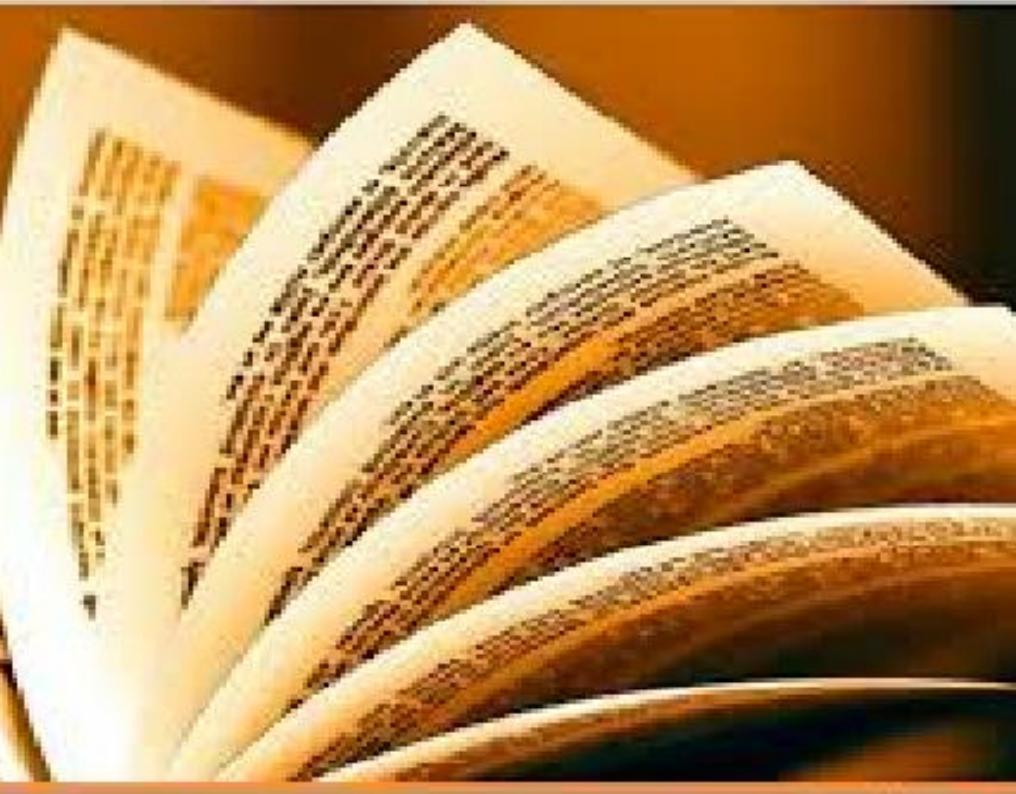


How to Write a Research Paper



Ten tips

Ng Seik Weng
UCSI University



Purpose of publishing



- SCI publications are used to rank universities.
- Other researchers make use of the findings.
- if a student doesn't publish work, the student cannot graduate.



Conceptual design

- New thing?
- New construction?
- New system?
- Systems being compared with?



Or only an idea?



**Wouldn't it be
easier to wait for
the rain to stop?**



www.YourCartoon.com 2024



The cash is in the *other* machine!

**ATM robbers steal
check deposit
machine from bank
in Bukit Mertajam**

(9 August 2006)



**Too much to handle - robbers ditched
RM2.7m as getaway car was too small**

**Robbers did not realize
money filled 15 sacks.**

**NST 30 September
2008**





Spanish skyscraper missing elevators

(August 2013)

Twin Toilets (Sochi)



