

Non-scientific rationality in risk/crisis communication

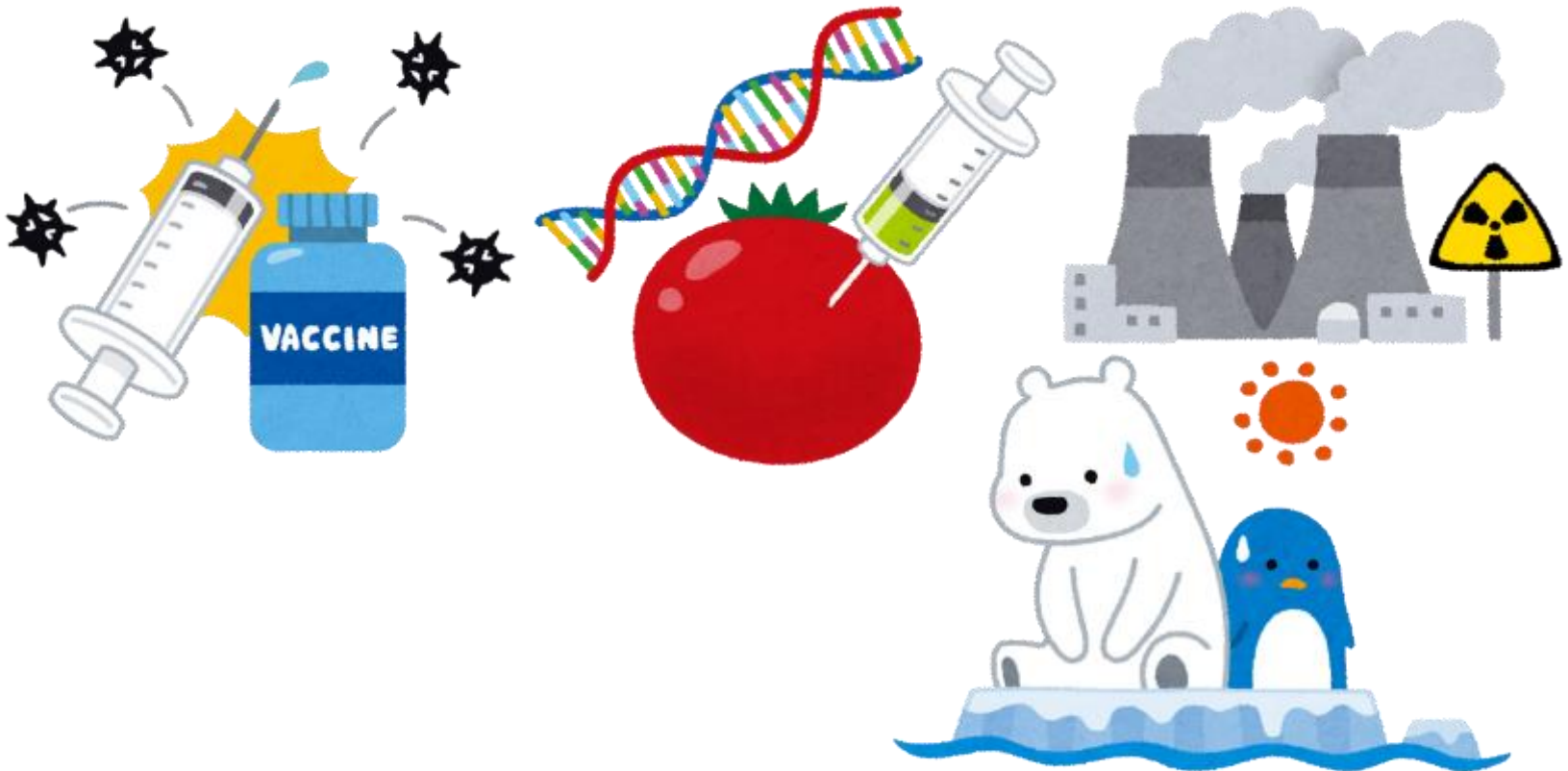
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COI disclosure

