

Discourse community and genre

Rhetorical positioning

- story - context, the larger meaning
- audience - specialist readers, cross-disciplinary readers, non-specialist readers
- communicative purpose
- problem space
- broad to narrow to broad, general to specific, problem to solution
- data, visuals, rigor

Reader-oriented writing

- register
- tone
- precision, clarity, grammar
- promise delivered

The process

- composing v editing
- revising paragraphs and sentences; word count
- reading aloud and redrafting
- feedback
- collaborating with peers, advisors, interdisciplinary colleagues, industry colleagues

Your world

- research papers, journal articles, dissertations, grants, posters
- job applications, fellowship applications
- personal statement, research vision, teaching philosophy, blog
- professional correspondence

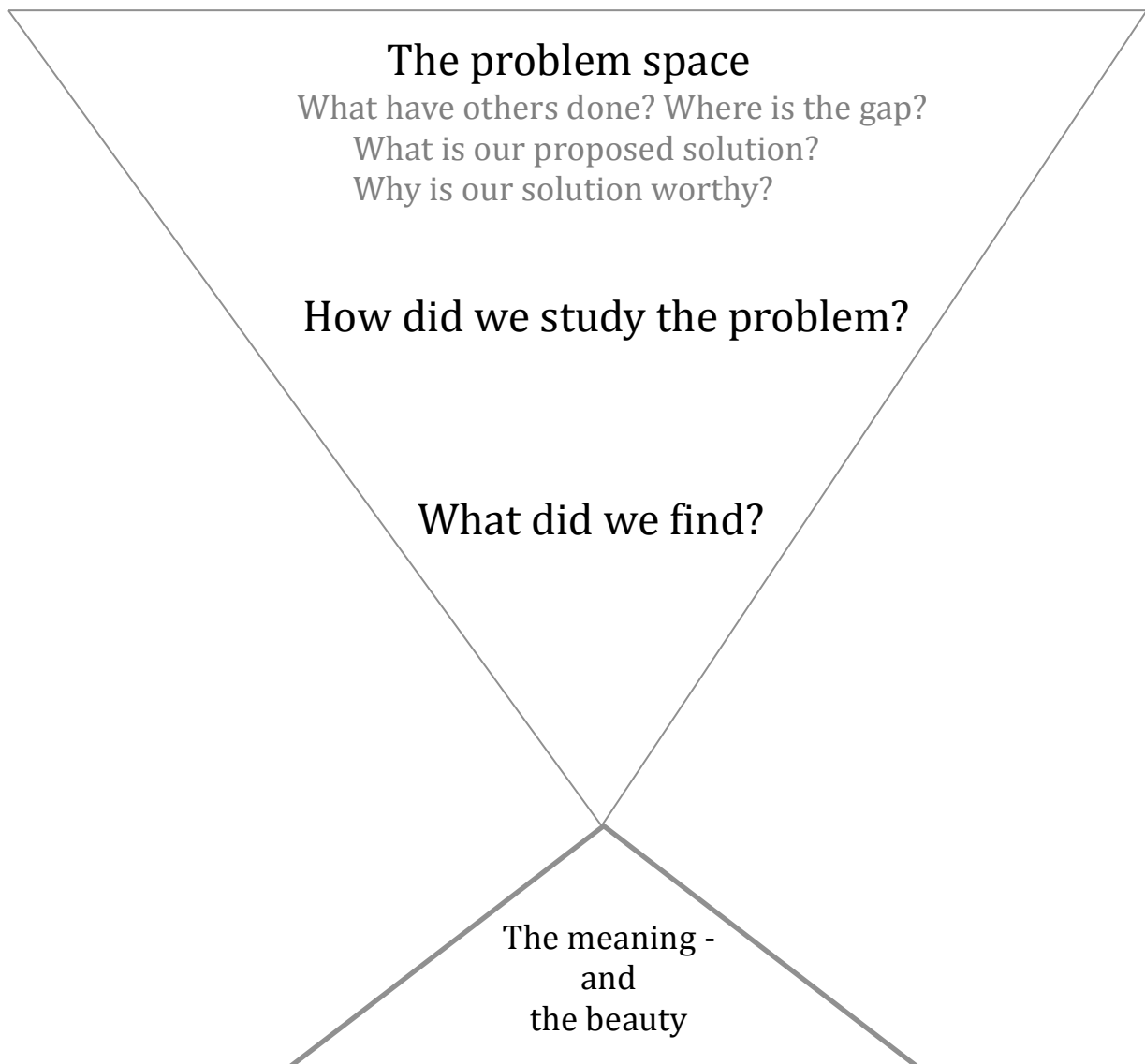
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Rhetorical Positioning

Research paper authors typically operate in a highly competitive environment. They need to establish that their research questions are sufficiently interesting for others to read. They also need to demonstrate that they are familiar with the relevant literature and that the research questions have not already been answered. As a result, authors are very much concerned with positioning -- with showing that their studies are relevant and that they make some new contribution to the field. (284)

The figure below captures the general rhetorical shape and movement of a typical research paper -- broad-narrow-broad; general-specific-general. The specific sections of a paper (Introduction; Methods; System Description; Results; Discussion; and so on) are determined by the discipline, the topic and story, and sometimes the journal.



INTRODUCTIONS

“The introduction has precisely one purpose: to convince your readers that they should read your paper. To do so, it must first convince your readers that you have identified an important, open scientific question that they should care about. Following this, it should prime your readers to expect an answer to that question, encouraging them to read on.” (Plaxco)

Creating a Research Space (CARS) (Swales)

The Introduction sections of research papers typically follow the CARS pattern in response to two kinds of competition: 1) competition for research space and 2) competition for readers. In the CARS pattern, the work of others and/or what is known about the world is primary, and your own work is secondary. This background-foreground relationship is reversed in Discussions.

The CARS organizational pattern contains three moves. (Which parts of each move are obligatory in your discourse community?)

Moves in Research Paper Introductions

Move 1 - Establishing a research territory

- a. by showing that the general research area is important, central, interesting, problematic, or relevant in some way
- b. by introducing and reviewing items of previous research in the area

Move 2 - Establishing a niche

- a. by indicating a gap in the previous research, raising a question about it, or extending previous knowledge in some way

Move 3 - Occupying the niche

- a. by outlining purposes or stating the nature of the present research
- b. by listing research questions or hypotheses
- c. by announcing principal findings
- d. by stating the value of the present research
- e. by indicating the structure of the paper

BREAKING IT DOWN

Move 1a - Claiming centrality

In move 1a certain fixed phrases tend to recur. In many cases, the present perfect is used, often with a time expression such as *In recent years*. The following are strong opening statements used to "claim centrality."

- There has been growing interest in X.
- Recent studies have focused on Y.
- Z has been investigated by many researchers.

