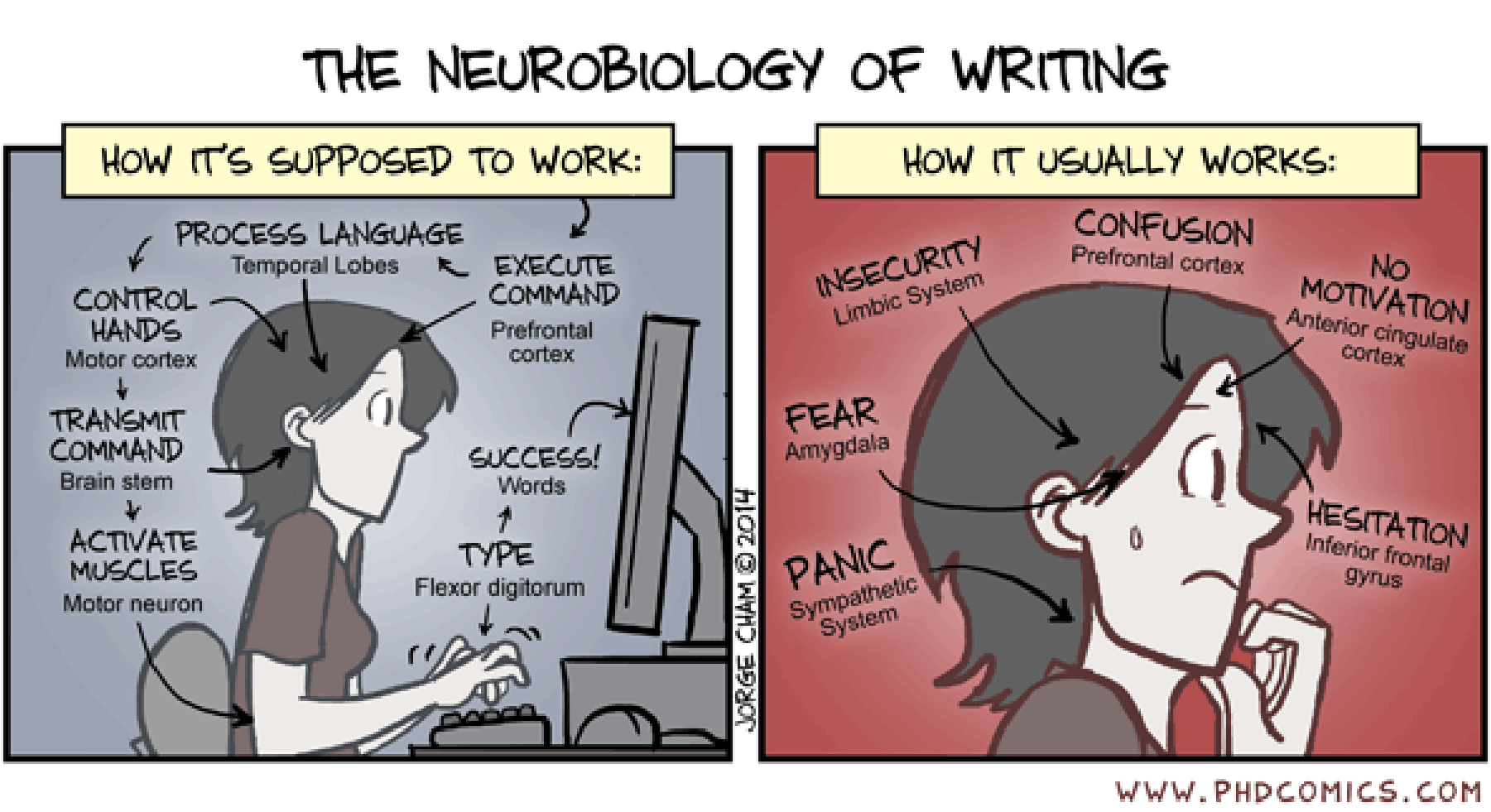
科技论文写作指导

陈琦

2015.04.08



Journal Presentations

- Articles — new data or fresh approach; details
- Notes — a limited scope; special significance; cannot be published again (#1, #2)
- Letters (Communications)

  urgency; length limitations; may not contain nonessential experimental details; "expected" extensive study later
- Reviews

  integrate, correlate, and evaluate; often no experimental details

Guide for Authors: check word limit for your type!

