Technical Jargon:
Communicating Complex Data and Information Effectively

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Overview

- “Big data” and communication: How they relate
- Communicating science: The big problem
- Communication breakdowns: External and internal
- Electronic media: #WhyWeNeedIt
- Effective communication: What it entails

“Big Data” and Communication: How They Relate

Defining Terms:

- **“Big data”**: When data sets outgrow processing applications
- **The study of communication**: focuses on how people use messages to generate meanings within and across various contexts, cultures, channels, and media.
    - **Mass communication and media literacy**: The study of how mass forms of communication, such as print, radio, and television disseminate information and influence society.
    - **Public relations**: The study of the management of communication between an organization and its audiences.
    - **Organizational communication**: The study of processes used to analyze communication needs of organizations and social interaction, including how to improve communication between supervisors and employees.

Source 1

“Big Data” and Communication: How They Relate

“Recent evolutions in computing science and web technology provide the environmental community with continuously expanding resources for data collection and analysis that pose unprecedented challenges to the design of analysis methods, workflows, and interaction with data sets.” - *Vitoloa, Elkhatibb, Reusserc, Macleodd, & Buytaerta, 2015*

(Source 2)

“Big Data” and Communication: How They Relate

“I would say that the challenge is not that there isn't big data by which to model future climate change and its impacts, but how to downscale these large datasets on a local scale so that decision makers and individuals have a sense of how climate change might affect them.” *- Angel Hsu, Director of the Environmental Performance Index (Bashour, 2014)*

Source 3

“Big Data” and Communication: How They Relate

Examples of Environmental Big Data Use

- White House & Project Open Data
- USEPA & Air Quality Monitoring
- USEPA & How’s My Waterway?
- IBM & WaterWatchers
- Farm Performance & Resource Use

