Dissemination of the results to the public (Flyer)

Dissemination of scientific results to the public (DoW)

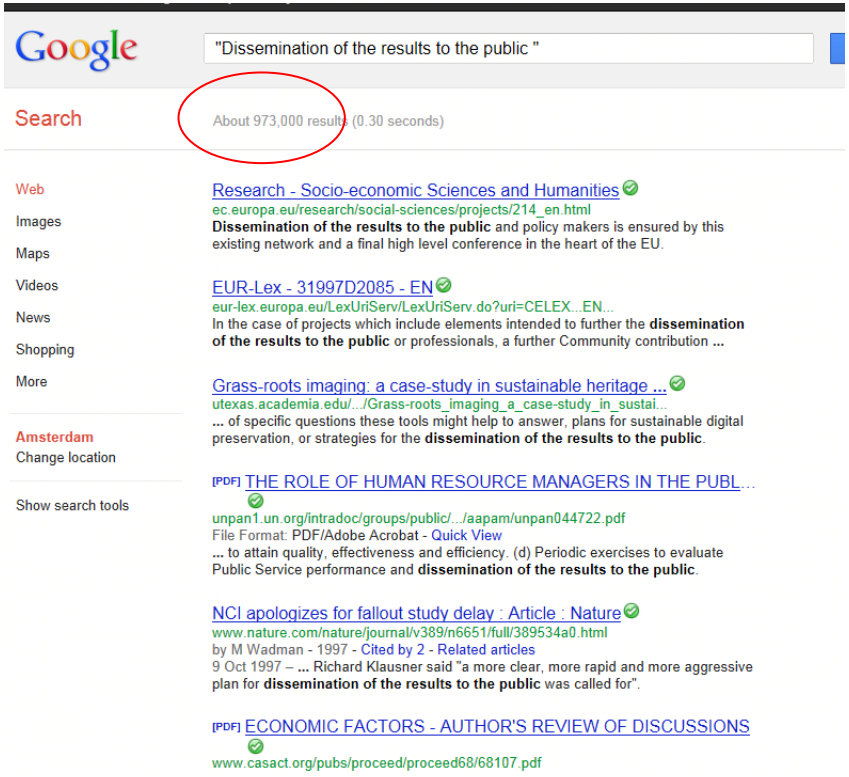
Changes Workshop PS-04
&
11th edition International Summer School
Environmental Hazards & Sustainable Development
in Mountain Regions

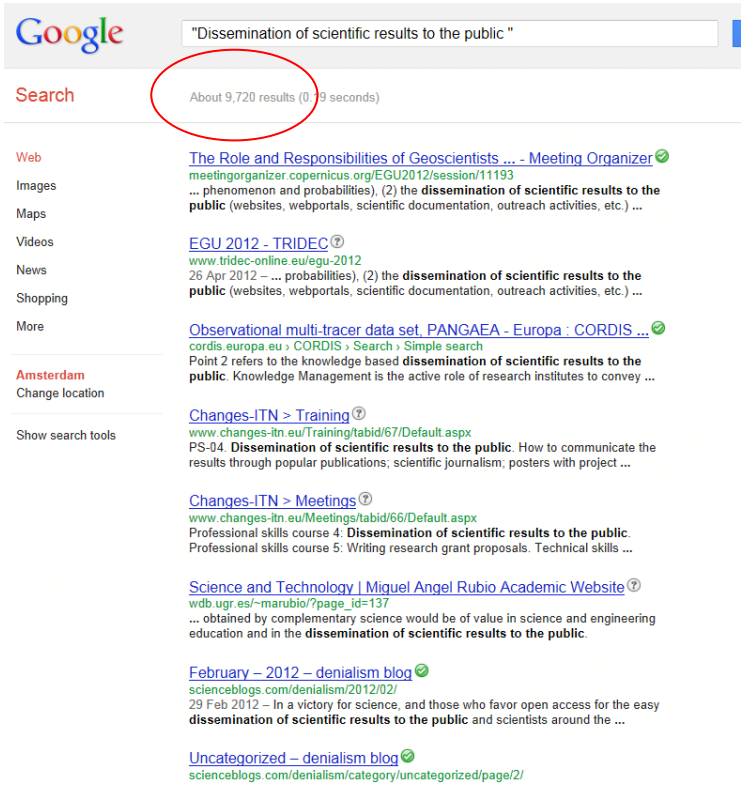
Thom Bogaard
Delft University of Technology

Dissemination of the results to the public (~ 1.000.000 entries)

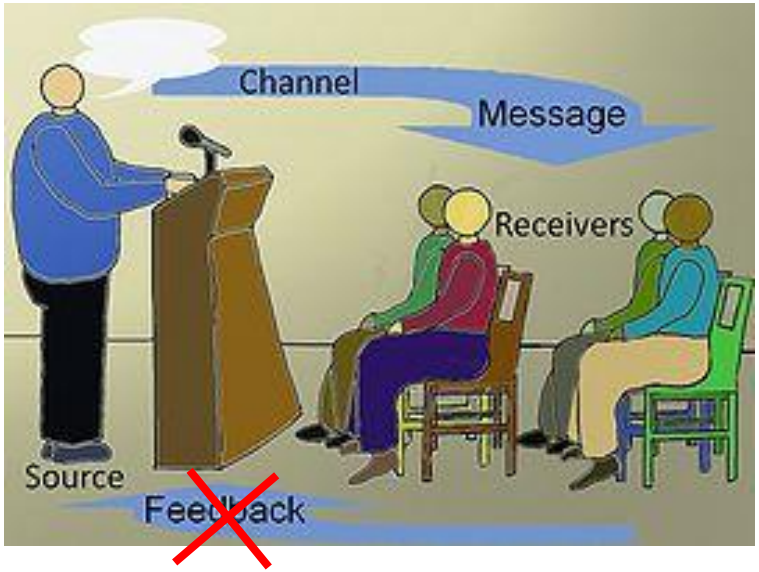
Dissemination of scientific results to the public (9.720 entries)

The latter mainly in relation to discussion on Open Acces Journals! and advertising workshops, courses, etc on the topic!



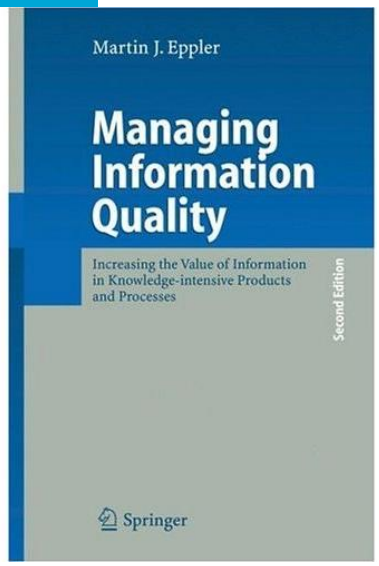


To **disseminate** (from lat. *disseminare* „scattering seeds"), in terms of the field of communication, means to broadcast a message to the public without direct feedback from the audience.