This presentation is not related to any company with
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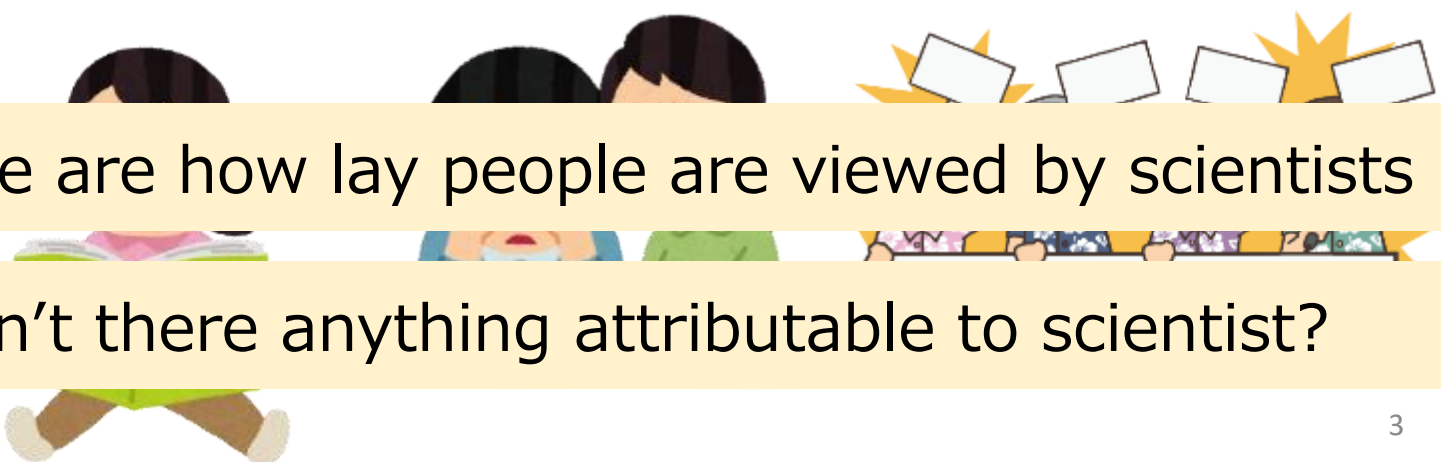
Universal question among scientists

Why is it difficult to communicate some kinds of science with people?



All-too-common answers

- Lay people do not understand science and logic
Using plain words and visualising
- People are too emotional to accept scientific facts
Sympathy and politeness
- People's view are biased by interests and ideology
It's no use talking with such people

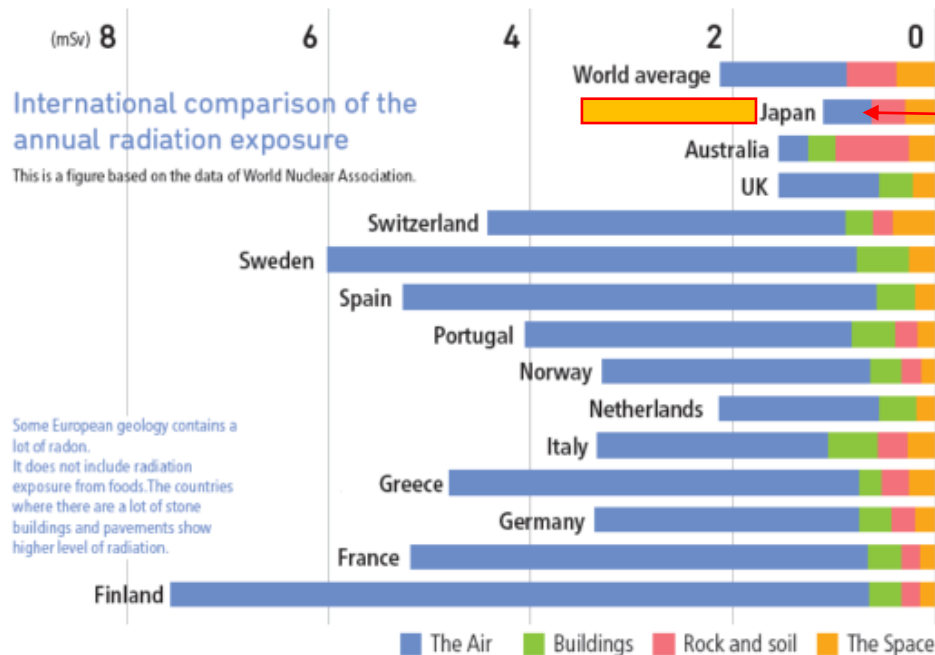


These are how lay people are viewed by scientists

Isn't there anything attributable to scientist?

Radiation risk in Fukushima

It is unlikely that incremental radiation exposure increases cancer risks among residents in Fukushima



+ 2mSv/year at maximum

‘My neighbors were diagnosed as cancer after the accident. I don’t understand why you say cancer is NOT increasing’

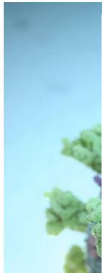
In CoVID-19 pandemic..

