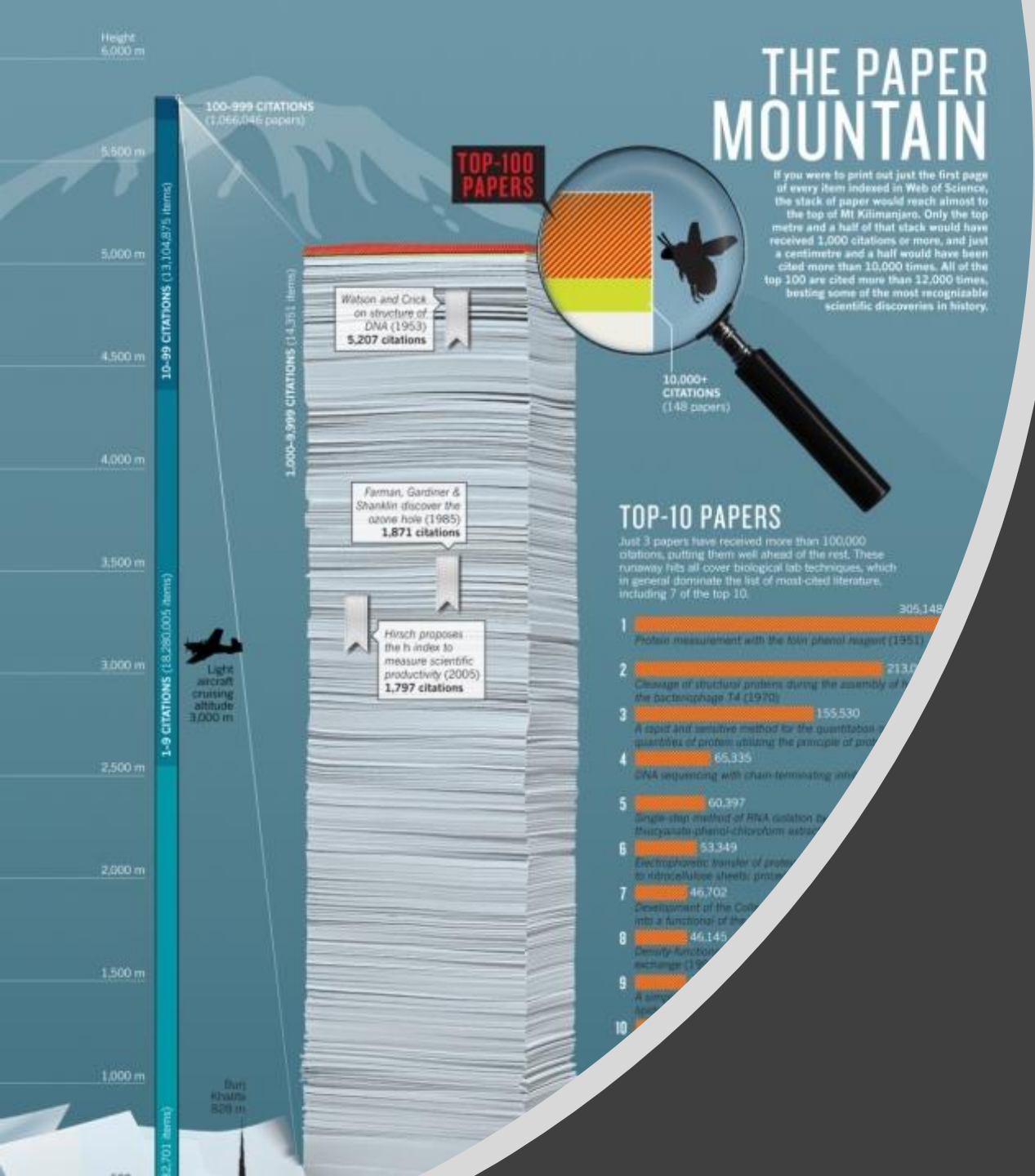