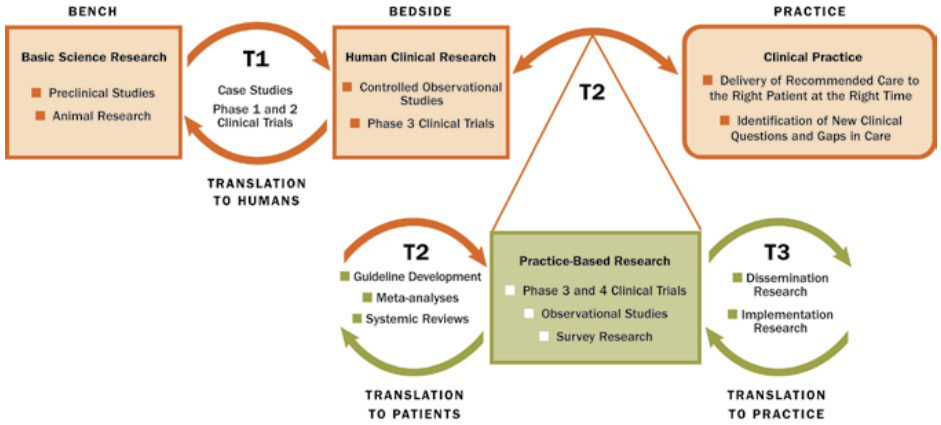
http://en.wikipedia.org/wiki/Models_of_communication

Results



Final report
Final outcome
'Decision'

Awareness
Warning



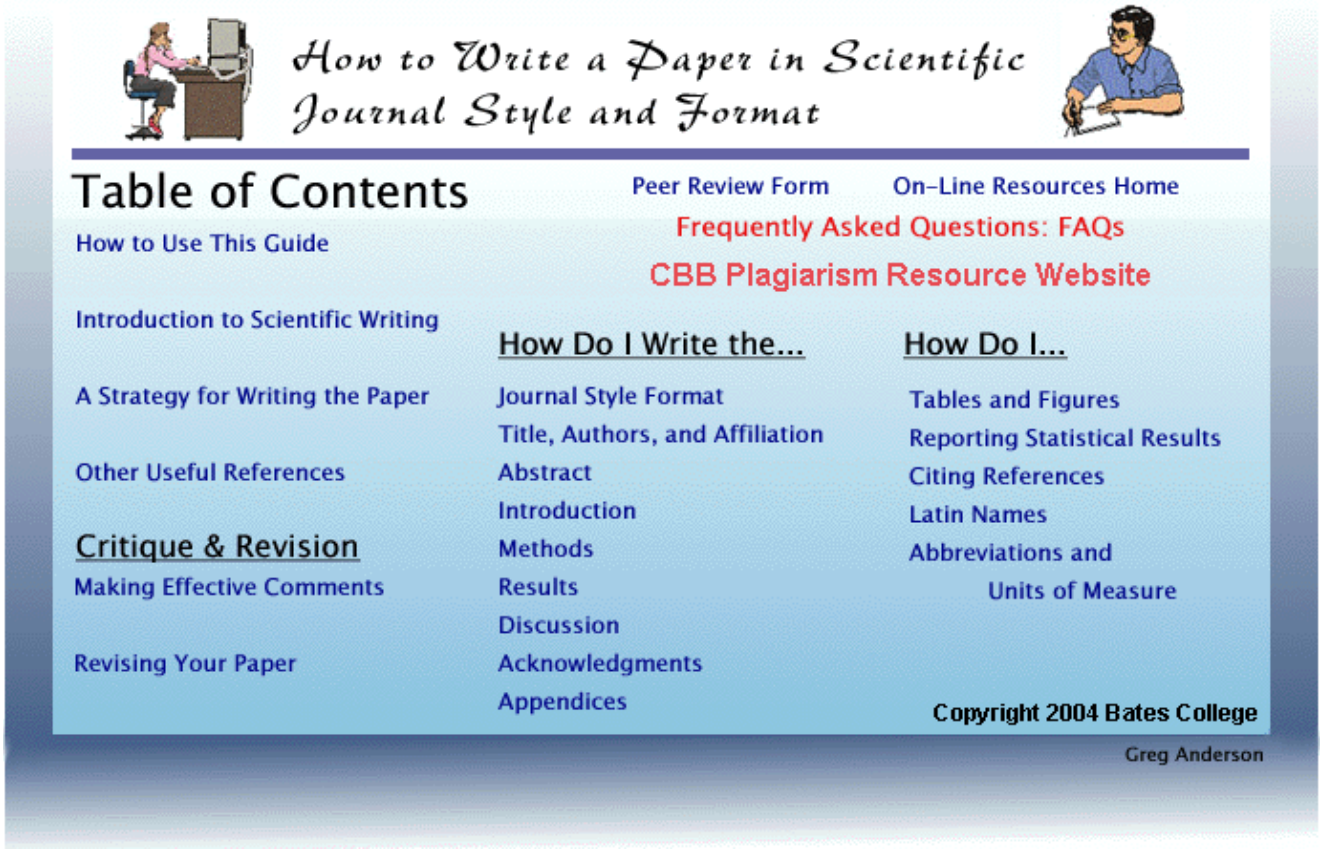
The set-up of the study
The process of the study

Public Audience

- Peer audience: scientists
- Managerial audience: policy makers
- Nonspecialists audience: general public
- Mixed audience
- ……

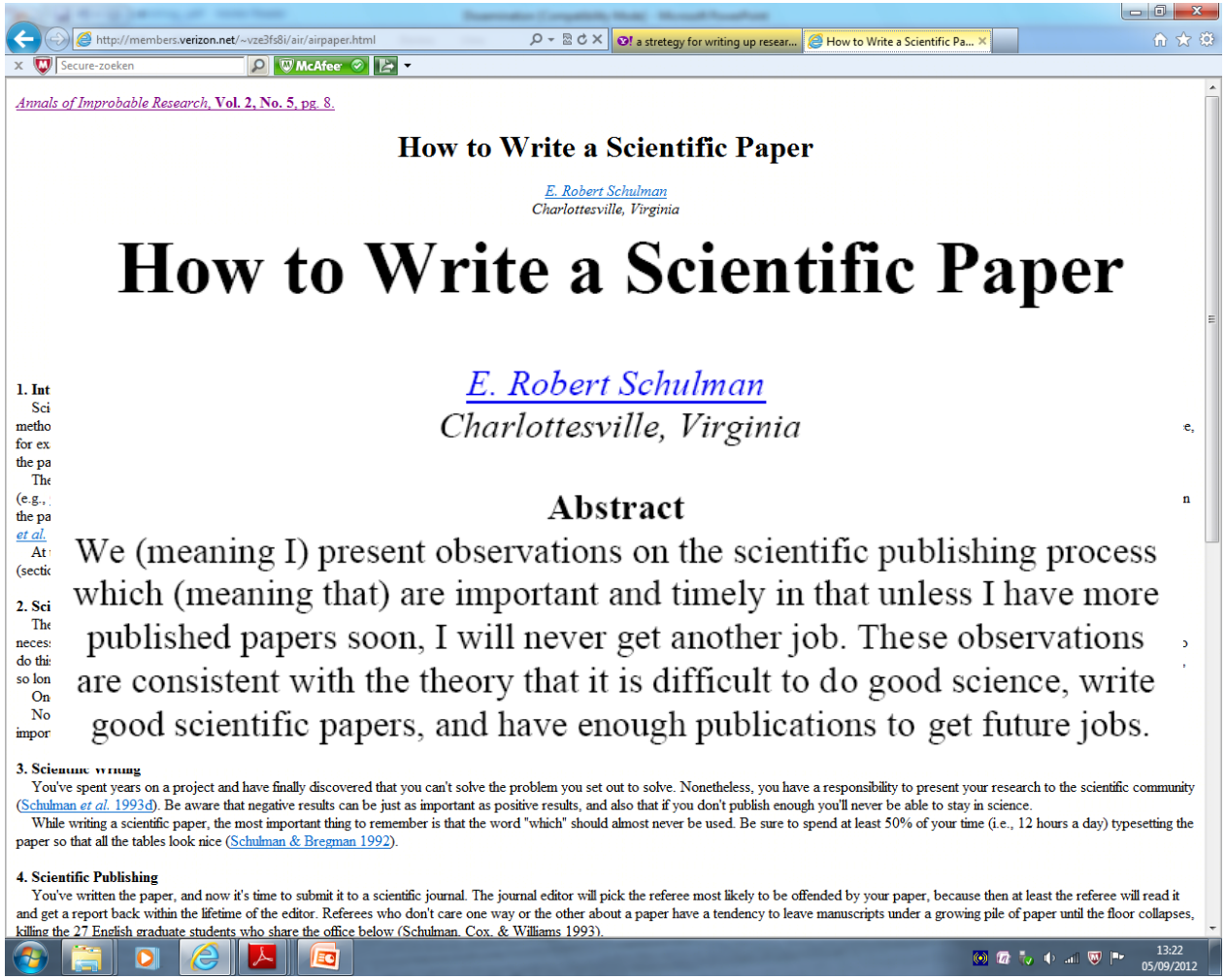
The aim of this course is NOT to learn the writing

