

Science Communication: A Practical Guide

Fall Semester, 2011

Introduction and Overview

- Personal introductions
- Course aims
- Course requirements
- Introduction to science communication
- Talking about science
 - What makes for good science talk?
 - Guidelines for first oral presentation

Course Aims

To provide:

- an introduction to popular science communication
- intellectual resources for constructive critical analysis of popular science communication
- opportunities for cultivating oral (public speaking) and written communication skills, through classroom exercises and assignments
- a range of resources and skills for effective communication of complex material;
- opportunities to undertake a substantial practical project in science writing or science exhibiting

***“Rivers of Ice”*, MIT Museum, Opening April 2012**

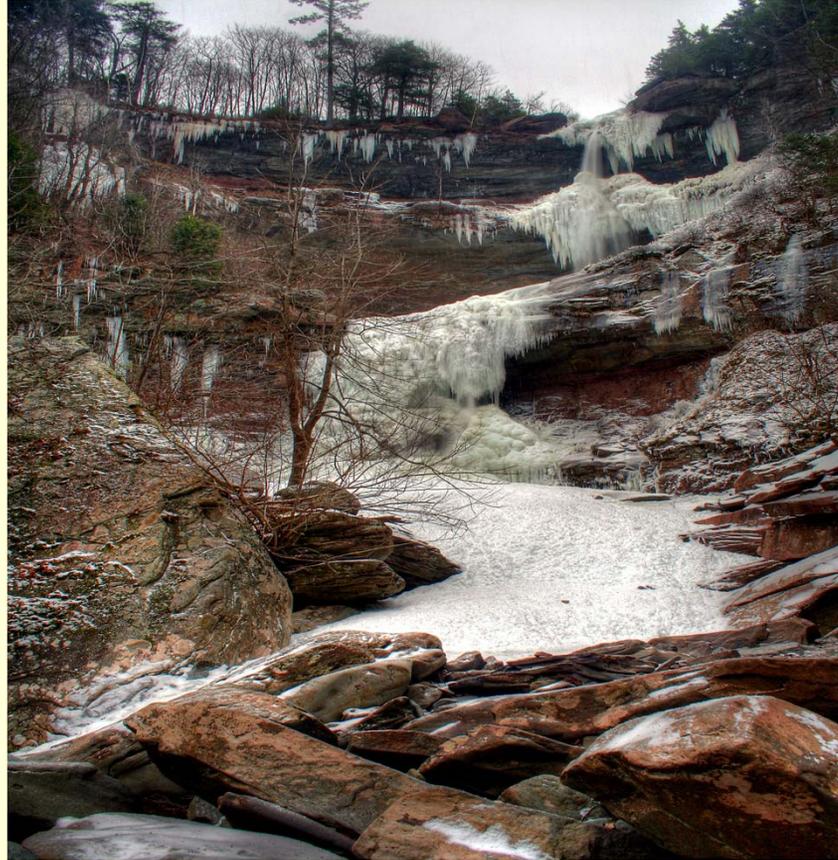


Photo courtesy of [Kenneth Barrett](#) on Flickr. CC-BY-NC.

Course Requirements

This is a CI-H course, which means:

- a big emphasis on cultivating communication skills
- substantial opportunities for oral expression
 - presentations
 - student-led discussions
 - class participation
- a minimum of 20 pages of written work, including revision of assignments based on feedback
- support of a Writing Advisor - each student to arrange a 1:1 meeting with Nora at least once during the course

Introduction to Science Communication

Who communicates science?

Who Communicates Science?

- Scientists
- Science publishers
- Science funders
- Science fund raisers
- Science policy-makers
- Presidents
- Politicians
- Lobbyists
- Entrepreneurs
- Venture Capitalists
- Investors
- Advertisers
- Etc, etc,
- Teachers
- Consumers
- Doctors
- Patients
- Medical insurers
- Journalists
- PR consultants
- Broadcasters
- Film makers
- Playwrights
- Museum curators
- Bloggers
- Etc, etc

Professional Science Communication

Why do scientists communicate with each other?

Why do scientists communicate with each other?

- Because science is social
- Because scientists depend on each other for ideas and information
- Because the first requirement of a successful scientist is that s/he succeeds in persuading other scientists that s/he is a successful knowledge producer
- Because scientists are professional critics of their colleagues' work
- Because the peer reviewed research paper is the official record of scientific achievement

Popular Science Communication

*Why do scientists engage in
popularization?*

Why do scientists engage in popularization?