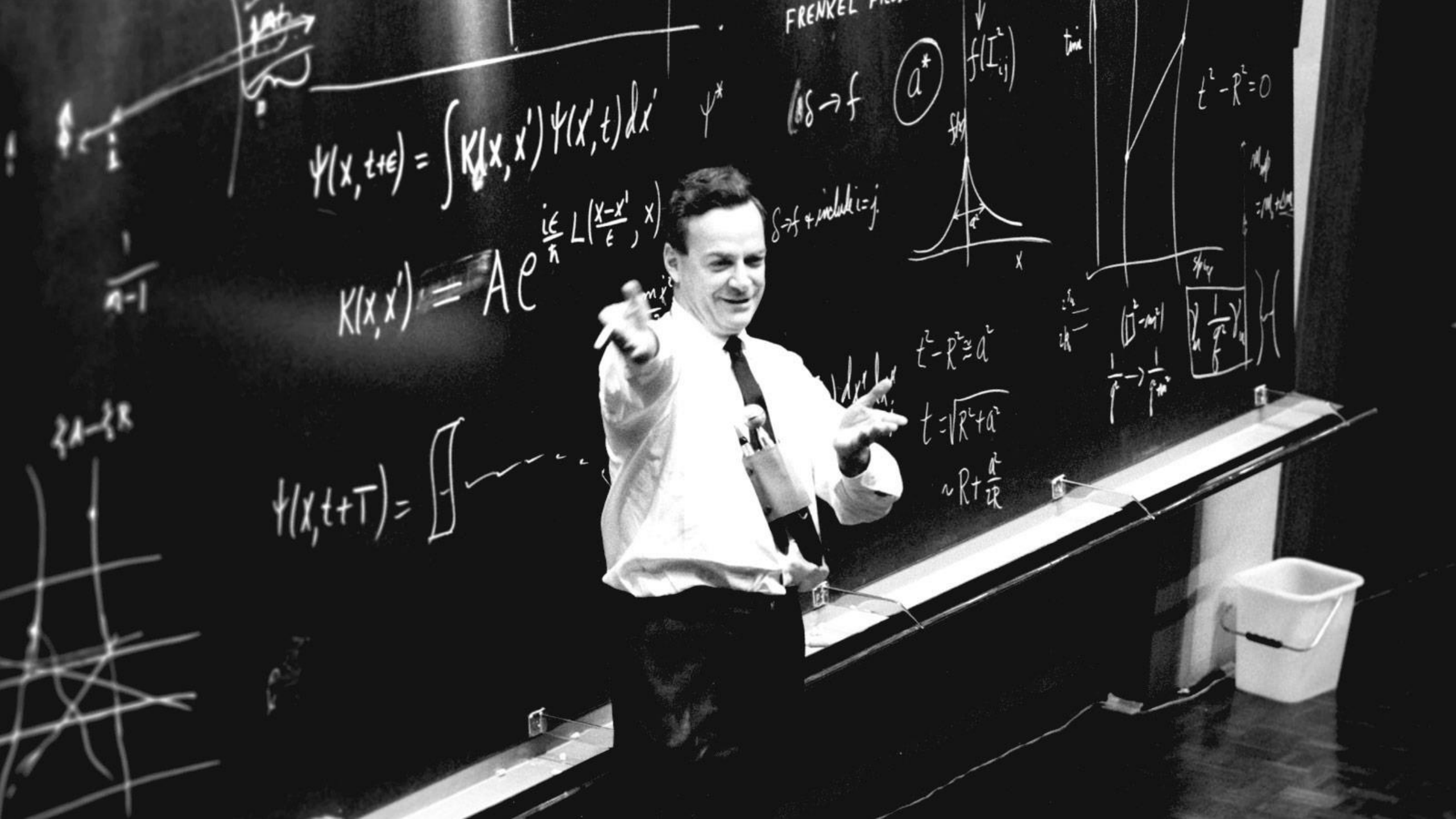