There are traditional courses and websites to help...



http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWstrategy.html

… most of which are very useful and some are fun …



Annals of Improbable Research, **Vol. 2, No. 5**, pg. 8.

How to Write a Scientific Paper

E. Robert Schulman
Charlottesville, Virginia

How to Write a Scientific Paper

E. Robert Schulman
Charlottesville, Virginia

Abstract

We (meaning I) present observations on the scientific publishing process which (meaning that) are important and timely in that unless I have more published papers soon, I will never get another job. These observations are consistent with the theory that it is difficult to do good science, write good scientific papers, and have enough publications to get future jobs.

3. Scientific Writing

You've spent years on a project and have finally discovered that you can't solve the problem you set out to solve. Nonetheless, you have a responsibility to present your research to the scientific community (Schulman *et al.* 1993d). Be aware that negative results can be just as important as positive results, and also that if you don't publish enough you'll never be able to stay in science.

While writing a scientific paper, the most important thing to remember is that the word "which" should almost never be used. Be sure to spend at least 50% of your time (i.e., 12 hours a day) typesetting the paper so that all the tables look nice (Schulman & Bregman 1992).

4. Scientific Publishing

You've written the paper, and now it's time to submit it to a scientific journal. The journal editor will pick the referee most likely to be offended by your paper, because then at least the referee will read it and get a report back within the lifetime of the editor. Referees who don't care one way or the other about a paper have a tendency to leave manuscripts under a growing pile of paper until the floor collapses, killing the 27 English graduate students who share the office below (Schulman, Cox, & Williams 1993).

Schulman, E. R., How to write a scientific paper, Annals of Improbable Research, 2 (5), 8, 1996, http://members.verizon.net/~vze3fs8i/air/airpaper.html

Outline

- Set the scene
- Role of dissemination in scientific career
- Audience
  - Perception of audience
  - Role of scientists
- Scientific communication
  - To scientists (Scientific writing)
  - To general public (Science Journalism)

- Example

Role in scientific career

Why we publish?

- Personal
  - Main metric for your work/succes
  - Academic duty
  - Promotion and Tenure/PhD
  - Getting a job
- Department/Faculty/University
  - Funding
  - Getting a “top” statuts
- World
  - Helping science to the next level

Role in scientific career

Publish or perish

So forget about writing to the public?

- Societal obligation to explain what you are doing (***they pay you***)
- Influencing public opinion, proof the importance of your work (***new projects, more money***)
- Intrinsic motivation (***feels good***)

- YOUR CURRICULUM VITAE ?

Role in scientific career

New science output evaluation
ERIC - SIAMPI

ERIC - Evaluating Research in Context
SIAMPI - Social Impact Assessment Methods through Productive Interactions

The aim of SIAMPI is to develop methods for assessing the 'societal impact' of research, focusing on the process by which this impact comes about – the productive interaction between researchers and stakeholders.

Productive Interactions	Social impact	Stakeholder	Assessment tool
Direct, personal	Behavioral change	One-to-one, personal and professional networks	Interviews, focus group
Indirect, media	Uptake, use	Different audiences	Quantitative data collection
Financial or in kind support	Collaboration	Joint projects	Annual reports, other documents

see www.siampi.eu

Audience

Please read this text
1 minute

Huckin and Olsen
Techhnical writing and professional communication for non native speakers

Figure 3-1 ❑ BEGINNING OF AN INFORMAL REPORT BY A NAVAL ARCHITECT
(Used with the permission of J. C. Mathes.)

To: XXXX, Public Relations — December 6, 19xx

From: YYYY, Naval Architect

Y-SHIPS: VESSEL CHARACTERISTICS

I understand Senator Q's Office has requested data on the Y-Ships for use in connection with his participation in launching the PRESIDENT Y-SHIP at Pascagoula, Mississippi.

Following are physical characteristics of these ships:

Length overall	572'-0"
Beam	82'-0"
Depth to Main Deck	45'-6"
Designed Draft	28'-4"
Maximum Draft	30'-7"
Displacement at 30'-7" Draft	21,230 Tons
Cargo Deadweight	10,000 Tons
General Cargo Capacity	770,000 Cubic Feet
Refrigerated Cargo Capacity	48,000 Cubic Feet
Liquid Cargo	40,000 Cubic Feet or 1,000 Tons
Container Capacity (8' x 8' x 20')	144 containers
Passengers Carried	12 in Eight Staterooms
Crew	45

Propulsion: Steam turbine developing 24,000 Horsepower driving a single 22'-6"-diameter five-bladed propeller.

Cruising Speed: 23.0 Knots

Cruising Radius: 11,600 Nautical Miles

PRESIDENT Y-SHIP is the first of a new class of vessels known as the Y-Ships (Design C4–S-69a). The design was developed by ABC Company, Naval Architects, New York, to meet design and performance characteristics and service requirements established by ST Lines for vessels operating on Trade Route Number 17. This route links both the east and west coasts of the United States with the Orient and involves a round trip in excess of 30,000 miles. The 23–knot continuous sea speed capability is optimum for the long ocean legs in this service.

The Y-Ships are notable in several respects. They are the first merchant vessels in the world to be built almost entirely of low-alloy, high-strength steel. The result is a weight saving of approximately 330 long tons, as compared with a similar ship built of conventional shipbuilding steel. This is reflected in an equivalent increase in cargo capacity.

Audience

Please read this text
1 minute

Figure 3-2 ❑ BEGINNING OF AN INFORMAL REPORT BY A SALES ENGINEER
(Used with the permission of J. C. Mathes.)

January 29, 19xx

CGC Boutwell
c/o U.S. Coast Guard Base
427 Commercial Street
Boston, Massachusetts

Attention: Lt. (j.g.) G. L. Cousins

Subject: Clutch to disengage turbine starting pump

Gentlemen:

Thank you for the courtesy extended our representative, Ed Driscoll, on his recent visit aboard the Boutwell, at which time he discussed with you your requirement of the clutch to be used to disengage the turbine starting pump from the main generator engine.

We understand you wish to mount the clutch on a shaft which would be turning 720 RPM, and that the duty of the turbine pump is 117 HP. Based on this, the torque requirement is 853 pound feet, and a clutch having 16.3 HP per 100 PRM is indicated. Twin Disk Model #CL-310 is rated 873 pound feet, 16.6 HP per 100 PRM, and 135 HP normal duty. The #CL-310 therefore would seem to fill the bill quite nicely.