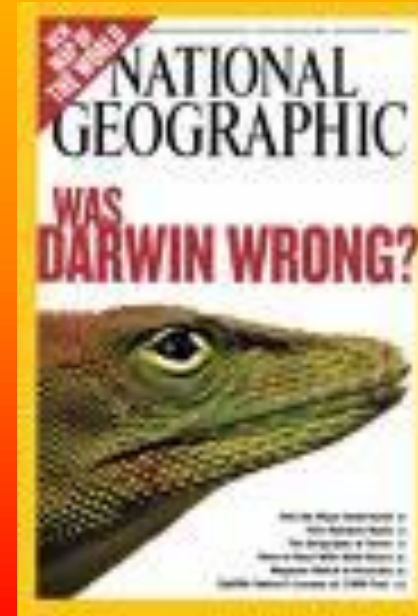
The African speed trap



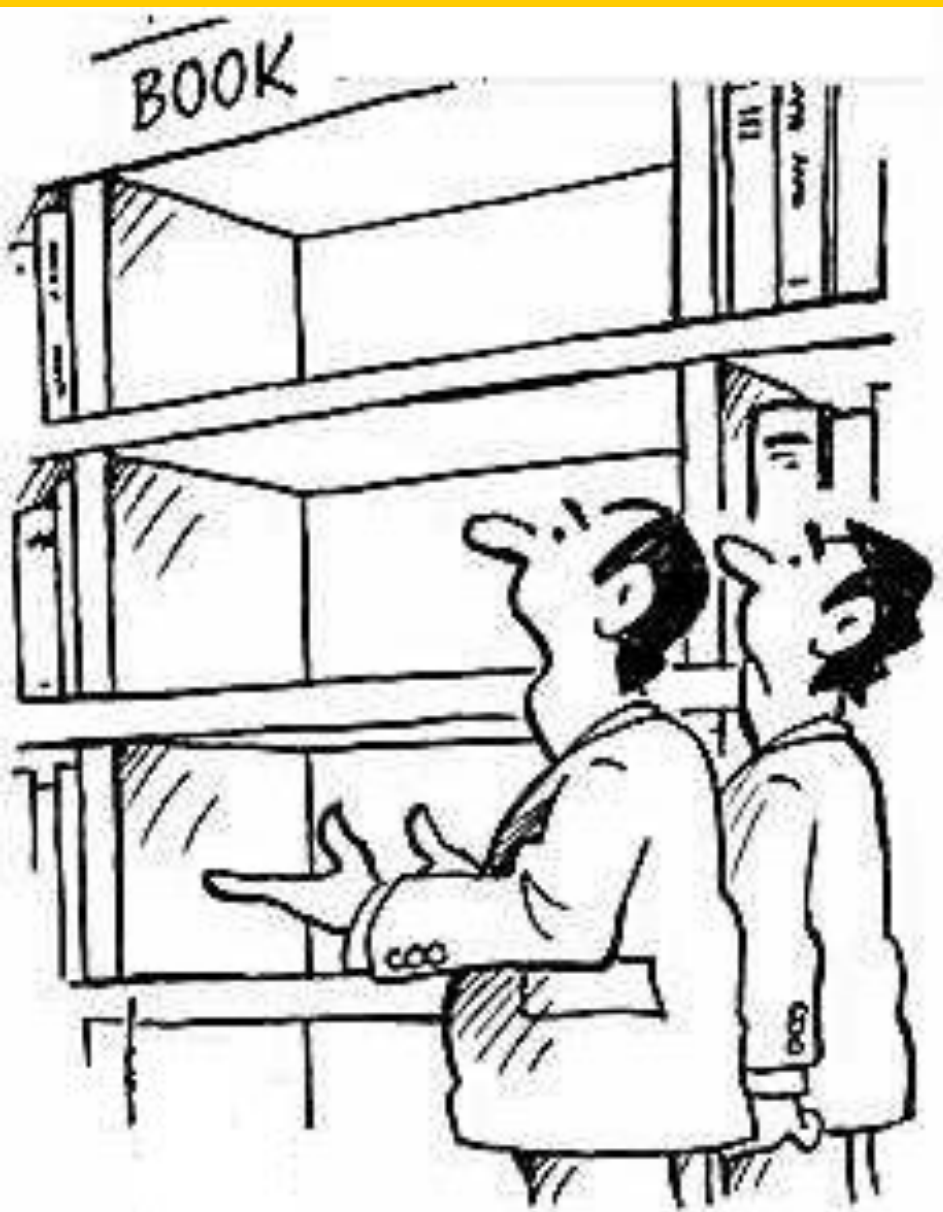
Doomsday machine or benefactor? A vindication.