The science of why people do (or don't!) care about your science message

Sustainable Biotech Innovation Symposium 2020
Monday, 2 March 2020
Dr Marina Joubert
Stellenbosch University



Science has
“the facts”!



$$\psi(x, t+\epsilon) = \int K(x, x') \psi(x', t) dx'$$

$$K(x, x') = A e^{\frac{i\epsilon}{\hbar} L(\frac{x-x'}{\epsilon}, x)}$$

$$\psi(x, t+T) = \int \dots$$

FRENKEL

$\delta \rightarrow f$

a^*



$$t^2 - R^2 = 0$$

$$t^2 - R^2 \approx a^2$$

$$t = \sqrt{R^2 + a^2}$$

$$\sim R + \frac{a^2}{2R}$$

$$\frac{1}{f} \rightarrow \frac{1}{f^*}$$

$$\left\{ \frac{1}{f} \right\}$$

Once they have the facts, they will be on our side, right?



But, how do
people
process
information
and decide?

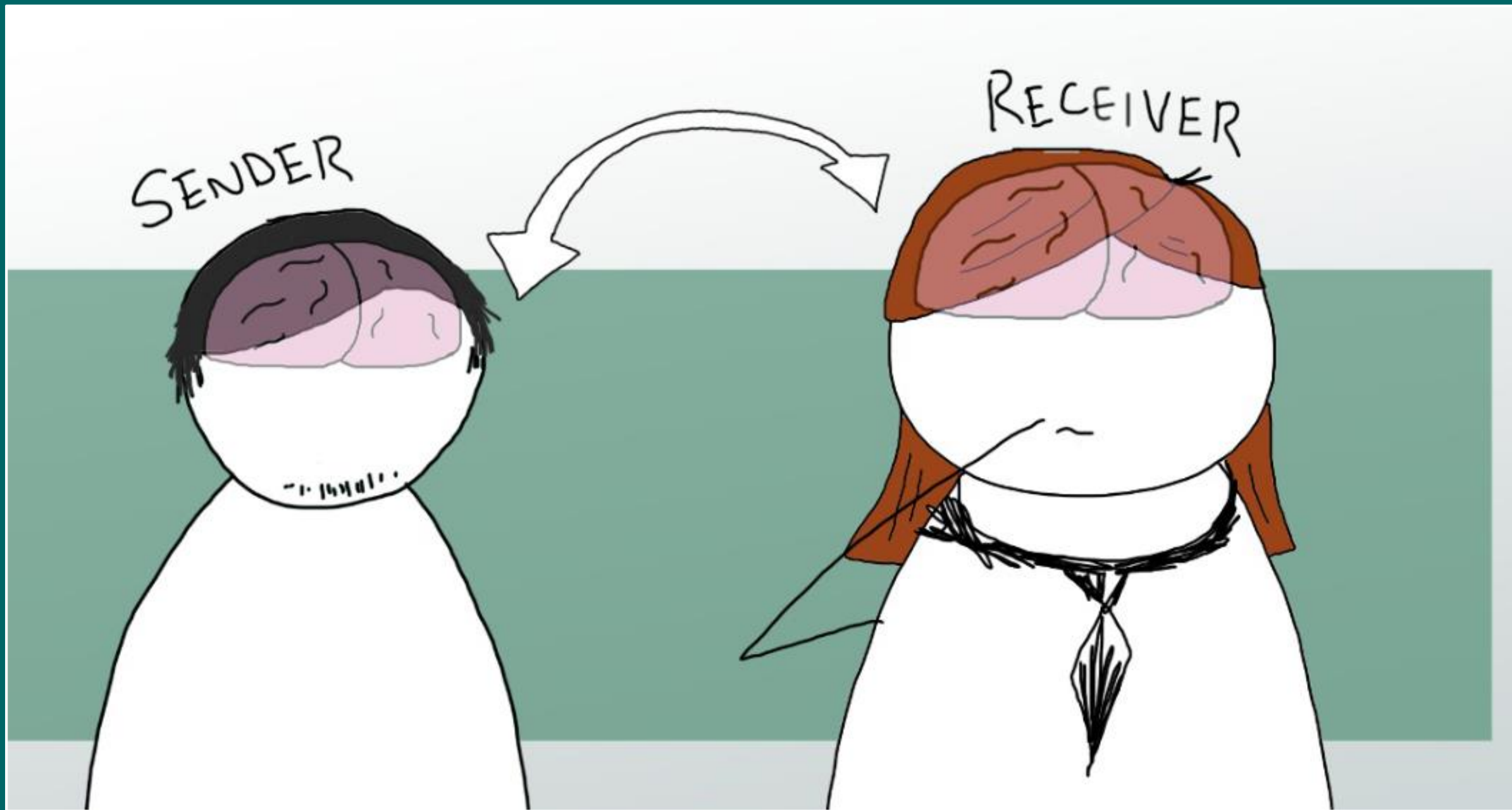
Facts are
important,
but ...

