



3-6  
APRIL  
2018

Public Communication of Science  
and Technology Conference  
DUNEDIN, NEW ZEALAND



**FULL PROGRAMME**  
SCIENCE, STORIES AND SOCIETY  
THE SOUL OF SCIENCE COMMUNICATION

A photograph of a penguin standing in a grassy field. The penguin is dark grey with a white stripe on its head and a white belly. It is looking to the right. In the foreground, there is a large, dark brown plant with long, thin, light-colored leaves. The background is a soft-focus green field with some driftwood visible.

# 1 INTRODUCTION

# SPONSORS



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Programme book designed and produced by  
Lloyd Spencer Davis and Anna Mills of Conference Innovators

# COMMITTEES

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Massimiano Bucchi, *Italy*

Lloyd Spencer Davis, *New Zealand*

Luisa Massarani, *Brazil*

Brian Trench, *Ireland*

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Jan Riise – *Europe*

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## LOCAL ORGANISING COMMITTEE

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# WELCOME



## SHARE YOUR STORIES

The theme of PCST 2018, Science, Stories and Society takes us to the core of the worldwide science communication endeavour. Stories are one of the principal means by which science is situated in society. Stories represent science in many different ways, reflecting diverse contributors and contexts.

As members of society, we receive and perceive science through the stories told by scientists, teachers, popular science authors, journalists, museums and science centres, and so many more. As members of society, scientists also constitute audiences for stories told about other parts of science, as well as being storytellers about their own science.

Not so long ago, such propositions might have caused anxiety, or antagonism, in scientific communities. "We don't make up stories," it could have been said. "We tell nature as it is". Telling stories carried the connotation of making things up, of fiction, and this was contrasted with exposition or explanation as fact-telling.

It is one of the notable achievements of the science communication movement of the past two decades to have stimulated awareness that there are many and increasing ways of communicating science with various audiences. Part of that awareness is breaking down the supposed hard border between presenting facts and telling stories. Facts need to be selected, dressed and put into order for them to be communicated; they need, in other words, to be arranged into stories.

Informal storytelling is part of all of our daily lives and formats like science cafés try to reproduce that. Formal storytelling is the professional work of explainers, mediators, publicists, broadcasters and others. Science communication as a field of practice and of research covers both of these domains. As practice, it is increasingly

professionalised, but it is not limited to the work of professionals. As research, it considers how society talks about science or, if you like, the stories society tells about science.

In the science communication community we have developed our own stories about our own evolution. According to one of our guiding stories, science used to be told top-down to society but now we understand that talk about science takes place in and with society. That shift is only part of the story, an important part, but still only part.

Through reflection and research, through international collaborations and conferences like ours, we are developing more sophisticated stories about who we are and where we are heading. In a global perspective, which uniquely the PCST conferences offer, we see the co-existence and co-evolution of diverse and apparently contradictory forms of communication.

At PCST 2018 in Dunedin, thousands of stories will be told and heard. Thank you for coming and sharing your stories.

[Brian Trench](#)

President PCST Network



## SCIENCE, STORIES AND SOCIETY...THE SOUL OF SCIENCE COMMUNICATION

Tēnā koutou katoa (Greetings to you all).

It is my great pleasure, on behalf of the Organising Committee, to welcome you all to Dunedin, New Zealand – or Middle Earth as it is known around here – for PCST 2018.

We have done everything within our hobbit-like powers to make this the most stimulating, thought-provoking, entertaining and enjoyable conference you will have ever experienced.

### **The Environs**

This starts with the setting: Dunedin lies at the base of the beautiful Otago Harbour with its associated Otago Peninsula. Within the city's boundaries can be found the world's only mainland colony of albatross (and they are not just any albatross, but Royal Albatross, the largest in the world); the world's rarest sea lion; and two species of penguins, including the world's rarest, the Yellow-eyed Penguin. A large green belt of native bush and forest runs through the city containing a plethora of

New Zealand native birds, glow-worm grottos and Peripatus (velvet worms), living fossils that have changed little in 500 million years. You get the picture: we inhabitants of Dunedin are a little unusual, but not just because of our hairy feet.

And, we hope that during your stay here, you will take the time to get to know some of us.

The University of Otago, where the conference is being held, is New Zealand's oldest university and arguably its most picturesque. Founded in 1869, it sits on the banks of the Leith River and contains a mixture of old stone buildings and strikingly modern ones. The St David Lecture Theatre complex – the main venue for PCST 2018 – is one of the latter, with first-class audio-visual facilities, break-out rooms and casual spaces. Importantly, it incorporates a café and we trust you will avail yourselves of the places to lounge and network with other conference goers – or step outside and enjoy sitting on the lawns or sculptured steps beside the calming waters of the Leith.

### **Themes**

PCST 2018 is opening with a gala evening on Tuesday 3 April and, then, each of the three main days is highlighting a different theme: Science, Stories and Society – the three elements that really are the heart and soul of science communication. PCST 2018 will explore that nexus between science, stories and society, that place where science communication lives.

### **Keynotes**

We have an exciting line-up of Keynote Speakers and Plenary Panelists for you. We have taken a great deal of care to ensure that our Keynote and Plenary speakers are gifted orators and have stimulating and, even, provocative things to say about science communication. We are also bringing a range of different formats to our keynote slots: in addition to the normal single-presenter keynotes, we are having plenary panel discussions and interviews. You should not miss our keynotes and plenary sessions.

### **Parallel Sessions**

Try as we might, we were simply unable to reduce the number of parallel sessions below 10 and still accommodate all the excellent proposals we received. We have taken care to curate the parallel sessions so that they represent the major themes of the conference each day with a variety of formats. At any one time, there will be individual paper sessions, grouped papers, roundtables, ideas in progress, show tell and talk, and workshops. In other words, we hope there will always be something to interest you.

### **Poster Sessions**

We have worked hard to elevate the role of poster presentations at PCST 2018; to make them a jewel in the conference's crown. This includes giving special prominence to posters in the foyer of the conference venue, having dedicated poster sessions with associated social activities, and theme-based tours of posters that turn them into “visual talks” – all ways of ensuring that authors of posters get valuable opportunities to discuss their work. We want to show that posters need not be the booby prize but, instead, the most rewarding way of all at PCST conferences to exchange ideas and get feedback about your research and reflections regarding science communication.

### **Social Interactions and Networking**

Of course, so many of us say that the best part of PCST conferences is the networking and we certainly want to facilitate that. In addition to the social functions associated with the posters, we are having the conference dinner at New Zealand's only castle; a gala opening-cum-reception at the Regent Theatre; and a social function in the new science centre of the Otago Museum. Plus, Dunedin is littered with bars, pubs and fine places to eat if you want to take yourself away from the throngs for a catch-up with friends and colleagues. The café culture in Dunedin is really vibrant too, with excellent coffee available everywhere. The hub of Dunedin's nightlife is in the Octagon, the city centre, which is an easy walk from the conference venue.

### **Middle Earth**

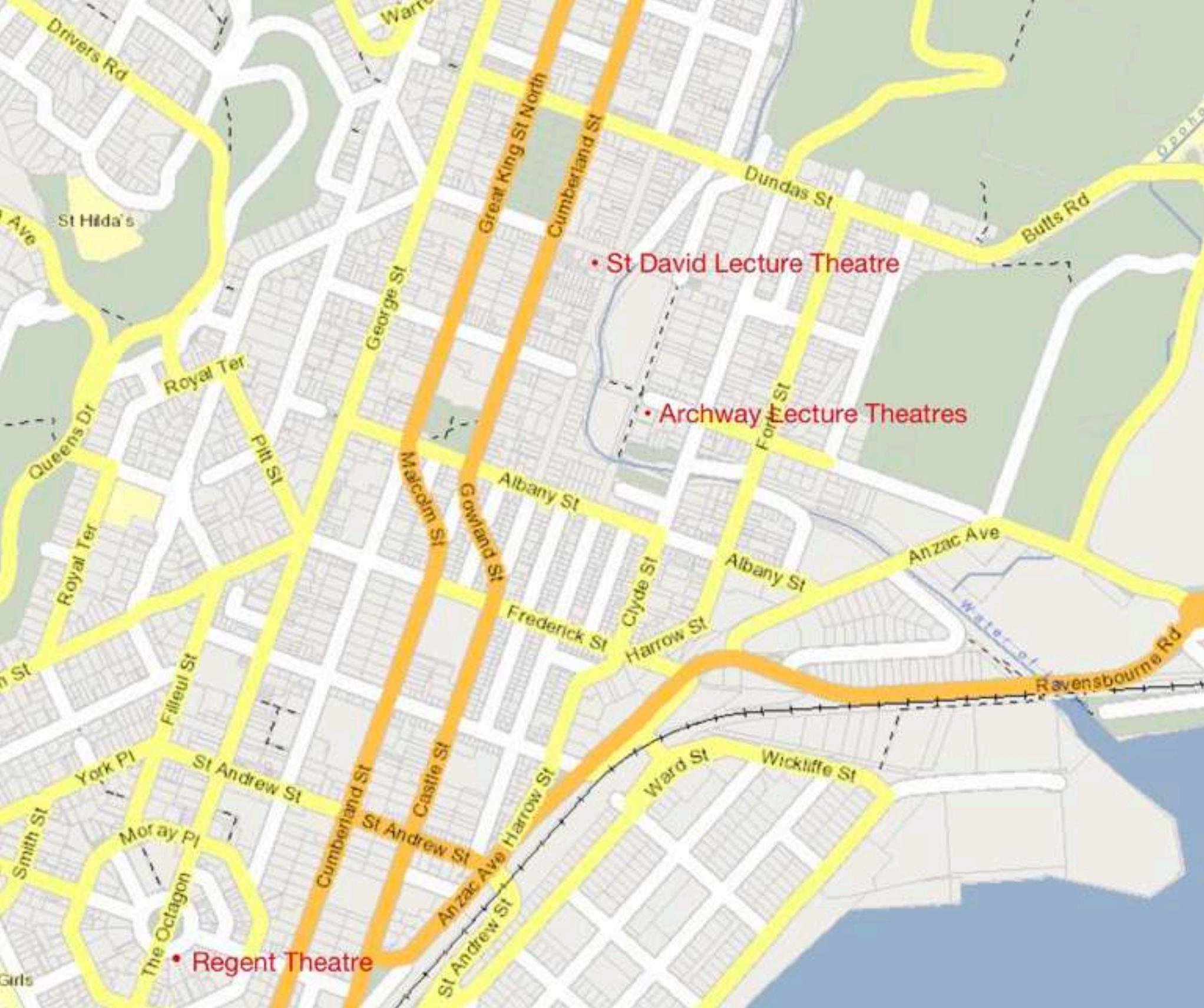
While we hope that PCST 2018 alone proves so attractive, insightful and enjoyable that you will be thankful you came for that alone, we hope that you will also take time to enjoy some of our unique wildlife (some of which is featured in this programme) and stunning scenery.

As our Maori people say, "He kotuku rerenga tahi" (A white heron flies once). We trust that you will be glad not to have missed this one: thank you for coming to PCST 2018.

Ka kite anō koutou (See you all soon).

[Lloyd Spencer Davis](#)

Chairperson of the Local Organising Committee, PCST 2018  
Vice-President PCST network

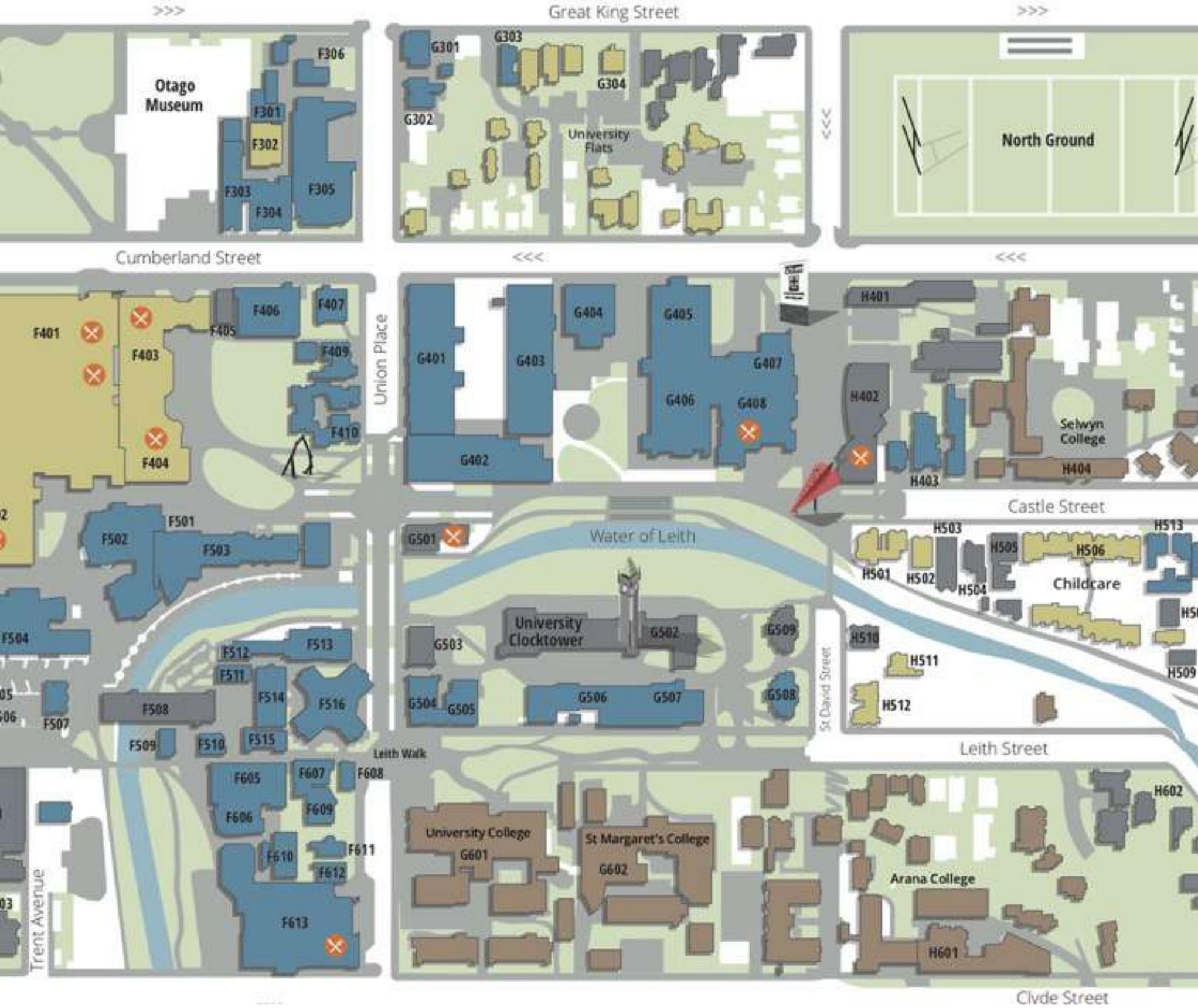


## MAP OF DUNEDIN

Map of the central part of Dunedin (The Octagon) and the area north showing the University of Otago campus.

Marked in red are the conference venues:

- St David Lecture Theatre complex – main conference venue and registration desk
- Archway Lecture Theatres – venue for some of the parallel sessions as part of the PCST 2018 programme
- Regent Theatre – venue for the Gala Opening of PCST 2018 on Tuesday 3 April



## MAP OF CONFERENCE VENUE

The main venue for PCST 2018 is the St David Lecture Theatre complex at the University of Otago on Cumberland Street (G407 and G408 on the map above). The registration desk will be at G407.

All rooms for PCST 2018 will be in either the St David Lecture Theatre complex or the Archway Theatres (F516 on the map above).



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# KEYNOTE AND PLENARY PANELS



## KEYNOTE SPEAKERS

We are pleased to be able to bring such exciting Keynote Speakers to PCST 2018.

There is a great tradition of oratory amongst New Zealand's native Maori population. Our Keynote Speakers were chosen not just because they are exceptional people with exceptional things to say, but in part because of the way they say those things.

See the [Programme Outline](#) and make sure you catch all our Keynote Speakers.

We thank our [sponsors](#) for making this feasible.



## DR JENNIFER WISEMAN

Dr Jennifer Wiseman is NASA's senior project scientist for the Hubble Space Telescope. Her primary responsibility is to ensure that the Hubble mission is as scientifically productive as possible. Previously, Dr Wiseman headed the Laboratory for Exoplanets and Stellar Astrophysics at the Goddard Space Flight Center. She started her career at NASA in 2003 as the programme scientist for Hubble and several other astrophysics missions at NASA Headquarters.

Dr Wiseman's scientific expertise is centred on the study of star and planet-forming regions in our galaxy using a variety of tools, including radio, optical and infrared telescopes. She has a particular interest in dense interstellar gas cloud cores, embedded protostars, and their related outflows as active ingredients of cosmic nurseries where stars and their planetary systems are born.

