

Giving a (good)  
mathematical talk

SMSTC Research Skills day

4 April 2024

There is NO magical recipe,  
there are NO incontrovertible

"To Do's"

Write your  
result in the  
first 5 min.

Illustrate  
with examples

Prove  
something

There are **MANY** absolute

"Not to Do" rules

One could think they are obvious, but they happen again, and again, and again...

There are some  
interesting & useful  
guidelines which boil down to

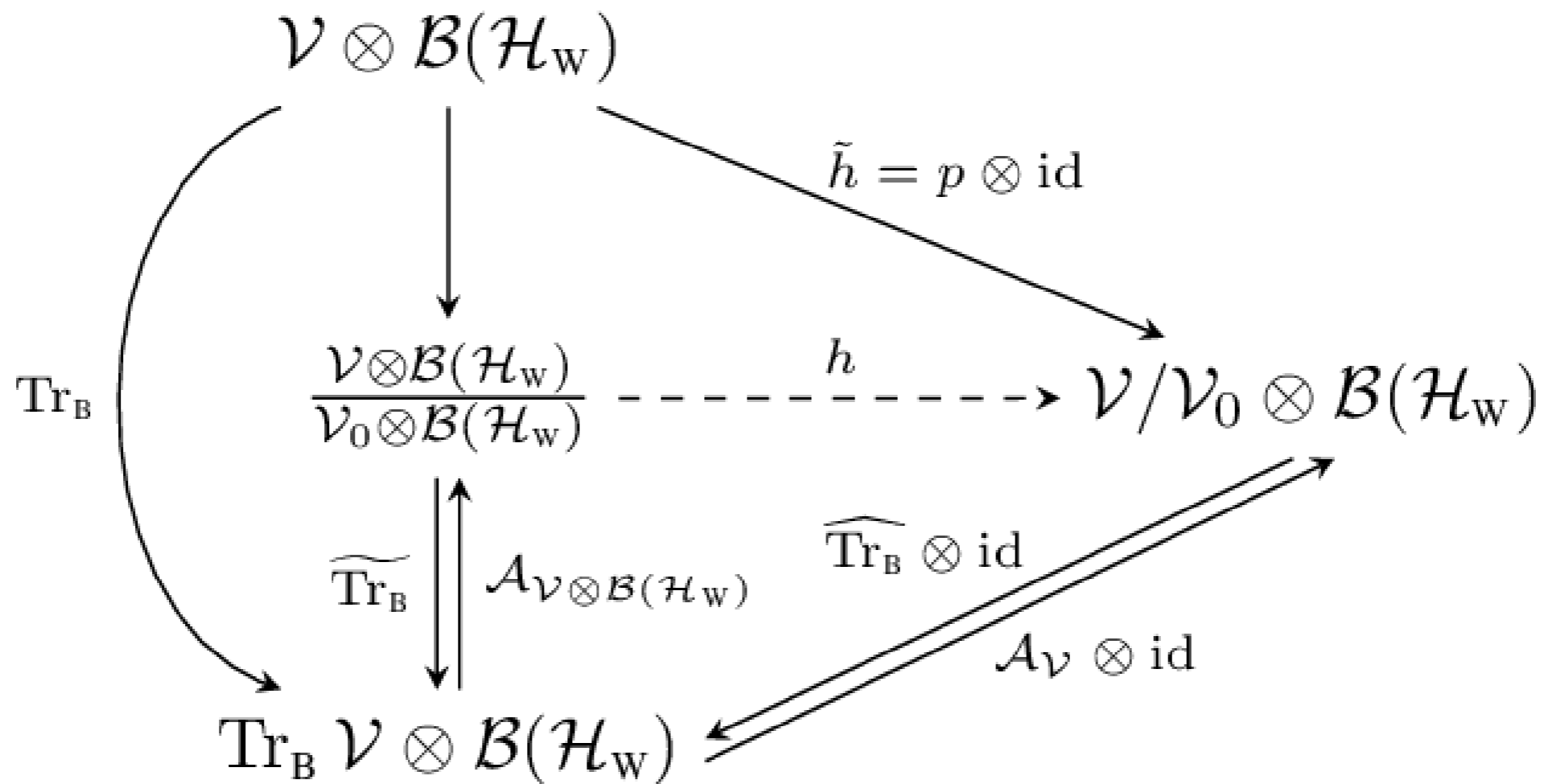
PRACTICE

Why make the effort?