- To share their enthusiasm with others
- To “pay back” to society
- To educate the next generation of scientists
- To earn money
- To win fame
- To win research grants
- To satisfy the requirements of grant-givers
- To advance particular ideas or theories
- To pursue arguments with opponents
- To define particular scientific fields or disciplines
- To persuade policy-makers and funders to support particular areas of research
- Etc, etc, etc.

Popular science is...*quite popular!*

- Science writing
 - newspapers, magazines, books, etc.
- Science broadcasting
 - radio, TV
- Science museums
 - international science center movement
- Science events
 - science cafes, science festivals, etc.
- Science on the web
 - move into multi-media

13-part TV series first
broadcast by PBS in
1980

Won an Emmy and a
Peabody Award and
has now been
broadcast in 60
countries and seen
by more than 500
million people

The cover of "Cosmos," Carl Sagan, removed due to copyright
restrictions.

#1 on the New
York Times Best
Seller Lists for
over 2 years

Went on to sell
more than 9
million copies by
2000

Cover of "A Brief History of Time," Stephen Hawking, removed due
to copyright restrictions.

Why bother with popular science communication?

Four arguments....

The Pipeline Argument

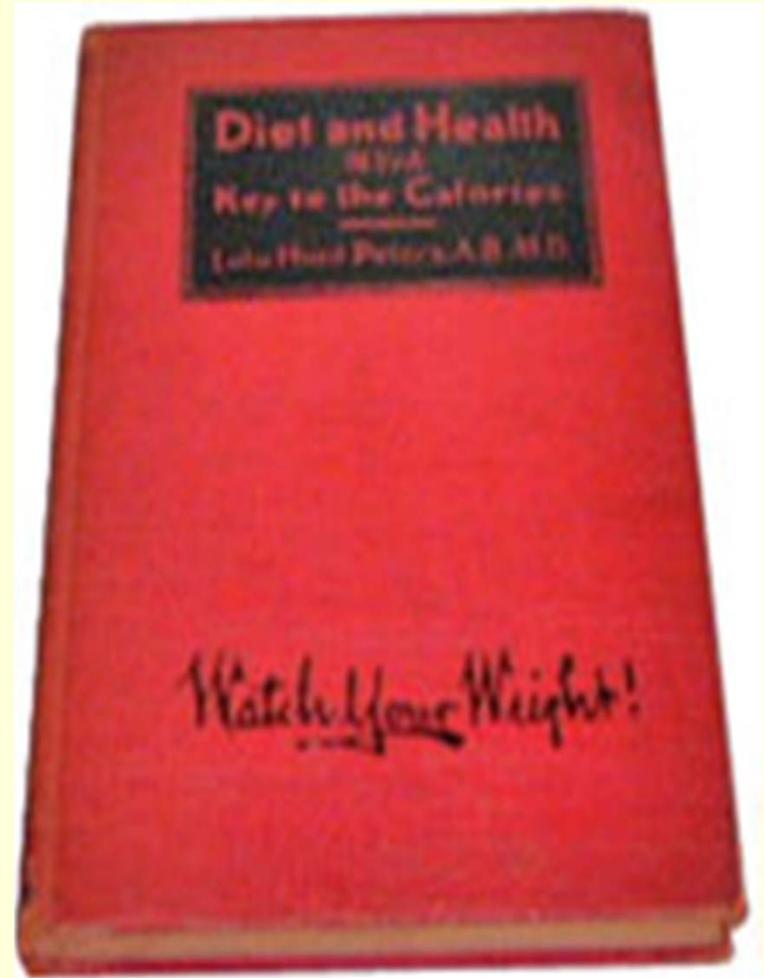
The continued health of science depends on each generation of scientists enthusing the best and brightest of the next generation to become scientists

The Practical Argument

An adequate knowledge of science is vitally important to individuals' health, wealth and well-being

Lulu Hunt Peters, Diet and Health with the key to the calories, 1918

The first successful modern diet book, selling some 2 million copies, Diet and Health introduced many people to the concept of 'calories'.

