

# Science Media Centre – New Zealand

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Senior Media Advisor



“The call for scientists to do a better job of communicating both the meaning and the nature of their work is getting louder.”

**Alan Leshner**

*Science* (2012)





Science in Society

**THE CONVERSATION**

National  
**SCIENCE**  
Challenges

**CURIOUS  
MINDS**   
HE HIHIRI I TE MAHARA

Bachelor of Applied Science  
(Science Communication)



**AKO** **AOTEAROA**  
NATIONAL CENTRE FOR  
TERTIARY TEACHING  
EXCELLENCE



**CENTRE FOR SCIENCE COMMUNICATION**



The Prime Minister's  
**Science Prizes**



# Science communication



**schools presentations community groups TV**

**policymakers writing children museums**

**NGOs social media graphics framing**

**speaking grants business blog students**

# **Science communication**

**government conferences design art**

**education media stakeholders news**

**videos messaging press releases**



**funders**

**animations**

**interviews**

schools

presentations

community groups

TV

policymakers

**writing**

children

museums

NGOs

social media

graphics

**framing**

**speaking**

grants

business

blog

students

# Science communication

government

conferences

**design**

art

education

media

stakeholders

news

videos

**messaging**

press releases

fundors

animations

**interviews**



schools

**presentations**

community groups

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# Science communication

government

**conferences**

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**art**

education

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stakeholders

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messaging

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# Science communication

**government**

conferences

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news

videos

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animations

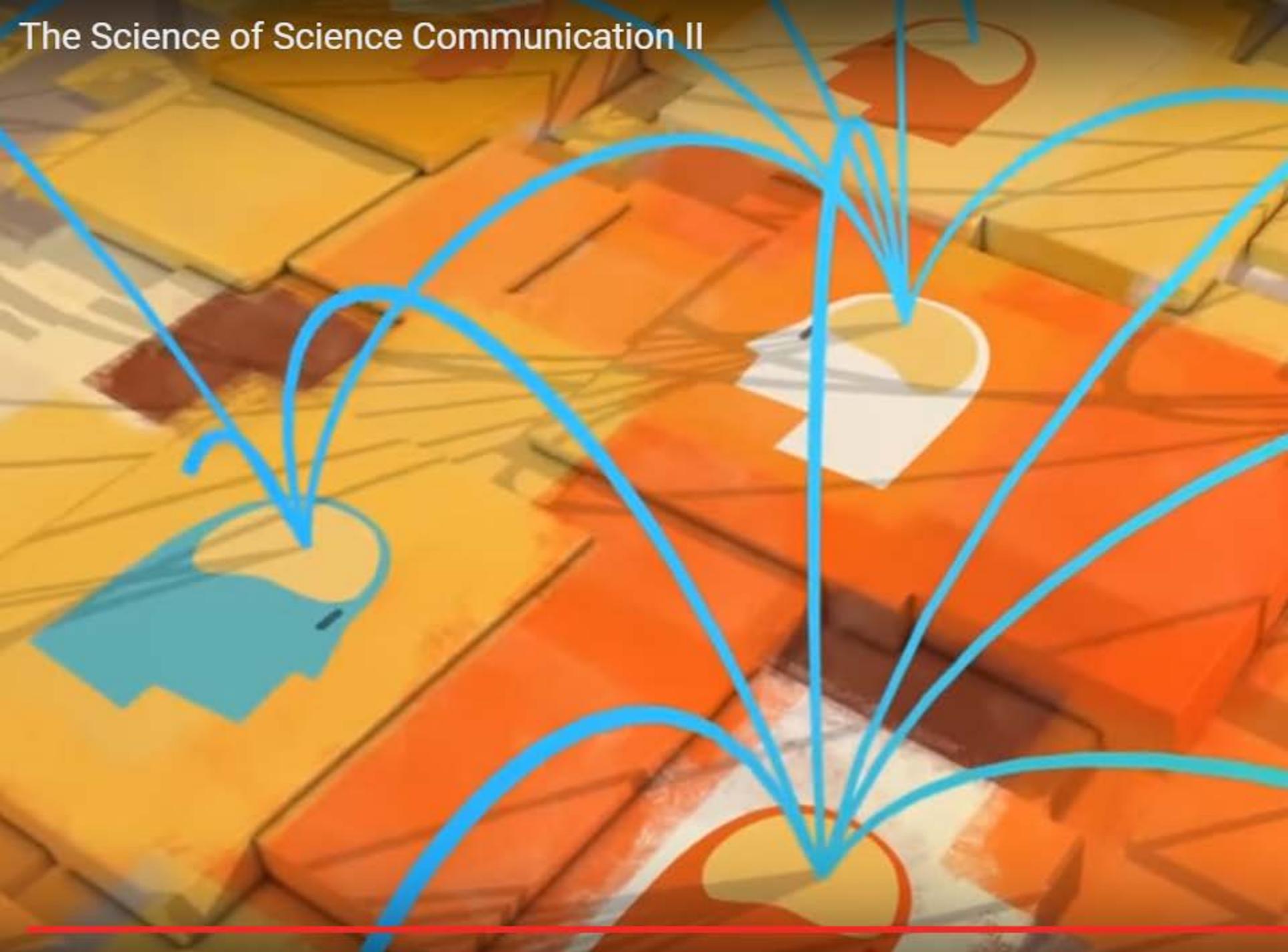
interviews



# Science communication



# The Science of Science Communication II



“[We] have an opportunity to help scientists think more reflectively and strategically about their public communication efforts.”

**Anthony Dudo and John C. Besley**

Scientists' Prioritization of Communication Objectives for Public Engagement, *PLOS One* (2016)



Effort  $\neq$  impact

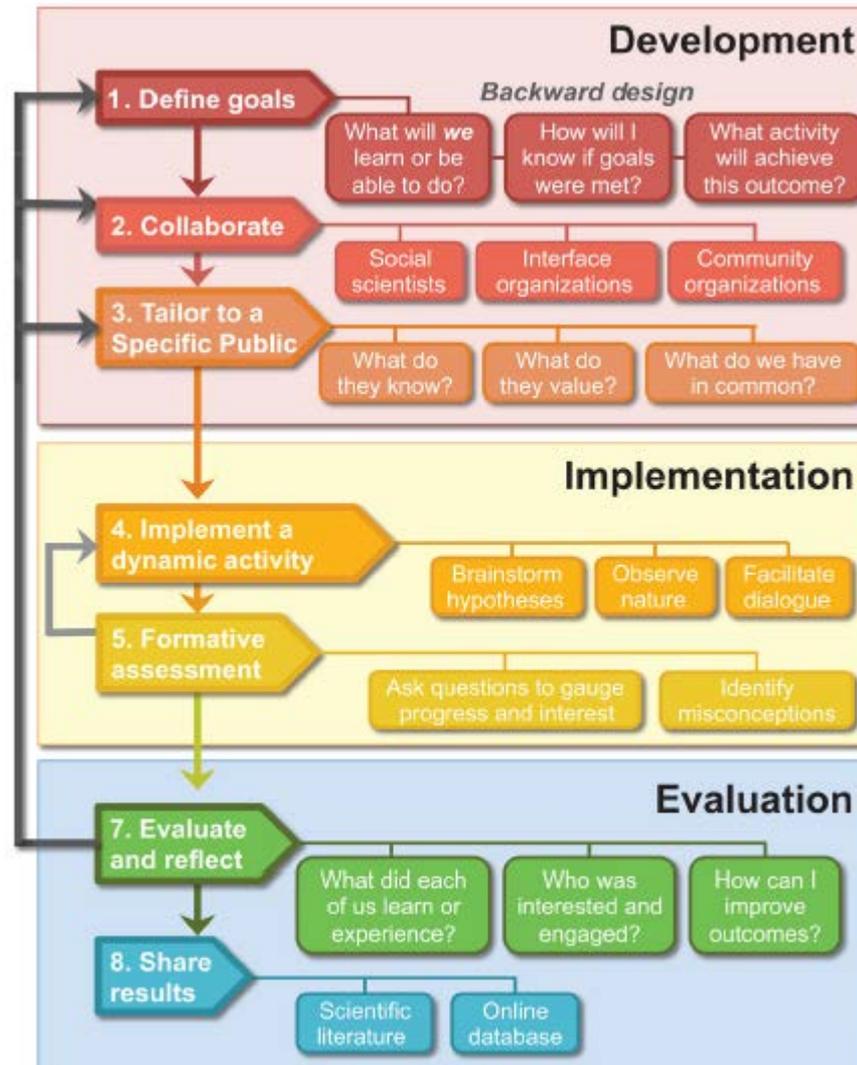


“As scientists, we would never conduct an experiment without careful planning or data collection, but most outreach about science lacks a description of goals and evaluation.”

**Johanna Varner**

Scientific Outreach: Toward Effective Public Engagement in Biological Sciences (2014)





Varner (2014) Scientific Outreach: Toward Effective Public Engagement. *BioScience* 64: 333–340.

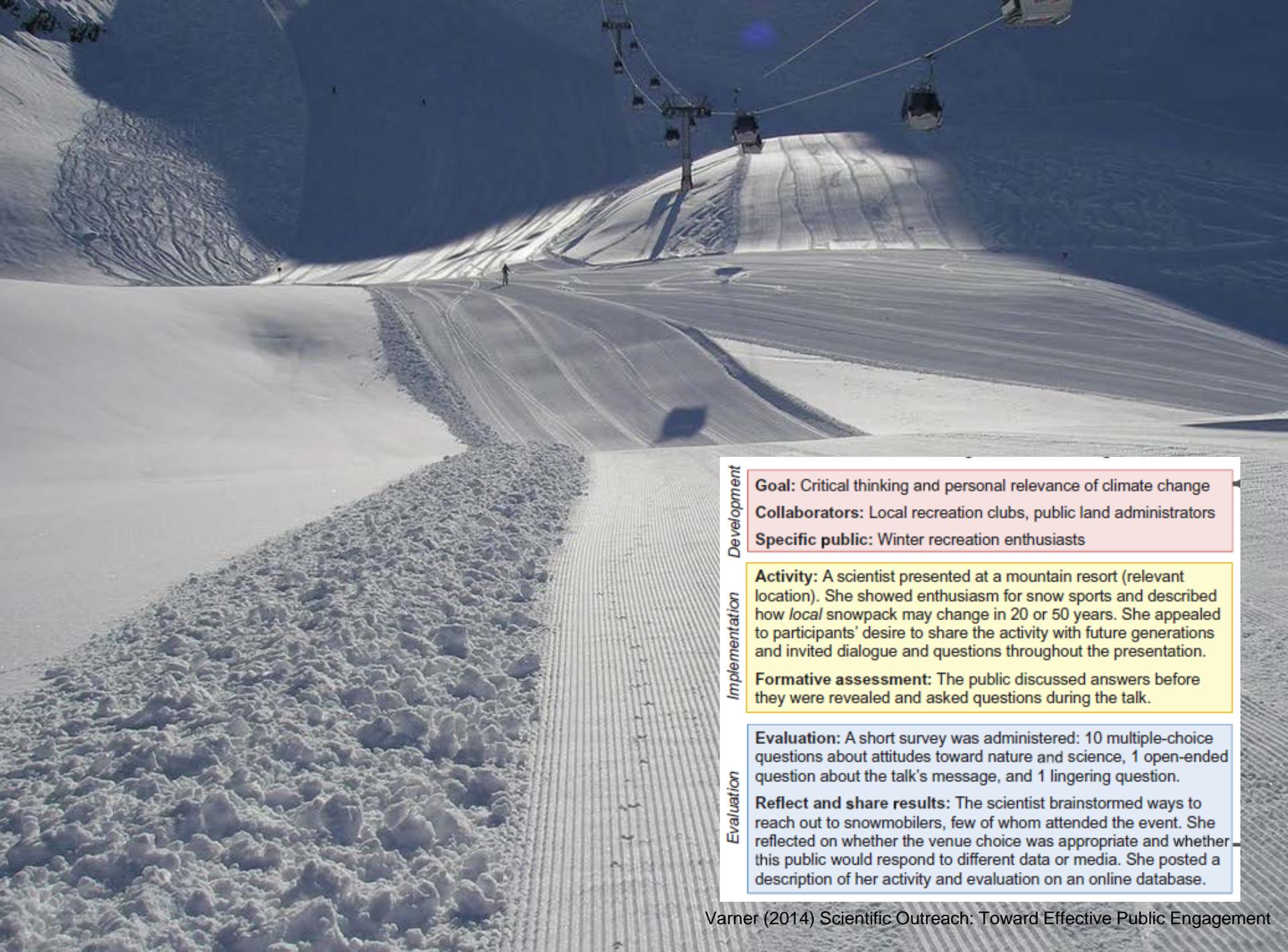




### Current model of outreach

**Activity:** A scientist gave a lecture at the public library. She showcased the impacts of climate change on global biodiversity with photos of exotic and endangered species. She answered a few audience questions after the presentation.

*(Specific public:* Librarygoers who are probably well educated and predisposed to listen to the message)



Development

**Goal:** Critical thinking and personal relevance of climate change  
**Collaborators:** Local recreation clubs, public land administrators  
**Specific public:** Winter recreation enthusiasts

Implementation

**Activity:** A scientist presented at a mountain resort (relevant location). She showed enthusiasm for snow sports and described how *local* snowpack may change in 20 or 50 years. She appealed to participants' desire to share the activity with future generations and invited dialogue and questions throughout the presentation.  
**Formative assessment:** The public discussed answers before they were revealed and asked questions during the talk.

Evaluation

**Evaluation:** A short survey was administered: 10 multiple-choice questions about attitudes toward nature and science, 1 open-ended question about the talk's message, and 1 lingering question.  
**Reflect and share results:** The scientist brainstormed ways to reach out to snowmobilers, few of whom attended the event. She reflected on whether the venue choice was appropriate and whether this public would respond to different data or media. She posted a description of her activity and evaluation on an online database.