The talks you give will  
determine the jobs that you get

# The No-noes:

- Assume the audience knows it all



• Only talk to the expert in the  
room

& to make it better

• Show the audience your back  
and mumble



Get as much on that page as possible

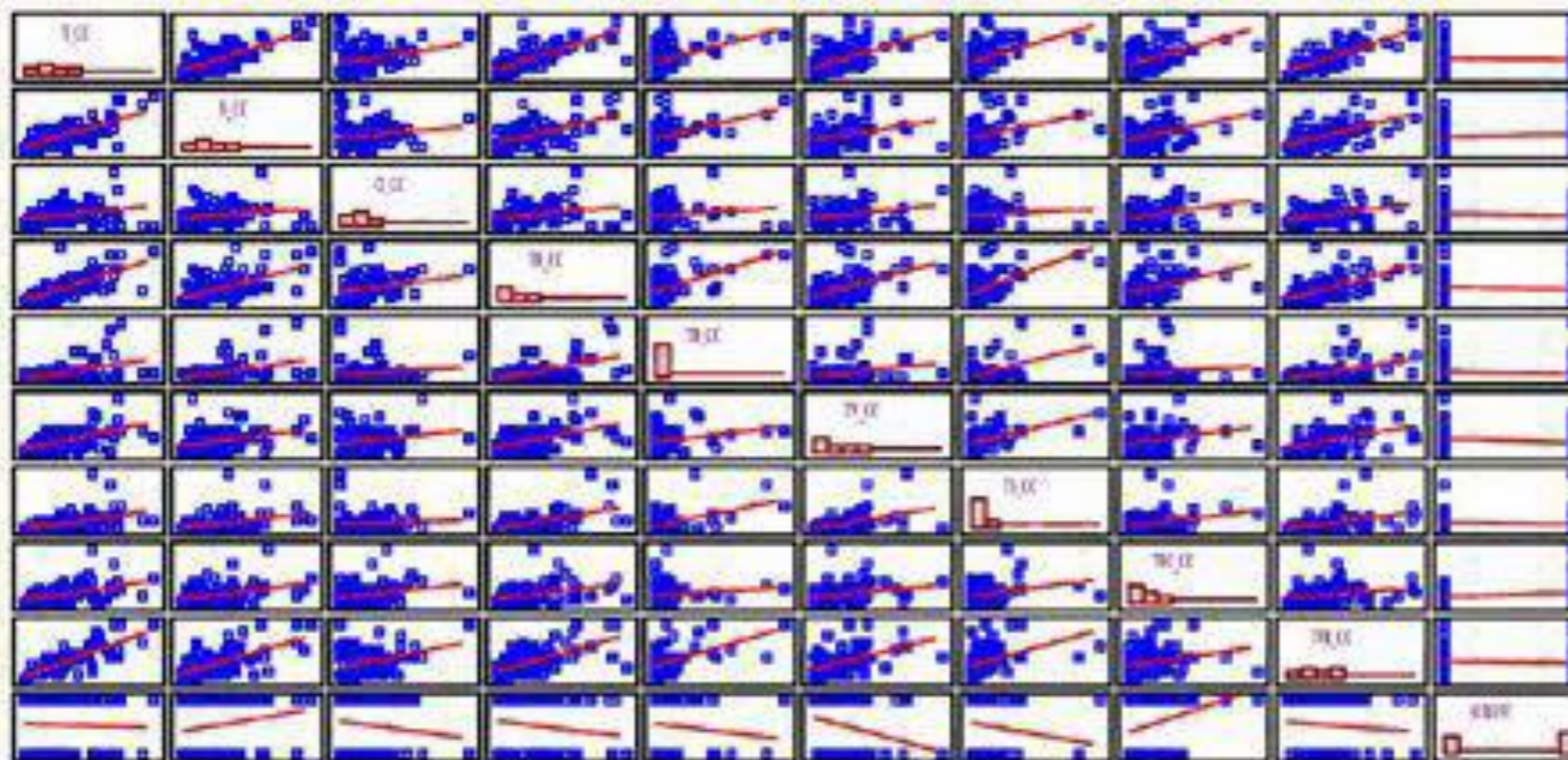
## Logistic Regression Model of System: Immune Cell Ratio Factors-Survival Lung Cancer Patients:

Correlations (LCLSTA 11/7/08)

Immune Cell Ratio Factors-5-Year Survival

Immunology of Lung Cancer Patients (n=100)

Logistic Regression





The last one goes together with

- Speak really fast
- Say "I know you can't read this,  
but..."

