

## **How science debates build new dialogues between research and society**

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### **Overview**

Science debates are an emerging new dialogue format. They give birth to a new partnership between research, technology and civil society. Researchers and representatives of the civil society meet at eye height. This is the roll-out of a new participation model. Citizens' participation thus far was mainly restricted to community issues. Science debates open access to a sector which increasingly shapes our future: the scientific-technological industrial complex. While we recently have been observing nascent forms of participation in this field, they mostly turn out top-down though. The website [\\_wissenschaftsdebatte.de\\_](http://_wissenschaftsdebatte.de_) was launched by the German Association of Science Writers TELI e.V. with the goal to provide a truly innovative participatory tool. The movers and shakers of this grassroots approach are the civil society, citizen platforms, NGOs. This new bottom-up discourse is compatible with the overall requirements and directives of the European Commission. The debate format could enhance the new EU research campaign Horizon 2020 and arrange for a unique feedback channel between researchers, politicians and citizens. This could constitute a new partnership, or more precise a new social contract on the pillars of the civil society.

### **History**

Founded in 1929, the German TELI is the worldwide oldest association of technical and scientific journalists. It has been guided by the best intentions, which for the beginning of the 20th century were very visionary views that journalists had to bridge the gap between research and society. However, when 1933 came around, TELI officials surrendered within months to the Nazis and became a loyal propaganda instrument of the regime and the war,

welcoming new weapons of mass destruction and technologies to promote the ideology. In comparison, other journalists and scientific organizations took years, sometimes until the end of the war in their struggle to stay independent. Some very few even managed to maintain their integrity.

After 1945, the questionable journalistic ethics and the guilt question were not pursued, as in most parts of the German postwar society. As the cold war rapidly progressed and the country became divided, the TELI split also into two sections, catering to the respective societies. After Germany's reunification in 1990, TELI rejoined and after the turn of the century examined its common heritage and failings in the period from 1933 to 1945. It became the first journalistic organization, which recorded its Nazi history and went public with it, presenting it at a number of international conferences. While a critical assessment of the TELI period from 1945 to 1989 in the German Federal Republic (BRD) and, above all, in the German Democratic Republic (DDR) is still missing, the reunified TELI is dedicated to take the commitment of its founding fathers serious and work on the dissemination of knowledge and also enlighten the citizenry on the sunny as well as the shady and dark parts of science and technology.

Thus, during the past ten years the relationship between "society and science" has increasingly moved into the focus of the journalistic association. This term basically calls for a close co-operation between researchers and citizens, with a mutual benefit: Scientific results and its technological implementations are enhanced by trustworthy relationships with the citizens. Distrust and fear leads to derailments and put science on a bumpy path, with disadvantages for both, scientists and society. It is TELI's firm belief that this new partnership requires also practical measures.

As a result of this, TELI kicked off before the last federal elections the German Science Debate 2009. It was prompted by the US Science Debate, which had been invented a few months before by the journalist and filmmaker Shawn Otto during the 2008 election in the United States. The US debate was based on questionnaires, circulated among key people of the scientific establishment, expressing their concerns about research, its shortcomings and priorities. That part was very successful, thousands of prominent people participated, the candidates Barack Obama and John McCain responded. However the main goal was not reached, neither in the 2008 nor in the 2012 campaign. That called for a

face-to-face debate on scientific issues between the presidential candidates with the aim to underline science's significance as the motor of modern societies and how our common future depends on responsible science.

The German Science Debate 2009 principally followed this lead. It involved the leaders of major scientific organizations in the country, individual scientists, politicians and parts of the civil society. The German Debate culminated before the election with a widely distributed press release, expressing the concern that science was hardly mentioned in the campaign at all, especially by the candidates for the chancellor's office. Nevertheless, the debate was considered a success, also measured in terms of media coverage and response.

One year later, the European Union of Science Journalists' Associations EUSJA presented science debates at the ESOF 2010 conference in Turin as a newly emerging method of the profession. Since then, various European countries, including Italy and Estonia, have experimented with it. Meanwhile TELI under the leadership of its chairman Hanns-J. Neubert decided to redesign and sharpen this tool for the 2013 election campaign and to adjust it more properly to German scientific and political culture.