Standard Format

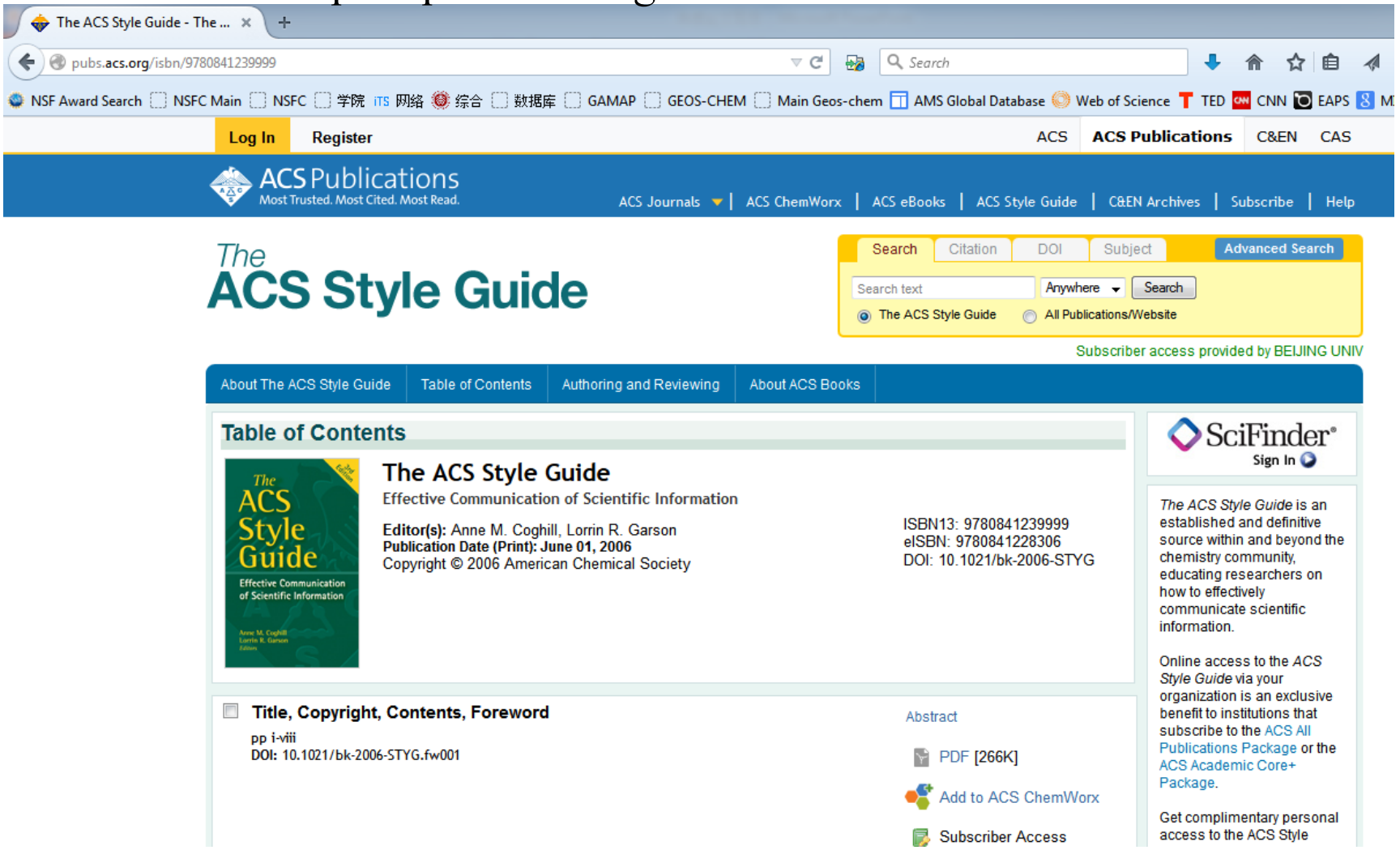
- Title (author list)
- Abstract
- Introduction
- Experimental (Methods, Materials…)
- Results
- Discussion
- Conclusions (Implications, Summary…)
- Appendix, Acknowledgements, References
- Figures and Tables
- *Supplementary*

define the problem (create a hypothesis)
devise an experiment
conduct the experiment
draw conclusion

Guide for Authors: check specific requirements and use template!

