Technical Writing for Papers and Proposals

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Most engineers assume that one form of technical writing will be sufficient for all types of documents.

This is absolutely not true.

This presentation will help you sharpen your technical writing skills so that you have a greater chance of your papers getting accepted and your proposals succeeding.

The Importance of Knowing Your Audience

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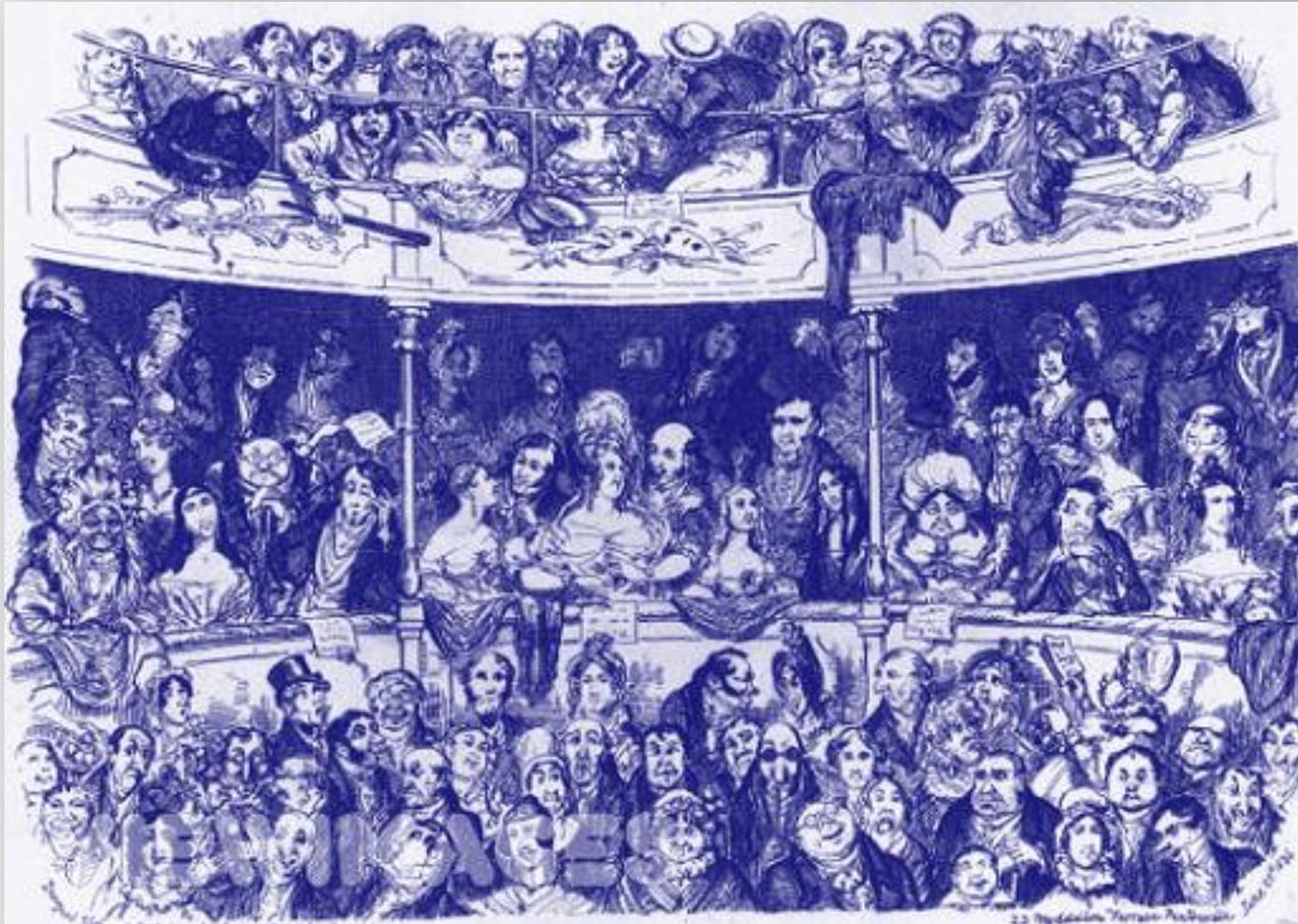
Knowing your audience is critical to writing a good technical document – or any written material, for that matter.

If people think you do not understand who they are and what they are interested in, then:

They simply won't read your work.

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The Importance of Knowing Your Audience

Who will be reading your paper or proposal?