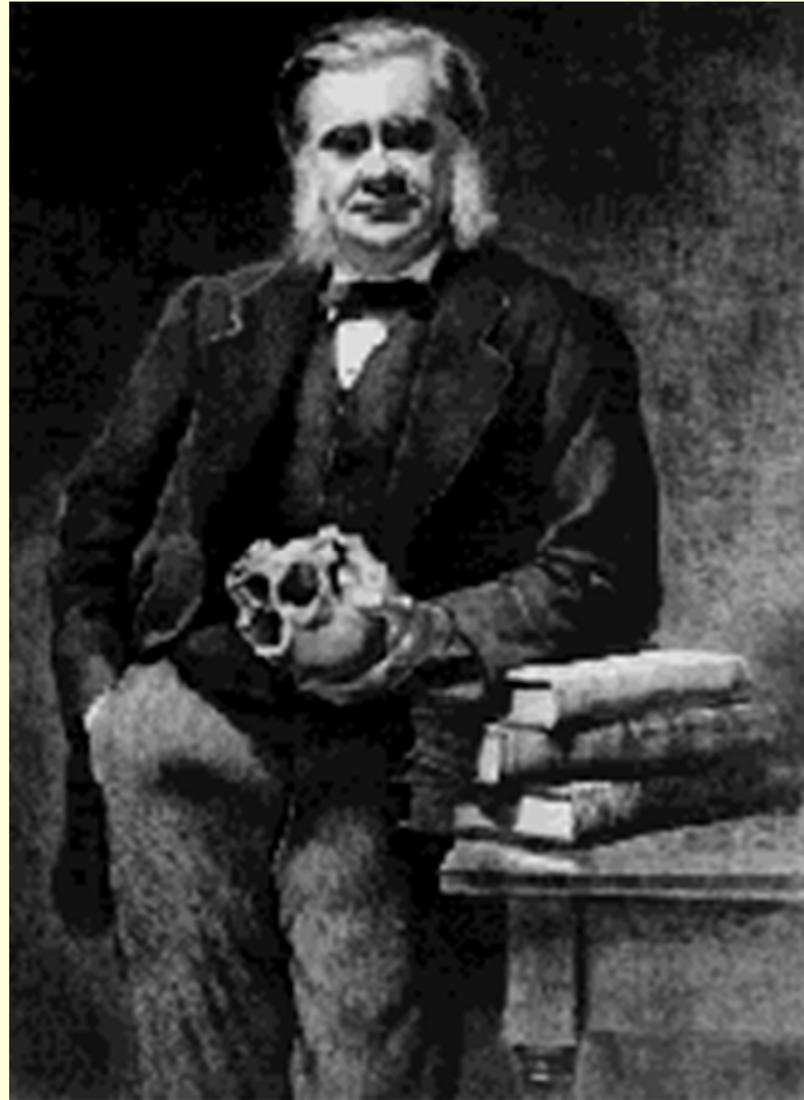


The Cultural Argument

Science is inherently valuable,
and should be communicated
to the public as a key part of
culture

Thomas Henry Huxley, 1813-1895

“The man who should know the history of a bit of chalk which every carpenter carries about in his breeches pocket, though ignorant of other history, is likely, if he will think his knowledge out to its ultimate results, to have a truer and therefore a better conception of this wonderful universe and of man’s relationship to it than the most learned student who is deep-read in the records of humanity and ignorant of those of nature.”



The Political Argument

Science is directly or indirectly relevant to a great deal of public policy, so people need to understand science in order to exercise their democratic duties as citizens

Dr James Hansen,
Director of NASA's
Goddard Institute,
spoke out on
global warming,
in 2006



Photo courtesy of [wdm](#) on Flickr. CC-BY.

Talking about Science

Some features of talk as a form of science communication:

- Earliest
- Simplest
- Most direct
- Most personal
- Most powerful
- Most often abused

Now for a real example

- I've chosen a TED talk that you can find on Youtube
- TED thought this person was a cool communicator
- Let's observe carefully, looking for evidence of what makes this a more or less effective science talk
- Pay attention to what you see, as well as what you *hear*
- Make notes of key points as we go along, so you won't forget

Michael Pollan gives a plant's eye view, TED Conference, March 2007

See Michael Pollan's talk on [TED.com](https://www.ted.com/talks/michael_pollan_the_eyes_of_a_plant).

Pollan Talking Science

- No script
- No visual aids
- Organized around...a personal experience
- Key idea is a “frame shift” - imagining the world from the point of view of (agricultural) plants
- Telling stories “to help us feel what we know”

Assignment for Monday

- Select any science, engineering or technology topic that interests you
- Prepare a 2-minute oral presentation, for a smart but uninformed, non-specialist audience
- Come to class on Monday prepared to give your presentation

Oral Presentation Guidelines

- Choose your topic carefully
- Prepare to be:
 - interesting
 - understandable
 - memorable
- Use *amaximum* of 1 image (if you must!)
- Use notes if you like, but don't read a text
- Time yourself beforehand

MIT OpenCourseWare
<http://ocw.mit.edu>

STS.034 Science Communication: A Practical Guide
Fall 2011

For information about citing these materials or our Terms of use, visit: <http://ocw.mit.edu/terms>.