# Time investment, reach and impact



Tool

Time investment

Control of outcome

Reach

Personal benefits

Societal benefits

## Public talk

Tool

Time investment

Low-med

Control of outcome

Med

Reach

Low

Personal benefits

Retain and motivate volunteers,  
engage stakeholders

Societal benefits

Share knowledge, inspire and  
inform, increase trust in science

Tool

Time investment

Control of outcome

Reach

Personal benefits

Societal benefits

Tool

Blog

Time investment

Med-high

Control of outcome

High

Reach

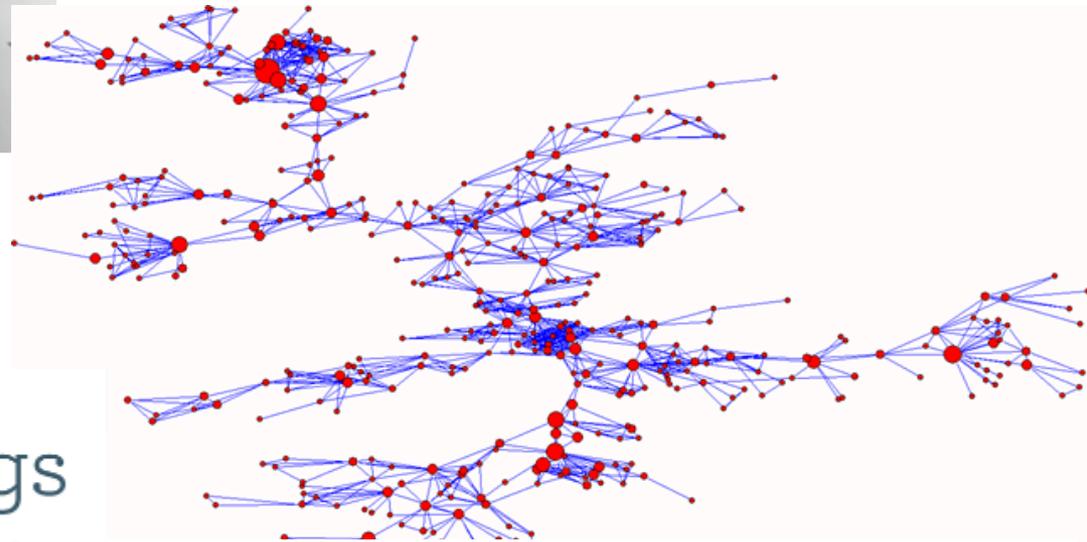
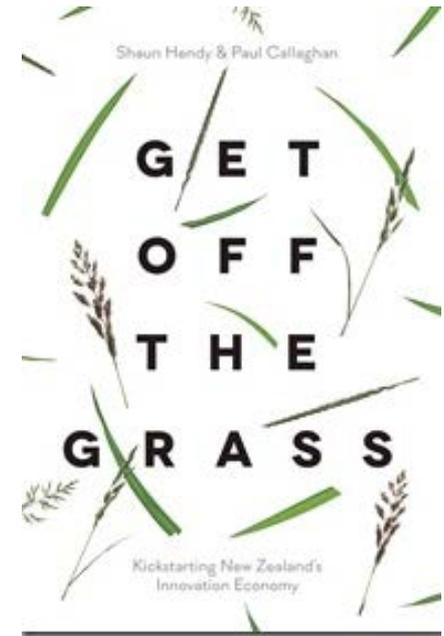
Low-med

Personal benefits

Audience feedback (comments, questions, enquiries)

Societal benefits

Information, public interaction with scientists



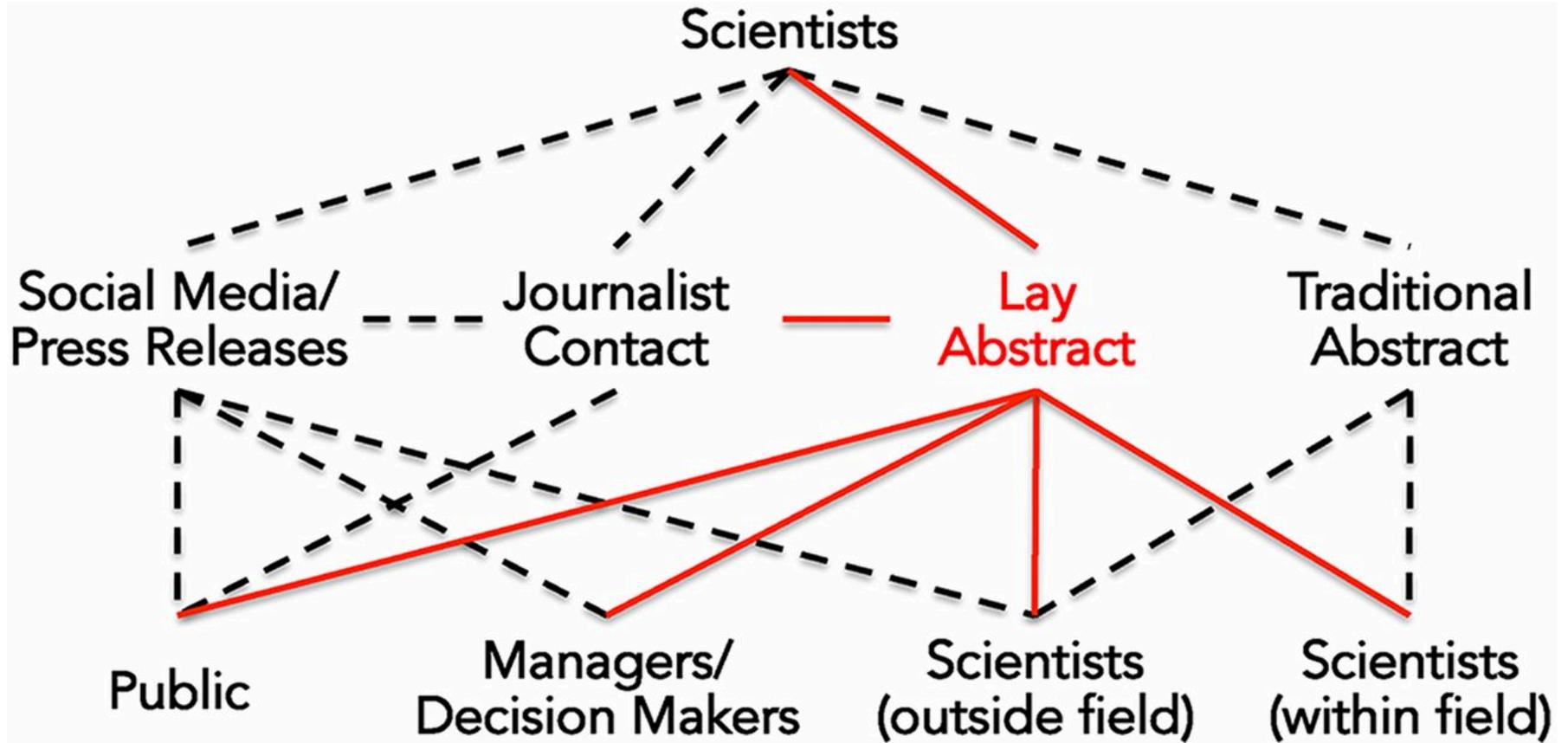
 **Sci**blogs

a measure of science





**Tweet**  
**Interview**  
**Blog post**  
**Press release**  
**Lay summary**  
**Research publication**



## Opinion: Lay summaries needed to enhance science communication

Lauren M. Kuehne and Julian D. Olden<sup>1</sup>



Tool

Time investment

Control of outcome

Reach

Personal benefits

Societal benefits

## Media interview

Tool

Time investment

Med-high

Control of outcome

Low

Reach

High

Personal benefits

Raise profile, increase awareness,  
attract support, funding

Societal benefits

Information, influence attitudes,  
change image of science

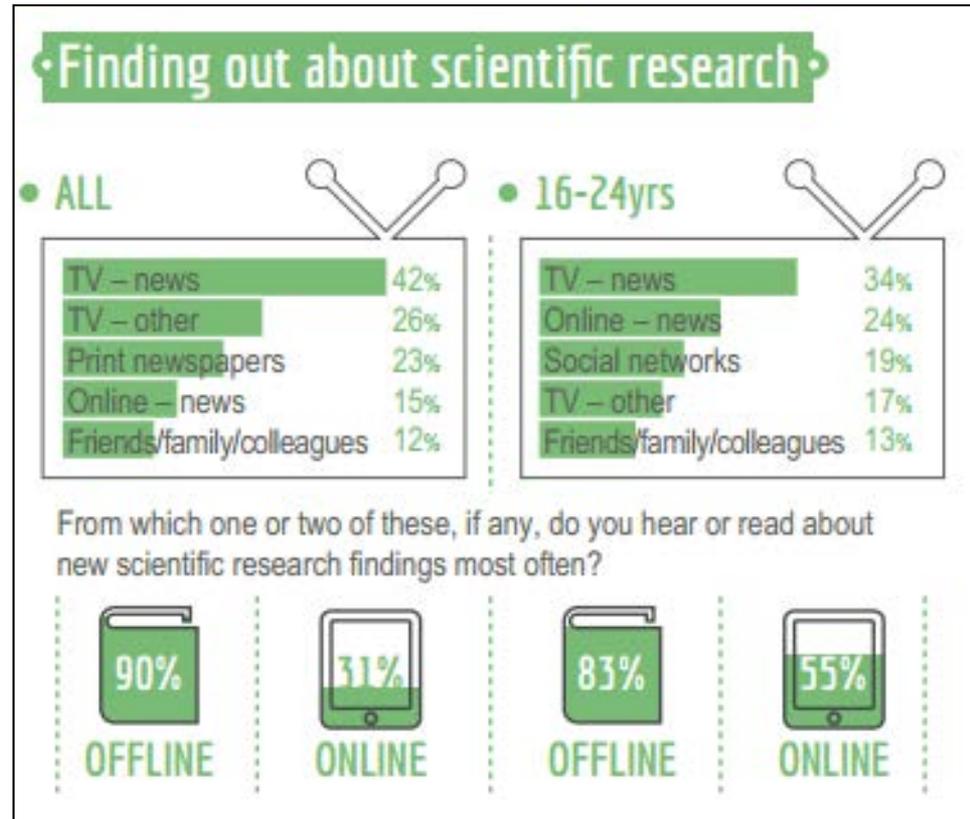


Why bother?





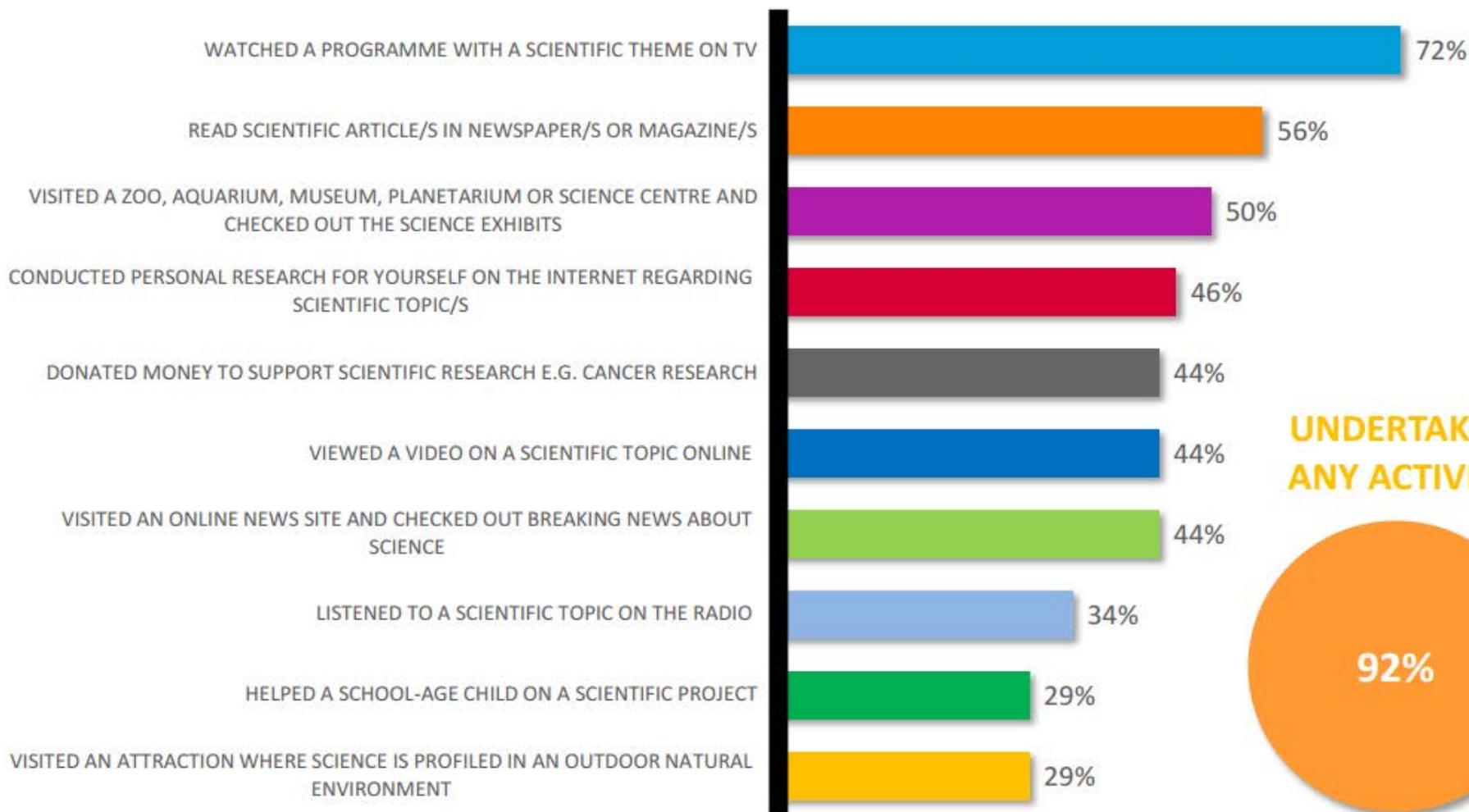
# Public gets majority of information about science through mainstream news media