- Peers in your specific field?

- Peers in your general field?

- Technical people not in your field?

- A non-engineering but professional audience?

Decide who is your primary audience.

Understand who are your secondary audiences.

Why would these audiences want to read your material?

- Write down specifics in answer to this question – this will help you create a focus for your material.

- Create an outline before you start writing – this will help you organize your thoughts.

- Use the resources of this university to help you with this step.

  - Writing Center   http://writingcenter.unlv.edu/

  - Online Writing Lab   http://writingcenter.unlv.edu/owl/

  - Downloadable Writing Tips http://writingcenter.unlv.edu/writing/downloads.html

  - Purdue OWL   http://owl.english.purdue.edu/owl/resource/544/01/

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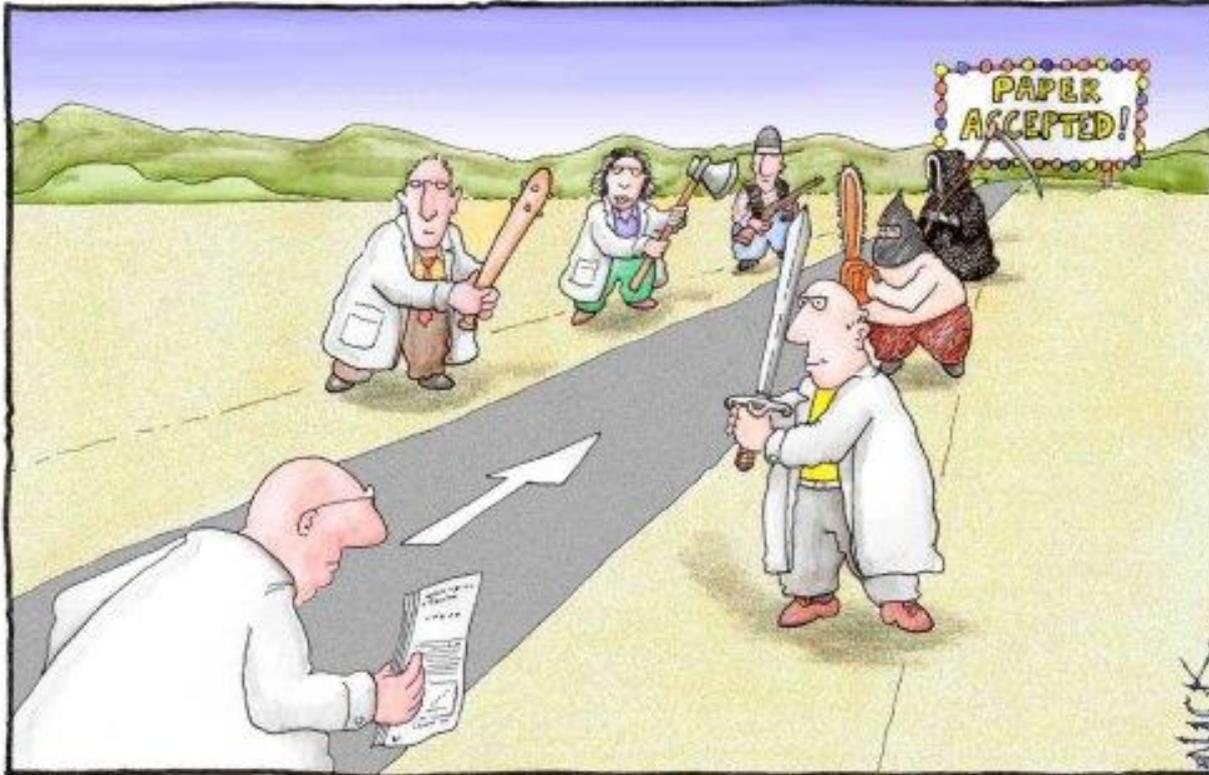
Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

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You must check the style guidelines of the journal or conference paper.

- **This is the first thing that the editors of the journal or conference will check – and reject if you don't comply.**

- **Suggested strategy:**

  - Find out and understand the style of that journal or proceedings.

  - Write your paper freely; don't be overly concerned about the style at this point.

  - Once you have written and edited your paper, then format it according to style guidelines.

Every journal and conference has some kind of style guide they want you to follow.

The style guide includes:

- Font type and size
- Double space, single space, etc.
- The way headers should look
- Indent or spaced paragraphs
- Abstract word count
- Keywords? Highlights?
- Page length of paper
- How to submit artwork and tables

Read the style guide for that publication very, very carefully.