Example - Two opening sentences from an aerospace research paper that uses the "claiming centrality" rhetorical pattern in Move 1a:

The increasing interest in high angle-of-attack aerodynamics has heightened the need for computational tools suitable to predict the flowfield and aerodynamic coefficients in this regime. Of particular interest and complexity are the symmetric and asymmetric separated vortex flows which develop about slender bodies as the angle of attack is increased. (Almosnino, 1985) (S&F 250)

Reviewing the Literature (Swales and Feak 2012)

The CARS model states that Move 1b is the place to assemble and review items of previous research relevant to the topic. In fact, in the original version of the CARS model, back in 1981, this was the only place where citations were thought to occur. However, citations can occur anywhere in an Introduction -- and even in other locations in a paper.

There are a number of theories about the role and purpose of citations in academic texts:

- to acknowledge the intellectual property rights of earlier authors
- to show respect for previous scholars
- to give your arguments greater authority
- to show that you are a member of a particular disciplinary community
- perceived relevance

In the great majority of situations, it seems clear that well-known scholars and researchers are cited because they have done important work, not simply because they are famous.

LANGUAGE FOCUS - Citations and tense - Tense choice in reviewing previous research is subtle and somewhat flexible. The following are general guidelines for tense usage.

Several studies have shown that at least two-thirds of all citing statements fall into one of these three major patterns:

Pattern 1 - Past (researcher activity as agent)

- Huang (2007) *investigated* the causes of airport delays. (active voice)
- The causes of airport delays *were investigated* by Huang (2007). (passive voice)

Pattern 2 - Present Perfect (researcher activity not as agent)

- Several researchers *have studied* the causes of airport delays (1, 2, 3). (active voice)
- The causes of airport delays *have been widely investigated* (Hyon 2004; Huang, 2007; Martinez et al., 2010). (passive voice)

Pattern 3 - Present (no reference to researcher activity)

- The causes of airport delays *are* complex (Hyon 2004; Huang, 2007; Martinez et al., 2010).

*** In general, moves from *past* to *present perfect* and then to *present* indicate that the research reported is increasingly *close* to the writer in some way: close to the writer's own opinion, or close to the writer's own research, or close to the current state of knowledge. ***

Note the common uses of these patterns.

Pattern 1 - reference to single studies -- past

Pattern 2 - reference to areas of inquiry -- present perfect

Pattern 3 - reference to state of current knowledge -- present

Note that in Patterns 1 and 2, attention is given to what previous researchers did, while in Pattern 3 the focus is on what has been found.

Writers of literature reviews have certain options in their choice of tenses. This is particularly true of Pattern 1. The main verbs in Pattern 1 can refer to what a previous researcher *did* (*investigated, studied, analyzed, etc.*). By and large, in these cases the past is obligatory. The main verbs can also refer to what the previous researcher *wrote* or *thought* (*stated, concluded, claimed, etc.*). With this kind of reporting verb, tense options are possible:

- Rogers (2004) *concluded* that business failure may be related to reduced working capital and retained earnings.
- Rogers (2004) *has concluded* that . . .
- Rogers (2004) *concludes* that . . .

Comparable tense options exist in the subordinate clause.

- Rogers (2004) found that business failure *was* correlated most closely with reduced working capital.
- Rogers (2004) found that business failure *is* correlated most closely with reduced working capital.

The first sentence shows that the writer believes the finding should be understood within the context of the single study. In the second sentence, the writer implies that a wider generalization is possible.

Different areas of scholarship have somewhat different preferences. Patterns 1 and 2 are most common in the humanities and the social sciences and least common in the areas of science, engineering, medical research. However, all three patterns tend to occur in many extensive literature reviews since they add *variety* to the text.

Move 2 - Establishing a niche

In many ways, Move 2 is the key move in Introductions to longer research papers. (This move may not be needed in shorter communications.) Move 2 is the hinge that connects Move 1 (what has been done) to Move 3 (what the present research is about). Move 2 thus establishes the motivation for the study. By the end of Move 2, the reader should have a good idea of what is coming in Move 3.

Most Move 2s establish a niche by indicating a gap - by showing that the research story so far is not yet complete. Move 2s, then, function as *mini-critiques*. Usually Move 2s are quite short, often consisting of no more than a sentence or two.

1. *Little is known, however, about participants' views of university-community collaborations.*
2. *The widespread deterioration and recent collapses of highway bridges have highlighted the importance of developing effective bridge inspection and maintenance strategies.*

#1 is a straightforward gap indication. #2 is more subtle -- it implies, but does not directly state, that current bridge inspection strategies need to be improved.

A range of options for establishing a niche

| | | |
|----------|----|--|
| Stronger | A. | Counter-claiming (something is wrong) |
| | B. | Indicating a gap (something is missing) |
| | C. | Raising a question or making an inference (something is unclear) |
| Weaker | D. | Continuing a tradition (adding something) |

Of the four Move 2 options, gap-indications (Option B) are very common in many fields. Option D is typically chosen by research groups in the Sciences and Engineering as they offer refinements and extensions of their previous work. At the other pole, regular employment of *counter-claiming* (Option A) is likely in contested areas such as Philosophy and Law.

“Negative” verbs and adjectives that tend to cluster in Move 2.

Verbs

However, previous research on deforestation has _____ x.
concentrated on _____ neglected to consider
overestimated _____ failed to consider
ignored _____ been restricted to
been limited to _____ misinterpreted

Adjectives

Nevertheless, these attempts to establish a link between dental fillings and disease are at present _____.
controversial _____ questionable
incomplete _____ unconvincing
inconclusive _____ unsatisfactory

Not all Introductions express Move 2 by indicating an obvious gap. You may prefer to avoid negative comment. In such cases, a useful alternative is to use a contrastive statement.

1. The research has tended to focus on ___ rather than on ___.
2. Although considerable research has been devoted to ___, less attention has been paid to ___.

Move 2 - Raising a question, a hypothesis, or a need

1. However, it remains unclear whether. . .
2. It would seem, therefore, that further investigations are needed in order to . . .

Move 2 - Extending previous knowledge

This type of Move 2 tends to be used by research groups who are following up on their own research or studies done by similar groups.

1. These recent developments in computer-aided design have considerable potential. In this paper, we demonstrate. . .
2. Although the method is simple and proven, it is still not clear to what extent the approach is practically useful. We . . . (353)

Sometimes Move 2s use a series of quasi-negative statements about previous research.

“Previous research has not addressed . . . Moreover, research has not fully considered. . . Nor has it addressed. . .” Notice how these sentences progress into increasingly narrow focus on the precise research question the author is attempting to answer.

Move 3 - Occupying the niche

The third step in the typical Introduction is to make an offer to fill the gap that has been created in Move 2. Move 3 is typically signaled by a reference to the present text, such as the use of *this*, *the present*, *reported*, and *here*. If the conventions of the field or journal allow, it is also common for authors to switch from the impersonal to the personal by using *we* or more rarely, *I* - “In this paper, *we* present the results of three experiments.”

1. This study explores the relationship between ___ and ___.
2. In this paper we give preliminary results for ___.

Sometimes a second sentence is necessary to complete Move 3a. Second statements are often introduced in the following ways:

In addition, . . . Additionally, . . . A secondary aim. . . A further reason. . . For example, . . .

NOTES: 1) If you choose to refer to the work in your text -- “The aim of this paper *is* to give . . .” -- you must use the present tense. 2) If you write “The aim of this paper *was* to give . . .,” in some fields this would mean that you are referring to an original aim that has now changed. In other fields, such as Biomedical Research, *was* is typical and simply refers to the aim when the research was conducted.