Up to now, there is no silver bullet for CoVID-19.
Preventive medication may do more harm than good.

PHARMACEUTICALS

From Avigan to remdesivir, hopes run high for coronavirus drugs

Scientists warn even repurposed medications will take time to show efficacy



Health > Coronavirus

Trials with breakthrough drug dexamethasone at Chesterfield Royal Hospital could save lives of Covid-19 patients around world

The dedication and persistence of a small research team at Chesterfield Royal Hospital could help save lives around the world amid the Covid-19 pandemic.

By Tim Paget
Thursday, 25th June 2020, 10:55 am
Updated Thursday, 25th June 2020, 10:56 am

University Hospital Ghent Sees Remarkable Results from Administering Convalescent Plasma on Severe COVID-19 Patient

APR 25, 2020 | BELGIUM, CONVALESCENT PLASMA, CORONAVIRUS, COVID-19, GHENT, LEADING SITES, PLASMA, SITE SUCCESS, SITE WATCH, UNIVERSITY HOSPITALS, UZ GHENT

‘There are *many* reports about successful treatment.’
‘A famous person actually got preventive medication.’

Discrepancy in facts

Preconception:

Sound statistics would reduce anxiety among the resident

Correct information would help people understand risks

But...

There is a gap between scientists & residents about

what is *sound*

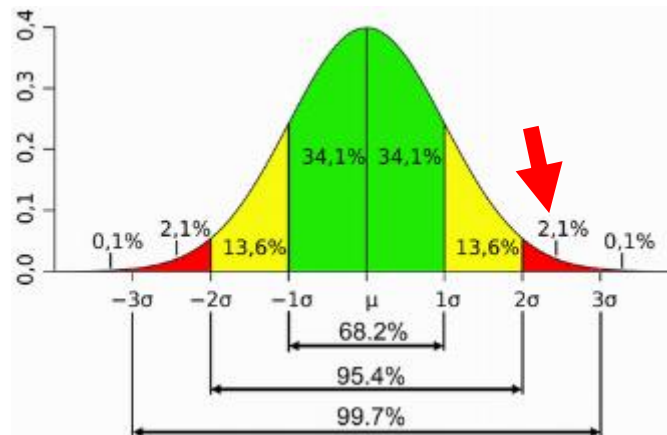
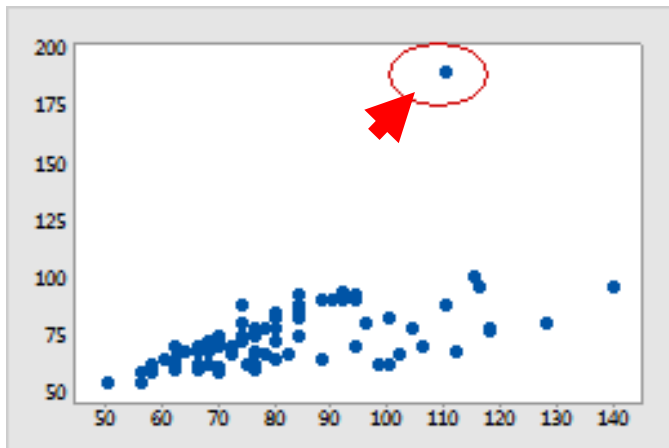
what is *correct*

‘Why are academic papers more reliable than a person’s actual experience?’

Gap in 'sound' facts

- Scientists usually excludes 'outlier'
A case report is weighed less on than cohort studies
- People rely much on personal experience
'My neighbors are diagnosed as cancer'
- Mass media reports outlier

'Dog Bites a Man' is not news. 'Man Bites a Dog' is news.
Still, both are 'sound information'



Eating wild meat in Fukushima

Radiation exposure levels we get by:

- Eating one portion of wild boar with 2000Bq/kg of cesium
 - An hour trip by plane
- are almost the same.



How dare you encourage people to get cancer!

Preventive actions against CoVID-19

There are risk trade-offs of preventive actions:

- Wearing masks all the time may increase risk of heat attack
- Prohibiting play equipment may deteriorate children's development



How can you take responsibility if my child is infected!

Life and science are different

Preconception:

Risk comparison can help people understand risk trade-offs and accept risks.

Risk selection is not a question of mathematics

'I understand statistics, but I cannot stop wishing zero-risk for my child.'

'I eat products in Fukushima not because they are safe, but because they are tasty.'