**L.M. Jones (1974). *Journal of Irreproducible Results*,
20, 2-14.**

Date	Thick	Weight	Width	Length	Area	Density
June 1959	7.73	402.15	17.33	25.34	439.1	1.185
August 1961	7.02	370.28	17.49	25.39	444.1	1.188
May 1962	7.70	408.72	17.51	25.35	443.9	1.196
October 1962	7.27	388.50	17.48	25.44	444.7	1.202
May 1963	7.58	396.15	17.43	25.32	441.3	1.184
April 1966	7.99	422.60	17.55	25.35	444.9	1.190
July 1971 6.52	342.72	17.36	25.31	439.4	1.196	
Nov 1971	6.95	371.49	17.54	25.48	446.5	1.196
Nov 1971	7.05	373.71	17.51	25.50	446.5	1.187
January 1973	6.05	324.75	17.49	25.38	443.9	1.209



**The time it would take to accumulate a thickness
of *National Geographic* sufficient to depress the
crust 100 feet would be 24.92×10^9 years.**



The publication
should give
compact, *useful* and
timely information.





Timeliness

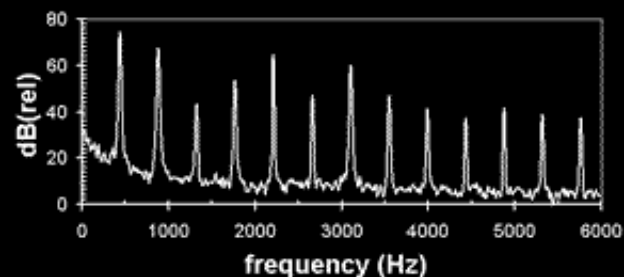




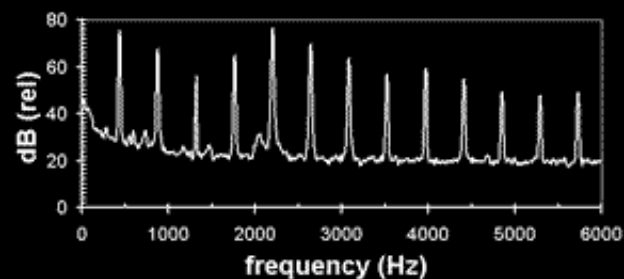
One reason reviewers reject papers

300-year da Vinci vs. 6-week Nagyvary: a blind test at Texas A&M (2003)