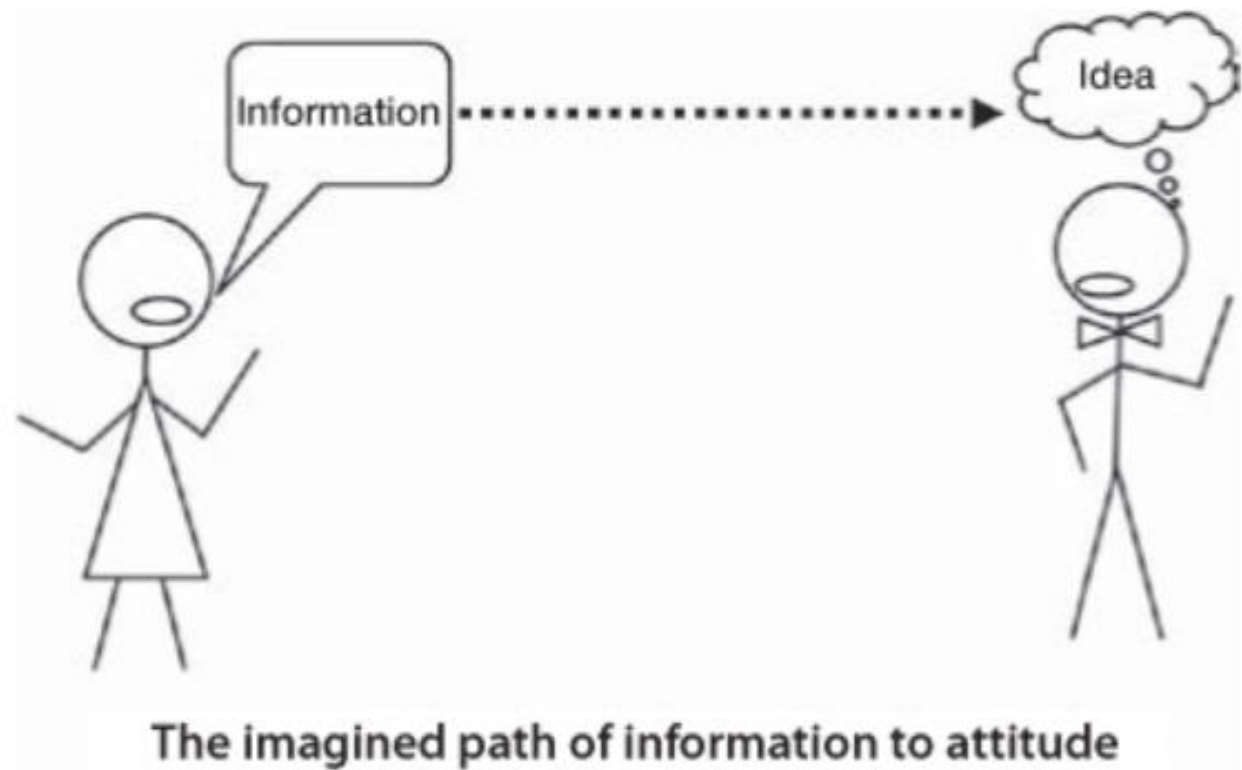
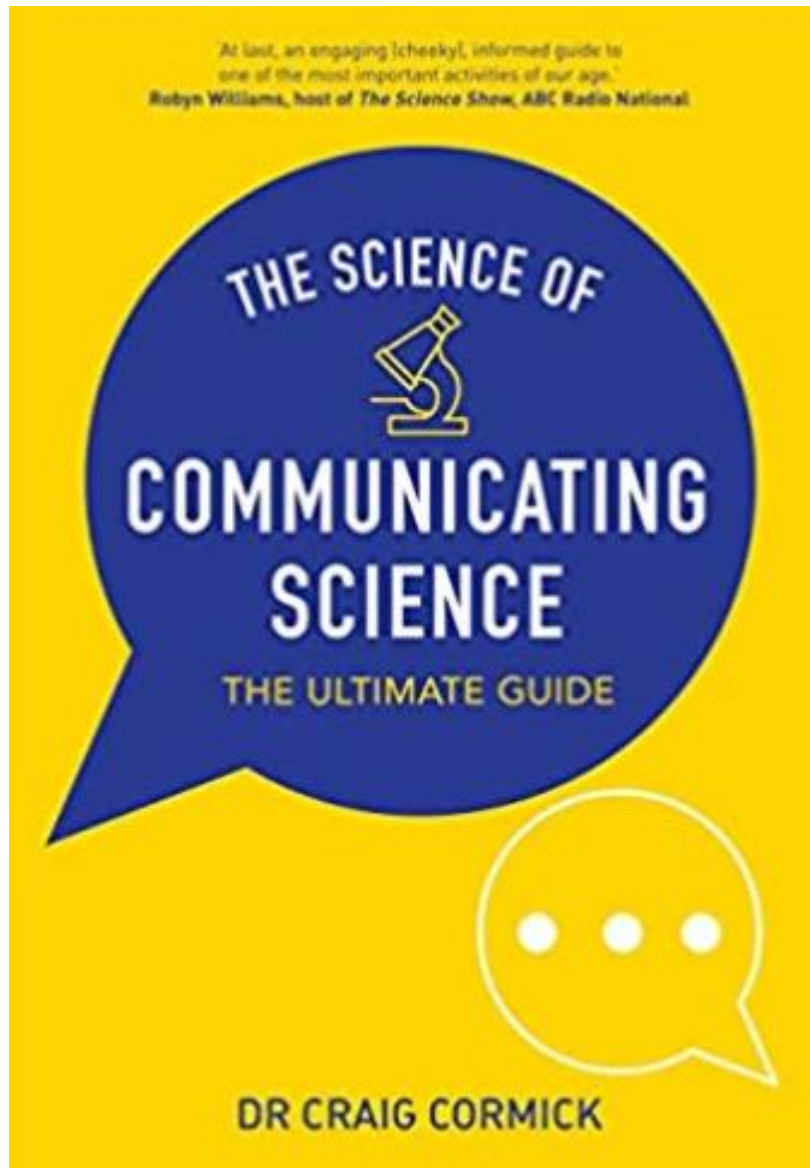
Facts don't
always
convince ...