Sample style guides

IEEE Author Digital Toolbox

http://www.ieee.org/publications_standards/publications/authors/authors_journals.html

Elsevier journals: extensive author instructions

http://www.elsevier.com/authors/home **and search for Guide for Authors for the journal you are interested in.**

ASCE Guide for Authors

http://www.asce.org/Content.aspx?id=18107

Springer's Author Academy

http://www.springer.com/authors/author+academy?SGWID=0-1739713-0-0-0

Many style guides are incomplete.

- They may not tell you how to format your figure captions or table titles.

- Look at a couple of recent published articles in that journal to find out missing style information.

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Create your own 'style sheet'

- As you begin to write, keep track of terms you use so that you are consistent.

- Note when you first use an acronym.

- If the journal or proceedings does not have instructions for headers, captions, or tables, create in your style sheet the format you plan to use.

- A customized style sheet is especially valuable for creating reports to agencies – you can create a consistent and professional look to the documents you submit.

Technical Writing for Journal and Conference Papers

Copyright and Permissions

According to Springer's *Journal of Civil and Structural Health*:

Permissions
Authors wishing to include figures, tables, or text passages that have already been published elsewhere **are required** to obtain permission from the copyright owner(s) for both the print and online format and to include evidence that such permission has been granted when submitting their papers. Any material received without such evidence will be assumed to originate from the authors.

Copyright and Permissions

According to the American Society of Civil Engineers (ASCE):

ASCE respects the copyright ownership of other publishers and requires ASCE authors to obtain permission to reproduce any material that **they did not create themselves or has previously been published.** Each author has a responsibility to identify materials that require permission and to obtain permission from the copyright owner.

Authors publishing with ASCE (other than *Civil Engineering* magazine) are required to submit written documentation of the permission that they have received from the copyright owner.

Citations and References

You must cite material correctly and provide references according to journal style guidelines

RefWorks

- All faculty, staff, students and <u>alumni</u> can access UNLV's RefWorks site for free.

- http://www.library.unlv.edu/research/refworks

- Online tutorials and excellent help section

- Look for RefWorks workshops held by UNLV Librarians

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- **Ignore style guides at your peril**

- **However** -- don't let the style guide hamper your writing style

Write your heart out and then refine your work.

- After writing, put the document away for a couple of days.
- Print it out, and use a pen to mark your work up. You are looking for:
  - Flow of thought
  - In-text citations and references
  - Grammar and punctuation
  - Equations, figures, and tables
  - Conformance to style guide
- Use university resources

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Converting a thesis or dissertation into a paper

- In a thesis, especially, you have to include information that ensures your board of reviewers understand that you know your subject

- This information is extraneous and largely unnecessary for experienced readers of journals

- When converting a thesis to a paper, think carefully about who your new audience is, and edit accordingly.

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Know when to --

An Editor-in-Chief once told me that it could take a lifetime to learn the art of knowing when to stop writing.

There is a point in your writing – or editing – where you must stop or risk having your material degenerate.

If there is too much information thrown into a paper – then, perhaps you need to write two or three separate papers…

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Technical Writing for Proposals

There are slightly different rules for proposal writing than for writing a paper.

If you understand from the outset that the proposal process can be stressful, then you can plan your strategies more effectively.

Proposal writing is a very stressful process

- Tight deadlines.

- A great many rules and requirements.

- You are emotionally invested in the result.

- The stress increases with the number of collaborators involved.

Technical Writing for Proposals

Knowing who is reading and evaluating your proposal is extremely important.

As with papers, know your audience:

- Technical readers, not necessarily in your field of expertise.

- Financial and legal advisors.

- Government officials.

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Technical Writing for Proposals

Your audience (think 'reviewers') sees thousands of proposals:

- They quickly know what is genuine and what is not.

- They want you to cut to the chase rather than create elaborate explanations.

- They want you to answer their questions very specifically.

Technical Writing for Proposals

In some proposal style guides, it is actually written:
"…if you do not comply with this format,
we will not look at your proposal."

You **must** follow the proposal style guide or risk rejection.

Sample proposal style guide:

Proposal and Award Policies and Procedures Guide of the National Science Foundation

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf13001

Proposal and Award Policies and Procedures Guide

Technical Writing for Proposals

If you don't create a calendar or checklist for milestones and deadlines, you risk either forgetting something or missing your deadline.

