

# *Communicating Science*

*APVMA Science Fellows Symposium*

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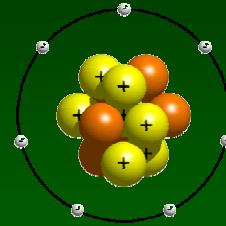
THE AUSTRALIAN NATIONAL UNIVERSITY

# Centre for Public Awareness of Science (CPAS)



# Grist for our mill...

Science



Medicine



Technology



Engineering



# Research/ practice - Lamberts

Mental illness communication in the lay community

Using Visual art in the Murray-Darling Basin to facilitate Environmental conversations

Science Communication advisor to UNESCO, Pacific

Consultancies with

Defence

CSIRO

ANU

# Grad research at CPAS

*Heroes in Science - public images, inspirations and impacts*

*Science Communication Capacity Building Needs for Pacific NGOs: a response to the new strategic direction for UNESCO*

*Scientists & Science Communication: An Australian Survey*

*Involving the Public in Prioritising Research*

*Longitudinal Study: Climate Change Communication and Intersect with Policy (1987-2001)*

*Global Approaches to Local Issues: UNESCO's Man and the Biosphere Programme - a Multilateral Instrument for Natural Resource Management*

*Visualising Science: The Use of Interactive Multimedia in the Communication of Science*

# CPAS Teaching

## Undergraduate

*Science & Public Awareness*

*Social Research Methods*

*Practical Skills for Communicating Science*

*Science in popular fiction*

*Science, Risk and Ethics*

*Science in the media*

## Postgraduate

Grad Certificate

Grad Diploma  
'science circus'

