

How to make your article boring

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As mentors and physicists-in-training, you have mastered a range of skills that I, a non-physicist, find humbling. I imagine your path to your present status something like this:

Evolution of a physicist

1. Curiosity about how things work



Evolution of a physicist

2. Pleasure in discovering natural order and rules.



Evolution of a physicist

3. Awareness of what has been learned by others



Evolution of a physicist

4. Acquisition of tools for exploring further



Evolution of a physicist

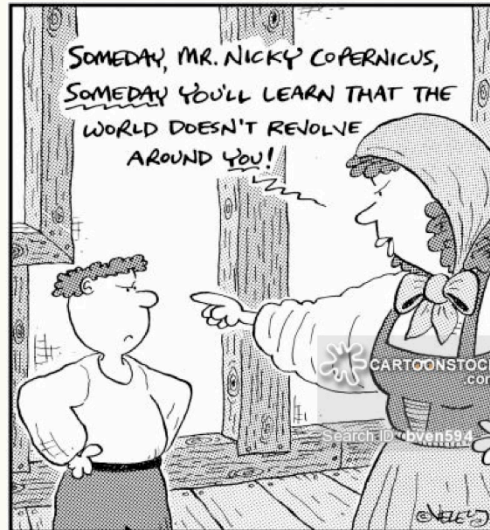
6. Development of writing skills for sharing one's work



This talk will be concerned with stage 6. However, the early stages of this evolution have some bearing on the last stage. For example, it was curiosity and pleasure in finding predictability in nature that motivated your present work and that motivates other scientists to read your articles. A weakness of many articles is that their writers are so focused on results that they forget what came before. They forget that the reader probably shares their curiosity and desire to understand, and that he or she, while interested in their results, would also welcome at least a glimpse of the fun part— the thought process that led to a particular method or outcome.

What is your reaction to someone who talks about himself, his theories, his activities, and his achievements, while hardly acknowledging your presence? Do you perhaps find this person boring?

Self-centeredness



Papers that describe the work but do not address or engage the reader produce a kind of impersonal pre-recorded message. They lack a sense of immediacy, of work-in-progress, the mind-to-mind contact between writer and reader that enlivens the best scientific writing. In short, they are boring.

Two models of scientific writing

a) The impersonal pre-recorded message (boring):

The position coordinate basis was used to calculate the generalized mutual information.

b) The friendly guide (engaging):

Here we work in the position coordinate basis in order to calculate the generalized mutual information.

To a large extent, scientific writing that ignores the reader follows the impersonal model, while writing that includes the reader follows the more engaging or friendly model. There are several ways in which to favor one or the other style in your writing. I would like to look at ten of these today. I will state them as ways to make an article boring, but the converse of each will accomplish the opposite. The choice is up to you.

Rules for a Boring Article

1. Make your title long and cumbersome. Do not save the details for the paper.

Boring title:

Nuclear magnetic resonance techniques as a probe of C_{60} and C_{60} superconductors: structural, electronic, and superconducting state properties

Simple title:

Nuclear magnetic resonance of C_{60} fulleride superconductors

Imagine your readers as a dissertation committee. Show them how much you know. A long title will also impress your mother.

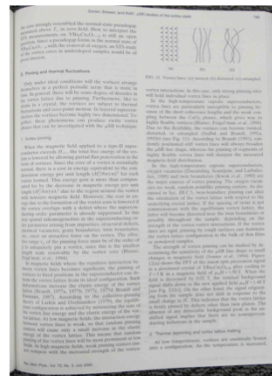
Rules for a Boring Article

2. Discuss your subject with few paragraph breaks. Go for solid columns of print, which look massive and weighty.

Boring page



Friendly page



Do not worry about slowing your reader's progress through the article. If you give him or her few opportunities to take a breath, s/he will fall asleep sooner, from oxygen deprivation.

Rules for a Boring Article

3. Use as many multisyllabic words as possible. This has a soporific effect on English-speaking readers.

... in order to execute an efficient experimental implementation ...