UK data

Source: Ipsos MORI poll 2014

## TOP TEN ACTIVITIES UNDERTAKEN IN THE LAST YEAR RELATING TO SCIENCE & TECHNOLOGY

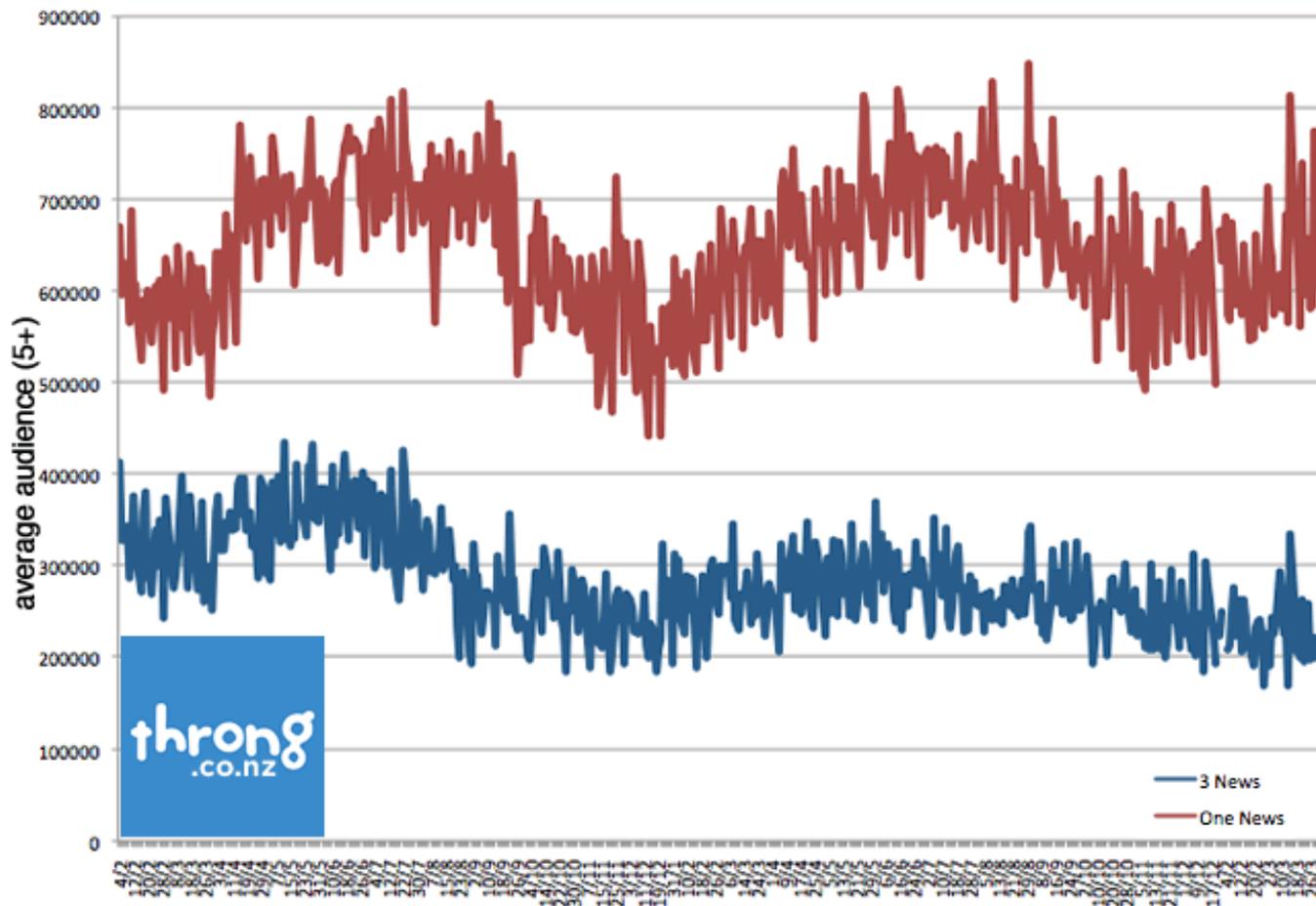


**UNDERTAKEN  
ANY ACTIVITY**

**92%**

**NZ data**

Source: MBIE Nielsen poll 2014



# Common motivations

- Explain and educate
- Counter “bad science”
- Raise awareness
- Inform public discussion
- Change attitudes
- Inspire next generation of scientists
- Justify publically-funded research

That's all very noble, but  
...what's in it for ME?



# Self-interest is a great motivator

- Raise profile
- Enjoy the experience, change of pace
- Attract funding, students
- Career advancement
- Seed research collaborations
- Demonstrate relevance of research
- Increase citations and impact factor

# Goals

What do I want  
my audience to

- know
- understand
- do ...?



## Goals

What do I want my audience to

- know
- understand
- do ...?

## Plan

What outreach efforts and activities will best reach these goals?



## Goals

What do I want my audience to

- know
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## Plan

What outreach efforts and activities will best reach these goals?

## Evaluation

How will I know if these goals are reached?



## Goals

What do I want  
my audience to

- know
- understand
- do ...?

# Your goals?



A photograph of Neil deGrasse Tyson sitting on a talk show set, likely The Daily Show. He is wearing a dark suit and a patterned tie, and is gesturing with his hands while speaking. The background features a large world map and studio lighting.

“If I’m invited onto the Daily Show, I am going to study previous episodes...”

## **Adapting to your audience**

“Packaging the message I want to deliver into the context of the program takes effort...”

“but I do that willingly because I am visiting them in their habitat. I owe the viewer a delivery that fits the medium”

“When you understand that, you can shape your content in a way that does not dumb it down.”

~ Neil deGrasse Tyson

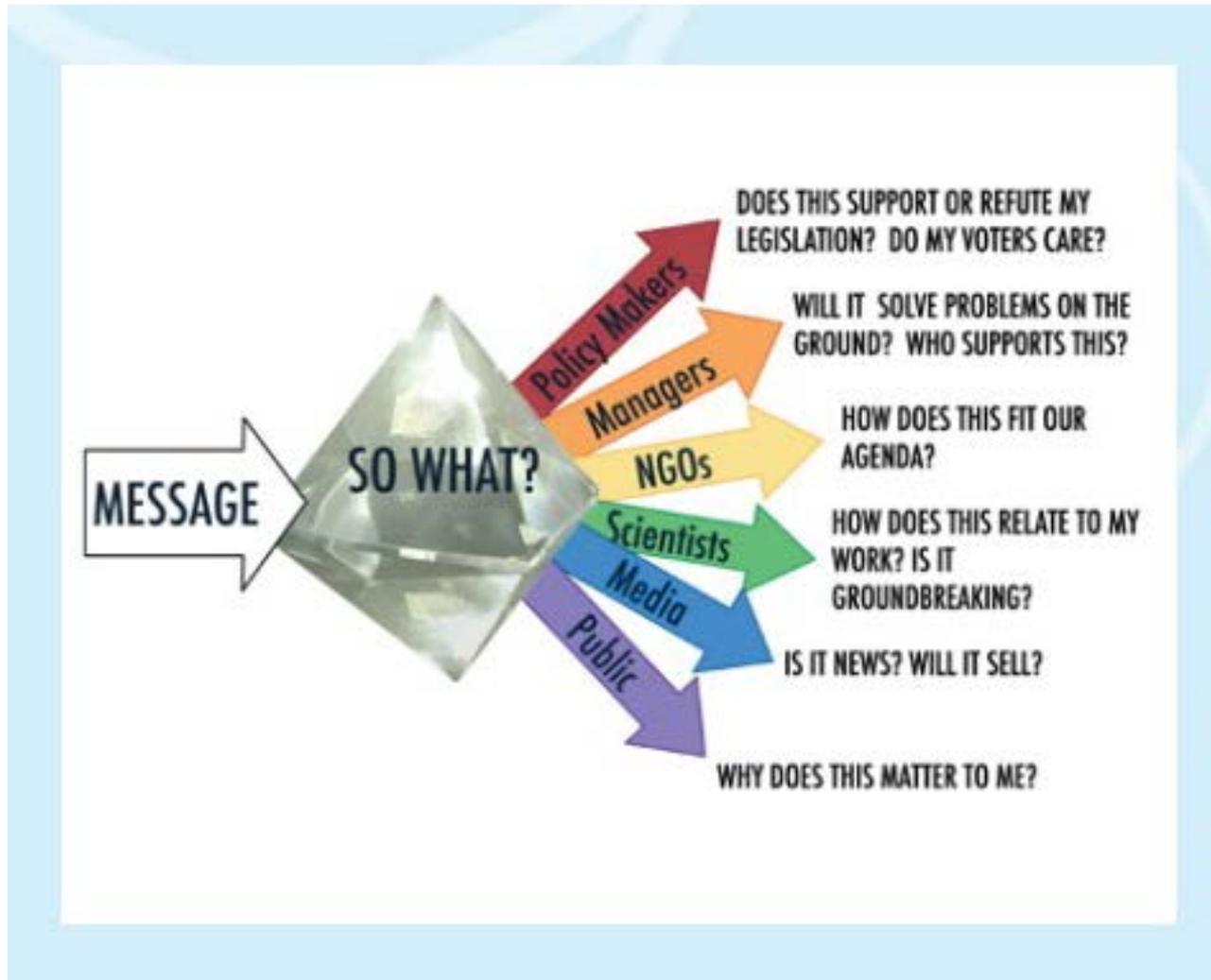


SCIENCE

F=ma

Science icons: microscope, DNA helix, chemical structure, beaker, and stars.



