

# Lessons learned doing my Ph.D. (or... Can you benefit from reading PhD comics)

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COINS Ph.D. student seminar  
Stavanger, Nov. 20-21, 2013

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# Doing a Ph.D. – What were my expectations?

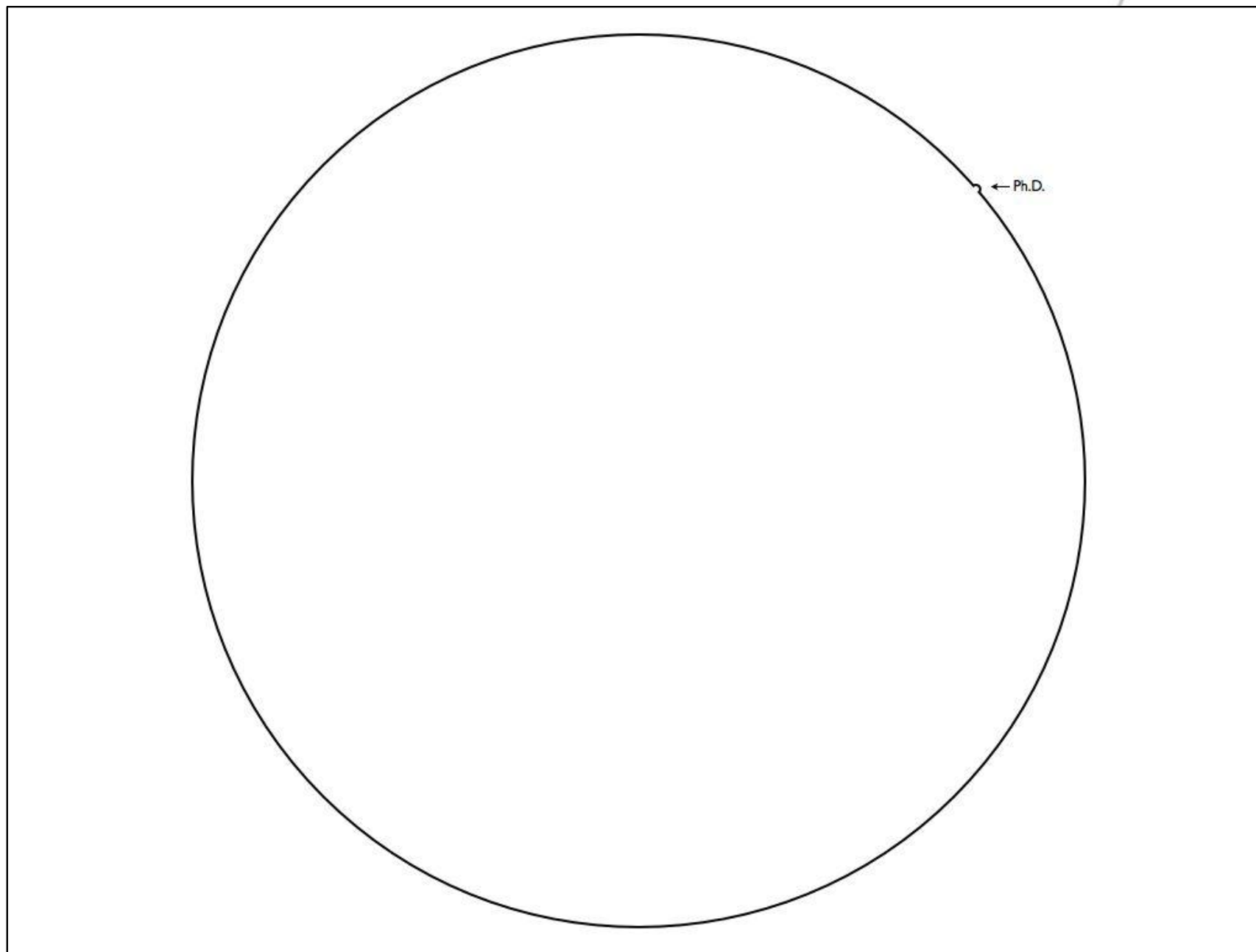
It all turned out to be  
true!!!