As an undergraduate, Dr Wiseman studied physics at MIT, where she discovered the comet 114P/Wiseman-Skiff. She then earned a Ph.D. in astronomy at Harvard University, and continued her research as a Jansky Fellow at the National Radio Astronomy Observatory and as a Hubble Fellow at The Johns Hopkins University.

In addition to research in astrophysics, Dr Wiseman is also interested in science policy and public science outreach and engagement. She has served as a congressional science fellow of the American Physical

Society, an elected councillor of the American Astronomical Society, and a public dialogue leader for the American Association for the Advancement of Science. She enjoys giving talks on the excitement of astronomy and scientific discovery, and has appeared in many science and news venues including The New York Times, The Washington Post, NOVA, the BBC, and National Public Radio.

**Keynote address: 7pm Tuesday 3 April Regent Theatre**

### **The Hubble Space Telescope: Our Window to an Amazing Universe**

The Hubble Space Telescope mesmerizes the world with its breathtaking images of stars, magnificent galaxies, colorful star-forming nebulae, and planets. It is also transforming our scientific understanding of the universe, through discoveries regarding black holes, active galaxies, dark matter, mysterious dark energy, and planetary systems beyond our own. The Hubble mission's phenomenal success is intertwined with its groundbreaking priority of public engagement. As a result, Hubble images are loved around the world, and the Hubble name has become synonymous with the highest scientific capability. I will share some of Hubble's greatest images and discoveries, and discuss how Hubble's successful public outreach can serve as a model for many other realms of scientific and technological achievement.

*Kindly sponsored by the Royal Society of New Zealand and the Stuart Residence Halls Council*



## DISTINGUISHED PROFESSOR TETSURO MATSUZAWA

Distinguished Professor Matsuzawa has been studying chimpanzees both in the laboratory and in the wild for 40 years. His laboratory work is known as the "Ai-project" and has been operating in the Primate Research Institute of Kyoto University since 1977, where a female chimpanzee named Ai learned to use Arabic numerals to represent numbers (Matsuzawa, 1985, NATURE). His fieldwork has been carried out in Bossou-Nimba, Guinea, since 1986, and focusses on the use of tools in the wild. Professor Matsuzawa tries to synthesize his field and lab work on the mind of chimpanzees so as to understand the evolutionary origins of the human mind. His published books include Primate origins of human cognition and behavior, Cognitive development in chimpanzees, and The chimpanzees of Bossou and Nimba. He has been awarded many prizes including the Jane Goodall Award in 2001, The Medal with Purple Ribbon in 2004, and The Person of Cultural Merit in 2013.

Distinguished Professor Matsuzawa is well known for his research on chimpanzee memory that suggests chimpanzees can outperform humans on some memory tasks. This has not been without scientific controversy and Professor Matsuzawa has been an active promotor of science, including giving many public talks. He also helped launch SAGA (Support for African/Asian Great Apes) in 1998. SAGA is a consortium of those persons and NGOs who are concerned about the welfare and future of the great apes (chimpanzees, gorillas, and

orangutans). SAGA has promoted conservation in the species' natural habitats, welfare and enrichment in the captive environment, and furthering scientific understanding through non-invasive techniques.

He is also the Editor-in-Chief of the journal *Primates* and the Director General of the Japanese Monkey Centre.

**Keynote address:** 9:05am Wednesday 4 April St David Lecture Theatre

### **The Study of Chimpanzee Mind in relation to Public Communication**

I have been studying chimpanzees both in the laboratory and in the wild. The laboratory work is known as the "Ai-project" in the Primate Research Institute of Kyoto University. Since 1977, a female chimpanzee named Ai has learned to use Arabic numerals to represent numbers (see <http://langint.pri.kyoto-u.ac.jp/ai/>). The fieldwork has been carried out in Bossou-Nimba, Guinea, since 1986, focusing on tool use in the wild (see <https://www.greencorridor.info/>). I endeavour to synthesize the field and the lab work to understand the mind of chimpanzees to know the evolutionary origins of the human mind. My colleagues and I have found that the young chimpanzees have an extraordinary working memory. In cognitive tasks, they are superior to humans. In contrast, humans are unique in terms of the power of imagination that provides the basis for symbolic communication such as language. In addition to publishing scientific papers and books, we have set up web pages to show the scientific results. The public awareness about the chimpanzees has helped us to stop invasive medical studies of chimpanzees in Japan and to promote the conservation of wild chimpanzees.



## DR DREW BERRY

Dr Drew Berry creates biomedical animations that combine cinema and science to reveal the microscopic worlds inside our bodies.

His career began in cell biology and microscopy at The University of Melbourne. He has used this knowledge to bring a rigorous scientific approach to every topic, immersing himself in relevant research and current data to ensure the frontier of human discovery is authentically reconstructed.

Since 1995, he has worked as a biomedical animator at the Walter+Eliza Hall Institute of Medical Research. His animations have been exhibited at the Guggenheim Museum, Museum of Modern Art, the Royal Institute of Great Britain and the University of Geneva.

A gifted speaker, his TED Talk on Animations of unseeable biology has been viewed nearly 1.5 million times.

**Keynote address:** [1:00pm Wednesday 4 April St David Lecture Theatre](#)

### **The Molecular Machines that Create your Flesh and Blood**

After 20 years producing bio-molecular visualisations with time-consuming, expensive 'Hollywood-style' animation pipelines, Drew Berry has switched to the extraordinary power of video game hardware for generating vast, detailed molecular and membrane landscapes inside our living cells. Drew Berry will present the latest experiments with real-time 3D 'diorama' open-world scenes of membranes and molecular engines that underlie the conversion of the food we eat into chemical energy for our cells, for interactive storytelling and memorable education experiences.



## PROFESSOR LEE BERGER

Professor Lee R. Berger, Ph.D. D.Sc. FRSSAf ASSAf, is an award-winning researcher, explorer, author and speaker. He has been recognized by Time Magazine in 2016 as one of the 100 Most Influential People in the World. He is the recipient of the National Geographic Society's first Prize for Research and Exploration and the Academy of Achievement's Golden Plate Award and was the 2016 National Geographic Society's Rolex Explorer of the Year. His work has brought him recognition as a Fellow of the Royal Society of South Africa and the South African Academy of Sciences and prominent advisory positions including the Chairmanship of the Fulbright Commission of South Africa, the Senior Advisory Board of the Global Young Academy and the Centre of Excellence in Palaeosciences of South Africa among many others. He is a South African Ambassador for Tourism, Conventions and Business Events.

His explorations into human origins on the African continent, Asia and Micronesia for the past two and a half decades have resulted in many new discoveries, including the discovery of two new species of early human relatives – *Australopithecus sediba* and *Homo naledi*. His contributions to exploration sciences have also resulted in advances in the field of applied exploration methods and the application of technology to exploration, excavation and discovery.

He is the author of more than two hundred scholarly and popular works including more than 100 refereed papers and a number of academic and popular books on palaeontology, natural history, and exploration. His work has been featured three times on the cover of *Science*, and has been named the top 100 science stories of the year by *Time*, *Scientific American* and *Discover Magazine* on numerous occasions. He has appeared in many television documentaries on subjects related to archaeology, palaeoanthropology and natural history.

Professor Berger is an internationally recognized proponent of open access science and open sourcing. He has founded the not-for-profit Lee R. Berger Foundation for Exploration and was a founder of the Palaeoanthropological Scientific Trust and a founding Trustee of the Jane Goodall Society of South Africa. He is Director of both the Malapa site and Rising Star excavations, the latter resulting in the discovery of the largest primitive hominin assemblage in history.

He is presently the Research Professor in Human Evolution and the Public Understanding of Science at the University of the Witwatersrand, Johannesburg, South Africa and an Explorer in Residence at the National Geographic Society. He is also the Division Director of Palaeoanthropology in the Evolutionary Studies Institute at the University of the Witwatersrand.

**Keynote address:** [8:50am Thursday 5 April St David Lecture Theatre](#)

### **Talking Origins – Communicating the science and the discovery of *Homo naledi* and other human ancestors**

In 2008 a nine-year old discovered in South Africa what was described as one of the most important discoveries of the twentieth century – the first specimens of an entirely new species of ancient human relative – *Australopithecus sediba*. The discovery, and the way it was communicated to, and shared with both the general public and the scientific community in some ways transformed the field of palaeoanthropology and set the stage for a revolution in open access science and collaboration. In 2013, the same team of scientists involved with the sediba project discovered a perhaps even more remarkable cache of ancient human relatives. In the Rising Star cave system, deep underground, a team of scientists, who happened to be all women, excavated and recovered in front of the world via social and traditional media, what would become the richest deposit of fossil hominids discovered in the history of the search for human origins on the continent of Africa. The scientific team would also name another new species – *Homo naledi*. In this keynote address, the scientific leader of both of these projects will take us through the history of these discoveries and the evolution of the remarkable projects that have come to be recognized as one of the largest and most successful collaborative science programs in history. A program that has also achieved significant levels of success in outreach and science communication. Prof. Berger will outline the history, background, challenges and successes of science communication around these projects, his personal experiences as a science communicator, and explore his ideas on the future of science communication and outreach.



## PROFESSOR LISA MATISOO-SMITH

Professor Lisa Matisoo-Smith focuses primarily on identifying the origins of Pacific peoples and their commensal plants and animals in order to better understand the settlement, history and prehistory of the Pacific and New Zealand. She is one of 13 Principal Investigators in the Genographic project which is sponsored by National Geographic, IBM and the Waitt Family Foundation. She is responsible for sampling the Pacific region. She is also currently leading a project entitled "Linking the Past and the Present - Ancient DNA and Pacific Origins and Interactions".

Prof Matisoo-Smith has instituted an innovative project that helps secondary school teachers teach human evolution by using their own DNA. The project aims to "inspire young high school students with the amazing story of our shared maternal ancestor in Africa," and how a "small band of humans" left Africa 60,000 years ago, and spread across the entire world.

Their final travel to New Zealand had been the "longest and most dangerous leg of the human journey" (Otago Daily Times 8 June 2017).

"The stories of our origins and different journeys are preserved in our DNA," says Professor Matisoo-Smith, who is herself a master

storyteller. From TEDx to classrooms to public forums, she is a tireless communicator and science storyteller.

**Keynote address:** [1:00pm Thursday 5 April St David Lecture Theatre](#)

### **The Powers and Pitfalls of Science Storytelling in the Pacific**

Engaging with the public is essential for science communication and, I would argue, for science more generally. Storytelling is a valuable tool for communicating with and engaging the public, but it can also be a dangerous weapon if used irresponsibly. Given my experience over the last 25 years of using molecular tools (ancient and modern DNA analyses) to answer questions about human migrations in the Pacific, I will highlight some of the lessons I have learned about storytelling. This approach has both opened doors for new research opportunities with Pacific communities, but can just as easily have negative impacts on community engagement and on scientific research.



## PROFESSOR MAJA HORST

As a researcher, Professor Maja Horst is interested in the relationship between science and society - with particular emphasis on public communication about science and technology. She is Head of Department of the Department of Media, Cognition and Communication at the University of Copenhagen.

She is one of those at the forefront of developing a framework for the relatively new discipline of Science Communication. In 2016, she published the book, *Science Communication: Culture, Identity and Citizenship*, which she co-authored with Sarah Davies.

Professor Horst has previously lead research projects studying the public debate on stem cell research, as well as those studying research management and risk. She is currently studying how social, political and cultural values affect scientific research and technological innovation and how these, in turn, affect society, politics and culture. She also researches the intersection between the public and science, studying – for example – how research and science results and processes are communicated by various sources to non-expert societal and political stakeholders including the general public via the media. She monitors the public debate around research and technology and how values and opinions form in the public domain, and how they affect and are affected by research and science communication.

In 2009, Professor Horst received the Research Communication Award granted by the Danish Ministry of Science, Technology and Innovation. Through innovative communication forms, she is able to inform and at the same time enter into a dialogue with the audience. "She is an inspiration to other researchers," says Science Minister Helge Sander.

**Keynote address:** [8:45am Friday 6 April St David Lecture Theatre](#)

### **Communicating (about) the social responsibility of science**

Starting the talk with a short video, I will describe how a cross-disciplinary group of researchers, designers and students made a very abstract and complicated social science project into an interactive installation in a science festival. The installation allowed visitors to take active part in the debate about the social responsibility of science, rather than simply observing it from the outside. Developing from this example, my argument is that science communication and the engagement of various actors are not the means to some other goal but an end in themselves – and not least since they reinforce interaction and dialogue as a foundational aspect of culture and society.



## SIR PETER GLUCKMAN ONZ FRS

Sir Peter Gluckman ONZ FRS is the first Chief Science Advisor to the Prime Minister of New Zealand, having been appointed in 2009.

He is also science envoy and advisor to the Ministry of Foreign Affairs and Trade. He is chair of the International Network of Government Science Advice (INGSA). He is the coordinator of the secretariat of Small Advanced Economies Initiative. He trained as a pediatric and biomedical scientist and holds a Distinguished University Professorship at the Liggins Institute of the University of Auckland. He has published over 700 scientific papers and several technical and popular science books. He has written and spoken extensively on science-policy and science-diplomacy and science-society interactions.

He has received the highest scientific (Rutherford medal) and civilian (Order of New Zealand,) honours in NZ and numerous international scientific awards. In 2004, he was named New Zealander of the Year. He is a Fellow of the Royal Society of London, a member of the National Academy of Medicine (USA) and a fellow of the Academy of Medical Sciences (UK).

In 2014, he hosted and chaired the Science Advice to Governments Conference, convened by the International Council for Science

(ICSU), which was the first global meeting of high-level science advisors. Two years later, he received the AAAS award in Science Diplomacy.

**Keynote address:** [9:05am Friday 6 April St David Lecture Theatre](#)

### **Knowledge brokerage in an age of rapid technological change**

The range of current and potential developments of science driven technologies is growing – artificial intelligence and big data, robotics, internet of things, autonomous vehicles, nanotechnology, gene editing, brain enhancement drugs, meiotic gene drives, bioelectronic implants, synthetic biology and geoengineering are some of the most obvious. In different ways, many of these technologies have the potential to both advance the planetary and human condition or to harm it, and different stakeholders will have very different perceptions and understandings.

Yet the nature of the public conversations on the complex issues of technological use and constraint, and on risk, benefit and precaution, are often trivialised or sensationalised or politicised from an early stage. Trade-offs are often not discussed in a realistic manner. Polarised positions, once established, are difficult to change.

Society needs new technologies, yet also needs to find ways to adaptively manage them. Issues of anticipatory versus reactive regulation emerge. There is a need for reflection on how communication of scientific and technological developments can affect the conditional achievement, or not, of social license. There are different roles, responsibilities and expectations on the various players at this interface.



## NICKEY HAGER

Nicky Hager is an author and investigative journalist based in Wellington, New Zealand. He has written six best-selling books and divides his time between investigative writing and freelance feature writing. He has specialised in investigating hard-to-document subjects, such as military and intelligence agencies, public relations activities and the unseen sides of politics, as well as environmental, technological and science issues.

His 1996 book, *Secret Power*, New Zealand's role in the international spy network, revealed and described the western intelligence system called Echelon. Based on interviews with intelligence officers and fieldwork in several countries, the book created international news and led to a year-long investigation into Echelon by the European Parliament.

*Secrets and Lies*, the anatomy of an anti-environmental PR campaign (1999), co-authored by Australian journalist Bob Burton, was based on internal PR papers and documented the techniques used by PR companies to manufacture political support for their clients and to undermine their clients' opponents.

*Seeds of Distrust* (2002) was based on public service and company documentation and was a case study of government processes and industry lobbying under the Labour Government. In 2006 he published

The Hollow Men, a study in the politics of deception, a detailed expose of three years of politics within the New Zealand National Party. This book, which prompted the resignation of the party leader on the day it was released, has since been adapted into a successful stage play and feature-length documentary film. His 2011 book Other People's Wars and 2017 book Hit and Run both investigate information and media control by militaries in the Afghanistan War. There is an archive of his writing and speeches at [www.nickyhager.info](http://www.nickyhager.info).

Since 2002 Nicky Hager has been the New Zealand representative of the Washington-based Consortium of Investigative Journalists, working on projects such as the Panama Papers. He also regularly lectures on investigative journalism to university journalism students and speaks widely on a range of subjects.

Lately, he has become interested in what happens when the data and voices of scientists clash with the interests of Big Business and governments.

**Keynote address:** 1:00pm Friday 6 April St David Lecture Theatre

### **When science clashes with vested interests**

A huge and well resourced industry has grown around the world devoted to influencing the news, public debate and government processes on behalf of vested interests: industry lobbyists, the unscrupulous parts of the PR and marketing industries, specialist law firms and a constellation of related professions. It has become routine, on issues where the public interest and vested interests collide, for science, fact and truth to be denigrated, manipulated and endlessly disputed.

Faced with this, ordinary people can become cynical about believing anyone and switch off. Some vested interests are probably perfectly happy for them to do this. Rational and democratic decision making is weakened and sidelined. But we must not fall for this. The challenge on most important issues is to keep caring, to keep speaking up and to keep finding ways to pursue fact and truth in spite of the manipulation.



