Research means to...

Select
a problem

Pick
a solution

Perform
the research

Evaluate
the results

Communicate
the results

Obvious ?

Research...

"...is less about inventing the fantastic, as it is about revealing the obvious.

The obvious is always there. It needs no invention.

It only needs us to take a look from a different perspective to see it."

Dr. Tudor Gîrba
(adapted)

Part 1

Pseudo Advices for a ... Pseudo PhD

based on "*How to Have a Bad Career in Research/Academia*", by David Patterson

How to select a problem?

Pseudo advice #1

Invent a new field

How to select a problem?
#1: Invent a new field

Corollaries

1. Choose it to be just slightly different
2. Make sure no one works on that
3. Never define a clear goal (success)
4. Place pay-offs in 20 years from now
5. Alternatively, re-invent the field in Romania (or Timisoara)

How to pick a solution?

Pseudo advice #2

Let complexity be your guide

How to pick a solution?
#2: Let complexity be your guide

Corollaries

1. Take "It's so complicated, I can't understand a thing"as a compliment .
2. Use complexity to impress
3. Use complexity to claim subsequent good ideas
4. Use complexity to publish redundant papers

How to perform research?

Pseudo advice #3

Never be proven wrong

How to perform research?
#3: Never be proven wrong

Corollaries

1. Don't implement anything.
2. Avoid quantitative experiments.
3. Avoid any benchmarks.

How to evaluate results?

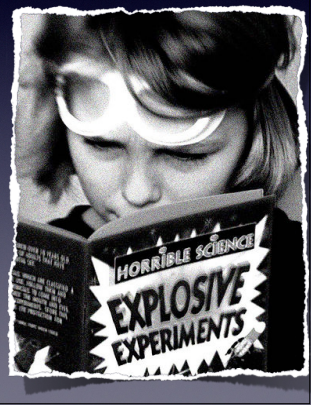
Pseudo advice #4

Avoid standard scientific methods

How to evaluate results?
#4: Avoid standard scientific methods

Corollaries

1. Hunches should substitute hypotheses
2. Never repeat experiments
3. Never change a single parameter
4. Discard experiment if it invalidates the hunch



How to communicate results?

Pseudo advice #5

Avoid any feedback

How to communicate results?
#5: Avoid any feedback

Corollaries

1. Don't go to conferences! (you waste time)
2. Avoid industry contacts! (they are degrading)
3. Don't read
4. Avoid reviews (they are always trivial)
5. Never be silent (silence is ignorance)

How to communicate results?

Pseudo advice #6

When publishing, focus on quantity

How to communicate results?
#6: When publishing, focus on quantity

Corollaries

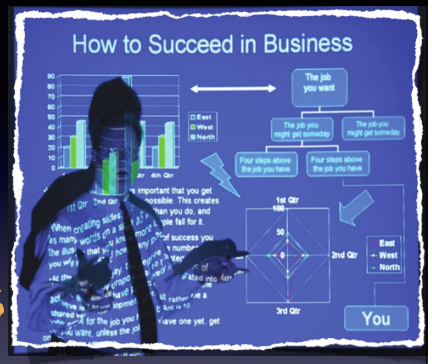
1. Go for conferences with an acceptance rate of over 80%
2. Choose conferences with titles containing the words like: "world", "multi-", "hyper-" or the name of some geographic region
3. Go for journals where you pay to get published
4. Join a publishing "gang"
5. Change your name to Aalboaiei or Aalexoaiei

How to communicate results?
#6: When publishing, focus on quantity

Pseudo Commandments on Writing

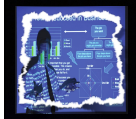
I. You shall not define terms, nor explain everything
II. You shall not reference any papers
III. You shall not mention any drawbacks.
IV. You shall replace "will do" with "have done"

How to communicate results?



Pseudo advice #7

All your talks should be boring



How to communicate results?
#7: All your talks should be boring

Pseudo Commandments on Talks

I. You shall never be concise, nor skip slides in a long talk

II. You shall use small fonts and bullet points everywhere

III. Use no colors and no illustrations.

IV. You shall not practice.

Results are guaranteed…

Part 2

Honest Advices for a … Valuable PhD

How to select a problem?

Honest advice #1

Choose a relevant problem

How to Start? Explore at the top!

1. What's the talk? Scientific and trade press

2. Who's doing it?

Top universities and research centers in your field

3. Who's financing it?

EU (H2020 programme), industry.

Case Study: Computer Science Magazines

How to select a problem?
#1: Choose a relevant problem

What's the state of the art?