It also decreases the forward momentum of anyone trying to plow through the paper.

A wordy style shows disrespect for your reader's time.

See how many simple verbs you can replace by wordy phrases.

decide	make a decision
fail	experience failure
consider	place under consideration
indicate	give indications of
discuss	present a discussion
try	make an attempt
replace	introduce a replacement

I have highlighted *present a discussion* because this occurred often in the Brazilian papers I surveyed.

Rules for a Boring Article

4. At the opposite extreme, use lots of acronyms.

“These allowed parameter regions are labeled as *MSW small mixing angle* (SMA), *MSW large mixing angle* (LMA), *MSW low mass* (LOW), and *vacuum oscillations* (VAC). Before including the SNO (CC) data, the best fit corresponded to the SMA solution, but after SNO the best fit corresponds to the LMA solution.”



Abbreviating everything makes writing easier for you. Do not worry about its making reading harder for your audience

Rules for a Boring Article

5. Never address your reader directly and use *we* only when referring to your co-authors.

Avoidance of *we* (Boring)

The calculation of the Green's function in Eq. (21) is made possible by performing a unitary transformation that decouples the impurity ...

Use of *we* (Friendly)

We can calculate the Green's function in Eq. (21) by performing a unitary transformation ...

This is a big one. It lies at the heart of producing an impersonal, unfriendly article. You are publishing your results (pre-recorded message model), not speaking to a colleague.

Rules for a Boring Article

Corollary of Rule 5. Do not ask questions.

Introduction of topic without question (Boring):
In this section I shall be considering whether these data can also be understood within the heuristic weak-universality scenario.

Introduction of topic with question (Friendly):
Can these data also be understood within the heuristic weak-universality scenario?

Questions not only address the reader directly, they engage him or her in thinking about an answer. .At the beginning of a section, they also provide a concise way into the topic.

Rules for a Boring Article

6. Avoid the use of gracious or helpful remarks.

Consider

Contrast this with

Let us take a closer look at

Remember that

Note the clear difference

Such remarks are frequent in articles that follow the friendly-guide model because they contribute to the impression that you are talking *with* the reader rather than submitting a report.

Here I must acknowledge a wonderful article by three authors at this Institute that was a model of how to present a derivation in a friendly, lively manner. This was “Kondo dynamics in one-dimensional doped ferromagnetic insulators” by Hudson Pimenta, Luiz Nunes Oliveira, and Rodrigo Pereira. Here are some more phrases taken from their paper.

More helpful and gracious remarks from
Pimenta *et al.*, Phys. Rev. B. 91.155143

Our starting point is
Let us describe
As a first step, we diagonalize
We see now that
The remarkable feature of bosonization is
The next step is to expand
Here a caveat is necessary.
On the other hand, we know that
The form of the interaction can be guessed from symmetry

For a wealth of similar phrases, I recommend this paper to you.

Moving on to Rule 7, ...

Rules for a Boring Article

7. Say nothing about the reasons for your choices or the process by which you arrived at your method. Focus on “cut and dried” results.

Do not waste words on guiding your reader through unfamiliar territory. Anyone reading your paper should know enough to figure it out, and if he doesn't, too bad!

Rules for a Boring Article

8. Tell the reader what he sees rather than suggest what can be seen.



Boring:
as seen, as is seen

Friendly:
as can be seen

Halley's comet *can be seen* in the background of this drawing by the 19th-century artist Honoré Daumier.

Rules for a Boring Article

9. Avoid comparisons from daily life. Physics is a pure science, removed from humble associations, and should be kept strictly cerebral.



Never mind about Schroedinger's cat, Planck's small black cloud on the blue sky of physics, and other memorable references to the everyday world. These might capture the reader's imagination and detract from an otherwise boring paper.

Example of reference to everyday life.

Even scientists who have spent the last few years under large rocks cannot help having heard of Supernova 1987A in the Large Magellanic Cloud (the associated neutrino burst having readily penetrated the very largest rocks}.

Virginia Trimble
Rev. Mod. Phys. **60** (1988)

Here is one of my favorite allusions to everyday life, from a review article by Virginia Trimble.