SENDER



RECEIVER



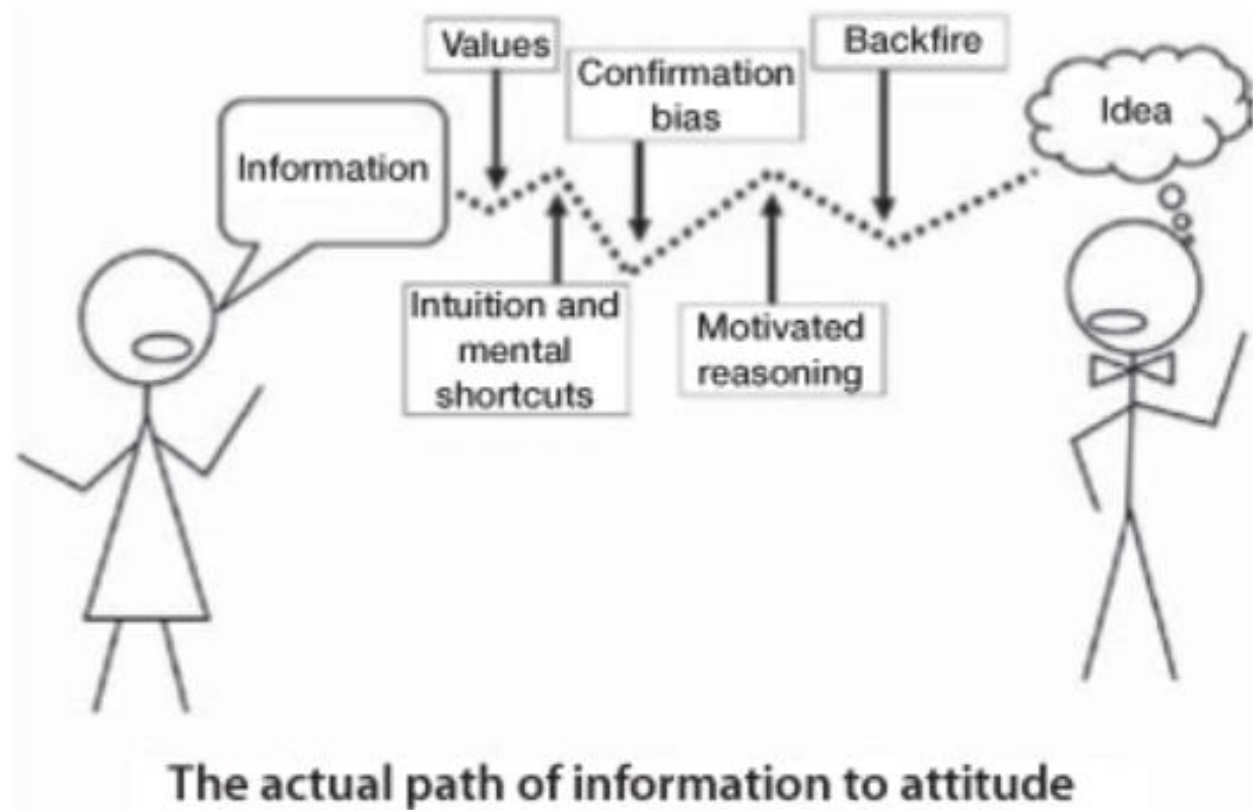


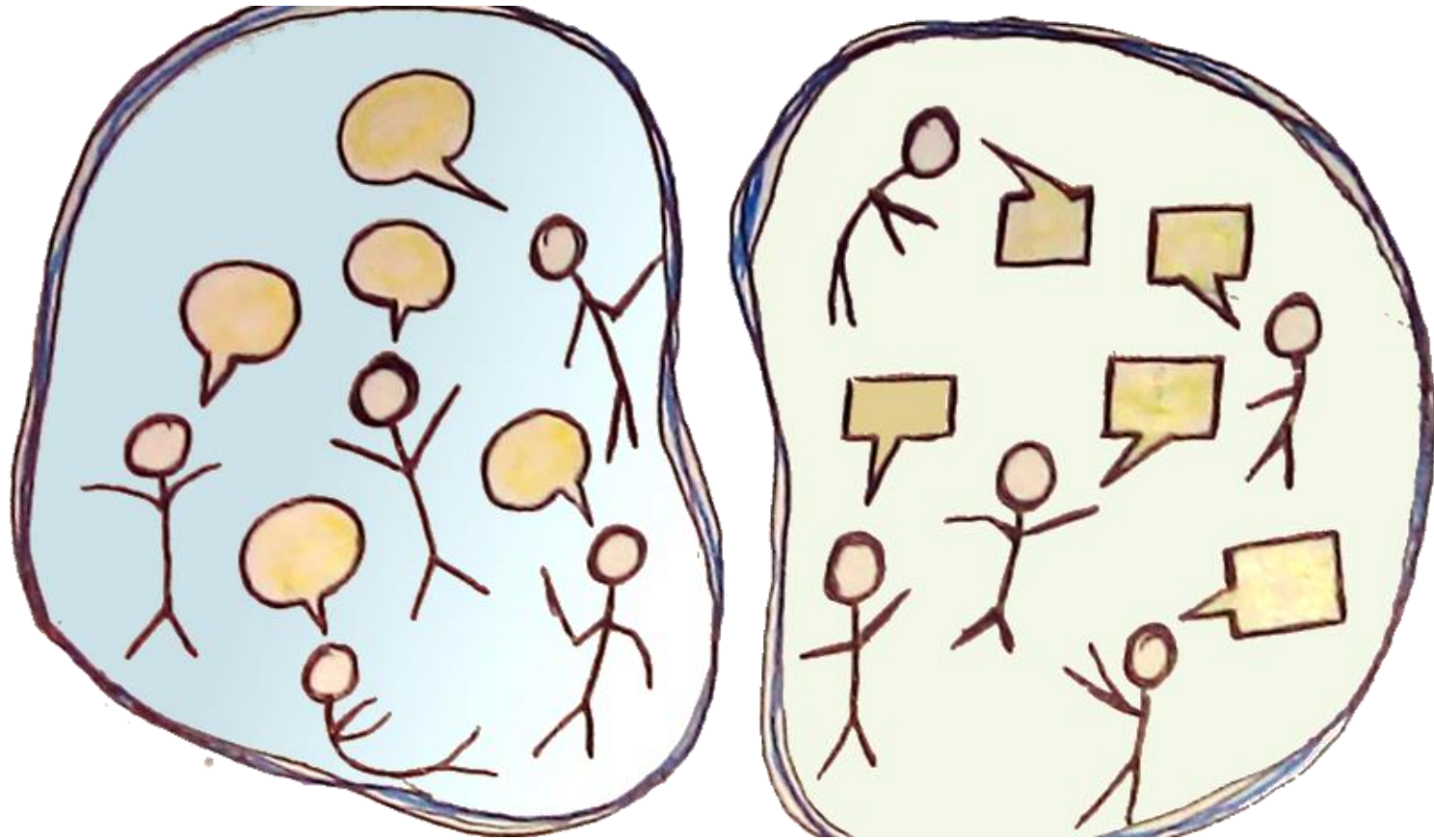
*"At last, an engaging (hecky!), informed guide to
one of the most important activities of our age."
Robyn Williams, host of The Science Show, ABC Radio National*

