

MACAS Workshop hosted at CREST, Stellenbosch University, opens new doors for global research collaboration

On Wednesday 16 September 2015 CREST (Centre for Research on Evaluation, Science and Technology) at Stellenbosch University welcomed 20 top researchers from around the world who work in the field of public understanding of science and related science-society topics. They were joined by local researchers for a three-day working session in support of the “MACAS” project.

MACAS is a global research network focused on “Mapping the Cultural Authority of Science”. It has been collaborating since 2007 with key partners in India, China and several countries in Europe. The Stellenbosch workshop marks the beginning of including South Africa, and local research data, in the MACAS project.

In his introduction, Prof Peter Weingart, chair in science communication at CREST, commented on the importance of science communication for supporting the democratic fabric and culture in any country.

Prof Martin Bauer, London School of Economics, reminded participants that “science is global, but ‘science culture’ remains local, but that it is important to understand the relationship between local culture and global science. “A petri dish in Shanghai is no different from a petri dish in Timbuktu,” he said. “What is different, is the way people relate to the petri dish - they have different expectations and concerns.” He reflected on different views about the relationship between science and common sense, as well as the relationship between doxa (opinion) and episteme (knowledge). “In the field of public understanding of science, we are trying to assess common sense and how it relates to science,” he explained. Prof Bauer described collaborative work between Europe and India to develop science culture indicators and presented examples of how these indicators are tracked comparatively between countries.

“Science is global, but science culture, and therefore science communication, is local.” - Prof Martin

Prof Petra Pansegrau, a co-leader of the MACAS project based at Bielefeld University in Germany, presented a review of literature about the intensity of science news over time. Investigations into science news coverage goes back to an American study in 1941, reporting that about 5% of editorial space was identified as science news. About fifty years later a UK study found a similar result for the British press. Since then, numerous studies have tracked science press coverage in many countries. Despite dramatic changes in some countries, the overall averages range between 3 - 10% of editorial space allocated to science. An interesting exception is the Indian newspaper *Times of India* where more than 30% of editorial space focuses on science, but - Prof Pansegrau remarked - this could possibly be attributed to a different way of sampling and coding. One of the challenges faced by the MACAS group is to come up with standardised approaches to analyse and track science media coverage across countries.

Prof Rajesh Shukla, the Indian project leader for MACAS and a researcher at the Institute for Human Development in Delhi, shared findings from the tracking of science culture in India over the last 15 years. He illustrated the complexity of doing this research and developing cultural indicators in a country as diverse and populous as India where there are marked differences across geographical regions and language groups within the country. Based on differences in findings between the EU and Europe, Prof Shukla called for new thinking about public understanding of science; more region-specific approaches and fresh interpretations in cross-country comparisons of science culture indicators. On the concept of “scientific temper”, he quoted Jawaharlal Nehru, first prime minister of independent India, who said: “People should think independently, understand and practice the scientific method in their daily lives, analyse and not take statements at their face value and avoid simple reasoning”.

Dr Gauhur Raza, a researcher at the CSIR in India, presented a fascinating insight into how science and scientific thinking has liberalised Indian intellectualism and reformed society since the early 1900s. He noted that, since India's independence in 1947, the 'nebulous notion of scientific temper' has been popularised, but also intensely debated, in the country. Nehru first used the phrase 'scientific temper' in 1946. He described it as follows in his book "The Discovery of India": "[What is needed] is the scientific approach, the adventurous and yet critical temper of science, the search for truth and new knowledge, the refusal to accept anything without testing and trial, the capacity to change previous conclusions in the face of new evidence, the reliance on observed fact and not on pre-conceived theory, the hard discipline of the mind—all this is necessary, not merely for the application of science but for life itself and the solution of its many problems."

"There is no such thing as African, Hindu, Arab or Western science; science is science and cannot be divided." - Dr Gauhur Raza

Dr Raza described how the 1980s and 1990s saw a retreat of the concept of scientific temper, followed by more consensus in recent years. The notion of scientific temper was challenged by some Indian intellectuals and philosophers who viewed science as inherently oppressive. They categorised science as 'local' (or Hindu) science on the one hand, and 'Western' science on the other. In addition to challenges of multi-culturalism, many myths and superstitions persisted in Indian society. Before 1990, people were warned not to get out of their houses during a solar eclipse and large cities would be deserted during such an event. Now, solar eclipses are widely celebrated as a spectacular natural phenomenon. "We assume that communicating science is public good and that there won't be any resistance, he noted, but warned that this was not always the case. "Popularising science often means disturbing or challenging religious and economic power balances." Dr Raza stressed the need to consider the "other" - those who may oppose science communication - when developing science culture indicators.