"Da Vinci" Strad Violin A440



Nagyvary Violin 2002 No.1 A440

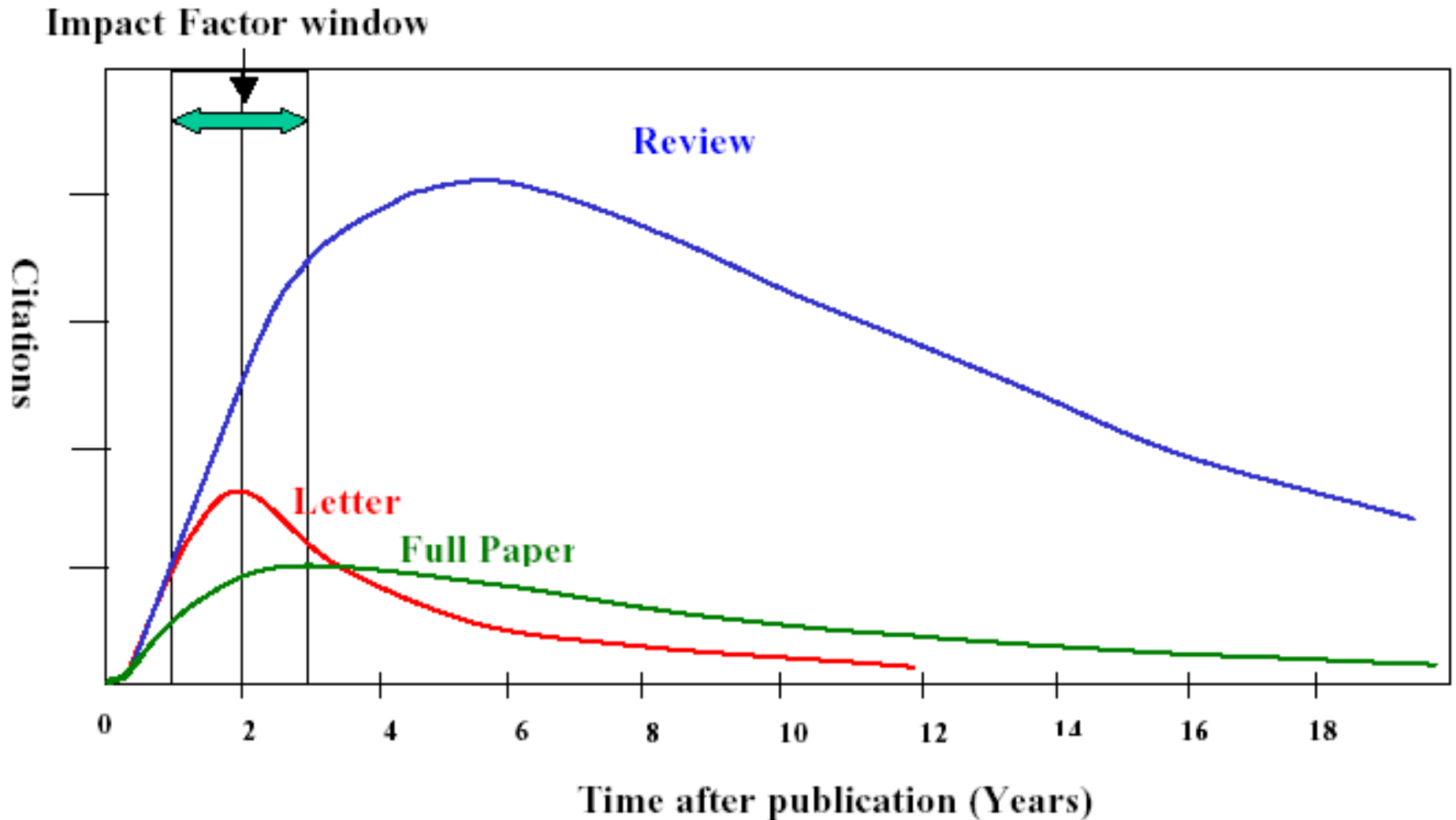


Impact Factors of journals & Carats

1 carat	\$ 4,500 to \$6,000
2 carats	\$ 18,000 to \$21,000
3 carats	up to \$200,000



Types of publications



“First example” and when *not* to publish a “Communication”



1st example can be published as communication.

2nd example will go to a lower level, and more work to be added.



May not be worthwhile to publish full paper.

The core of research is in biomedical sciences

The auto immune system will always dominate science.

Some will always be at the periphery.

tin is a “less common metal”,
allergies are not life-threatening,



and there will be a market for cook books.



Tip No. 1: Think about writing report at every stage of study.

Analysis of data will unravel many relationships to give the researcher insights problem.

Publication should consist of only one main point.

Point should be so fundamental that it can be expressed in one sentence or one paragraph.

Tip No. 2: Know your audience.

a.k.a. *First Rule of Advertising*

Is work suitable
for the journal?

Is level too high?

Will review take too
long?





Tip No. 3: Give your findings, the whole findings and nothing but your findings.

Tell:

- why you want to conduct the study,
- what you are investigating,
- how you conducted your investigation,
- what results you found and
- what you think of your work.

Your job is to report, not to convince.

Useless descriptions

- All earthquakes are **devastating** earthquakes.
- All accidents are **freak** accidents.
- All murders are **brutal**. murders.