THE SCIENCE OF COMMUNICATING SCIENCE

THE ULTIMATE GUIDE

DR CRAIG CORMICK





Human nature ...

- Prior views
- Social cues
- Cognitive shortcuts
- Emotions
- We often respond based on how we feel

*research * evidence * experts * institutions * facts*

Science

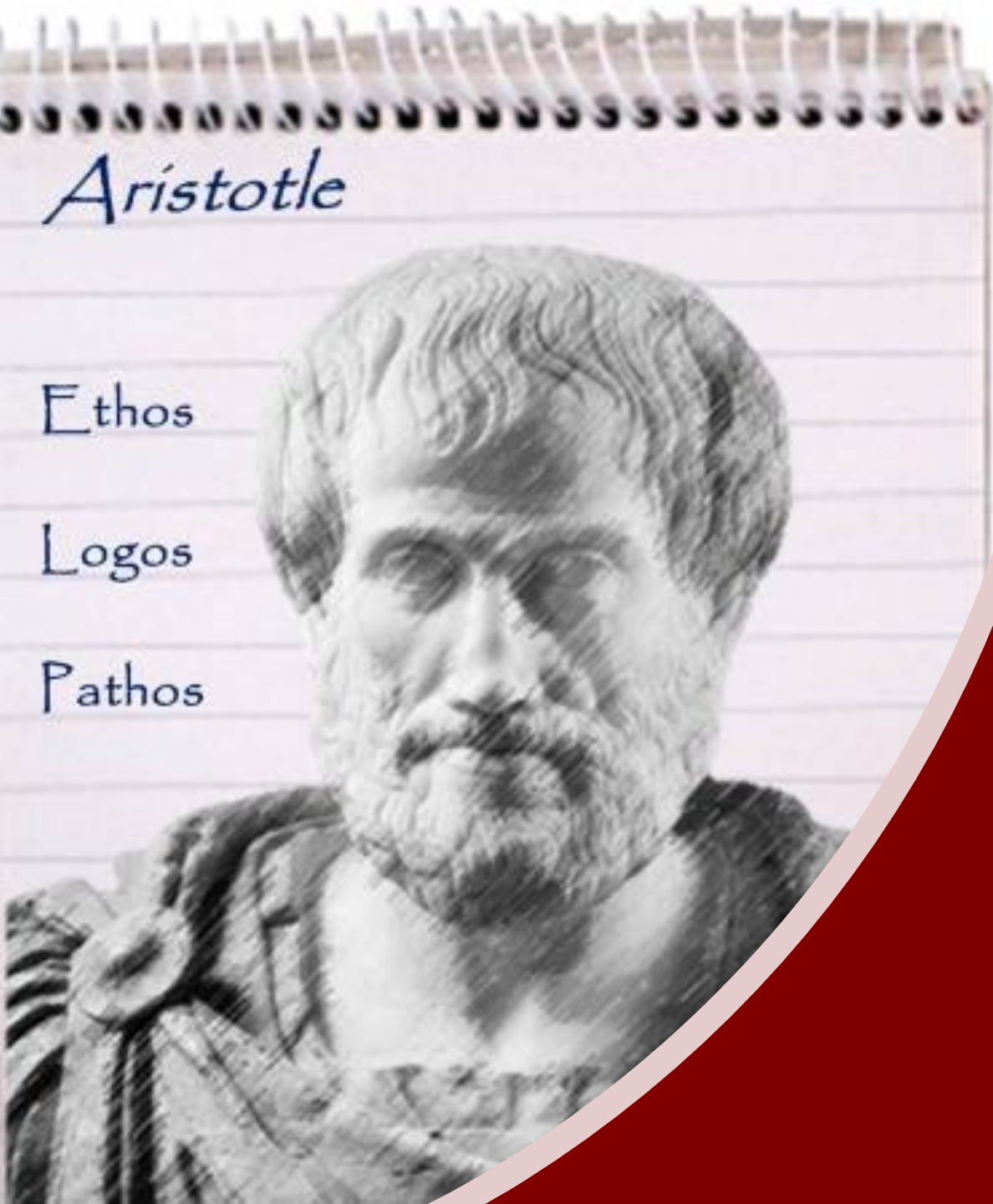
Communication

*values * interpretation * filters * emotions * feelings*



Bombarding people with facts make
scientists appear competent,
but cold.