Rules for a Boring Article

10. Use the Present Perfect tense often because it sounds more impressive.

What does a choice of tenses have to do with being boring? A great deal. Our inclusion or exclusion of the reader is largely governed by the time in which we frame our work. Discussing work in the present tense allows us to say “we do this, we see that,” as if the reader were present with us. When we use the past tense, whatever we describe is closed to participation. The Present Perfect serves as a transition between the two. Using transitions is generally helpful, contributing to the accessibility of an article. Unfortunately, the situation is complicated by misuse of the Present Perfect, in the mistaken idea that it is for completed action or just that it sounds impressive.

Let’s take a closer look at this one. It involves not only a choice of style, but actual rules of usage that many authors seem to have trouble with. Recall that problems with tense accounted for enough errors to rank sixth among the top 10 errors in Brazilian English.

A scientific paper generally uses three tenses:

Present	We study
Past	We studied
Present Perfect	We have studied

Speakers of Portuguese (and several other languages) frequently confuse the last two and use the Present Perfect inappropriately. There is not a one-to-one correspondence between the tenses in Portuguese and English. And the two-word Present Perfect is not analogous to the two-word French *passé composé*, for completed action. Quite the contrary. It is for action that may be ongoing up to the present. Therefore, rather than compare the subtleties of different languages, I think it would be most useful just to focus on how and when to use these three English tenses in a scientific paper.

Use the Present Perfect tense like second gear in a car.

Its main function in a scientific article is to transition from one tense into another. You do not drive in it for very long.



The Present Perfect can describe something in the past that is ongoing up to the present.

Up until now, the bulk and boundary cases **have been treated**

Recent work [6, 7] **has given** us some insight into

So far, no numerical studies **have explored**

To date, there **has been** little interest

These uses are well suited to an introduction, reviewing recent progress before moving on to current work. Just as shifting into second gear is generally a precursor to third gear, the use of the Present Perfect in this context raises the expectation that the speaker is about to talk about present research.

The Present Perfect can also look back (but not very far back) at something just done.

As we **have just seen**

Hence we **have shown**

While controlling the polarization, we **have been able**

Such uses are well suited to the conclusions section of a paper, transitioning out of a description of work in the recent past and into a present summation.

By comparison, the past tense is used mainly for narration (not transitions) and for describing more distant past events.

In an earlier article [3], we [derived](#)
As early as the nineteenth century, Boltzmann [studied](#)
The scattering in this experiment [gave rise to](#)

There is no rule that says one tense should be used in an abstract or another in an introduction. But since tense seems to pose a problem for so many, I offer a proposed sequence of tenses for a journal article, merely as a suggestion. If you follow it, you will also avoid the secondary problem of shifting from one tense to another far too often.

Tenses to use in the Abstract

a) The Present tense is most common and straightforward:

We **report** on ...

These profiles **offer** ...

We **propose** a model ...

Our definition **is based** on ...

b) The Past is a natural choice for describing a completed experiment:

We **used** 30 different laser excitation lines ...

A magnetic field **was applied** normal to the surface ...

These are the tenses you would use when speaking with a colleague about your work. The Present Perfect would not be wrong, strictly speaking, but sounds odd and somewhat affected when used for narration rather than a transition.

Tenses to use in the opening sentence (or paragraph) of the Introduction

- a) Present tense
The control of light by light **is** a fascinating process with applications in ...
- b) Present Perfect
The phenomenon of tunneling **has long been** a textbook example of ...

Both choices introduce your reader to the topic and imply that current work will be described next. The Past tense has no such implication and would seem rather abrupt for an opening sentence.

Tenses to use in the Introduction after the opening

Present

These results **raise** the important question of ...

As our starting point, we **take** the two time-dependent Schrödinger equations ...

Past

Sekine *et al.* **were** the first to report ...

To address this question, we **selected** ...

The Present tense is especially well suited for a theoretical paper, the Past for an experimental one or for giving extended background. Note, no Present Perfect. While useful as an entry point, it is not suitable for a narrative.