### **Methodology**

Although created for the election, the platform is supposed to be a permanent one. As of now, it consists of five major themes: energy, demography and old age, health and nutrition, the scientific system and science journalism. Debate moderators feed these topics regularly with new articles highlighting current and controversial developments in the respective fields, for example:

- The perils of Germany's change from nuclear to renewable energy and why citizens have to watch out that decision makers don't bypass them;
- Foul scientific studies about the dangers of genetically manipulated organisms and why GMOs remain highly controversial;
- The merits of grandmothers for the younger generation and whether they should receive special benefits;
- The pros and cons of Science Media Centers and the question of whether the involvement of scientists in the assessment of research endangers the journalistic profession.

The moderators acquire opinions, which they disperse, recollect, summarize and feed the media with them. In the second stage of this process, face-to-face meetings of scientists, citizens and politicians are planned to further discuss the issues. As Neubert points out in the project description, these meetings could take place in theaters, cinemas, pubs, stadiums, churches, also to publicly demonstrate that society is an integrated and integrative element in the scientific process. Even poetry slams or artistic performances are in the range of conceivable forums in order to address as many people as possible, preferably from highly diverse social settings to ensure a perfect mix and inclusion.

### **Discussion**

Debating about not only politics, but also research, science and technology is something new and at this stage alien to many people. Therefore, the method itself will be subject to democratic debate and discussion, in the course of which it may reveal strengths and weaknesses, threats and opportunities. This in-built quality control is a very important step to make this innovation more resilient. The organizers are very much aware of the necessity of this scrutiny. Pro-actively, they make efforts to enhance this process, receive colleague's feedback and implant valuable ideas.

At the end of November 2012, the science debate was presented at the German "Wissenswertes" ("Worth to Know") in Bremen. Once a year, science journalists from all over the country hold their annual reunion in this city, taking a critical look at the state of the art of their profession. This time, the science debate had received a favorable slot right at the beginning of the three day conference. Although this session had to compete with attractive other events, it filled a room with a curious crowd. Other than other conference workshops, this one was deliberately not top-down, a panel of experts speaking to the audience with questions and answers at the end. After an introduction, a professional moderator and dialogue expert took the floor and divided the participants into small groups. They reviewed, debated and digested the concepts and came up with additional reflections which will be incorporated into the scheme.

Some of the impulses and questions worthwhile to think about are:

- Can basic research also be submitted to debate and societal input?

- How to recruit high potential participants, should they be specially selected, and if yes with which set of rules?
- After the concept had been perceived by some participants somehow patchy and foggy, how can it be designed, worded and implemented in a way that it reaches the population?
- Above all, what is the unique selling point for an individual citizen, in other words: Why should she or he care?

Other issues, which were not raised by the Bremen audience, need to be addressed as well. For instance, exchange and debate have become very popular in the past couple of years, not only throughout Germany, but all over Europe, even starting now in Latin America. Politics and especially science gradually open to the fact that democratic societies need also a broad based communication about their scientific and technological strivings. After all, it was the director of the prestigious German Museum in Munich (“Deutsches Museum”), Wolfgang Heckl, who demanded already years ago: “We need a lively debate on nano technology and have to take the anxiety of the population very seriously, if we want to avoid it becoming a major apple of discord, such as nuclear energy.”

Even before the Chernobyl meltdown in 1986, nuclear plants have been fiercely debated by the German public. Other developments such as construction plans for a huge underground railroad station in Stuttgart (“Stuttgart 21”) without consulting with the public attributed to even more concern and rage about technological developments.

When the Fukushima nuclear disaster occurred, the conservatives lost the election in the state of Baden-Württemberg. The head of the party and chancellor, Angela Merkel, decided to pull the plug and to phase out nuclear energy and replace it with renewable energy, which has become a globally closely monitored experiment of a major industrial nation. So, for decades and since well before reunification, many debates have rocked Germany, which mostly were imposed on the political system by the population. The green movement, by now a worldwide environmental and economic force, has been around since the 1970’s, when some German dissidents decided that science and technology did not serve the needs of the people.

