

# **Something You Need to Know about Research and Writing**

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# Outline

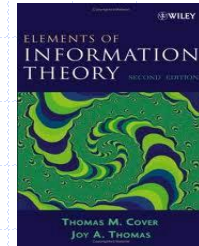
- General Description on Writing
- Two Perspectives about Writing
- On the Road of Fighting Reviewers
- Two Arguments with Summary

# Outline

- General Description on Writing
- Two Perspectives about Writing
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# Keep your knowledge up to date

- Read classic textbooks
  - Delay: 5-10 years
- Read leading journals
  - Delay: 2-3 years
- Read leading conf. proc.
  - Delay: 0.5-1 years



**Read**



**Write**

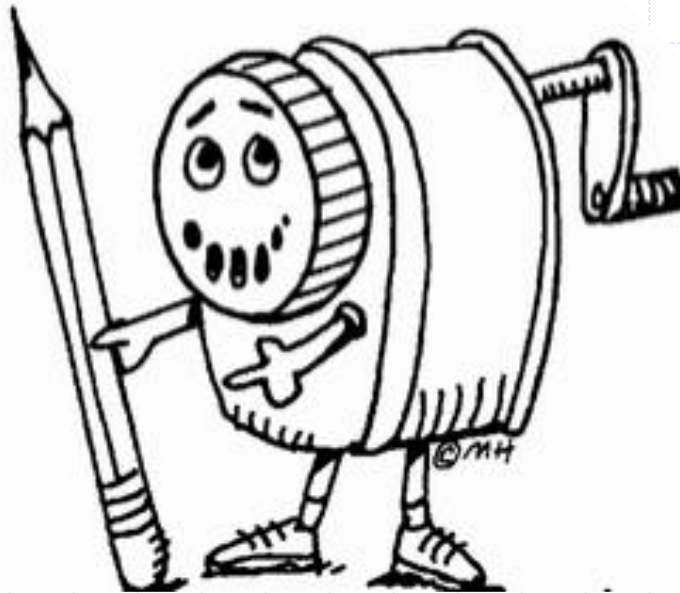
Learn  
technologies  
better

Make  
technologies  
better



# Writing makes your life better

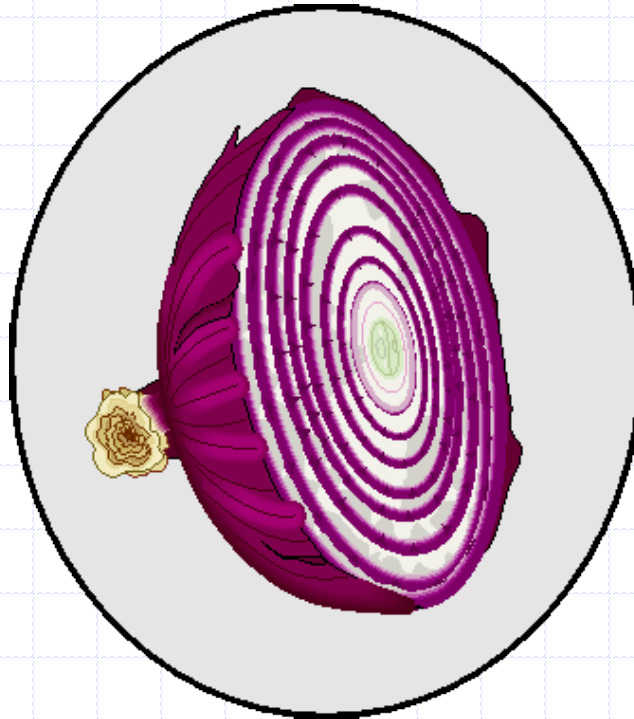
- Writing helps you obtain greater accuracy in communication.



Reading makes a full man, conference a ready man, and writing an exact man.  
---Sir Francis Bacon, Author and philosopher

# Writing makes your life better

- Writing helps you form logic reasoning for complex thoughts.



The process of writing down your idea is similar to peeling an onion, piece by piece, layer by layer.