We refer you to Twin Disk Bulletin #326–B, enclosed. On page 10 you will find the description, capacities, etc., of this clutch. You will also note, it is available in 2¼" and 2⁷⁄₁₆" bore. Accessories are described on page 11. Two possible spider drive arrangements are suggested, as described in Figures 2 and 3 on the back cover of the bulletin. The spiders and their dimensions are indicated on pages 18 and 19. We are pleased to quote as follows:

1	XA5752 Model # CL-310 Twin Disk Clutch in standard bore of 2¼ or 2⁷⁄₁₆	$131.20
2	Part #3507 Throwout Yoke	2.25
3	Part #3039 Hand Lever	1.49
4	Part #1144–E Operating Shaft	2.18

Huckin and Olsen
Techhnical writing and professional communication for non native speakers

Audience

Which one you prefer?

What is the difference?

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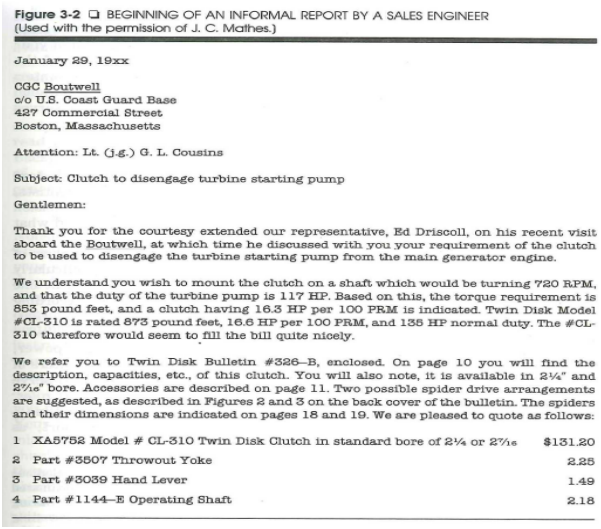

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Huckin and Olsen
Techhnical writing and professional communication for non native speakers

Audience

Examples of audience groups

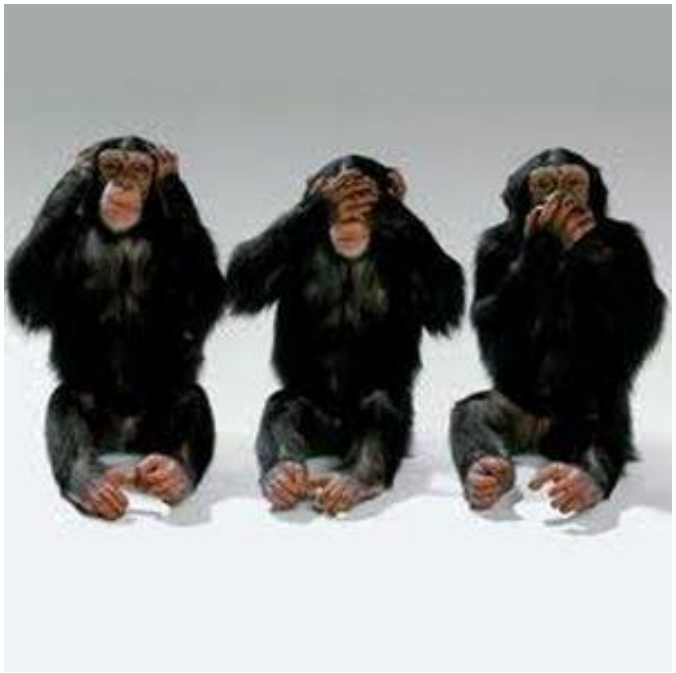
- Peer audience: scientists
- Managerial audience: policy makers
- Nonspecialists audience: general public
- Mixed audience
- ……

Audience

Think to…

- Identify all communication uses and routes
- Identify all possible audiences: current or future
- Identify concerns, goals, values and needs of each audience: the perspectives of the audience
- Make communication appropriate for managers
- Identify each audience's preferences for and objections to the arguments

Audience perception



Are the people opposing scientific findings ignorant?

Think of:

- The evolution debate
- Vaccination debate
- Climate change debate

Note the Google experts ("University of Google")

4 types of audience:
believers, deniers, doubters and apathetic

How objective is science?
How objective is the scientist?

Do scientists have 'privileged' access to the truth?

Prof. Dr. Diederik Stapel and many others...

Hydrol. Earth Syst. Sci., 12, 1087–1096, 2008
www.hydrol-earth-syst-sci.net/12/1087/2008/

Hydrology and Earth System Sciences

Seven rules for researchers to increase their impact on the policy process

E. Mostert and G. T. Raadgever
Delft University of Technology, Stevinweg 1, 2628 CN Delft, The Netherlands

In their article "Water footprints of nations" Hoekstra and Chapagain (2007) discuss the "water footprint" of the different countries of the world and the means to reduce the footprint. The water footprint is defined as the total freshwater volume that is used to produce the goods and services consumed by the population of that country. Contrary to traditional water use indicators, the water footprint includes the "virtual water" (Allan, 2003) that is embedded in the goods and services that are imported or exported. Using some simplifying assumptions, the authors calculate the global average water footprint to be 1240 m3/cap/yr, ranging from a mere 700m3/cap/yr for China to 2480 m3/cap/yr for the USA. The means to reduce the water footprint discussed in the paper are 1) more water efficient production methods, 2) changes in consumption patterns (e.g. less meat), and 3) moving production to regions where water efficiency is higher.

How objective is science?
How objective is the scientist?

- Scientists are not objective
- Science is much more messy than suggested by publications
- "Facts" do not decide scientific controversies
- Researchers make choices what to include and exclude and how to deal with uncertainty
- Research reflects values and background

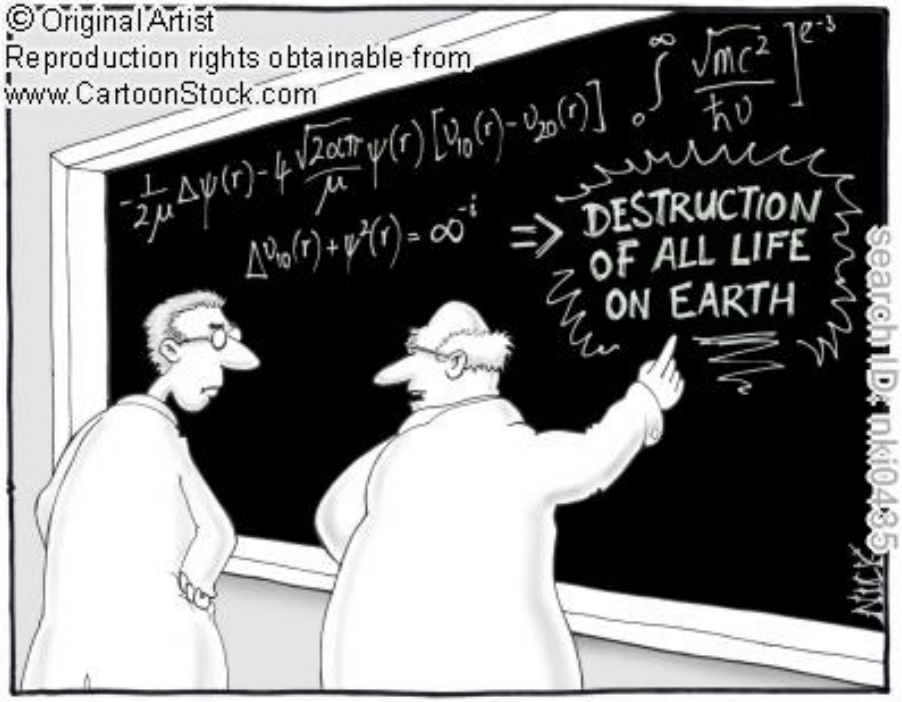
Mostert en Raadgever (2008)

and your audience knows!