M.Cont.Sci

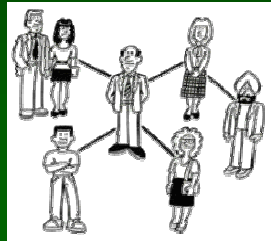
MSc

M.Phil

Ph.D

# Emphasis on science in context

Social



Legal



Political



Ethical



Economic



Cultural



Emphasis on science in context

Communication

# Some core elements of science communication

# Public Understanding of Science

AKA – the 'PUS' movement

Spawned by an article of the same name in  
*Nature* in 1989



# The Deficit Model

Education =

*motivation*

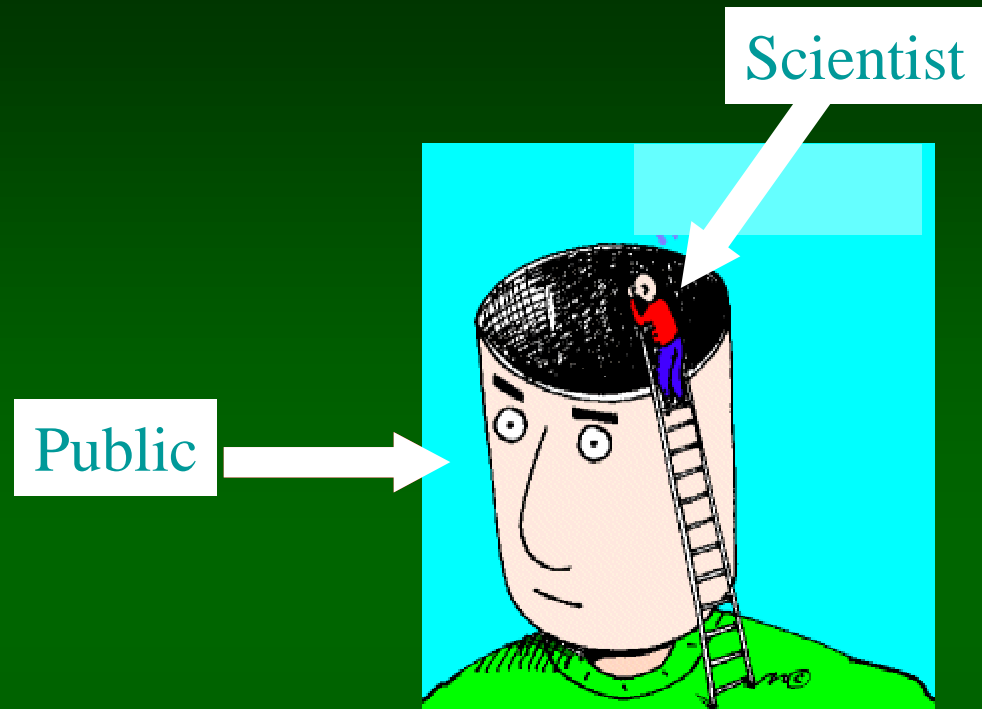
*inspiration*

*attitude change*

*behaviour change*

Science knowledge privileged  
above all other

Expertise = formal, scientific  
qualifications



# Public Science Literacy

Science literacy-raising in the broader public arena  
**does not work**

BUT...

Facilitating the availability and possibility of  
engagement with science can

# Public awareness

knowing science is out there and how to get it



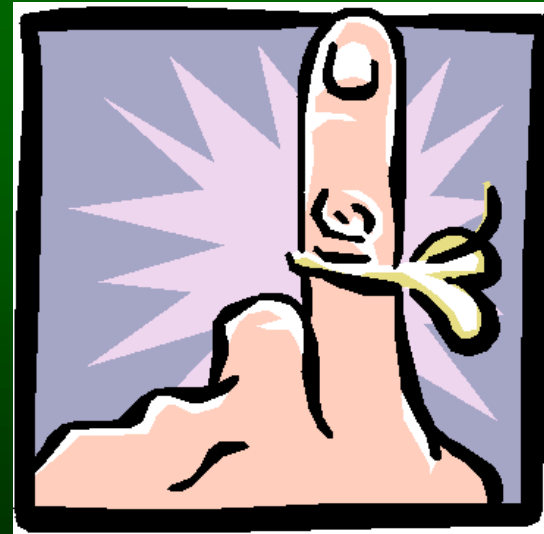
# Public engagement

a sense of ownership and entitlement to science and its products

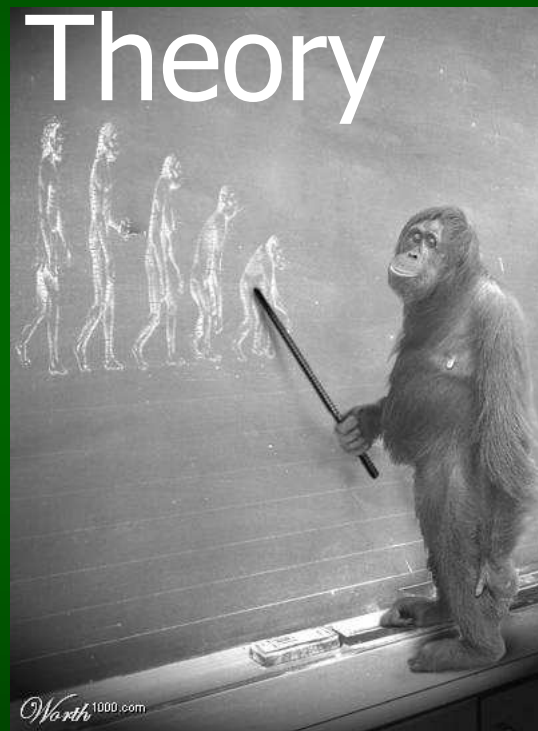


# Know your audience

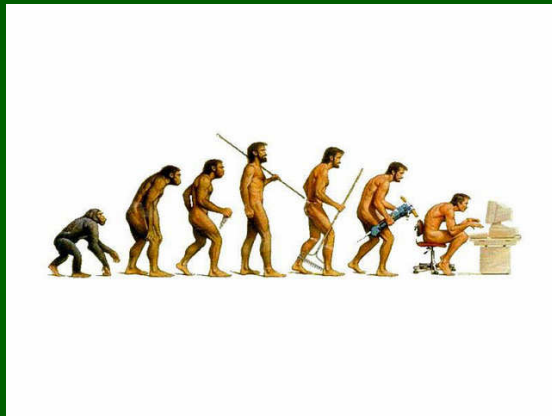
(Communication 101)



