

Trust, truth and expertise; a physics perspective

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- Topic was very broad - impossible really to investigate in depth with only three meetings, but a most useful start.
- Papers can be downloaded from ALLEA.org web site
- Many complex interacting issues were identified, but important to note (as a scientist) that there is NOT a general breakdown in trust for scientists or science, nor any single simple cause.
- Maria has given a good overview, so I will mainly focus on some of the more science and Ireland related aspects.
- Will go a bit beyond what is in the papers with some personal views of my own.

Loss of trust in science?

- Some areas have obvious causes - deliberate and evil propaganda by fossil fuel industries in the case of climate change for example, compounded by an obsessive neoliberal fear of regulation and global governance.
- Others, such as fluoridation, vaccination, and opposition to GM foods play on people's "instinctive biology".
- Fear of the unknown and invisible feeds opposition to power lines, nuclear power, 5G networks etc.
- A common feature is a lack of trust in the benevolence of "authorities" - sadly not entirely unjustified - picking up on Maria's point about the emotional dimensions of trust.
- Amplified by desire to be part of an in-group who "have seen the light" or "taken the red pill" and can feel superior to others.

- These psychological factors are the only rational explanation for some truly weird belief systems:
 - Flat Earth believers (who can hold “global” conventions).
 - Conspiracy theories of the weirdest kinds (shape-shifting lizards for example).
 - Chemtrails - chemicals in aircraft exhausts are being deliberately spread to poison us.
 - Corporate interests are suppressing a cure for cancer, cold fusion, etc.
 - Alien abductions, UFO landings etc.

Some cautionary notes

- Science, or what is presented as science, has not always been right or ethical and particularly in areas close to politics and social issues has often been misused.
- Eugenics and the whole sorry story of racial inequality theories, still regrettably refusing to die.
- Cesare Lombroso and “scientific criminology”, possibly due a revival in the era of brain imaging?
- Evil experimentation on populations without agency - the Tuskegee experiment on syphilis in African Americans being perhaps the most egregious example.

New Media

- One common theme in all three papers is the influence of social media and new communication channels and platforms.
- “Fake news” is of course not new - Titus Oates was a well-known practitioner back in 1678 with the “Popish Plot” to assassinate Charles II.
- But has acquired a new salience with the rise of platforms such as facebook, twitter and youtube.

- Deliberate pushing of polarisation by algorithms seeking to maximise advertising revenue through clicks.
- Formation of bubbles and echo-chambers on social media.
- Manipulation by bot-farms and social engineering.
- Use of micro-targeted advertising for political purposes.
- Decline of traditional journalism with loss of revenue.
- Normalisation of “click bait” and “sound bites” over serious analytic pieces.

What is to be done?

- Science communication needs to convey HOW science is done, not just “facts”. The so-called “Deficit model” is dead.
- We must not ask people to “believe” in science - we need to explain how scientists work, how they came to a certain conclusion, and the relative level of certainty that attaches to it - in other words we need to be evidence based, not belief based.
- We need to tell human stories - people engage much more with people than with abstract concepts.

- We need to be careful about language - some of the words we use in a specialist sense can be misinterpreted by the public. Example “trick” was exploited in climate-gate to suggest deception when it just meant a clever technique. Or “it’s just a theory” commonly used by creationists to denigrate evolution.
- We need Open Science, if we lock the real science away behind paywalls we are fighting with one hand tied behind our back.
- We need to consider adding abstracts for the general reader to scientific papers where there is a policy dimension (and we need to rethink scholarly communication more generally).
- Social media will have to accept that they are responsible for the content they carry in the same way as traditional publishers.

Conclusions

- Urgently need laws on greater transparency and control for political use of social media as advocated by James Lawless.
- More generally, social media have to accept that their power comes with responsibilities - they are not neutral platforms.
- Need to beware of the attraction of in-groups, group think etc.
- SFI need to rethink their “believe in science” hashtag - epistemologically just wrong and dangerously misleading.
- Need to find new ways to resource quality journalism and quality science communication