Writing for Science Journals

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Outline

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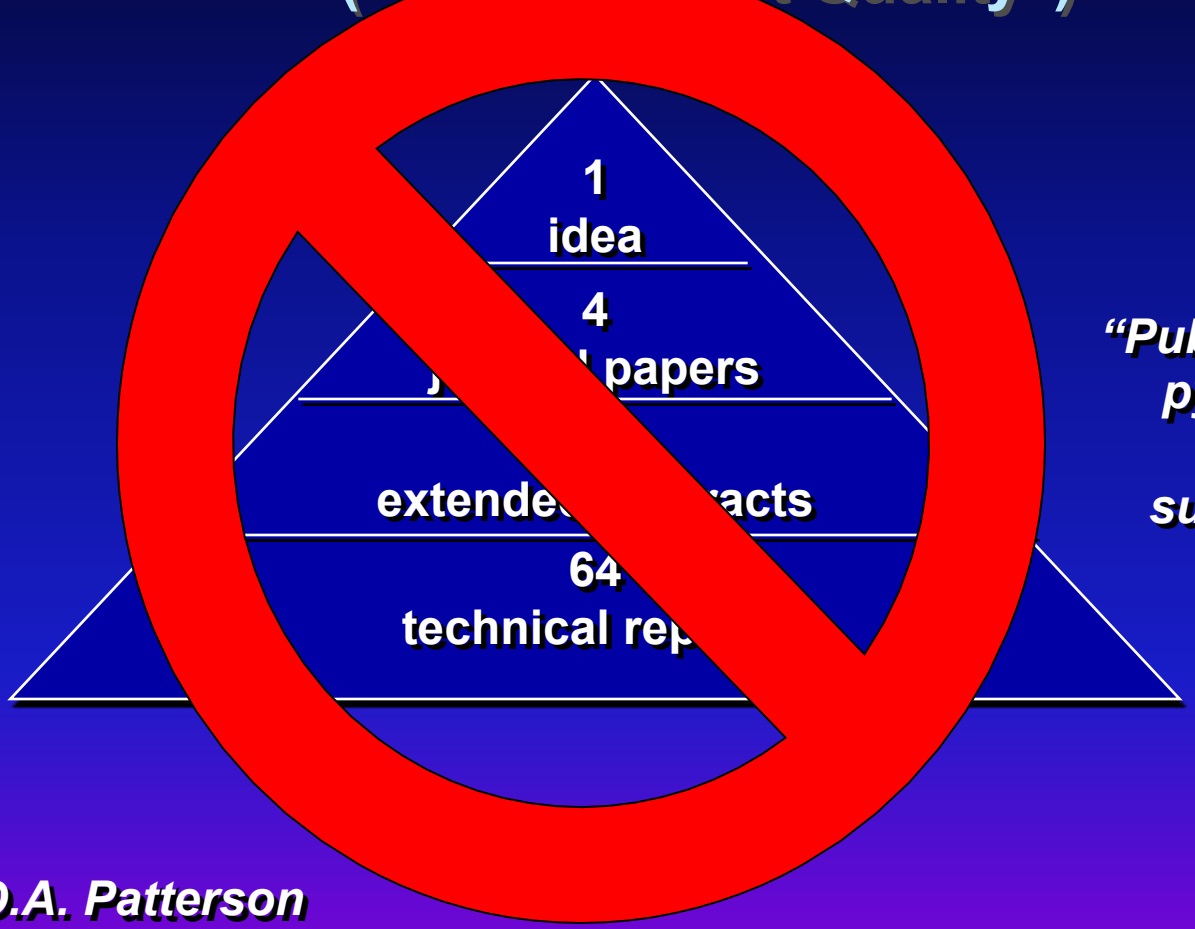
- Abstract Writing

When to Write?

- An article is an article if:
  - It makes a contribution
    - Have I discovered something new? Have I advanced the state of the art? Will people want to cite my paper?
    - Avoid the “thin-section” or “LPU” (Least Publishable Unit) approach.

The Least Publishable Unit Syndrome

("Qu[illegible]not Quality")



"Publication pyramid of success"

After D.A. Patterson

When to Write?

- An article is an article if:
  - It makes a contribution
    - Have I discovered something new? Have I advanced the state of the art? Will people want to cite my paper?
    - Avoid the “thin-section” or “LPU” approach.
    - Avoid the “Kitchen Sink” approach (too broad).
  - The results are supported by solid evidence
    - Experimental, Statistical, etc.
  - Others can replicate the results

What to Write?

