

# Introduction to science denial, misinformation, the dangers it poses, and what to do about it

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How do people think about  
topics like climate change?

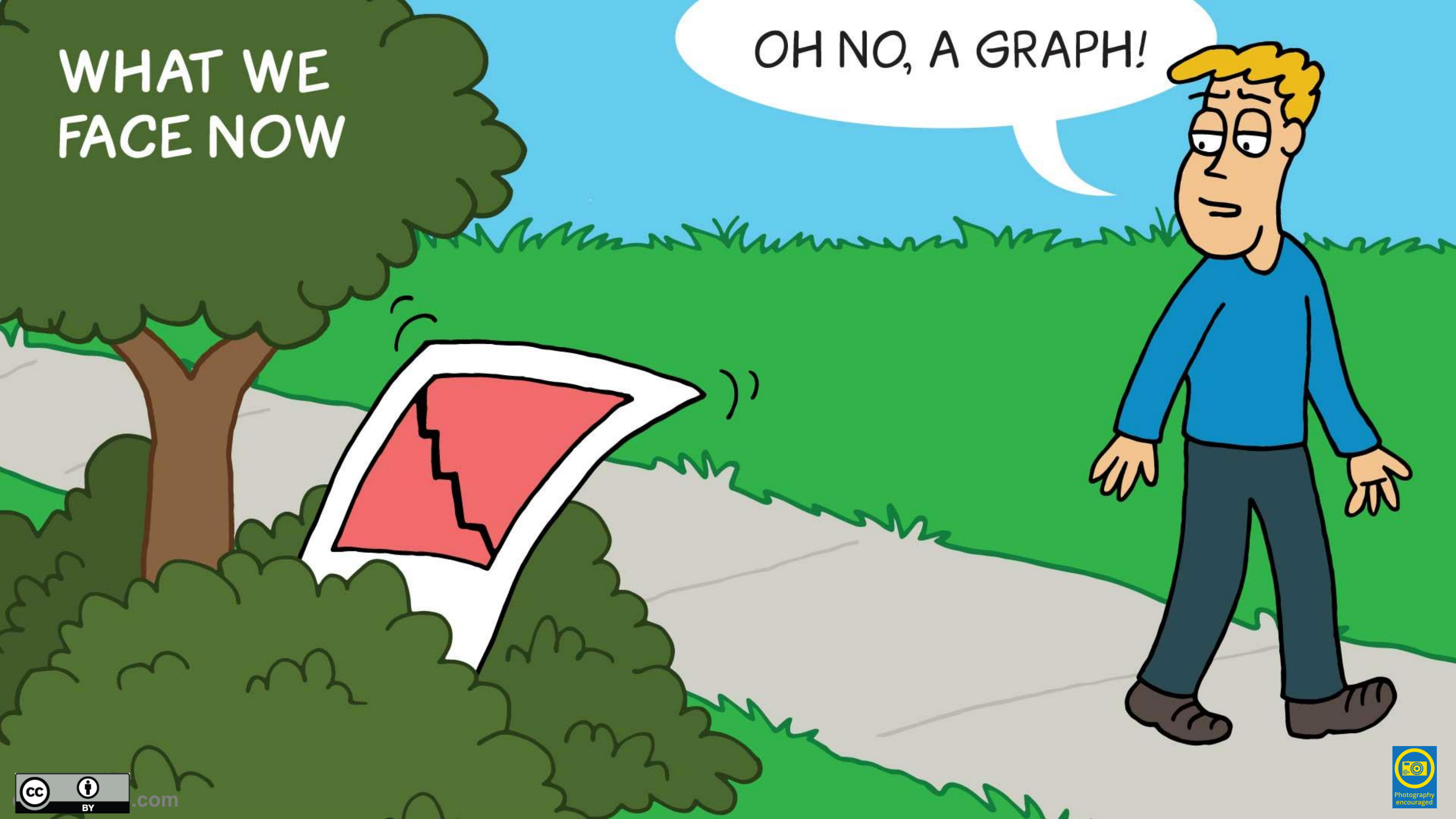
WHAT WE'RE  
BUILT FOR

OH NO, A BEAR!