# Doing a Ph.D. –

# Why???

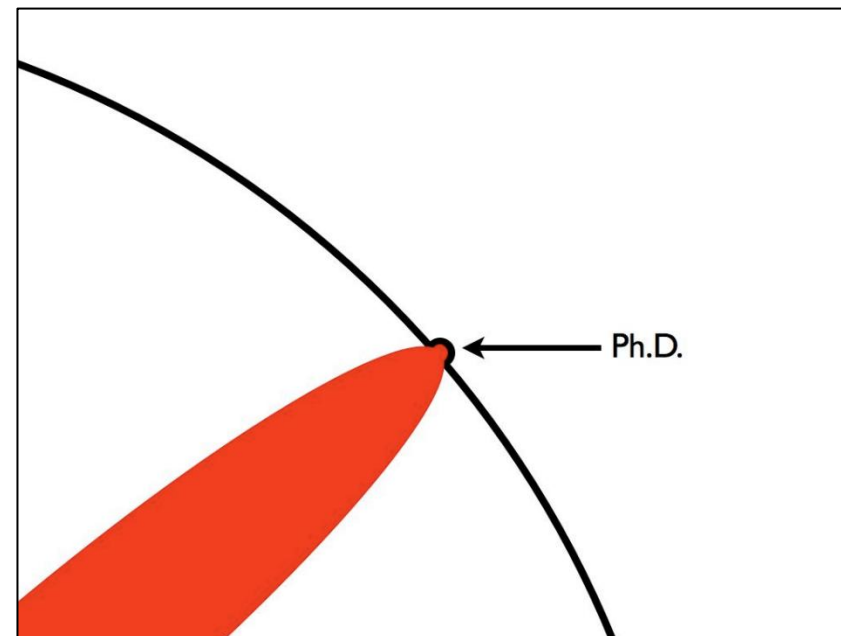
- Become an expert in the field
- Discover important stuff
- Get a PhD degree
- Advance in your career



# Doing a Ph.D. –

# Why???

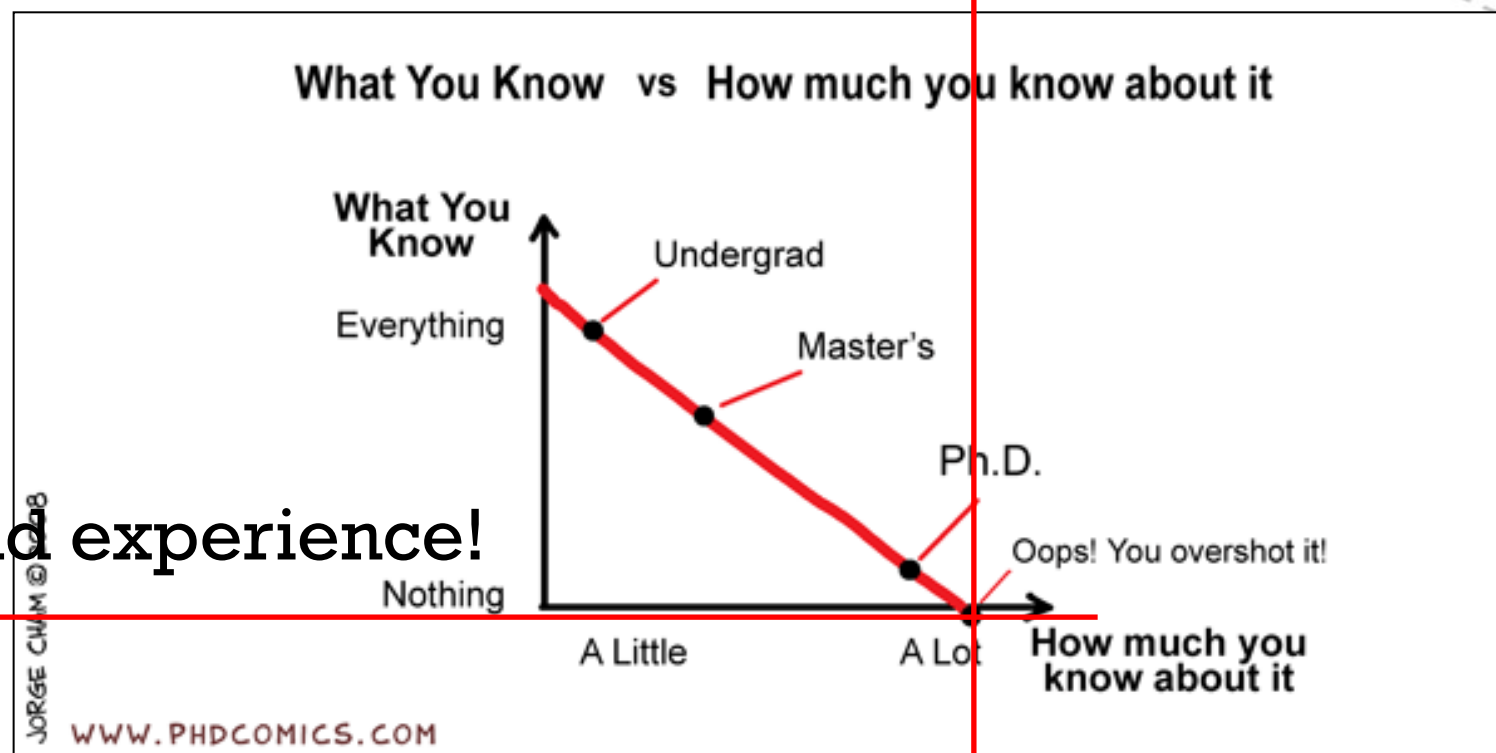
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# Threat 1: Becoming an expert ???