## PLENARY PANELS

At PCST 2018, we have Plenary Panels to debate and discuss four of the main issues confronting us as science communication professionals. Our Plenary Panelists were chosen because of the tremendous expertise and insights they bring to these topics. Many, you will notice, are members of our [Scientific Committee](#).

We anticipate that these Plenary Panels will be some of the most provocative and stimulating parts of PCST, where we get to bat around ideas and question what we do and why. Like the Royal Albatross breeding at Taiaroa Head, you may be surprised by how some of these ideas fly.

Make sure that you are there to contribute.

# PLENARY PANEL: WHAT DO SCIENTISTS WANT FROM PUBLIC COMMUNICATION?

**When and Where:** 9:25am Wednesday 4 April St David Lecture Theatre

**Featuring also:** [Dr Jennifer Wiseman](#) and [Distinguished Prof Tetsuro Matsuzawa](#)

**Moderated by:** Jenni Metcalfe



## LUISA MASSARANI

Luisa Massarani has been a Brazilian science communicator since 1987. She is the coordinator of the National Institute of Public Communication in Science and Technology. She is a researcher and science communicator at the Museum of Life ([www.museudavida.fiocruz.br](http://www.museudavida.fiocruz.br)) and coordinator of the master in science communication, both of them linked at House of Oswaldo Cruz, Oswaldo Cruz Foundation, in Rio de Janeiro, Brazil. Coordinator for Latin America and the Caribbean of SciDev.Net ([www.scidev.net](http://www.scidev.net)). Director of RedPOP, the Network for Science Popularization in Latin America and the Caribbean 2015-2017. She received the 2014 Mercosur Award on Research in Science Communication and the Jose Reis Award 2016 – the Brazilian Award for Science Communication.



## DR HANS PETER PETERS

Hans Peter Peters is a social scientist at the Research Center Juelich, Germany, and Adjunct Professor of Science Journalism at the Free University of Berlin. He received his Ph.D. in 1984 from the University of Bochum with a thesis on information transfer from science to the mass media. Since 2002 he is member of the Scientific Committee of the PCST Network.

His scientific interests are in the domain of Public Communication of Science and Technology (PCST) with an emphasis on empirical research and international comparisons. Most of his research has dealt with public perception, public attitudes and public communication about nuclear power, climate change, genetic engineering, biomedicine and neuroscience. A particular focus was on scientists as media sources and

public communicators, their role as "public experts" in environmental and risk issues, and their interactions with journalists.

His current research looks at the implications of three trends for science communication: (1) increasing strategic orientation of scientific communicators and its possible repercussions on science, (2) rise of the "public engagement" paradigm with its challenge of the traditional boundary between science and the public, and (3) changing public arenas in an Internet-based media system with alternative paths to the public sphere and new communicators, media, gatekeepers and selection criteria.

# PLENARY PANEL: WHAT KINDS OF STORIES ABOUT SCIENCE SHOULD WE TELL?

**When and Where:** 9:25am Thursday 5 April St David Lecture Theatre

**Featuring also:** [Prof Lee Berger](#)

**Moderated by:** Marina Joubert



## ASSOCIATE PROFESSOR AYELET BARAM-TSABARI

Ayelet Baram-Tsabari is an Associate Professor at the Faculty of Education in Science and Technology at the Technion – Israel Institute of Technology (B.Sc. Tel Aviv University, Ph.D. Weizmann Institute of Science). Ayelet is a member of the Learning in a Networked Society (LINKS) Israeli Center of Research Excellence (I-CORE) and an elected member of the Israel Young Academy. She founded the Israeli Science Communication Conference series and is elected member of the scientific committee of PCST.

Ayelet's research focuses on bridging science education and science communication scholarship; identifying people's interests in science; building on people's authentic interests in science to teach and communicate science in more meaningful and personally relevant ways; and supporting scientists in becoming effective science communicators to enable publics to use evidence in order to make informed individual and social decisions.



## JAN RIISE

Jan Riise is currently manager for communication and engagement at Mistra Urban Futures, a research centre for sustainable urban development at Chalmers University of Technology. He has served as director of Eusea, European Science Events Association, and project manager in several EU funded science communication projects. Jan's primary interest is in the dialogue and participation of stakeholders and

citizens in research, innovation and societal development – and the role of communication to realise this.

Jan Riise is ‘Engagement Manager’ at Mistra Urban Futures, a transdisciplinary research centre for sustainable urban development, located at Chalmers University of Technology in Gothenburg, Sweden. He has served as director and president of Eusea, European Science Events Association and project manager in several EU funded science communication projects. Jan’s primary interest is in the dialogue, citizen science and participation of various actors in research, innovation and societal development. This also includes the interface between politics, policy-makers and how research results become recommendations and advice supporting ‘evidence-based policies’.



## SOFÍA OTERO

Sofía Otero is a journalist, writer, and science communicator. She has been working in the field of promoting mathematical and physical sciences for 10 years, with an emphasis on geology and geothermal energy, and developing communication strategies and outreach materials on several platforms (videos, books, museum exhibitions, social media) for different audiences. She is a co-founder of the first science communication diploma in Chile, and the first science communication undergraduate course for engineers in the country. She was awarded the Scientific Education Award from the Young Science Foundation – UNESCO in 2016 for the project “Julieta in the land of girls,” which promoted girls’ exploration of nature through team play.

Sofía’s publications include popular science books on the relation of Andean volcanoes and local mythology and legends (“Land of fire”), the first zoo elephant that died in Chile (“Free Fresia”), astronomical observatories in the Atacama desert (“Look up!”) and the celebration of the beauty of minerals (“Chilean mineral richness”). Her Master of Science Communication thesis was on the topic of effective narratives to communicate science to children. Generating interest and entertainment with science are the main drivers of Sofía’s work, and boredom is her enemy.

# PLENARY PANEL: WHAT IS THE SOCIAL FUNCTION OF SCIENCE COMMUNICATION?

**When and Where:** 9:25am Friday 6 April St David Lecture Theatre

**Featuring also:** [Prof Maja Horst](#) and [Sir Peter Gluckman](#)

**Moderated by:** Brian Trench



## DR BIRTE FÄHNRICH

Dr Birte Fähnrich is a senior researcher at the Center for Political Communication at Zeppelin University (Friedrichshafen, Germany). She is a speaker for the Science Communication Section of the German Communication Association DGPK and a member of the PCST committee. Before that, she was visiting professor for Organizational Communication at the University of Greifswald as well as at Royal Roads University (Canada, BC) and Lund University (Sweden). She holds a PhD from Leipzig University. Her research interests include science communication, political communication and strategic communication.



## DR ROD LAMBERTS

Dr Rod Lamberts is Deputy Director of the Australian National Centre for the Public Awareness of Science (CPAS) at the Australian National University and a former National President of the Australian Science Communicators. He has 20 years' experience as a science communication lecturer, practitioner, commentator and researcher. Rod has provided science communication advice to a wide variety of private and public science-related agencies in Australia and overseas (including the CSIRO, UNESCO & the DIIS) and is a regular public commentator on science, science communication, and science and public policy in Australia. His current professional pursuits focus on:

- the role of expertise, public intellectualism and science communication in affecting social change

- conducting large scale national public surveys of beliefs and attitudes to science and scientists
- the interaction of perceptions of risk and ethics in science and science communication

Rod also frequently comments and interprets science on national radio programmes, has written numerous public commentary pieces for sites like The Conversation, and is co-creator of The Wholesome Show podcast.

# PLENARY PANEL: REFLECTIONS AND FUTURE DIRECTIONS

**When and Where:** 4:45pm Friday 6 April St David Lecture Theatre

**Moderated by:** Dr Fabien Medvecky



## PROFESSOR MASSIMIANO BUCCHI

Massimiano Bucchi is Professor of Science and Technology in Society at the University of Trento, Italy and has been visiting professor in academic and research institutions in Asia, Europe, North America and Oceania. He is the editor of the international journal Public Understanding of Science (Sage). He has published papers in journals such as Nature and Science and several books (in Italy, Brazil, Finland, China, Korea, UK and USA, Spain and Latin America), including Science in Society (London and New York, Routledge, 2004), Beyond Technocracy (New York, Springer, 2009); Handbook of Public Communication of Science and Technology (London & New York, Routledge, 2014) and the 4vols anthology The Public Communication of Science (London & New York, Routledge, 2016, both ed. with B. Trench).



## PROFESSOR ALEXANDER GERBER

Alexander Gerber is Professor of Science Communication at Germany's first fully international public university, Rhine-Waal. Prof Gerber coordinates Europe's only 3-year Science Communication degree programme. The research in Prof Gerber's department focusses on socio-political dimensions of science-society issues. As an outspoken critic of the ineffective transfer mechanisms of scholarly publishing, Prof Gerber is calling for an 'Open Science Communication', by emphasising the shared responsibilities of the different stakeholders. Prof Gerber introduced Reintermediation Theory in Science Journalism research, and is the author of the German series of "Trend Studies in Science Communication".

Prof Gerber is also Research Director of the extramural Institute for Science and Innovation Communication (INSCICO) and a Visiting Professor in the Science Marketing/Science Communication Masters degrees in Trieste, Italy, and at the Berlin Institute of Technology, Germany. Before coming to Rhine-Waal University, the information scientist and long-time science journalist-author-film director was Head of Marketing & Communications at Fraunhofer (ICT) for seven years, and founder and editor-in-chief of InnoVisions Magazine.

Prof Gerber is an elected member of the Scientific Committee of PCST. He chairs the Board of Curators of the German Association of Specialised Journalists. He is a member of the Advisory Boards of the International Science in Society Knowledge Community, the International School for Advanced Studies (SISSA), and the Science Shop Network in Bonn. For Euroscience, he serves as an elected member of the Governing Board and of the ESOF Supervisory Board.



## DR SARA YEO

Sara K. Yeo (Ph.D., University of Wisconsin-Madison) is an Assistant Professor in the Department of Communication and a faculty affiliate with the Global Change and Sustainability Center and the Environmental Humanities Program at the University of Utah. Her research interests include science and risk communication, public opinion of STEM issues, and information seeking and processing. Her work has been published in journals such as *Public Understanding of Science*, *Risk Analysis*, *Energy Policy*, *Journalism and Mass Communication Quarterly*, and *Materials Today*. Originally from Malaysia, Dr. Yeo is trained as a bench and field scientist and holds a M.S. in Oceanography from the University of Hawaii at Manoa. Her training in ecology and the life sciences has been invaluable to her research at the intersection of science, media, and politics.



## PLENARY MODERATORS AND INTERVIEWERS

Moderators for Plenary sessions are crucially important: they are the oil that keeps the sessions running smoothly. In addition, we are bringing a new format to Plenary sessions at PCST 2018: interviews with some of our Keynote Speakers. Hopefully not as incongruous as Larnach Castle – New Zealand’s only castle and the venue for the Conference Dinner – these should provide for a more personal, more probing approach to delving into what our Keynote Speakers have to say about communication.

We are grateful to all our Plenary Moderators and Interviewers who are either members of the [Scientific Committee](#) or prominent contributors to the science communication scene in New Zealand.

# PLENARY MODERATORS



## PROFESSOR LLOYD SPENCER DAVIS

Lloyd Spencer Davis is an award-winning science writer, science filmmaker, scientist and science communication researcher with over 150 publications. In 2007, he was appointed the inaugural Stuart Professor of Science Communication at the University of Otago and was tasked with establishing the Centre for Science Communication and becoming its first Director. His most recent books Professor Penguin: discovery and adventure with penguins (Random House) and an edited volume Science Diplomacy: new day or false dawn? (World Scientific) were published in 2014 and 2015, respectively, while his most recent documentary, The Guardian of Kinabalu, was made for the Malaysian Film Board and completed in 2017. In October 2017, he stepped down as the Director of the Centre to concentrate on his current projects involving science communication, which include research on science communication in national parks, a film about the science of wine, and a book about the first penguin biologist. He is currently the Vice President of PCST.



## JENNI METCALFE

Jenni Metcalfe is the Founder and Director of Econnect Communication, established in 1995 to help scientists communicate about their research. Jenni also lectures in science communication at the University of Rhine-Waal in Germany. She has been a science communicator for more than 25 years, working as a journalist, practitioner and researcher. Jenni has published many papers and articles on science communication. She was co-editor of the human scale: International practices in science communication, published in 2006 by Science

Press, Beijing. Jenni has been a member of the scientific committee of the International Public Communication of Science and Technology (PCST) Network since 1996. She is currently Chair of the PCST's Programme Committee for its next conference, being held in Dunedin New Zealand in 2018. Jenni is passionate about doing science communication that creates a positive difference to people's lives. She believes that every person has a right to understand and engage with science so they can make more informed decisions about issues and opportunities that affect their lives.



## MARINA JOUBERT

Marina Joubert is a science communication researcher at the Centre for Research on Evaluation, Science and Technology (CREST) at Stellenbosch University (SU) in South Africa. After working as a science communication manager and consultant for two decades, she joined SU in 2015. In addition to coordinating and presenting an online science communication course with a focus on Africa, she teaches science communication within an MPhil programme on science and technology studies. Her research interests focus on scientists' role in public communication of science.

Marina serves on the scientific committee of the global PCST (Public Communication of Science and Technology) network and the editorial board of Science Communication, as well as the global advisory board of the online, open access Journal of Science Communication. In July 2015, she won the (South African) National Science and Technology Forum Award for her contribution to promoting science communication and outreach in the country.

She holds a BSc Food Science (Honours) degree, as well as a Journalism (honours) degree from Stellenbosch University, as well as an MSc (Agric) from University of Pretoria. Marina submitted her PhD dissertation on the science communication behaviour of publicly visible scientists in South Africa during October 2017.



## BRIAN TRENCH

Brian Trench is a researcher, educator and editor in science communication. Journalist-turned-university-lecturer, he led a Masters in Science Communication at Dublin City University from 1996. Around that

programme, he developed European and nationally funded training and research projects and opportunities for PhD research. He has given talks and workshops on science communication in over 20 countries, written many papers and book chapters, and co-edited the Routledge Handbook of Public Communication of Science and Technology (2008 and 2014), Public Communication of Science (4-volume anthology, 2016), and Little Country, Big Talk – science communication in Ireland (2017). He has been president of the PCST Network since 2014.

## DR FABIEN MEDVECKY



Fabien Medvecky is a lecturer in science communication at the University of Otago's Centre for Science Communication and the President of the Science Communicators' Association of New Zealand. With a background in philosophy and in economics, his interest sits at the intersection between science communication, science policy, economic theory and ethical theory with a focus on the tension between the objective aims of science and the value-driven reality of decision-making. His current research focuses on the ethics of communicating knowledge in a social setting (such as science communication and Responsible Research and Innovation), and on the communication of economics as a special case of public engagement with knowledge. He previously lectured at the University of Queensland's Science Communication programme.

## PLENARY INTERVIEWERS



### ASSOCIATE PROFESSOR REBECCA PRIESTLEY

Associate Professor Rebecca Priestley is a science writer and historian. She is a senior lecturer in the Science and Society group at Victoria University of Wellington and a principal investigator with Te Punaha Matatini. Her research covers science communication in New Zealand and the history of science in New Zealand and Antarctica, with a focus on 20th century science. Her science communication practice includes science journalism – she wrote a regular science column for the New Zealand Listener from 2010-2016 – and creative non-fiction. Her books include *Dispatches from Continent Seven: an anthology of Antarctic science*, *The Fukushima Effect: a new geopolitical terrain*, *Mad on Radium: New Zealand in the atomic age* and *The Awa Book of New Zealand Science*. She has also written for *Scientific American Online*, the *Griffith Review* and *The Conversation*. Her writing often chronicles and draws on her own journeys in New Zealand's wider territories, from the Kermadec Islands to the north, and south to Antarctica. Rebecca was winner of the 2016 Prime Minister's Science Communication Prize and the 2009 Royal Society of New Zealand Science Book Prize. She is now working on a book based on her trips to Antarctica.



### ASSOCIATE PROFESSOR MICHELLE RIEDLINGER

Jenni Metcalfe is the Founder and Director of Econnect Communication, established in 1995 to help scientists communicate about their research. Jenni also lectures in science communication at the University of Rhine-Waal in Germany. She has been a science communicator for

more than 25 years, working as a journalist, practitioner and researcher. Jenni has published many papers and articles on science communication. She was co-editor of the *human scale: International practices in science communication*, published in 2006 by Science Press, Beijing. Jenni has been a member of the scientific committee of the International Public Communication of Science and Technology (PCST) Network since 1996. She is currently Chair of the PCST's Programme Committee for its next conference, being held in Dunedin New Zealand in 2018. Jenni is passionate about doing science communication that creates a positive difference to people's lives. She believes that every person has a right to understand and engage with science so they can make more informed decisions about issues and opportunities that affect their lives.