1. Start from articles in general-purpose scientific magazines
2. Read referenced papers (seminal papers and roadmaps)
3. "Zoom-in" on appealing problems
4. Follow links (key papers, journals, conferences)
5. Take notes! (first step to solution)

How to select a problem?
#1: Choose a relevant problem

Make Google Scholar your friend

How essential is a paper? (how many citations)

What was built on top? (who cites it)

How to select a problem?
#1: Choose a relevant problem

Is this the right problem for me?

What gives me an advantage in solving it?

How to pick a solution?

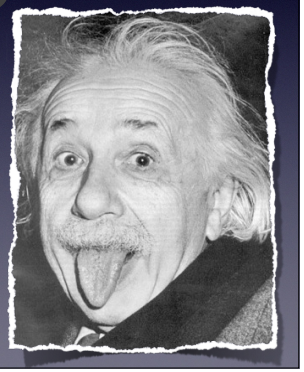
Honest advice #2

Seek simple and realistic solutions

How to pick a solution?
#2: Seek simple and realistic solutions

Make everything as simple as possible, but not simpler.

A.Einstein



How to pick a solution?
#2: Seek simple and realistic solutions

Corollaries

1. Avoid pseudo-complexity
2. Avoid solving … solved problems.

How to pick a solution?
#2: Seek simple and realistic solutions

Key Questions

What is my thesis?

What is my solution?

Is my solution relevant and realistic?

How to perform research?

Honest advice #3

Monitor your progress

How to perform research?
#3: Monitor your progress

3 years is a short time - don't waste it!

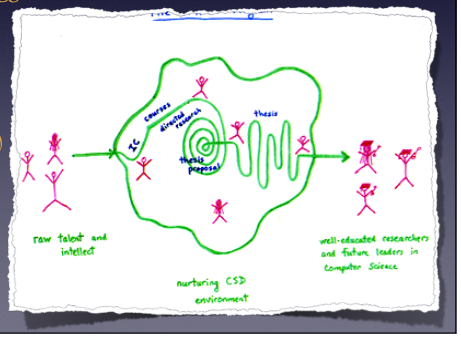
Make a timeline

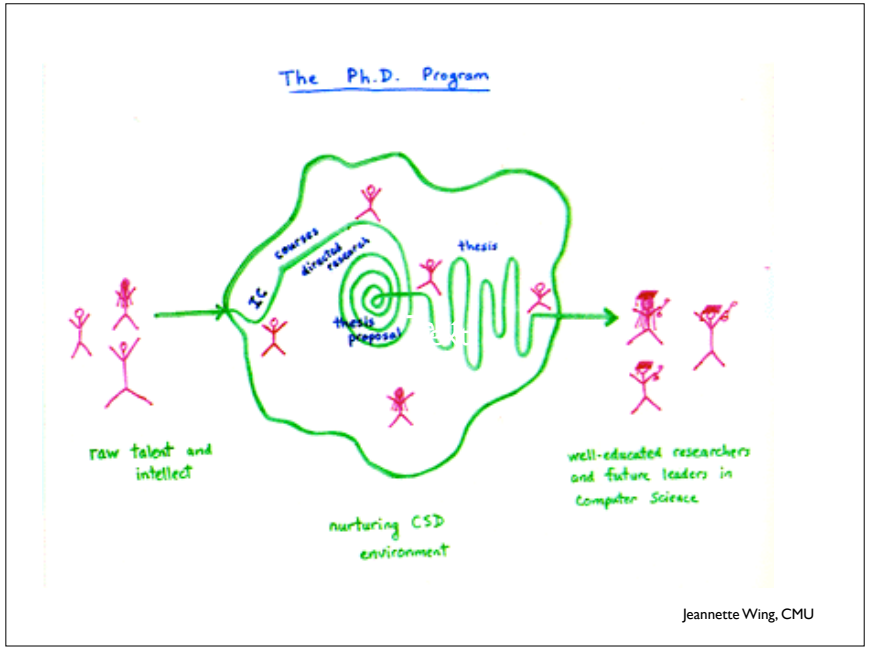
Set short-term reachable milestones

(where will I be next month?)

Write REAL activity reports

(no bureaucracy, like an article!)





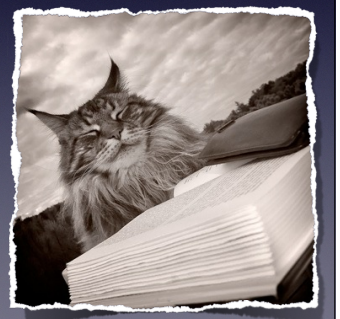
Jeannette Wing, CMU

How to perform research?
#3: Monitor your progress

Reading is part of your work

It's a start, but don't stay stuck!

Note down what you read



How to evaluate results?

