

Can science win back public trust?

Venice Charter starts the dialogue

→ Anna Wagstaff

Confidence in science is becoming dangerously eroded in the face of a rise in religious fundamentalism and a general scepticism that scientific advances will be used for the good of humanity as a whole. Will a global alliance for science win back some respect?

It must have been a long time since the magnificent Doge's Palace in Venice hosted such a bold piece of diplomacy. Victor Chernomyrdin, plenipotentiary minister in Russia's government, was at the top table with Kathleen Kennedy Townsend, niece of the assassinated US President John F Kennedy, by his side.

Despite appearances, this was not a summit looking to reconcile differences between political powers. This was the grand opening of the First World Conference on the Future of Science, organised by the Umberto Veronesi Foundation. Among those present were government ministers, a representative of the Vatican and other religious authorities, and the director of the United Nations Educational, Scientific and Cultural Organization

(UNESCO) regional bureau for science.

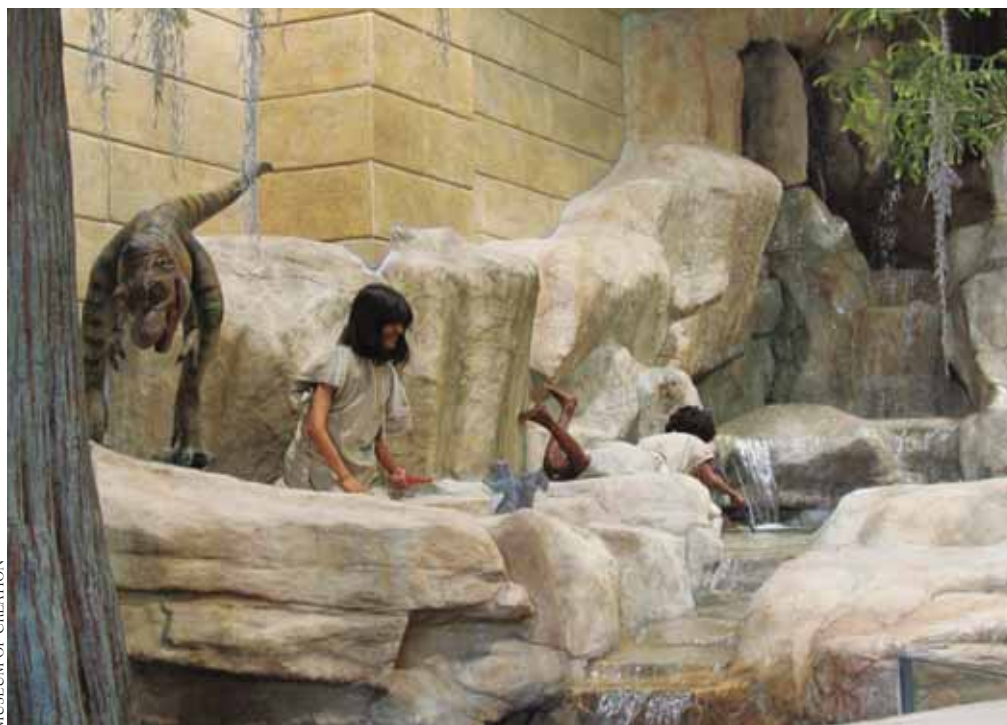
The differences this conference sought to reconcile concerned a breach between science and society that seems to be widening in communities across the globe. The alliance it hoped to forge was a global alliance for science, "involving scientists, philosophers, theologians, politicians, industrialists, jurists, and all interested parties."

There was even a declaration – the Venice Charter – which affirms the importance of science as a force for progress and human well-being. It talks of the need for scientific progress to be fully and openly debated by society, particularly the areas of genetics, astrophysics and information technology – and it commits the signatories to promoting and participating in such dialogue.