## ASSOCIATE PROFESSOR JESSE BERING

Jesse Bering is an award-winning science writer. His "Bering in Mind" column at *Scientific American* was named a 2010 Webby Award Honoree and his first book, *The Belief Instinct* (2011), was included on the American Library Association's Top 25 Books of the Year. He is also the author of the critically acclaimed collection of essays *Why Is the Penis Shaped Like That?* (2012), and the book *Perv* (2013), a *New York Times* Editor's Choice. All three books have been translated into many different languages. A developmental psychologist by training, Bering is an expert in the field of cognitive science and religion, with over 50 research publications in that discipline. He began his career at the University of Arkansas, as an Assistant Professor of Psychology from 2002 to 2006. He then served as the Director of the Institute of Cognition and Culture at the Queen's University, Belfast, Northern Ireland, where he was a Reader in the School of History and Anthropology until 2011. He is presently the Director of the Centre for Science Communication at the University of Otago, New Zealand. His latest book, *A Very Human Ending: The Truth About Suicide*, will be released later this year.



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**PROGRAMME OUTLINE**

# PROGRAMME IN BRIEF

Time	Tuesday	Wednesday	Thursday	Friday
08:45am		Plenary	Plenary	Plenary
10:15am		Morning tea Speaker's corner	Morning tea Speaker's corner	Morning tea
10.45am		Parallel sessions	Parallel sessions	Parallel sessions
12:00pm	Registration opens	Lunch	Lunch/AGM	Lunch
1:00pm		Plenary	Plenary	Plenary
1:45pm		Parallel sessions	Parallel sessions	Parallel sessions
3:00pm	Scientific Committee meeting	Afternoon tea	Afternoon tea	Afternoon tea
3:30pm	Workshops	Parallel sessions	Parallel sessions	Parallel sessions
4:45pm		Poster session Performances	Poster session Performances	Closing Plenary
6:00pm		Otago Museum function		Scientific Committee meeting
7:00pm	Gala Opening Regent Theatre		Conference Dinner Larnach Castle	

## VENUES [\(see map\)](#)

### St David Lecture Theatre complex rooms:

- St David Lecture Theatre
- SDAV1 – SDAV6

### Archway Lecture Theatre complex rooms:

- ARCH 1 – ARCH 4

### Regent Theatre, The Octagon [\(see Map of Dunedin\)](#)

# TUESDAY 3 APRIL

9:00am – 5:00pm PCST 2018 Science Communication Career Skills, Knowledge and Networking Workshop  
Venue: Hutton theatre, Otago Museum

3:00pm - 5:00pm **PCST Scientific Committee Meeting**  
**Room: SDAV6**

3:30pm - 5:15pm **Pre-Conference workshops**

**AA1 Workshop**

**Room: SDAV1**

ImproSciComm - the art of (science) communication is improvisation

Author: [Susanne Hecker](#)

**AA2 Workshop**

**Room: SDAV2**

Why won't they just vaccinate? An infectious disease risk communication workshop based on a story about a virus, a vaccine and fear

Author: [Jennifer Manyweathers](#)

**AA3 Workshop**

**Room: SDAV3**

Whose story is it anyway? Participatory approaches to science engagement

Author: [Robert Inglis](#)

**AA4 Workshop**

**Room: SDAV4**

Landing on reality though a future scenario: a case on responsible research

Author: [Nuria Saladie](#)

Co-authors: Gema Revuelta & Carolina Llorente

7:00pm – 10:30pm **Gala Opening**

**Venue: The Regent Theatre**

**Keynote: [Dr Jennifer Wiseman](#)**

The Hubble Space Telescope: Our Window to an Amazing Universe

*Kindly sponsored by the Royal Society of New Zealand and the Stuart Residence Halls Council*

Moderator: [Professor Lloyd Spencer Davis](#)

# WEDNESDAY 4 APRIL

## Theme for the Day: Science

*Kindly sponsored by Ministry of Business, innovation and Employment*

7:30am Registration and information desk opens  
St David Theatre Complex

### **Plenary Session in St David Lecture Theatre**

8:45am President's opening remarks  
Brian Trench

9:00am Introduction  
[Jenni Metcalfe](#)

9:05am **Keynote:** [Distinguished Professor Tetsuro Matsuzawa](#)  
*The Study of the Chimpanzee Mind in relation to Public Communication*

9:25am **Plenary Panel:** *What do Scientists Want from Public Communication?*  
featuring Dr Jennifer Wiseman, Distinguished Prof Tetsuro Matsuzawa, [Luisa Massarani](#), and [Dr Hans Peter Peters](#)

10:15am **Morning tea**  
St David Theatre Complex Foyer

10:15am **Speakers corner**

Toxic zombie death machines ... a love story

Author: [Jeremy Anderson](#)

Where: Cumberland St entrance to St David Theatre Complex

"China" imagination in science fiction – Take personal handphone system roaming future as an example

Author: [LiFen Yao](#)

Where: Café picnic tables outside

Science! You'll never guess what happened next ...

Author: [Shaun Hendy](#)

Where: SDAV2

10:45am **Parallel session A**  
*For full details please refer to the app*

**A1 Grouped paper**

**Room: SDAV1**

**Chair: Todd Newman**

Is science communication training effective? Integrating research into practice

Author: [Yael Barel-Ben David](#)

Co-authors: Dacia Herbulock , John C. Besley & Ayelet Baram-Tsabari

**A2 Roundtable discussion**  
**Room: SDAV2**  
**Chair: Maarten van der Sanden**

Science communication: the heartbeat of collaboration in science & technology development  
Author: [Maarten van der Sanden](#)  
Co-authors: Sarah Davies, Frank Nuijens, Edward Duca & Eva Kalmar

**A3 Roundtable discussion**  
**Room: St David Lecture Theatre**  
**Chair: Luisa Massarani**

Mapping science communication research globally: trends, gaps, challenges and opportunities  
Author: [Luisa Massarani](#)  
Co-authors: Alexander Gerber, Jenni Metcalfe, Lars Guenther & Marina Joubert

**A4 Roundtable discussion**  
**Room: SDAV3**  
**Chair: Karen Broneus**

Mind the 'Ivory Tower–Grassroots' Gap: Science communication in post conflict societies  
Author: [Karen Broneus](#)  
Co-authors: Mariska Kappmeier, Stephen Knowles & David McBride

**A5 Roundtable discussion**  
**Room: SDAV5**  
**Chair: Ruth O'Connor**

An exploration of science communication in the world of decision-makers  
Author: [Ruth O'Connor](#)  
Co-authors: Alan Irwin, Dominique Brossard, Jennifer Manyweathers & Birte Fähnrich

**A6 Individual paper - Communicating medical/health science**  
**Room: ARCH1**  
**Chair: Ana Nepote**

The scientific basis of homeopathy, where is the (mis)communication?  
Author: [Manon Knapen](#)  
Co-author: Fabien Medvecky

A study about knowledge and attitudes towards complementary and alternative medicine (CAM) among teacher training students: a pilot study based on open ended questionnaires  
Author: [Carolina Moreno](#)  
Co-authors: Emilia Lopera-Pareja & Mavi Corell-Doménech

Presenting science to young adults with intellectual disabilities: the steps of thinking  
Author: [Vanessa de Kauwe](#)

A critical review of pre-eminent vaccine compliance and risk communication theorists  
Author: [Barbara Gormley](#)

**A7 Individual paper - Novel ideas for communicating science**  
**Room: ARCH2**  
**Chair: Toss Gascoigne**

Science crowdfunding in Japan: its characteristics and future problems

Author: [Yuko Ikkatai](#)

Co-author: Hiromi Yokoyama

Making the invisible visible: Photo-interview techniques in science communication

Author: [Christine Mauelshagen](#)

Co-author: Eva-Maria Jakobs

Rojak science: a gastronomical path to science communication in Singapore

Author: [Linda Sellou](#)

Co-author: Kim Yong Lim

Taking the science stories to the people: reaching diverse audiences through venue changes

Author: [Jessica Turner-Skoff](#)

Co-authors: Alexandra Prokuda & Krisztina Eleki

How to innovate in science communication in complex societies

Author: [Bernard Schiele](#)

#### **A8 Individual paper - Scientists and science communication**

**Room: ARCH3**

**Chair: Hans Peter Peters**

Public confidence in research – communication dos and don'ts for researchers

Author: [Fredrik Brouneus](#)

Co-authors: Maria Lindholm & Ylva Norén Bretzer

The investigation and analysis of scientists' engagement in popular science writing in China

Author: [Honglin Li](#)

Co-author: Ling Chen

The email as a stress factor for academics

Author: [Franziska Thiele](#)

Co-author: Corinna Lüthje

'A form of sanity check': how people at CERN view science communication

Author: [Daria Dvorzhitskaia](#)

Co-authors: Alexander Gerber, Alexander Struck, Angelos Alexopoulos & Achille Petrilli

Comparison of graduate students and tenure-track faculty in levels of and attitudes toward public science communication engagement

Author: [Kathleen Rose](#)

Co-authors: Emily Howell, Dominique Brossard, Michael Xenos, Dietram Scheufele & Julia Nepper

#### **A9 Show, tell and talk - New ways of communicating science**

**Room: ARCH4**

**Chair: Michelle Riedlinger**

Musical tales: one composer in residence and three movements of science

Author: [Ana Lucia Mena](#)

Science games: the nexus of science education and science communication?

Author: [George Aranda](#)

Co-authors: John Cripps Clarke, Peta White, Joe Ferguson, Kathleen Hayes, & Leissa Kelly

Key elements for communication and strengthening of the relationship: first steps to develop bicultural partnerships for amphibian conservation in New Zealand

Author: [Javiera Cisternas](#)

Co-author: Priscilla M. Wehi, Jennifer M. Germano, Phillip J. Bishop & Nancy Longnecker

The comics as a tool to inform scientific concepts about glass in an interesting and playful way

Author: [Adriana Iwata](#)

Co-authors: Karina Lupetti & Ana Cândida Rodrigues

S-Factor - creative ways to communicate science

Author: [Erez Garty](#)

Co-authors: Oshrit Navon & Revital Ahronov

Communicating science in stealth

Author: [Chammika Udalagama](#)

Co-author: Meng Ho Tan

### **A10 Workshop**

**Room: SDAV6**

Science communication and gender: challenges, opportunities and stereotypes

Author: [Merryn McKinnon](#)

Co-author: Christine O'Connell

12:00pm

### **Lunch**

St David Theatre Complex Foyer

1:00pm

### **Plenary session in St David Lecture Theatre**

**Keynote:** [Dr Drew Berry](#)

*The Molecular Machines that Create your Flesh and Blood*

then interviewed by [Associate Prof Rebecca Priestley](#)

1:45pm

### **Parallel session B**

*For full details please refer to the app*

#### **B1 Grouped paper**

**Room: SDAV1**

**Chair: Nancy Edwards**

Successful science communication about problems that cross sectors

Author: [Nancy Edwards](#)

Co-authors: Susan Roelofs, Maja Bertram, Ronald Plotnikoff & David Lubans

#### **B2 Roundtable discussion**

**Room: SDAV2**

**Chair: Dacia Herbulock**

Breaking down silos: sharing outcomes from different approaches to science communication training

Author: [Dacia Herbulock](#)

Co-authors: Yael Barel & Todd Newman

#### **B3 Roundtable discussion**

**Room: St David Lecture Theatre**

**Chair: Brooke Smith**

Systemic support for scientists' communication and engagement

Author: [Brooke Smith](#)

Co-authors: Eric Marshall, John Besley, Bruce Lewenstein, Marina Joubert & Joan Leach

**B4 Roundtable discussion**

**Room: SDAV3**

**Chair: Joseph Roche**

Evaluating science communication across cultures: European Researchers' Night

Author: [Joseph Roche](#)

Co-authors: Eric Jensen, Leonardo Alfonsi & Giuseppe Pellegrini

**B5 Roundtable discussion**

**Room: SDAV5**

**Chair: Matthew Hickman**

Engaging the STEM-excluded: critical perspectives on broadening participation

Author: [Matthew Hickman](#)

Co-authors: Bronwyn Bevan, Graham Walker, Robert Inglis & Craig Tomlinson

**B6 Individual paper - Social media perspectives**

**Room: ARCH1**

**Chair: Massimiano Bucchi**

The 'dinosaur' magazine in the age of social media

Author: [David Salt](#)

Tweet or perish

Author: [Kaisu Innanen](#)

Platform politics vs. content: how we communicate science on YouTube

Author: [Andrea Geipel](#)

Are researchers using social media professionally? A comparative survey among fields, levels of career and universities

Author: [Germana Barata](#)

Co-authors: Juan Pablo Alperin, Ronaldo Araújo & Crispulo Traviezo Rodríguez

When motivated reasoning is reasonable: being vigilant about dubious science claims in online articles

Author: [Lukas Gierth](#)

Co-author: Rainer Bromme

**B7 Individual paper - A focus on climate communication**

**Room: ARCH2**

**Chair: Sarah Davies**

Failure to engage: analysis of climate risks to food and agriculture in the American press

Author: [Linda J. Pfeiffer](#)

Co-author: Erica M. Ballmer

The Influence of temperature on #ClimateChange and #GlobalWarming discourses on Twitter

Author: [Sara Yeo](#)

Co-authors: Zachary Handlos, Alexandra Karambelas, Leona Su, Kathleen Rose, Dominique Brossard & Kyle Grin

Why is early adolescence so pivotal in the climate change communication and education arena?  
Author: [Inez Harker-Schuch](#)

Climate change engagement in the "Deep South challenge": integrating theory into practice  
Author: [Rhian Salmon](#)  
Co-author: Joanna Goven

**B8 Individual paper - Stimulating critical thinking / analysis**  
**Room: ARCH3**  
**Chair: Brian Trench**

The News Evaluator – fostering source criticism through citizen science  
Author: [Thomas Nygren](#)  
Co-author: Fredrik Brounéus

Who do we trust and think should have a say, when it comes to controversial scientific issues such as human gene editing?  
Author: [Dominique Brossard](#)  
Co-authors: Nicole Krause, Diatram Scheufele, Michael Xenos & Patrice Kohl

Citizen science: a new knowledge politics?  
Author: [Alan Irwin](#)

Valuing good engagement process and individual outcomes in decision-maker engagement with science  
Author: [Ruth O'Connor](#)  
Co-authors: Joan Leach, Fabien Medvecky, Lilly Lim-Camacho & Jeanne Nel

**B9 Show, tell and talk - Perspectives on policy, decision-making, democratisation**  
**Room: ARCH4**  
**Chair: Alexander Gerber**

Communicating contested science  
Author: [Simon Torok](#)  
Co-author: Paul Holper

Report on mega-drought in Chile (or how to win the hearts and minds of decision makers)  
Author: [Nicole Tondreau](#)

Co-creating science communication: how important is facilitation for 'democratisation'?  
Author: [Jenny Rock](#)  
Co-author: Ali Rogers

Adoption and implementation of scientific knowledge into peatland policy – does it work?  
Author: [Rosmarie Katrin Neumann](#)  
Co-authors: Mark Reed & Jeremy Phillipson

Science communication for citizen scientists: fostering community capacity for environmental leadership  
Author: [Merryn McKinnon](#)  
Co-authors: Jennifer Loder, Angela Dean & Karen Vella

Think tanks for or against science: examples of recent anti-science rhetorics  
Author: [Satu Lipponen](#)

**B10 Workshop**  
**Room: SDAV6**

Science communication filmmaking and multimedia workshop  
Author: [Wiebke Finkler](#)

3:00pm

**Afternoon tea**  
St David Theatre Complex Foyer

3:30pm

**Parallel session C**  
*For full details please refer to the app*

**C1 Grouped paper**  
**Room: SDAV1**  
**Chair: Steve Miller**

Communicating science across cultures: session 1 of 2 - Astronomy and voyaging  
Author: [Steve Miller](#)  
Co-author: Pedro Russo, Kalepa Baybayan, Nancy Longnecker & Steven Tingay

**C2 Roundtable discussion**  
**Room: St David Lecture Theatre**  
**Chair: Bruce Lewenstein**

Turning undergraduates into science storytellers. What are the best practices?  
Author: [Mark Sarvary](#)  
Co-authors: Kathleen Gifford, Bruce Lewenstein, Merryn McKinnon, Fabien Medvecky & Will Grant

**C3 Roundtable discussion**  
**Room: SDAV2**  
**Chair: Ana Nepote**

The soul of Latin-American science communication  
Author: [Ana Nepote](#)  
Co-authors: Luisa Massarani, Elaine Reynoso, Dominique Brossard & Sandra Murriello

**C4 Roundtable discussion**  
**Room: SDAV3**  
**Chair: Ronen Mir**

High level science learning centers – innovative community project to develop young science experts and science communicators  
Author: [Ronen Mir](#)  
Co-authors: Erez Garty, Alemayehu Abera & Debby Mir

**C5 Roundtable discussion**  
**Room: SDAV5**  
**Chair: Leonardo de la Torre Avila**

Science communication the other way around: how to get scientists to understand you?  
Author: [Leonardo de la Torre Ávila](#)  
Co-author: Franco Bagnoli  
Co-author: Mitsuru Kudo

**C6 Individual paper - Training / stimulating science communicators**  
**Room: ARCH1**  
**Chair: Birte Faehrich**

Talking about reflexivity  
Author: [Gwendolyn Blue](#)

Jamaica: Assessing Science Communication at the Post-Graduate Level  
Author: [Zahra Oliphant](#)

Questioning assumptions: the evidence gap in science communication  
Author: [Isabelle Kingsley](#)  
Co-authors: Carol Oliver & Martin Van Kranendonk

PCST training across the world: conclusions from a curriculum analysis  
Author: [Alexander Gerber](#)  
Co-author: Allison Hadden

Evaluating the effectiveness of a science communication MOOC  
Author: [Anusuya Chinsamy-Turan](#)  
Co-authors: Andrew Deacon, Eric Jensen & Janet Small

### **C7 Individual paper - Perspectives on scientists and science communication**

**Room: ARCH2**

**Chair: Jenni Metcalfe**

Natural and social scientists relate differently with the public and take roles in different kinds of media stories. Evidence from surveys in Brazil and Germany

Author: [Hans Peter Peters](#)  
Co-author: Luisa Massarani

Scientist as communicators: a study on the role of researchers in the public space of communication

Author: [Giuseppe Pellegrini](#)  
Co-author: Andrea Rubin

Not my understanding: survey of Canadian scientists' views on public engagement

Author: [Kathryn OHara](#)  
Co-author: John Besley

Scientists' ambivalence about public communication

Author: [Marina Joubert](#)

Scientists' views on their own engagement in science communication and outreach activities

Author: [Friederike Hendriks](#)  
Co-authors: Doris Niederhoff, Dorothe Kienhues & Rainer Bromme

### **C8 Individual paper - Science and media perspectives**

**Room: ARCH3**

**Chair: Ayelet Baram-Tsabari**

Science told by 'science': The story of EurekAlert!