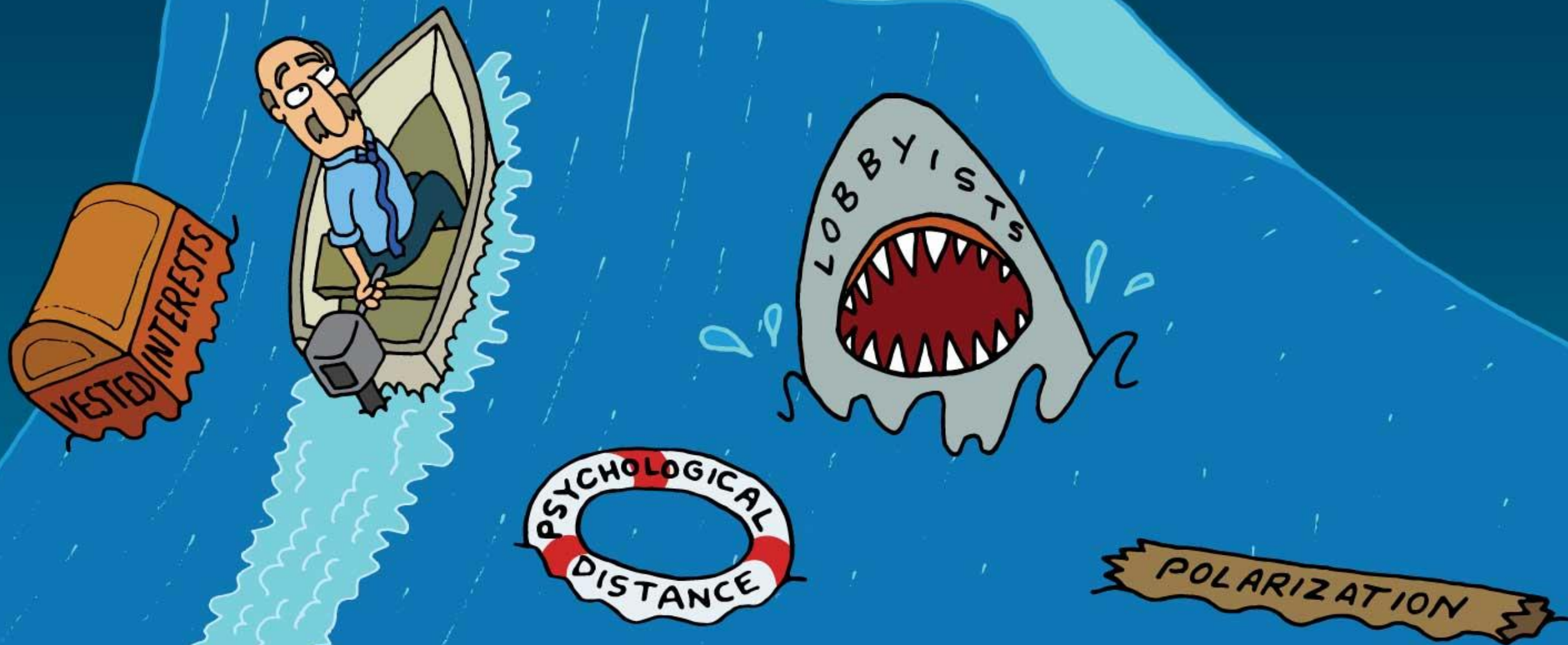


WHAT WE  
FACE NOW

OH NO, A GRAPH!

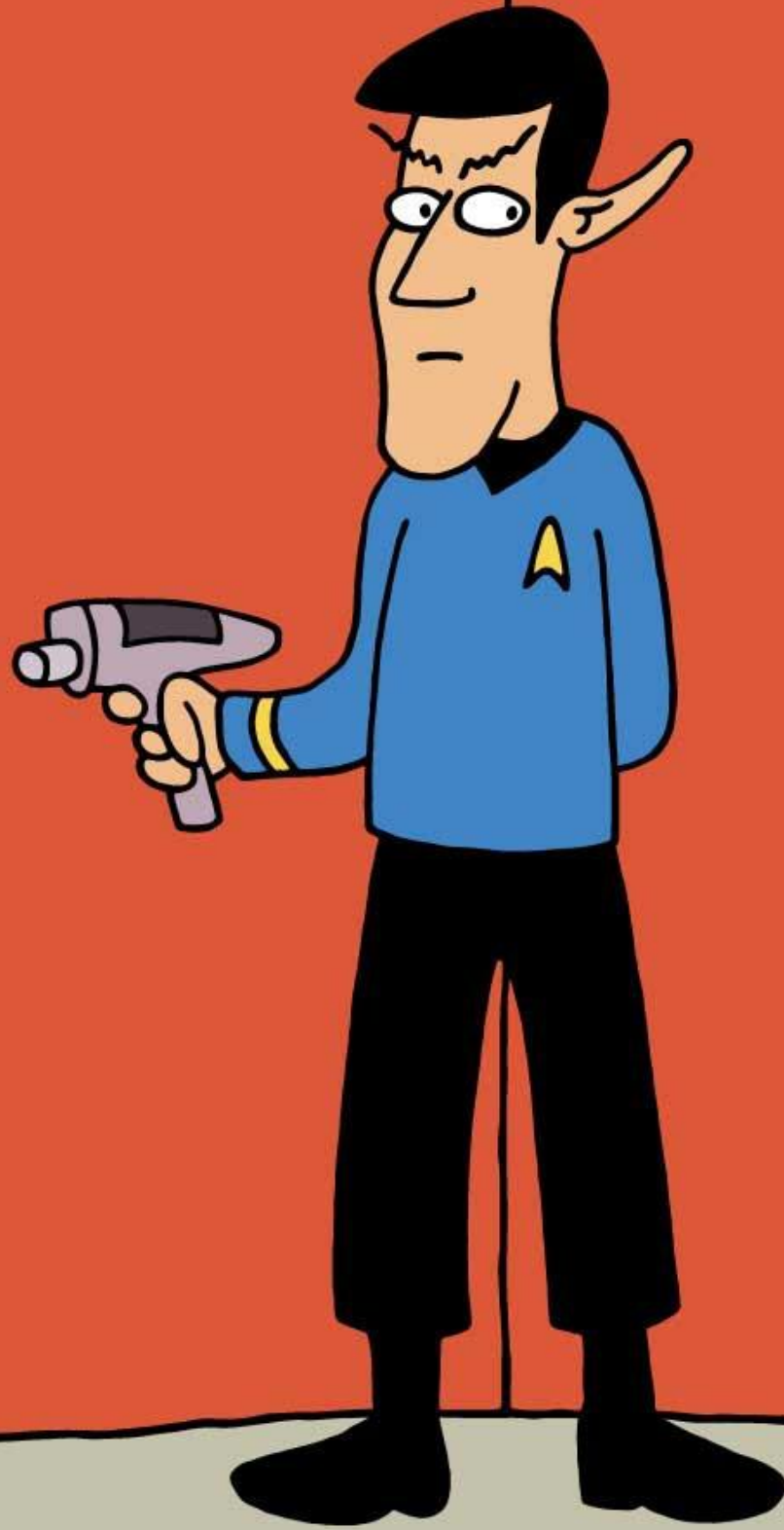


# MISINFORMATION CAMPAIGN



Why is mis- and disinformation a problem and can be dangerous?

SPOCK,  
I'M THE REAL  
CAPTAIN  
KIRK!



THAT'S  
FAKE NEWS!  
I'M THE REAL  
KIRK!



The antidote to fake news...  
...is a little bit of fake news.



BEHOLD,  
CO<sub>2</sub> IS PLANT  
FOOD!

HEY!  
YOU'RE HIDING ALL THE  
NEGATIVE IMPACTS IN  
YOUR SLEEVE!

Beware  
the  
hoax!