Given the grandeur of the setting and the stature of the top table, one

might have expected a document resonating with the sort of vision Kennedy Townsend's uncle used to rally the people behind the US space exploration programme. Yet, the Venice Charter is essentially a cautious document, reflecting not so much a lack of ambition, as a recognition that attitudes towards science have changed, leaving it feeling beleaguered and misunderstood.

Kennedy Townsend talked about how the US, the super-power that landed the first man on the moon and has led scientific and technological innovation for half a century, seems to be turning its back on science. Almost two-thirds of US Americans now say they are open to the teachings of 'intelligent design' – a bible-based explanation of the origin of life, touched up with a quasi-scientific veneer. One third would like to see 'intelligent design' replace evolutionary theory in the school curriculum.



Science rejected. The Cincinnati Museum of Creation presents as historical fact this tableau of children playing alongside dinosaurs

Decisions over issues such as stem cell research or the withdrawal of life support where brain death has occurred are turned into emotive articles of faith by the Christian fundamentalists who make up President Bush's electoral base, making rational debate very difficult.

A parallel rise in religious fundamentalism in the Islamic world, where the arts and sciences were for centuries nurtured with pride, is exerting an increasing influence over cultural and social life. Interestingly, however, Darius Atighetchi, professor of Islamic Bioethics at the Second University of Naples, indicated that gene therapy, in-vitro fertilisation, cloning and stem cell research – issues that have become flashpoints in the US and in strongly Catholic countries – have posed less of a problem in Islamic countries. When the UN General Assembly adopted a declaration virtually prohibiting all forms

of human cloning, most Islamic countries abstained.

Religious fundamentalism is by no means the only problem. Science is also suffering from increasing constraints on the freedom of information on the grounds of national security, where the concept of 'dual use' can cover a wide area of scientific research. In China, which is investing heavily in biotechnology and other sciences, and where religion has little influence, progress is held back by constraints on movement and freedom of information. In Europe, academic clinical research is hampered by unnecessarily bureaucratic regulations designed with pharmaceutical companies in mind.

THE THREATS

The conference looked at the way governments increasingly see science as simply a part of their economic development policy. Funding for basic

science, where researchers have freedom to follow their own leads, is being squeezed in favour of project-based funding concentrated on potential economic growth areas.

The free exchange of ideas is being threatened as universities are encouraged to patent their research findings to earn extra revenue – a practice that started in the US and is now spreading to Europe. Increasingly intense competition for funding between academic institutions deters an open and collaborative approach. A policy of cutting back on tenured positions means that by the time science graduates can settle down to work on a permanent contract they are often past their most productive age. Having constantly to compete for jobs and funding means they become slave to their impact factor, and the need to publish may bias their choice of research.

Drug development, once seen as

The super-power that landed the first man on the moon seems to be turning its back on science

part of a state's social responsibility, is now left almost entirely to the private sector. With huge sums of private investment riding on what academic researchers and journals publish about these drugs and what clinicians prescribe, public trust in the integrity of the system has been undermined. As a result, there are plenty of people who suspect that bird flu is a scare inspired by the pharmaceutical industry. The widespread distrust of genetically modified crops is another example.

Genetic scientists talked of their astonishment at the public rejection of what they see as a technological advance with the potential to address the food needs of the world's poorest populations. This was a public argument between industrial scientists and the western environmental lobby – and the public sided with the environmentalists against the weight of scientific opinion.

Attempts by the US government to give credibility to scientific theories that dispute the overwhelming evidence of global warming were also mentioned as helping to discredit science in the eyes of the public as an objective method of investigation.

The image of science as a means to resolve the major problems afflicting mankind is also undermined by the allocation of resources. Vast sums of money are ploughed into finding ways to keep the world's wealthy populations healthier, looking younger and living longer, and into technologies of war. Meanwhile, the world's poorest die from preventable malnutrition, malaria, and lack of clean drinking

water and sanitation, and future generations are threatened by lack of attention to issues of sustainability.