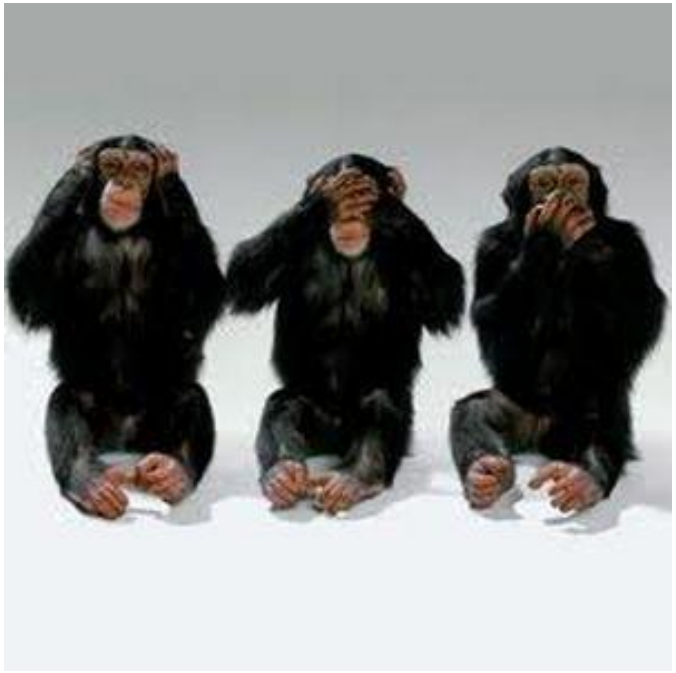
Scientists and audience

Scientists are not objective (but we do our best to be…)

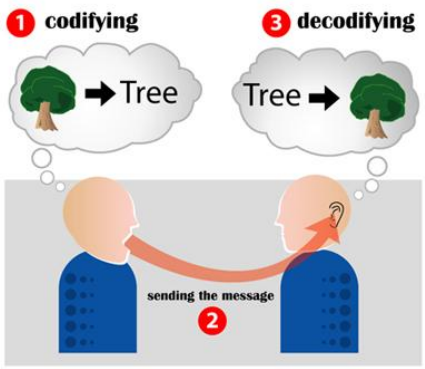
Public is unbiased nor ignorant



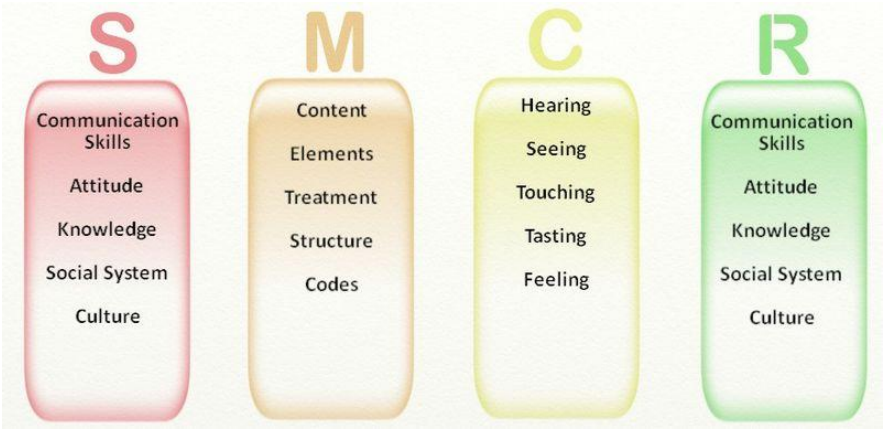
"This isn't a BREAKTHROUGH, Colbert! This is CIRCULAR REASONING! All you've done here is re-state our original objective!"



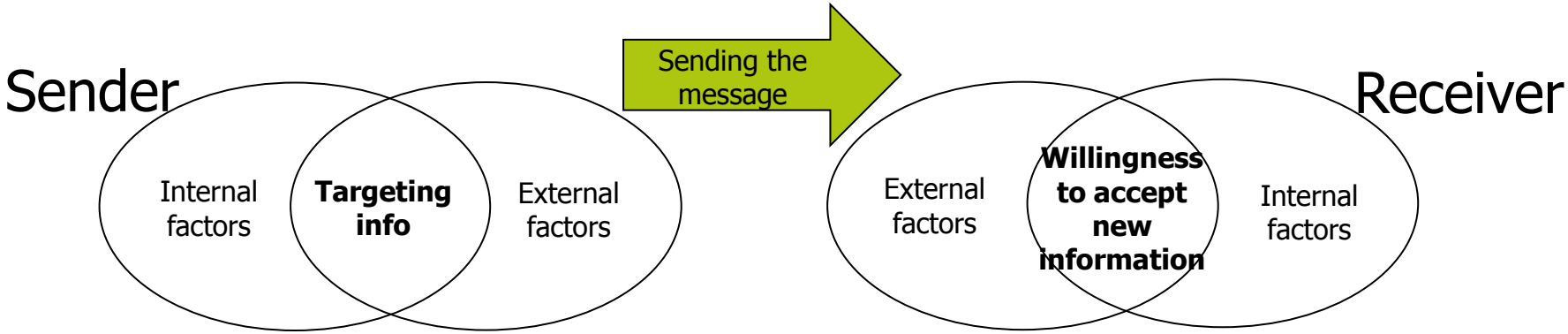
Communication models



Encoding communication

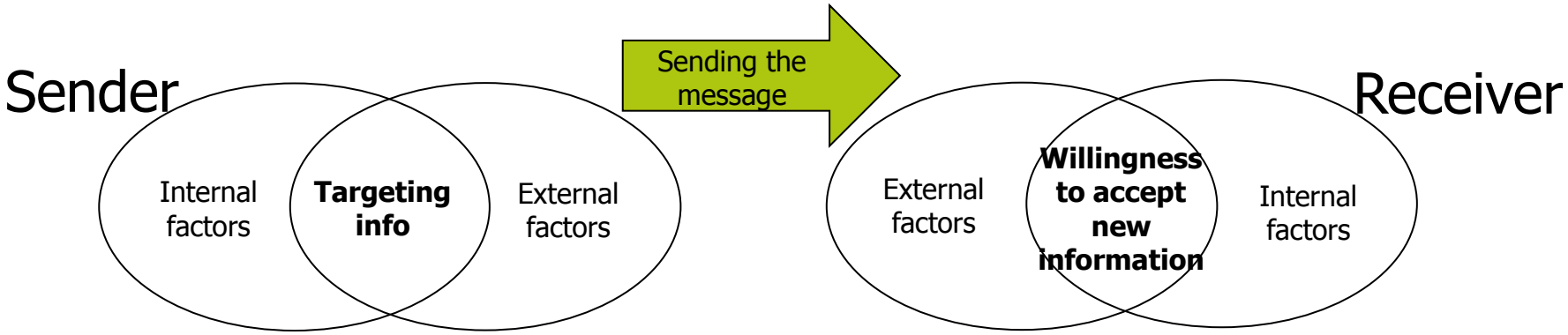


Berlo's Sender-Message-Channel-Receiver Model of Communication



Duggan, F. and Banwell, L. (2004). Constructing a model of effective information dissemination in a crisis *Information Research*, 9(3) http://informationr.net/ir/9-3/paper178.html

Psychological dimensions in communication



Trust and credibility (conspiracy)

> Wynne, 1992: Misunderstood misunderstanding

Effect of framing (e.g. numbers)

and so on…

Outline

- Set the scene
- Role of dissemination in scientific career
- Audience
  - Perception of audience
  - Role of scientists
- Scientific communication
  - To scientists (Scientific writing)
  - To general public (Science Journalism)

- Example

Essential Messages

Your audience wants the answer to:

- What is the problem?
- What are you going to do about it?
- How will you achieve that?
- How will that help us?