# The End

Don't leave that awkward  
silence hanging, where the  
audience doesn't know if you're  
finished or are just having  
a deep thought.

The golden rule of the no-noes

NEVER GO OVER TIME.

NEVER, EVER.

The majority of talks are not very good

## Seminar BINGO!

To play, simply print out this bingo sheet and attend a departmental seminar.

Mark over each square that occurs throughout the course of the lecture.

The first one to form a straight line (or all four corners) must yell out **BINGO!!** to win!



SEMINAR B I N G O				
Speaker bashes previous work	Repeated use of "um..."	Speaker sucks up to host professor	Host Professor falls asleep	Speaker wastes 5 minutes explaining outline
Laptop malfunction	Work ties in to latest buzz-words in your field	"...et al."	You're the only one in your lab that bothered to show up	Blatant typo
Entire slide filled with equations	"The data <i>clearly</i> shows..."	<b>FREE</b> Speaker runs out of time	Use of Powerpoint template with blue background	References Advisor (past or present)
There's a Grad Student wearing same clothes as yesterday	Bitter Post-doc asks question	"That's an interesting question"	"Beyond the scope of this work"	Master's student bobs head fighting sleep
Speaker forgets to thank collaborators	Cell phone goes off	You've no idea what's going on	"Future work will..."	Results conveniently show improvement

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# WHAT YOU BROUGHT TO SEMINAR AND WHAT IT SAYS ABOUT YOU:

Stuff to take notes:  
First year. Foolishly  
thinks he'll ever  
need notes again.

Reading  
material: Third  
year. Just  
here for show.

Didn't bring  
anything:  
ABD/Postdoc.  
Has nothing  
better to do.

Laptop: Young  
Assistant Professor.  
Working on three  
proposals at the  
same time.

Playing with latest  
Gadget/Gizmo:  
Full Professor.  
Loooves new toys.

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WWW.PHDCOMICS.COM

Piled Higher and Deeper by Jorge Cham

Think about the last math talk  
you went to.

- What general area was the talk about?
- What was the specific problem? why  
was it interesting?
- What was the main message of the talk?



# How can you make it work?

"Big picture questions"

- Who is the audience?
- What do I want to tell them?
- What can I **realistically** communicate in the time given?