# INOCULATION THEORY

## “A VACCINE FOR THE BRAIN”

# The 5 techniques of science denial (FLICC)



# The 5 techniques of science denial (FLICC)

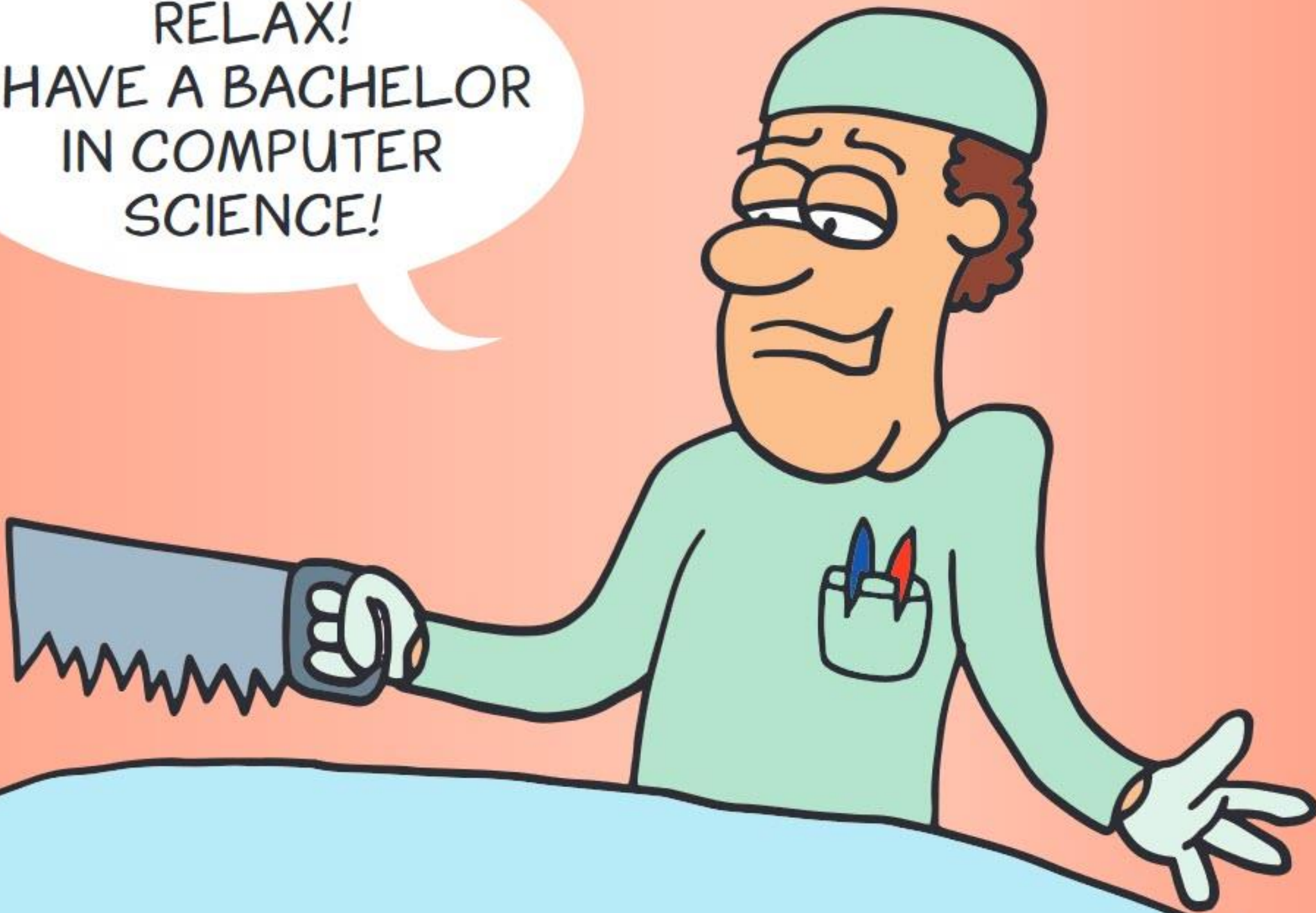
 Fake Experts



*Fake experts* are people who convey the appearance of expertise without possessing any actual relevant expertise.



RELAX!  
I HAVE A BACHELOR  
IN COMPUTER  
SCIENCE!



# Global Warming Petition Project

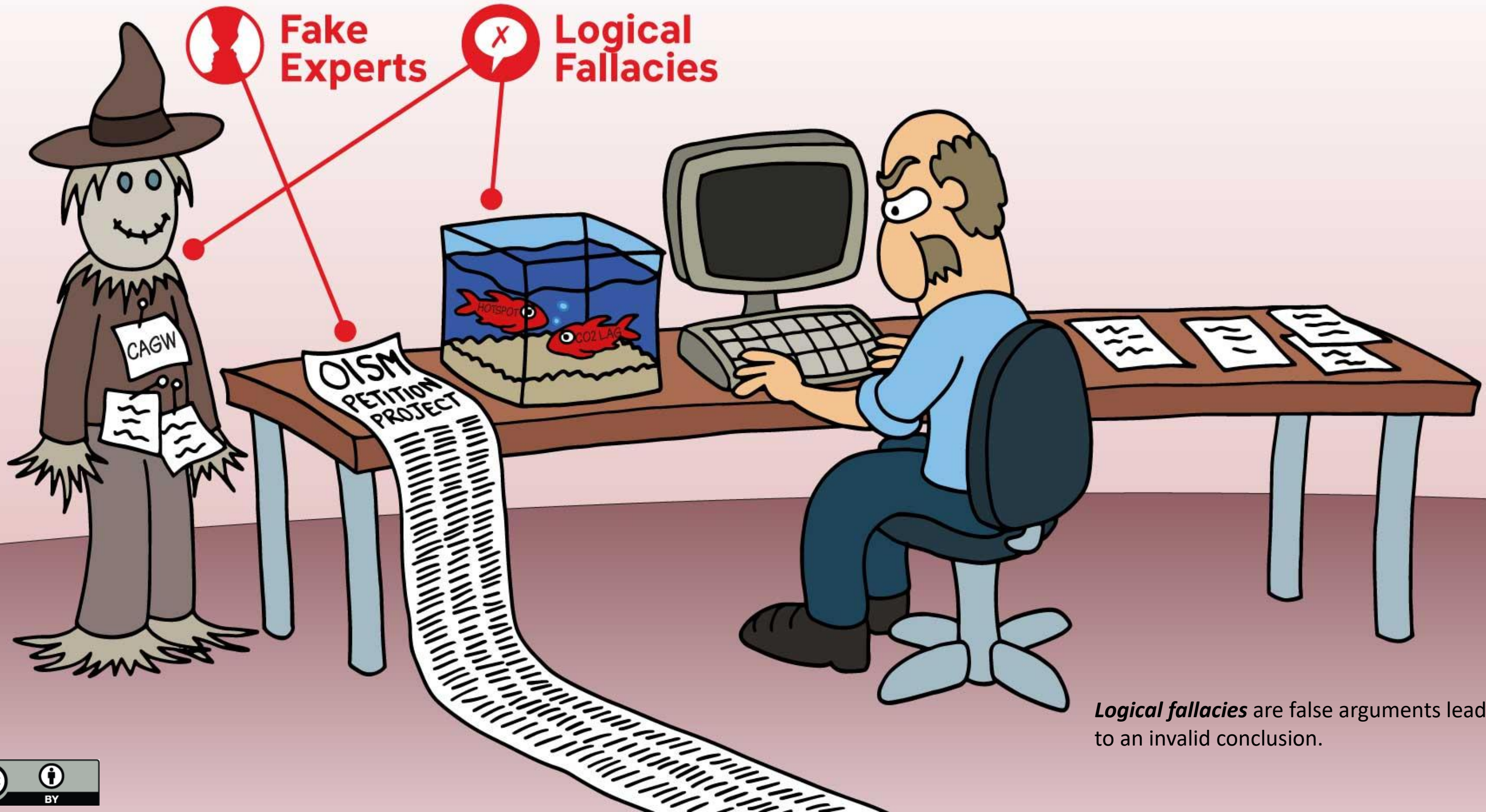
*31,487 American scientists have signed this petition,  
including 9,029 with PhDs*