Scientific writing

Always, 3 things

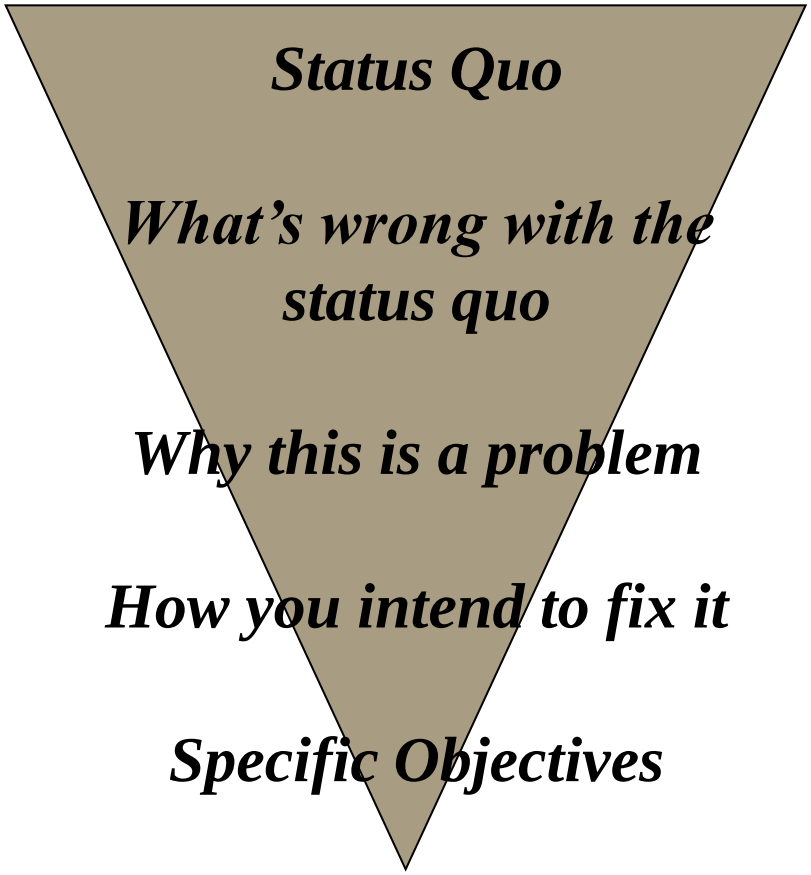
- What's the status quo?
- What's wrong with the status quo?
- How does your work go beyond the status quo?

➔**Remember this structure for every paper you write!**

Scientific writing

Introduction

…as an inverted pyramid



# of references increases

Very general References

Very specific references

PS-03 Communication in Padua by Erik Peters

Elevator Pitch Example Alert Solutions (inverted pyramid)

There are 7 billion people on this planet. 50% live in cities. By 2050 the population will have increased to 9 billion of which an astonishing 70% will live in urbanized areas.

Cities are located near water; rivers, delta's and seas shore. These are at risk of flooding. Climate change will make floods a more frequent event.

To maintain safety we need to improve our flood defences.

Alert Solutions has developed a monitoring system that provides a real time insight into the stability of dams, dikes and levees.

This will allow us to build and improve flood defenses where and when necessary. Experience in The Netherlands shows that 80% of planned dike reinforcements can be optimized in time and size.

Thereby saving public spending, while at the same time achieving more safety.

This is adapting to climate change, the smart way.

Scientific writing

A scientific paper tells a story!

- You need a problem or something to catch the reader's attention
- You need a plot
- You need resolution of the problem at the end of the story

Writing approach

A topdown approach

- Start with a story board approach
- Develop an outline with headings and subheadings
- Iterate on this many times, adding sub-sub-headings
- Identify key figures to tell the story
- Fill in the outline further
- Make writing assignments to co-authors
  - A divide and conquer approach
- Do not start any writing until
  - the outline is rock-solid,
  - figures are made
  - Subheadings = paragraph topics

Scientific journalism

rocess of science needs to be

rienced the quiet
of the newsroom
. My colleagues felt
ıed papers without
r critical comment:
ntists said.

t exactly a descrip-
re that of a priest,
source of authority
ıe congregation.
forced when you
of other journalists.
nple, take an active
hey produce expert
ties of the political
ıgths, weaknesses
y ideas. They inter-
hallenging
and,
on
-

Alongside this is a

ELD

Scientific journalism

Why science communication?

- Democratic perspective
- Economic perspective
  - Public: tax
  - Private: valorisation
- Social-cultural perspective
- Infotainment
- Profiling institute, your research (important!)

Scientific journalism

Key elements of science journalism

- requires a more than average knowledge of science field
- requires a lot of explaining
- requires understanding of jargon (when reading original papers)
- requires understanding of process of scientific research
- requires different use of balance
  e.g. Climate change
- Is helped/bound by the embargo system
  Pro: time for in-depth coverage
  Con: lazy reporting, no scoops

Scientific journalism

Main actors

- Researchers
- Science information officers
- Science journalists
- Public

Who are science journalists?

- Former scientists
- Graduates science communication
- Specialized journalists

Scientific journalism

One of the main differences between *scientists* and journalists is the **audiences** they play to. Scientists care first and foremost about impressing their peers, while one of the main standards used by *a newspaper reporter* to assess a story's newsworthiness is "Why would my grandmother care about this?"

This disconnect between the two audiences - one highly expert and highly critical, the other non-expert and mostly in search of interesting and entertaining information - often leads scientists to ignore the other **golden questions of journalism: "who, why, what, where, how, and so what?"**

- Mike Hopkin, Nature News reporter

Scientific journalism

About science journalism students

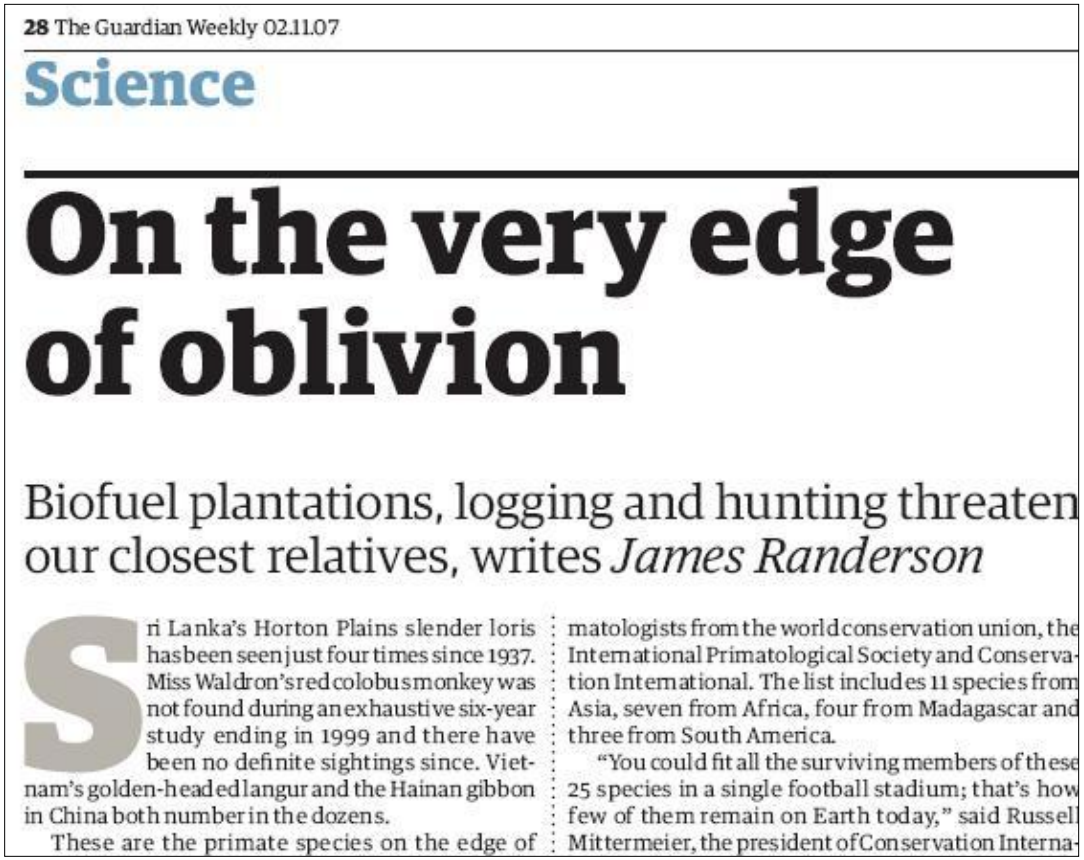
"Those who fail share a single characteristic. They prove unable, despite great effort, **to empathize with non-scientist readers**."