# Jargon



# Jargon



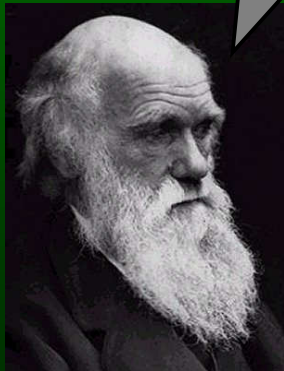
Evolution



Intelligent design

# Jargon

evolution is a well established, long-standing scientific theory



scientists still admit  
it's only a theory



# Jargon



# Relevance

Why would people care about your science?

What's in it for them?

How can they use what you want to tell them?

**Don't assume you know what's relevant**

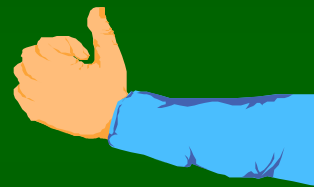
# The facts

What exactly are “facts”?  
(and to whom?)

How are “facts” best presented/represented?  
(and to whom?)

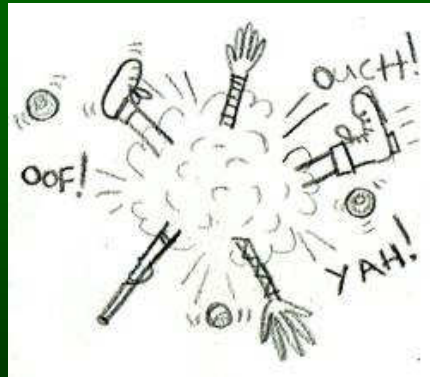
Who should decide?  
(and on what should the decisions be based?)

# Expertise & Trust



# *Interesting times*

*Expertise has never been so indispensable, while being simultaneously so hotly contested*



# *Mental Illness Information Survey*

Top 10 most popular categories of mental illness expert  
(n = 671)

<u>Expert</u>	<u>Frequency</u>
Psychiatrists	505
Psychologists	412
Doctors (non-specialists and GPs)	291
Counselors	127
Social Workers	94
Consumers	71
Family Members	42
Specialists	33
Friends of consumers	31
Researchers	30

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# *Mental Illness Information Survey*

We are comfortable with contradiction

Saying experts know almost all there is to know about mental illness

But wouldn't necessarily trust **these same experts** to look after them if mentally ill

# ***Trust in expertise can be taken too far...***

Tertiary qualifications and experience in  
science communication and psychology  
equals....



**Renewable energy expertise!**

# Risk Communication & Perception

# ***Three primary goals – risk communication***

Increase knowledge and understanding

Enhance trust and credibility

Enhance dialogue to resolve disagreements



# ***Characterising Risk***

Risk conceived of/ dealt with in 3 fundamental ways

## **Risk as feelings**

Fast, instinctive, intuitive reactions to danger

## **Risk as analysis**

Logic, reason, scientific deliberation and management of hazard

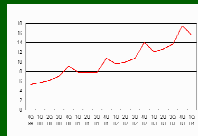
## **Risk as politics**

When the first two clash

# Assessing risk...

Technically

RISK = Probability x consequence



=



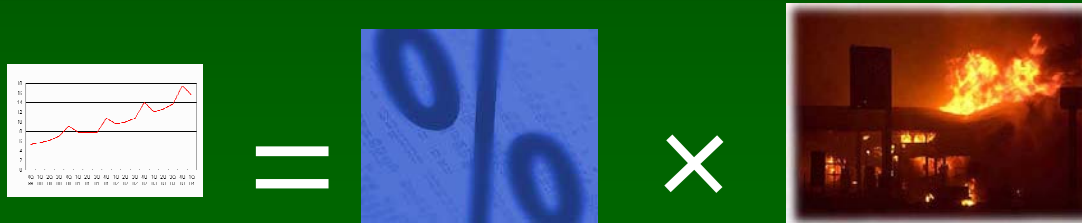
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# Assessing risk...