Guide

http://pubs.acs.org/isbn/9780841239999



A good Title --- brief, grammatically correct, accurate, and stand-alone

- 4<words<14: >14 subtitle
- Attract readers and aid indexing
  - ✓ Avoid phrases such as "on the", "a study of", "research on", "report on", "regarding", and "use of"
  - ✓ Avoid jargon, symbols, formulas, and abbreviations
  - ✓ Series titles are of little value

Examples:

Unexpected epoxide formation in the gas-phase photooxidation of isoprene

Biogenic potassium salt particles as seeds for secondary organic aerosol in the Amazon

Maximum efficiency in the hydroxyl-radical-based self-cleansing of the troposphere

A new atmospherically relevant oxidant of sulphur dioxide

Abstract --- informative, concise, and self-contained

- Determine the **nature** and **scope** of the paper
  - ✓ briefly state the problem or the purpose of the research
  - ✓ indicate the methods used
  - ✓ summarize the findings
  - ✓ point out major conclusions
- A few guidelines
  - ✓ Do not cite references, tables, figures, or sections
  - ✓ Do not include things that require display on a separate line (e.g., equations)
  - ✓ Use abbreviations only when necessary; define abbreviations at first use in the abstract
  - ✓ Word count

Introduction --- concise background discussion

- Opening paragraphs are usually introductory
- State the problem and the significance, scope, and limits of the work
- Outline what has been done before citing literature
- State how your work differs from or is related to previous work
  - ✓ Do not include a general survey of semirelevant literature
  - ✓ On the basis of scientific questions (of broad interests) not location (local)

Example

- 观测

科学问题： 来源、机理 （别人可以借鉴）

- ✓ 围绕数值（地点：北京、东京、香港等等）没有太大意义
- ✓ 对同类研究做总结，而非罗列所有研究，说明缺乏那些重要的工作。
- ✓ 对科学问题的前沿做总结，只具体列举重点相关研究。
- ✓ 文献的选择要有代表性。

Experimental --- the easiest part

- Sufficient detail so that other experienced workers can **repeat the work** (reagent, procedures, and data analysis)

✓ Describe apparatus only if it is not standard or not commercially available; otherwise (company, model number)

✓ Cite proper literature when using a standard method and give only the details needed

✓ Data processing: equations and formulas necessary to the arguments (lengthy derivations are best presented as supplementary)

Results and Discussion

- Summarize the data collected and their statistical treatment

✓ Include only relevant data but give sufficient detail to justify the conclusions

✓ Use equations, figures, and tables only where necessary for clarity

✓ Extensive but relevant data should be included in supplementary

- Interpret and compare the results

✓ Be objective; point out the features and limitations of the work

✓ Relate your results to current knowledge in the field

✓ Suggest further study

✓ If separate, do not repeat information given elsewhere

Conclusions

- Put the interpretation into the context of the original problem

✓ Do not repeat discussion points

✓ Should be based on the evidence presented

Example:

Appendix, Acknowledgements, References

- Appendix: relevant background but not critical
- Acknowledgements: funding; fellowship; people; data location, conflicts etc.
- References: the accuracy of the references is the author's responsibility
  - ✓ Carefully read **Guidelines for Authors**
  - ✓ Endnote tips: term list, style list, manual corrections (name, capitalize), prefix and suffix in Word

Figures

- Necessary? 500 words (one publication unit)
- Use color?
- How to cite figures:
  - ✓ Capitalize the word "Figure" when it is followed by the figure number
  - ✓ Number figures sequentially
  - ✓ Designate parts of a figure by using a combination (e.g., Figure 1a, Figure 1A, Figure 1-I, Figure 1-II)
  - ✓ Do not cite, for example, Figure 4 and Figure 4A
  - ✓ Good examples: "Figures 1 and 2", "Panels a and b of Figure 1", "in Figure 2a,b"; or "Figure 3b-d", "Figures 3-5", "Panels c-e of Figure 2"
  - ✓ Bad examples: "Figure 2c and Figure 2d show…", "Figure 3 and Figure 4 show"

Look good? --- personal choice but

Table 15-2. Column Dimensions Most Common in ACS Publications

	Column Width			*Page Length*		
Publication	*picas*	*inches*	*centi-meters*	*picas*	*inches*	*centi-meters*
Books, trim size						
6 × 9 in.	27	4½	11	42	7	17½
7 × 10 in.	33	5½	13½	51	8½	21½
8 × 11 in.				56	9	23
single column	20	3¼	8¼			
double column	42	7	17½			
Journals and magazines, two-column format				60	10	25½
single column	20	3¼	8¼			
double column	42	7	17½			
Magazines, three-column format				60	10	25½
single column	13	2	5			
double column	27½	4½	11			
triple column	42	7	17½			

Look good? --- personal choice but

	20 picas (single-column journal)	*27 picas (6 x 9 in. book)*
Approximate reduction	38%	50%
Type size in Excel	14 pt	14 pt
Type size after reduction	5 pt	7 pt
Line width in Excel	1.5 pt	1 pt
Line width after reduction	0.5 pt	0.5 pt

Too thin or small for scanning!