There is an increasing tendency to choose the present tense, perhaps because it makes the research seem relevant and fresh and new. A safe rule here is to check the journal you want to publish your paper in to determine the tendency.

Move 3b - Listing research questions or hypotheses

1. This paper uses a sample to investigate (a) whether one’s occupational status influences the importance one attributes to maintaining overall appearance, and (b) whether one’s occupation influences one’s choice of type of hairgrooming establishment.

2. Specifically, we test two hypotheses:

Hypothesis 1 . . .

Hypothesis 2 . . .

Move 3c - Announcing principal findings

There is some confusion as to whether Introductions should close with a statement of the principal results. Swales and Najjar (1987) found that physicists close Introductions with findings about half the time, but educational researchers hardly ever include such statements. The need for promotion has tended to increase the “announcing principal findings” feature in Introductions, perhaps especially in engineering papers.

Is it rhetorically necessary/useful to give the main findings in the abstract, in the introduction, and in the results? It is best to follow standard practice in your field.

Move 3d - Stating the value of the research

This feature is typical of many biomedical papers.

“We show how this classification system might permit more accurate evaluation of safety concerns for rare immune-mediated adverse events that may occur following vaccination, *thus enhancing our ability to properly identify and analyze associations in clinical trials and post-licensure surveillance.*” (From a paper on vaccine monitoring.)

Move 3e - Indicating the structure of the paper

“The plan of this paper is as follows. Section II describes the current arrangements for regulating business mergers within the EEC. In Section III a theoretical model is constructed which is designed to capture these arrangements. Experimental parameters are then tested in Section IV. Finally, Section V offers some suggestions for the modification of the current mechanisms.”

METHODS

Reviewers, supervisors, editors, and examiners pay particular attention to Methods sections. A good methodology leads to the expectation that the results will also be good.

From medical research - “If an abstract is of interest, the editor next looks at the methods section of the manuscript before deciding whether to reject the paper or pass it on to the screening editor on duty for that day. The screening editor decides whether the manuscript should be sent for external review.”

From education - “As a reviewer I may find an opening theoretical gambit to be compelling, but if I can’t reconstruct the author’s means of collecting, reducing and analyzing data, then I will have little faith that the construction of results follows responsible and consistent treatment of evidence and will not likely recommend the paper for publication.”

Methods sections are variable across the disciplines, and even the term *Methods* is not always used. In other cases, the main point of a paper will be to announce some development in method.

In many of the social sciences, the methodology is very important and is described in considerable detail, including details about materials, the apparatus used, definitions employed, the subjects or participants in the study, manufacturers, sources, permissions, or the statistical procedures used. In the natural sciences, engineering, and in parts of medical research, standard practices and established methods are much more widely available. In these areas methods may be largely taken for granted.

Variation in Methods Sections - Methods sections vary according to how much information and explanation they contain. Another consideration has to do with positioning. How widely acceptable are your methods? To what extent do you need to clarify, explain, justify what you did? Do you need to convince readers that your procedures are appropriate and reasonable?

It should be noted that the Methods section will probably need to be more extensive if any of the following conditions apply:

- The paper is aimed at a multidisciplinary audience.
- The methods are new or controversial.
- The paper is essentially a “methods paper.”

Example of a condensed Methods section -

DNA was extracted from tissue and feather samples using the Qiagen DNeasy Extraction kit. An addition of dithiothreitol was used for samples from feathers. Polymerase chain reaction (PCR) was carried out using two primers pairs for cytochrome B (CytB; Sorenson et al., 1999). PCR and sequencing was done following protocols in Mindell et al. (1997). (296)

Example of an extended Methods section -

To detect groups among the specimens and extract the variables that best diagnose the groups, we used principal components analysis (PCA). Before conducting the analysis, we standardized all measurements so that each variable would have a mean of 0 and a standard deviation of 1. For the PCA, we included only continuous characters. To avoid weighting characters, we excluded characters that are probably genetically redundant, as revealed by high values for the Pearson correlation coefficient between all possible pairs of characters. (296)

LANGUAGE FOCUS - **Linking phrases** are used to tie together the text of a Methods section. Some phrases indicate a temporal relationship (“Prior to the commencement of data collection for the baseline survey. . .”), while others indicate a purposive relationship (“To detect groups among the specimens, we used . . .”). Examples of linking phrases often found in methods sections:

Initial purpose -

- In an effort to evaluate
- To further test this hypothesis

Temporal links -

- During the data collection
- In the follow-up phase of the study, we

Causal or connective phrases -

- Based on the feedback from the pilot study
- Because of privacy issues, we

DATA COMMENTARIES

In many disciplines, the data are displayed in a table, graph, figure, or some other kind of non-verbal illustration. The data are likely incorporated in the main text, although in some cases it may be provided in an appendix.

Data commentaries are exercises in positioning yourself. There are, as a result, both dangers and opportunities. One danger is to simply repeat in words what the data have expressed in nonverbal form -- to offer description rather than commentary. An opposite danger is to read too much into the data and draw unjustified conclusions. The art of the matter is to find the right *strength of claim* for the data and then order your statements in some appropriate way. In most cases, this means moving in a general to specific direction.

It is not easy to predict precisely what you might need to do in a data commentary. Some of the more common purposes are to:

- Highlight the results of research
- Use the data to support a point or make an argument in your paper
- Assess theory, common beliefs, or general practice in light of the given data
- Compare and evaluate different data sets
- Assess the reliability of the data in terms of the methodology that produced it
- Discuss the implications of the data
- Make recommendations

LANGUAGE FOCUS - Starting a data commentary - Many data commentary sections begin with a sentence containing a location element and a brief summary.

- 1) Table 5 **shows** the points of entry of computer viruses for U.S. businesses. (active voice)
- 2) The most common modes of infection for U.S. businesses **are shown** in Table 5. (passive voice)

Examples 1 and 2 use indicative summaries that indicate what kind of research has been done. Alternatively, the writer could have highlighted a key piece of the data --

- 3) Our data suggest that **home disks are the major source of computer viruses** (Table 5).

Expressing strength of claim in a data commentary - Your claims require good judgment. They are an opportunity to show your intelligence and to demonstrate --

- that you can spot trends or regularities in the data,
- that you can separate more important findings from less important ones, and
- that you can make claims of appropriate strength.

So, do *not*

- repeat all the details in words,
- attempt to cover all the information, or
- claim more than is reasonable or defensible. (Swales and Feak)

LANGUAGE FOCUS - Put the sentence variations in order from 1 (**strongest claim**) to 6 (**weakest claim**).

Many studies have concluded that excessive credit growth _____ the global financial crisis.

- ___ a. contributed to
- ___ b. caused
- ___ c. may have contributed to
- ___ d. was probably a major cause of
- ___ e. was one of the causes of
- ___ f. might have been a small factor in

Qualifying and moderating a claim

It is important to know how to indicate your stance toward your claims. Your perspective is important in academic writing because it allows you to reveal not only *what you know*, but also *what you think*.