## Technically

RISK = Probability x consequence



## Socially

RISK = Hazard + Outrage



# Risk Acceptability

*Public belief in the acceptability of a risk is often influenced by perception of the size and controllability of the danger rather than the probability that individuals will be affected*



Year	7%	8%	9%	10%	11%
1	1,239	1,245	1,251	1,257	1,262
5	7,159	7,348	7,542	7,744	7,952
10	17,308	18,295	19,351	20,484	21,700
15	31,696	34,604	37,841	41,447	45,469
20	52,091	58,902	66,789	75,937	86,564
25	81,907	95,103	112,112	132,683	157,613

Rates of return are nominal and compounded monthly. For illustration purposes only. Does not represent performance of any actual investment. Actual results will vary. Does not take taxes into account.



## ***Risk comparisons***

### **Better risk**

Voluntary

Own control

Clear benefits

Fairly distributed

Natural

Statistical

Trusted source

Familiar

Adults

### **Worse risk**

Imposed

Other control

Little or no benefit

Unevenly distributed

Human made

Catastrophic

Untrusted source

Exotic

Children

# Communicating science with lay – audiences (aka 'the public')

A few suggestions

Identify and research your audiences

Set clear goals for your communication activities

Do this in the context of the issues

*Don't be surprised or alarmed  
differences exist, especially if there has been  
minimal dialogue between parties.*