Create a milestones and deadline checklist

- This helps you keep track of all the forms and documents

- Give a copy to all collaborators, but make sure one person is responsible for tracking everything.

- Allow yourself plenty of 'slip room' in case of delays.

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Technical Writing for Proposals

Milestone Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Jan 1	2	3	4	5	6	7
		Kickoff meeting of collaborators			Bio sketches and current & pending support forms to Tech Writer	
8	9	10	11	12	13	14
	1st draft sections of Project Narrative submitted to PI		1st draft of Project Narrative to Tech Writer		Complete all required forms and check	
15	16	17	18	19	20	21
		1st draft Project Summary to Tech Writer		1st draft of Data Management Plan to Tech Writer		
22	23	24	25	26	Jan 27	28
	1st draft budget to OSP for review	Final drafts complete of all written material	1st draft budget narrative to OSP for review	All final docs submitted to OSP	**Deadline 5 pm EST**	

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Technical Writing for Proposals

Writing suggestions

- **Really** know your audience – no kidding, call up your program director and get to know them.
- Know the style guide of that agency
- Write what you want and then refine your work
- Check the details
    - Compliance to requested information
    - In-text citations and references
    - Conformance to style
    - Grammar and punctuation
    - Equations, figures, and tables
- Create a recognizable 'look' (we have done this for the College of Engineering)
- **Know when to stop!**

Technical Writing for Proposals

Please try to avoid:

Writing so much text that the document looks 'jammed.'

- Edit your proposal down to the essentials.

- Don't tire your readers with lengthy and difficult language.

- White space adds elegance – and the reviewers like it.

Technical Writing for Proposals

According to the National Science Foundation's guidelines:

The guidelines specified above establish the **minimum** type size requirements; however, PIs are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the proposal.

Small type size makes it difficult for reviewers to read the proposal; consequently, the use of small type not in compliance with the above guidelines may be grounds for NSF to return the proposal without review.

Adherence to type size and line spacing requirements also is necessary to ensure that no proposer will have an unfair advantage, by using smaller type or line spacing to provide more text in the proposal.

Technical Writing for Proposals

Please try to avoid:

Long, long sentences

- Rule of thumb: read it aloud, and if you have to take a breath to finish it, it is too long.

- Try to break up long sentences – your readers will thank you.

Final thoughts

Winning a proposal is a complex process

1. Quality of research
2. Need for this kind of research
3. Quality of proposal writing
4. Political aspects
5. Funding aspects
6. Many more factors involved

The point of creating a well-written proposal is to make sure that elimination will not occur to due Factors 1, 2, and 3.

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Grammar and Punctuation Basics

Errors common to engineers…

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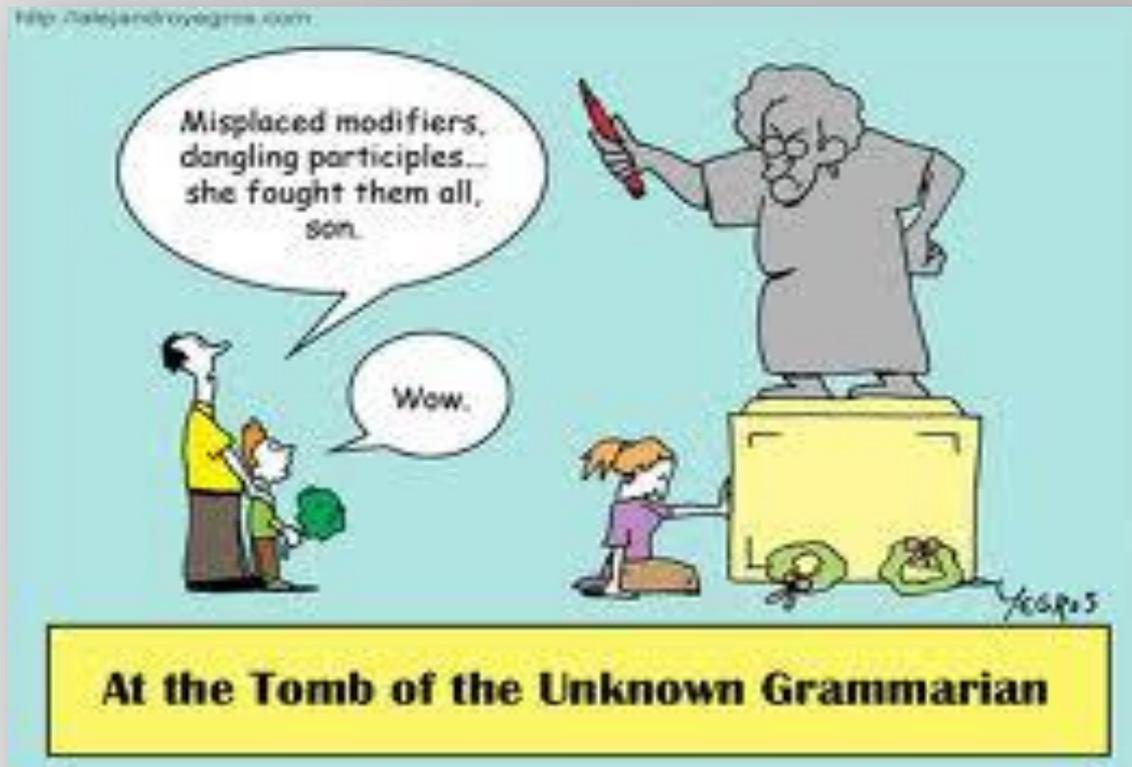
Grammar and Punctuation Basics