Honest advice #4

Evaluate rigorously

How to evaluate results?
#4: Evaluate rigorously

Learn to evaluate

Read and discuss seminal papers

Learn to write a review

How to evaluate results?
#4: Evaluate rigorously

Get results and evaluate them

on relevant problems

with honest, reproducible setups

comparing to others

How to communicate results?

Honest advice #5

Constantly seek feedback

How to perform research?
#5: Constantly seek feedback

Ideas for collecting feedback

Talk with EVERYONE about your research

Submit early work to specialized workshops

Go to doctoral workshops

How to communicate results?

Honest advice #6

Say what matters, where it matters

Choose quality over quantity!

1. Write only when you have something to say
2. Write one thesis, not 17 "contributions"
3. Avoid papers that you don't want in your CV
4. Avoid "least publishable increments"

Say it where it matters

1. Choose only relevant conferences
2. Start early

How to find good conferences?

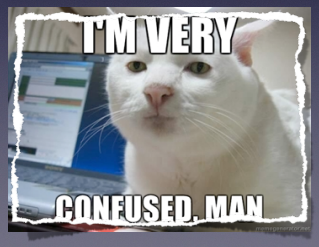
1. Sources of good papers you've read
2. List of major conferences in each field
3. Reputable program committee
4. Acceptance rates
   - be realistic!
   - but: a good review is invaluable help

Where to publish ?

ISI ?

Impact Factor ?

Journal or conference?



ISI ≠ The Absolute

ISI = Institute for Scientific Information (Thomson Reuters)

first citation index (E. Garfield, 1960)

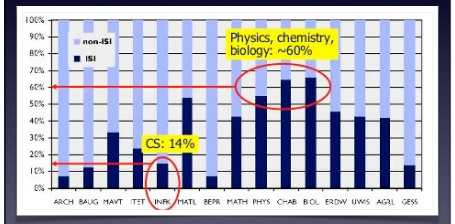
(i.e., a network linking papers to their citations)

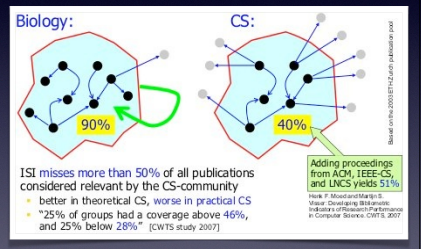
others exist (Elsevier SCOPUS, CiteSeer, ACM, Google ...)

for librarians and scientists researching information

use only as directed

Every research field is different!





ISI is not equally representative for all

[F. Mattern, Bibliometric Evaluation..., ETH Zurich, 2008]

Impact Factor

= how well is a Journal X cited ?

$$\text{IF (2016)} = \frac{\text{ISI Citations for Journal X in 2014-2015}}{\text{papers in Journal X published in 2014-2015}}$$

is an average over all papers in the journal

does not say that much about your paper

How to communicate results?
#6: Say what matters, where it matters

Don't misuse ISI & Impact Factors !

"
... a means to measure the impact of scientific journals
... not always a reliable instrument for measuring the quality of journals
... use for purposes for which it was not intended causes even greater unfairness
... not for the assessment of single papers
... certainly not for the assessment of researchers
"

European Association of Science Editors
+ bibliometric research papers + 93 Swiss CS professors + many others

How to communicate results?
#5: Say what matters, where it matters

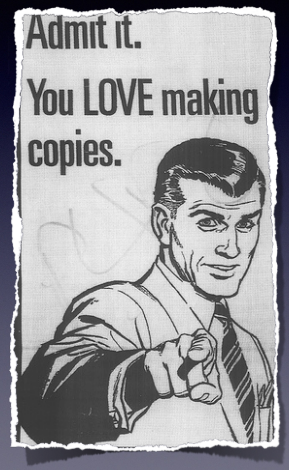
Publish honestly!

1. Report accurate and reproducible results

2. An author is a significant contributor!

YES: read my paper and I'll read yours
NO: coauthor my paper and I'll coauthor yours

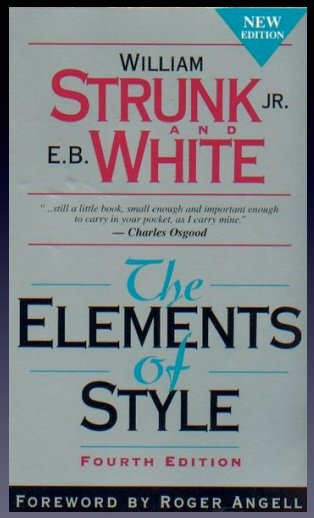
3. Give credit where credit is due



How to communicate results?