# *Research priorities*

Depression consumers

Depression researchers

Side effects



Drug effectiveness

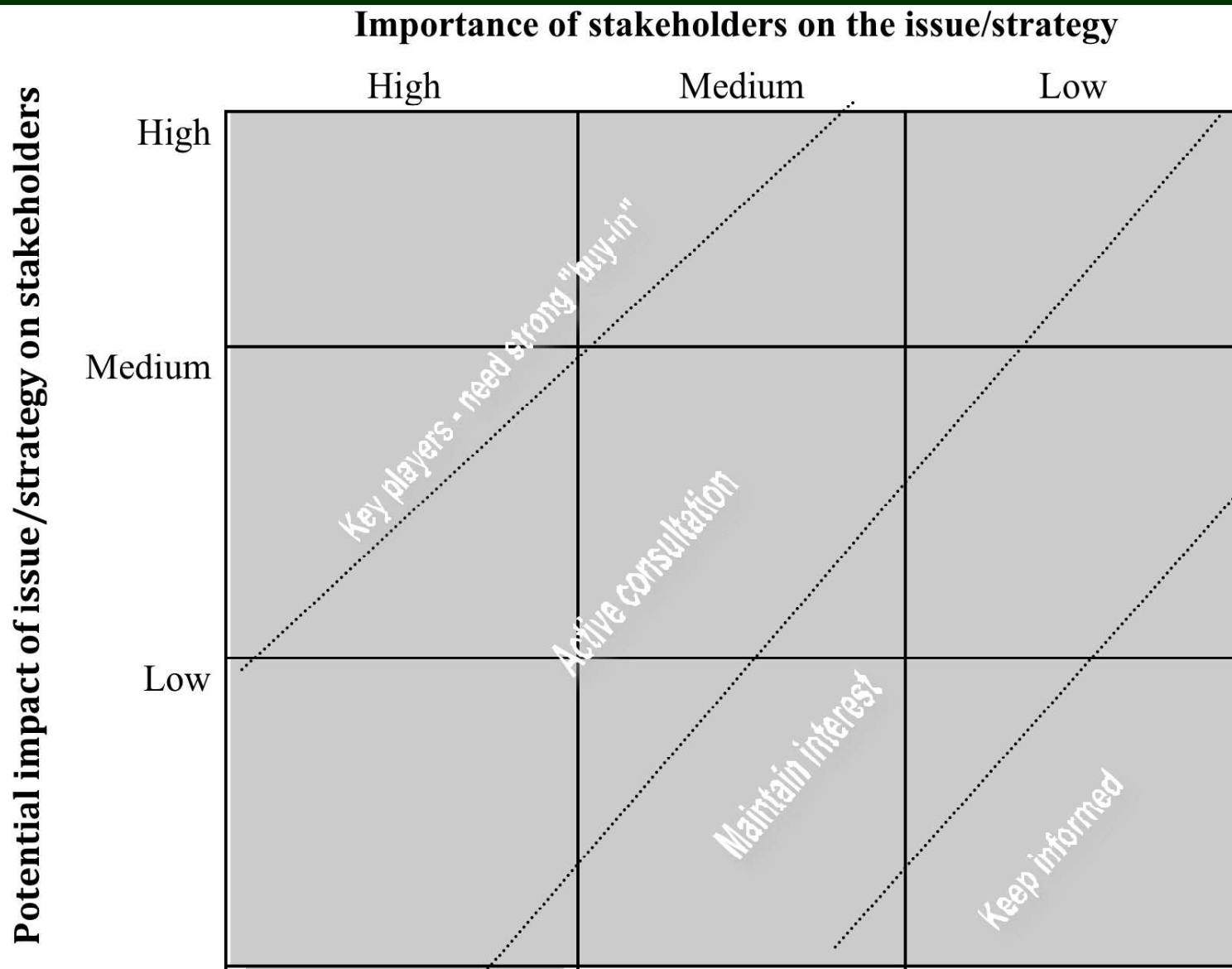
## *Hazard plus outrage*

If experts and lay people disagree on an assessment of risk...

There is a much higher chance of controversy and therefore lower chance of agreement