Thus, an independent observer might come to the conclusion, that scientific citizenship and participation in relation to science and technology have come a long way in

Germany. However, if such findings are put under a magnifying glass, little evidence is found. This at least maintains Hanns-J. Neubert, who introduced at ESOF 2010 Turin two distinct categories of participation: “start of pipe” and “end of pipe” debates. The latter ones are the most common ones, run by officials of various authorities, who have to comply with laws and regulations, and start the dialogue at the end of the decision making process. Thus, citizen participation is abused, because it provides only a rubber stamp for what experts have already determined. These are “pseudo-debates”, as Neubert criticizes in the final project description of the German Science Debate.

To summarize, there are many initiatives already, with a long tradition, more recently with many new one springing up, ranging from regional levels to nationwide, such as the government-driven Science in Dialogue (“Wissenschaft im Dialog”). Furthermore, debates reach out all the way to the top on the European level. The European Union has opened a variety of discussion and debate platforms about scientific and technological subjects. They are meant to encourage researchers to consult with the bodies of the civil society and Non-Government Organizations NGOs to ensure smooth sailing for scientific investigations and vice-versa encourage the public to get engaged. On the negative side, many of these debates are top-down, basically partial and not really independent, grassroots-driven.

Bottom- up from the roots of society, this is what the TELI initiative stands for. Because it aims at citizens’ participation from the beginning on, many established organizations in science and politics will look at it like unwanted competition, perhaps even unprofessional from the scientific view. But even science has to submit to the general rules. The conflict of competing opinions and designs has been widely acknowledged as the driving force of history, progress and evolution.

Opposition is an elementary part of change and democratic development. The following question is a very legitimate one and must be answered in the course of the Science Debate: How much participation can a society tolerate and bear?

Obviously, our societal systems have become highly complex, so that we need to delegate control. Moreover, many scientists will argue that they are afraid of a loss of freedom, if they are submitted to constraints, which some might call “public control”. Ideally, people perform best in systems with a maximum of freedom. But it has been the

achievement of the age of enlightenment, which not only gave birth to modern science, but also modern democracies: Checks and balances, along with transparency and accountability control power systems and regulate them. The conflict of interest between those in power and their clients always needs to be negotiated and re-negotiated, on all levels at any time. This is what the German Science Debate is all about.

Journalists are traditionally considered the mediators within a society, the fourth power among legislators, the executive branch and judiciary. They facilitate dialogues between citizens and politicians. So it seems evident that science journalists would try to include researchers in this process. This approach could create a new type of science journalism, update the profession and make it fit the 21st century: Debate-Driven Science Journalism, as it is being introduced at the World Conference of Science Journalists in June 2013 in Finland's capital Helsinki.

### **Science Debate Live**

Shortly thereafter, the Science Debate Format went out for a highlight: "New Trialogue Links Research, Citizens and Politicians in Crucial Issues: Live longer, work more flexible – but watch out for the poverty trap." This was the title of a Live Debate which took place in July 2013 in Munich's International Press Club. It focused on the demographic development, retirement age, pension funds and, as a whole, the labor market. A scientist from the Munich Center for the Economics of Aging (Max Planck) presented research and evidence that citizens could work longer beyond mandatory retirement which would ease the demographic pinch. Young people have to pay for the pensions of an increasing senior population. An independent expert on retirement and representative of an NGO said that the problem is not so much of demographic nature but more one of distribution. The pension funds are badly administrated and favor civil servants. Thereafter, the moderator involved the audience and collected questions for the politicians.

Representatives of six parties were present, most of them candidates for parliament (Bundestag) at the upcoming federal elections in September 2013. They picked up on the experts' statements as well as the citizens' queries. As a result many agreed that Germany needs a basic pension which everyone has to contribute to and which everyone is entitled to, which shall promote more equality and justice as to avoid old age poverty. Many of the

political representatives also agreed on the need to better support mothers and families, to improve working conditions as to prevent mental health problems and burnout, both of which have become very common in Germany. Last but not least, more flexibility in the retirement regulations could keep the German labor market on high standards, set off the increasing portion of old agers in the population and maintain the pension funds well filled.