Author: [Charlotte Autzen](#)

Are science stories inherently boring? A comparison of public engagement with science and general items on two popular news sites.

Author: [Yael Barel-Ben David](#)  
Co-authors: Ayelet Baram-Tsabari or Erez Garty

Where science meets the headlines: a decade of the New Zealand Science Media Centre

Author: [Rebecca Priestley](#)  
Co-author: Dacia Herbulock

How do recipients interact with data journalism?  
Author: [Bernhard Goodwin](#)

Insights from a brand new cooperation model: science edu-communication through frame analysis of the project - Difference Science News in Taiwan  
Author: [Leon Yufeng Wu](#)  
Co-authors: Pin-Sheng Li & Chun-Yen Chang

**C9 Ideas in Progress - New approaches to communicating science**  
**Room: ARCH4**  
**Chair: Jan Riise**

The Floor is to the Stakeholders  
Author: [Fred Balvert](#)

PERFORM  
Author: [Casimiro Vizzini](#)  
Co:author: Isabel Ruiz-Mallen

Mind in the Lab': a powerful tool in the field of science communication  
Author: [Theodore Anagnostopolos](#)

Science and art: evaluating public perception of the mural "Volcanoes of Chile"  
Author: [Sofia Otero](#)

The search for effective methods of engaging Pacific Ocean nations for coral reef conservation  
Author: [Akiko Hamada-Ano](#)

Stylistic elements of YouTube videos: what do users expect of science communicators?  
Author: [Lukas Gierth](#)

**C10 Workshop**  
**Room: SDAV6**

How to evaluate science communication impact using survey methods  
Author: [Eric Jensen](#)  
Co-authors: Joseph Roche, Eric Kennedy & Brady Wagoner

4:45pm

**Poster Session Function**

St David Theatre Complex Foyer

*There are functions associated with dedicated time for viewing the Posters on Wednesday and Thursday at 4.45pm. As part of this, there are also walking tours, with a guide, to hear from poster presenters (Visual Talks).*

*The schedule of tours for Visual Talks on Wednesday is:*

- 5:00pm Tour 1: Communicating about New Technologies*
- 5:00pm Tour 2: Evaluation 1: Museums & Informal learning*
- 5:00pm Tour 3: Communicating Science 1: Science Communicators*
- 5:20pm Tour 4: Risk Communication*

### **Communicating about New Technologies**

257: The science communication lab: an expert-based study on design requirements for technology exhibitions

Author: [Christine Mauelshagen](#)

376: Where no one has gone before: a journey into the nano world

Author: [Robert Inglis](#)

393: Public perceptions of genetic engineering in New Zealand

Author: [Amy Smith](#)

442: Crowdsourcing the storytelling: competitions in quantum film and fiction

Author: [Jenny Hogan](#)

479: Engagement in advanced biotechnology

Author: [Roger Hellens](#)

### **Evaluation 1: Museums & Informal learning**

81: Effectiveness of NSM Science Caravan as a science outreach for rural communities in Thailand

Author: [Ekapong Sripaoraya](#)

178: Voices towards a science centre's redevelopment

Author: [Daniel Solis](#)

212: Science Learning+: understanding the value of informal science experiences

Author: [Matthew Hickman](#)

320: Communicating science to the very young through play

Author: [Claire Concannon](#)

460: Science museum not yet, but 10 years communicating sciences in the same sense

Author: [Maria Lujan Castro](#)

467: Contextual model of learning in science museums: learning mathematics in Ponto UFMG Itinerant Museum

Author: [Lara Poenaru](#)

### **Communicating Science 1: Science Communicators**

2: Building bridges between universities and society: the Magazine Lynaldo experience

Author: [Diogo de Oliveira](#)

148: How Japanese academic and research institutions communicate scientific information to the public: the rise of news releases

Author: [Ayumi Koso](#)

200: Outside the box

Author: [Susan Hamel](#)

305: Thinking science: initiatives of public communication for the scientific culture in Brazil

Author: [Adriana Santos](#)

318: Who tells the science stories in Spain? Survey among the members of associations of science communicators

Author: [Carolina Moreno](#)

428: Communicating 'astronomy for development': approaches to communicate the relevance of science to society

Author: [Ramasamy Venugopal](#)

### **Risk Communication**

151: Public problematization of water supply and the risk of scarcity

Author: [Franzisca Weder](#)

164: School-based disaster risk reduction program: a critical analysis on role-playing in evacuation training

Author: [Mita Anggaryani](#)

368: What about climate change? The absence of climate change from science communication in New Zealand national parks

Author: [Karen Hytten](#)

380: Tweeting uncertainty during Hurricane Irma

Author: [Stephanie Wahl](#)

### **Conservation Communication**

145: Using animal storytelling to communicate undergraduate students' understanding of the human-nature relationship

Author: [Chi-I Lin](#)

165: Cameras for conservation: How photographing wildlife affects engagement with biodiversity

Author: [Emma Hanisch](#)

176: Communicating conservation with detection dogs

Author: [Ellen Rykers](#)

302: Vive el arrecife. First interactive exhibition on Mexican coral reefs to improve their conservation

Author: [Pedro Medina-Rosas](#)

322: When science meets politics: the case of young adults and the Predator Free 2050 policy

Author: [Lucy Dickie](#)

429: The effectiveness of photographs to communicate science in a Chinese national park

Author: [Lei Zhu](#)

### **Health Communication**

90: What science story do they tell? - A comparative study of how science was presented in three different types of Taiwan's TV programs

Author: [Chun-Ju Huang](#)

222: Attitudes and perceptions of training teaching students about alternative and complementary medicines: a focus group study

Author: [Mavi Corell](#)

226: Church and the bedroom: the relationship between religious service attendance and information about the emergency contraceptive pills

Author: [Emma Harcourt](#)

247: YouTube: to be or not to be science

Author: [Vanessa Roger-Monzo](#)

256: Evaluation of vaccine communications and interventions, 1998-2014: do any actions have a shown improvement in reducing vaccine hesitancy and increasing vaccination rates to herd immunity levels?

Author: [James Ansell](#)

## **Evaluation 2: Museum & Science Outreach**

141: Science in Jamaica: setting the baseline for improvement

Author: [Zahra Oliphant](#)

161: A new tool to evaluate impacts of science communication on scientific literacy

Author: [Isabelle Kingsley](#)

208: A five year qualitative and quantitative assessment of science engagement by NRF|SAASTA

Author: [Lindie Muller](#)

295: Preliminary study: applying hands-on activities as introduction to science and technology related occupations in enjoy science careers exhibition

Author: [Kedwadee Atchawisit](#)

396: Assessment on the science communication effect of S&T contest: A case study of 31st China Adolescents Science & Technology and Innovation Contest (CASTIC)

Author: [Lei Shi](#)

430: 'STEMpowering Youth': Innovation to the local community and science communication

Author: [Theodoros Anagnostopoulos](#)

## **Sources of Knowledge**

16: How college students respond to cyber scientific research information in Taiwan

Author: [Sungtao Lee](#)

37: Caribbean ties: co-developing a new narrative on indigenous heritage in the Caribbean and beyond

Author: [Tibisay Sankatsing Nava](#)

65: The creation of story authenticity – a case study of the Taiwanese fictional medical program 'Wake Up'

Author: [Yin-Yueh Lo](#)

132: Paper, scissors, playdough: an experiment in using creative methods for the collaborative design of instruments for responsible industrial innovation

Author: [Ilse Marschalek](#)

358: Narratives of science and community in marine ecosystem restoration: the Ongatoro/ Maketu Estuary case

Author: [Patrick Barrett](#)

425: The arousal of 'Hot cognition' in science explanation and judgement

Author: [Chih-Hsiung Ku](#)

## **Sensory Communication**

78: Hearing colors, coloring sounds: developing awareness of synesthesia phenomenon

Author: [Dyah Ratna Permatasari](#)

298: Science against the wall

Author: [Sofia Otero](#)

315: Exploring perceptions about the educational use of augmented reality

Author: [Rebecca John](#)

371: Frequensea: making the intangible tangible

Author: [Katharina Marino](#)

480: A case study in supporting video and narrative based science communication to engage non-expert national audiences

Author: [Claire Farrugia](#)

## **Communicating Science 2: Scientists & Organisations**

62: Inside the mind of the science presenter

Author: [Shanii Austin](#)

82: Skills and knowledge development of programme presenters who participate in science outreach

Author: [Nantida Sripaoraya](#)

119: Context and challenges in engaging scientists in science communication: case study from Thailand

Author: [Ganigar Chen](#)

172: Reasons for use and disuse of academic social networking sites

Author: [Franziska Thiele](#)

389: Increase science reporting in the media in three easy steps

Author: [Erez Garty](#)

413: Formation of mediators of Science Square of Vitoria, ES, Brazil: a proposal for a conceptual approach to the hand lift equipment

Author: [Laercio Ferracioli](#)

4:45pm

### **Performances**

Two cultures: the musical

Author: [Toss Gascoigne](#)

Room: St David Lecture Theatre

Stand-up comedy to rise scientific vocations

Author: [Helena González Burón](#)

Room: SDAV6

5:30pm

Vitreous sounds

Author: [Karina Lupetti](#)

Room: St David Lecture Theatre

Uncle Albert's kosher dill pickle & dash; telling the story of Albert Einstein through science experiments, music, humour and audience participation

Author: [Ronen Mir](#)

Room: SDAV1

6:00pm

**Function at Tuhura at the Otago Museum**

*Kindly sponsored by Otago Museum*

# THURSDAY 5 APRIL

## Theme for the Day: Stories

Kindly sponsored by NHNZ

### Plenary session in St David Lecture Theatre

8:45am

Introduction

[Marina Joubert](#)

8:50am

**Keynote:** [Prof Lee Berger](#)

*Communicating the science and the discovery of Homo naledi and other human ancestors*

9:25am

**Plenary Panel:** *What kinds of stories about science should we tell?*

Featuring Prof Lee Berger, [Associate Prof Ayelet Baram-Tsabari](#), [Jan Riise](#), [Sofia Otero](#)

10:15am

**Morning tea**

St David Theatre Complex Foyer

10:15am

**Speakers corner**

Science Communication Strategies in Tertiary Student Recruitment

Author: [Tangyao Zhang](#)

Where: SDAV2

There and back again – A science communicator and researcher's tale

Author: [Yael Barel-Ben David](#)

Where: Café picnic tables outside

10:45am

**Parallel session D**

*For full details please refer to the app*

**D1 Grouped paper**

**Room: St David Lecture Theatre**

**Chair: Marta Entradas**

Institutional science communication: cross-national comparative study

Author: [Marta Entradas](#)

Co-author: Giuseppe Pellegrini, Pedro Russo & John Besley

**D2 Roundtable discussion**

**Room: SDAV1**

**Chair: Germana Barata**

The role of professional science communication associations in supporting science communicators and legitimising science communication practices

Author: [Michelle Riedlinger](#)

Co-authors: Germana Barata, Fabien Medvecky, Maarten van der Sanden & Marina Joubert

**D3 Roundtable discussion**

**Room: SDAV2**

**Chairs: Elaine Reynosa-Haynes**

What knowledge and skills define a professional science communicator?

Author: [Elaine Reynoso](#)

Co-authors: Toss Gascoigne, Alexander Gerber, Luisa Massarani & Ana Claudia Nepote

**D4 Roundtable discussion**

**Room: SDAV3**

**Chair: Tara Robertson**

Can hype be a force for good? – Debating the benefits and drawbacks of science hype

Author: [Tara Robertson](#)

Co-authors: Sujatha Raman, Megan Munsie, Heather Bray & David Kirby

**D5 Individual paper - Novel means of story telling**

**Room: ARCH1**

**Chair: Bernard Schiele**

The use of narratives (photo-comic) as a means to communicate information about use, treatment and conservation of water in Mexico.

Author: [Aquiles Negrete](#)

Co-author: Claudia Cecilia Lartigue

Using videos of live surgeries to communicate medical knowledge to the public

Author: [Marie Eggeling](#)

Co-authors: Martina Bientzle & Joachim Kimmerle

Co-creating an Amerindian Heritage Research Exhibition with Caribbean and European Museums

Author: [Tibisay Sankatsing Nava](#)

Co-authors: Corinne Hofman & Arlene Alvarez

Telling stories through the soundscapes of nanotechnology media

Author: [Padraig Murphy](#)

Co-authors: Norah Campbell & Cormac Deane

The meaningful power of emojis to understand public perceptions of science

Author : [Lourdes Mateos Espejel](#)

Co-authors: Helga Lissette Ochoa Cáceres, Helios José Roberto Valencia Ortega & S.R. Casolco

**D6 Individual paper - Where the people tell the stories of science**

**Room: ARCH2**

**Chair: Masataka Watanabe**

"Monitoring disease risk is not a huge priority, but herd health, that's sort of important": Beyond a top down approach, using farming stories to develop a farmer-led disease surveillance system.