Acronyms

- You **must** write out an acronym the first time you use it in the body of the paper.

- Write the term first and then put the acronym in parentheses.

- Also write out the acronym in the abstract – however, you also must write it out again when first used in the body of the paper.

- If you have a great many acronyms, and you use them frequently throughout the paper, it is a courtesy to your readers to provide a Glossary list at the end of your paper.

Grammar and Punctuation Basics

Saving the most important points for the end of the sentence

- By doing this, you make your readers guess why they are reading that sentence in the first place; then they have to read the sentence a second time. This annoys them.

- Figure out what the most important point of the sentence is and put it in the front of the sentence.

- There are exceptions to this rule, but very rarely.

Grammar and Punctuation Basics

Use (or overuse) of commas and semicolons

- This is a very common issue with engineering documents.

- Because most papers and proposals include difficult concepts and equations, it is very important to use commas and semicolons correctly in order to help the reader.

- Avoid the overuse of parentheses – again, this will cause 'brain freeze' in deciphering a lengthy and difficult sentence.

- After you have written your paper, read it as if you were the audience and try to break up the longer, more difficult sentences and paragraphs.

Grammar and Punctuation Basics

The overuse of 'i.e.' and 'e.g.'

- Engineering writing is very complex and hard to follow.

- 'i.e.' means 'that is' and 'e.g.' means 'for example.'

- It will be easier on the reader if you simply use the English words instead of the Latin acronyms.

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Grammar and Punctuation Basics

'that' and 'which'

- "**That**" is used with restrictive phrases – phrases that are essential to the sentence.

- "**Which**" is used with nonrestrictive phrases – phrases that are not essential to the sentence.

- When you use 'which,' a comma precedes it.

Other punctuation issues

UNLV's Writing Center offers a workshop on Punctuation, which all engineering writers should attend.

PUNCTUATION. Do you feel uncomfortable with commas or wonder what to do with semi-colons? This session will discuss all types of punctuation and help improve your sentences.

To find the list of workshops provided on various writing topics you might be interested in: http://writingcenter.unlv.edu/wkshops/

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In Conclusion –

- Technical writing for papers and proposals take as much care as your actual research

- Different writing styles are used for papers, proposals, and reports

- Keep your reader in mind at all times

- Comply with the journal or proposal style guidelines

- Editing and refining your writing is a key part of the process

Resources

- Julie Longo, College of Engineering Technical Writer, julie.longo@unlv.edu

- Sue Wainscott, UNLV Librarian for UNLV's College of Engineering, Sue.Wainscott@unlv.edu

- Jeanette Bernard-Snyder, Sr. Research Administrator, Office of Sponsored Programs, jeanette.bernard-snyder@unlv.edu

- UNLV's Writing Center
    - Individualized assistance
    - Workshops: http://writingcenter.unlv.edu/wkshops/classes.html
    - Writing Tips – APA Style http://writingcenter.unlv.edu/writing/apa.html

- UNLV Thesis and Dissertation Style Guide http://graduatecollege.unlv.edu/PDF_Docs/TDGuidelinesFormat.pdf

- Purdue's Online Writing Lab (OWL) http://owl.english.purdue.edu/

- Identify great scientific writers (current and historical) and study their writing styles – for starters, go to http://pinterest.com/jlongounlv/

- UNLV's College Engineering website on Grant Development Aids – http://www.unlv.edu/engineering/grant-development-aids

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