Source 4

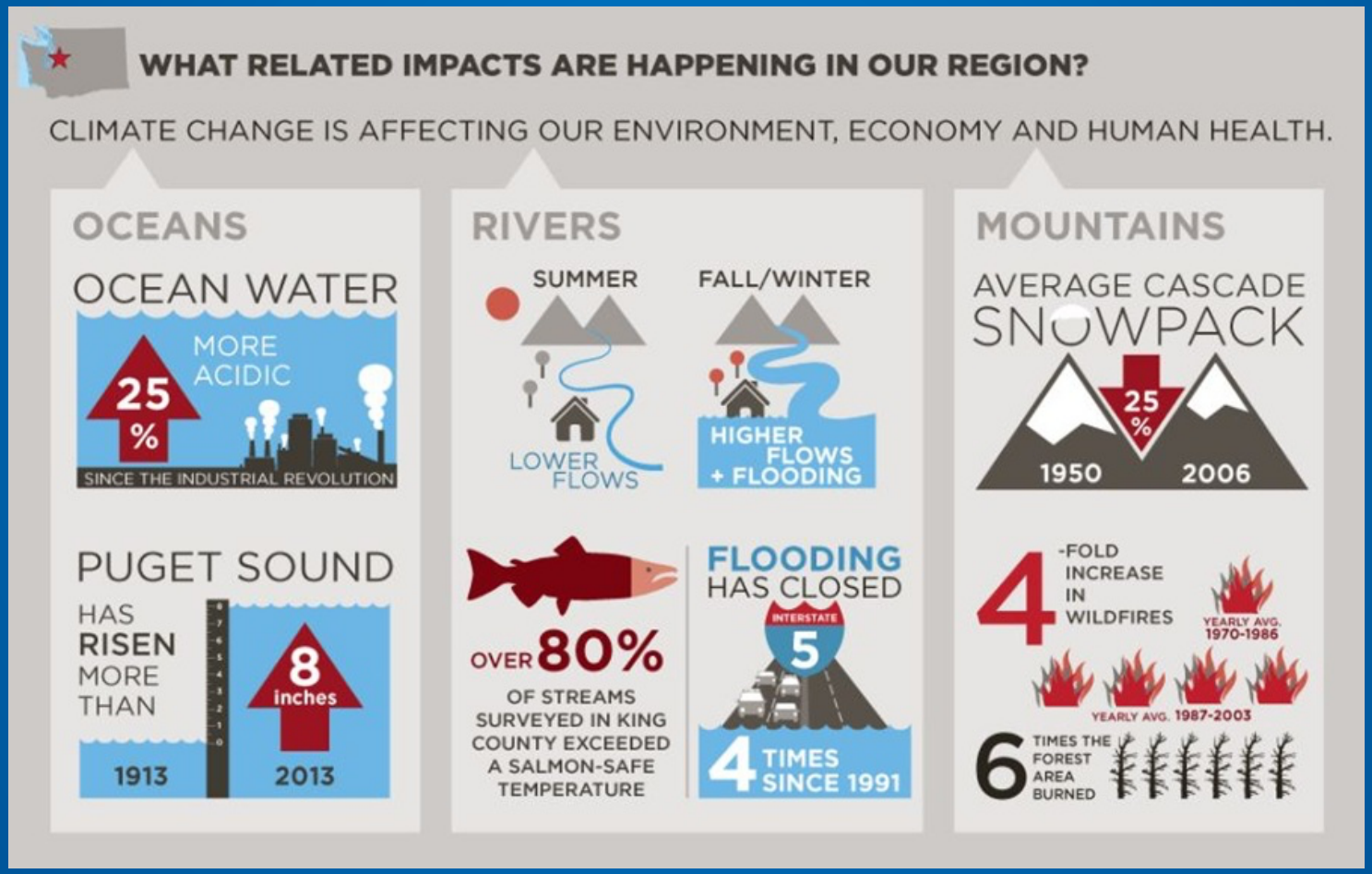
Source 5

“Big Data” and Communication: How They Relate

What organizations need to ask themselves:

- **Who** does this information have the potential to affect? **Who** has helped us collect this data?
- **What** knowledge does our audience already have on this topic? **What** are the practical implications of this information?
- **Why** does our audience care about the information derived from this data? If they don’t, **why** should they?
- **Which** audience are we talking to? **Which** channel of communication does our audience prefer?
- **How** do we produce understandable, easy-to-access information pieces? **How** can we create a visual piece that best illustrates this information?

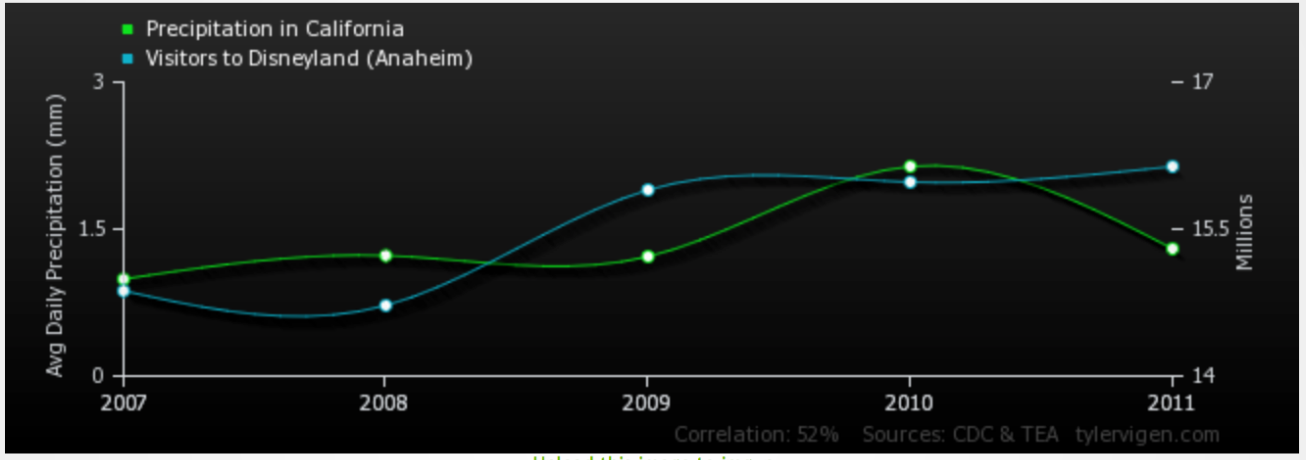
“Big Data” and Communication: How They Relate