The afternoon session on day one of the workshop was devoted to sharing research on media content analysis comparing not only the amount of science coverage, but also trends in media coverage of difference topics and controversies between countries. Researchers reported on methodologies to investigate science media coverage and shared their findings on how science is portrayed in the mass media, including the sentiments (positive or negative) associated with science stories, as well as how science stories are framed. In the subsequent discussion, it was emphasised that is about much more than number crunching, but also understanding how science is presented and how people respond to these stories.

The second day of the MACAS workshop kicked off with presentations on research about cognitive polyphasia (where different kinds of knowledge, for example science and religion, co-exist) in Nigeria (Dr Bankole Falade) and Taiwan (Dr Yuh-Yuh Li). This was followed by reports on the measurement of science attitudes in China (Dr Eric Xiang Li) and indicators of scientific temper in India (Dr Rajesh Shukla).

Dr Fabienne Cretaz von Roten from the University of Lausanne in Switzerland, presented her findings about attitudes in the World Value Survey - a global opinion survey running since 1981 and currently involving 99 countries. Researchers from the US (Prof John Besley); Brazil (Dr Yurij Castelfranchi) and Europe (Prof Ahmet Suerdem and Prof Martin Bauer) presented data - based on large surveys since the early 1980s - on three aspects of the science-society relationship: (1) interest in science; (2) knowledge of science and (3) attitudes towards science.

Day two concluded with a plenary talk by Prof Peter Weingart on the topic 'the authority of science revisited'. Commenting on the perceived loss of the authority of science in recent years, Prof Weingart posed the question: What kind of authority of science is typical, and what is appropriate, in modern societies? "Science depends on public support for funding, but why should the general public be interested in science any more than in politics, economy or religion?"

"Modern societies no longer accept, or need to accept, the unquestioned authority of science - to most people the world of science is unknown and strange." - Prof Peter Weingart

On the final morning of the workshop, Dr Thomas Auf der Heyde presented the strategic framework for public science engagement, developed by the South African Department of Science and Technology. He sketched the engagement challenges against the backdrop of South Africa's history of systematic exclusion of the majority of the population from science and technology. He elaborated on the Department's plans to coordinate and fund science communication more strategically in future, as well as to increase reflective engagement between science and society and strengthen the professional nature of science communication in the country. The Department has set itself a benchmark to spend at least 4% of its annual budget on science engagement.

"The purpose of the DST public engagement strategy is to elevate science communication in SA from a deficit model approach focusing on outreach to young people to more strategic level of engaging diverse publics in science."

"We need a new public space - a kind of 'restless agora' where science and society can freely debate and explore concerns, values and expectations" - Dr Hester du Plessis

Dr Hester du Plessis, a science philosopher at the Mapungubwe Institute for Strategic Reflection, reminded the MACAS group that science communication is not untouched by global events and tensions. "This means that we cannot continue as before," she says. "We have to think more critically about the nature of science culture, and strive to embed science communication in social values and social movements."

Two researchers from the Human Sciences Research Council - Dr Vijay Reddy and Dr Michael Gastrow - reflected on South Africans' knowledge of and attitudes towards science, based on nationally representative surveys since 1999. Dr Reddy reflected on the specific challenges of interpreting findings from these surveys and to come up with meaningful recommendations for future knowledge production and science engagement; as well as the best way to continue this research in future.

"If we are measuring attitudes to science over time, it must be because we think they are amenable to change. It therefore becomes very important to understand how attitudes are formed." - Dr Vijay Reddy

Dr Gastrow presented findings on where South Africans access scientific information. Currently television and radio are still the most popular sources, followed by newspapers and magazines. "The future will be online communication," he said, "It is rapidly growing in popularity and access, and we see its popularity specifically in the age group 16 - 24 years." His research also showed that more than 75% of South Africans have never been to a science museum or science centre.

In his concluding remarks Prof Weingart reflected on the importance for South African researchers to be in touch with global research trends and outcomes in the field of science communication. He pointed to the need to complement empirical research with theorising about its implications. "We need to understand the deeper meanings and implications of terms such as 'scientific temper' and how trust in science is formed and changes over time."

Marina Joubert, CREST, October 2015