

The paradox of trust in science

Science thrives by combining trust and distrust. **Robert P Crease** asks why more research is not done on how this strange paradox works

Arnold Relman, former editor of the *New England Journal of Medicine*, once put his finger on the strange role of trust in science. “It seems paradoxical”, he mused, “that scientific research, in many ways one of the most questioning and sceptical of human activities, should be dependent on personal trust. But the fact is that without trust, the research enterprise could not function.”

But what exactly is trust? In the context of science, trust might be defined as the willingness of a person, group or community to defer to or tolerate, without fear, the judgements or actions of another person or institution that directly affect one’s own actions or welfare. Trust is, as the sociologist Adam Seligman remarks, what you need when you cannot predict, or do not have confidence in, behaviour and outcomes.

Trust permeates the scientific process in various personal, professional and public dimensions. Personally, one must trust collaborators, colleagues and administrators. Professionally, one must trust data, results, techniques, experiments and theories. As for public trust, it is indispensable to scientific institutions, which depend on a stable relationship with the outside world.

In science as elsewhere, trust can be undermined by the suspicion of incompetence, unreliability and self-interest for personal or financial gain. Without trust, the scientific process would grind to a halt, like a machine drained of oil. And given that scientific projects often have a huge potential environmental impact, building and maintaining trust with the wider public is critical. Indeed, many first-rate scientific facilities have been shut due, in large measure, to a lack of public trust (*Physics World* January 2002 p17 and May 2003 p19).

But maintaining public trust is a complicated and ongoing process – complicated not least by the behaviour of activists in whose interest it is to disrupt it.

The paradox deepens

Considering its critical role in science, it is quite surprising that trust is not the focus of more research. One reason for the lack of attention is that a vast interdisciplinary effort is required. Trusting attitudes are a key part of the process by which humans organize and make sense of their social surroundings. A trusting relationship is not governed by neat and easily controllable variables in laboratory-like situations. It is therefore yet another area in which the health of a scientific profession, such as



It works both ways – science relies on trust, yet it is also one of the most sceptical of human activities.

physics, has strong philosophical, psychological and sociological dimensions.

Philosophically, one needs to make important distinctions between trust and related concepts such as certainty, credibility, confidence and belief. Trust, the philosopher Michael Gelvin points out, is not certainty. “We do not trust the Sun to rise,” he once wrote, “but are assured of it; to trust is to risk; the greater the risk the greater the trust.” This distinguishes gullibility or naïveté from trust; “the latter can be legitimate even if consequentially hurtful, the former, never”.

Psychologically, humans begin to learn trust in social interactions during infancy, particularly nurturing and play. These experiences form the basis from which we develop the trusting attitudes that become indispensable in adult life. As the psychologist Niklas Luhmann once wrote: “Trust reduces social complexity, that is, it simplifies life by the taking of a risk.” And sociologists have empirically demonstrated that whom one trusts depends on factors including our own and the other person’s socioeconomic background.

The bottom line is that no-one has carried out a full interdisciplinary study of trust, which therefore tends to remain in the background and be taken for granted. We only pay attention to trust in conditions when it has broken down. Like a smoothly sailing ship capsized by a huge wave, such break-

downs appear as if an external force has intervened on a normal situation. This view encourages scientists to seek scapegoats for the irruption of distrust – the media, scientific illiteracy, politicians – rather than to understand trust itself.

One example of this view was expressed at an international conference entitled “Fear of science versus trust in science”. Held shortly after the accident at the Three Mile Island nuclear power plant in 1979, the conference was advertised as addressing the question of trust in science. However, in the end it did not really examine this issue, but instead focused on the public’s fear of big science. The conference participants tended to treat the distrust of science as fear of the unknown, as anti-science, or as “cultural pessimism”.

The critical point

I once argued that the question of how trust is “generated, perpetuated, disrupted and recovered” is one of the top 10 challenges facing science and society in the coming millennium (*Physics World* December 2000 pp17–18). The future ability of scientists to study and use radiation, toxins, genetic alterations and the like – as well as anything else that non-scientists perceive to be potentially harmful – surely depends on trust. So will the future existence of research labs investigating infectious diseases, as recent controversies indicate. As an epidemiologist at Boston University recently remarked concerning community opposition to its plans for such a lab: “The issue is one of trust.” And if it is true (as some say) that we need nuclear power to curb global warming, or that combating worldwide hunger depends on genetic engineering, then the fate of the human race may depend on trust as well.

“Trust is good,” Lenin once remarked, “but control [is] better yet.” Alas, modern-day scientific researchers are forced to rely on others and on the surrounding community in ways in which full control is unattainable. The paradox of trust is not only that the process of inquiry depends on trust, but the products of inquiry as well – the achievement of stability and control. To anyone who genuinely cares about the future of science, therefore, understanding trust is a top priority.

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