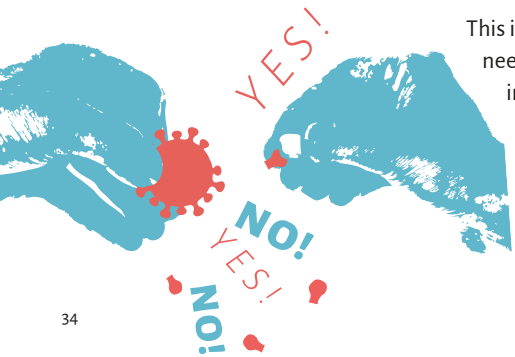
Trust in science

by DIRK HANS

Trust is needed from those who don't know or can't do everything themselves – in other words, from everyone. We delegate control because we have to. Two examples to begin with: Since we can neither build an aeroplane nor fly one ourselves, we have to trust the manufacturers and the pilots that we will somehow arrive at our holiday destination. If the WHO recommends a vaccination, it is up to us to trust it or not. In any case, we can't do the research that led to a vaccine ourselves, and we don't have the pilot's flight certificates shown to us before take-off. Therefore, the only thing left for the individual to do, as is so often the case, is to evaluate the expertise and honesty of the participants and make a decision. In a world that is as technological and complex as ours, in which our interactions with other people and machines are so varied, every second of our existence is interwoven with trust.

Science, with its sophisticated methods of generating scientific knowledge, is a particularly challenging case. Evolution, quantum mechanics, black matter and epigenetics – come on! With such "crazy" scientific theories, why trust anyone? Since there are probably only a few supporters of the Flat Earth Theory or climate-change deniers among the readers of this book, let's keep it brief: The scientific system, while not perfect, is the most reliable system we have – it is "fundamentally consensual" [18]. A high degree of trust can rightly be placed in the process of peer review and scientific discourse. And international studies confirm that societies around the world generally have a high level of trust in science and scientists [19].



This immediately leads to other aspects that need to be addressed in the context of trust in science: doubt.

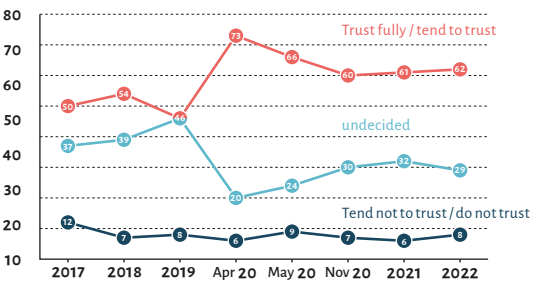
Doubt is important – it is a virtue.

Fortunately, many people become sceptical when dubious sources suggest that injecting disinfectants to fight SARS-CoV-2 might be a good idea. And it is perfectly clear that scientists can err and make mistakes. The COVID-19 pandemic, because of its remarkably public scientific disputes, shows us to this day how much science struggles for truth, and that competing theories and disputes about them are part and parcel of the scientific system. Doubt is already built into science and its theories. This is a strength! The fact that the reluctance with which many scientists present their scientific findings to the public is not a weakness. But this is often difficult to convey to a society that wants to know the "truth" – now, not tomorrow.

Those who want to promote trust in science in a sustainable way need to invest more in explaining the scientific system and the process of gaining scientific knowledge, and put less effort into boasting about the latest research results. Trust in science and a political system based on its findings are fundamental to a stable society that is focused on the common good. Trust in science saved countless lives during the pandemic. So perhaps the most important goal of benevolent SciCom is this: to promote trust in science.

How much do you ***trust SCIENCE*** and ***RESEARCH?***

Results from the German *Wissenschaftsbarometer* 2022



(adapted from [34])

Recommended reads:

- Oreskes N. (2019) *Why trust science?* Princeton University Press. ISBN: 97806911790001
- Hendriks *et al.* (2015), *Measuring Laypeople's Trust in Experts in a Digital Age: The Muenster Epistemic Trustworthiness Inventory (METI).* PLoS ONE 10: e0139309. https://doi.org/10.1371/journal.pone.0139309
- van der Bles *et al.* (2020), *The effects of communicating uncertainty on public trust in facts and numbers.* PNAS 117 :7672–7683. https://doi.org/10.1073/pnas.1913678117