by word, sentence by sentence
- Ask: does this make sense? Can I (they) say this more clearly?
- A good editor is ruthless!!
- Assume the reader is naïve and doesn't have specialist background

It doesn't help a colleague to be a gentle editor  
→ they won't get the help that they need.

- Don't be hurt by suggested changes:
  - accept edits gracefully.
  - editorial suggestions are meant to help.