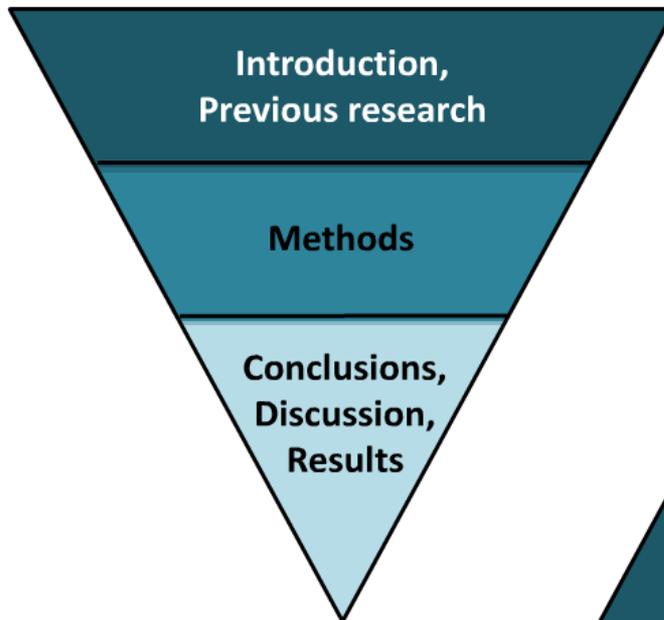




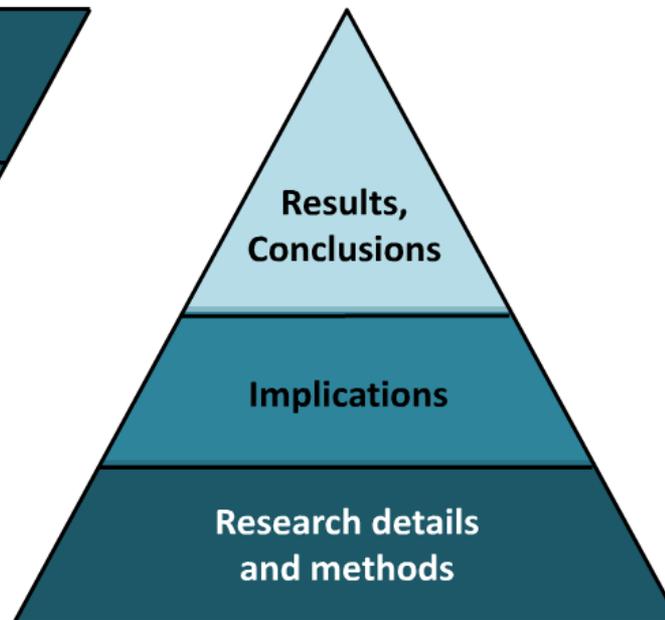
LAB IN  
A BOX



## Research Paper/Scientific Presentation

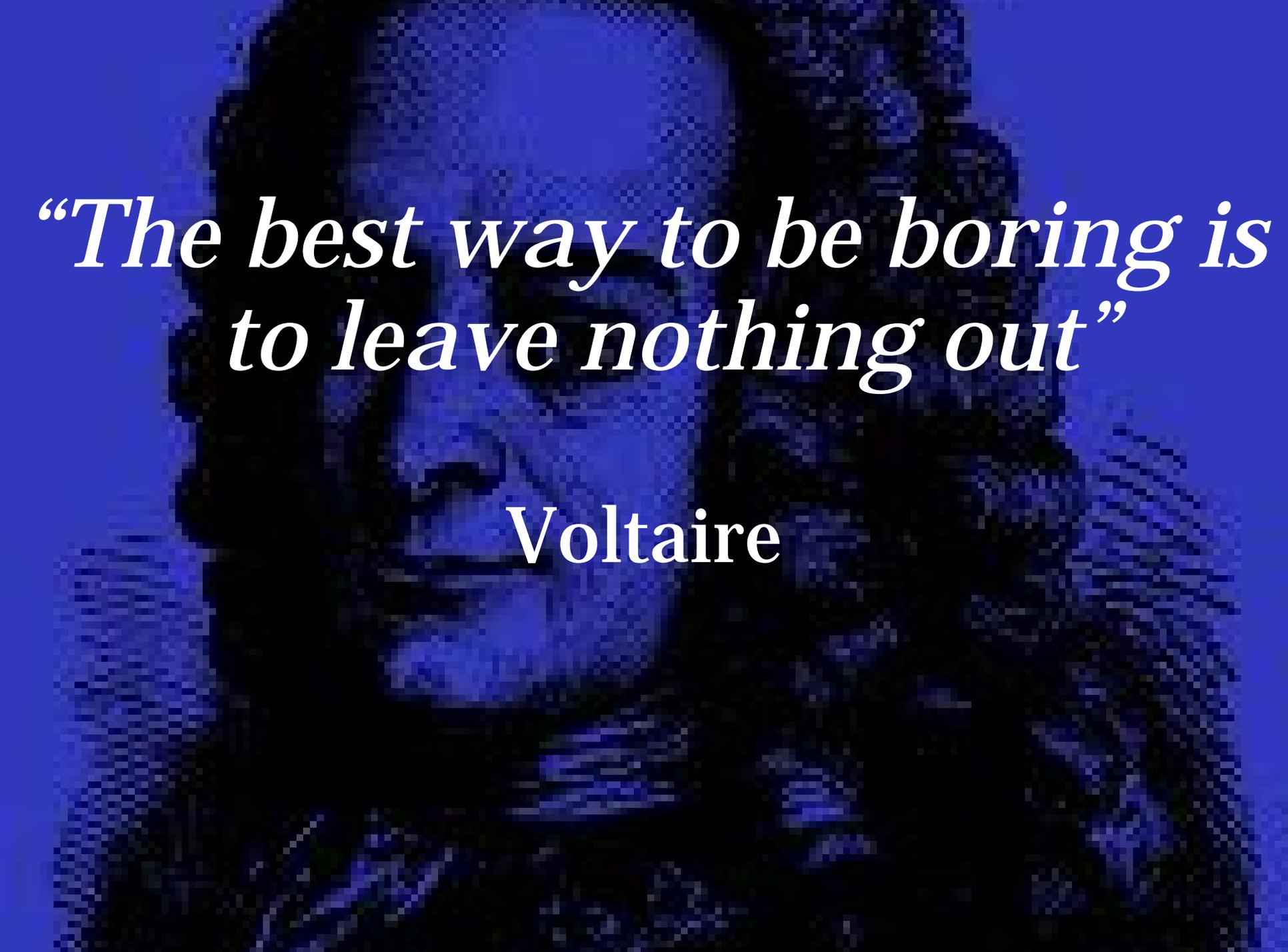


## News Story



# Distilling your message



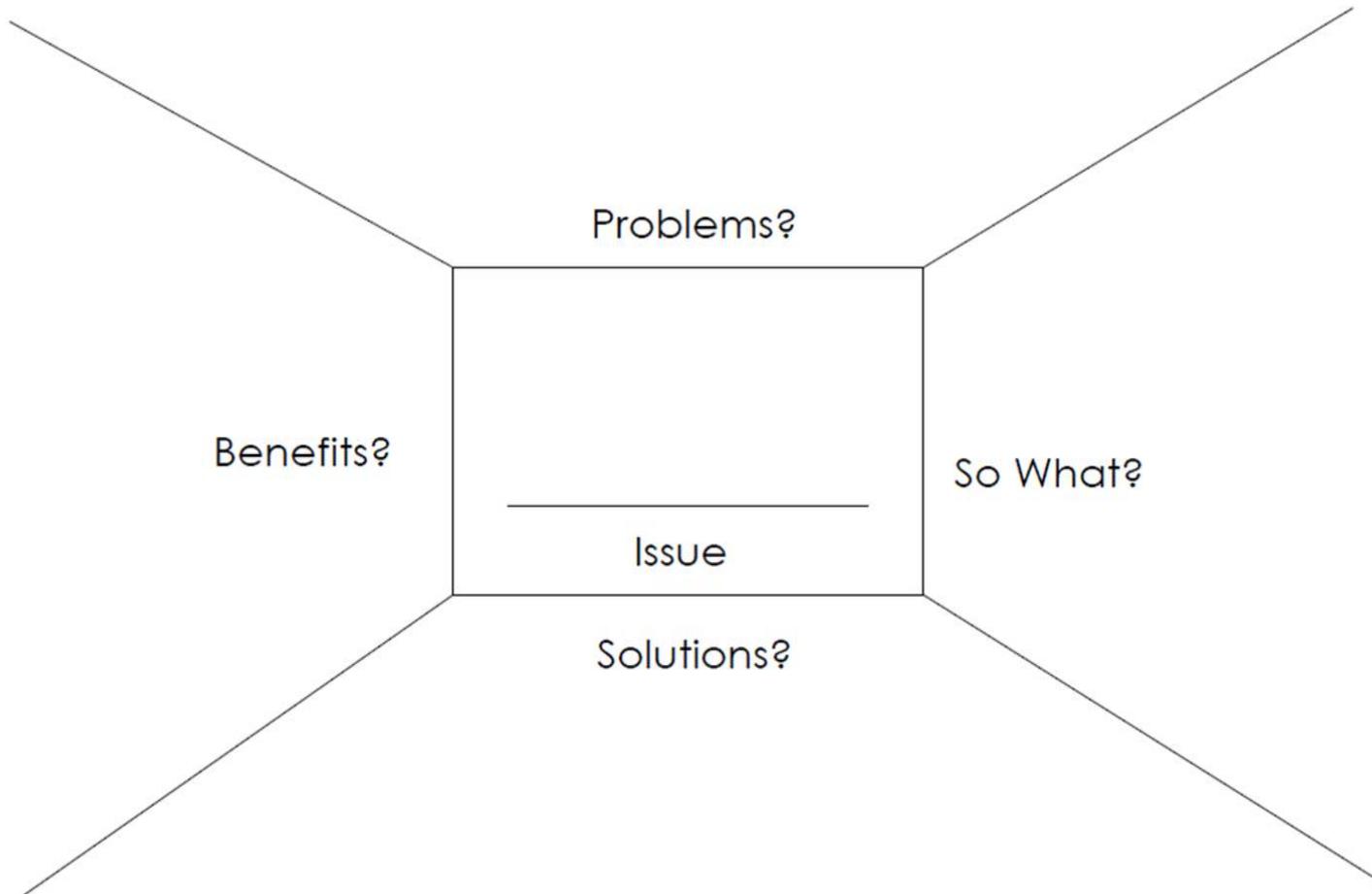


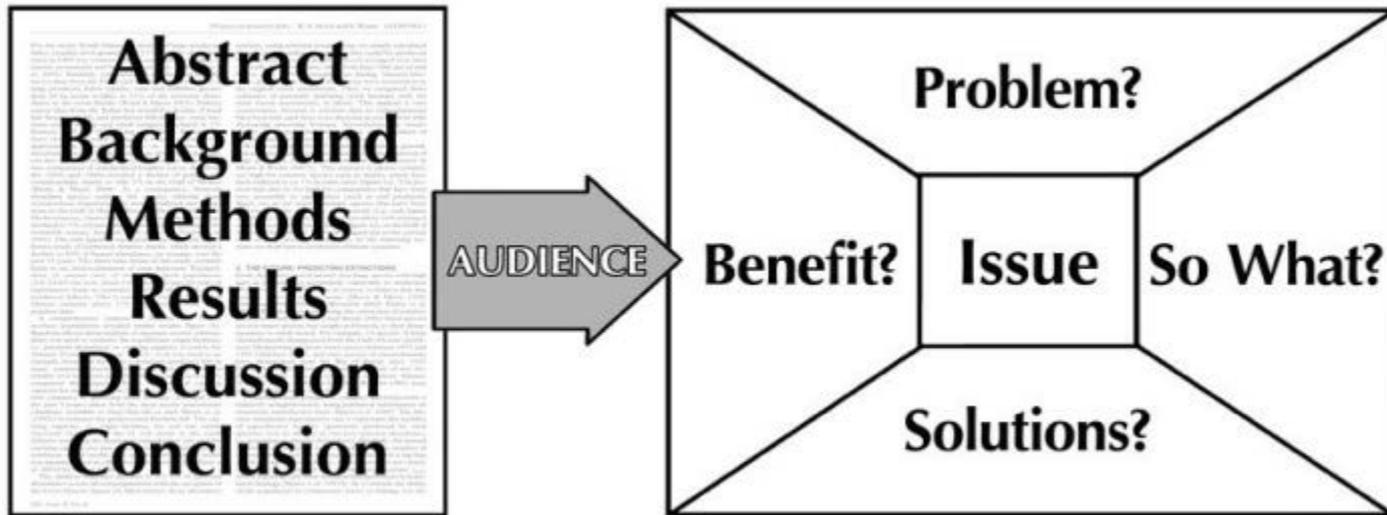
*“The best way to be boring is  
to leave nothing out”*

Voltaire

# Message Box

Audience: \_\_\_\_\_





## BEFORE:

Burning fossil fuels and (to some extent) cutting forests → increase global average temperature by ~6°F, by the end of the century.

^ freq extreme weather events

many diseases strongly influenced by weather (eg, heat, O3-related, water- and insect-borne infectious dis, violent storms, malnutrition)

CAVEAT: weather and global warming not necessarily strongest factor in many diseases BUT....

Benefits of Solving prob.

1) Reduce the adverse health effects of global warming

2) "Co-benefits" of cleaning up local air quality, because fossil fuel burning is the source of both GHGs and hazardous air pollution.

3) Achieve 'sustainable health' whereby, we take care of current populations, without compromising the opportunity for health of future generations

### Regional health effects of global warming

- 1) Give key points first – very brief
- 2) PAUSE
- 3) Go in-depth
- 4) Check in – "are you getting what you need?"

## NO WHAT?

We found large regional differences in disease burdens when we mapped the >150,000 deaths and 5 million annual cases of disease that the WHO has determined to be due to recent global warming [e.g. CVD, mal, diarr, malnutr, floods] –but WHO estimates conservative: More recent research reviewed in this paper, and events such as the 45,000 excess deaths in the European summer 2003 heatwave, give even more cause for concern about future health risks.

When this regional map of diseases caused by global warming is then shown side-by-side with the map of CO emissions (by country) the contrast is striking –\*\*\*those at most risk from global warming, are also those least responsible for causing the problem \*\*\*(eg, US being #1 emitter of CO2). Herein lies an enormous global ethical challenge.

As a public health physician, it's clear to me that global warming is not only an environmental problem, but also a serious health threat. Whats worse is Malaria, malnutrition and diarrhea mostly afflict CHILDREN. *Acute vs longterm health crisis. From a medical perspective, we need to address bleeding wounds, but we also need to treat longterm insidious killers like high BP.*

Industrialized nations may have more capacity to adapt to climate change, BUT: 1) they are not immune to the risk as was seen in the 2003 European heatwave when upwards of 45,000 people died in less than 2 weeks time; 2) we live in a globalized world and increases disease in any region of world can reach every country (WNV, SARS, and now Avian influ clear reminders) **US-specific:** Chicago; 2X heat deaths Calif; O3 eastern US/asthma, crypto Milwaukee

### ===== DIARMID'S

1) We need to take a precautionary approach. We already have good evidence that climate change poses a series of significant risks to health. This makes it even more important to curb greenhouse gas emissions, sooner rather than later. Failing to curb greenhouse gas emissions means that we're just storing up health problems for the future.

- Flooding as a result of coastal storm surges will affect the lives of up to 200 million people by the 2080's
- Hazardous "red ozone alert" days in the eastern US may

\*\*\*At the natl. & intl. Level– the US should ratify the Kyoto protocol\*\*\* and join the rest of the world in confronting climate change –a message I will deliver in a **keynote address at the Health Canada/WHO parallel session of the UN Conference on global warming in Montreal in 2 weeks.**

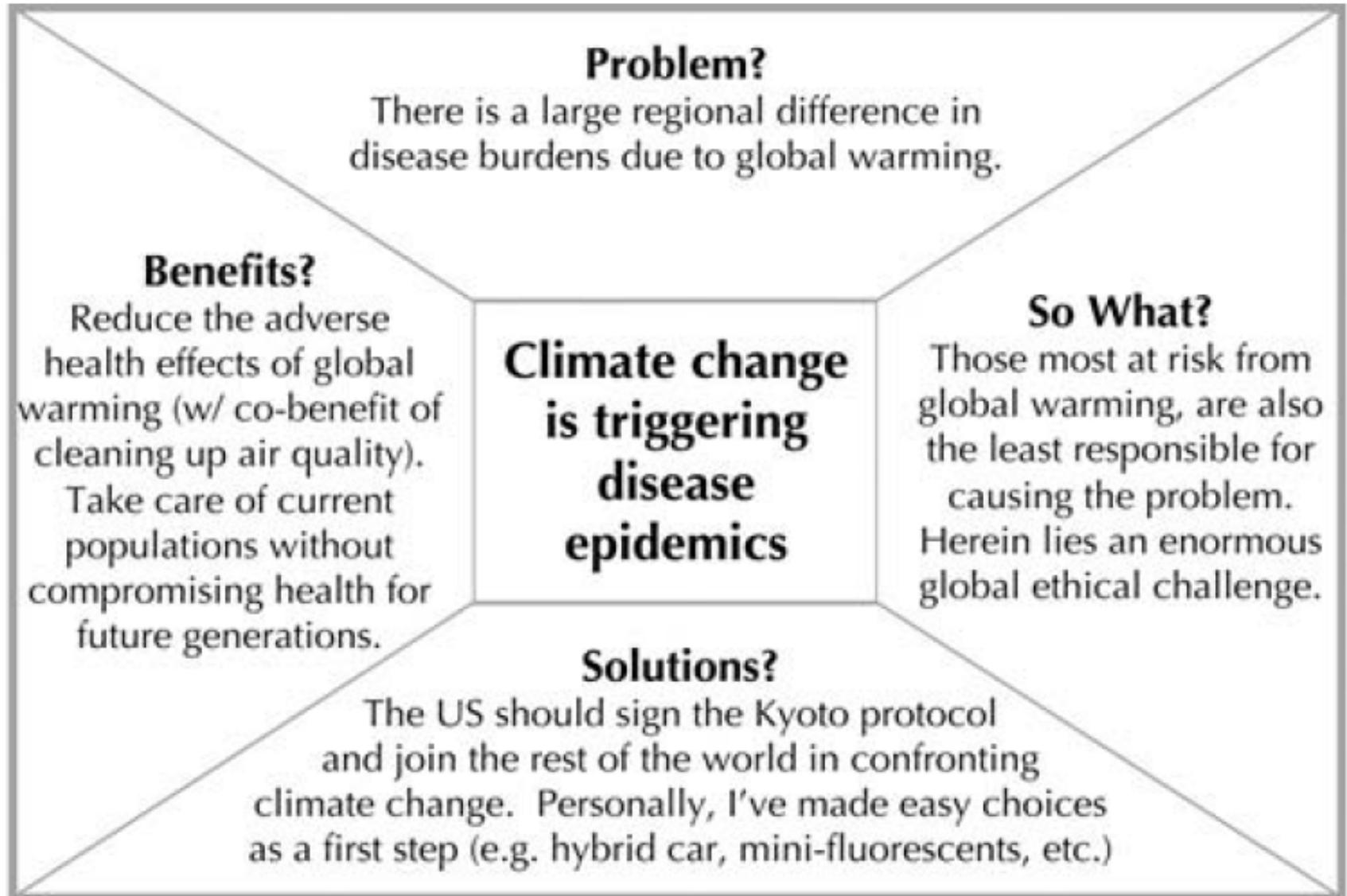
evidence of CC effects on health makes it even more important for the international community to tackle diseases of the poor (e.g. diarrhoea, malnutrition, malaria), many of which are climate sensitive

**More locally, we can make our cities more climate-safe**, by preserving greenspace or planting green-roofs. The US EPA's "**Urban Heat-Island Reduction pgm**" promotes such measures to reduce the amount of heat absorbing surfaces in cities (urban center often 5-10°C warmer).