Too thick or big for screen viewing!

General guidelines:

- ✓ Create the graph to the exact size at which it will be published
- ✓ Make the symbols at least the size of "o"
- ✓ Plain, simple fonts such as Helvetica or Times Roman are best
- ✓ Make the lines at least 0.5 point but no more than 1.5 points wide
- ✓ Select a type size of 7-10 points; for ACS, 5-6 points

Example:

Figure captions

- Informative description, preferably in nonsentence format

Example:

Figure 5. Mass yields of typical first-generation products (P236 and P252-2&3) and of typical second-generation products (P238 and P254-2&3). Error bars represent ±1 standard deviation (δ) of the yields of three samples collected under each condition.

Figure 5. Mass fractions of first- (blue) and second-generation (red) products for increasing organic particle mass concentration. The ozone concentration was 50 ppbv. Error bars represent ±1 standard deviation of the mass percentages of three replicate experiments. Lines are shown to guide the eye.

Tables

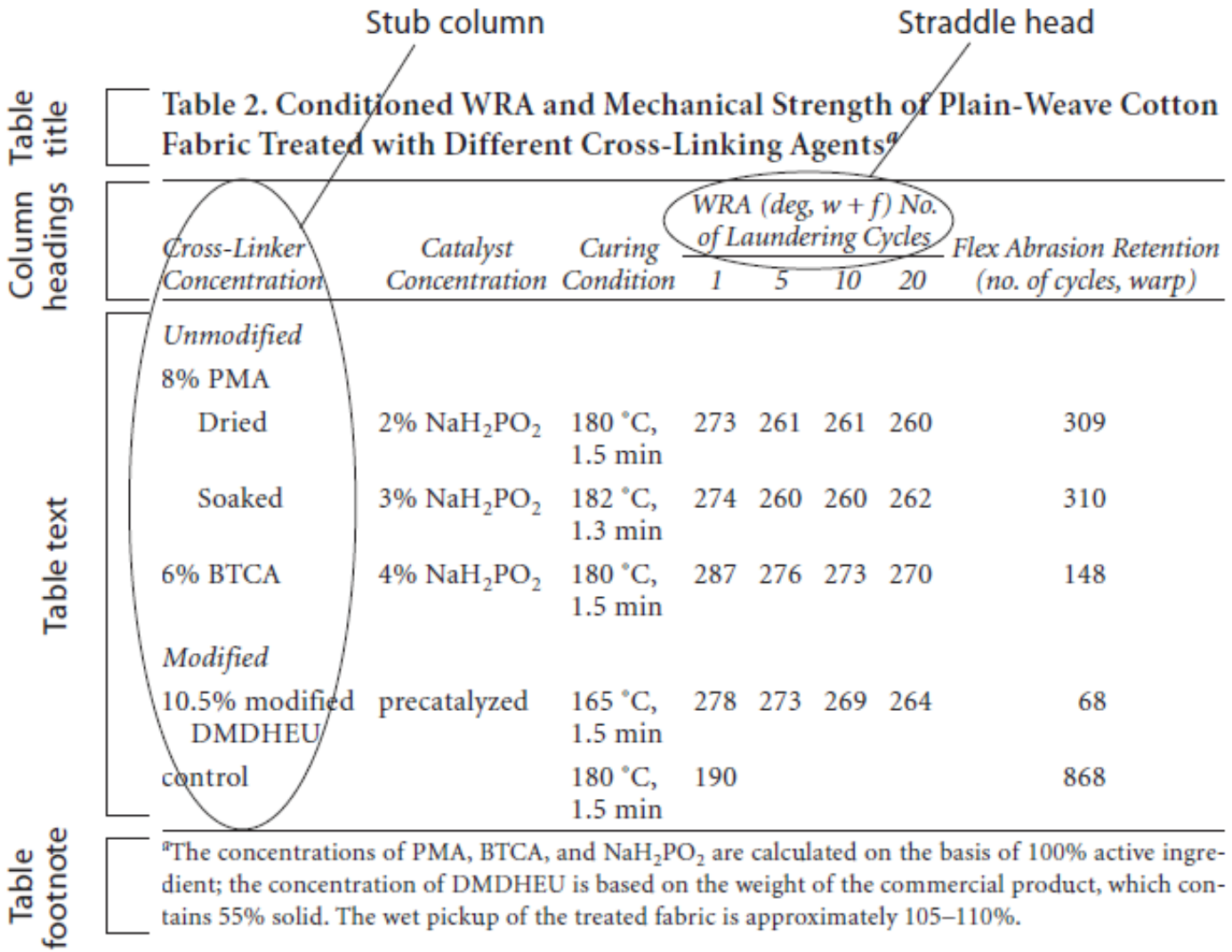
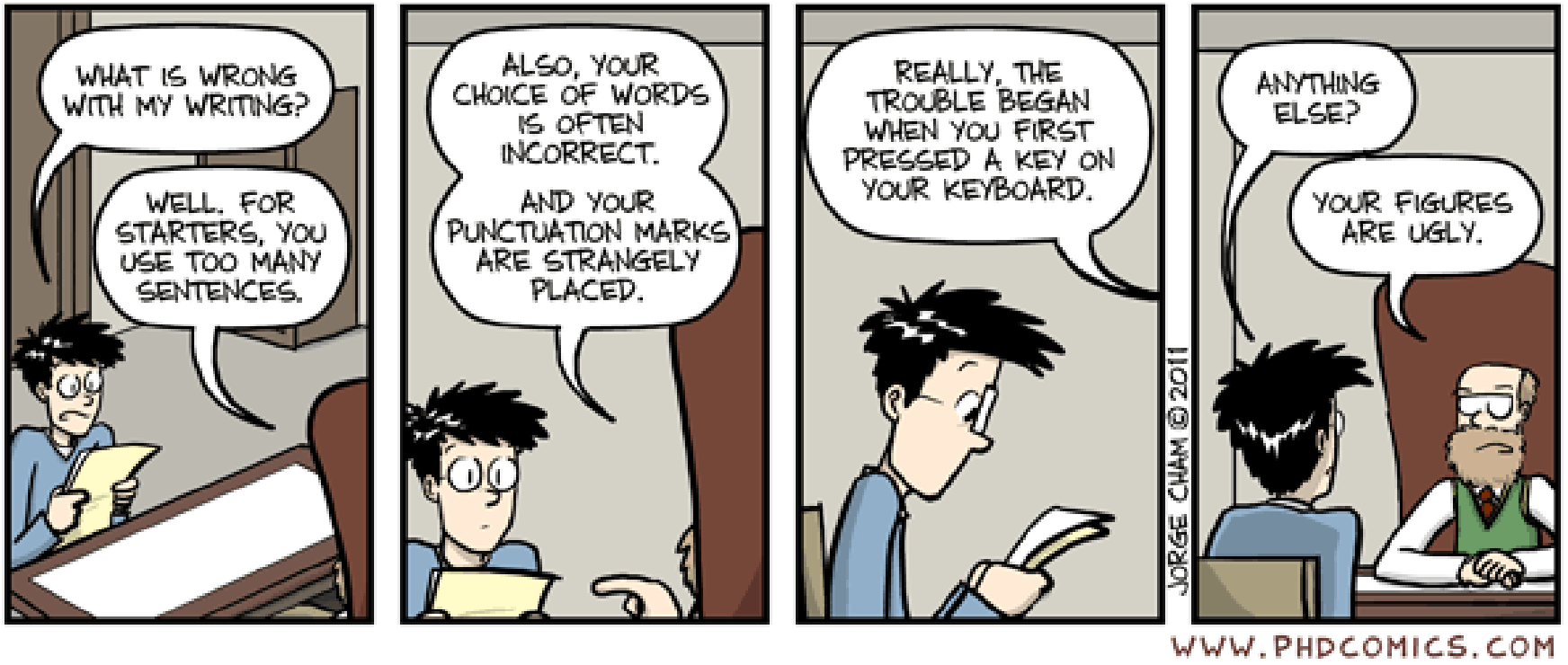