Become overqualified

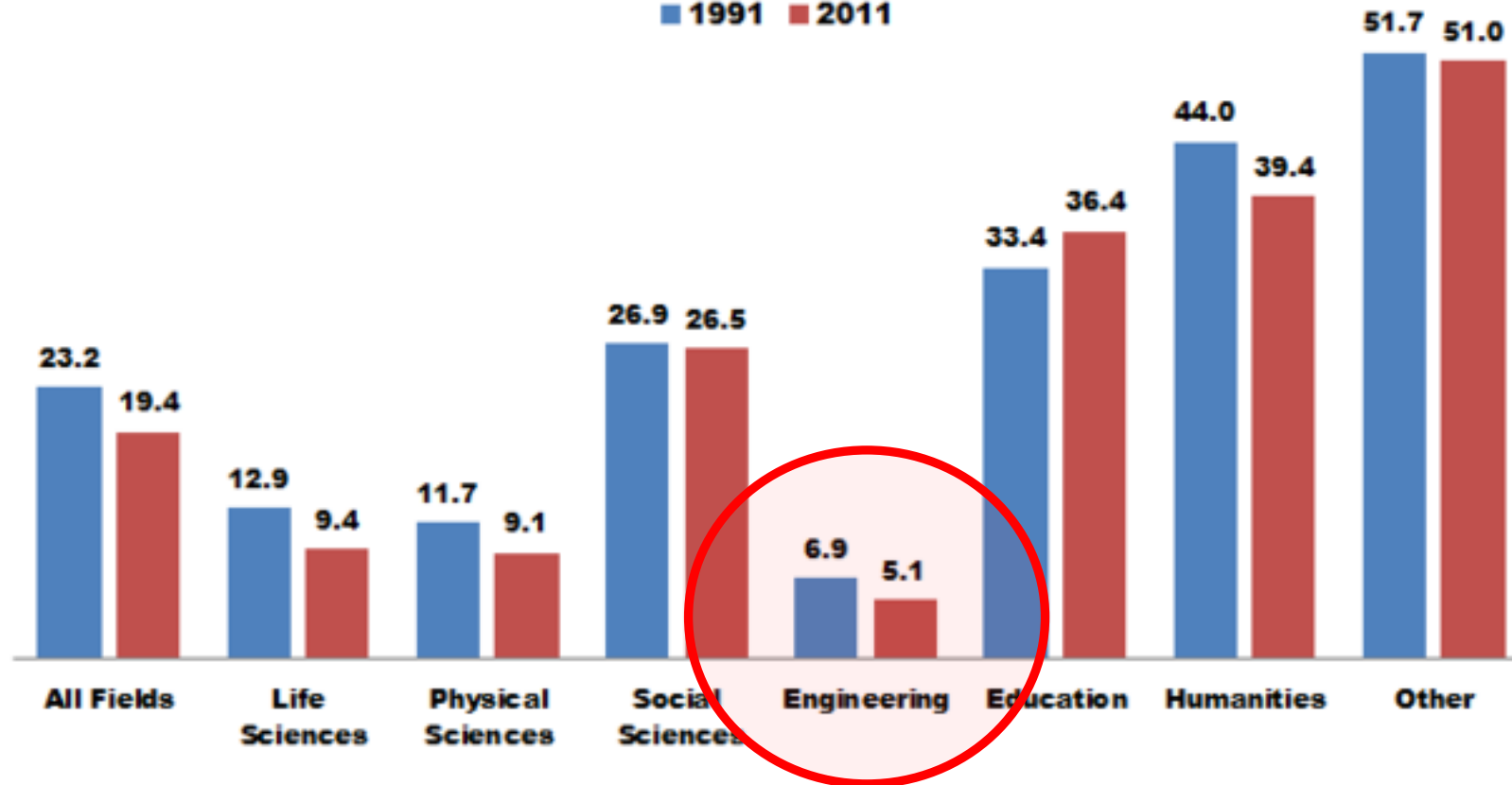
Yet, no skills and experience!