**Finally, we in the US, can no longer pretend that our energy-consumptive lifestyles have no effect on the world's climate.**

On a person level, I've made easy choices as a first step. I own a **hybrid** car (though bike to work most of time), use **mini-fluorescents**, **insulated curtains**, and am installing a **solar hot water system** on the roof next year! **BICYCLES –win win win**

**AFTER:**

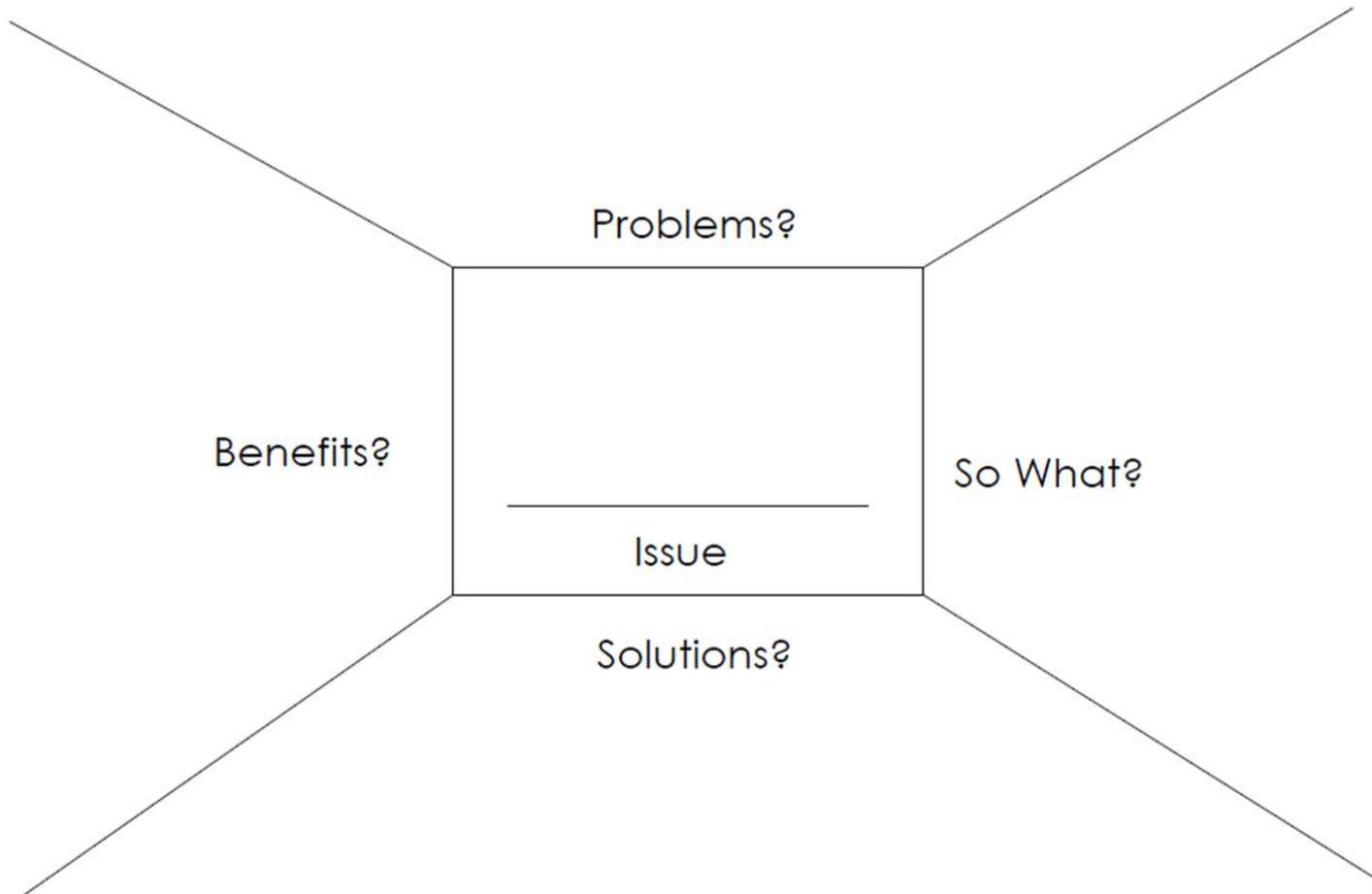


Audience: Prestige Media - NPR, Economist, NYT, BBC



# Message Box

Audience: \_\_\_\_\_



# Tea Break – 20 mins





## Motivation: Disagreement amongst experts

You are a geoscientist. There has been a large, devastating earthquake. You are mandated by your organisation to effectively communicate about your science within the first 72 hours after the event in a press conference format, to differing target audiences who are impacted by the situation. In particular, think about how appropriate different aspects of communication are, when communicating with the public.

In an earthquake crisis, scientific information and its presentation to the Public should...

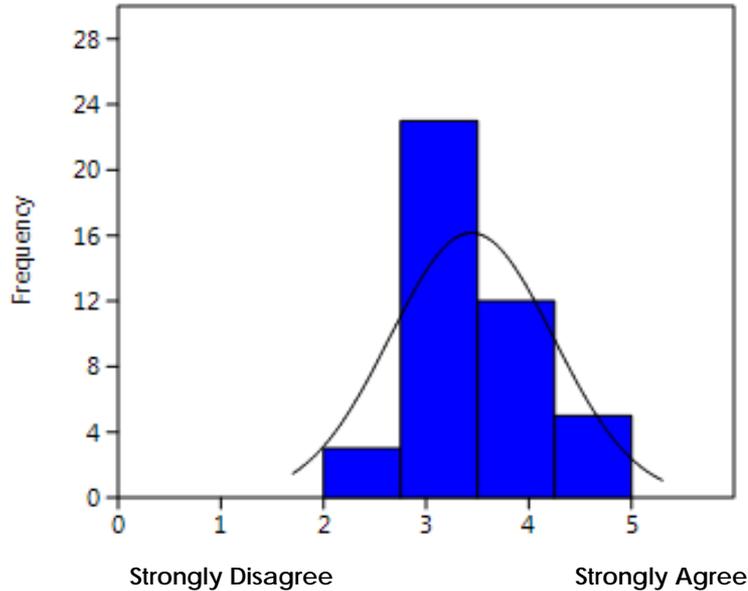
(#3) " ... not show the scientist's emotions"

(#26)" ... persuade people to care"



# (#26) " ... persuade people to care "

Mean – 3.44  
Median - 3



"Role is to **advise**, not advocate"

"Not keen on references to persuasion hence neutrality - prefer concept of providing evidence-basis for people to **come to own conclusions**"

"I don't know if we need to persuade people to care - no, I think our job is to present what we know about the geosciences to the best of our ability."

"My feeling is that science communication should remain **factual**"



# Advocacy or Informed Consent? (Bostrom 2003)

Is it ethical to advocate for a particular action or stance?

Why or why not?

Under what circumstances is it ethical?

*If we choose **advocacy**, then we can use communication strategies which aim to **persuade** the audience of a particular action or stance...*

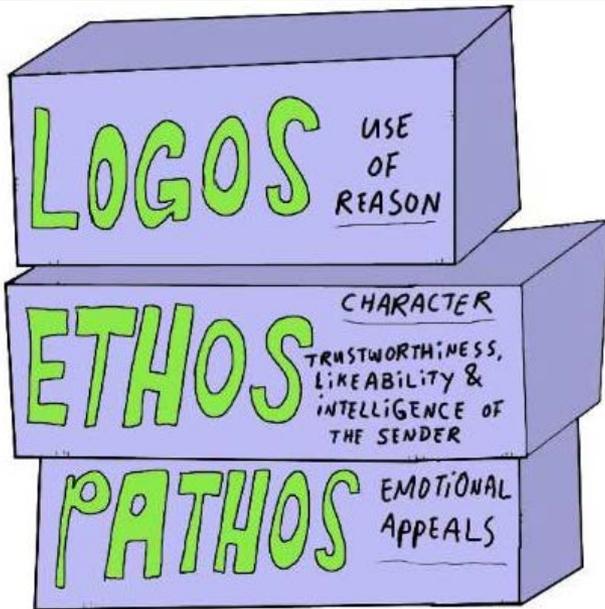
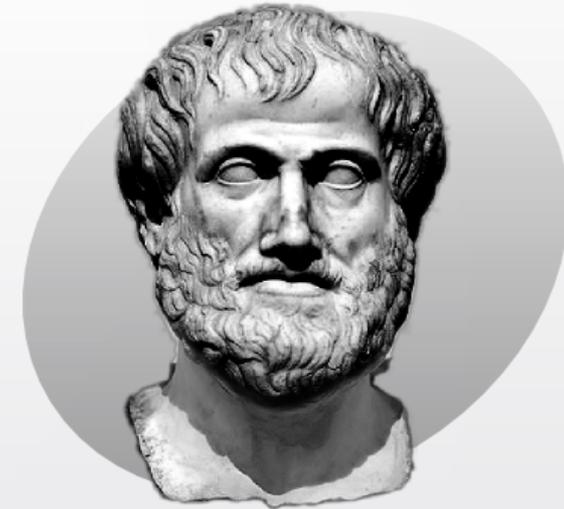


## Rhetorical Communication - Fundamentals:

- Use of **specific strategies** to help engage the audience
- **Goal-directed** communication
- Influential messages are more effective at producing **action** (or inaction)
- Primarily discussed in the context of **public communication**
- **Verbal** and non-verbal

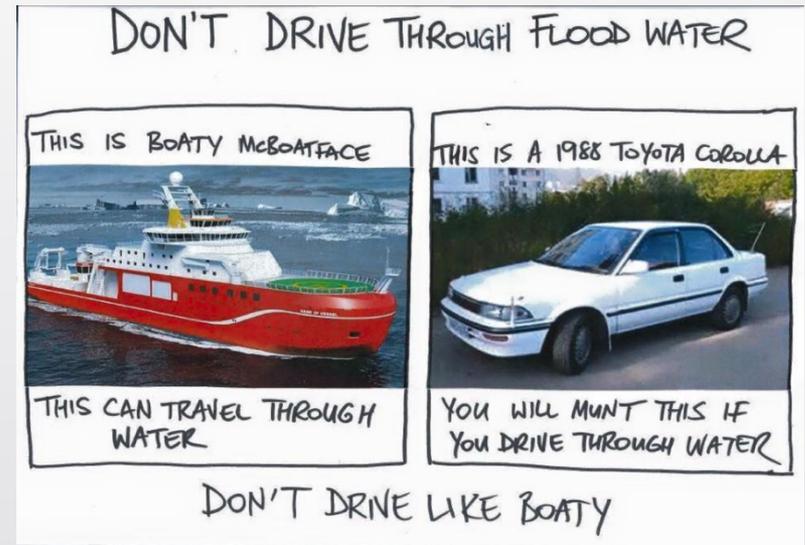
# Aristotle's Rhetoric

*Rhetoric – an ability to use available strategies as means of persuasion.*



- **Perceived truth** using logical and rational evidence and arguments
- **Character and credibility** of the speaker
- **Emotional appeals** made by the speaker

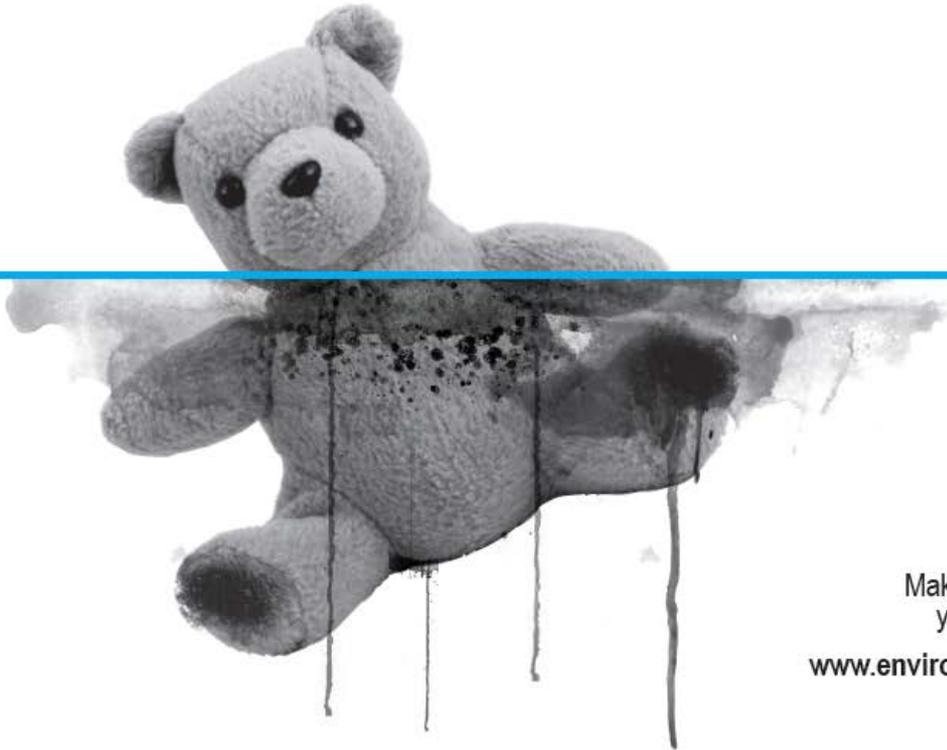
# Rhetoric & Flood Risk Communication



Let's analyse the rhetoric (logos, ethos and pathos) used in these two adverts



# HOME, SWEET HOME?



**FLOODS  
DESTROY  
DESTROY  
BE PREPARED**



Making a flood plan could help protect your family and home from flooding

[www.environment-agency.gov.uk/floodplan](http://www.environment-agency.gov.uk/floodplan)