Table 2. Conditioned WRA and Mechanical Strength of Plain-Weave Cotton Fabric Treated with Different Cross-Linking Agents[a]

Cross-Linker Concentration	*Catalyst Concentration*	*Curing Condition*	*WRA (deg, w + f) No. of Laundering Cycles* 1	5	10	20	*Flex Abrasion Retention (no. of cycles, warp)*
Unmodified							
8% PMA							
Dried	2% NaH_2PO_2	180 °C, 1.5 min	273	261	261	260	309
Soaked	3% NaH_2PO_2	182 °C, 1.3 min	274	260	260	262	310
6% BTCA	4% NaH_2PO_2	180 °C, 1.5 min	287	276	273	270	148
Modified							
10.5% modified DMDHEU	precatalyzed	165 °C, 1.5 min	278	273	269	264	68
control		180 °C, 1.5 min	190				868

[a]The concentrations of PMA, BTCA, and NaH_2PO_2 are calculated on the basis of 100% active ingredient; the concentration of DMDHEU is based on the weight of the commercial product, which contains 55% solid. The wet pickup of the treated fabric is approximately 105–110%.

Writing Style and Word Usage



- Voice

Use the active voice when it is less wordy and more direct than the passive.

POOR

> The fact that such processes are under strict stereoelectronic control is demonstrated by our work in this area.

BETTER

> Our work in this area demonstrates that such processes are under strict stereoelectronic control.

- Tense

➤ Use the proper subordinating conjunctions. (*Conjunctions* join parts of a sentence; *subordinating conjunctions* join subordinate clauses to the main sentence.) "While" and "since" have strong connotations of time. Do not use them where you mean "although", "because", or "whereas".

POOR

Since solvent reorganization is a potential contributor, the selection of data is very important.

BETTER

Because solvent reorganization is a potential contributor, the selection of data is very important.

POOR

While the reactions of the anion were solvent-dependent, the corresponding reactions of the substituted derivatives were not.

BETTER

Although the reactions of the anion were solvent-dependent, the corresponding reactions of the substituted derivatives were not.

Accurate comparisons

➤ Use the verb "compare" followed by the preposition "to" when similarities are being noted. Use "compare" followed by the preposition "with" when differences are being noted. Only things of the same class should be compared.

> Compared to compound **3**, compound **4** shows an NMR spectrum with corresponding peaks.
>
> Compared with compound **3**, compound **4** shows a more complex NMR spectrum.

➤ Use the more accurate terms "greater than" or "more than" rather than the imprecise "over" or "in excess of".

➤ Use "fewer" to refer to number; use "less" to refer to quantity.

Commonly confused words and phrases

➤ Choose "based on" and "on the basis of" depending on your meaning. Phrases starting with "based on" must modify a noun or pronoun that usually immediately precedes or follows the phrase. Use phrases starting with "on the basis of" to modify a verb.

> The doctors' new methods in brain surgery were based on Ben Carson's work.
>
> On the basis of the molecular orbital calculations, we propose a mechanism that can account for all the major features of alkali and alkaline earth catalyzed gasification reactions. (*not* Based on …)

➤ Choose "assure", "ensure", and "insure" depending on your meaning. To assure is to affirm; to ensure is to make certain; to insure is to indemnify for money.

> He assured me that the work had been completed.
>
> The procedure ensures that clear guidelines have been established.
>
> You cannot get a mortgage unless you insure your home.

Words and Phrases To Avoid

- Avoid slang and jargon.

- Be brief. Wordiness obscures your message and annoys your readers.

- Omit empty phrases such as

  As already stated
  It has been found that
  It has long been known that
  It is interesting to note that
  It is worth mentioning at this point
  It may be said that
  It was demonstrated that

- Omit excess words.

INSTEAD OF	CONSIDER USING
It is a procedure that is often used.	This procedure is often used.
There are seven steps that must be completed.	Seven steps must be completed.
This is a problem that is ….	This problem is ….
These results are preliminary in nature.	These results are preliminary.

➤ Write economically (and usually more precisely) by using single words instead of phrases.