## What Percentage of Ph.D.'s Find Academic Jobs by Graduation?

(NSF, Author's Calculations)

■ 1991 ■ 2011



[JORDAN WEISSMANN](#), THE ATLANTIC, FEB 23 2013

- Not a bad idea: Figure out as soon as possible!!  
Academia or Industry?
- Easier said than done....

Inner Doubts 1:  
I choose academia.....  
Are my dreams realistic?

Inner Doubts 2:  
I choose industry.....  
Why do I need a PhD in the first place?



# Again, becoming an expert ??? ... Well, YES!!!

- The **focus** training pushes you to the limits,
  - Intellectual
    - You learn how to look for solutions of problems
    - How to try to solve the
    - And **eloquence** the right path
  - And mentally
    - Teaches you not to
    - Teaches you how to rise after you fall
- creativity**      **intuition**      **speed**  
**wisdom**      **insight into deeper connections**  
**experience**      **perseverance**  
**realism**      **patience**  
**optimism**

# Try a small experiment

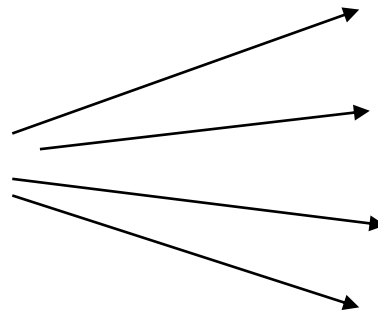
- Find a paper you tried to read at the beginning of your PhD
- Or a programming language
  - ... that at the time seemed too difficult...
  - ... and you gave up...

You'll be amazed how easier it will be now

# Doing a Ph.D. – What really matters???

Timeframe for outputs:

3-4 years



- Ideas
- Papers
- Projects
- Thesis

**Extremely important!!!  
LEARN TO MULTITASK**

# UNH Mathematician's Proof Is Breakthrough Toward Centuries-Old Problem



“Basically, no one knows him,” said Andrew Granville, a number theorist at the Université de Montréal. “Now, suddenly, he has proved one of the great results in the history of number theory.”

states that there are an infinite number of prime numbers (numbers divisible only by themselves and 1) that are a fixed number of units apart, like 3 and 5. Zhang's result demonstrates that the number of prime pairs that are less than 70 million units apart is infinite.