////////////////////

# DON'T DRIVE THROUGH FLOOD WATER

THIS IS BOATY McBOATFACE



THIS CAN TRAVEL THROUGH WATER

THIS IS A 1988 TOYOTA COROLLA



YOU WILL MUNT THIS IF YOU DRIVE THROUGH WATER

DON'T DRIVE LIKE BOATY

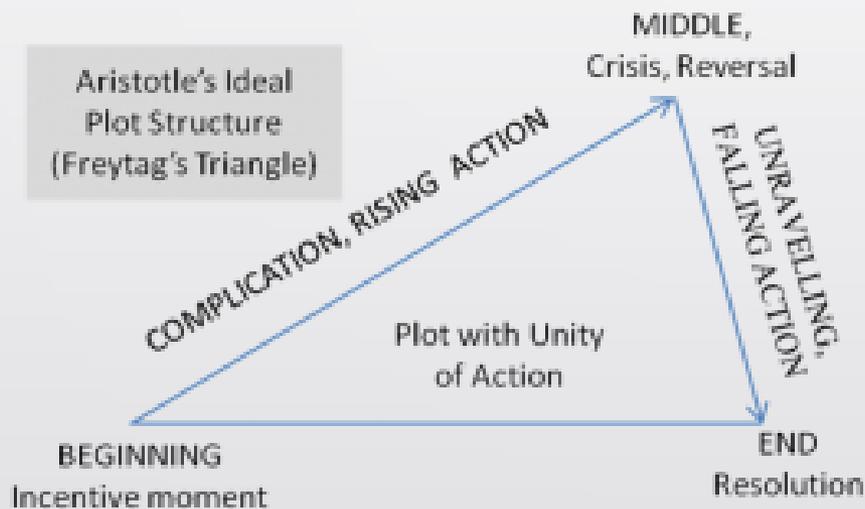


# Narrative Theory (Fisher 1989)

***Humans are storytellers***, and stories are used to transfer knowledge

- Stories must be **coherent** and make sense
- Stories must be **relatable** and **salient**
- Help to describe the **context** of a problem (psychological, social, cultural); Stories situate the audience.
- Can easily use **Pathos** within a narrative, by appealing to the reader's emotions.

# Activity: Construct a story



- As a group, construct a **short narrative** or anecdote about preparedness & flooding
- Note the use of ethos, pathos and logos

**Objective:** Influence the listener into be more prepared for the event of a flooding event.



## Strategies which can be borrowed from Rhetorical Communication:

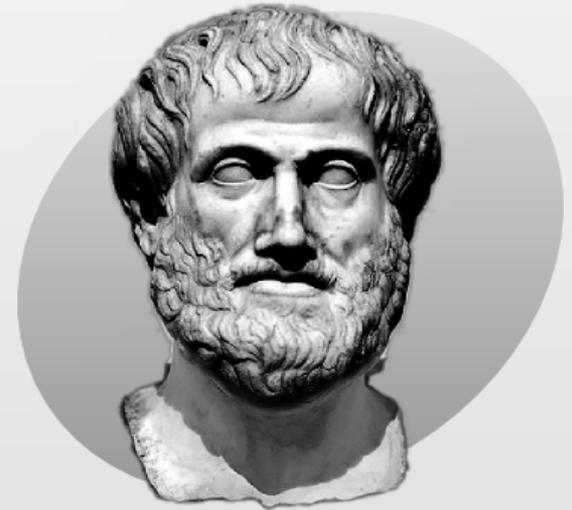
- State the facts rationally, and in a **logical, evidence-based manner**
- Maintain the appearance of a **credible, reasonable** speaker
- Provide **clear advice/course of action** which will benefit the listener
- Use **narrative** to help contextualise the situation (consequences of action)
- Use **emotional appeals** (as appropriate) to encourage the audience to take the right course of action

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# Rhetoric Reading List

Springston et al. (2009) Influence Theories: Rhetorical, Persuasion, and Informational. Handbook of Risk and Crisis Communication (Robert L. Heath & Dan O'Hair)

Introduction to Rhetorical Communication, James McCroskey, Routledge, 2015





# Building your own communication strategy

ACKNOWLEDGE & REFLECT  
SOCIOCULTURAL CONTEXT  
**CONTEXTUALISED**  
COMPLEXITY  
DIVERSITY  
DIFFERENT  
KNOWLEDGE BASES  
DISCIPLINES



## BUILDING YOUR OWN COMMUNICATION STRATEGY

- **Put yourself in the shoes** of a wide range of audiences.
- **Pick three Cs** that you think are **the most important** to the public. Discuss as a group why you think that is.
- **Pick some Cs** that YOU **excel** at. Pick some Cs that you can **improve** on.
- Discuss the **common barriers/challenges** that are inhibiting us from being effective science communicators.
- **Review the 7Ts**. Think about how you can

# Pitch your science



# Training and resources

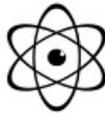


# What is the Science Media Centre?

- > Independent resource for journalists supporting quality coverage of science and research
- > Connects reporters to experts and current research on breaking news and topical issues
- > Draws on experts from across the New Zealand science system and internationally
- > Fully government-funded through Ministry of Business, Innovation and Employment
- > Administered by Royal Society of New Zealand
- > Established in 2008, team of 4 staff in Wellington



PEER REVIEWED RESEARCH



EMERGING SCIENCE ISSUES



BREAKING NEWS STORIES



## PROACTIVE

- Background briefings
- Breaking news alerts
- Engage experts
- Infographics & images
- Science media training

## REACTIVE

- Suggest experts
- Source independent research
- Fact-check claims
- Eliminate pseudoscience
- Media watchdog role

## OUTCOMES

- More accurate stories
- Voice of science heard
- Better informed public
- More depth and context
- international exposure







## Treating low blood sugar prevents brain damage in newborn babies

Stabilising blood sugar levels in newborns with hypoglycemia - low blood sugar - can prevent brain damage, according to a new study led by New Zealanders. Although there may also be a risk of brain damage if blood sugar levels...

Publicly released: Thu 15 Oct 2015 at 0800 AEDT | Thu 15 Oct 2015 at 1000 NZDT

### MORE FEATURED STORIES

New species find in Central Otago confirms link between Australian and South American shorebirds

➤ [Treating low blood sugar prevents brain damage in newborn babies](#)

Māori and Aboriginal peoples' cancer burdens revealed



### Newsfeed Filter

### Latest News

Show Results 10 20 50



## Kiwi men's little swimmers are back on track

Under embargo until: Thu 15 Oct 2015 at 2201 AEDT / 0001 NZDT

New Zealand Medical Journal

The concerning decline in New Zealanders' sperm concentration has ground to a halt, according to new research. The study shows that sperm concentration in samples from Kiwi donors has remained unchanged between 2002 and 2014, suggesting semen [Read more](#)

New Zealand Fertility Associates

Health / Medical



Scimex is an initiative of



Submit to Scimex

SUBMIT A MEDIA RELEASE

SUBMIT A STORY PITCH

SUBMIT TO MULTIMEDIA HUB

SUBMIT A CALENDAR EVENT

Pitch a story

# Desk guide for scientists



DESK GUIDE FOR SCIENTISTS: WORKING WITH MEDIA



# A day in the life of a reporter



**JAMIE MORTON**  
New Zealand Herald  
Science reporter

New Zealand Herald Science reporter Jamie Morton plots the development of a story through the day from idea to finished product...

## 8.30am

I sit down at my desk and read the paper. I want to see how my stories were treated, how I can improve. I catch up on news that broke overnight, browsing science sections of overseas media and check the debates running on Sciblogs.

Press releases from universities or research institutes will be waiting in my inbox. Whatever turns up, via releases or news tips, I ask myself a few questions: Is it new, a world-first? Why should a reader care about it? Will it have some significant impact on their life? Or is it simply interesting or quirky enough to make the grade?

## 9.30am

The first general news meeting is held in the newsroom. I'll pitch my stories to the morning duty chief reporter, and hopefully I'll have chosen them well enough that they'll sell themselves.

## 10am

I hit the phone, lining up interviews. The key is to get quotes from key sources in the bag as early as possible. I'll think about photos, graphics, factboxes. Do we need them? If so, I'll let the photography and graphics teams know early. The middle part of the day is research and writing, maybe a site visit or coffee catch-up on a slow news day.

## 2.30pm

The afternoon chief reporter will ask how my story is tracking. If it is looking good, they'll add it to the newslist for the editorial heads to consider at the afternoon general news meeting. My bosses will make suggestions or query the research. They want to make sure it's a strong story.

## 4.30pm

For anything other than breaking news, the story has to be finished by this time. I'll file my article in our system and it will be picked up, sub-edited, and placed on a designated page.

## 5.30pm

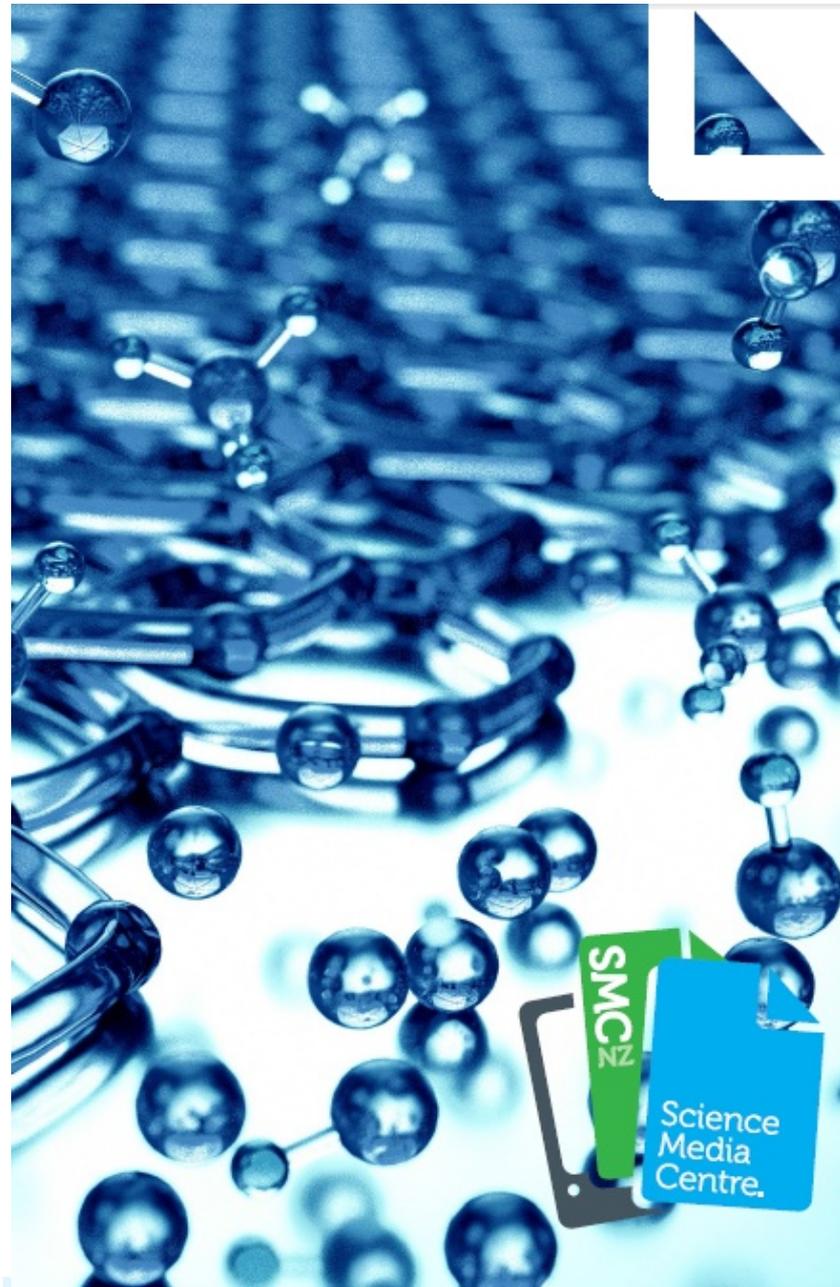
The final newslist is sent out to all reporters and I'll finally be able to see what page my story is destined for. But I don't see exactly how it will look, the layout team will work into the night. I check my inbox and science websites one last time and head home.

## 9pm

My mobile phone rings - a sub editor wants to check a fact. I talk her through it, she tweaks the sentence. The story is finally put to bed and within a couple of hours will be rolling off the presses.

Instead of saying...	Try saying...
Benthic	On the seabed
Plasticity	Ability to change
Hypoxic	Low on oxygen
Macroscopic	Visible
Anthropogenic	Man-made
Ascertain	Find out

# Desk guide for journalists



DESK GUIDE FOR COVERING SCIENCE



# Types of scientific evidence

Being able to evaluate the evidence behind a claim is important, but scientific evidence comes in a variety of forms. Here, different types of scientific evidence are ranked and described, particularly those relevant to health and medical claims.

INCREASING STRENGTH OF EVIDENCE



## ANECDOTAL & EXPERT OPINIONS

Anecdotal evidence is a person's own personal experience or view, not necessarily representative of typical experiences. An expert's stand-alone opinion, or that given in a written news article, are both considered weak forms of evidence without scientific studies to back them up.