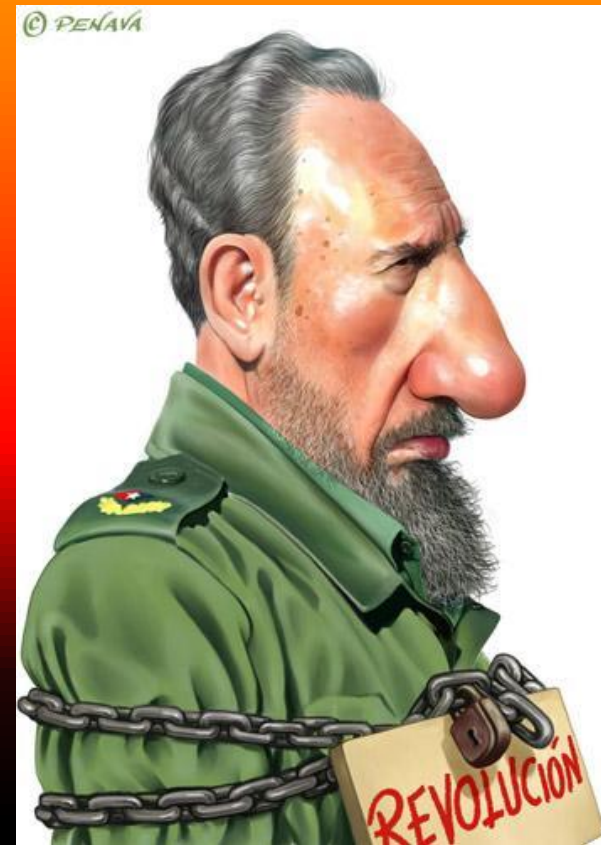


More useless descriptions



Former
President
Bush

Ailing
President
Castro





‘Novel’ does not mean new!

The American Chemical Society banned ‘novel’ in 2003 because many cases turned out later not to be ‘novel’.

There are many words having no useful meaning, e.g., *facile, respectively*.

... there is no such word as “**unreacted**”.

Format of a research paper

- Title
- Authors and addresses
- Abstract
- Introduction
- Experimental
- Results and Discussion
- References
- Schemes and figures





A format for reporting:

Sonata-allegro format



Exposition

Historical
Background

Development

Function &
Structure

Recapitulation

Continued
Usage

The exposition introduces the main theme in a tonic key and minor theme in a related key.

The development expands on the themes. It is creative but “unstable”.

The recapitulation re-states the themes. Sometimes, the work ends with a coda.

“Ten-course Chinese dinner” format



FOTOFSEARCH.com

- 1 Cold dish
- 2 Soup
- 3
- 4
- 5
- 6
- 7
- 8
- 9 Rice or noodles
- 10 Dessert



Long titles are self-explanatory

Size matters: how height affects the health, happiness and success of boys

(Stephen S. Hall: Houghton Mifflin)





Abstract:

**The abstract is not a conclusion,
and a house is not a home**



- Give some real information.
- Do not re-state the problem.
- Concentrate on the solution of the problem and your findings.

Tip No. 4: Give reason for study.



Tip No. 5: Connect the previous to the present work in Introduction

Do:

- Survey and summarize the field.
- Explain how work is a contribution to field.

Do not:

- motivate study because of “**potential applications**”.
- harp on importance of field.
- **give multiple references to prove importance of field.**





A four-line introduction: “Dream” 梦

People say that life is like a dream.

(But) I say that a dream is like life.

Third line ... (singer talks about his aspirations).

Fourth line ... (singer will talk of he has learned from life).