There are many ways of expressing degree of commitment to a claim in written academic English.

1. **Likelihood** - One way to express degree of likelihood in written academic English is to use a *modal auxiliary* (may, might, could, etc.). Notice how the claim progressively weakens in the following sentences.

Stronger Sleeping 7-9 hours each day results in better academic performance.
 Sleeping 7-9 hours each day *will* result in better academic performance.
 Sleeping 7-9 hours each day *can* result in better academic performance.
 Sleeping 7-9 hours each day *could* result in better academic performance.
 Sleeping 7-9 hours each day *may* result in better academic performance.

Weaker Sleeping 7-9 hours each day *might* result in better academic performance.

Stronger It is clear that . . .
 It is highly likely that. . .
 It is probable that. . .
 It is possible that. . .

Weaker It is unlikely that. . .

2. **Distance** - Distance is a way of removing yourself from a strong and possibly unjustified claim. Compare the following -

Strong claim The factory has benefited from the recent technology upgrade.

More distance It seems that health education has a positive impact on a patient's quality of life.

3. **Combined qualifications** - Sometimes several types of qualification are combined to construct a defensible claim.

Big claim: The use of seat belts prevents physical injuries in car accidents.

| | |
|------------------------------|--|
| adding distance | <i>according to simulation studies</i> |
| weaker verb | prevents → <i>reduces</i> |
| indicating likelihood | reduces → <i>may reduce</i> |
| softening the generalization | <i>certain types of injury</i> |

Moderated claim: According to simulation studies the use of seat belts may reduce certain types of injuries in car accidents.

Presenting Visuals and Data Commentary

(Thank you to UCSB Computer Science Professor Tim Sherwood for telling me about **WALTER** and for providing the examples from Computer Science.)

After setting your research story's background in the introductory sections of your paper, the data you present are the tools that impart your core ideas to the reviewer and the reader. It is important to be as clear as possible in your data presentation. In fact, if a reader were to look at the graphs and figures isolated from the text, the figures and their captions should clearly reveal your story.

Here we introduce "**WALTER.**" **WALTER** is a rhetorical framework, a design pattern to help us structure the essential pieces of a clear, excellent data commentary. Think of **WALTER** as a concrete way to get started with your data description and discussion. Then depending on the specific argument you are developing and the role of each visual in the larger story, refine each part of the **WALTER** plan so that your discussion is appropriate for your specific purposes and audience.

Each letter in the **WALTER** acronym represents an important element in a data commentary.

| | |
|---|------------|
| W | Why |
| A | Axes |
| L | Lines |
| T | Trends |
| E | Exceptions |
| R | Recap |

The idea is to include all of the **WALTER** elements -- or as many as you think would be most helpful to your audience -- in any description of a visual. You can use **WALTER** when you are discussing your data in a paper or a technical memo, when you are writing a caption for a figure, when you are describing data on a poster, or when you are talking about your data during a presentation.

W - Why Before you describe a figure, you need to set up the context. Sentences such as "*To understand how our technique scales under heavy loads, we ...*" or "*As energy efficiency is critical to the usability of our system, we ...*" set up the expectations for the figure.

It is critical that the listener or reader be made aware of the new insight she will discover by studying your visual. None of this is obvious. This "Why" part of your commentary is **the most important part** of describing a graph, yet it is often omitted because to the author everything about the visual seems clear and self-evident. Even more importantly, if you don't have a good answer to the question "Why are you showing me this?" you should really question whether the data is necessary to present at all!

A - Axes The axes frame the results of a graph and are an opportunity to precisely describe the parameters of your experiment. Example 1: *“We varied N, the number of virtual machines running our improved memory manager, from 1 to 64 as shown on the x-axis.”* Example 2: *“The y-axis shows the average power consumed by the devices as measured in Watts.”*

All axes should have units, and complex metrics or units should be fully motivated and described. All too often a presenter will have “ ϕ ” or “K” or some other less than helpful indicator. This is especially true if a technically unit-less ratio like speedup, energy reduction, or signal-to-noise is being shown. Even in these cases, it is important to be clear what is being compared in the ratio and whether the numbers shown are a fraction or a percentage.

L - Lines Very often we need to show several experiments on the same graph so that the results can be compared directly. Here “Lines” could refer to lines on a multi-line graph. We also use “Lines” to refer to the different types of bars in a bar chart or data columns in a table. The point is to make sure that each line is clearly described. Example 1: *“The solid black line shows the performance of the baseline system described in Section 1.2, while the dashed grey line shows system performance after our optimization is applied.”* Example 2: *“The solid red portion of the bar shows the fraction of users who indicated they were satisfied with the user experience, while dissatisfied users are shown in dark blue.”*

Keep in mind that many publications are black and white only and that many readers, including reviewers, print out the papers on non-color printers. Avoid colors that look the same to color blind viewers. Likewise avoid colors that look the same when printed in grayscale.

T - Trends Now that you have the stage properly set, including the motivation (the Why), the parameters (the Axes), and the types of data points (the Lines), you can begin to discuss the overall trends of the graph -- the main points you want people to take away from the visual. Do not assume that this is obvious -- tell your reader directly: *“Looking across all of the applications we can see that in most cases an 8% to 10% reduction in memory footprint is achieved.”*

This part of your commentary is where you guide your audience to look at the data from your expert point of view. It is here where you offer interpretation and draw conclusions. Do not squander this opportunity -- be precise and clear.

E - Exceptions In most graphs of experimental data there are some outliers and exceptions. Your readers and listeners will notice them. Don't try to hide them (you have a responsibility after all), but do try to explain them. Example 1: *"While we achieve near linear scaling up to 64 processors, there is a short performance dip at 16 processors where the data structures can no longer be completely memory resident."* Example 2: *"The only program for which this technique actually hurts performance is gcc. The complex control dependencies of that program are large enough that they overflow the small buffer in our design."*

The exceptions section can be made even stronger by including evidence that your theory behind the exceptions is true. Continuing Example 2: *"If the buffer size is doubled for gcc, the overall speedup jumps to 5%."*

R - Recap Finally, now that the graph is described, discuss why these results are significant and segue on to the next result. Example 1: *"Even after simple optimizations are applied, a very large fraction of the execution time is being spent in memory copy. In the next section we evaluate a novel copy free implementation that eliminates more than 70% of this overhead."* Example 2: *"Now that we have demonstrated the stability of our routing scheme in the face of errors, we need to examine the performance of the algorithm across those same topologies."*

As you can see for these examples, the "Recap" comment can overlap nicely with the "Why" of the next data commentary in your paper or presentation. In this way, the "R" part of your discussion for one visual can serve as the transition to the "W" part of the next visual you talk about.

Remember, when preparing a manuscript or a presentation, the data commentary has two critical parts: 1) the data narrative, and 2) the visuals. The overall flow of your argument in partnership with excellent visuals is how the magic happens. So take the time to ensure that your discussion is rigorous and appropriately detailed. Likewise, make sure that your visuals are not distorted or stretched, that they are at a scale that is readable, and that you present them at a resolution appropriate for printing.