Gap in risk comparison

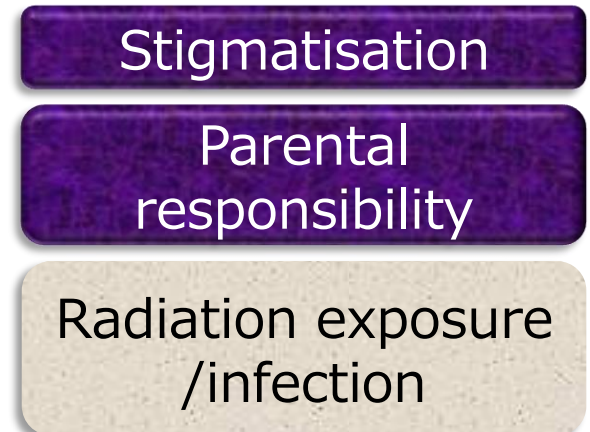
Scientists show balance of risks as measurable
People put a lot more on the balance

Risk of staying at home



Stay home

Risk of going out



Size of the risk are different from person to person

Some people pursuit fan *at all costs*



Little evidence exist about how to communicate benefits in risk/crisis communication

Do you eat contaminated food?



Eating 1lb of mushroom contaminated with 100,000 Bq/kg of cesium is equivalent to about 0.9 mSv of radiation exposure

→ Less than taking a CT scan

But you may be glad if your children do not like truffle or *matsutake* (\$1000/kg)

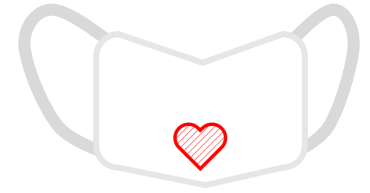


Eating while knowing the risk of radiation exposure
Avoid eating from fear of radiation

→ Both are reasonable choice.

But persuading or compelling others to eat is against the rule.

Do you wear a mask?



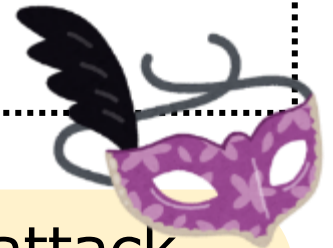
You can prevent droplet and contact infection

You may avoid a risk of infecting others

But

People with respiratory disease may stifle

There is a risk of heat attack in summer



Wearing a mask while knowing risk of heat attack

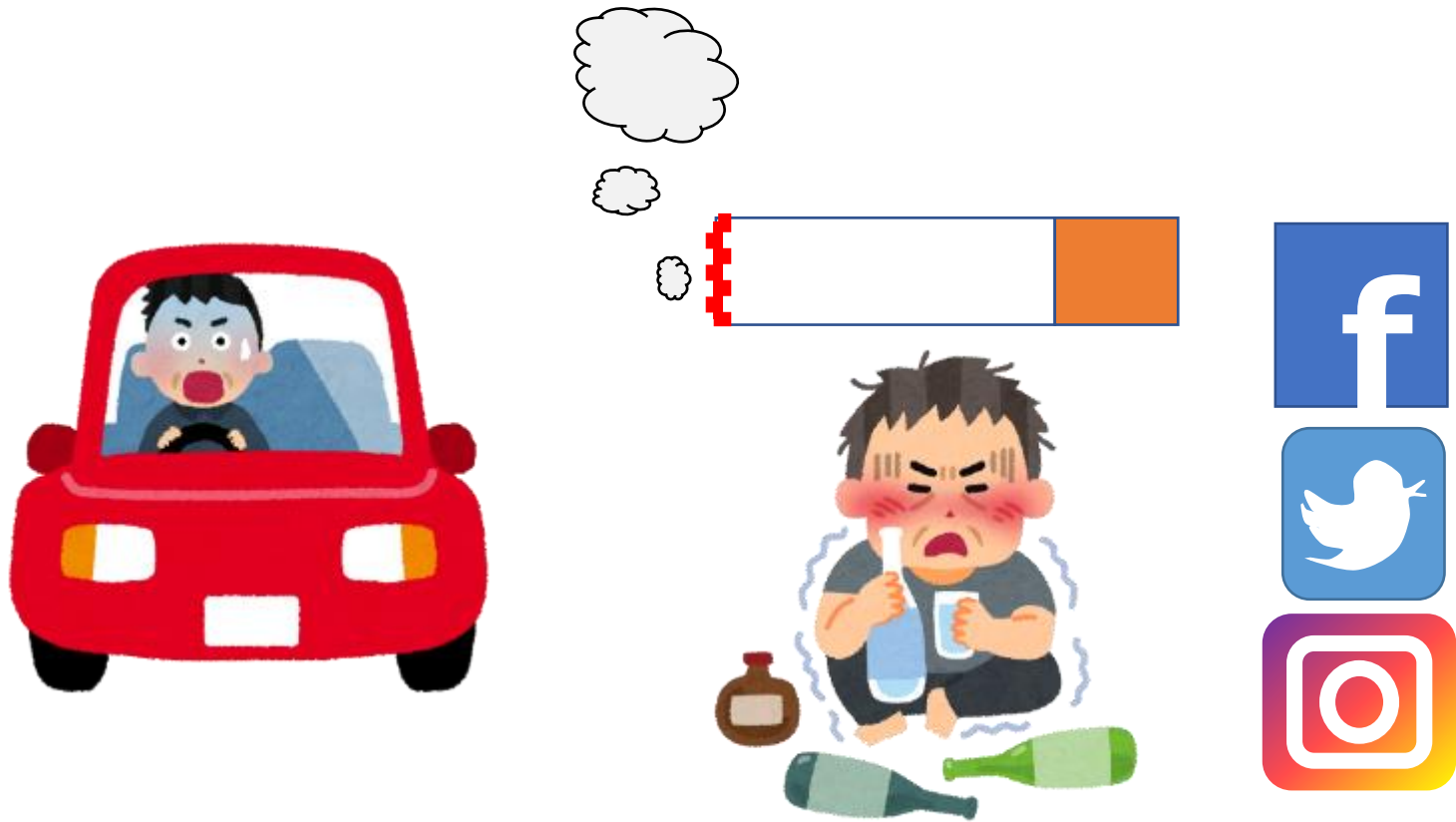
No mask while knowing risk of infecting others