Aristotle

Ethos

Logos

Pathos

People respond
to warmth;

people look for
emotional
connections



Facts may backfire

- More information may lead to more concern
- People have a strong 'my side bias'
- Once formed, opinions are incredibly resistant to change
- People are more interested in winning arguments than rational reasoning

WHY FACTS DON'T CHANGE OUR MINDS

New discoveries about the human mind show the limitations of reason.



By Elizabeth Kolbert
February 20, 2017

THE
NEW YORKER



You can't fight feelings with facts:
Start with a chat.

A personal take on science and society

World view



By Maggie
Ryan Sandford

You can't fight feelings with facts: start with a chat

I donned a sandwich board inviting questions on evolution and learnt three crucial lessons about public engagement on divisive issues, writes Maggie Ryan Sandford.



Lesson 2: Lay people

I went to the Minnesota State Fair with a sandwich board to ask people about evolution.

...to unlock ... let people know I ... everything on it, and that I'd ... about animals that I hoped people would ...

In the cow barn, a man with his pre-teen daughter smiled at me, then avoided my gaze. "We don't believe in evolution, so ..." "Okay!" I called back. "Did you want to talk about cows?" I pointed out how humans can build muscle by eating cow protein, because of our shared ancestry. We know that 'relevancy' is crucial to public understanding – people need takeaways that relate to their everyday lives. "Well, that's awesome," he said, "because I do love a good steak!" Before he and his daughter walked away, we exchanged thumbs ups.

Lesson 1: Don't argue with beliefs. People tend to incorporate facts that align with their belief systems.

No problem. I just had to find topics that made sense to all of us – pro and anti-evolution alike. Dogs or livestock breeding, for example. Half the folks within a 30-metre radius were there to showcase their carefully bred cows, horses and chickens. Open-faced and genuine, I invited them to school me on the areas of their expertise. Which, it turns out, is evolution.

... folk ... Listening to them, ... evolution an attack on ... Several asked me about a narrative they'd ... somewhere about how "life began when water was dripping on a rock". Clearly, they were worried that such a narrative undercut the idea that humans were created in the image of God.

People from both groups often misinterpreted the term 'survival of the fittest', and were surprised to hear that evolution isn't a system of improvement, just a system of change. And that *On the Origin of Species* was not intended as an attack on faith. Even in old age, Darwin declared: "I have never been an atheist."

Lay people are more likely to trust and engage with science when they learn that researchers are human beings, fallible and conflicted. Yet somehow it seems hard for many in the scientific community to show those qualities to others. A common concern is that, in the anti-evolution, anti-science debate, any whiff of disagreement or uncertainty spells doom for scientific arguments.

When I began this 'experiment', my hypothesis was that a willingness to show vulnerability – to show that we science folks are willing to listen and receive criticism – boosts credibility, not the opposite. I think my experience supports that. When feelings speak louder than facts, appealing to feelings can actually work in favour of science.

No matter where we think we fall in the evolution debate, all of us are human, and we evolved to read each other's facial expressions and tones of voice, to be together. Returning to our humble, apish roots is the only way to see anti-science sentiment go the way of the dodo.

Maggie Ryan Sandford is a science communicator and author of the 2019 book *Consider the Platypus: Evolution through Biology's Most Baffling Beasts*. e-mail: m.r.sandford@gmail.com

Maggie's tips

- Don't argue with beliefs
- Listen
- Be human
- Don't be scared to show vulnerability



“Lay people are more likely to trust and engage with science when they learn that researchers are human beings, fallible and conflicted.”