John Wilkes, director science communication programme UCSC
EMBO Reports, 2002

Scientific journalism

- **Inform**
- **Alert**

Structural elements



28 The Guardian Weekly 02.11.07

Science

On the very edge of oblivion

Biofuel plantations, logging and hunting threaten our closest relatives, writes *James Randerson*

Sri Lanka's Horton Plains slender loris has been seen just four times since 1937. Miss Waldron's red colobus monkey was not found during an exhaustive six-year study ending in 1999 and there have been no definite sightings since. Vietnam's golden-headed langur and the Hainan gibbon in China both number in the dozens.

These are the primate species on the edge of matologists from the world conservation union, the International Primatological Society and Conservation International. The list includes 11 species from Asia, seven from Africa, four from Madagascar and three from South America.

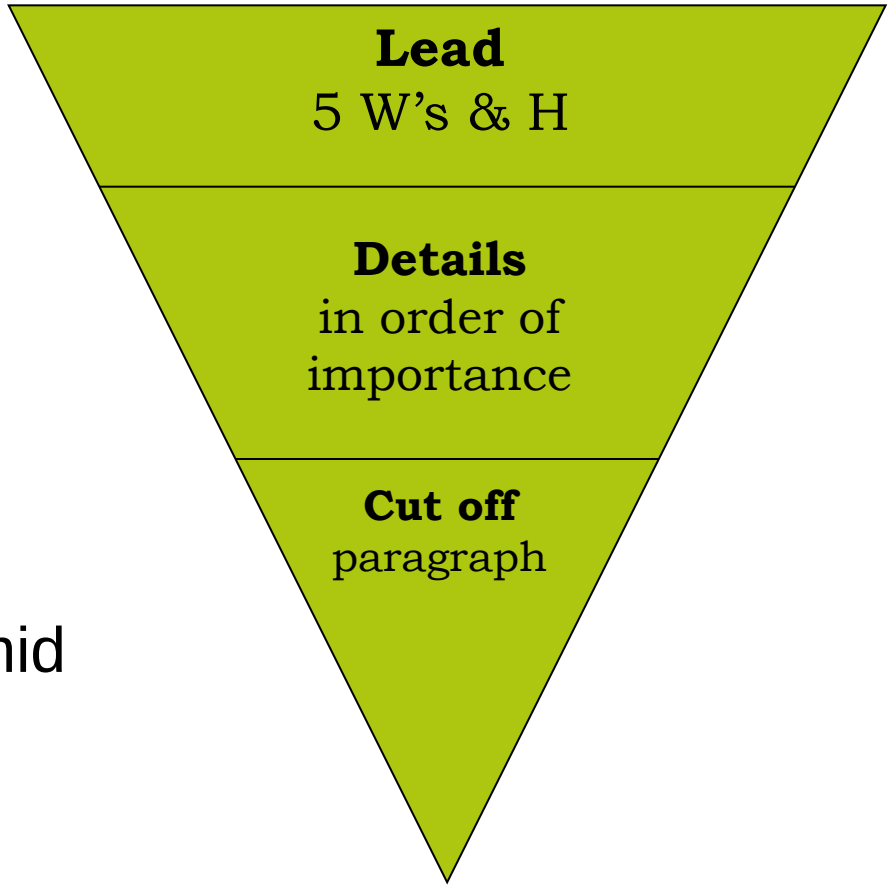
"You could fit all the surviving members of these 25 species in a single football stadium; that's how few of them remain on Earth today," said Russell Mittermeier, the president of Conservation Interna-

- Headline
- Lead
- Intro
- (nut graph)
- Paragraphs
- Subheads
- Sidebars, boxes, illustrations
- Streamers
- Kicker

Scientific journalism

Writing news reports

- 5 Ws & H:
  - Who
  - What
  - Where
  - When
  - Why
  - How
- Upside down pyramid



Scientific journalism

How 'reliable' is (science) journalism?

85% of news articles come uncensored from press releases! *(Nick Davies:Flat Earth News)*

Churnalism

http://www.pbs.org/mediashift/2011/11/why-the-world-needs-better-science-journalism333.html

Scientific journalism

Churnalism is a form of journalism in which press releases, wire stories and other forms of pre-packaged material are used to create articles in newspapers and other news media in order to meet increasing pressures of time and cost without undertaking further research or checking.
Churnalism has increased to the point that many stories found in the press are not original. The decline of original journalism has been associated with a corresponding rise in public relations.

http://en.wikipedia.org/wiki/Churnalism

Scientific journalism

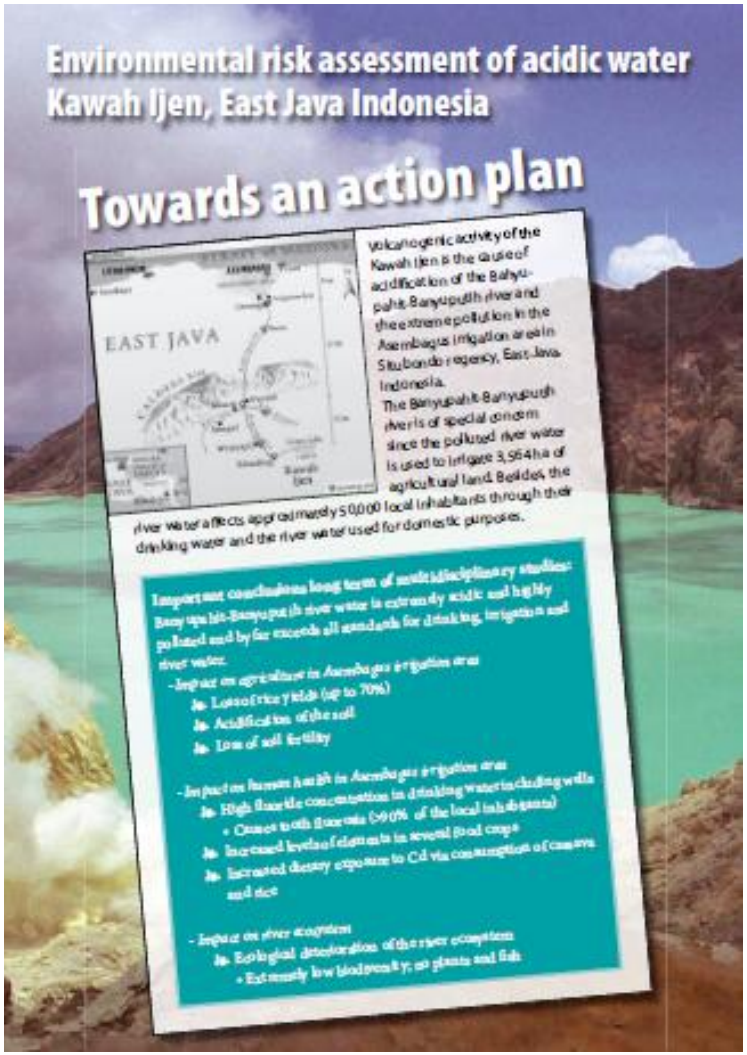
Developments in science journalism

- ‘Only’ translating the jargon
- Notion of influence of uncritical churnalism of scientific results on society
- From cheerleaders to watchdogs
- More attention to the process of science