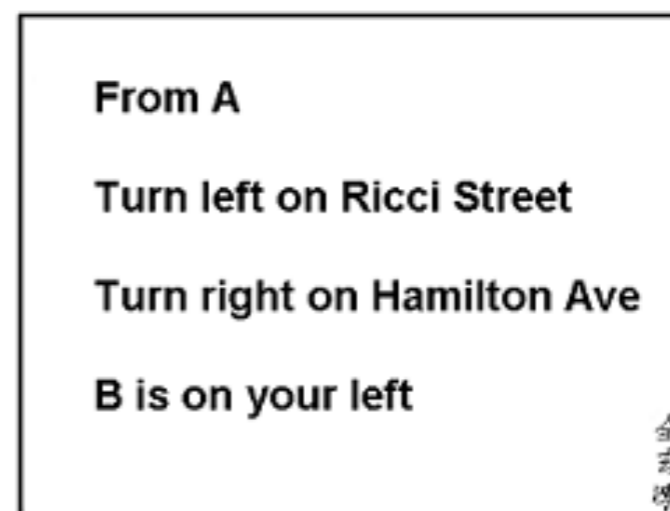
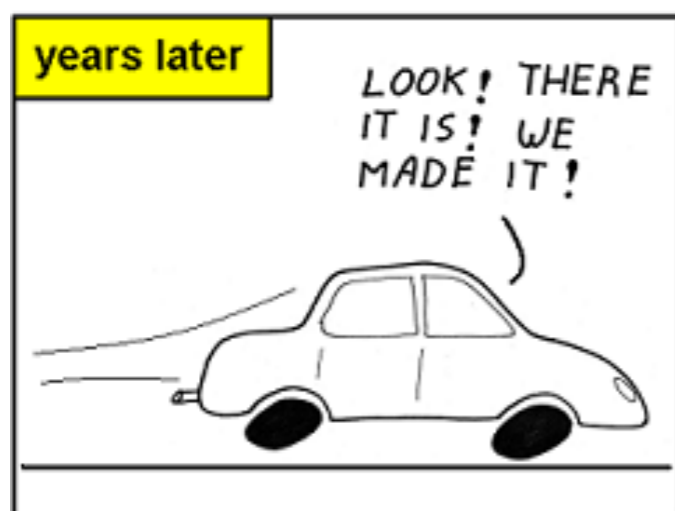
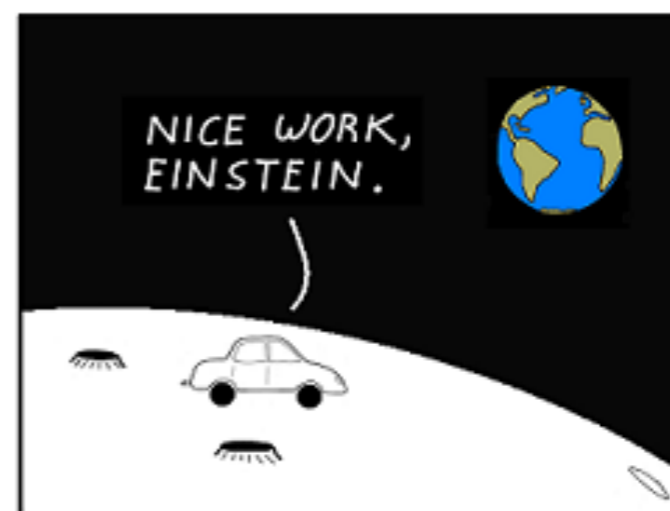
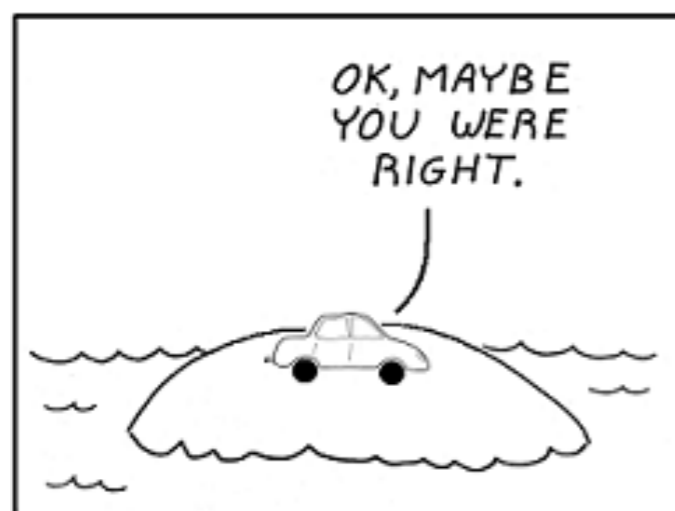
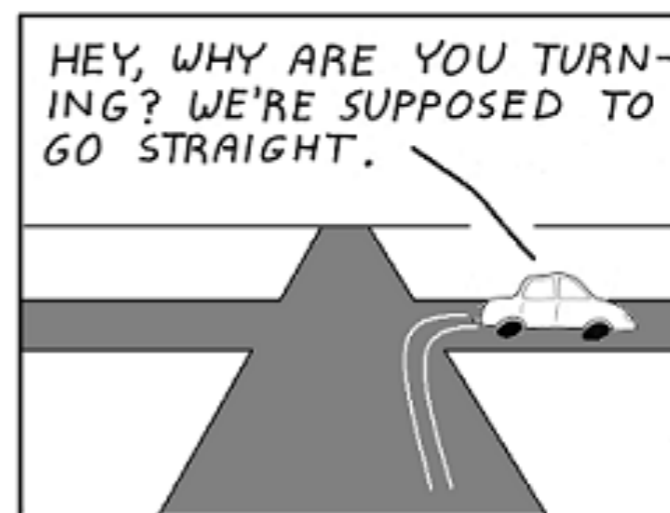
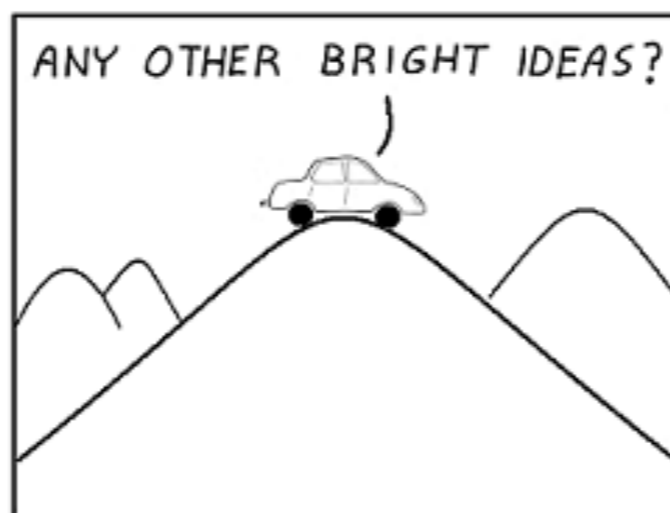
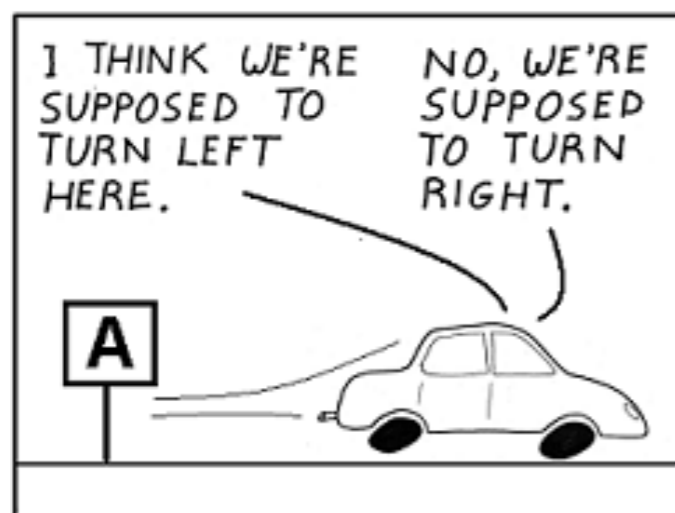
Focus on the ONE & ONLY goal:

COMMUNICATE

IDEAS

(We are assuming you understand these ideas)

# Math talk $\neq$ math paper



This is how most mathematical proofs are written.



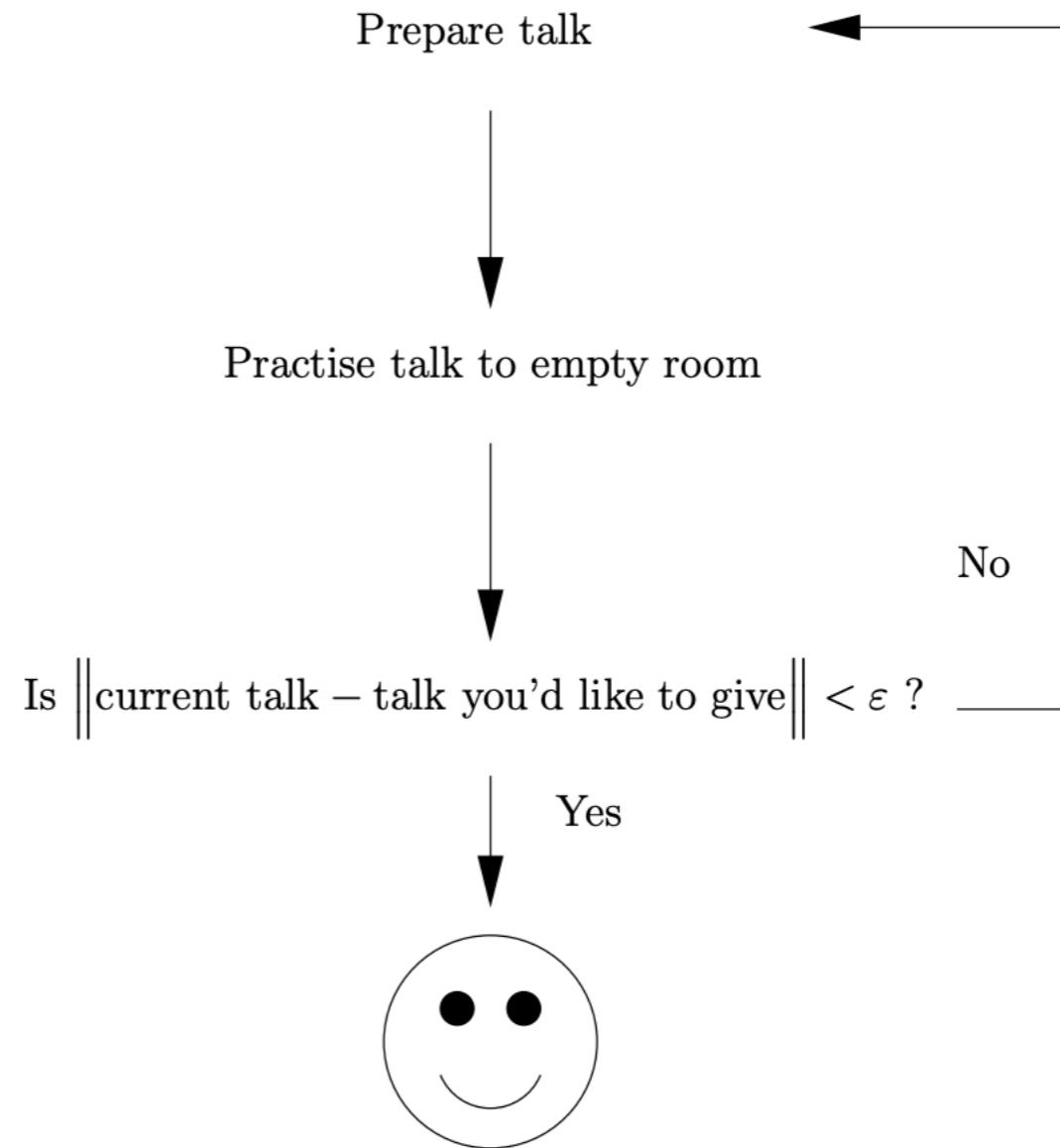
The mindset = 'Trial by PhD student'