## Petition

We urge the United States government to reject the global warming agreement that was written in Kyoto, Japan in December, 1997, and any other similar proposals. The proposed limits on greenhouse gases would harm the environment, hinder the advance of science and technology, and damage the health and welfare of mankind.

There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere and disruption of the Earth's climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.

# The 5 techniques of science denial (FLICC)



*Logical fallacies* are false arguments leading to an invalid conclusion.

“I have blue eyes, so I’m an expert in quantum physics.”



One of the reasons why the climate is changing...



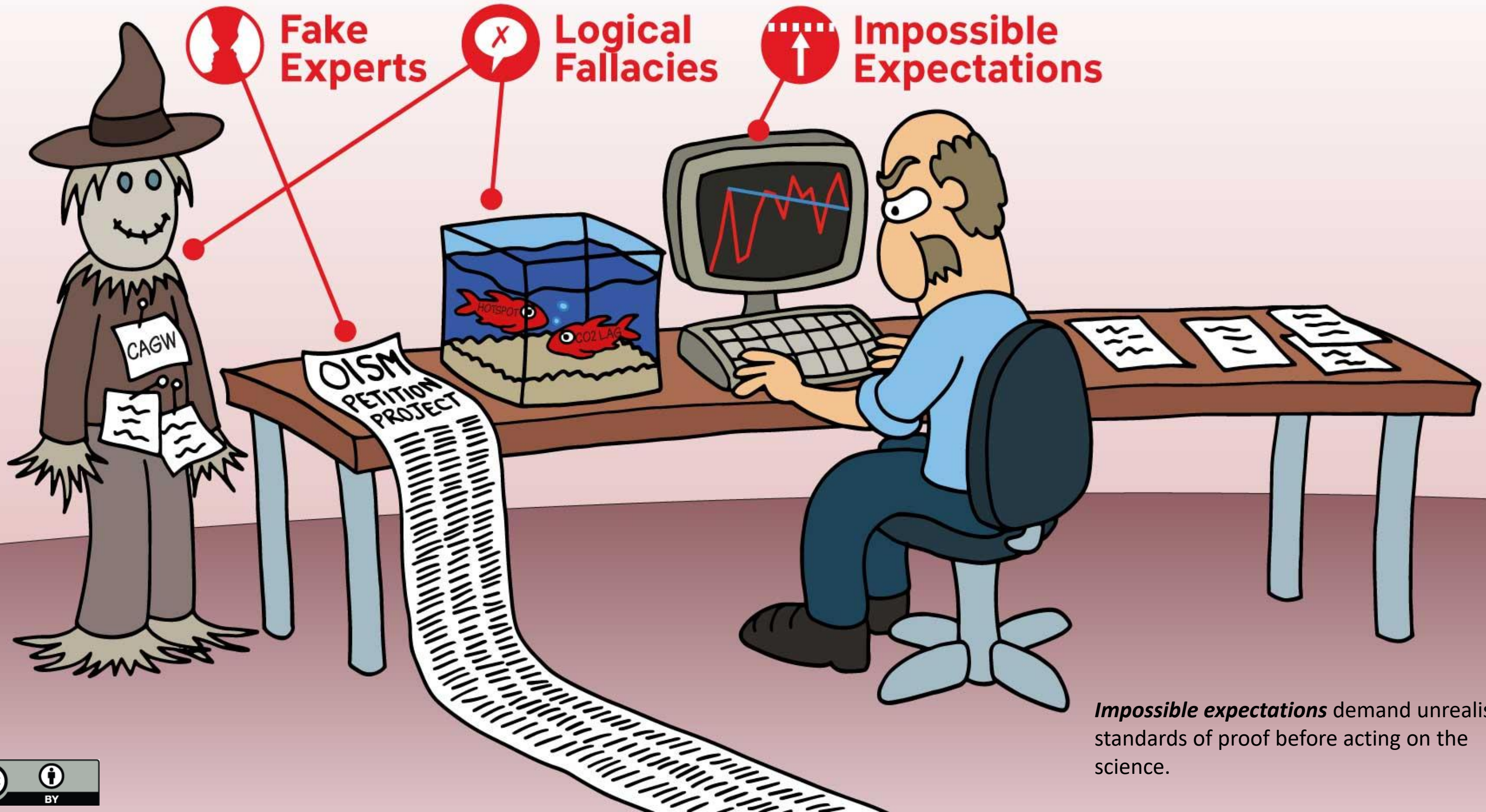
...is climate has always been changing.

This person died of natural causes...



...because people have always died of natural causes.

# The 5 techniques of science denial (FLICC)



**Fake Experts**



**Logical Fallacies**



**Impossible Expectations**

*Impossible expectations* demand unrealistic standards of proof before acting on the science.