Honest advice #7

Omit needless words

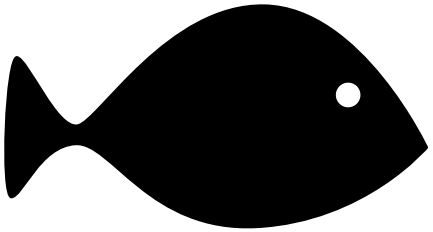


The Story of Vijay...

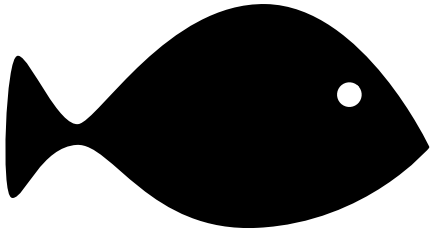
based on "*Presentation Zen*", by Garr Reynolds (www.presentationzen.com)
slides couresy of Tudor Girba (www.tudorgirba.com)

I want to open a fish store.

Vijay, a young indian



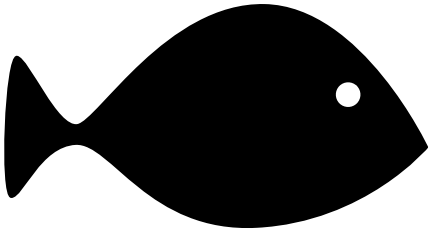
we sell fresh fish here



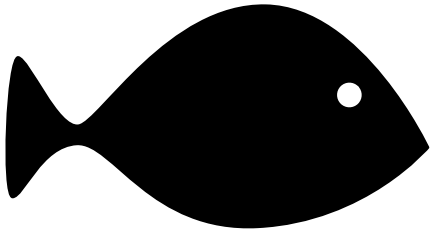
we sell fresh fish here

“we” is not really needed

the Father



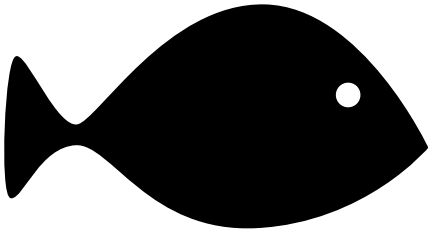
fresh fish sold here



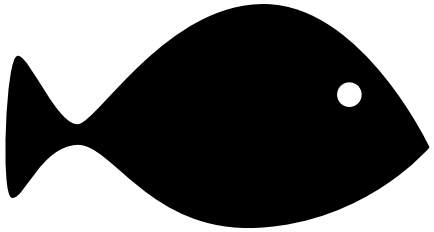
fresh fish sold here

"here" is superfluous

the Brother



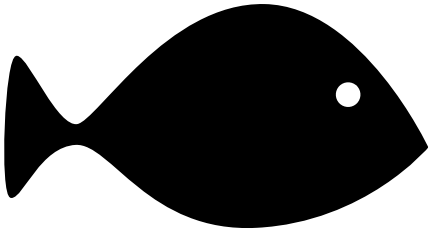
fresh fish sold



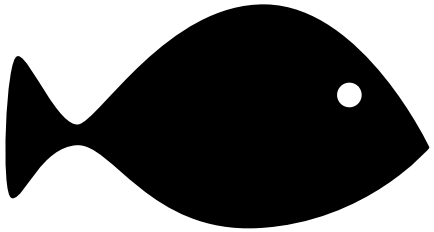
fresh fish sold

it's clear that the fish is sold.

the Sister



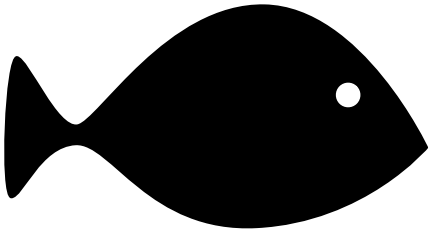
fresh fish



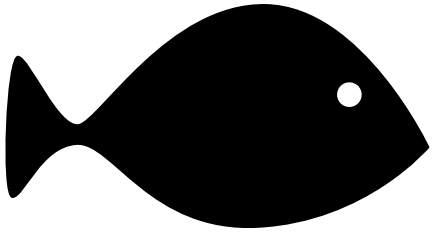
fresh fish

everyone can see
the fish is fresh.

the Neighbor



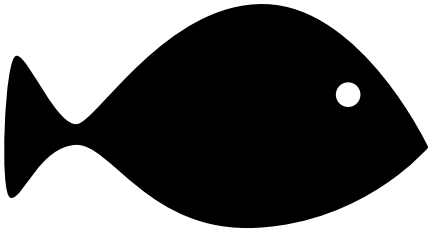
fish



fish

everyone can
smell the fish

Vijay himself




END
One Last
Advice....
START


Enjoy!