Analogy due to Marj Batchelor

What's the secret ingredient?

Give yourself enough time to prepare.



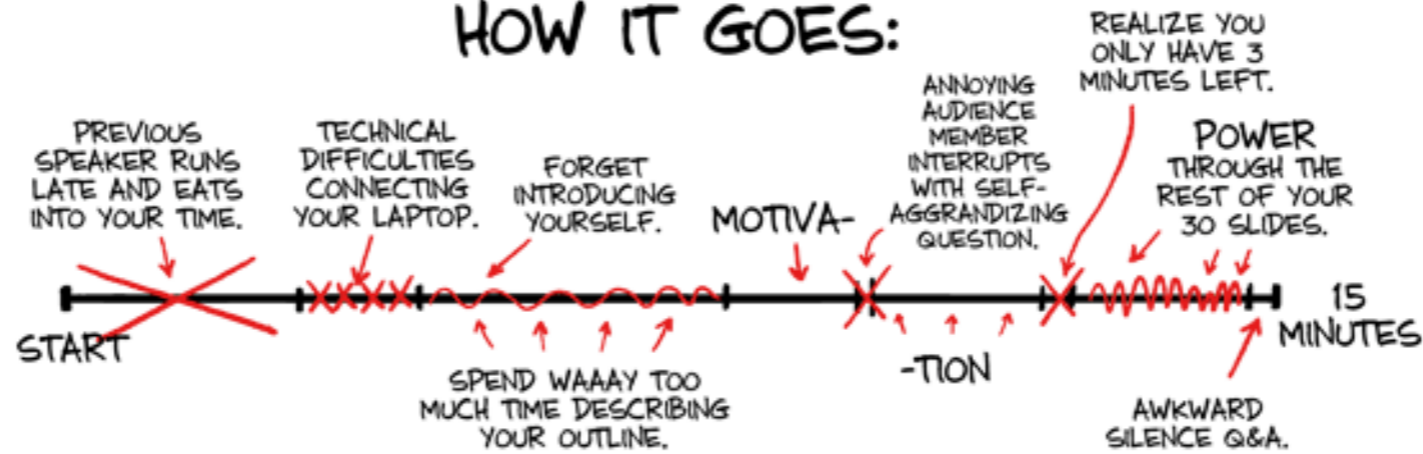
(algorithm needs enough time to run)

# YOUR CONFERENCE PRESENTATION

## HOW YOU PLANNED IT:



## HOW IT GOES:





# Final remarks

- Whatever you do after your PhD, being able to communicate well and give good talks will be valuable skills.
- You get better at giving talks by giving talks!

And from now on:

Take time to

prepare your

talks!