Jacobian conjecture

While a gap of 70 million is a long way from a gap of 2, Zhang's results are nonetheless attracting attention. “The jump from 2 to 70 million is nothing compared to the jump from 70 million to infinity,” said an article in the journal Nature. Mathematicians interviewed about the work have lauded the finding in distinctly un-mathematical terms: “Beautiful.” “Stunned.” “Astounded.”

the endless ocean of other people's work

- Look for relevant info at each moment

## Keep up with the community

- Know the open problems

A possible trap:  
Open problems are sometimes really hard

- Be ambitious, but only if you think you have something to begin with

## Your Research Interests:

What you were actually  
interested in when you  
came to grad school (3%)

Stuff you think is cool but nobody  
will ever pay you to do (14%)

**In the end it's all up to you!  
Nobody will do it for you!**

s/celebrity  
(0%)

gs

Interests (67%)

Why other people's blogs  
are more popular than  
yours (18%)

WWW.PHDCOMICS.COM

JORGE CHAM © 2008

# Ideas – The development of

- Test, Test, Test
- Discuss your ideas with

- E
- A
- A
- Bei

and wastes time

**In the end it's all up to you!  
Nobody will do it for you!**

- Ask questions
  - Colleagues
  - Write to experts

Sentences you will probably never  
read in a published paper:

"We were totally surprised it worked!"

"We just thought it'd be a neat thing to do."

"I'm only doing this to get tenure."

"Oops."

"Previous work by XXX et al. is actually pretty good!"

"To be honest, we came up with the hypothesis  
*after* doing the experiment."

"The results are just 'OK'."

"Future work will... ah, who are we kidding?  
We won't get more funding to do this."

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# Learn the rules of the game