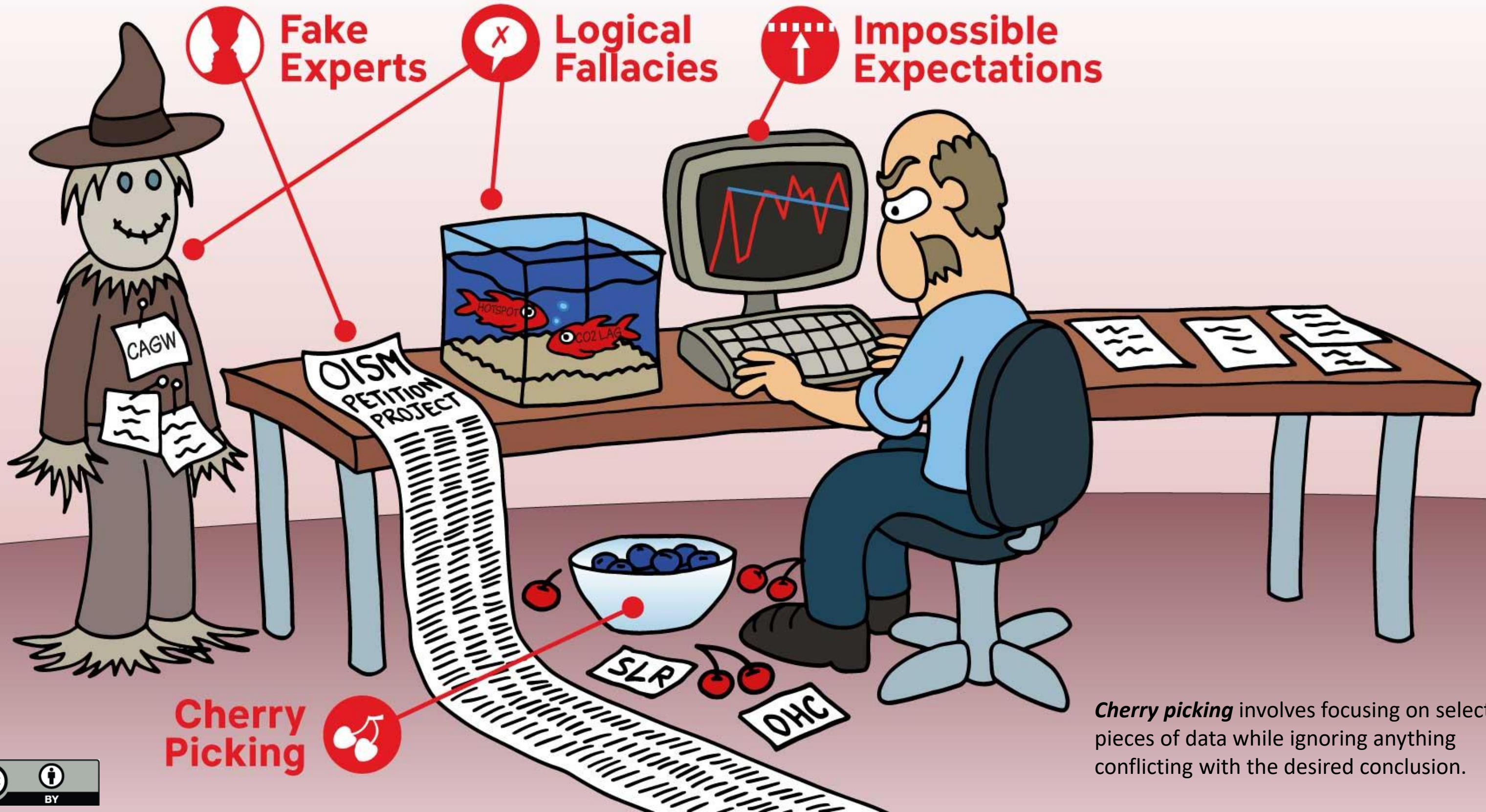


YOU'LL HIT  
THE GROUND IN 12  
TO 15 SECONDS.



GET BACK TO  
ME WHEN YOU HAVE  
MORE CERTAINTY!