INSTEAD OF	CONSIDER USING
a number of	many, several
a small number of	a few
are found to be	are
are in agreement	agree
are known to be	are
at present	now
at the present time	now
based on the fact that	because
by means of	by
despite the fact that	although
due to the fact that	because
during that time	while
fewer in number	fewer
for the reason that	because
has been shown to be	is
if it is assumed that	if
in color, e.g., red in color	just state the color, e.g., red
in consequence of this fact	therefore, consequently
in length	long
in order to	to
in shape, e.g., round in shape	just state the shape, e.g., round
in size, e.g., small in size	just state the size, e.g., small

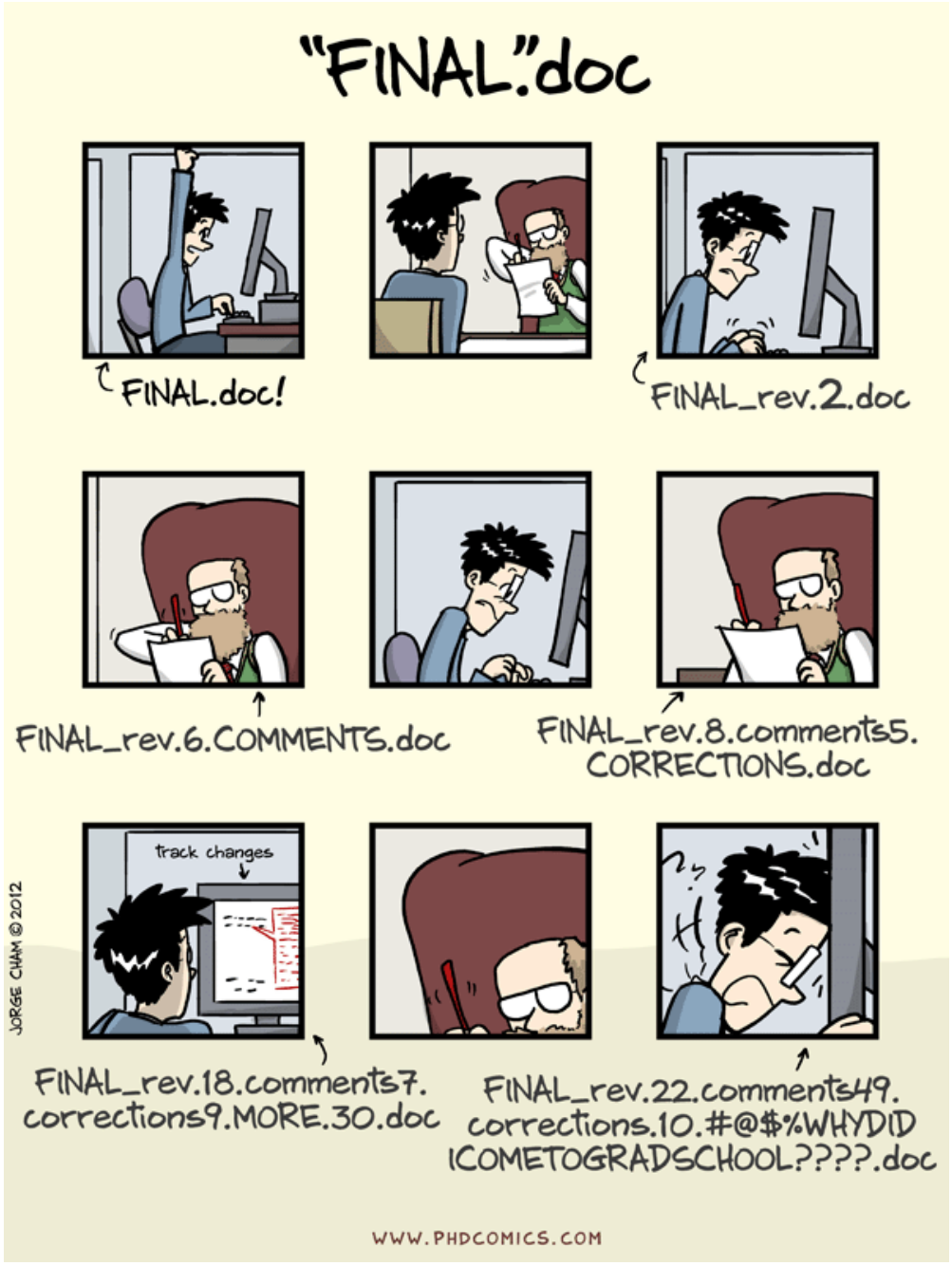
Cheat Sheet on Grammar and Punctuation

- Date and Time

25 July 2007 (dd month yyyy), 15:17:02 (hh:mm:ss). Often it is necessary to specify the time if referring to local time or universal time coordinated. This can be done by adding "LT" or "UTC", respectively.