Source 6

Communicating Science: The Big Problem

Precipitation in California
correlates with
Visitors to Disneyland (Anaheim)



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	2007	2008	2009	2010	2011
Precipitation in California *Avg Daily Precipitation (mm) (CDC)*	0.99	1.23	1.22	2.14	1.3
Visitors to Disneyland (Anaheim) *Millions (TEA)*	14.87	14.721	15.9	15.98	16.14

Correlation: 0.515456

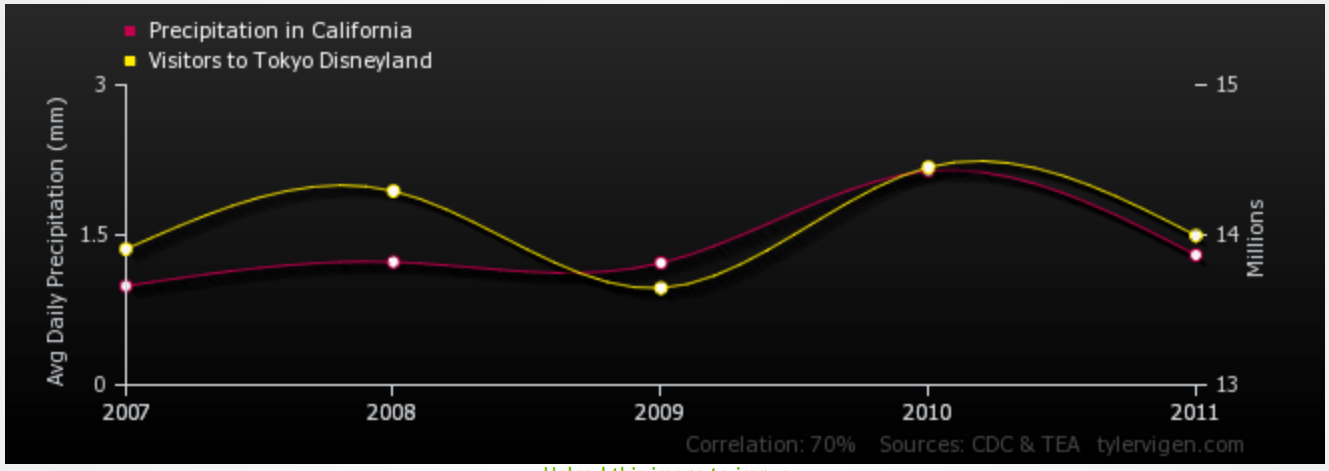
Source 7

Communicating Science: The Big Problem

Precipitation in California

correlates with

Visitors to Tokyo Disneyland



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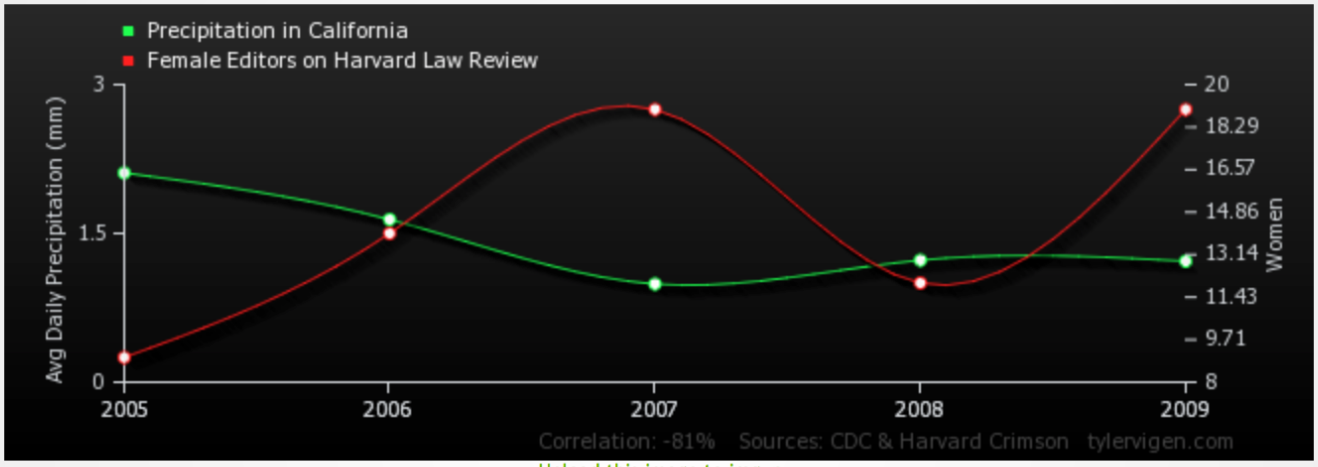
	2007	2008	2009	2010	2011
Precipitation in California *Avg Daily Precipitation (mm) (CDC)*	0.99	1.23	1.22	2.14	1.3
Visitors to Tokyo Disneyland *Millions (TEA)*	13.906	14.293	13.646	14.452	13.996

Correlation: 0.697953

Source 8

Communicating Science: The Big Problem

Precipitation in California
inversely correlates with
Female Editors on Harvard Law Review



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	2005	2006	2007	2008	2009