A four-line introduction



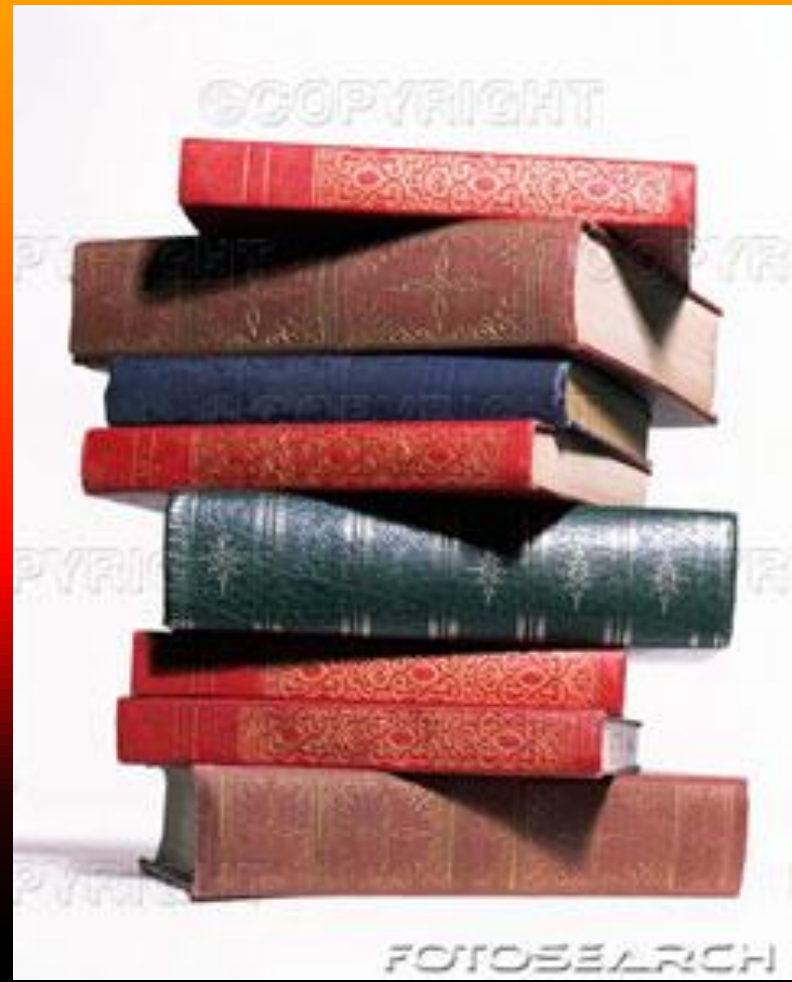
- 1 So-and-so reported something (ref) and so-and-so reported a related thing (ref); the field has been surveyed (ref).
- 2 However, they missed something which takes place in another system (ref).
- 3 You wish to conflate the two ideas because (give a reason/ref).
- 4 Round up the introduction by hinting what you will do.

Tip No. 6: Pace your ideas by references.

$\frac{1}{4}$ for Introduction

$\frac{1}{4}$ for Experimental

$\frac{1}{2}$ for Results & Discussion



Use some of your own papers as references.



The references will tell whether the field is important or not.

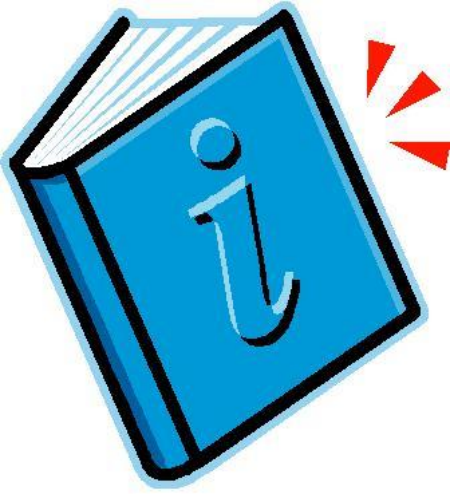
The year will tell whether the field is new or old.

Not too many self citations, please.



P.O. Seglen (1997). Citation and journal impact factors: questionable indicators of research quality. *Allergy*, 52, 1050-1056.





Styles of inserting references

The oldest reference to tin is the Old Testament book of Micah (*ca.* 300 BC).

Despite being the drug for treating influenza (references), the crystal structure of **Tamiflu**, which can be synthesized through several routes (references), the three-dimensional structure has not been reported ...

Tip No. 7: Weave your thoughts by connecting and contrasting your ideas with discourse marks.

Furthermore,
strengthen sentences by
transitive verbs
and
weaken sentences by
intransitive verbs.