# Writing makes your life better

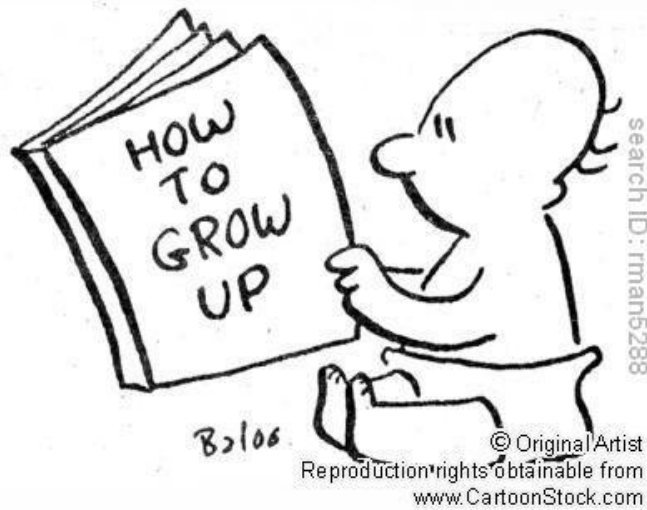
- Writing helps you build up your self confidence.



If you can survive after several rounds of peer-reviewed process, you will be much more confident on what you are doing and what you are talking about.

# Writing makes your life better

- Writing and getting published are techniques. They can be learned.



Of course, good writings are arts. They are lifelong pursuit.



# Two perspectives about writing



**Author**



**Reviewers**

# From an author' perspective



- **Why do I write?**
  - Want to publish something
  - Want to prove myself a great thinker
  - Want to make the world a better place, even just a little bit better.



Writing down new ideas and getting them published may be one of the best way to make contributions to the progress of today's technology.

# Writing starts from thinking



1. **Think the problem, design the method, and predict the results.**
2. **Verify the results by simulations**
3. **Search and read existing works**
  - **Big difference? Write a journal paper!**
  - **Small difference? Could I make it better?**
    - ◆ Yes, I can improve the result. Work towards a journal paper.
    - ◆ No, this is the best I can do. Write a conference paper.
4. **Write the paper**
  - **Model and algorithm**
  - **Simulations and conclusions**
  - **Introduction and abstract**
5. **Go to Step 1 until satisfied.**
6. **Rewrite, rewrite, and rewrite.**



# Steps for writing

- **Wait for the decisions**
  - **Unfavorable?**
    - ◆ Rewrite and resubmit.

Do not expect every paper to be accepted.  
If that happens, it's time to move forward.



# From reviewers' perspective



- **Why do I review your paper?**
  - The editor of this paper is a big guy. I don't want to decline his/her request.
  - I want to use the opportunity to learn more from the authors.
  - I'm working on the same topic. I want to know what people are doing.
  - I'm the author of your cited paper. I want to know the difference between both works.

Pay less efforts

Pay more efforts

# How do I make decision?



- **Introduction, the most understandable section, tells the authors' attitude**
  - **Lots of grammar and spelling mistakes?**
    - ◆ The author didn't pay his/her attention. I'll not too. Find more mistakes and list some general problems; then try to reject.
  - **The author knows what he is doing. I can't find any obvious mistakes. I'm willing to let this paper go.**
    - ◆ Major/minor depends on the details of the work.
- **What makes me angry?**
  - **Lots of stuff come from textbook.**
  - **Obvious results are listed as Theorem.**
  - **Lots of stuff come from existing paper.**
  - **Didn't acknowledge existing work?**
  - ...





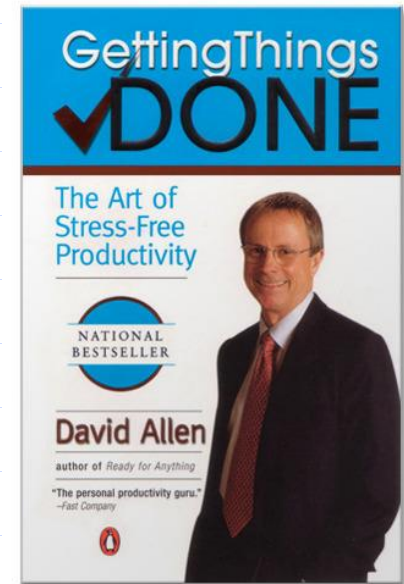
Copy from one, it's plagiarism;  
copy from two, it's research.  
---Wilson Mizner, playwright and entrepreneur.

Please don't over-interpret. I believe research should be based on lots of careful reading and creative thinking.