Example Kawah Ijen natural pollution

For whom we wrote this?

Why did we write this?



JangAn LAkukaN !

Yang HaRuS diLAkukaN

Bulan	Tindakan
[illegible]	[illegible]
Juli s/d September	Pendidikan Lingkungan
April & Oktober	Waspada
Maret & November	Bahaya
[illegible]	[illegible]

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Kota Mungkid
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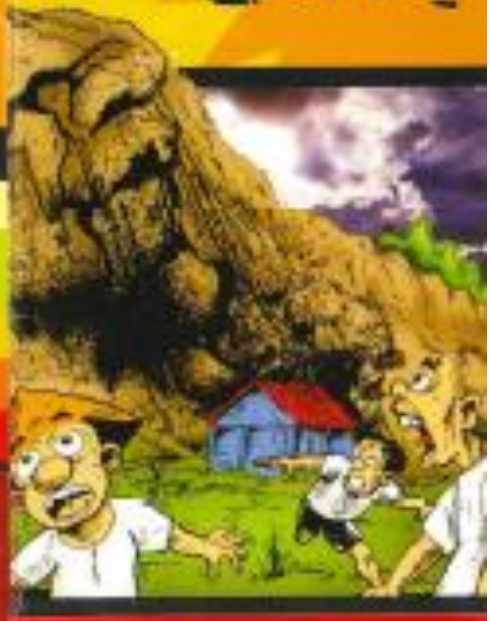
PENCEGAHAN DAN PENANGGULANGAN BENCANA ALAM TANAH LONGSOR

AWAS LONGSOR !



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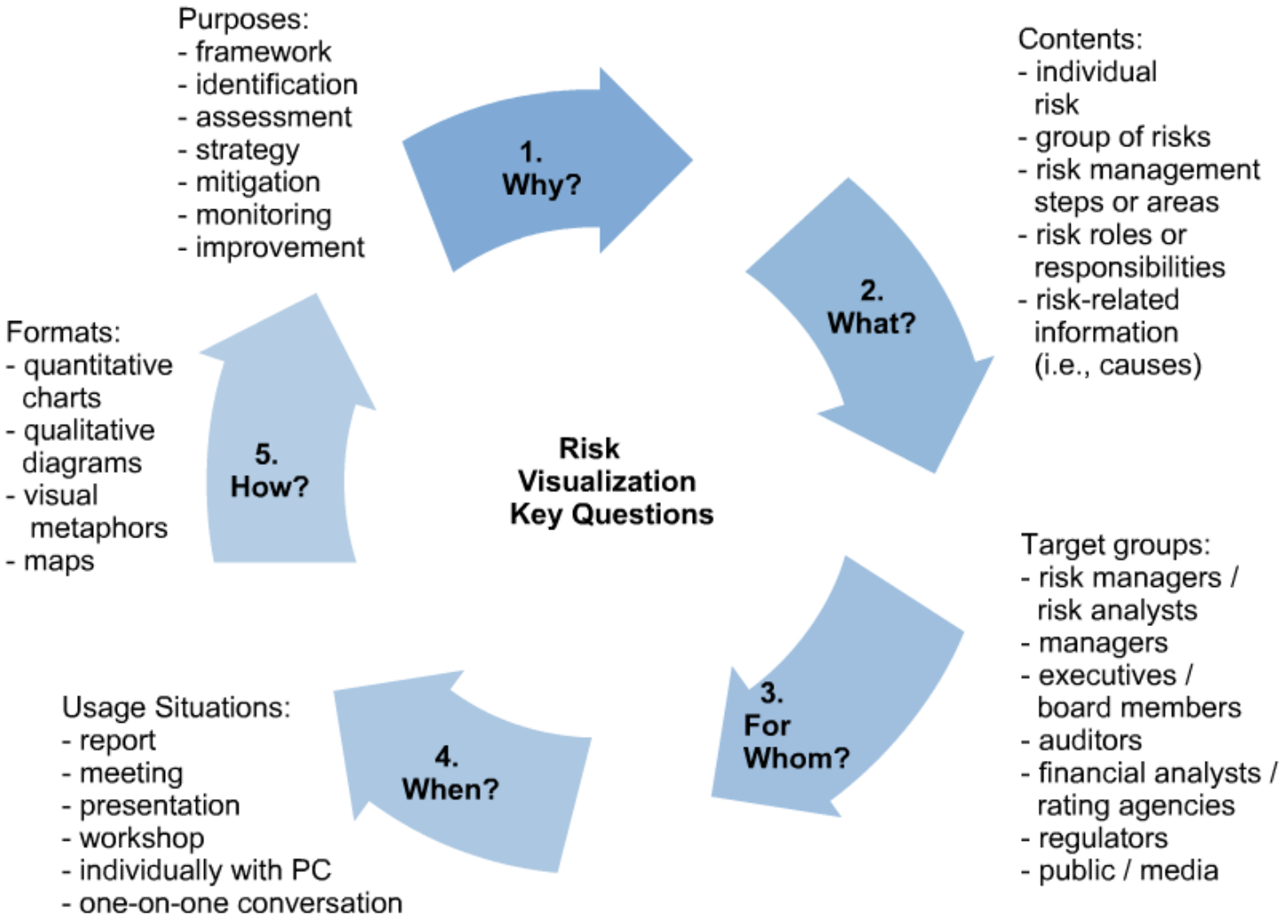
Perhatikan !
WASPADAILAH
Tindakan
Segera
Bahaya
Awas

Change text in this figure: scientific dissemination



Marie Charriere, 2011/2012

Summary

In a nutshell:

- Effective communication of science to the public requires understanding that most learning occurs outside of the classroom and is influenced by learners' interests, prior knowledge, social networks, and values/beliefs
- A "deficit model", which assumes that public perceptions of science controversies are rooted in ignorance, is not effective for communication; instead, scientists need to "frame" issues in ways that resonate with the public
- New communication tools and social science research can help scientists to interact with the public more effectively

SCIENCE, COMMUNICATION, AND CONTROVERSIES

Restarting the conversation: challenges at the interface between ecology and society

Peter M Groffman[1*], Cathlyn Stylinski[2], Matthew C Nisbet[3], Carlos M Duarte[4], Rebecca Jordan[5], Amy Burgin[1], M Andrea Previtali[1], and James Coloso[6]

Take Home Message
(for all writing/communication)

Take the Reader's perspective

Ask yourself why 'the receiver' wants to spend time on your information

Start with listening

Analyze the stakeholders and issues at stake

Knowing your audience