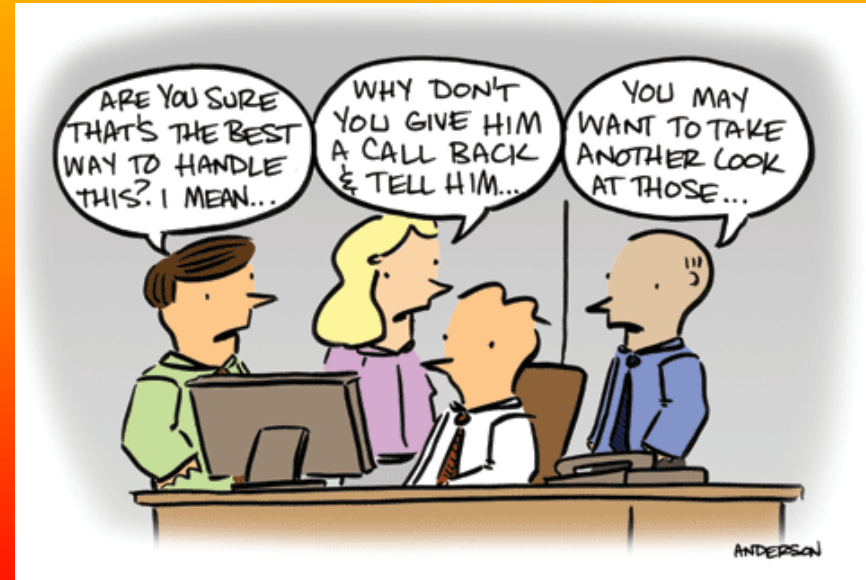
Experimental



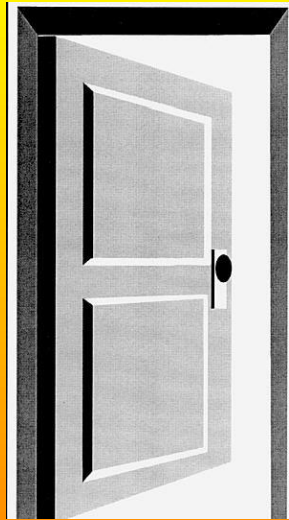
- Give full details so that another person can repeat experiment.
- Say it matter-of-factly.
- Note anything unusual even if you cannot deal with the problem.

Results and Discussion

- Describe the work and highlight any unusual features.
- Return to the problem you introduced.
- Talk on the significance of the work.



Open the door to view the hills



**Do not say
“Figure 1 shows
...”**

**... particularly if
the figure
appears on
another page.**





... and

- Do not explain the work.
- Do not explain the charts.
- Do not talk on the significance of the field.
- Do not write a conclusion!!!

Tip No. 8: Don't write a conclusion if you have no final impression to leave to the reader.

“In conclusion, we have done this and done that”

is an abstract, not a conclusion.



Conclusions should not:

- run into more than one paragraph
- repeat what has been said
- have words such as furthermore ...



Conclusion

Coda in a concerto

Last dish in Chinese dinner

Cowboys riding into sunset

Newly-weds leaving church



Tip No. 9: Paint a thousand words with one picture.



High risk, high reward
... not for weak-hearted

53-Year old
robber dies of
heart attack
after being
chased by
police

(NST 3 November 2006)



Tip No. 10: Don't let your reviewer swear.