A summary and documentation of the live debate will be sent to experts in this field and major media outlets to further stimulate the debate, accumulate more ideas and reach more consensus. And, of course, the debate is continuing on the Science Debate Platform, featuring a wide scope of opinions such as the one of the 74 year old lady who has to keep working to make a living, who engages in enhancing the mobility of elderly people and says: It all starts with education and pupils have to learn to debate in order to form opinions about complex issues, communicate them properly and to become tolerant of other people's views. Which means that debates, in classrooms or about science, always promote our democratic skills to solve societal issues. Finally science is becoming a vital part of this. The EU, as a governance role model for the European nations, is already implementing this new understanding.

## **Conclusion**

The German Science Debate is a social experiment dealing with the essence of all science. This will most likely polarize the research community and make part of it defensive, a natural reaction which most innovations are confronted with, because they change the status quo. A firm foundation for the science debate has already been built during the past 40 years, so now the house needs to be constructed. Scientists, whether they are natural or social scientists, have already accepted the necessity to collaborate more closely with society. Almost four years ago, Hans-Joerg Bullinger, the president of the prestigious Fraunhofer Society at that time, inaugurated the German Science Debate 2009 with three remarkable sentences:

“We need a broad societal debate on how we want to shape the future. People need answers on questions of our time. We can only utilize the chances which research and technology offer us, if people are going along.”



The renowned French sociologist and philosopher Bruno Latour condensed this to one blunt and challenging sentence: “No innovation without representation.”

## **Outlook**

In November 2013, the Berlin Humboldt University published a reader and manual about the German Science Debate and its prototype event in July in Munich. Shawn Otto, Inventor of the US Science Debate and godfather of the German Science Debate [wissenschaftsdebatte.de](http://wissenschaftsdebatte.de) // Wissenschaftsdebatte\_Live wrote an introduction with the title “Why modern democracies need science debates”. It is a practical road map for future action.

“Whenever the people are well-informed,” the scientist-statesman Thomas Jefferson wrote, “they can be trusted with their own government.” That sentiment, perhaps more than any other, lies at the center of the modern democratic form of government that Jefferson helped bring into existence.

But the world was very different some two centuries ago when Jefferson penned those words, writing in a circular library of his own design, surrounded by most of human knowledge in the form of books he carefully categorized by subject.

Today there is so much knowledge that it’s impossible for it all to fit in a single library, much less the mind of even the most eminent thinker. What does this explosion in knowledge mean for the concept of the well-informed voter, and is it still possible in a science-driven society for people to be trusted with their own government?

This is the question we first began grappling with in 2007, when we noticed that the candidates for US president were not debating many of the key issues—most of them science-driven—that were facing the United States and the planet. In general, the national media were also failing to address the situation. Of 2,975 questions asked the candidates through January of 2008, just six mentioned the words “global warming” or “climate change.” No matter where you stood on the issue, it was one of the most profound policy challenges facing the nation and the planet. To put that in perspective, three questions mentioned UFOs.

We put up a web site calling on the candidates to debate the key science questions, including climate change, innovation and the economy, energy policy, education, genetics,

fresh water supply, food, ocean health, stem cell research, and others that had a large amount of voter concern and major inputs from science. We reached out to scientists and engineers, and we hit a nerve.

The site went viral in the US science and engineering community, and within a matter of weeks we had 39,000 scientists and engineers signed on, including many of the most prominent scientists in the US, dozens of Nobel laureates, members of congress, leaders of major corporations, key science journalists, and the leaders of hundreds of universities and science organizations.

Despite this sudden, shocking outpouring of support and passion, the top candidates for office declined to participate. We arranged a national television broadcast shortly before the all-important Pennsylvania primary and worked with the venerable Franklin Institute in Philadelphia to host, but John McCain ignored us and Senators Clinton and Obama indicated some slight interest, but then instead chose to debate religion at the “compassion forum” at Messiah College in Harrisburg, Pennsylvania.