Author: [Jennifer Manyweathers](#)

Co-authors: Marta Hernandez-Jover, Aditi Mankad, Barton Loechel, Heleen Kruger & Yiheyis Maru

How can citizen science support communities to expand their narrative: seashore stories from New Zealand

Author: [Sally Carson](#)

Co-author: Jenny Rock

How the lived experience is shaping dementia research

Author: [Sally Grosvenor](#)

Co-authors: Jennifer Thompson, Meera Agar, Kate Laver, Louise Heuzenroeder & Susan Kurrle

Heroes in science: personal narratives and self-identities

Author: [Bobby Cerini](#)

Recognising the importance of story scouting and crafting to maximise stakeholders engagement in the Great Barrier Reef

Author: [Juan C. Ortiz](#)

Co-authors: Danette Langbecker & Rebecca E. Holt

#### **D7 Individual paper - Digital and online story telling perspectives**

**Room: ARCH3**

**Chair: Sara Yeo**

"To Trust or Not To Trust?" - Exploring the Credibility and Trustworthiness of Science Communicators in Online Video Lectures

Author: [Lars König](#)

Co-author: Regina Jucks

Coverage comparison of homeopathy and acupuncture stories in Spanish digital media

Author: [Lorena Cano-Orón](#)

Co-authors: Isabel Mendoza-Poudereux & Carolina Moreno-Castro

Digital absenting: the impact of digitization on narratives of science communication

Author: [Kate Hannah](#)

Zika and microcephaly: from the scientific discovery by Fiocruz to the institution's Facebook

Author: [Luís Amorim](#)

Co-authors: Paloma da Silva Barreto & Marcelo Garcia

'I, for one, welcome our robot overlords!': reader comments as a space for public deliberation of emerging technologies

Author: [Marie Boran](#)

#### **D8 Show, Tell & Talk - New ways of communicating**

**Room: ARCH4**

**Chair: Ayelet Baram-Tsabari**

Adventures in aerial dance and physics: how we made Flying Atoms

Author: [Amanda Griffkin](#)

An approach to scientific literacy through chemical experiments using wine and metaphoric representations

Author: [Akemi Nagao](#)

Engagement for digital native storytellers: making students the science communicators

Author : [Kaitlyn Martin](#)

Co-authors: Lloyd Davis & Susan Sandretto

Science communication: how to get from the lab bench to the stock exchange

Author: [Veronica Stevenson](#)

Does astronomy really inspire and change perspectives? A randomized controlled study of an astronomy outreach program

Author: [Ramasamy Venugopal](#)

Co-author: Kodai Fukushima

Metaphors for the "commons" in the media  
Author: [Franzisca Weder](#)  
Co-author: Nikolá Dobric

**D9 Workshop**  
**Room: SDAV5**

What's the Buzz? - a selection of outstanding science story telling in film, television and streaming video.  
Author: [Alison Leigh](#)

**D10 Workshop**  
**Room: SDAV6**

A scientific meal in 3 dishes  
Author: [Erez Garty](#)

12:00pm

**Lunch**  
St David Theatre Complex Foyer

12:15pm

AGM  
St David Lecture Theatre

1:00pm

**Plenary session in St David Lecture Theatre**

**Keynote:** [Prof Lisa Matisoo-Smith](#)

*The Powers and Pitfalls of Science Storytelling in the Pacific*  
then interviewed by [Associate Prof Michelle Riedlinger](#)

1:45pm

**Parallel session E**

*For full details please refer to the app*

**E1 Grouped paper**  
**Room: St David Lecture Theatre**  
**Chair: Toss Gascoigne**

Building a theoretical basis for science communication  
Author: [Jennifer Metcalfe](#)  
Co-authors: Joan Leach, Brian Trench & Bruce Lewenstein

**E2 Roundtable discussion**  
**Room: SDAV3**  
**Chair: Ronen Mir**

Outdoor science parks - increasing community participation and building new society partnerships  
Author: [Ronen Mir](#)  
Co-authors: Mikko Myllykoski, Graham Walker & Elaine Reynoso

**E3 Roundtable discussion**  
**Room: SDAV5**  
**Chair: Caitriona Mordan**

The role of society in science: insights into responsibility, integrity and stakeholder values  
Author: [Caitriona Mordan](#)

Co-authors: Pdraig Murphy, Yin Lin, Heather Doran & Peter Broks

**E4 Roundtable discussion**

**Room: SDAV1**

**Chair: Alexander Gerber**

Be there. The importance of presence in a digital era. Stand-up and public seminars

Author: [Jenny Björkman](#)

Co-authors: Alexander Gerber, Duncan Needham, Rebecka Lennartsson, Lotta Tomasson, Frederik Fritzon & Nathalie Wierdak

**E5 Roundtable discussion**

**Room: SDAV2**

**Chair: Wiebke Finkler**

The art and science of engagement: a global perspective on science communication through the arts

Author: [Wiebke Finkler](#)

Co-authors: Wolfgang Goede, Robert Inglis, Bronwyn Bevan and Eric Jensen

**E6 Individual paper - Climate story telling**

**Room: ARCH1**

**Chair: Jan Riise**

Dilemmas in communicating climate science

Author: [Darrin Durant](#)

The role of story in transitioning to low carbon travel

Author: [Jean Fletcher](#)

Co-authors: James Higham & Nancy Longnecker

Framing futures through fiction and folklore: weaving past and prospective narratives of public understanding of climate science

Author: [Debashish Munshi](#)

Co-authors: Priya Kurian & Sandra Morrison

Climate modelling, cognitive mapping and literary form

Author: [Tim Corballis](#)

Pulling out prematurely: Donald Trump and the Paris Agreement - a cross-country comparison of climate change narratives in legacy media

Author: [Geraldine Satre Buisson](#)

**E7 Individual paper - Media stories - different cultural contexts**

**Room: ARCH2**

**Chair: Ana Nepote**

Scientists' beliefs about science and the public in different cultures

Author: [Yin-Yueh Lo](#)

Co-author: Hans Peter Peters

Stories of complementary therapies in the Spanish digital newspapers

Author: [Isabel Mendoza-Poudereux](#)

Co-authors: Lorena Cano-Orón & Carolina Moreno-Castro

The representation of synthetic biology in Dutch media

Author: [Liesbeth de Bakker](#)

Science in the Brazilian magazine piauí: who writes the story also has a story

Author: [Renata Fontanetto](#)  
Co-authors: Luis Amorim & Marina Ramalho

Does the big natural science metanarrative exist? Are there any trends in publicity, what topics are journalists interested in and the public consumes? Media content as a way of defining of the Czech natural sciences.

Author: [Markéta Hrabánková](#)

**E8 Individual paper - Developing the skills of science communicators - whoever they may be**  
**Room: ARCH3**  
**Chair: Sara Yeo**

Evaluation of attitudes toward CAM among budding science storytellers: medicine, nursing, journalism and teaching undergraduate students

Author: [Emilia Hermelinda Lopera-Pareja](#)

Co-author: Carolina Moreno-Castro

Investigation on research themes and the development trend of science communication through literature research on all published papers in PCST conference from 1989 to 2016

Author: [Xi Cheng](#)

Co-authors: Shukun Tang, Yiqing Wang, Liangyan Pan & Qiao Pan

A qualitative study of reflective accounts of a science communication training programme provided by its former trainees

Author: [Mitsuru Kudo](#)

Co-authors: Eri Mizumachi & Ekou Yagi

Who are the science communicators? Profiling backgrounds, practices and aspirations of a professional community

Author: [Manuel Valença](#)

Co-authors: Marta Entradas & Martin Bauer

The importance to gain knowledge and skills through science communication

Author: [Adriana Bravo Williams](#)

**E9 Show, tell and talk - Science communication delivering change**  
**Room: ARCH4**  
**Chair: Birte Faehnrich**

Translating life science research to stories: using media channels for broader impact and increased audience reach

Author: [Jessica Turner-Skoff](#)

Co-authors: Kelley Regan, Patricia MacMillan & Nicole Cavender

Trying to find more variety and increase popular appeal in processes

Author: [Riina Linna](#)

ICATE: a strategy for infection control awareness

Author : [Sónia Ferreira](#)

Co-authors: Ana Santos-Carvalho, Inês Cravo Roxo, Richard Marques, Rui Soares & Susana Alarico

Scientists and journalists networked to promote environmental health

Author : [Bernard Appiah](#)

Co-authors: David Anum, Esther Nakkazi, George Appiah, Edward Mulogo, Samuel Odai & Anubhuti Poudyal

Creating new heroes: promoting CERN in the post-Higgs era

Author: [Harriet Jarlett](#)

Co-author: Christoph Madsen

Do you speak politician? Lessons from PRIME

Author: [Maggie Marx](#)

**E10 Workshop**

**Room: SDAV6**

Participatory science communication to rise scientific vocations

Author: [Helena González Burón](#)

Co-author: Oriol Marimon Garrido

3:00pm

**Afternoon tea**

St David Theatre Complex Foyer

3:30pm

**Parallel session F**

*For full details please refer to the app*

**F1 Grouped paper**

**Room: St David Lecture Theatre**

**Chair: Susanne Hecker**

Citizen science communication – theory and new concepts

Author: [Susanne Hecker](#)

Co-authors: Bernard Schiele, Bruce L. Lewenstein, Victoria Martin & Rachel Kelly

**F2 Roundtable discussion**

**Room: SDAV3**

**Chair: Merryn McKinnon**

Building Public Understanding of Population Health Science: Insights from a unique new collaboration

Author: [Merryn McKinnon](#)

Co-author: Samantha Rowbotham, Penny Hawe, Will Grant, Anita Beck & Christine O'Connell

**F3 Roundtable discussion**

**Room: SDAV5**

**Chair: Nuria Saladie**

Training on RRI: experiences on responsibility

Author: [Nuria Saladie](#)

Co-authors: Gema Revuelta, Steve Miller, Alexander Gerber & Frank Kupper

**F4 Roundtable discussion**

**Room: SDAV1**

**Chair: Brian Trench**

Big challenges for small countries in science communication

Author: [Brian Trench](#)

Co-authors: Marta Entradas, Per Hetland, Fabien Medvecky & Pdraig Murphy

**F5 Roundtable discussion**

**Room: SDAV2**

**Chair: Liesbeth de Bakker**

Supporting science communicators – new approaches

Author: [Liesbeth de Bakker](#)

Co-authors: Ayelet Baram-Tsabari, Lotta Tomasson, Dacia Herbulock & Caroline Wehrmann

**F6 Individual paper - Stories of risk and controversy**

**Room: ARCH1**

**Chair: Marina Joubert**

When a risk message fails – telling the story of raw milk in Australia

Author: [Penny Wilson](#)

Short and swift: equipping policy-makers with regional science

Author: [Tiffany Straza](#)

Co-authors: Sefanaia Nawadra & Tommy Moore

Constructing the framework of risk governance for free opening science and technology centers in China

Author: [Xiangdong Liu](#)

Co-authors: Hongwei Wang & Xiang Li

Reducing motivated reasoning on controversial science: testing which factors best promote open minded processing of information

Author: [April Eichmeier](#)

Co-author: Neil Stenhouse

Risky business: the role of communicating science stories in emotionally-charged debates

Author: [Helen Beringen](#)

Co-author: Dr Tsuey Cham

**F7 Individual paper - Story telling devices**

**Room: ARCH2**

**Chair: Luisa Massarani**

Multimodal metaphors in science communication

Author: [Jan Swierkowski](#)

Reflexivity on contradictions

Author: [Franziska Weder](#)

Co-author: Larissa Krainer

Increasing awareness of women's health services: the continued need for face-to-face communication

Author: [Christina Standerfer](#)

Co-authors: Joseph Schafer & Akaylah Jones

From 'old media' to interactive radio?

Author: [Julia Lorke](#)

Empirical study from the golden ratio in Chinese landscape paintings

Author: [Guoyan Wang](#)

**F8 Idea in progress - Communicating risky science**

**Room: ARCH3**

**Chair: Massimiano Bucchi**

Psychosocial stress due to environmental and health concerns: What should be our risk communication research agenda?

Author: [Will Rifkin](#)

Co-author: Kathy Witt

The study of communication strategies of climate change risk

Author: [Yuh-Yuh Li](#)

Treating patients with an illness that may not exist- using Lyme or Lyme-like illness in Australia as a case study for developing patient centric communication strategies and policy guidelines for interacting with complex and controversial illnesses

Author: [James Ansell](#)

Reviewing a case for the deficit model of communication during crisis pandemic communications

Author: [Barbara Gormley](#)

Government credibility in a post-expert world: a case study of GMO communications in China

Author: [Tangyao Zhang](#)

Motives, opinions and communication – perspectives from the field study of Kakrapar Atomic Power Station (KAPS) in Gujarat, India

Author: [M P Ram Mohan](#)

### **F9 Show, tell and talk - Meeting science communication challenges**

**Room: ARCH4**

**Chair: Sarah Davies**

Small screen science: mobile video as a platform for explaining gravitational waves

Author: [Theo Lipfert](#)

Co-author: Catherine Trainor

Science writing as designing: an educational experiment

Author: [Frank Nuijens](#)

Co-author: Steven Flipse

Age-specific opportunities and challenges found engaging the public in science

Author: [Julia Wallace](#)

Co-author: Pam Wolff

Final year science communication projects for undergraduate science students

Author: [Claire Concannon](#)

Co-author: Muriel Grenon

Relevance-distance as a model for evaluating the engagement potential for different fields of scientific research

Author: [Achintya Rao](#)

Co-author: Emma Weitkamp, Clare Wilkinson, Erik Stengler & Christine Sutton

Building bridges to bring science closer to society. '20 years is nothing'

Author: [Maria Alvarez](#)

Co-author: Maria L Castro

### **F10 Workshop**

**Room: SDAV6**

How to train your audience: research based advice on public speaking for scientists

Author: [Trine Bentsen](#)

Co-authors: Peter Hyldgård & Maja Horst

St David Theatre Complex Foyer

*Kindly sponsored by Science Media Centre*

Please refer to the Poster Session on [Wednesday](#) for a list of papers and authors

*There are functions associated with dedicated time for viewing the Posters on Wednesday and Thursday at 4.45pm. As part of this, there are also walking tours, with a guide, to hear from poster presenters (Visual Talks).*

*The schedule of tours for Visual Talks on Thursday is:*

*5:00pm Tour 6: Health Communication*

*5:00pm Tour 7: Evaluation 2: Museum & Science Outreach*

*5:00pm Tour 8: Sources of Knowledge*

*5:20pm Tour 9: Sensory Communication*

*5:20pm Tour 10: Communicating Science 2: Scientists & Organisations*

4:45pm

**Performance**

5:30pm

Getting all emotional about communicating science

Author: [Graham Walker](#)

Room: St David Lecture Theatre

6:15pm

**Coaches depart for the Conference Dinner from St David Theatre Complex**

7:00pm

**Conference Dinner**

*Ticketed event*

# FRIDAY 6 APRIL

## Theme for the Day: Society

*Kindly sponsored by Department of Conservation*

### Plenary session in St David Lecture Theatre

Moderated by [Brian Trench](#)

8:45am

**Keynote:** [Prof Maja Horst](#)

*Communicating (about) the social responsibility of science*

9:05am

**Keynote:** [Sir Peter Gluckman ONZ FRS](#)

Chief Science Advisor to the Prime Minister of New Zealand

*Knowledge brokerage in an age of rapid technological change*

9:25am

**Plenary Panel:** *What is the Social Function of Science Communication?*

featuring Prof Maja Horst, Sir Peter Gluckman, [Dr Rod Lamberts](#), [Dr Birte Fähnrich](#)

10:15am

**Morning tea**

St David Theatre Complex Foyer

10:45am

**Parallel session G**

*For full details please refer to the app*

**G1 Grouped paper**

**Room:** SDAV1

**Chair:** Ka'iu Kimura

Communicating science across cultures: session 2 - Heritage and engagement and risk communication

Author: [Steve Miller](#)

Co-authors: Tibisay Sankatsing Nava, Marina Joubert, Sam Botting & Rachel Wesley

**G2 Roundtable discussion**

**Room:** SDAV3

**Chair:** Caroline Wehrmann

The story of our science communication curricula: to be continued

Author: [Caroline Wehrmann](#)

Co-authors: Miriam Sullivan, Liesbeth de Bakker, Henk Mulder & Todd Newman

**G3 Roundtable discussion**

**Room:** St David Lecture Theatre

**Chair:** Sarah Davies

Science communication as culture: Entertainment, interaction, and emotion

Author: [Sarah Davies](#)

Co-authors: Megan Halpern, Maja Horst, Bruce Lewenstein & David Kirby

**G4 Roundtable discussion**

**Room: SDAV2**

**Chair: Toss Gascoigne**

Research meets practice: outcomes of the Bellagio meeting

Author: [Toss Gascoigne](#)

Co-authors: Michelle Riedlinger, Massimiano Bucchi, Maarten van de Sanden & Peter Broks

**G5 Roundtable discussion**

**Room: SDAV5**

**Chair: Bobby Cerini**

Emerging trends and issues in citizen science

Author: [Bobby Cerini](#)

Co-authors: Julia Lorke, Alan Irwin, Friederike Hendrike & Victoria Metcalf

**G6 Individual paper - Science communication for social inclusion**

**Room: ARCH1**

**Chair: Masataka Watanabe**

Preaching to scientifically converted audiences: evaluating social inclusion at science festivals and events

Author: [Eric Jensen](#)

Co-author: Eric Kennedy

The science communication of whale watching: a marketing based people-focused science communication process and impact model

Author: [Wiebke Finkler](#)

The communication of science and technology as a tool for social inclusion. Analysis of cases in indigenous communities in Mexico

Author: [Carlos García](#)

Social participation in science: the perspective of third sector organizations

Author: [Carolina Llorente](#)

Co-authors: Gema Revuelta & Mar Carrió

Policy design and implementation; an inclusive model to promote public participation

Author: [Patricia Rios](#)

**G7 Individual paper - Communicating to citizens about hazards - natural and manmade**

**Room: ARCH2**

**Chair: Alexander Gerber**

Study on enhancing the public confidence in nuclear safety regulations in Korea : the case study of effective communications with the public

Author: [Dong Hee Yeo](#)

Frankenstein food? The legitimation processes of GM Food in the Netherlands

Author: [Sikke Jansma](#)

Co-author: Jordy Gosselt & Kimberly Kuipers

Social license and two narratives of science communication in Australia's gasfield communities

Author: [Will Rifkin](#)

Co-authors: Lucy Mercer-Mapstone & Martin Espig

Communicating disasters: after action reviews as a genre of science communication  
Author: [Eric Kennedy](#)

Communicating with the public during natural disasters in Europe  
Author: [Stefanie Wahl](#)  
Co-authors: Karolin Bauer & Lars Gerhold

**G8 Individual paper - Communicating within social, environment and economic context**  
**Room: ARCH3**  
**Chair: Luisa Massarani**

Study of lifelong learning and civic science literacy of youth in Thailand  
Author: [Ganigar Chen](#)  
Co-authors: Archanya Ratana-ubol & Pichai Sonchaeng

Science and socio-environmental problems: discourses in the urban context of Guadalajara, Mexico  
Author: [Susana Herrera](#)

You need to shut up: research silencing and its implications for public health policy  
Author: [Jacqui Hoepner](#)

Evaluation of vaccine communications and interventions, 1998-2014: do any actions have a shown improvement in reducing vaccine hesitancy and increasing vaccination rates to herd immunity levels?  
Author: [James Ansell](#)

Tracking trends in demand for Australia's research workforce  
Author: [Will Grant](#)  
Co-authors: Inger Mewburn & Hanna Suominen

**G9 Show, tell and talk - New approaches to visual storytelling**  
**Room: ARCH4**  
**Chair: Ana Nepote**

Online news from the past – ancient Greece on YouTube and the seemingly revival of a holistic academic education  
Author: [Andrea Geipel](#)  
Co-author: Jesus Muñoz Morcillo

Visualising Pacific women in ocean science and management  
Author: [Tiffany Straza](#)  
Co-author: Sefanaia Nawadra

Blog & Tweet turns – changing the culture of science communication  
Author: [Kaisu Innanen](#)

When researchers, students and pupils communicate science with stop-motion animation movies  
Author: [Frederique Carcaillet](#)

Stories can save lives: breaking through stigma with video stories  
Author: [Robert Inglis](#)  
Co-author: Jacob Bor

**G10 Workshop**  
**Room: SDAV6**

Little lessons in science communication: a game of cards

Author: [Brian Trench](#)

Co-author: Maja Horst & Birte Faehnrich

12:00pm

**Lunch**

St David Theatre Complex Foyer

1:00pm

**Plenary session in St David Lecture Theatre**

**Keynote:** [Nicky Hager](#)

*When science clashes with vested interests*

then interviewed by [Associate Prof Jesse Bering](#)

1:45pm

**Parallel session H**

*For full details please refer to the app*

**H1 Grouped paper**

**Room: St David Lecture Theatre**

**Chair: Ayelet Baram-Tsabari**

What's new about public engagement with science on new media?