# The 5 techniques of science denial (FLICC)



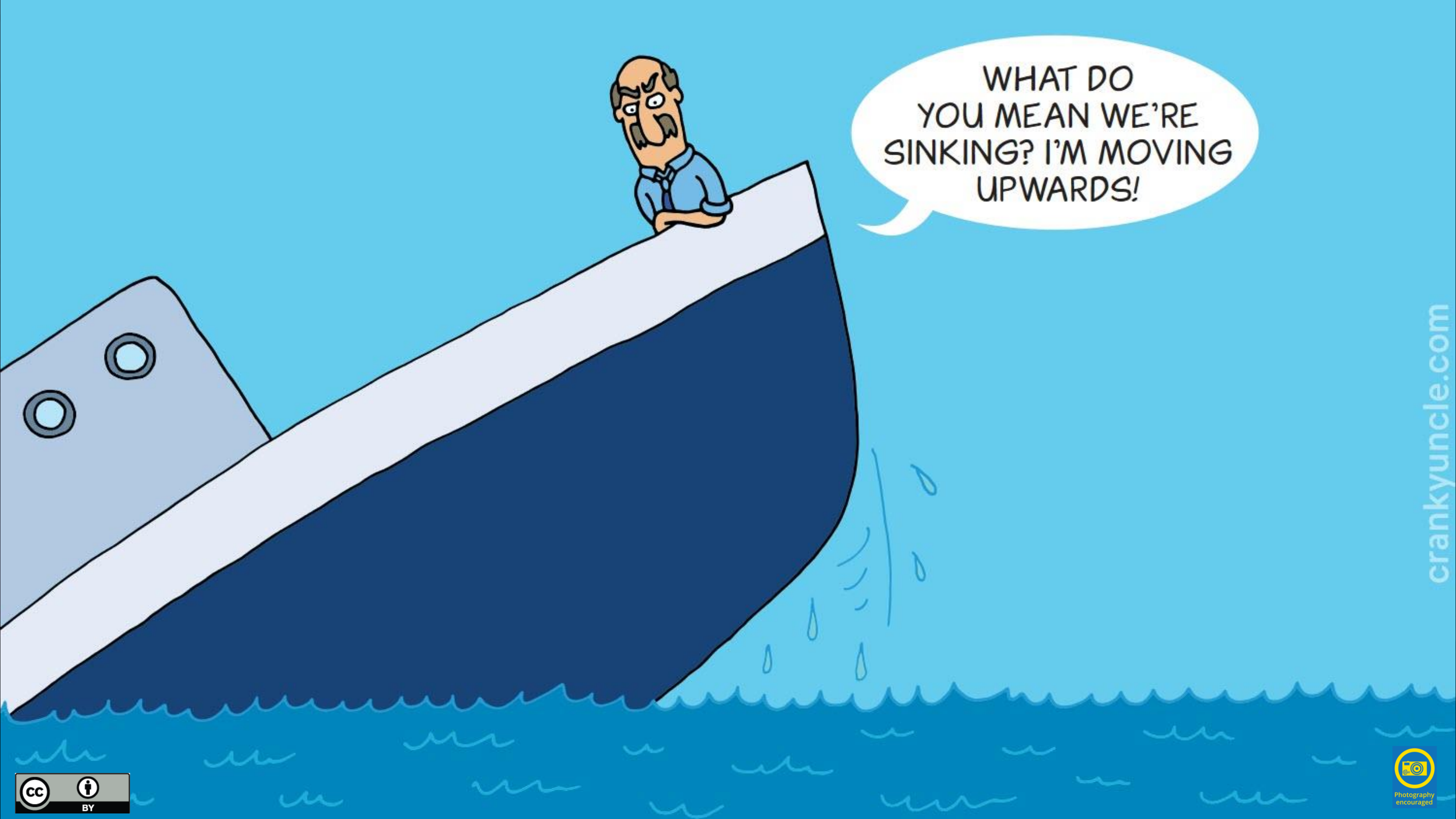
 Fake Experts

 Logical Fallacies

 Impossible Expectations

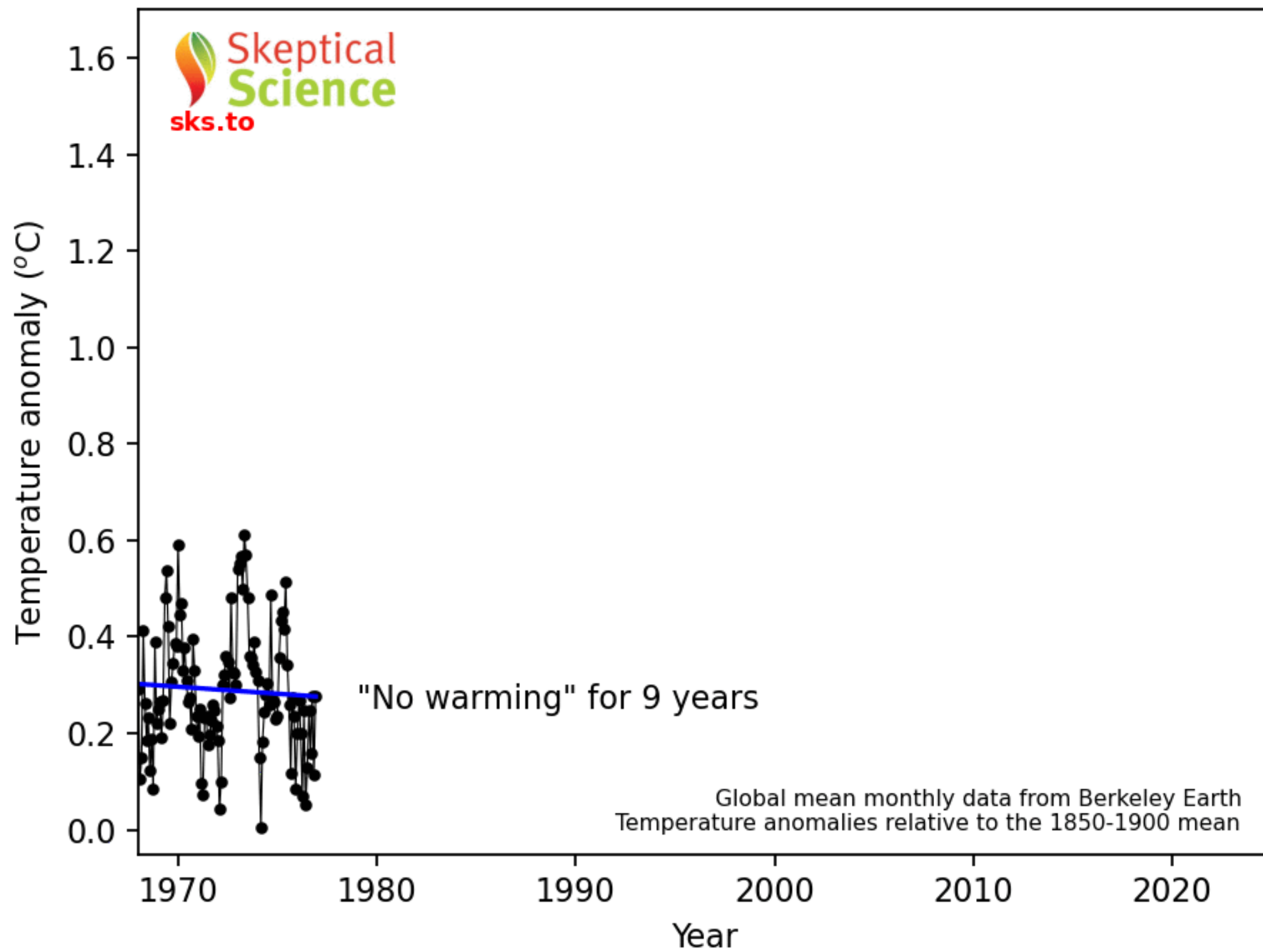
 Cherry Picking

*Cherry picking* involves focusing on select pieces of data while ignoring anything conflicting with the desired conclusion.