Precipitation in California *Avg Daily Precipitation (mm) (CDC)*	2.11	1.64	0.99	1.23	1.22
Female Editors on Harvard Law Review *Women (Harvard Crimson)*	9	14	19	12	19

Correlation: -0.806512

Source 9

Communicating Science: The Big Problem

"Correlation does not imply causation."

So why do people think otherwise?

More Americans Trust Fox News Than Obama On Climate Change, Poll Finds

The Huffington Post | By James Gerken

Posted: 04/02/2015 2:49 pm EDT | Updated: 04/02/2015 11:59 pm EDT

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More U.S. adults believe Fox News is a reliable source of information about climate change than believe President Barack Obama is, according to a new poll from St. Leo University.

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Power to be free

a better tomorrow

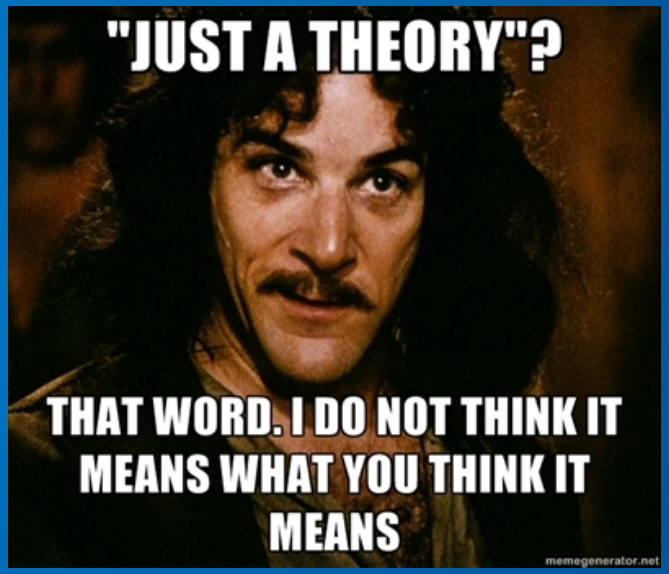
- General lack of education
- Sensationalism sells
- The power of visuals!
- The power of the authoritative voice

Source 10

Communicating Science: The Big Problem

The conflation of the word "**theory**" with "**guess**"