Author: [Ayelet Baram-Tsabari](#)

Co-authors: Lloyd Spencer Davis, Bruce V. Lewenstein & Massimiano Bucchi

**H2 Roundtable discussion**

**Room: SDAV3**

**Chair: Michael Gastrow**

Exploring the science-society interface in South Africa

Author: [Michael Gastrow](#)

Co-authors: Anne Dijkstra, Janice Limson & Lars Guenther

**H3 Roundtable discussion**

**Room: SDAV1**

**Chair: Kathryn O'Hara**

A sizeable shift: exploring new boundaries for science journalists and science communicators

Author: [Kathryn O'Hara](#)

Co-authors: Brian Trench, Sharon Dunwoody, Amanda Alvarez & Fred Balvert

**H4 Roundtable discussion**

**Room: SDAV5**

**Chair: Enrico Balli**

The role of science communication journals in America Latina

Author: [Enrico M. Balli](#)

Co-authors: Luisa Massarani, Dominique Brossard, Nancy Longnecker

**H5 Roundtable discussion**

**Room: SDAV2**

**Chair: Susana Herrera**

Science communication and socio-environmental problems: the case of water and forests

Author: [Susana Herrera](#)

Co-author: Ana Claudia Nepote, Jennifer Metcalfe, James G. Cantrill & Alexander Gerber

**H6 Individual paper - Understanding who you're communicating with Room:**

**Room: ARCH2**

**Chair: Hans Peter Peters**

Defining public attitudes and understanding of human gene therapy in Australia

Author: [Michel Watson](#)

National surveys: if you're going to bother, bother hard!

Author: [Rod Lamberts](#)

Co-author: Lyndal Byford

Understanding 'trusted intermediaries' in order to broaden participation

Author: [Matthew Hickman](#)

Attitudes towards science in New Zealand: psychological factors and implications for science communication.

Author: [John Kerr](#)

Communicate science for everyday Jose, knowing our audience

Author: [Angel Figueroa Perea](#)

**H7 Idea in progress - Participating in science, including citizen science**

**Room: ARCH3**

**Chair: Jan Riise**

The challenges of establishing a national citizen science association

Author: [Joseph Roche](#)

Co-author: Nicola Davis

Communicating 'science for development': getting scientists, communicators and policy makers on board

Author: [Ramasamy Venugopal](#)

Indigenous languages in Patagonia: a travelling exhibition

Author: [Sandra Murriello](#)

Co-authors: Máximo Farro, Marisa Malvestitti & Anahí Mariluán

Reflexive practice: radicalising how scientists approach communication

Author: [Rhian Salmon](#)

Co-authors: Jo Bailey & Rebecca Priestley

Children drawing pictures against antimicrobial resistance in Ghana

Author: [Bernard Appiah](#)

Co-author: David Anum, Martha Gyansa-Lutterodt & Cecil Jones Abban

Introducing LEARN CitSci – Exploring youth participation in citizen science

Author: [Julia Lorke](#)

Co-authors: Lucy Robinson, Heidi Ballard, Déana Scipio, Christothea Herodotou, Maria Aristeidou, Alison Young, Rebecca Johnson, Lila Higgins & Grant Miller

**H8 Show, tell and talk - Dealing with controversy, activism and policy**

**Room: ARCH4**

**Chair: Toss Gascoigne**

Changing climate x changing communities = emergency communication challenges  
Author: [Craig Cormick](#)

2500% and counting: who gives a hoot about science?  
Author: [Melanie Bagg](#)  
Co-authors: Anna-Maria Arabia & Robyn Diamond

Activism, Science, and the Infinite Game  
Author: [Siana Fitzjohn](#)

Synthetic phosphoethanolamine: the Brazil media controversy  
Author: [Luís Amorim](#)  
Co-authors: Eduardo Barreto Rosario & Marina Ramalho

**H9 Workshop**  
**Room: SDAV4**

Synesthesia live painting show: developing public awareness of synesthesia phenomenon  
Author: [Dyah Ratna Permatasari](#)

**H10 Workshop**  
**Room: SDAV6**

Reframing climate change: a deliberative approach to public engagement with science  
Author: [Gwendolyn Blue](#)

3:00pm **Afternoon tea**  
St David Theatre Complex Foyer

3:30pm **Parallel session I**  
*For full details please refer to the app*

**I1 Roundtable discussion**  
**Room: St David Lecture Theatre**  
**Chair: Fabian Medvecky**

Talking about values in science communication  
Author: [Fabien Medvecky](#)  
Co-authors: Massimiano Bucchi, Joan Leach, Michael Dahlstrom

**I2 Roundtable discussion**  
**Room: SDAV1**  
**Chair: Sharon Dunwoody**

How journalists deal with scientific uncertainty and what that means for the audience  
Author: [Sharon Dunwoody](#)  
Co-authors: Friederike Hendriks, Luisa Massarani, Hans Peter Peters

**I3 Roundtable discussion**  
**Room: SDAV2**  
**Chair: Jan Riise**

Creating the stories together

Author: [Jan Riise](#)  
Co-authors: Jenni Metcalfe, Alexander Gerber, Yael Barei

**I4 Individual paper - Different values and perspectives on science and scientists**

**Room: ARCH1**

**Chair: Bernard Schiele**

The Draw-a-scientist test in an African context: comparing students' (stereotypical) images of scientists across university faculties

Author: [Lars Guenther](#)

Co-authors: Corlia Meyer, Marina Joubert

Square kilometre array's (Meerkat) struggles with anti-science advocacy groups

Authors: [Anton Binneman](#)

Co-author: Lorenzo Raynard

Science advocacy in Australia: A Twitter analysis of the March for Science

Author: [Michelle Riedlinger](#)

Co-author: Brenda Moon

From the communication of science and technology to the social appropriation of knowledge

Author: [Xenia Rueda](#)

If you want to go far, go together – partnerships to create African science centres

Author: [Graham Walker](#)

**I5 Individual paper - Perspectives on citizen science and society**

**Room: ARCH2**

**Chair: Sara Yeo**

Building knowledge infrastructures for citizen science: the quest for reciprocity

Author: [Per Hetland](#)

What do you want to explore? Introducing personal research into a citizen science project

Author: [Ayelet Baram-Tsabari](#)

Co-author: Yaela N Golumbic, Barak Fishbain

Support for citizen scientists through social media

Author: [Nancy Longnecker](#)

Co-author: Andrea Liberatore

How can we engage more diverse audiences in large-scale citizen science projects for broader societal impact?

Author: [Victoria Martin](#)

Co-authors: Rick Bonney, David Bonter, Emma Greig, Bruce Lewenstein, Drew Margolin, Tina Phillips

When curious citizens lead science – the paradigm shift arising from participatory science

Author: [Victoria Metcalf](#)

Co-authors: Kristiann Allen, Craig Grant, Josh Richardson, Sarah Morgan

**I6 Individual paper - Society, science and the media**

**Room: ARCH3**

**Chair: Birte Faehnrich**

Public engagement-oriented science education practices and research - using TV programs broadcasted by NHK in Japan

Author: [Kei Kano](#)

Co-authors: Eri Mizumachi, Takayuki Shiose, Shinichi Takeuchi

"It won't hurt you. It's natural": the treatment of alternative therapies in Spanish women's magazines

Author: [Vanessa Roger-Monzo](#)

Co-authors: Myriam Marti-Sanchez, Isabel Mendoza-Poudereux, Yolanda Cabrera Garcia-Ochoa

Science/pseudoscience TV series, a comparison

Author: [Alexandre Schiele](#)

Changing the story: a case study of exaggeration in neuroscience reporting

Author: [Natasha Abrahams](#)

"It actually works for me": the presence of homeopathy in the Spanish digital press

Author: [Myriam Marti-Sanchez](#)

Co-author: Vanessa Roger-Monzo, Ramon Camaño-Puig, Mavi Corell-Domenech

## **17 Idea in progress - New ideas about science communication, culture and literacy**

**Room: SDAV3**

**Chair: Brian Trench**

Public opinion of evolution: different approaches to measuring evolution beliefs

Author: [Kathleen Rose](#)

Co-author: Michael Xenos, Dominique Brossard, Dietram Scheufele

Nice to MOOC you: online learning for science communication

Author: [Lisa Bailey](#)

Co-author: Peter Tangney

Collaboration readiness of transdisciplinary collaborations

Author: [Eva Kalmar](#)

Uses of public communication in the scientific culture of Brazil and Canada: a comparative study between The Federal University of Uberlandia and The University of Ottawa

Author: [Adriana Santos](#)

Co-author: Mirna Tonus

Cultural pre-conceptions and their implications on earth science education

Author: [Simon Schneider](#)

## **18 Show, tell and talk - Understanding cultural and social barriers to science communication**

**Room: ARCH4**

**Chair: Lloyd Davis**

Counteracting cross-cultural calamities when creating a comic – lessons learned from a pilot study

Author: [Fredrik Brouneus](#)

Co-author: Paula Alvarado

Why do female Japanese students not study mathematical and physical sciences?

Author: [Hiromi Yokoyama](#)

Co-author: Yuko Ikkatai

Square kilometre array South Africa understanding San cosmology

Author: [Anton Binneman](#)

Stories about earthquakes and eruptions in Andean Patagonia

Author: [Sandra Murriello](#)

Co-author: Liliana Pierucci, Mariano Nuñez Freire, María Elena Apa, Bárbara Erak, Carolina Salazar Marin

What are girls curious about when it comes to nature?

Author: [Sofia Otero](#)

Co-author: Nelida Pohl

Mining secondary datasets for mapping science culture: cross-cultural and longitudinal comparison of EU; China and India

Author: [Ahmet Suerdem](#)

Co-author: Martin Bauer

## **I9 Workshop**

**Room: SDAV5**

Mistakes, fun, creativity - reinventing the idea of a meeting

Author: [Satu Lipponen](#)

Co-authors: Mikko Myllykoski, Orlando Werffeli, Wolfgang Goede

## **I10 Roundtable discussion**

**Room: SDAV6**

**Chair: Heather Doran**

Implementing responsible research and innovation at universities. A cultural perspective

Author: [Heather Doran](#)

Co-authors: Anne Dijkstra, Steve Miller, Yin Lin, Caitriona Morden

4:45pm

### **Closing Plenary Session in St David Lecture Theatre**

Moderated by [Dr Fabien Medvecky](#)

**Plenary Panel: *Reflections and Future Directions***

featuring [Prof Massimiano Bucchi](#), [Prof Alexander Gerber](#), [Dr Sara Yeo](#)

5:30pm

Final remarks from hosts and presentation of PCST 2020

6:00pm

**Close of PCST Conference 2018**

6:15 pm - 8:00pm

**PCST Scientific Committee Meeting**

**Room: SDAV6**



4

# ABSTRACTS

# NATASHA ABRAHAMS

When & Where: [16 4:15pm Friday 6 April ARCH3](#)

Title: **Changing the story: a case study of exaggeration in neuroscience reporting**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Natasha Abrahams**, *Monash University, Australia*

This case study analyses print and online global news reporting upon a single neuroscientific study (Hahn et al. 2015) to trace how the messaging changes from the original article, to the press release, to news reporting. Hahn et al.'s (2015) study used functional magnetic resonance imaging to visualise brain structure changes in female-to-male transgender individuals who were administered testosterone. The widespread international news coverage of their study was notable for its embellished claims. Some articles included the claim that women given testosterone experienced a decline in their multi-tasking ability, suggesting that men are less adept at multi-tasking due to their higher levels of testosterone. These news articles erroneously attributed this result to Hahn et al. (2015), who did not examine or speculate on multi-tasking.

Through examining a comprehensive sample of news reporting on Hahn et al.'s (2015) study, I have inferred key points at which the story deviated from that expressed in the study abstract and press release. I argue that two factors underpinned this misleading reporting. Firstly, the news reporting called upon the established gender script that women possess an inborn propensity for multi-tasking. Secondly, unsubstantiated claims proliferated due to a unique globalised news environment in which a small number of articles are reproduced and adapted across many news outlets. Based on my analysis, I make recommendations on responsible news reporting of science relating to sex differences.

The case study sits within my broader doctoral thesis which argues that biological justifications for gender roles in the home are perpetuated by the interplay between scientific literature and popular media.

# MARIA ALVAREZ

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)

Title: **Building bridges to bring science closer to society: '20 years is nothing'**

Format: Show, tell and talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Maria Alvarez**, *Fundacion Solydeus, Argentina*

Co-author(s): Maria L Castro, *UNICEN-CONICET*

Fundación Solydeus, a non-governmental non-profit organization, institutionalized in Argentina in 1998, has as its mission to promote and develop activities in science, technology and innovation for the formation of responsible citizenship. It is thus that a group of professionals convinced that society must know and understand and see in science and in technological innovations, social processes that can sustainably improve their living conditions, meet and shape Solydeus. This implies creating and working in a new way of communicating science, which is closely linked to the treatment of our problems, while involving, in the extension of knowledge to increase the exercise of citizenship. In this work we recover the 20 years of what Solydeus acted in a brief review is described and shows the way covered by the institution. It describes the actions developed, the actors involved, the spaces covered, the links with associations, the international networks, the collaboration agreements, without losing sight of the socio-political context in which it takes place, conceived within the framework of a CTS perspective

# LUÍS AMORIM

When & Where: [D7 11:30am Thursday 5 April ARCH3](#)

Title: **Zika and microcephaly: from the scientific discovery by Fiocruz to the institution's Facebook**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Luís Amorim**, *Oswaldo Cruz Foundation, Brazil*

Co-author(s): Paloma da Silva Barreto Marcelo Garcia, *Oswaldo Cruz Foundation*

The paper analyzed how zika/microcephaly was approached by Fiocruz, the main health research center in Latin America and the first institution to link zika and microcephaly, on its Facebook page. The objectives of this research were to identify the main characteristics of Fiocruz fanpage posts on Facebook that refers to the subject, in relation to its formats and contents addressed. In addition, we intended to understand how was the interaction between the public and Fiocruz; how the rumors about the epidemic were addressed by the institution and how science has been portrayed throughout the posts. A total of 132 posts, published between May 2015 and May 2016, the period of higher impact and relevance of the zika theme, were analyzed. All these posts were examined by quantitative analysis considering four dimensions: frequency, thematic, format and engagement; and the five posts with more engagement were analyzed qualitatively. The study concluded that Fiocruz's page dedicated an expressive space to the topic zika/microcephaly, prioritizing approaches with a scientific and political-institutional approach. There was also an effort to dialogue with a varied audience, with a multi-topic approach. The posts with the highest engagement were focused on scientific dissemination and target an audience beyond professional and academic ties. Among them, the posts about rumors were the ones that most motivated audience interaction, demonstrating great interest in the topic and the search for reliable sources of information. There was also a low frequency of response to comments by Fiocruz. Regarding the formats of the publications, the research concluded that there were little experimentation and variation in the approach of the subject. Together, these two findings indicate the lack of use of important social networking potentials, which could be even more important in an epidemic situation marked by considerable uncertainty and fear as that of zika.