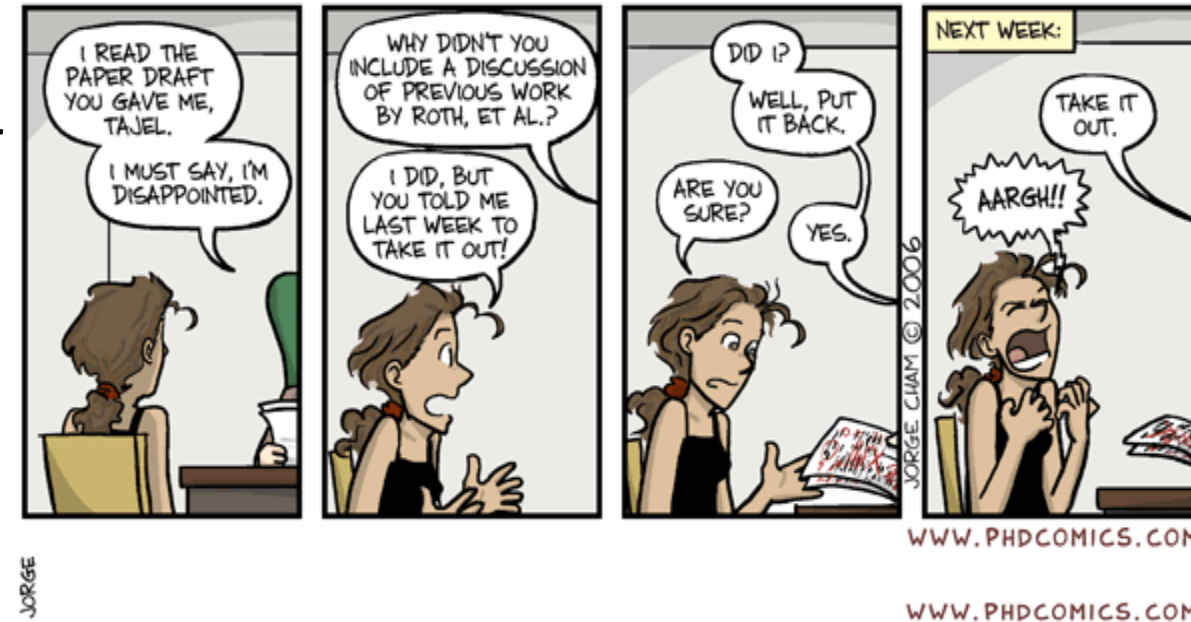
- Supervisor
- Co
- Ne
- W

**Engineers?**  
**Sorry if nobody has told you that you  
need social skills**



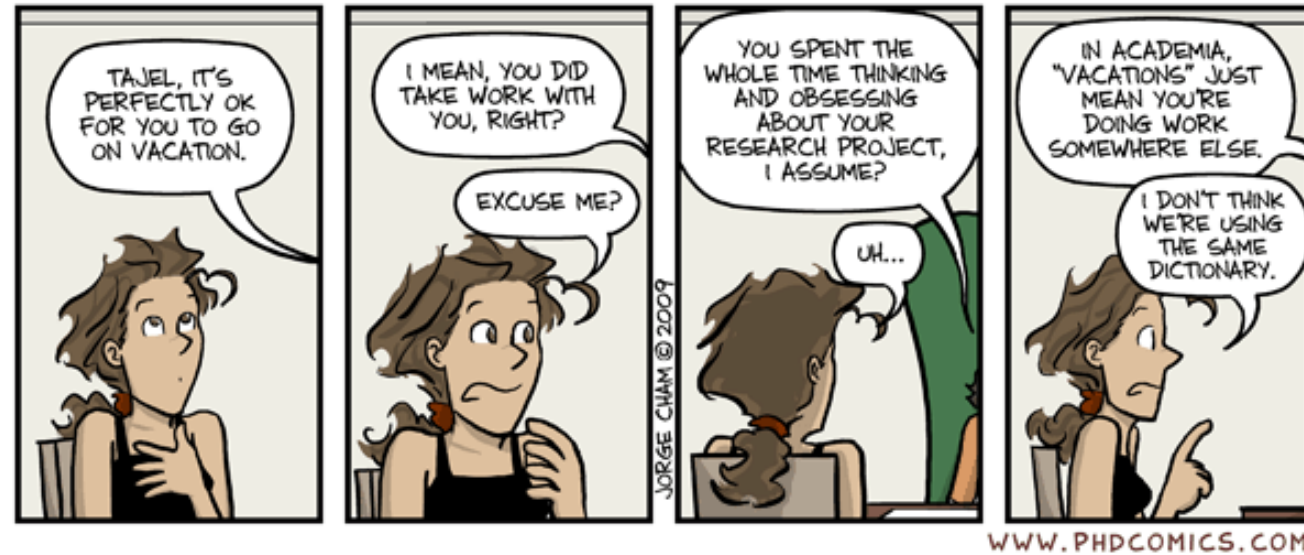
# The supervisor

- Has taken you as a PhD student
  - Most likely, believes in your capabilities
- Most likely, has plans for your research
  - Learn how to present your own ideas
- You learn and you make mistakes
  - Accept critique
  - The supervisor is experienced after all
- Build a close, but realistic relationship
  - Have regular meetings
  - Get to know his methodology
- Is a human after all
  - Accept that the supervisor can make mistakes as well