NOTE: Professor Sherwood makes a distinction between figures which help describe *concepts*, and graphs which describe *experiments and results*. "I am really picky about the way the figures and graphs look. They need to look clean and interesting -- two goals that are a bit at odds."

Captions

A caption can be a mini paragraph. A caption's power is that it is located right at the context where it is important - - What does the figure show? What conclusion should we draw from this figure? Professor Sherwood describes the axes in detail in the captions. Sometimes a one sentence summary of the point of the graph is all that is needed. Note: Do not say the same thing in the caption that you write in the commentary.

Examples of visuals and captions - The length of a caption may vary from one field to another.

Nature Genetics **40**, 1068 - 1075 (2008) doi:10.1038/ng.216. Detection of sharing by descent, long-range phasing and haplotype imputation. <http://www.nature.com/ng/journal/v40/n9/abs/ng.216.html>

Proceedings of the National Academy of Sciences of the United States of America. v.109(47); Nov 20, 2012. Neuronal code for extended time in the hippocampus.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3511087/>

Unique in the Crowd
<http://www.nature.com/srep/2013/130325/srep01376/full/srep01376.html>

Bar graphs - Figures 3 and 5
<http://engineering.ucsb.edu/~sherwood/pubs/PACT-09-hardgrind.pdf>

Line graphs - Figures 3, 6, 9, 10
<http://www.cs.ucsb.edu/~sherwood/pubs/ProfilingAdaptiveRanges.pdf>

Computer Science - Figures 1, 2, and 3 for interesting visualizations
<http://www.cs.ucsb.edu/~sherwood/pubs/IEEEMicro-phases.pdf>

Chemistry/Materials
<http://www.pnas.org/content/108/3/937>
<http://prl.aps.org/abstract/PRL/v104/i11/e115503>

LANGUAGE FOCUS - Comparing different outcomes in your study. Some examples -

- The median wage of a college graduate is *more than 70 percent higher than* the median wage of a high school graduate.
- The paired metal chlorides yield *more than three times* the amount of product than the CuCl₂ catalyst (Fig. 2).
- Women had a mean score of 3.89 *compared with* a mean for men of 4.76.
- The observation of smaller magnetization and coercivity at low thickness *is similar to* results obtained for the Fe₃O₄ thin films.

RESULTS

WALTER integrates the visual representation with results and discussion. But sometimes you may want to separate the presentation of results from the discussion.

Commentary in Results Sections

The question of whether the results section should include commentary is not easy to answer. The more traditional view is that the results section of a research paper would report the data that has been collected; it should focus exclusively on describing the actual results and should do so using the past tense.

Another view accepts some interpretation of results but suggests that more wide-ranging observations should be left until discussion and conclusions.

One must also consider the type of material expected in the final section of the paper. In some disciplines, the discussion section will be extensive and may be the longest section of the paper (as is often the case in medical research, and sometimes the case in the areas of social psychology and education.) In other disciplines, the final section may provide little more than a summary conclusion. Because of this uncertainty, it is not surprising that some researchers prefer to offer a combined results and discussion section (WALTER).

Commentary Found in Results Sections from 20 published biochemistry papers (Thompson 1993)

| | |
|--|--------------|
| Justifying the methodology | 19/20 papers |
| Interpreting the results | 19 |
| Citing agreement with previous studies | 11 |
| Commenting on the data | 10 |
| Admitting difficulties in interpretation | 8 |
| Pointing out discrepancies | 4 |
| Calling for further research | 0 |

Summary of Types of Results Sections

Type 1 - Gives straightforward description of the author's results; includes no commentary at all; no comparisons with the work of others, no justifications.

Type 2 - Is mostly restricted to present findings, but includes a few minor uses of commentary.

Type 3 - Consists of both description of findings and a number of commentary elements; uses several of the categories mentioned by Thompson.

Type 4 - Makes heavy use of commentary; uses most of the categories found by Thompson; could almost be taken for a discussion.

DISCUSSION/CONCLUSION(S)

1. "In my view, it is usually better to maintain separate results and discussion sections. A separate discussion section allows you to reiterate your point bluntly and concisely and thus provides an additional forum in which to get your point across. It is also the only place you are allowed to speculate widely (and perhaps wildly) on the implications of your work. Why surrender such a great opportunity?"

The discussion section should be constructed like a normal, upright pyramid, stating your most specific research conclusions at the top before broadening out to encompass wider and wider ideas. The first paragraph answers the question: what are your key results? ("The phylogenetic data presented here indicate that Chimps and Humans are in the same taxonomic family"). Following this, it is often effective to lead your readers through an overview that describes how your results fit into the bigger picture. ("Our findings support previous work by Jones and coworkers, who have argued..."). (Plaxco 2264)

2. "We will not distinguish between these two terms -- Discussion and Conclusion -- since the difference is partly conventional, depending on traditions in particular fields and journals." (Swales and Feak 365)

There is disciplinary variation. For example, some scientists, especially those in the life sciences, believe that a long discussion implies weak methods and results, while social scientists and humanists may well believe the opposite.

Overall, in published research papers, Results deal with factual statements and their interpretation, while Discussion sections deal with the *claims* that can be made, especially *new knowledge claims*. Discussions, then, need to be more than summaries. They should go beyond the results.

In contrast to Results sections, we would expect Discussion sections to be -
 more theoretical
 more abstract
 more general
 more integrated with the field
 more connected to the real world
 more concerned with implications or applications
 more likely to discuss the limitations of the study

The Structure of Discussion/Conclusions

- Move 1 - Background information (research purposes, theory, methodology)
- Move 2 - Summarizing and reporting key results
- Move 3 - Commenting on key results (making claims, explaining the results, comparing the new work with previous studies, offering alternative explanations)
- Move 4 - Stating the limitations of the study
- Move 5 - Making recommendations for future implementation and/or future research

Move 4 - Limitations in Discussion sections

By using positioning, authors can present themselves very effectively by both

1. highlighting intelligently the strengths of the study -and-
2. highlighting intelligently its weaknesses.

Discussion Move 4s tend not to use much negative language. The main reason is obvious - it is your own research you are talking about. Many limitation statements in Discussions are not so much about the weaknesses in the research, as about what cannot be concluded from the study. Producing statements of this kind provides an excellent opportunity for the writer to show that she understands how evidence is evaluated in the particular field.

LANGUAGE FOCUS - High-frequency reporting verbs

| Discipline | Verbs and frequency rank | | | | |
|------------------------|--------------------------|----------|-------------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 |
| Harder Sciences | | | | | |
| Biology | describe | find | report | show | suggest |
| Physics | develop | report | study | find | expand |
| Elec Eng. | propose | use | describe | show | publish |
| Mech Eng. | describe | show | report | discuss | give |
| Epidemiology | find | describe | suggest | report | examine |
| Nursing | find | suggest | report | identify | indicate |
| Medicine | show | report | demonstrate | observe | find |
| Softer Sciences | | | | | |
| Marketing | suggest | argue | find | demonstrate | propose |
| Applied Ling | suggest | argue | show | explain | find |
| Psychology | find | show | suggest | report | demonstrate |
| Sociology | argue | suggest | describe | note | analyze |
| Education | find | suggest | note | report | demonstrate |
| Philosophy | say | suggest | argue | claim | point out |

(Swales and Feak, p. 213).