## ANIMAL & CELL STUDIES (experimental)

Animal research can be useful, and can predict effects also seen in humans. However, observed effects can also differ, so subsequent human trials are required before a particular effect can be said to be seen in humans. Tests on isolated cells can also produce different results to those in the body.



## CASE REPORTS & CASE SERIES (observational)

A case report is a written record on a particular subject. Though low on the hierarchy of evidence, they can aid detection of new diseases, or side effects of treatments. A case series is similar, but tracks multiple subjects. Both types of study cannot prove causation, only correlation.



## CASE-CONTROL STUDIES (observational)

Case control studies are retrospective, involving two groups of subjects, one with a particular condition or symptom, and one without. They then track back to determine an attribute or exposure that could have caused this. Again, these studies show correlation, but it is hard to prove causation.



## COHORT STUDIES (observational)

A cohort study is similar to a case-control study. It involves selection of a group of people sharing a certain characteristic or treatment (e.g. exposure to a chemical), and compares them over time to a group of people who do not have this characteristic or treatment, noting any difference in outcome.



## RANDOMISED CONTROLLED TRIALS (experimental)

Subjects are randomly assigned to a test group, which receives the treatment, or a control group, which commonly receives a placebo. In 'blind' trials, participants do not know which group they are in; in 'double blind' trials, the experimenters do not know either. Blinding trials helps remove bias.



## SYSTEMATIC REVIEW

Systematic reviews draw on multiple randomised controlled trials to draw their conclusions, and also take into consideration the quality of the studies included. Reviews can help mitigate bias in individual studies and give us a more complete picture, making them the best form of evidence.

Note that in certain cases, some of these types of evidence may not be possible to procure, for ethical or other reasons.

# Media training for scientists





# SCIENCE | MEDIA | SAVVY



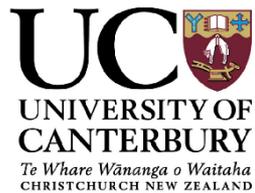
## CONCLUDING REMARKS

Thank you very much for attending today!

We may contact you to fill out a short evaluation form to ask you how this workshop went.



[riskcommresources.strikingly.com](http://riskcommresources.strikingly.com)    [jacqueline.dohaney@canterbury.ac.nz](mailto:jacqueline.dohaney@canterbury.ac.nz)



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Facilitated by:  
Jacqueline Dohaney (VUW/UC) &  
Dacia Herbulock (Science Media Centre)

**Thank you!**



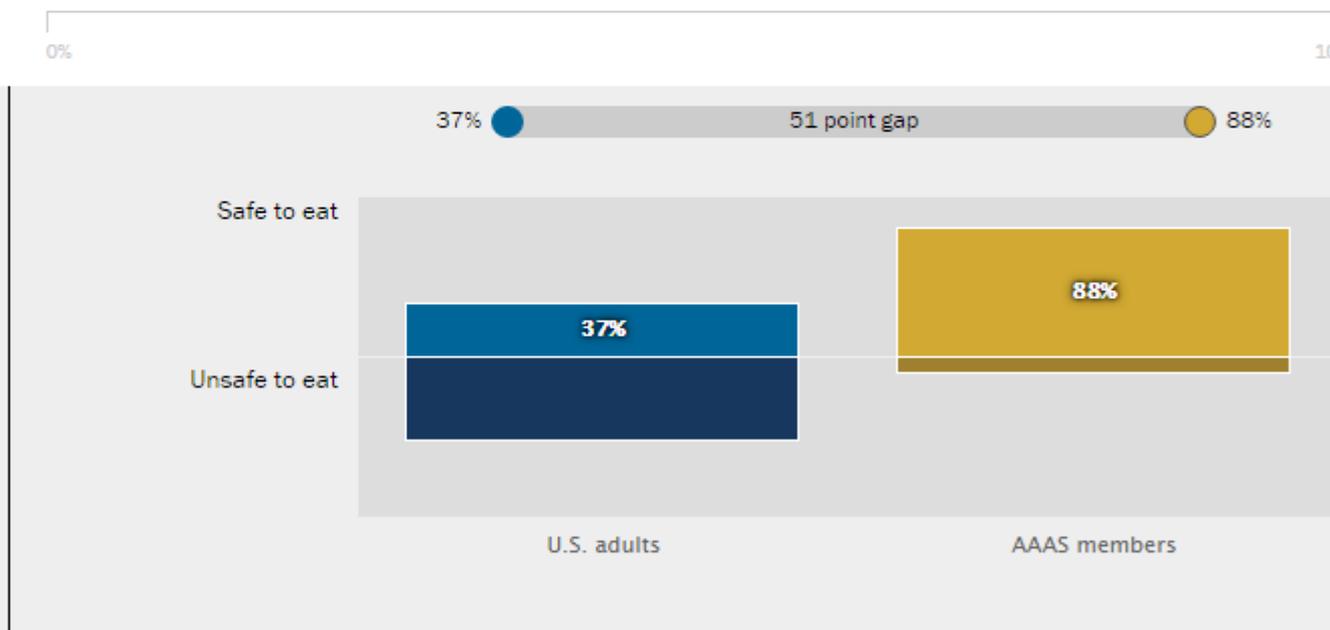
# Major Gaps Between the Public, Scientists on Key Issues

Despite broadly similar views about the overall place of science in America, there are striking differences between the views of the public and those of the scientific community connected to the American Association for the Advancement of Science (AAAS) on a host of science-related issues, from whether genetically modified foods are safe to eat to whether the world's growing population will be a major problem. See how their views differ by clicking on the topics below.

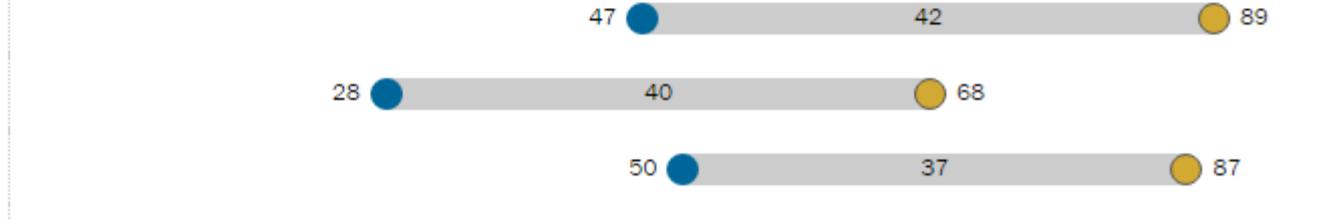
- OVERALL
- GENDER
- AGE
- RACE
- EDUCATION
- IDEOLOGY
- SCIENCE DEGREE
- SCIENCE KNOWLEDGE
- PARTY ID

● U.S. adults ● AAAS members

- ▼ Safe to eat genetically modified foods



- ▶ Favor use of animals in research
- ▶ Safe to eat foods grown with pesticides
- ▶ The earth is getting warmer mostly because of human activity



Learned Publishing, 25: 207–212  
doi:10.1087/20120307

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## Promotion of research articles to the lay press: a summary of a three-year project

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Sharon MATHELUS, Ginny PITTMAN  
and Jill YABLONSKI-CREPEAU  
*John Wiley & Sons, Inc.*

**ABSTRACT.** *The promotion of scholarly journal articles to journalists and bloggers via the dissemination of press releases generates a positive impact on the number of citations that publicized journal articles receive. Research by John Wiley & Sons, Inc. shows that article-level publicity efforts and media coverage boosts downloads by an average of 1.8 times and were found to increase citations by as much as 2.0–2.2 times in the articles analyzed in this study. We evaluated scholarly journal articles published in nearly 100 Wiley journals, which were also covered in 296 press releases. The results in this case study suggest a need for greater investment in media support for scholarly journals publishing research that sparks interest to a broad news audience, as it could increase citations.*



Sharon Mathelus



Ginny Pittman



Jill  
Yablonski-Crepeau

© Sharon Mathelus, Ginny Pittman and  
Jill Yablonski-Crepeau 2012

A study of Wiley journals  
in 2012 found media  
coverage nearly doubles  
article downloads and more  
than doubles citations.

### Introduction

Current data indicates that researchers seek to publish their work in scholarly journals that maximize potential for citation.<sup>1</sup> It is widely recognized that publication in a highly cited journal can have a positive influence on career advancement in the sciences, and citations to a specific paper published within a high-impact factor journal can often be a statement of intellectual recognition.<sup>2,3</sup> Universities and research organizations consider publication in a highly ranked journal as one criterion for promotion or evaluation, and authors compete for prestige and influence by publishing their work in the most highly cited journals.<sup>4</sup>

According to Carol Tenopir, Director of Research for the College of Communication and Information at University of Tennessee, Knoxville:

Authors select journals that will give their articles prestige and reach. Impact Factor is a widely used surrogate for the former, while perceived circulation and readership reflect the latter. But usage is becoming more important as a measure of reach.<sup>5</sup>

The CIBER report<sup>6</sup> and survey results indicate that researchers believe that article downloads offer a better measure of the 'usefulness of research' than author citations. However, download statistics and article rankings based on number of downloads are not yet the main deciding factors that lead to recognition and progress within the research community.<sup>7</sup> Until overall reach or usage as measured by downloads defines an article's value, citations and impact factor remain the primary measure of the quality of published research.

A classic study in the *New England Journal of Medicine*<sup>8</sup> showed that coverage in a specific high-profile national newspaper (the *New York Times*) increased citations to those



# The NEW ENGLAND JOURNAL of MEDICINE

## Importance of the Lay Press in the Transmission of Medical Knowledge to the Scientific Community

David P. Phillips, Ph.D., Elliot J. Kanter, M.L.S., M.A., Bridget Bednarczyk, B.A., and Patricia L. Tastad  
N Engl J Med 1991; 325:1180-1183 | [October 17, 1991](#)

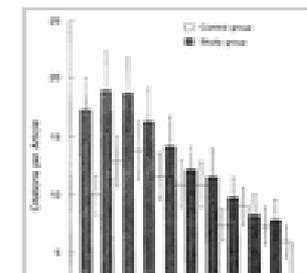
### Abstract

#### BACKGROUND.

Efficient, undistorted communication of the results of medical research is important to physicians, the scientific community, and the public. Information that first appears in the scientific literature is frequently retransmitted in the popular press. Does popular coverage

### MEDIA IN THIS ARTICLE

FIGURE 1





# Smoking is riskier than ever

Despite recent reports of sev- reach the healthy levels we en- are gathered last week. The con-

## Flu Outbreak

Few health issues are as imbed quarter

## The Childhood Obesity C

When considering the health of they do agree that problems will most

# EFFECTS OF STRESS ON YOUR HE







RENA

MSC

MSC



# Working within the news cycle



# Putting it into practice





# US SPACE TEAM'S UP GOER FIVE

THE ONLY FLYING SPACE CAR THAT'S  
TAKEN ANYONE TO ANOTHER WORLD

(EXPLAINED USING ONLY THE TEN HUNDRED  
WORDS PEOPLE USE THE MOST OFTEN)

THING TO HELP PEOPLE ESCAPE REALLY FAST  
IF THERE'S A PROBLEM AND EVERYTHING IS ON  
FIRE SO THEY DECIDE NOT TO GO TO SPACE

STUFF TO BURN TO MAKE THE BOX WITH  
THE PEOPLE IN IT ESCAPE REALLY FAST

THING TO CONTROL WHICH DIRECTION  
THE ESCAPING PEOPLE GO

PLACE WHERE FIRE COMES  
OUT TO HELP THEM ESCAPE

PEOPLE BOX

DOOR

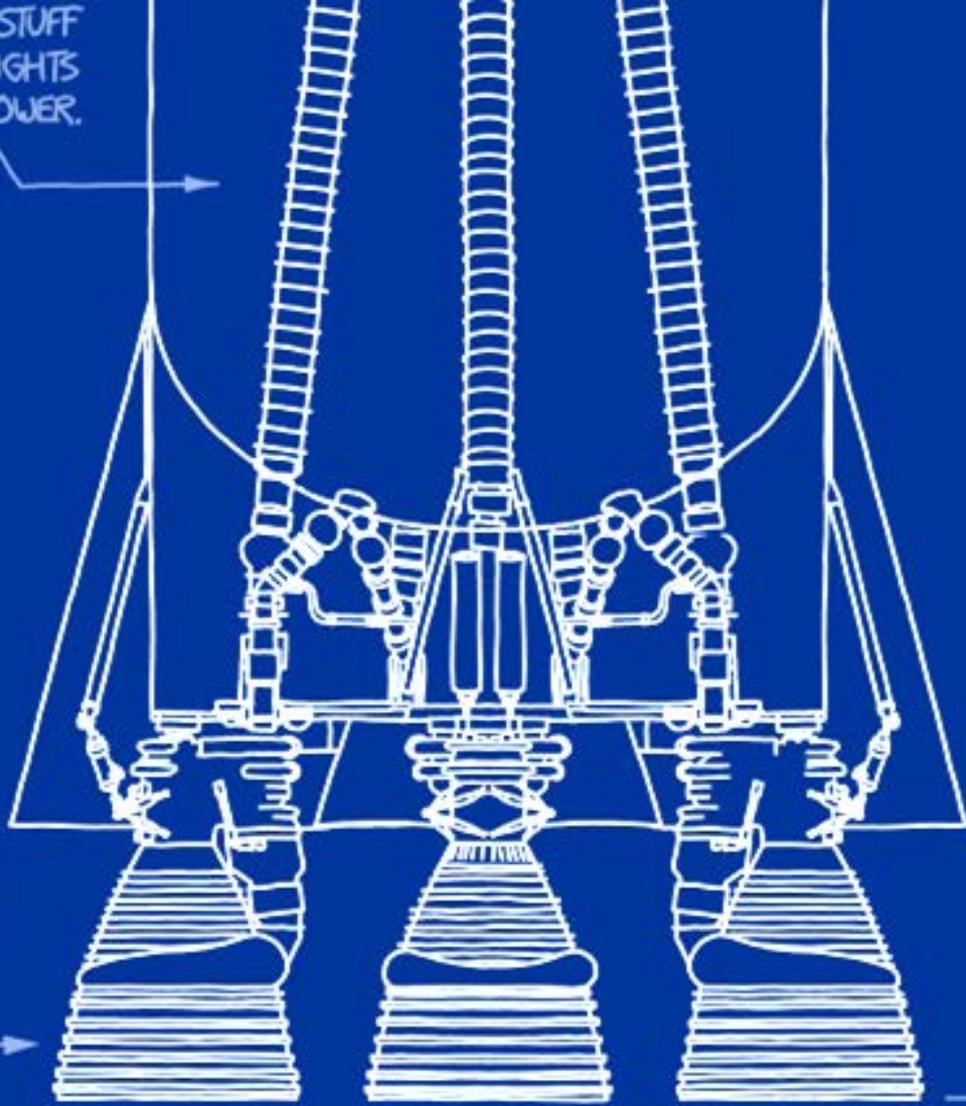
CHAIRS

PART THAT FLIES AROUND THE OTHER  
WORLD AND COMES BACK HOME WITH THE  
PEOPLE IN IT AND FALLS IN THE WATER.