- Units:

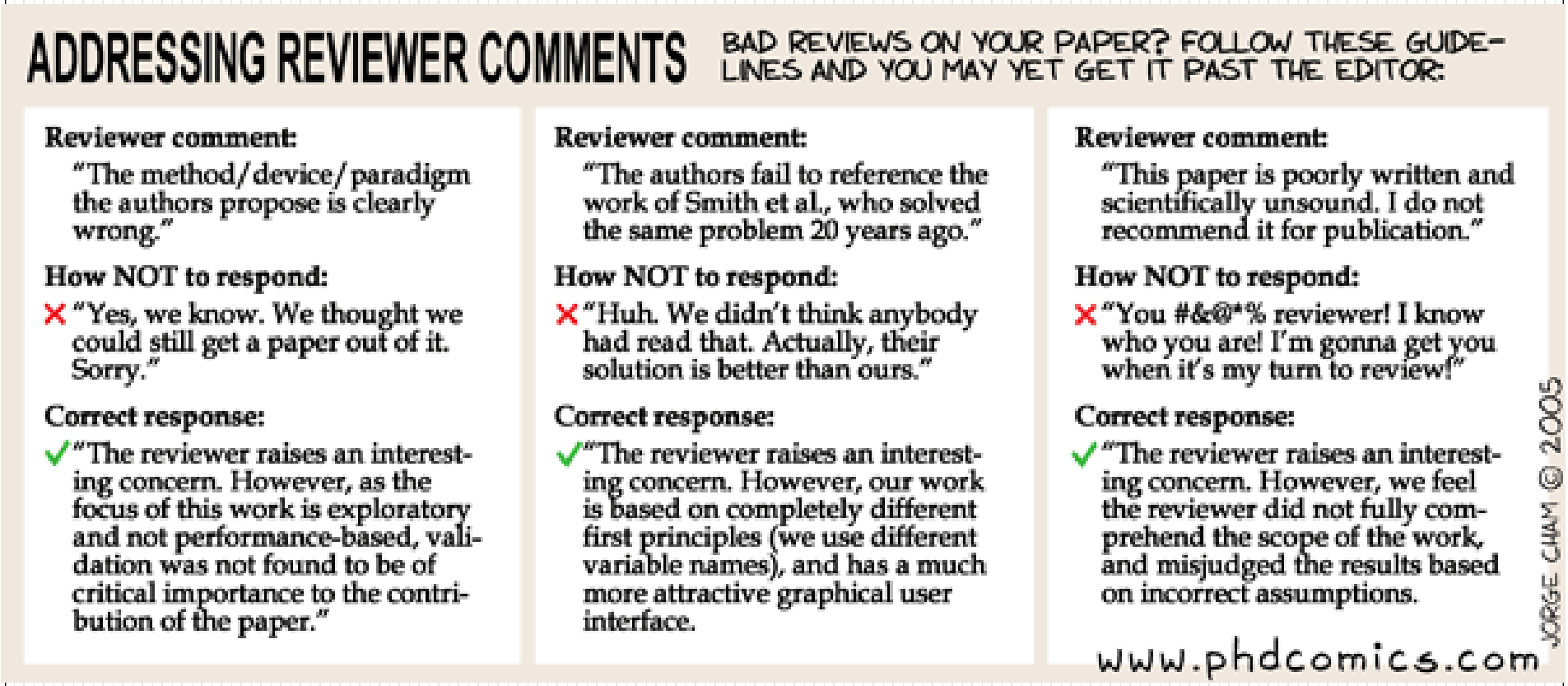
The metric system is mandatory and, wherever possible, SI units should be used. Also units in the denominator should be formatted with negative exponents (e.g. km h^{-1} instead of km/h).


"FINAL".doc
FINAL.doc!
FINAL_rev.2.doc
FINAL_rev.6.COMMENTS.doc
FINAL_rev.8.comments5.
CORRECTIONS.doc
track changes
FINAL_rev.18.comments7.
corrections9.MORE.30.doc
FINAL_rev.22.comments49.
corrections.10.#@$%WHYDID
ICOMETOGRADSCHOOL????.doc
JORGE CHAM © 2012
WWW.PHDCOMICS.COM

DONE!

Response to Reviews:
Thank open-access journals!

To editor first and then the reviewers



You are not alone! Happy Writing, Happy Graduating!