→ Both are reasonable choice.

But persuading or compelling others to wear masks
might be against the rule.

(Unless a law is enacted)

Is infection a unique risk?



Risk of harming others is everywhere

Role of experts

Putting all possible risks/benefits on the same table
Showing both quantitative and **qualitative** aspects

Risk of staying at home

How much?

Fun

How?

Tasty

Mental stress

Lifestyle change

Economic burden



Stay home

Who are vulnerable?

Risk of going out

What is it?

How much?

Stigmatisation

Parental responsibility

Radiation exposure /infection

Not to make people achieve *minimum* risk, but to help people choose risks based on their *own sense of values*

Scientists are often the most divided

Nationwide Increase in Com
Fukushima Nuclear Accident

No data about special
distribution!

Morphological defects in native
Japanese fir trees around the
Fukushima Daiichi Nuclear Power
Plant They are eaten by deer!

Thyroid Cancer Detection by Ultrasound Among
Residents Ages 18 Years and Younger in Fukushima,
Japan: 2011 to 2014

TABLE 2. Prevalence, Prevalence Odds Ratios (POR), and Incidence Rate Ratios (IRR) in Each District up to December 31, 2014

Areas and Districts (1) to (9)	Prevalence of Thyroid Cancer Cases per 10 ⁶ (95% CI)	Internal Comparison	External Comparison
		POR (95% CI)	IRR ^a (95% CI)
Nagatsubo (1) (2011-2014)	250 (201-503)	1.5 (0.62-4.0)	20 (17-40)

No statistically discernable differences!



‘How can we believe scientists when their
opinions are always the most divided? ‘

Murase K, et al. J Am Heart Assoc. 2019 Mar 19;8(6):e009486

Watanabe Y, et al. Scientific Reports 2015;5:13232

Tsuda T, et al. Epidemiology. 2016 May;27(3):316

Polarisation may cause infodemic

Is global warming caused by human activity ?
Is living in Fukushima dangerous?
Is CoVID-19 transmitted in the toilet?
Is keeping social distance effective enough to stop pandemic?



Search engines invariably return some 'seemingly correct' answers, which are ear-pleasing
→ People continue searching academic journals until they reach an answer they prefer.

The more ambivalent or ambiguous the answer is, the more likely people reach an unbalanced answer.

Communicate, communicate, communicate!

Summary

- It is not always lack of knowledge or emotional reaction that cause science miscommunication.
- Risk balances viewed by scientists and residents are different.
- Role of scientists is to put all possible risks and benefits on both side of the balance

How can we put all options on the same table?

How can we encourage people to discuss rather than to search 'correct answers' on the internet?

How can we prevent infodemic while securing freedom of the press?

We may get a clue from crisis communication

Thank you for listening

*My sincere condolences for the
victims of COVID-19.*