*OK – I want to start communicating*



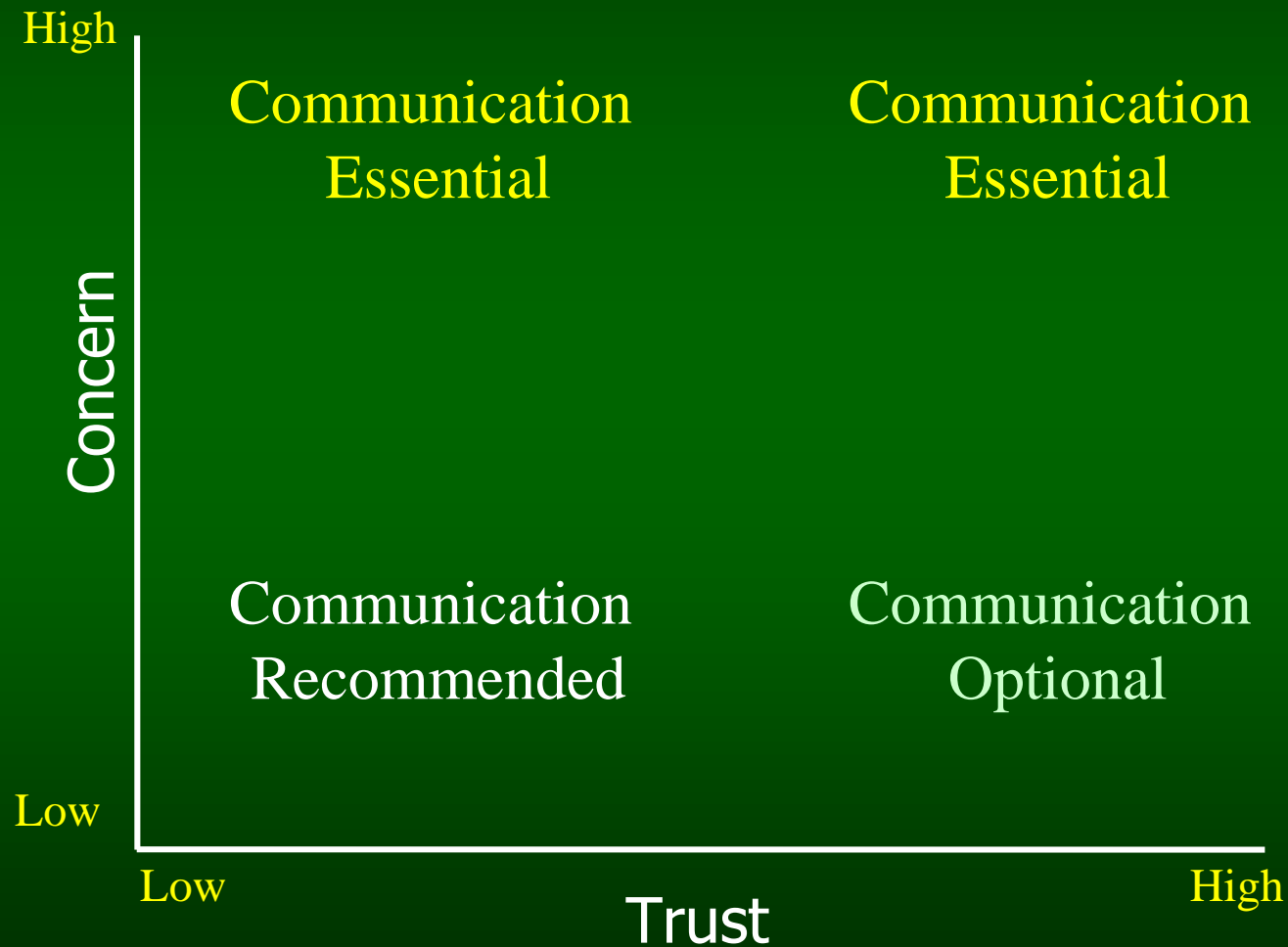
# ***Characterising differences between “us and them”***

Differences in **values** and life experiences

Differences in **understanding** of the research process

Differences in **access** to decision-making structures

# *Risk communication, trust and concern*



# *Broad comm's categories – Sci Comm*

*Deficit model*



*Contextual models*



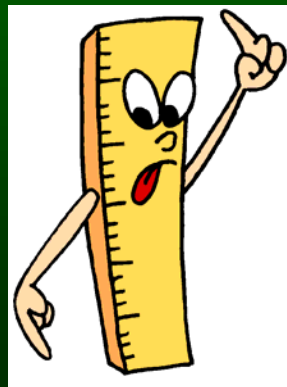
*Lay expertise models*

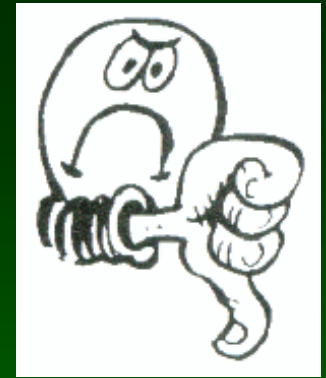


*Public participation models*

\*From: Lewenstein, B (2003) Models of public communication of science and technology.  
<http://communityrisks.cornell.edu/BackgroundMaterials/Lewenstein2003.pdf>

*We must treat efforts to be more inclusive and representative as provisional, **themselves subject to evaluation** and revision*





Do too much at once

Try to raise science literacy for its own sake

Assume facts alone will change attitudes or behaviours

Patronize people

Make assumptions (about expertise, evidence & audiences in general)

Pay attention to context

Clarify goals of communication

Collaborate & 'dialogue with' desired communication partners

Match topics, audiences and modes of communication

Evaluate communication efforts

Get professional social research and communication advice



*Without this, science communication  
is little more than evangelism*