This led to the headlines that “Candidates debate religion, not science,” and led several of us to ask what has transpired in modern civil society that it has become more taboo to talk about science—the nonpartisan driver of progress and the economy—that it is about one’s religion, which was once a topic politicians went out of their way to avoid? We asked the candidates’ staffers and they said they thought science was a niche topic and no one was very interested. To test this we commissioned a national poll and found that eighty-five percent of the public was interested in seeing the candidates debate these topics. It was the staffers and members of the media, who all largely come out of the humanities, that were much less interested than the public as a whole.

This confirmation bias among the political elite seems to be caused by the fact that many politicians and media professionals come out of humanities programs, which they took in order to avoid college science classes. And yet, when the rare scientist or engineer is elected or otherwise assumes a leadership position, they are often among the best leaders because of their training in problem solving. A higher percentage of corporate CEOs, for example, were engineers than any other field.

While we eventually did convince the candidates for president to participate in a science debate, and while many of president Obama’s key cabinet appointments were

scientists that were among our original supporters, the question of why it was so difficult is instructive, and suggests several emerging problems in the science-democracy gap.

The first is that scientists generally do not have to participate in much public outreach in order to get their funding, which today is mostly government-derived; they simply have to convince other scientists that the project is worthwhile. As a result, they have tended for the last two generations to remove themselves from participation in civil society. But in order to arrive at balanced policy, democracies rely on a plurality of voices—those of individuals, businesses, various faiths, and those of science—and not just in the role of expert witnesses, but in the *hoi polloi* of the public discussion.

With the voices of scientists silent in the ongoing civil society dialogue, policy discussions have increasingly tended become skewed away from reason and toward the most loudly arguing vested interest. Thus we see it become possible for politicians to take positions contrary to science and knowledge and not pay a political penalty, something that was unthinkable a little as twenty-five years ago. With journalists trained that there is no such thing as objectivity, as occurs in journalism schools since the advent of postmodernism, the ship of democracy is then set adrift, rudderless, and vulnerable to manipulation by vested interests, who can also spend on public relations campaigns and on influencing elections.

The problem is likely only to get worse in the coming decades. The rate of knowledge generation is increasing exponentially as the number of scientists increases, multiplied by their ability to collaborate over the Internet. With the aid of computers and the Internet, we are now poised to create as much new knowledge in the next forty years as we have in the last four hundred. Recall the policy fights we have had over vested ideological and economic interests battling new knowledge over the last four centuries, from Galileo's observation that the Earth was not the center of the universe to climate change today, and now multiply that number by ten.

All of this knowledge affects life, the environment, the economy, and our legal and regulatory structures in increasingly complex ways. For as knowledge becomes more refined, familiar definitions of life and the world collapse, and our morality, ethics, and relationships with one another must be similarly refined. That process is always and invariably political.

The problem is that the process of democracy is becoming gummed up and paralyzed by the combination of public silence by scientists and engineers, big spending by vested interests, the increasing complexity of science, and its rapid advances that are outpacing the political discussion in literally dozens of fields now. By default or by design, democracy is facing a mounting challenge to its status as the preferred form of government. The best—and perhaps the only—solution to the growing challenge to democracy posed by the science gap is to better incorporate science into the ongoing public policy dialogue in civil society through the form of science debates. In a science debate, politicians come together with scientists, the media and the public to debate the key science policy questions facing the nation and the planet that have the most critical political traction at the time.

Such debates are excellent means of presenting adult viewers with complex science and science policy information in the context within which they are used to taking in complex information—the ongoing public policy dialogue. Thus, they serve to not only educate the public and policymakers, but to elevate the level of the policy discussion. By bringing these four divorced elements of civil society back together in a common forum, we can re-integrate science as a part of the broader public policy discussion, and help keep Jefferson’s idea of the well-informed voter’s government of, by and for the people alive for another two centuries.”

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