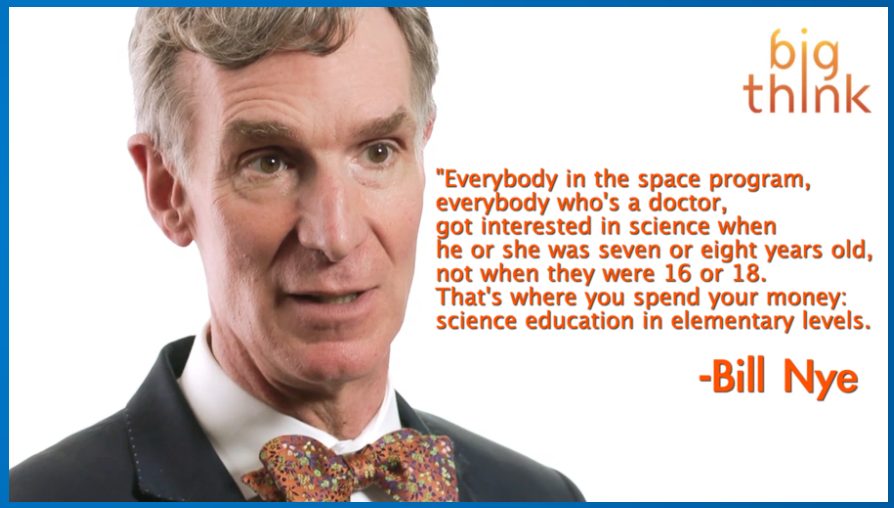
- **Guess/Hypothesis:**
  - conjecture or supposition
  - based on insufficient/incomplete evidence; may be based on feelings
  - if a scientific hypothesis, must be testable
- **Theory:**
  - well-substantiated explanation
  - based on facts
  - repeatedly confirmed
  - can be used to make predictions



Source 11

Communicating Science: The Big Problem

- What's the solution?
  - Education
  - Publicity
  - Persuasion



    - Beat them at their own game by using effective ethos, pathos, and logos

Source 12

Communicating Science: The Big Problem

- Just because we're scientists doesn't mean we understand all science
  - **Technical jargon**: unnecessarily complicated technical language
  - **Technical terminology**: specialized vocabulary of any specialized field of knowledge
- The goal is to inform, not impress
  - Things to consider:
    - What is my audiences' base knowledge?
    - How can I *teach* instead of simply relay the information?
    - From the perspective of my audience, what information is vital vs. superfluous?
    - How will I check to verify that my audience understood what I was attempting to communicate?

Communication Breakdowns: External and Internal

Cost of Communication Breakdowns:

- External
  - Miscommunication
  - Over-communication
  - Negative PR
  - Low reach/visibility
  - Keeping it old school
- Internal
  - Wasted time/money
  - Loss of business
  - Low morale
  - Toxic organizational culture