LANGUAGE FOCUS - Expressions of limitation in discussions -

1. The findings of this study are restricted to . .
2. However, the findings do not imply . . .
3. Despite its preliminary character, the research reported here would seem to indicate . . .

ACKNOWLEDGMENTS

Acknowledgments provide an opportunity for you to show that you are a member of a community and have benefited from that membership. If permitted, acknowledgments should be written in the first person -- I or we. Some of the common elements include -

1. Financial support (First?)
2. Thanks (Second?)
3. Disclaimers (“The interpretations in this paper remain my own.”) (Optional?)
4. Other matters
 - Permissions
 - Previous version (“An earlier version of this paper was presented at _____.”)
 - Source (“This paper is based on research completed as partial fulfillment for the PhD requirements in the Department of Computer Science at _____.”)

ABSTRACTS

1. “The abstract is the entire paper in brief. . . [and] perhaps the single most important element in a paper; it will, after all, be read far more often than the paper it describes. Indeed, a badly written abstract almost guarantees that no one will read the paper itself. . . The abstract should be considered a stand-alone piece of literature, which, again, is how it is often read.” (Plaxco 2266)

2. “For some top journals such as the *British Medical Journal (BMJ)* and the *Journal of the American Medical Association (JAMA)*, the acceptance rate for research abstract manuscripts is typically about 5 percent. Among journals such as these, manuscripts may be rejected after a reading of the abstract alone (Langdon-Neuner, 2008). While we need to stress that such rejections will be largely based on the perceived scientific merit of the paper (or lack thereof), it remains the case that a careful and coherent abstract can only help a manuscript reach the next step of external review. We also know that if readers like your abstract, they may read your paper -- or at least part of it. If they do not like it, they may not.” (Swales)

3. “If the abstract is in your own field, you tend to shake your head in wonder, wishing that you’d made the discovery yourself - - sometimes, of course, you already have. In either case, a good abstract should evoke an emotional as well as an intellectual response. The best of breed fit Robert Frost’s definition of poetry: “when an emotion has found its thought and the thought has found words.” (Weissmann)

Abstracts have at least 2 distinguishable functions:

- 1) They function as stand-alone *mini-texts*, giving readers a short summary of a study’s topic, methodology, and main findings.
- 2) They function as *screening devices*, helping readers decide whether they wish to read the whole article or not.

Tense usage and person (“we discuss”) in abstracts can be fairly complicated. First, the conclusions are nearly always in the present. Second, some abstracts use the present or present perfect for their opening statements. Third, there appears to be considerable disciplinary and individual tense variation in sentences dealing with results.

The shift to the present tense is more likely to occur in the physical sciences. Physicists and chemists seem more likely to adopt a personal stance (We discuss; we compute; we conclude). Choosing the present tense option can produce an effect of liveliness and contemporary relevance.

There are two main approaches to writing abstracts:

- 1) the *results-driven* abstract which concentrates on the research findings and what might be concluded from them, and
- 2) the *summary* abstract in which the writer provides one or two sentence summaries of each section of the paper. Some journals require the *structured* abstract where each section is labeled with a title.

Abstracts from Various Fields adapted from Orasan (2001)

| Field | # of sentences | # of words |
|-------------------------|----------------|------------|
| Computer Science | 9.6 | 232 |
| Chemistry | 8.6 | 215 |
| Artificial Intelligence | 8.2 | 166 |
| Biology | 7.9 | 196 |
| Anthropology | 6.2 | 158 |
| Linguistics | 5.8 | 150 |
| Overall Averages | 7.4 | 175 |

Moves in abstracts - Most researchers identify a *potential* total of five moves in abstracts -

- | | |
|--|--|
| Move 1 - Background/introduction/situation | What do we know about the topic and why is it important? |
| Move 2 - Present research/purpose | What is the study about? |
| Move 3 - Methods/materials/subjects/procedures | How was it done? |
| Move 4 - Results/findings | What was discovered? |
| Move 5 - Discussion/conclusion/implications/ recommendations | What do the findings mean? |

How abstracts get started

There are four basic types of opening sentences.

- | | |
|--------|---|
| Type A | <i>Starting with a real-world phenomenon or with standard practice</i> Economists have long been interested in the relationship between corporate taxation and corporate strategy. |
| Type B | <i>Starting with purpose or objective (Why?)</i> The aim of this study is to examine the effects of the recent change in corporate taxation. |
| Type C | <i>Starting with present researcher action (What?)</i> We analyze corporate taxation returns before and after the introduction of the new tax rules. |
| Type D | <i>Starting with a problem or an uncertainty</i> The relationship between corporate taxation and corporate strategy remains unclear. |

WRITING CRITIQUES - Evaluating a Published Article (Swales and Feak)

The simplest structure of a critique is a short summary followed by an evaluation.

It is important that critiques be fair and reasonable within your discipline. Different fields are likely to impose different emphases on critiques. In the humanities, attention may focus on how interesting the arguments are; in the social sciences, on the methodology; and in the sciences and engineering, on the results and what they imply for the real world.

Here are a few questions to consider as you read an article and form the foundation for your evaluation:

1. Who is the audience?
2. What is the purpose of the article?
3. What research questions or hypotheses are being addressed in the article? Are the questions relevant? (Stating the questions as yes/no questions will help identify the focus of a paper as well as help evaluate the evidence and conclusions. *Does herbal tea cause tooth decay?* is more useful in guiding your thinking than *This paper is about herbal tea and tooth decay.*)
4. What conclusions does the author draw from the research? Does the author answer yes or no to the research questions?
5. What kind of evidence was collected to explore the research questions? Is there any evidence that could or should have been collected and included but was not? How good is the evidence? How well does the evidence support the conclusions?
6. Are the author's conclusions valid or plausible based on the evidence? Why or why not?
7. Are there any important assumptions underlying the article? How do they influence the conclusions?
8. Are the charts, tables, and figures clear? Do they contribute to or detract from the article?
9. Does the research make an original contribution to the field? Why or why not?

LANGUAGE FOCUS - Unreal Conditionals - You may want to express criticism by saying what the author should have done but did not.

Past Unreal Conditionals

These conditionals refer to an unreal situation in the past and are common in critiques because the texts being critiqued have already been put into final form.

1. This was a well-written review of current information, but the connection between nutrient stress, secondary compounds, and herbivory rates in wetland plants *could have received greater coverage*.
2. This article *would have been* more persuasive *if* the author *had related* the findings to previous work on the topic.
3. The resolution of the gel material *might have changed if* substantial Joule heating *had occurred*.

NOTE: The choice of the modal (should, could, might) will affect the strength of your criticism. *Should have* is a criticism; *could have* is a suggestion; *might have* is a weak suggestion.

- The author *should have provided* more data about her sample.
- Although this is an interesting and important paper, the authors *could have given* more attention to the fact that their model of consumer choice is based entirely on U.S. data.
- The analysis *might have been more convincing* if the graphs and tables had been more comprehensive.