- An article must contain explanations of:
  - Its importance
    - Why you should read this?
    - Needs clear understanding and statement of the research issues in the field.
  - The scientific basis for the work
    - E.g., follows as consequence of existing theory, understanding of physical processes, etc.
  - Research methodology and experimental design
  - Analysis and results
  - Conclusions (implications)

Preparing to Write
(Strategic Suggestions)

- Study the journal
  - Look at back issues
    - Have articles appeared on related topics?
    - Study references in related articles
  - Look for editorial statements
  - Study length, format, and other requirements in "Instructions to Authors"
    - E.g., Color? Can I afford the page charges?

Writing Format

- **General Principle: Make the Editor Happy!!**
  - If format is rigidly specified, use it!
  - If not, format should follow from essence and essentials:
    - Abstract
      - A clear statement of problem, methods, and results

Writing Format

- **General Principle: Make the Editor Happy!**
  - If format is rigidly specified, conform.
  - If not, should follow from essence and essentials:
    - Abstract
      - A clear statement of problem, methods, and results
    - Introduction
      - Context: Relation of your work to previous, why important (verification), what questions will be addressed
    - Theoretical/Scientific Basis
    - Methodology
    - Results
    - Conclusions

Writing Tips

- **General Principle: Make the Editor Happy!!**
  - Don't write a mystery novel
  - Avoid the urge to complicate
  - Watch length (too long *or* too short?)
  - Use active voice
    - No: "It is seen in Table 5"
    - Yes: "Table 5 shows"
  - Limit "while" and "since" to appropriate use
    - No: "While others have found…"
    - Yes: "Although others have found…"
  - Qualify "this" when referring to previous sentences
    - No: "This accounts for…"
    - Yes: "This reduction in soil moisture accounts for…"

Writing Tips

- **Pay attention to Paragraph Structure**
  - **Topic sentence**

In selecting a general approach for usability engineering, we first considered the work of Gabbard et al. (1999), which was recommended by Slocum et al. (2001) as potentially appropriate for a broad range of geovisualization applications. Gabbard et al.'s approach involves four major steps: an analysis of potential user tasks prior to software development, an evaluation of the software by usability experts, having actual users work with a broad range of software functions, and a comparative evaluation…

Writing Tips

- Pay attention to Paragraph Structure
  - Topic sentence
  - Put references to figures and tables early in paragraph

Referring to a Figure

As a result, we decided to implement the six-step process shown in Figure 2. We began by developing a software prototype largely based on the third author's domain expertise in water balance models and climatology. Because we felt the that resulting software might be biased toward the third author's interests, we asked domain experts to evaluate the software in step 2. Our thinking was that the domain experts might suggest a number of tasks that we had not thought of implementing…

Writing Tips

- Pay attention to Paragraph Structure
  - Topic sentence
  - Put references to figures and tables early in paragraph
- Be careful how others' work is characterized
- Use %-signs in table entries (not in captions)
- Effective Figures
  - Graphic elements
  - Axes (titles and units)
  - Long captions are better than long descriptions in text

Writing Tips
(Tactical Suggestions, Continued)