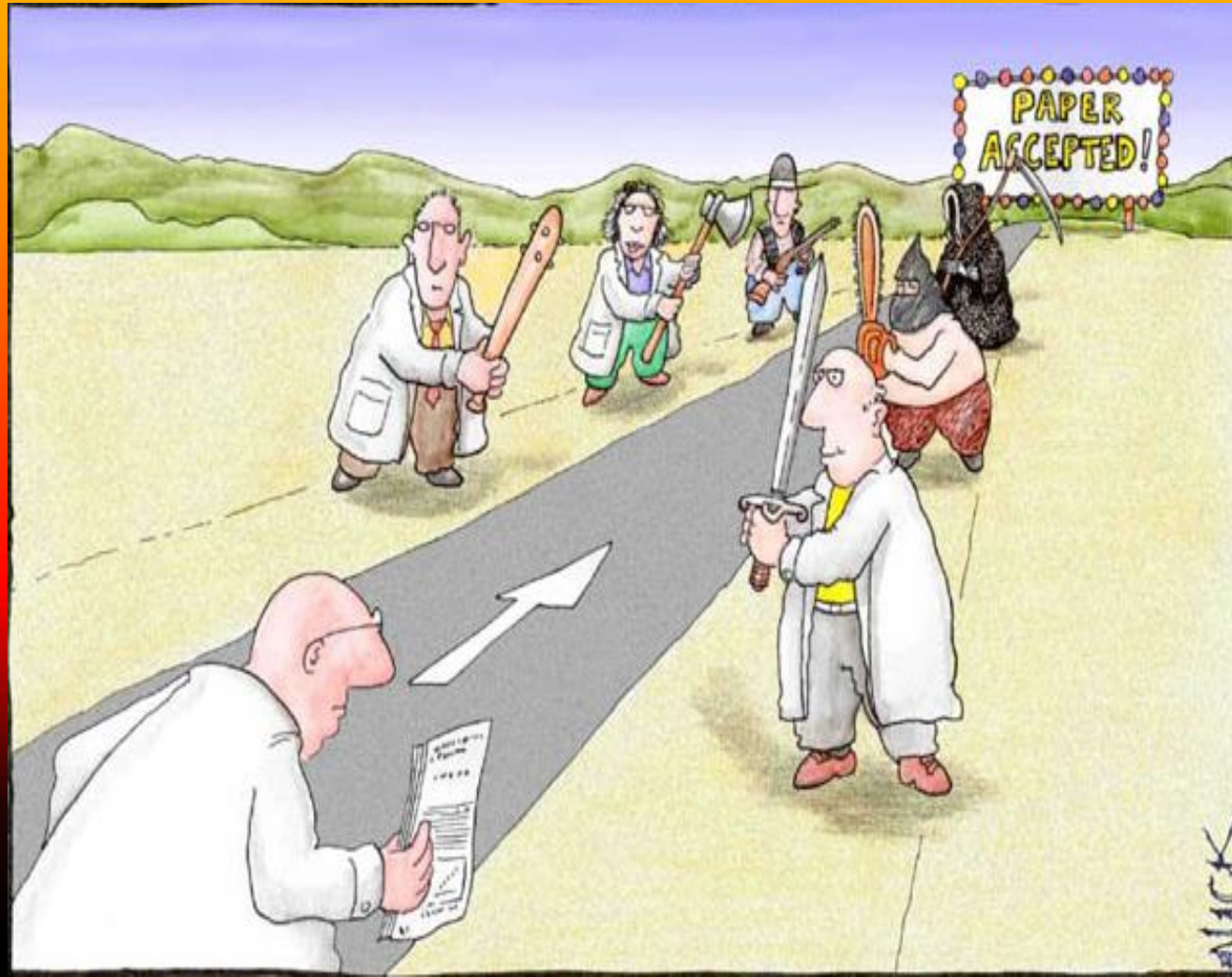


... and what is a “Three-person paper”?



Art consists in concealing art. — Horace

Connect your ideas seamlessly so that the reader does not notice the art that has gone into the writing.



Science Citation Index



Clarivate
Analytics

WEB OF SCIENCE™



I don't know.



ELSEVIER

**HOW TO IDENTIFY
SCIE, SCOPUS, OR
SCIMAGO INDEXED
JOURNALS?**

ILovePhD.com

2020

Science researchers in China are moving away from *SCI* to *Nature Index*



Global ranking by science output

Rank	Institution
1	Chinese Academy of Sciences
2	Harvard University
3	French National Centre for Scientific Research
4	Max Planck Society (Germany)
5	Stanford University
6	The University of Tokyo
7	Massachusetts Institute of Technology
8	Helmholtz Association of German Research Centres
9	Oxford University
10	Cambridge University
37	Nanyang Technological University
46	National University of Singapore
162	Agency for Science, Technology and Research

Source: NATURE INDEX 2019 STRAITS TIMES GRAPHICS

cop·y·ed·it

/ˈkæpēˌedit/

verb

gerund or present participle: copy-editing

1. edit (text to be printed) by checking its consistency and accuracy.

you needed
a copy editor.
(I'm available.)





motivational speaker



I am not!





**Quality of manuscript depends on novelty of study,
strong references, universally important outcome**

TV static