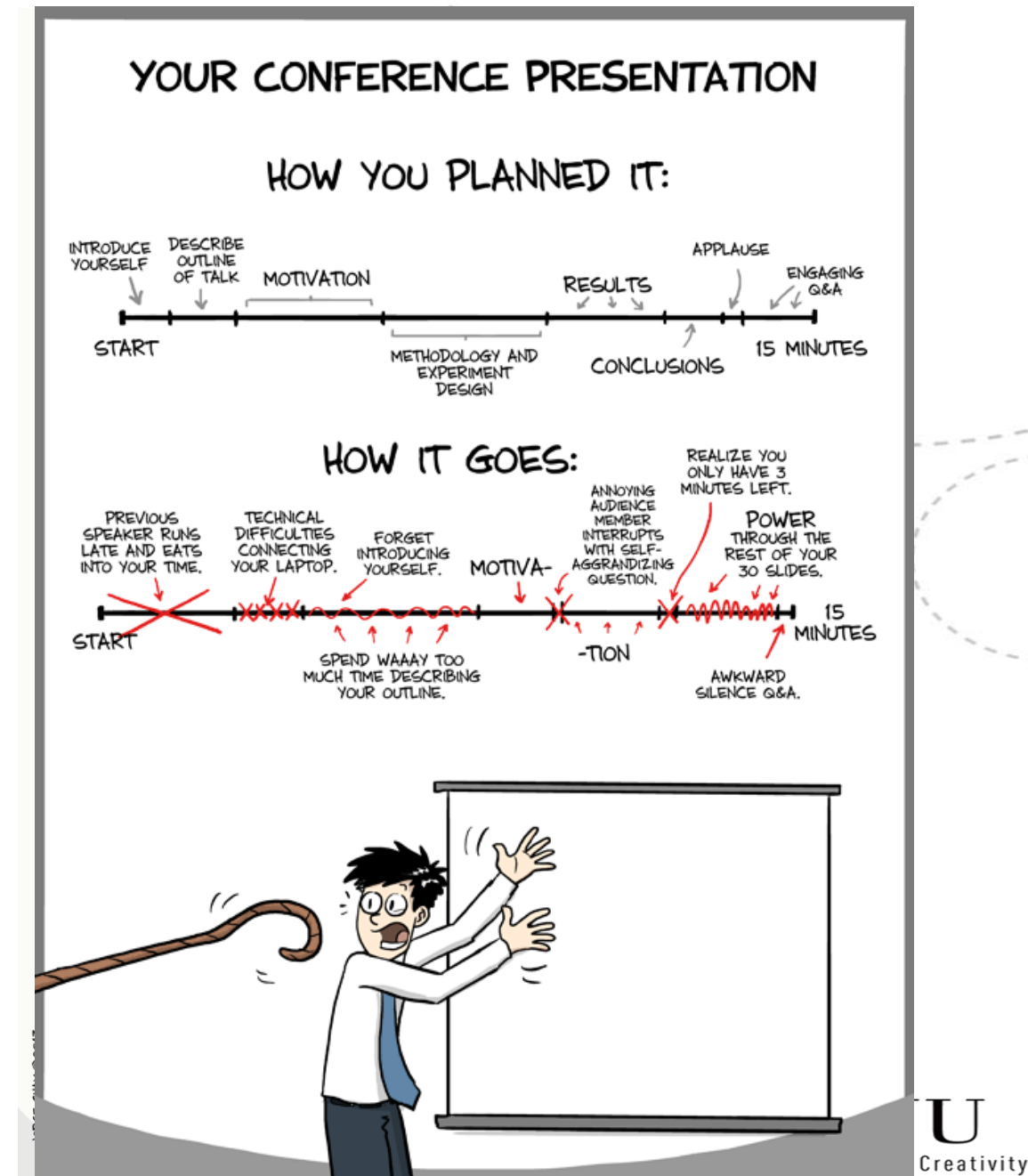
# Duties and colleagues

- Offer your help
- Don't complain about everything
- People should like you in order to work with you
- Accept duties, but learn to say no



# Networking and visibility

- Go to conferences
- Ask questions
- Talk to people
- Write them sometimes
- Don't miss opportunities
- Give talks, a lot!
- Remember, you need to sell your research



# IMPROBABLE RESEARCH



Research that makes people LAUGH and then THINK

Read the

Google™ Custom Search

Search

## THE AUTHOR LIST: GIVING CREDIT WHERE CREDIT IS DUE

**The first author**  
Senior grad student on the project. Made the figures.

**The third author**  
First year student who actually did the experiments, performed the analysis and wrote the whole paper. Thinks being third author is "fair".

**The second-to-last author**  
Ambitious assistant professor or post-doc who instigated the paper.

Michaels, C., Lee, E. F., Sap, P. S., Nichols, S. T., Oliveira, L., Smith, B. S.

**The second author**  
Grad student in the lab that has nothing to do with this project, but was included because he/she hung around the group meetings (usually for the food).

**The middle authors**  
Author names nobody really reads. Reserved for undergrads and technical staff.

**The last author**  
The head honcho. Hasn't even read the paper but, hey, he got the funding, and his famous name will get the paper accepted.

www.phdcomics.com

Press Clips

selected references therein). An excellent example of the latter phenomenon occurs in most introductions, which are supposed to introduce the reader to the subject so that the paper will be comprehensible even if the reader

**TNU**  
ion and Creativity

# Traveling

Call for Papers!

Xth International Conference on  
(Conference/Workshop/Symposium) *what's the difference?*

(Sub-topic of sub-area of an already narrow field of research)

Description: [www.phdcomics.com](http://www.phdcomics.com)

has recently garnered interest as a separate field of

## Location! Location! Location!

(Haven't you always wanted to go to a beautiful place and spend the whole time inside a convention center?)



(Pictures of sunny beach and/or historical ruins)

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# Your personal life



# Thanks for listening!

Disclaimer: While I may have noticed all these important things, I do not claim that I was able to implement all or even any of them. I accept no liability if it turns out to be harder than anticipated.