Source 13

Communication Breakdowns: External and Internal

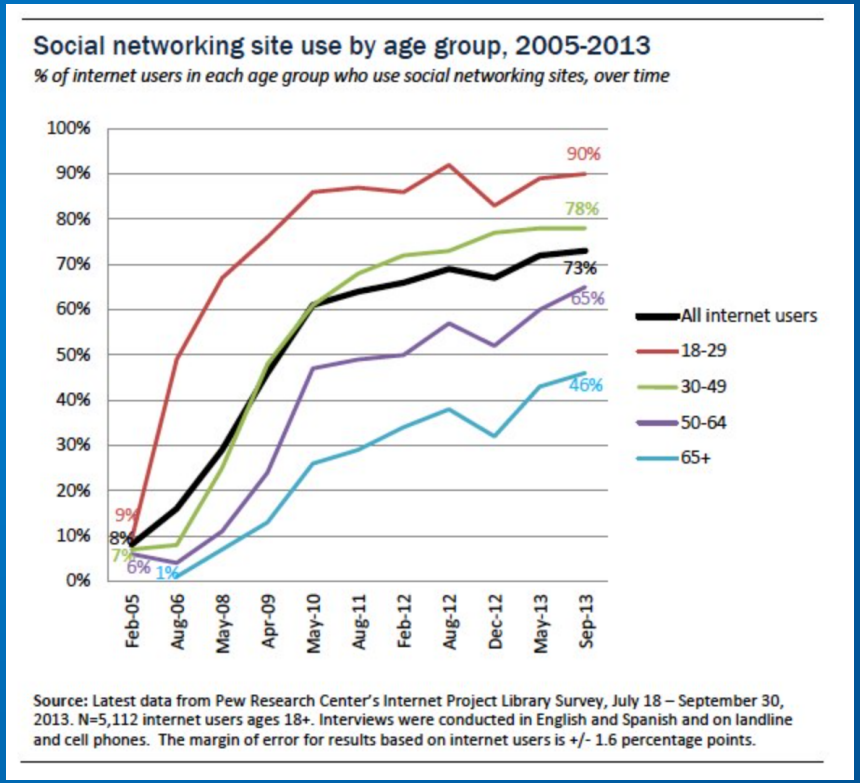
Solutions & Prevention Tactics for Communication Breakdowns:

- External
  - Define terms, *always*
  - Keep it clear & concise
  - Offer ways to find more information
  - Do damage control
  - Adapt to the communicative environment
  - Keep it relevant
- Internal
  - Good listening skills are essential
  - Communication is a two-way process; Ask for feedback
  - Give feedback; Demonstrate understanding
  - Verify channel effectiveness and always use the best channel

Source 14

Electronic Media: #WhyWeNeedIt

- Everyone is online, every day, every hour, every second (you may be asleep but your phone is not)
  - According to the Pew Research Center, as of January 2014, 87% of American adults use the internet; 74% of online adults use social networking sites.
- Information is consumed at a real-time pace, but only in bite-size pieces



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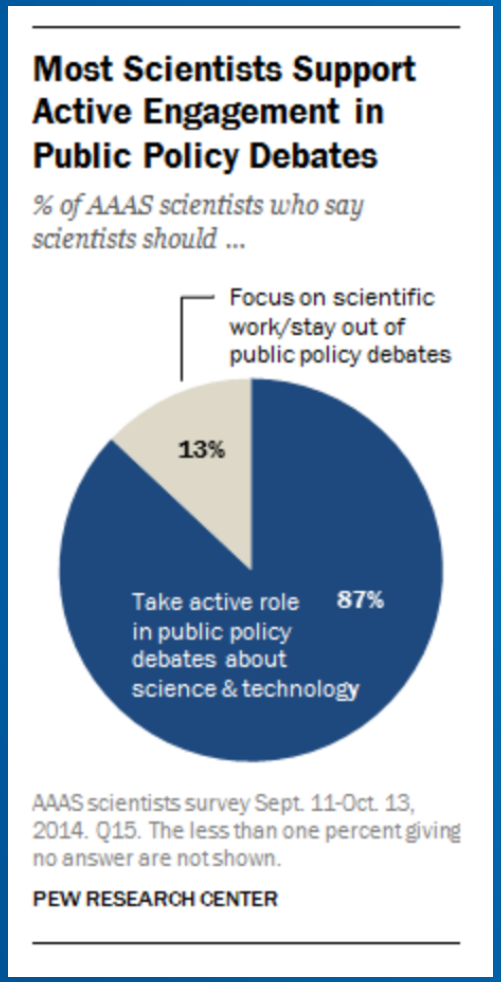
Electronic Media: #WhyWeNeedIt



Source 16

- Forget orange, sensationalism is the new black
- Education is power, and people are educating themselves online
  - Examples:
    - Buzzfeed type media making science “cool” but only if its presented in a “cool” way
    - John Oliver using comedy to bring light to serious issues