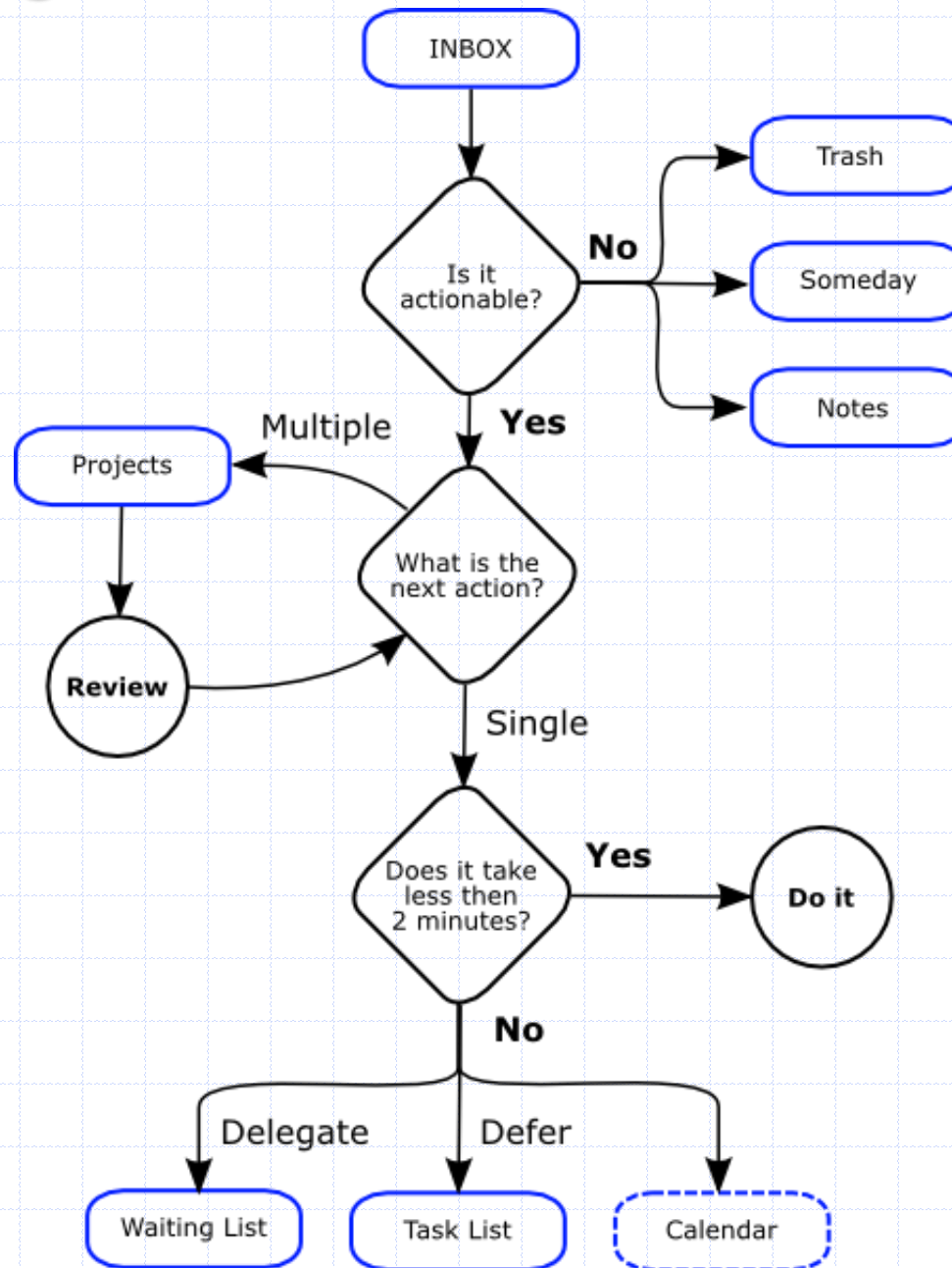
# On the road of fighting reviewers

- **We are not alone**
  - Talk with our advisor
  - Cooperate with our friends
- **We need to be more efficient**
  - Finish tasks within time limits
  - Balance our research and daily life
  - Already have a task processing system?  
Stick to it.
  - Else, here is a reference:  
Getting things done





# Getting things done: A task processing procedure



# On the road of fighting reviewers



- **We need to be better prepared**
  - Math. Tool: Matrix, Optimization, Probability, etc.
  - Programming: Matlab/C/C++/Python
  - LaTeX
  - Written English
- **Critical thinking: Effective Communications**
  - Issue: what is the problem?
  - Conclusion: what do we want to tell?
  - Reasoning: how do we support our conclusion?