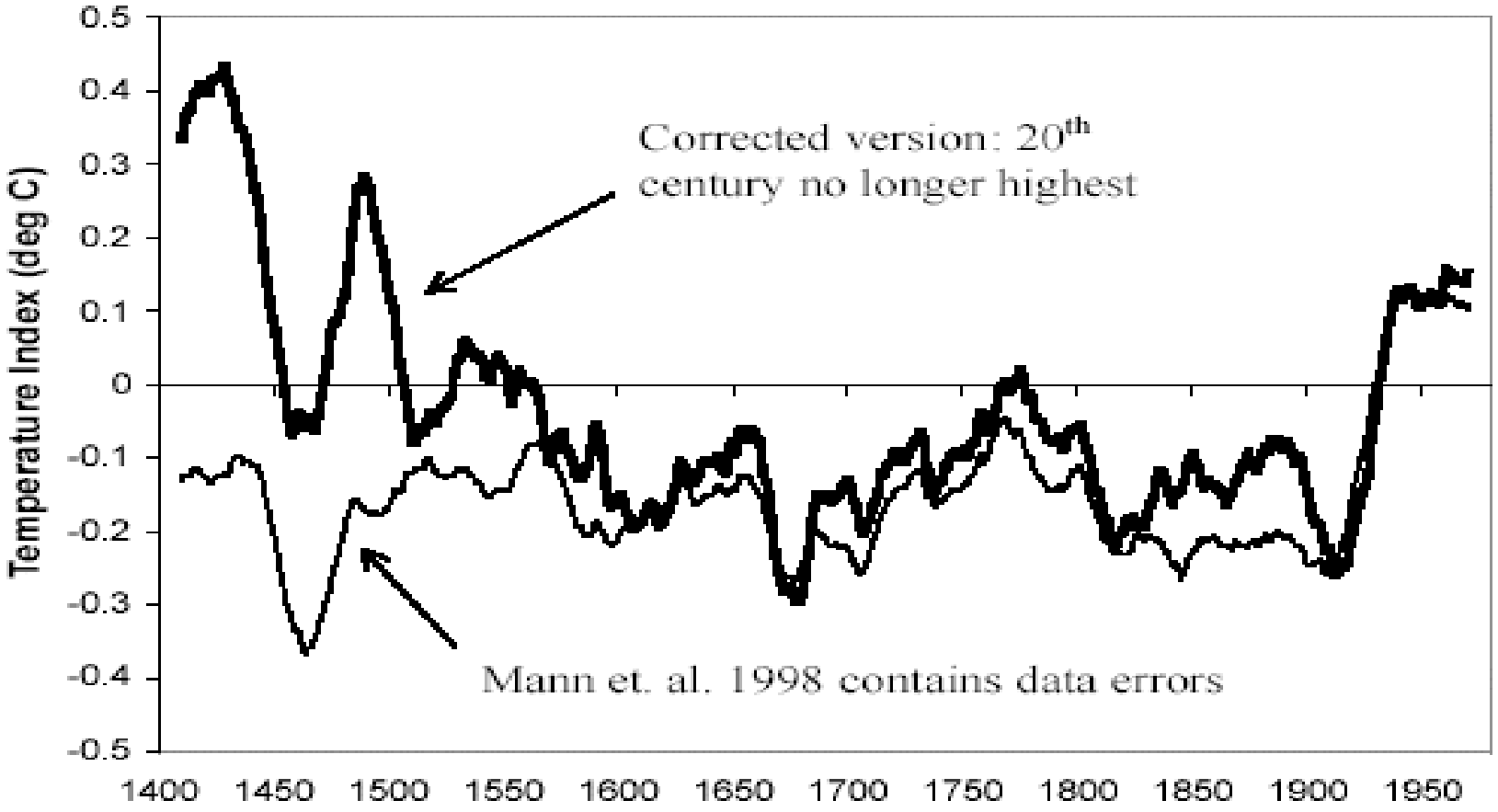


Figure 8. As Figure 7, using 20-year running mean to smooth.

Writing Tips
(Tactical Suggestions, Continued)

- **Steps in Manuscript Production:**
  1. Prepare 1-page outline
  2. Prepare Paragraph Map
     - Pseudo-code: topic sentences, hand-drawn figures and captions, table placeholders
  3. Write Draft
  4. Spell and grammar check
  5. Read out loud
  6. Repeat (3)-(5)
  7. Show to colleague(s)
  8. Repeat (3)-(5)

Writing Tips
(Tactical Suggestions, Continued)

- Why Guess? Consult the Experts:
  - Robert Weissberg,and Suzanne Buker, *Writing Up Research*, Prentice Hall, Inc 1990.
  - Strunk and White, *The Elements of Style*, 4th ed., Allyn and Bacon, 1999
  - Flower, *Problem Solving Strategies for Writing,* 4th ed.,Heinle, 1997
  - Tufte, *Visual Display of Quantitative Explanation*, 2nd Ed., Graphics Press, 2003 (and other Tufte books)
  - Other articles as templates and examples

The Review Process

- General Principle: Keep the Editor Happy!
  - He/she has invested in you
  - Show timeliness & good-faith effort to follow
- Understand the Editor's role
- Understand the Reviewer's role
- Know that:
  - Nearly all articles require revision, and usually two review cycles
  - Reviewers often want to help
  - Some reviewers seem unkind
  - Some reviewers are unkind
  - Regardless---you can benefit