Tenses to use in the main body of the article,
including the Methods section, if there is one.

Present for Theory

Past for Experiment

We introduce ...

We monitored ...

The scaling functions behave ...

All the energy bands displayed...

The next step is to substitute ...

The vortices were imaged ...

This is just a suggestion, not a rule. Note once again, no Present Perfect because it is not suitable for either a narrative or a presentation of theory, though in a derivation it might be briefly used for a transition from one step to another, for example, saying “Up to now we have included ...”

Tenses to use in the Summary and Conclusion

The following sequence—shifting through all the gears—is most common.

- a) Present Perfect – Looking back at what you **have done**.
In conclusion, we **have demonstrated** ...
The effect of magnetic flux on the energy spectrum **has shown** ...
- b) Past – Looking back with slightly more distance.
In this work we **considered** ...
We **found** that the two cross sections ...

Tenses to use in the Conclusion, continued

- c) Present – the most forceful for stating conclusions
 - We **conclude** that ...
 - Our results **demonstrate** ...
 - The existence of only one phase shift **can be** interpreted ...

- d) Future and Subjunctive – a zoom out from your own work
 - Future calculations **should** also **examine** ...
 - It **will be** interesting to see ...

Well, I hope this has clarified somewhat the uses of different tenses and their implications in both boring and not so boring articles. We are almost done, but before I conclude there is your Problem Set to do. It consists of ten sentences drawn from the articles by Brazilian research groups that I read for my survey. Seven of them have problems with tenses, while three are correct and require no changes. Please take a few minutes now to read these sentences and correct any incorrect use of tense that you find.

We have been considering how to make an article boring. In brief, ...

Summary. The Boring article should be ...

- unappealing in its title
- weighty in appearance (few paragraph breaks)
- difficult to plow through because of wordiness
- difficult to decipher because of too many acronyms
- impersonal
- unhelpful
- set in a tense that excludes the reader or that impedes the flow of the article

Such a paper may put its reader to sleep and is highly likely to be forgotten within days. I would like to close with a brief consideration of its opposite, the memorable paper.

The memorable paper is intriguing at the beginning, friendly and accessible in the main body, and convincing as to its science and conclusions. While not the same as a mathematical proof, it shares some of the qualities of mathematical elegance. The physicist Carl Friedrich Gauss went so far as to revise his proof of quadratic reciprocity eight times, trying to make it more elegant. I'm not suggesting eight rewrites of any article, but it might be worthwhile to keep in mind while writing the qualities that contribute to elegance.

Consider the concept of mathematical elegance.

“A beautiful or elegant result possesses three components: economy, unexpectedness, and inevitability.”



G. H. Hardy
A Mathematician's Apology
1940

G. H. Hardy, in his book *A Mathematician's Apology*, wrote, “A beautiful or elegant result possesses three components: economy unexpectedness, and inevitability.” If, in place of unexpectedness, we substitute liveliness or that mind-to-mind contact that I mentioned before, we get something like this:

Economy

A simple, unpretentious **title** draws the reader in.

Use of **shorter paragraphs** presents the material in digestible pieces.

Limiting the use of **multisyllabic words** and **wordy phrases** improves accessibility.

Limited use of **acronyms** also aids accessibility.

Appropriate use of **tenses** welcomes and guides the reader, as well as contributing to a smooth pace.

Unexpectedness (Mind-to-Mind Contact)

Direct address treats the reader like a colleague in the same room.

Questions that intrigued the authors are also of interest to readers.

Reasoning that led to a particular choice guides the reader through unfamiliar material.

Suggesting what can be seen allows the reader to discover it for himself.

An **analogy from daily life** can bring freshness to a presentation.

Inevitability

The scientific merit of the paper, its originality, insight, and result, are wholly in the domain of science.

The meat of a paper, dependent on your originality and insight, as well as on your work, is up to you. I can't presume to advise you on conducting your research. But judging from the flow of publications from this Institute you are doing fine.

Thank you for your attention!

Thank you!