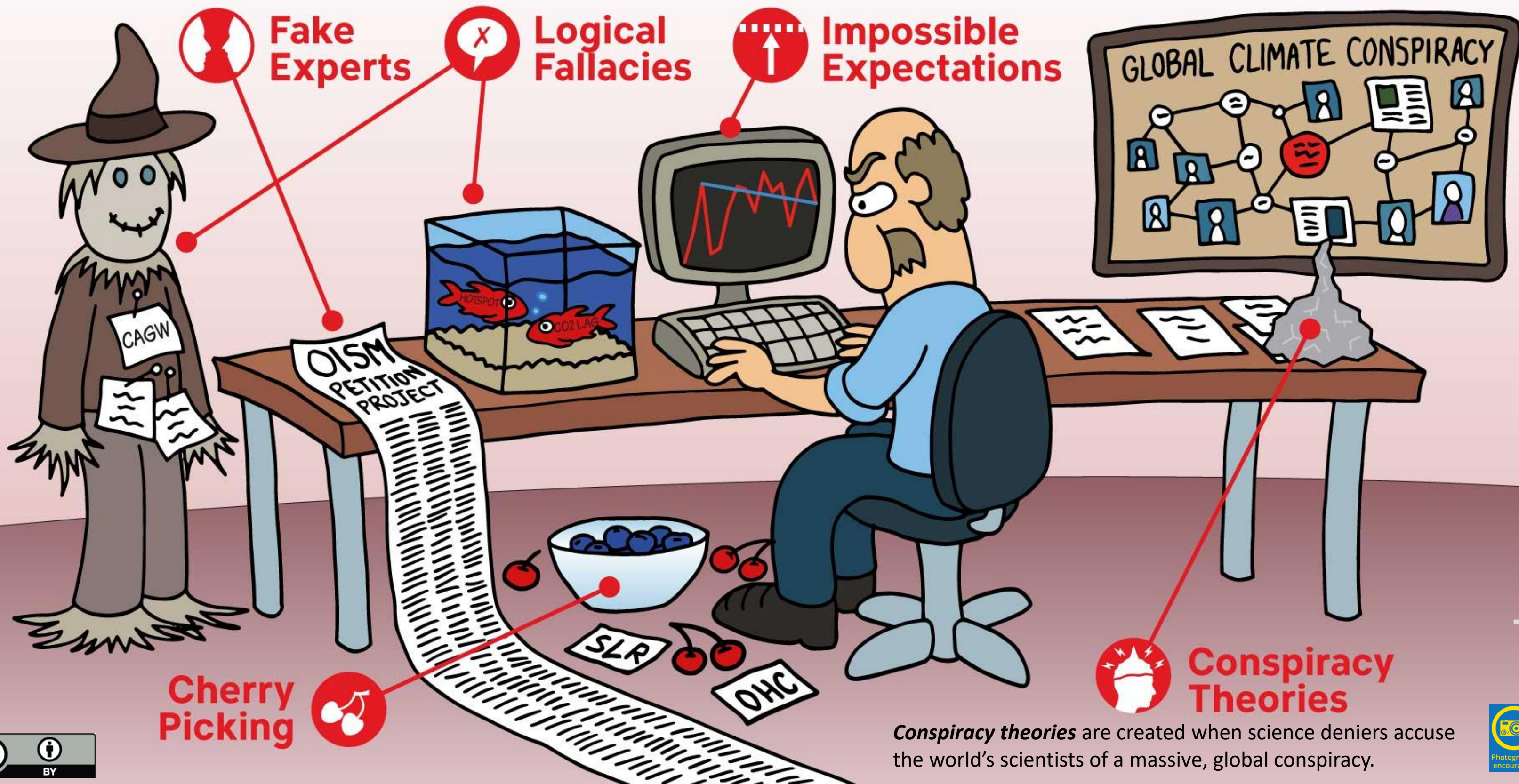


WHAT DO YOU MEAN WE'RE SINKING? I'M MOVING UPWARDS!

crankyuncle.com



# The 5 techniques of science denial (FLICC)



**Fake Experts**



**Logical Fallacies**



**Impossible Expectations**



**Conspiracy Theories**

**Cherry Picking**



*Conspiracy theories* are created when science deniers accuse the world's scientists of a massive, global conspiracy.



**Donald J. Trump** 

@realDonaldTrump



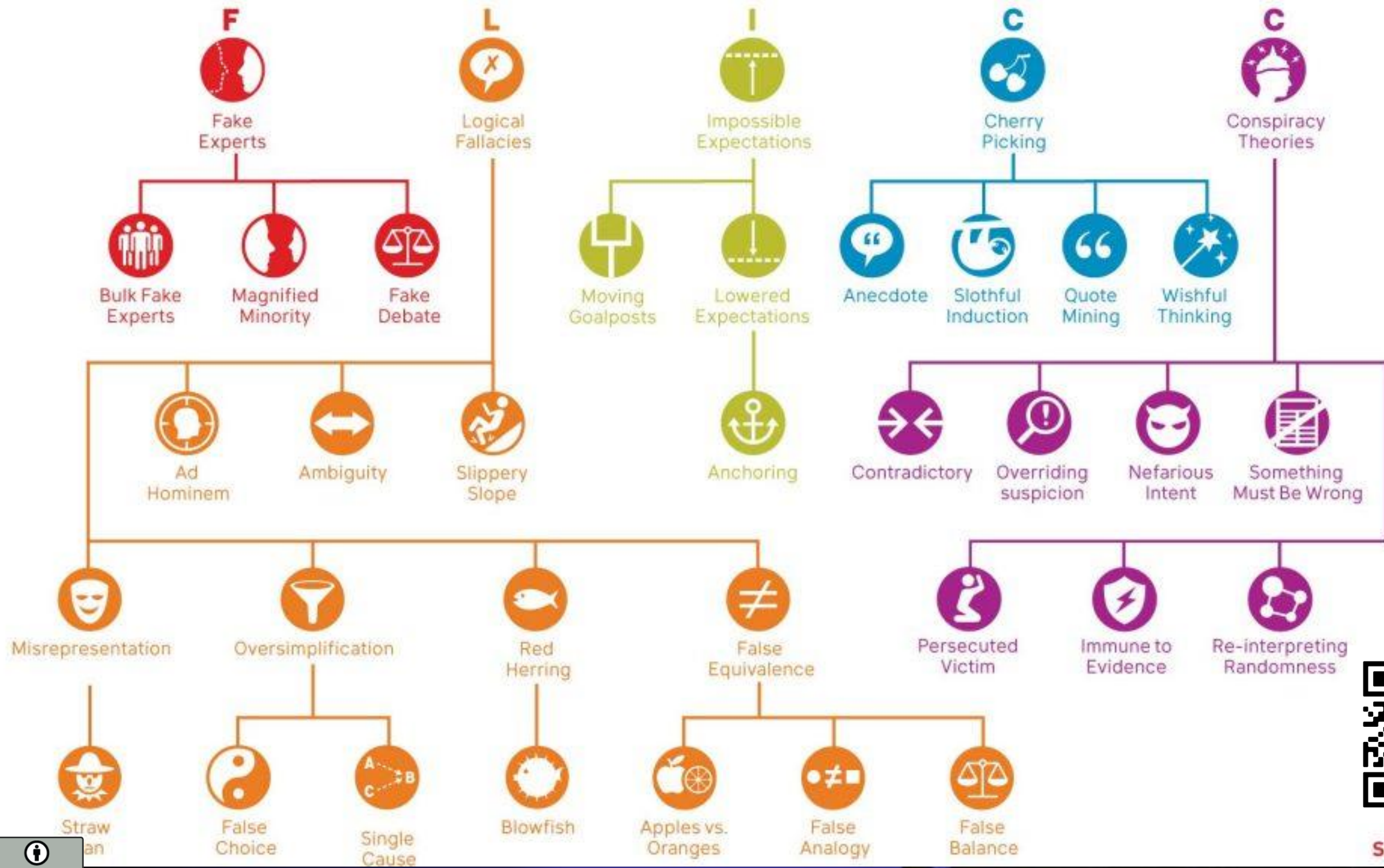
The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive.