But this remarkable gathering in Venice, which included philosophers, theologians, jurists, economists and politicians in addition to scientists versed in genetics, bio-informatics, neurology, climate change, bio-agriculture and energy, had not been convened just to bewail the low position of science. It aimed to examine ways to restore public belief and confidence in science, the scientific community and scientific methodology.

THE DEBATES

The first session, including theologians of several religions and a chemistry professor, looked at whether it is possible to bridge the gap between religion and science, or at least find a common language to discuss issues of life, death and humanity. No conclusions were reached, and evidence for any intellectual basis for common ground was hard to detect. Perhaps the most pertinent contribution came from Kennedy Townsend, who has to build bridges as a politician. She emphasised that people are more open to rational argument in an atmosphere of tolerance and mutual respect. "The important thing is not to fan flames of fear," she said. "Scientists should say nice things about God."

There was, however, a recognition that advances in neuroscience and genetics present an unsettling challenge not just to the religious concept of the soul, but also to the deeper sense of individual identity. Much of

the world has had trouble enough coming to terms with the concept of evolution – that mankind is separated from the animal kingdom chiefly by its level of intellectual development. Now we are asked to accept that who we are, how we perceive and understand things and what actions we take are all determined by our genetic make up and neurophysiology. And to cap it all, with advances in cloning, even our genetic make up can be reproduced.

Daniel Dennett, Director of the Center for Cognitive Studies at Tufts University, Massachusetts, and Philip Pettit, Professor of Politics and Human Values at Princeton University, New Jersey, presented fascinating accounts of what science has uncovered about the relation between a person acting and that person willing that act, and offered a comforting philosophical treatise about what all this means for the whole concept of free will.

In a nutshell, our brains give the order to act split seconds before we are aware of willing the action. However, our own neurophysiological make up is constantly evolving as we interact with our surroundings, so we are not stuck with some predetermined and unchanging hardwiring; we develop in a unique way. So long as we can accept that our millions of neurons are what we are, and don't insist on having some intermediary 'I' giving the orders, then the perception that our actions are our own is still philosophically viable, and human dignity can remain intact. "We are not in the loop – we are the loop." Or in

Crossing boundaries. Judges at the ENLSC seminar donned lab coats and picked up their pipettes to get a feel for the realities of scientific investigation



ENLSC

the language of attempted bridge building, “Yes we have a soul, but it is made of trillions of tiny robots.”

The threat posed by scientific progress, however, goes beyond problems of philosophy and self-identity. Advances in genetics hold the key to tackling many of the diseases and hereditary conditions that have defeated traditional medicine, but they also threaten to open the way to new forms of discrimination and social exclusion.

Women with a family history of BRCA-related breast cancer, for instance, could jeopardise their chances of qualifying for a mortgage or insurance if they follow medical advice to be tested for the BRCA mutation. Some countries have now introduced legislation to prohibit companies from requesting information on any genetic test results when they ask potential clients to divulge their medical history.

But the implications of a known genetic predisposition go beyond the

interests of one individual. In a recent case in Iceland, a court upheld a mother’s request that the hereditary cause of her partner’s death should not be given on his death certificate because the information could jeopardise their daughter’s interests.

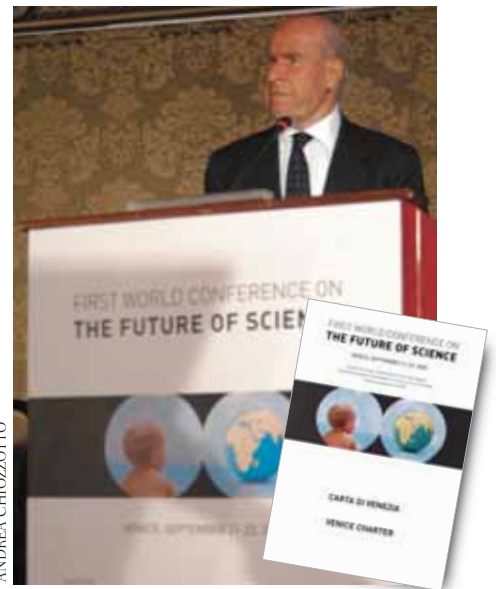
This is a foretaste of what is to come. Research into the genetic risk for alcohol and drug addiction or mental health problems is opening up the potential for discrimination against entire gene pools. The new knowledge is also open to selective interpretation and misuse by people pursuing racist or sectarian agendas.