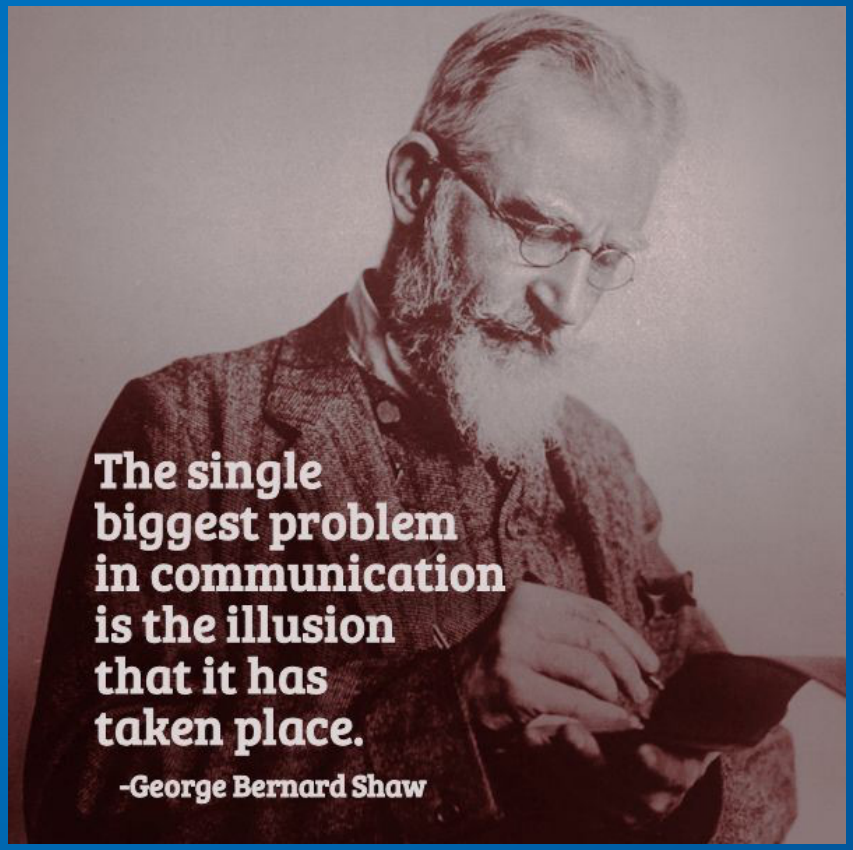
Effective Communication: What It Entails

- **Ethos**: you are the expert, so BE the expert
- **Pathos**: appeal to your audiences' emotions
- **Logos**: know the facts, present them as facts, and communicate the significance of the facts

- *Find the balance:*
  - Consider publishing white papers and press releases
  - Make note of how it affects an individual at the personal, communal, and global level as well as the social, economic, political, and environmental level
  - Present the information clearly and concisely, without discrediting the science

Effective Communication: What It Entails

- Understand
- Tailor
- Simplify
- Teach
- Check
- Adapt
- Listen



Source 17

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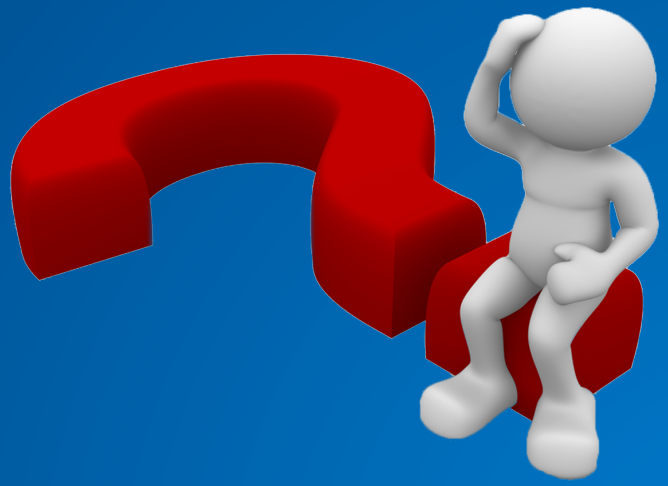

Questions?

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Thank You!