2:15 PM · Nov 6, 2012 · [Twitter Web Client](#)

**96.7K** Retweets   **64.7K** Likes







sks.to/flic



# A big Challenge for Inoculation

Critical Thinking is hard and requires a lot of effort to not just memorize the techniques of science denial but to also be able to quickly recognize them “in the wild”.

# Cranky Uncle to the rescue!



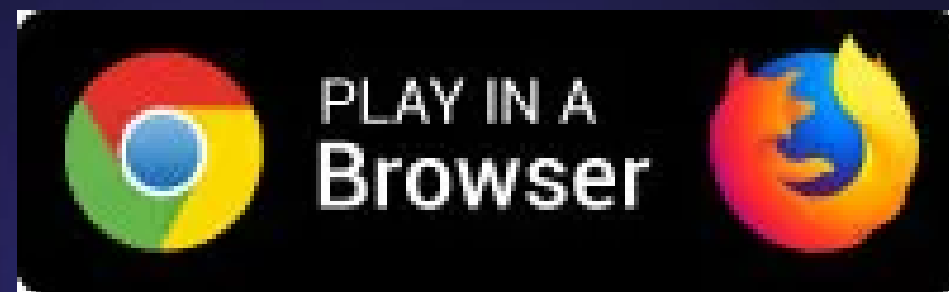
# Understand cranky uncles by becoming a cranky uncle



<https://sks.to/crankyiphone>

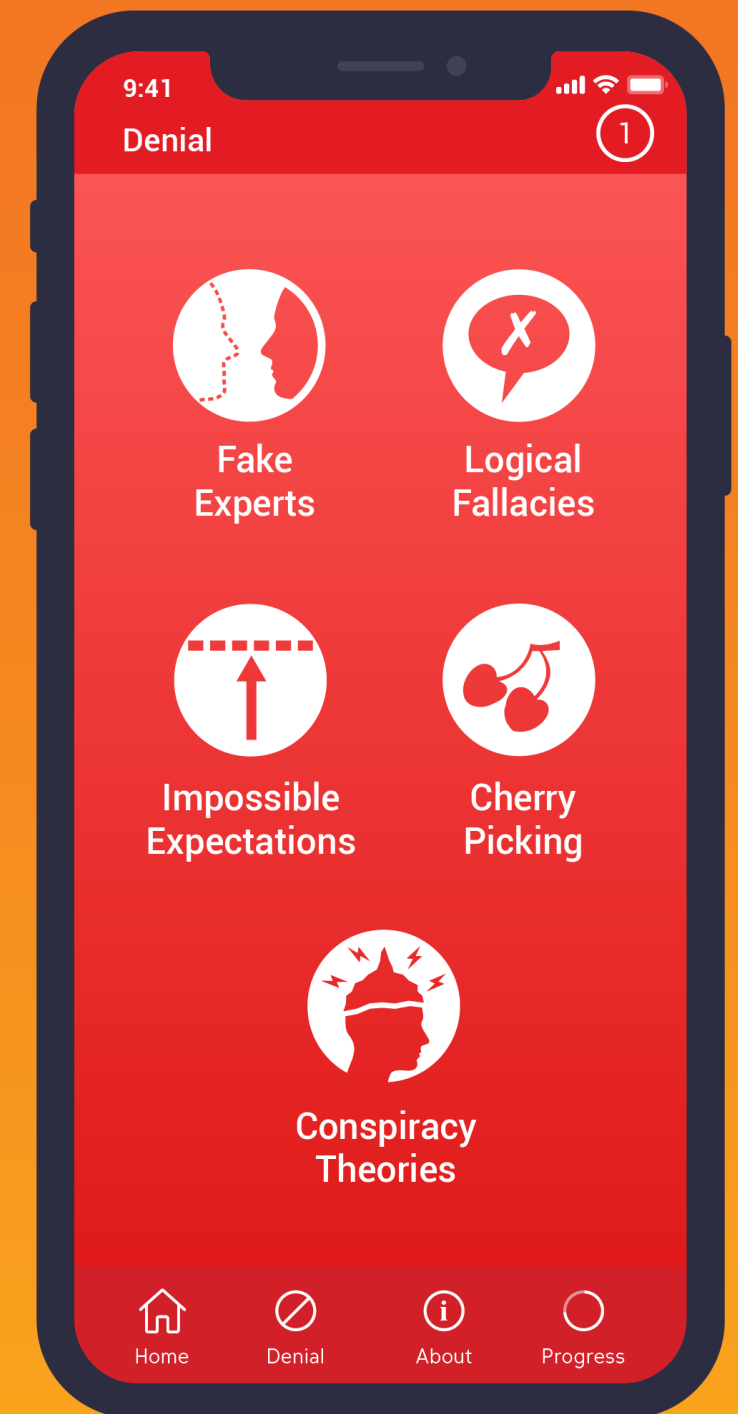


<https://sks.to/crankyandroid>



<https://sks.to/crankybrowser>

# Learn techniques of science denial



# Cranky Uncle - a multi-lingual critical thinking game to build resilience against climate misinformation

Game is available for iPhone, Android and Browser



[sks.to/crankyiphone](https://sks.to/crankyiphone)



[sks.to/crankyandroid](https://sks.to/crankyandroid)



[sks.to/crankybrowser](https://sks.to/crankybrowser)

Thanks to John Cook  
for his slides as well as the Cranky Uncle  
cartoons used in this presentation!

More information is available at  
<https://crankyuncle.com>



Thank you!

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