Present Unreal Conditionals

Present unreal conditionals describe a hypothetical situation in the present. The simple past tense forms are used. These types of sentences are sometimes called *contrary to fact* or *hypothetical conditionals*.

- Your paper *would be* stronger if you *included* some additional information.

In this example, it seems that there may still be a possibility for revisions and improvements.

LANGUAGE FOCUS - Evaluative Language -

| | | |
|-------------|--------------|----------------|
| Nouns: | success | failure |
| Verbs: | succeed | fail |
| Adjectives: | successful | unsuccessful |
| Adverbs: | successfully | unsuccessfully |

The article *succeeds* in demonstrating how bio-gas has improved daily life in Nepal.
This article *fails* to serve teachers who need to make more complex judgments. . .

The article *successfully* demonstrates how bio-gas has improved daily life in Nepal.
Early papers *unsuccessfully* attempted to use cross-section distributions to . . .

The protocol described in this paper is *successful* at accurately tracking. . .
The article is *unsuccessful* at convincing readers of the benefits of new taxes on. . .

Some evaluative adjectives

| | |
|----------------|-------------|
| unusual | traditional |
| unsatisfactory | ambitious |
| useful | important |
| careful | innovative |
| elegant | complex |
| exploratory | impressive |
| limited | preliminary |
| restricted | modest |
| significant | flawed |
| competent | interesting |

Voice, Rhythm, and Reading Aloud

Voice refers to tone and style, subtle but powerful components of any written text. Often a writer is not able to maintain a consistent tone through a long text. Uneven tone can usually be traced to issues of register, the degree of formality of the language used, as well as the degree of personalization that the author has created in the text. Reading the text aloud to someone can reveal places in the writing where there is choppiness or awkwardness.

The rhythm in a text is the element that subtly pulls the reader through the story. Text inside parentheses or the use of many commas slow the rhythm for the reader, and can even stall your argument. How do you know if the rhythm of your text is smooth and helpful to your goal? Read your text aloud! You will feel the places that need your help. Perhaps there are too many short sentences that might be combined in some way or even edited out. Look for repetition and rework those areas. Perhaps there is a sentence that is too long in the context and requires restructuring. Keep playing with the rhythm and keep reading aloud until the text is smooth and readable.
<http://janetkayfetz.wordpress.com/2013/08/26/voice-rhythm-and-reading-aloud/>

FORMAL STYLE - THE VOCABULARY SHIFT

A distinctive feature of academic writing style is the choice of the more formal alternative when selecting a verb, noun, or other word. Shifting from a less formal word to a more formal word is a concrete way to maintain an academic tone in your text.

One of the most dramatic stylistic shifts from informal to formal style is the choice of a single verb over a verb + preposition. Often in lectures and everyday speech, the verb + preposition is used. To project a written academic style, writers should try to use a single verb wherever possible.

Less formal style - Given our fast-paced society, people must routinely **put** creative solutions to unexpected problems **into practice**.

More formal style - Given our fast-paced society, people must routinely **implement** creative solutions to unexpected problems. (Academic style)

Less formal style - Many software manufacturers in developed countries **put up with** widespread copyright violations in less developed countries and often even offer local versions of their products.

More formal style - Many software manufacturers in developed countries **tolerate** widespread copyright violations in less developed countries and often even offer local versions of their products.

| | |
|--------------|---|
| figure out | determine (what is lacking) |
| help out | assist |
| set up | establish |
| made bigger | enlarged |
| get rid of | eliminate |
| look into | investigate |
| do over | repeat |
| get | obtain (results) |
| look over | review (applications) |
| come up with | develop (hybrid vehicles that use a fuel-cell engine) |
| cut down | reduce |
| think about | consider |

| | |
|--------------------|-------------------------|
| good | considerable (progress) |
| a lot of | numerous |
| pretty good | encouraging (results) |
| do not have enough | have insufficient |

GRAMMAR AND FORMAL WRITING STYLE

Below are a few non-vocabulary related considerations for maintaining a scholarly and objective tone in your writing.

1. In a few fields contractions may be common; in most fields, contractions are not used.

Export figures won't improve until the economy is stronger. -->

Export figures *will not* improve until the economy is stronger.

2. Limit the use of vague and imprecise expressions such as *and so forth* and *etc.* where the reader has to "fill in" the missing information.

These semiconductors can be used in robots, CD players, *etc.* -->

These semiconductors can be used in robots, CD players, *and other electronic devices.*

Micropumps can be used in drug delivery, lab-on-a-chip analysis, etc. →

Micropumps can be used in drug delivery, lab-on-a-chip analysis, ink dispensing, and other specialized applications that require self-contained, low power, miniature pumps.

3. Often in academic writing, adverbs are placed within the verb rather than in the initial or final positions of sentences.

This model was developed by the IMF *originally* and was adapted by Lalonde and Muir (2007) *later.* -->

This model was *originally* developed by the IMF and *later* adapted by Lalonde and Muir (2007).

Then the morphology of the samples was analyzed using a scanning electron microscope (SEM). ->

The morphology of the samples was *then* analyzed using a scanning electron microscope (SEM).

Actually, very little is known about the general nature and prevalence of scientific dishonesty. →

Very little is *actually* known about the general nature and prevalence of scientific dishonesty.

4. *I* and *We*

Single authors in some fields use the first-person pronoun *I*. In some engineering and hard science fields, single authors may choose *we* given the collaborative nature of research in these areas.

Check to see what is done in your field. The use of *I* or *we* does not necessarily make a piece of writing informal. The vocabulary shift and some of the other features listed here are more important for maintaining a consistent academic style.

5. E.g. and i.e.

"For example" and "that is." Should we use the abbreviations or the real words they replace?

6. Use as many words as you need to express your point.

It may be difficult to make a decision about the method that should be used. →

Choosing the proper method may be difficult.

7. Both active and passive voices are used in academic writing; the key is to choose the right voice for the right purpose. Although grammar checkers may caution against using passive voice, it is commonly used in academic writing.

COMMAS, PARENTHESES, AND DASH SKEWERS

(from Adios, Strunk and White by G&G Hoffman, 2007, 38-40)

A dash skewer--two dashes used to enclose an internal clause--is a versatile hieroglyph (the authors' term). With the post-modernist's preoccupation for subtext --ideas that are implied below the surface of the text--and with the writer's impulse to pay closer attention to information a reader might mistakenly consider mundane, beside the point, or non-crucial, writers need to signal readers they are entering a parallel reality without totally exiting the surface one.

1) A writer's first instinct might be to use a set of commas to enclose an internal or interrupting clause or a parenthetical statement within a sentence: *William, my aunt Tina, and their cronies, avowed carnivores who adamantly avoid fructose, chewed the red apple.*

Using a set of commas to enclose the internal clause, the writer blends together the surface information and the subtext material. The information inside and outside the commas is read and regarded as of equal importance.

2) However, the writer who wishes to de-emphasize the internal clause (or treat the clause as a secret revealed) might choose to lower the volume with a set of parentheses: *William, my aunt Tina, and their cronies (avowed carnivores who adamantly avoid fructose) chewed the red apple.*

By choosing parentheses, the writer indicates that the internal clause is less important, that the information is a digression from the main point of the sentence, or that a secret is being divulged. (Also, sometimes parentheses are used to whisper sideline comments.)