THIS IS FULL OF THAT STUFF  
THEY BURNED IN LIGHTS  
BEFORE HOUSES HAD POWER.

IT GOES TOGETHER WITH  
THE COLD AIR WHEN IT'S  
TIME TO START GOING UP.



LOTS OF FIRE  
COMES OUT HERE

THIS END SHOULD POINT TOWARD THE  
GROUND IF YOU WANT TO GO TO SPACE.

IF IT STARTS POINTING TOWARD SPACE  
YOU ARE HAVING A BAD PROBLEM AND  
YOU WILL NOT GO TO SPACE TODAY.



# THE UP-GOER FIVE TEXT EDITOR

CAN YOU EXPLAIN A HARD IDEA USING ONLY THE [TEN HUNDRED](#) MOST USED WORDS? IT'S NOT VERY EASY. TYPE IN THE BOX TO TRY IT OUT.

You have to avoid jargon |

**UH OH! YOU HAVE USED A NON-PERMITTED WORD (JARGON)**

INSPIRED BY [XKCD](#). (THE IMAGE IS FROM [#386](#))  
CREATED BY [THEO SANDERSON](#). HOW DOES IT [WORK](#)?

*“Cells in your body sometimes grow too fast and make a big ball. This can make you sick, but what really makes you sick is when these cells move to another place in your body where they would not usually be found.*

*I study what happens inside the cell to change how it acts and what makes cells move to somewhere else.”*



*“I work with doctors who study how to avoid people being sick, especially in their hearts.*

*It is easy to confuse different reasons for being sick, and I use numbers to help the doctors understand if the real cause is what they guess.”*



*“I study what rocks tell us about how the ground moves and changes over many, many (more than a hundred times a hundred times a hundred) years.*

*I can do this because little bits hidden inside a rock can remember where they were when they formed, and can give us their memories if we ask them in the right way.”*



## ED54B: Make It More Simple: The Up-Goer Five Giving-It-a-Try (aka Challenge)

SESSION



Friday, 18 December 2015 16:00 - 18:00

Moscone South - 310



16:05

ED54B-01

[The Building Blocks of Life Move from Ground to Tree to Animal and Back to Ground](#)

*Eric A Davidson, University of Maryland Center (UMCES) for Environmental Science, Frostburg, MD, United States*



16:15

ED54B-02

[Studies of Places on Our Home Ground Where We Find Life That Might Be Like Places Life Could Be On Other Worlds](#)

*Jennifer G Blank, NASA Ames Research Center, Moffett Field, CA, United States*



16:25

ED54B-03

[What's under the long line of heavy rocks? Waves can tell us. \(Seismic tomography of the lithosphere below the Midcontinent Rift\)](#)

*Emily Wolin, Northwestern University, Evanston, IL, United States*



16:35

ED54B-04

[Old flying ice-rock body in space allows a glance at its inner working.](#)

*Andre Michel Bieler, University of Michigan Ann Arbor, Ann Arbor, MI, United States*



16:45

ED54B-05

[Rocks usually shake when they break, but sometimes they don't \(Seismic and aseismic slip of oceanic strike-slip earthquakes\)](#)

*Kasey Aderhold, Incorporated Research Institutions for Seismology, Seattle, WA, United States*



16:55

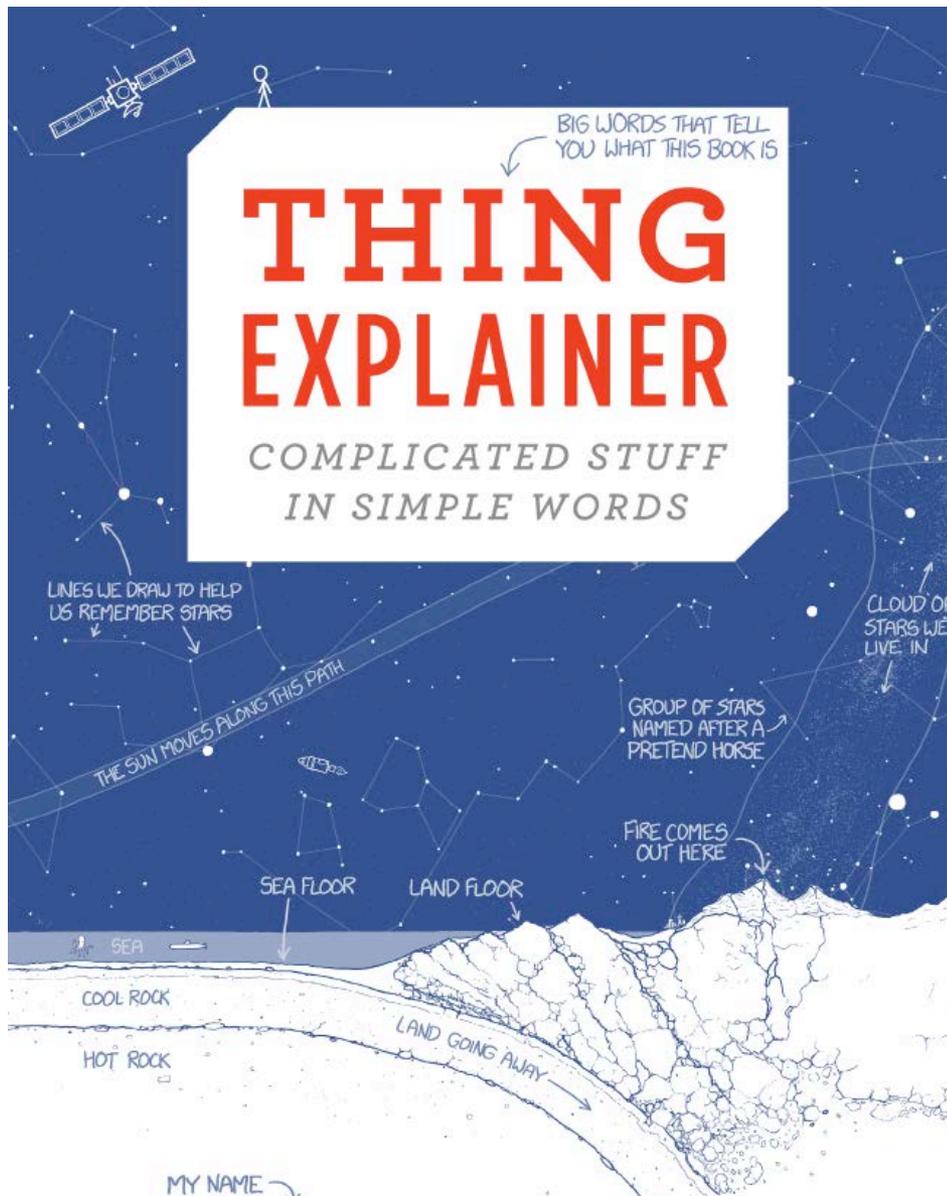
ED54B-06

[First Thoughts About Being Outside In The Very Cold Land: Did We Get Rocks That Will Let Us Study How Warm And Wet It Was In The Past?](#)

*Kelsey Winsor, University of Massachusetts Lowell, Environmental, Earth & Atmospheric Sciences, Lowell, MA, United States and Kate Swanger, University of Massachusetts, Lowell, MA, United States*

[splasho.com/upgoer5](https://splasho.com/upgoer5)





MY NAME →

**RANDALL MUNROE**

author of *What If?* and creator of *xkcd*

I MADE THIS WHOLE BOOK  
USING SIMPLE WORDS.  
IT WAS FUN TO MAKE!  
NOW ALL THE THINGS I  
SAY SOUND LIKE THIS.

WAIT, FOR REAL?  
PLEASE HELP.



# TINY BAGS OF WATER YOU'RE MADE OF

Everything that's alive is made of tiny bags of water. Some living things are made of just one bag of water. Those things are usually too small to see. Other things are made of a group of bags stuck together. Your body is a group of lots and lots of these bags that are working together to read this page.

These bags are full of smaller bags. Life uses lots of bags. All life is made from different kinds of water, and a bag keeps the stuff inside it from touching the stuff on the outside. By using bags, living things can keep different kinds of water in one place without it all coming together.

Some of the little bags you see here were once living things on their own. Long ago, some little green bags learned to get power from the Sun. Then they got stuck inside other bags, and those became flowers and trees. The green color of leaves comes from the children of those little green bags.

## LITTLE ANIMALS

These are living things (not really "animals") that got stuck in our bags of water a long time ago, like the green things in tree leaves. Now we can't live without each other. They get food and air from our bodies and turn them into power for our bags.

## SIZE

These bags are almost always too small to see. In fact, they're almost as small as the waves of light we see with:



## BAG FILLER

This machine fills little bags with stuff and then sends them out into the water. Some stuff gets sent out of the big bag to another part of your body.

The machine also fills bags with death water, marking them very carefully before sending them out so they don't get used in the wrong place.

## OUTSIDE WALL

The water bags that make up animals have soft walls. The bags in trees and flowers, which don't need to move around as much as us, have a less soft outside layer.

## GETTING IN AND OUT

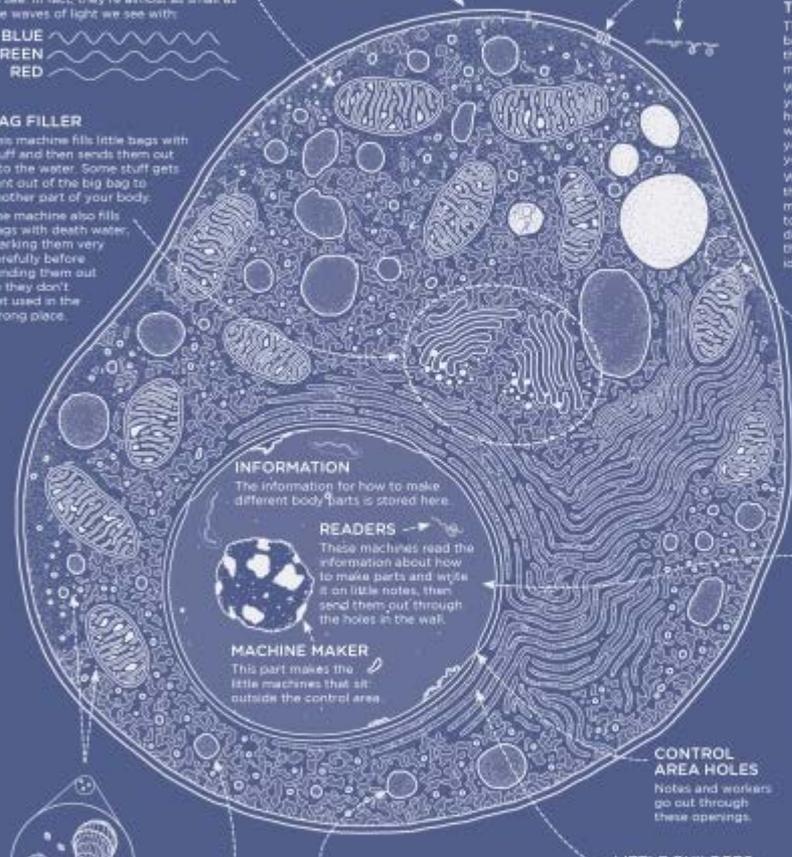
Some things can go through the bag's wall on their own. Other things can only go through if the bag helps them, either by letting them through an opening, or by making part of the wall into a new bag to hold them.



## THINGS THAT MAKE YOU SICK

These tiny things can get into your bags and take control of them. When they do that, they use the bag to build more of them.

When the kind shown here gets into you, your body gets hot, your legs hurt, and you have to lie down. Your whole body feels bad, and it makes you hate everything. You feel like you're going to die but usually don't. We say all life is made of bags, but these things aren't. They also can't make more of themselves; they have to get a bag to make them. So we don't know if it makes sense to say they're "alive." They're more like an idea that spreads itself.



## EMPTY POCKETS

This part of the bag has pockets to hold stuff that it might need later. It also makes a few things.

One of the things it makes is that stuff that helps your arms and legs get stronger. Sometimes, people who want to run or ride fast will put bottles of that stuff into their body and then lie about it.

## CONTROL AREA

This area in the middle holds information about how to make the different parts of your body. It writes this information in notes and sends them out into the bag.

Bags make more bags by breaking in half. When this happens, the control area also breaks in half, and each half gets a full set of the bag's information.

Not all bags have these control areas. The bags in human blood don't (which means blood can't grow) but the bags in bird blood do.

This control area may have once been a living thing on its own, just like the green things in leaves.

## INFORMATION

The information for how to make different body parts is stored here.

## READERS

These machines read the information about how to make parts and write it on little notes, then send them out through the holes in the wall.

## MACHINE MAKER

This part makes the little machines that sit outside the control area.

## CONTROL AREA HOLES

Notes and workers go out through these openings.

## LITTLE BUILDERS

This area is covered in little building machines that build new parts for the bag. The builders sit just outside the control area, reading the notes from inside that tell them what to build.

After the builder makes a part, the part falls away into the bag.

## BAGS OF DEATH WATER

These little bags are full of a kind of water that breaks things into tiny pieces. If something is put inside

## BAG SHAPERS

The space between bag parts is full of lots of very thin hair-like lines. These