The Science of What Makes People Care

1. Feelings & emotions
2. Images
3. Meaningful calls to action
4. Telling better stories

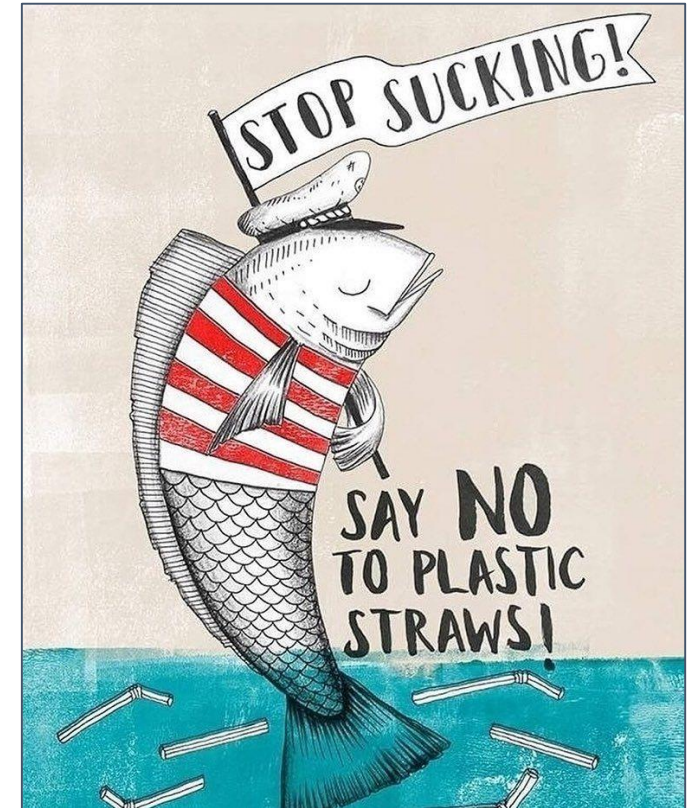
Evidence shows that ...

- People **like** information that aligns with their values and views, and makes them feel good, proud, happy.
- People **avoid/reject** information that challenges or threatens them, or make them feel bad or guilty.



Also ...

- People respond to specific, do-able calls to action





Frame it!
Focus on what
people care about



When it comes to science communications, the only thing to keep quiet on is PR. bookgrl

We need to talk about science ... just more thoughtfully

Beware of science PR!

There is no such thing as value-free facts

Be aware of embedded biases

Don't focus on "benefits" only

Acknowledge uncertainty

Aim for open dialogue



THE CONVERSATION

Academic rigour, journalistic flair

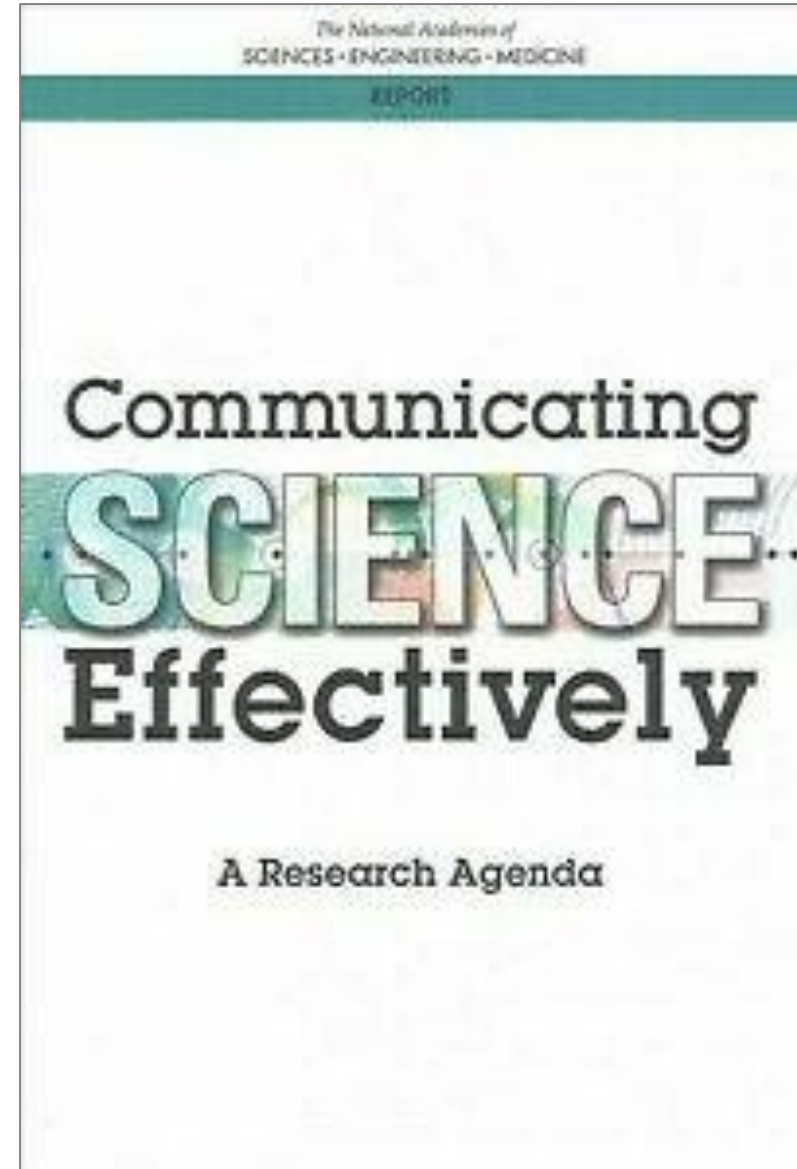


Taking stock of what we know works... or not. TV head image via www.shutterstock.com.

What does research say about how to effectively communicate about science?



NATIONAL ACADEMY
OF SCIENCES



Communicating
science is
complex and
depends on ...



Topic



Relevance



Feelings



Context

Facts are the core,
but emotion
is the key.