3) But, a writer who wants to create the opposite effect-- emphasizing the parenthetical statement-- will employ the dash skewer: *William, my aunt Tina, and their cronies -- avowed carnivores who adamantly avoid fructose --chewed the red apple.*

Here the internal clause, skewered by dashes, is forcefully raised to the surface, getting at least as much, if not more attention as the main sentence, stressing the contrast between the information within the dashes and that which surrounds the punctuation, thus communicating irony.

With all three enclosures, a sentence is begun, then temporarily suspended by the delivery of an internal clause, and after the interruption, the main sentence is finally completed.

THOUGHTS ON WRITING

1) Kevin Plaxco from "The art of writing science"

The value of writing well should not be underestimated. Imagine, for example, that you hold in your hand two papers, both of which describe precisely the same set of experimental results. One is long, dense, and filled with jargon. The other is concise, engaging, and easy to follow. Which are you more likely to read, understand, and cite? The answer to this question hits directly at the value of good writing: writing well leverages your work. That is, while even the most skillful writing cannot turn bad science into good science, clear and compelling writing makes good science more impactful, and thus more valuable.

The goal of good writing is straightforward: to make your reader's job as easy as possible. Realizing this goal, though, is not so simple. I, for one, was not a natural-born writer; as a graduate student, my writing was weak and rambling, taking forever to get to the point. But I had the good fortune to postdoc under an outstanding scientific communicator, who taught me the above-described lesson that writing well is worth the considerable effort it demands. Thus inspired, I set out to teach myself how to communicate more effectively, an effort that, some fifteen years later, I am still pursuing.

2) E.B. White from The Elements of Style

Clarity, clarity, clarity. When you become hopelessly mired in a sentence, it is best to start fresh; do not try to fight your way through against the terrible odds of syntax. Usually what is wrong is that the construction has become too involved at some point; the sentence needs to be broken apart and replaced by two or more shorter sentences. When you say something, make sure you have said it. The chances of your having said it are only fair.

3) E.B. White from The Elements of Style

"Omit needless words!" cries the author on page 23, and into that imperative Will Strunk really put his heart and soul. . . He was a memorable man, friendly and funny. Under the remembered sting of his kindly lash, I have been trying to omit needless words since 1919, and although there are still many words that cry for omission and the huge task will never be accomplished, it is exciting to me to reread the masterly Strunkian elaboration of this noble theme.

It goes: "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. This requires not that the writer make all sentences short or avoid all detail and treat subjects only in outline, but that every word tell."

4) Stephen King from On Writing (2000)

If you want to be a writer, you must do two things above all others: read a lot and write a lot. There's no way around these two things that I'm aware of, no shortcut.

I'm a slow reader, but I usually get through seventy or eighty books a year, mostly fiction. I don't read in order to study the craft; I read because I like to read. It's what I do at night, kicked back in my blue chair. Similarly, I don't read fiction to study the art of fiction, but simply because I like stories. Yet there is a learning process going on. Every book you pick up has its own lesson or lessons, and quite often the bad books have more to teach than the good ones. . .

Being swept away by a combination of great story and great writing -- of being flattened, in fact -- is part of every writer's necessary formation. You cannot hope to sweep someone else away by the force of your writing until it has been done to you.

So we read to experience the mediocre and the outright rotten; such experience helps us to recognize those things when they begin to creep into our own work, and to steer clear of them. We also read in order to measure ourselves against the good and the great, to get a sense of all that can be done. And we read in order to experience different styles. (139-41)

5) Francine Prose from Reading Like a Writer: A Guide for People Who Love Books and for Those Who Want to Write Them (2006) (<http://www.brainpickings.org/index.php/2012/08/31/how-to-read-like-a-writer/>):

With so much reading ahead of you, the temptation might be to speed up. But in fact it's essential to slow down and read every word. Because one important thing that can be learned by reading slowly is the seemingly obvious but oddly underappreciated fact that language is the medium we use in much the same way a composer uses notes, the way a painter uses paint. . . . it's surprising how easily we lose sight of the fact that words are the raw material out of which literature is crafted.

Every page was once a blank page, just as every word that appears on it now was not always there, but instead reflects the final result of countless large and small deliberations. All the elements of good writing depend on the writer's skill in choosing one word instead of another. And what grabs and keeps our interest has everything to do with those choices.

6) Reflecting on the art of picture-book storytelling, Maurice Sendak (*Where the Wild Things Are* and *In the Night Kitchen*) shares his strong opinions about the interplay between words and pictures:

An illustration is an enlargement, and interpretation of the text, so that the reader will comprehend the words better. As an artist, you are always serving the words.

You must never illustrate exactly what is written. You must find a space in the text so that the pictures can do the work. Then you must let the words take over where words do it best. It's a funny kind of juggling act.

From *Artist to Artist: 23 Major Illustrators Talk to Children About Their Art* by Eric Carle. 2007. www.brainpickings.com.

7) William Zinsser from “The Sound of Your Voice” in *On Writing Well*

Never hesitate to imitate another writer. Imitation is part of the creative process for anyone learning an art or a craft. Bach and Picasso didn't spring full-blown as Bach and Picasso; they needed models. This is especially true of writing. Find the best writers in the fields that interest you and read their work aloud. Get their voice and their taste into your ear – their attitude toward language. Don't worry that by imitating them you'll lose your own voice and your own identity. Soon enough you will shed those skins and become who you are supposed to become.

8) Kevin Plaxco

The most important rule is simple: ignore any and all other rules if doing so makes the paper easier to read. Writing the clearest, easiest to read papers possible is the one-and-only goal. And there is no single “right way” to do this that fits all stories under all circumstances. Remember: writing is an experimental science. Just keep experimenting until you find a way that works for the task at hand. Good luck!

9) “Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives - choice, not chance, determines your destiny.” — Aristotle

10) Kurt Vonnegut from “How to Write with Style”

Find a subject you care about and which you in your heart feel others should care about. It is this genuine caring, and not your games with language, which will be the most compelling and seductive element in your style. I am not urging you to write a novel, by the way — although I would not be sorry if you wrote one, provided you genuinely cared about something. A petition to the mayor about a pothole in front of your house or a love letter to the girl next door will do.

For a discussion of literary style in a narrower sense, a more technical sense, I commend to your attention *The Elements of Style*, by Strunk, Jr., and E. B. White. E. B. White is, of course, one of the most admirable literary stylists this country has so far produced. You should realize, too, that no one would care how well or badly Mr. White expressed himself if he did not have perfectly enchanting things to say.

<http://www.brainpickings.org/index.php/2013/01/14/how-to-write-with-style-kurt-vonnegut/>

THANK YOU VERY MUCH: Much of the information contained in this packet comes from sections of John Swales and Christine Feak - [Academic Writing for Graduate Students - Essential Tasks and Skills](#). Editions One, Two and Three, The University of Michigan Press. In some cases I quote directly; in other cases I paraphrase and edit. Thank you also to every single student and colleague who helped me to refine the contents of this packet. Any errors are mine alone. JLK