Advances in neurology are also fraught with ethical dilemmas. The development of drugs to combat, for instance, memory loss in the elderly, opens question about whether healthy people who can afford to buy the drugs privately should be allowed to use them, for instance, to boost their exam performance.

Amedeo Santosuosso is based at the Department of Law at Pavia

University and is a founding member of the European Network for Life Sciences, Health and the Courts (ENLSC, www.unipv.it/enlsc/). He told the conference how, in recent decades, lawyers all over the world have had to find ways of responding to these new scientific developments. Western law, he said, has traditionally taken as its starting point the concept of the ‘private sphere’ and ‘the social sphere’ developed by John Stewart Mill back in the mid-nineteenth century. As advances in genetics have blurred that distinction, jurists have had to think on their feet and search around for other reference points.

Unlike scientists, said Santosuosso, jurists tend to work within their own legal systems – and also in their mother tongue. He told of what a revelation it had been when the ENLSC called an international meeting in Pavia to see how other countries were dealing with these issues. Fifteen nationalities were represented, and it soon became



An Alliance for Science. Left to right: Giuliano Amato, veteran Italian/European political campaigner; Federico Mayor, chair of the European Research Council Expert Group, Janez Potočnik, EC Commissioner for Science and Research and, far right, Conference President Umberto Veronesi

apparent, he said, that all of them had been taking the same basic approach, using universal reference points that transcend national boundaries, such as self-determination and liberty.

“As we started to discuss cases within the Network for the first time, we realised that in practice we were drawing up a sort of ‘universal charter of rights,’” said Santosuosso. “And we thought: ‘Who are we to do this?’ But there is no other process.”

THE REMEDIES

What the jurists were doing goes to the heart of what this conference was all about. On the one hand, professionals were engaging in a welcome debate, grappling with the implications of scientific advances for society and its laws. On the other hand, they also recognised that such debate has to take place in a far wider forum.

Exactly how this will happen was the subject of the final session, which concluded that scientists have a responsibility to engage with the public. “You have to get actively involved,”

said Kennedy Townsend, “Learn to be articulate, explain what you are doing and don’t talk in code.”

This session was chaired by Giuliano Amato, a veteran political campaigner who at various times has served as Italy’s prime minister and chancellor, and vice-president of the EU Convention in Europe. In the months leading up to the conference, Amato had been a leading voice, together with Umberto Veronesi, calling for a ‘yes’ vote in the Italian referendum on stem cell research, which was lost because of a high level of abstentions. He believes that the results of the referendum might have been different “if scientists and philosophers and so on spoke directly to the people, instead of leaving it to the politicians, who had only learnt about the subject a short while before.”

He urged scientists to trust the public judgement. “People can learn to evaluate the significance of research without understanding all the details.” But they have to be given the opportu-

nity. “Scientists should speak more with the public.”

He joined many other speakers in the session in calling for science to be taught better, and for more and better coverage in the media. But he also stressed that supporters of science must use the institutions of participatory democracy – polls, referenda, consensus conferences, and citizens’ juries – to argue their case.

Veronesi, the renowned Italian oncologist and prime mover behind the Venice Charter, was delighted by the response to the Venice Conference, but says it is only the beginning of a global project. “The problems and dilemmas of unrelenting technological progress are not being adequately discussed in society as a whole. Hopefully, through setting up an alliance, we can move in a direction to change this. We are now planning to promote the Charter worldwide, as we did last November with the presentation to the New York Academy of Science. Next step will be the presentation to the European Commission.”