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# Critical thinking: Argument One

- **Issue: what is the problem?**

**Do I need to work on the hot topic to success in academia?**

- **Conclusion: what do we want to tell?**

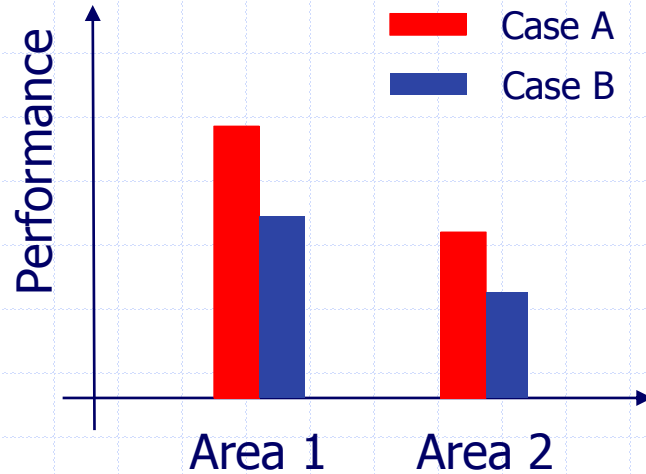
**No.**

- **Reasoning: how do we support our conclusion?**

**The story of Joseph H. Flom, Pioneering Takeover Lawyer\*.**

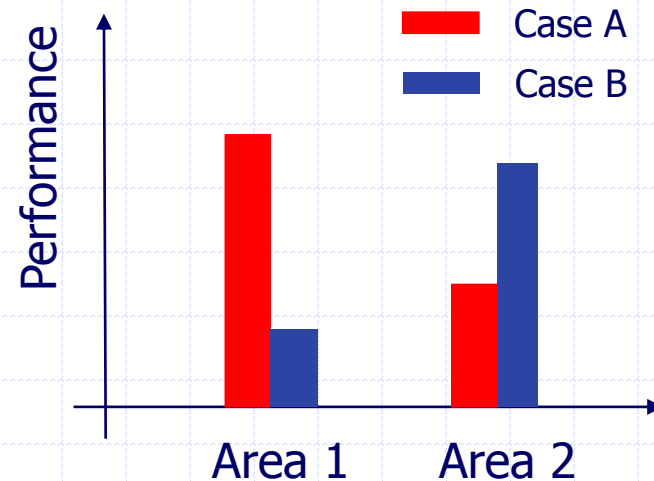
[\*] M. Gladwell, Outliers: The story of success, NY: Little, Brown, 2008

# Success in my eyes: be Pareto optimal



$$A_1 > B_1; A_2 > B_2$$

Case A is better than Case B.



$$A_1 > B_1; A_2 < B_2$$

Case A and Case B are Pareto optimal; they are not comparable.

Success means you are a Pareto optimal point; therefore, it is more easier to success in areas with less people working on.

# Critical thinking: Argument Two

- **Issue: what is the problem?**

**Do I need to be extremely smart to get paper published in leading journals?**

- **Conclusion: what do we want to tell?**

**Absolutely not.**

- **Reasoning: how do we support our conclusion?**

**The statistic of Nobel Prize winner\*.**

[\*] M. Gladwell, Outliers: The story of success, NY: Little, Brown, 2008

# Critical thinking: Argument Two

Here are the colleges of the last twenty-five American Nobel Prize winners in Chemistry:

City College of New York

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Stanford University

University of Dayton, Ohio

Rollins College, Florida

MIT

Grinnell College

MIT

McGill University

Georgia Institute of Technology

Ohio Wesleyan University

Rice University

Hope College

Brigham Young University

University of Toronto

University of Nebraska

Dartmouth College

Harvard University

Berea College

Augsburg College

University of Massachusetts

Washington State University

University of Florida

The threshold effect: To be a Nobel Prize winner, you only have to **be smart enough to get into a college that is not too bad**. That's all.

The same happens to you. Your smartness/IQ needed to publish a paper in top journals has already be proved at the first day you are enrolled by your graduate program. You only need to follow your desire to write.

# Summary

## What I think are important:

- **Select the topic you are interested**
- **Use the math. tool you like**
- **Open your mind and work on it continuously**
- **Write your idea down and rewrite until you and your advisor are satisfied**
- **Submit your paper to a journal and working on the next one**
- **Build your reputation and you are on your way to the academia world.**





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