# LUÍS AMORIM

When & Where:	<a href="#">H8 1:45pm Friday 6 April ARCH4</a>
Title:	<b>Synthetic phosphoethanolamine: the</b>
Format:	Show, tell and talk
Theme:	Stories
Area of interest:	Investigating science communication practices
Author:	<b>Luís Amorim</b> , <i>Oswaldo Cruz Foundation, Brazil</i>
Co-author(s):	Eduardo Barreto Rosario Marina Ramalho

The end of the year 2015 was marked by the repercussion in the Brazilian media and abroad of the controversy surrounding Synthetic Phosphoethanolamine. Capsules with this substance were produced and supplied to cancer patients at the University of São Paulo, the most prominent University in Brazil, until an ordinance published by the institution prohibits the production and distribution of any drug for medicinal purposes that does not have an official registration. The press went on to report examples of cancer patients who sought in court the right to continue to receive and use the substance. These patients reported improvements and even remission of cancer attributed to the use of the Phosphoethanolamine. Several decisions of the court were granted determining the return of the distribution of the drug, despite the absence of official evidence of efficacy and safety issued by official bodies. The judicial and popular pressure also determined urgency in conducting official tests with the drug, financed by the Brazilian government. The objective of this work is to analyze how the controversy was portrayed on YouTube, the leading online video platform in the world. We searched the top 30 videos in the number of views for four keywords, in Portuguese: "Fosfoetanolamina", "Pílula do Câncer", "Chierice" and "Fosfo", leading at a corpus of analysis of 95 videos. Our analysis shows the great relevance of "producers". Our data reveal the importance of user-generated content that outnumbered genre views that reflect professional-generated content: the total number of views of the 50 professional-generated content videos is 1,462,052, while the total number of views of the 45 user-generated content videos is 3,054,754. Another finding shows that the scientist is present in 66 videos, demonstrating the importance of this voice in the construction of the messages.

# THEODOROS ANAGNOSTOPOLOS

When & Where: 430 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **“STEMpowering Youth”: Innovation to the local community and science communication**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Theodoros Anagnostopoulos, SciCo, Greece**

Co-author(s): Elpiniki Pappa, SciCo  
Marilena Andrikopoulou, SciCo

"STEMpowering Youth" is a program developed to facilitate innovation in local communities, via STEM education and science communication. Trying to fill in the gap of Greece's educational system, the program supports interactive "hands-on" education and seeks to connect citizens' everyday life with science.

We developed a 9-week STEM program that was piloted in 12 educationally weak, remote areas in Greece. This program was implemented in out of school hours and aimed to make students use science tools and engineer innovations in order to tackle local social challenges. As a long-lasting solution approach, we empowered local educators on how to use student-centered and project-based activities to teach science. As an end result, each team produced an innovation that aims to solve local or social problems.

In a second phase, the "student-innovators" were asked to explain their work through a series of local, popular events. The common characteristic of all these events was the communication of scientific and technological knowledge to the public, i.e. to people who were not aware of these topics.

In the pilot phase, we trained fourteen teachers and 360 students, aged 13 to 16, while 15 innovative projects were constructed. The projects constructed, as well as, the science behind them were communicated to approximately 3.000 people.

The project's results were disseminated to the general public through social media while all innovative constructions were video recorded and uploaded on video platforms. More than 50.000 people have viewed these. The project is planned until 2019.

# THEODOROS ANAGNOSTOPOLOS

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)  
Title: **“Mind the Lab”: a powerful tool in the field of science communication**  
Format: Idea in progress  
Theme: Society  
Area of interest: Investigating science communication practices  
Author: **Theodoros Anagnostopoulos, SciCo, Greece**  
Co-author(s): Elpiniki Pappa, SciCo

Most science communication approaches and mediums are usually attracting people with a pre-existing interest in science, and with high appreciation for the added value of involving scientific knowledge in everyday life. Thus, failing in achieving their principal goal, i.e. bringing science to the general public.

To overcome this challenge we have organized an outreach event in a place where thousands of people with different backgrounds pass by: The Metro! “*Mind the Lab*” was piloted for the first time in the Athens metro, Greece, on February 3, 2017.

Approximately 10.000 people stopped by (1 out of 10 of the total number of passengers) to be informed and interact with the exhibits for an average time of 2-3 minutes. The 89, 6% was keen on learning more about the presented scientific and technological topics and 96, 3% would be interested in similar outreach events. These data support that “*Mind the Lab*” can be a powerful tool, since it acts as a science teaser, attract the general public and direct it to science-related channels.

“*Mind the Lab*” is unique in the way that has been designed as an easy-to-use / do-it-yourself online platform that will facilitate the organization of the event in other cities and countries. This design facilitates the establishment of an international science celebration day where “*Mind the Lab*” will take place simultaneously in as many cities around the world as possible. We propose that such an initiative in international level will increase public engagement in science, by boosting the impact of traditional science communication activities and increasing their dissemination to the general public. “*Mind the Lab*” is being planned to take place in five European and two Latin America cities in 2018.

# JEREMY ANDERSON

When & Where: [10.15am Wednesday 4 April Cumberland St entrance to St David Theatre Complex](#)  
Title: **Toxic zombie death machines ... a love story**  
Format: Speakers' corner  
Theme: Stories  
Area of interest: Investigating science communication practices  
Author: **Jeremy Anderson, Otago University, NZ**

In New Zealand we are in the middle of a national debate about cats because we have 'a cat problem'. This debate sits within a broader national conservation goal to be mammalian pest free by 2050.

Violent metaphors, and the positioning of cats as 'invasive species' and 'immigrant killers' not only removes our human agency in their worldwide distribution, but sets up dualisms of wild vs domestic, native vs introduced, and pets vs pests, when our relationship with the domestic cat is more complex than these simple dualities allow.

My thesis examines the language used to communicate the many problems our domestic cats pose, and the benefits to Science Communication when storytelling, rather than violent military metaphors, are used in our communication strategies.

In five minutes, I will present two stories that illustrate the effectiveness of storytelling and offer you the choice of warfare or welfare.

# MITA ANGGARYANI

When & Where: **164** 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **School-based disaster risk reduction program: a critical analysis on role-playing in evacuation training**

Format: Visual talk

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Mita Anggaryani**, *The Australian National University, Australia*  
*The State University of Surabaya*

Role-playing presents a new trend that has not been standardized yet as a Disaster Risk Reduction (DRR) communication strategy in schools. School community plays a significant role in disseminating DRR awareness. A school-based DRR program provides knowledge and practical skills needed to reduce the risk of disaster. However, there is a challenge in teaching risk management to the school community. The school community seems not ready for communicating information merely based on scientific data. In countries that still have a robust belief system mainly related to supernatural powers, such as Indonesia, science needs to be transformed into information that is simple and acceptable for the local community. In some cases, practical procedures of safety become more prioritised than science-based knowledge of risk when it comes to raising public awareness. Evacuation training in school-based DRR programs has become essential in promoting DRR awareness. As the training developed with an intention to give a real situation during the disaster, dramatic scenes involving school community as actors are set. Evacuation training with role-playing is expected to be able to offer emotional aspects that might help decision making in a critical situation. This study seeks to draw a critical analysis regarding the evacuation-training program in Indonesia by comparing the key features of similar programs in Japan and New Zealand. The analysis will be used to recommend a better risk management training for schools. The methods in this study are interviews and observations. There were 20 schools, 18 principals, and 36 teachers that participated in this study. The results show role-playing in evacuation training affects the community's interest in DRR. However, the interest does not guarantee the school community committed to continuing the program. In brief, role-playing has a potential to communicate DRR in the risk management training.

# JAMES ANSELL

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)

Title: **Treating patients with an illness that may not exist- using Lyme or Lyme-like illness in Australia as a case study for developing patient centric communication strategies and policy guidelines for interacting with complex and controversial illnesses**

Format: Idea in progress

Theme: Society

Area of interest: Investigating science communication practices

Author: **James Ansell**, *The Australian National University, Australia*

Lyme disease is a complex, debilitating tick-borne illness with symptoms ranging from fever and malaise to polyneuropathy and encephalomyelitis. Lyme is surrounded by much controversy, particularly in Australia. There are an increasing number of extremely ill Australians who believe they have Lyme or a Lyme-like illness. However Government agencies and the medical community firmly maintain that Lyme does not exist in Australia.

This stark division has led to an increasing breakdown of relations between key stakeholder groups. In 2016 this culminated in an emotionally charged Australian Senate Committee. The Inquiry concluded that the official response to these unwell people had been inadequate, recommending a patient-centred, multi-disciplinary treatment approach be adopted by official agencies and the medical community. The Inquiry urgently recommended funding be made available for research and in 2017 the Australian National Health and Medical Research Council allocated \$3 million to a targeted call for research into Lyme-like illness in Australia. This issue raises an important question for science communication in the medical landscape- how can we best communicate the science of complex, controversial and constantly changing diseases such that ill people remain engaged with the medical community and treatments. Particularly when stakeholders are so strongly divided. More broadly, what policies can be developed to guide medical practitioners, researchers and government agencies in responding in an appropriate and constructive manner that minimises harm if a complex and controversial disease emerges, or is perceived to emerge, in a new area.

This research proposes to use Lyme or Lyme-like illness in Australia as a case study to develop best communication practices and policy in this field. Firstly by looking at the historical situation to review what occurred and what went wrong. And secondly by examining the effects of what is developed or delivered over coming years following the Senate Inquiry and NHMRC funding.

# JAMES ANSELL

When & Where: [G8 11:30am Friday 6 April ARCH3](#)

Title: **Evaluation of vaccine communications and interventions, 1998-2014: do any actions have a shown improvement in reducing vaccine hesitancy and increasing vaccination rates to herd immunity levels?**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **James Ansell**, *The Australian National University, Australia*

Vaccination has been inarguably beneficial to humanity, however recent decades have seen a rise in vaccine hesitancy and refusal. In particular the false connection of the Measles, Mumps, Rubella (MMR) vaccine with Autism by Wakefield et al in 1998 started a rigorous anti-vaccination movement. Since then vaccination rates in some areas have fallen below 'herd immunity' levels, allowing for vaccine preventable diseases to return and claim lives.

This research reviewed the literature of vaccination program communications and interventions between 1998 and 2014 to determine if any had reduced vaccine hesitancy and improved vaccination rates. This review focused on two vaccines- the MMR vaccine which had been the subject of the Wakefield et al (1998) and the Human Papillomavirus vaccine which had been incorporated into vaccination schedules post-1998.

The research identified a gap in existing science communication literature, with few studies specifically tracking vaccination rates. Most research looked only at vaccine attitudes or intentions. Overall there was insufficient data to show any specific communication or intervention strategy reduced vaccine hesitancy or increased vaccination rates to herd immunity levels.

Of the literature that did exist, it suggested that vaccine hesitancy potentially played an unexpectedly small role in decreasing vaccination rates, with logistical issues predominately preventing vaccination. Additionally most interventions relied on single interactions, so vaccines requiring multiple sessions e.g. booster shots could not have immunisation rates determined at all.

This suggests that potentially interventions and communication strategies that have multiple interactions and address logistical barriers may be sufficient to attain herd immunity levels without needing to directly address vaccine hesitancy. Recommendations for future research to fill this literature gap include a larger focus on directly tracking vaccinations rates rather than vaccination attitudes or intentions, as well as developing communications strategies that focus on logistical barriers and engage with audiences multiple

# JAMES ANSELL

When & Where: 256 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Evaluation of vaccine communications and interventions, 1998-2014: do any actions have a shown improvement in reducing vaccine hesitancy and increasing vaccination rates to herd immunity levels?**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **James Ansell**, *The Australian National University, Australia*

Vaccination has been inarguably beneficial to humanity, however recent decades have seen a rise in vaccine hesitancy and refusal. In particular the false connection of the Measles, Mumps, Rubella (MMR) vaccine with Autism by Wakefield et al in 1998 started a rigorous anti-vaccination movement. Since then vaccination rates in some areas have fallen below 'herd immunity' levels, allowing for vaccine preventable diseases to return and claim lives.

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# BERNARD APPIAH

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)

Title: **Scientists and journalists networked to promote environmental health**

Format: Show, tell and talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Bernard Appiah**, *Centre for Science and Health Communication, Ghana; Texas A&M School of Public Health, USA*

Co-author(s): David Anum, *Centre for Science and Health Communication, Ghana*  
Esther Nakkazi, *Health Journalists Network Uganda*  
George Appiah, *Centre for Science and Health Communication, Ghana*  
Edward Mulogo, *Mbarara University of Science and Technology, Uganda*  
Samuel Odai, *Kwame Nkrumah University of Science and Technology, Ghana*  
Anubhuti Poudyal, *Texas A&M School of Public Health, USA*

Workshops involving scientists and media professionals are increasingly being organised to promote public engagement with science. However, there is limited research on approaches to establishing and evaluating networks among scientists and journalists to promote public engagement with environmental health.

The Scientists and Journalists Networked to Promote Environment Health is a pilot project that was implemented in Ghana and Uganda to build the capacity of journalists and scientists to engage with each other. In addition, this project used social network analysis as an innovative approach for analyzing the networks, and assessed the feasibility of using online discussions for public engagement with environmental health. In each country, journalists with interest in reporting environmental health attended a two-day workshop with scientists undertaking environmental health research. A social network questionnaire was administered to participants during, and several months after, the workshop, to assess engagements with environmental health among the scientists and the journalists.

This show and tell will highlight how the networks were formed and the findings from the social network analysis. We will also show the findings of a feasibility study among the scientists and journalists for using online discussion forum to engage with each other to help sustain the networks. There were increased public engagements among the participants after the workshop, with most favouring using weekly online discussions to promote engagement with environmental health issues.

Scientists-journalists networks on environmental health and the use of social network analysis as an approach for evaluations should be encouraged for advancing public communication of science and technology, and knowledge translation.

# BERNARD APPIAH

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **Children drawing pictures against antimicrobial resistance in Ghana**

Format: Idea in progress

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Bernard Appiah**, *Centre for Science and Health Communication, Ghana; Texas A&M School of Public Health, USA*

Co-author(s): David Anum, *Centre for Science and Health Communication, Ghana*  
Martha Gyansa-Lutterodt, *Ministry of Health, Ghana*  
Cecil Jones Abban, *Centre for Science and Health Communication, Ghana*

Antimicrobial resistance — the phenomenon by which medicines used for fighting disease-causing microbes no longer become effective — is a threat to human life. Behavioral practices such as buying antibiotics without prescriptions and stopping treatment with antibiotics without advice of healthcare professionals are particularly common in the developing world. These practices contribute to the rising antimicrobial resistance.

In Ghana, an ongoing project involves schoolchildren (12-16 years old) using picture drawing as an engagement approach to depict the correct and incorrect use of medicines, and the consequences. The project is being implemented in collaboration with Ghana's Ministry of Health, Ghana Education Service and a community-based, non-governmental organisation.

We have trained two science teachers to use picture drawing drawing to engage the students. The students will be asked to draw pictures about correct and incorrect use of antibiotics and the effects of these practices.

We will invite parents to attend a picture-drawing event in the school, during which students and parents could ask questions for science communicators and medical experts to provide them with answers. In addition, we will produce an animation in collaboration with five students with the top five pictures. We will show the animation during Parent-Teacher Association meeting as a second engagement approach with the parents.

We expect knowledge, attitudes and beliefs about misuse of antibiotics among the students and parents to change positively. The outcome of this project could contribute to the fight against antimicrobial resistance in Ghana.

# GEORGE ARANDA

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)

Title: **Science games: the nexus of science education and science communication?**

Format: Show, tell and talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **George Aranda**, *Deakin University, Australia*

Co-author(s): John Cripps Clarke, *Deakin University*  
Peta White, *Deakin University*  
Joe Ferguson, *Deakin University*  
Kathleen Hayes, *Deakin University*  
Leissa Kelly, *Deakin University*

There has been a world-wide resurgence in the popularity of board games over the last decade. This has included commercially produced board games and those crowd-funded on websites such as Kickstarter (Wong, 2016). Science board games can be counted amongst those increased sales.

What do these science board games have to offer science education and science communication? Their potential seems promising.

In this paper we examine what affordances science board games such as *Organ Attack!*, *Pandemic* and *Go Extinct!*, offer to science education and science communication contexts. These include potential increases in understanding of the nature of science, science literacy and the use of representations in science.

A pilot study was conducted in Melbourne, Australia, as part of National Science Week, which was attended by parents/guardians and their children who were provided with a range of different science games with which to play. This study offers unique insights into the possibilities of science board game-play between different generations. We discuss feedback from participants in regards to the gameplay and learning of these events in relation to Longnecker's (2016) Integrated Model of Science Communication, which highlights the importance of the roles of communication, engagement and identity.

This research discusses the potential of how playing science board games could be used to facilitate the dissemination of information, encourage discussion about scientific issues and influence identity in relation to science – issues critical to both science education and science communication.

# KEDWADEE ATCHAWISIT

When & Where: 295 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Preliminary Study: Applying Hands-on Activities as Introduction to Science and Technology related Occupations in Enjoy Science Careers Exhibition**

Format: Visual talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Kedwadee Atchawisit**, *National Science Museum, Thailand*

Co-author(s): Ganigar Chen, *National Science Museum, Thailand*

In the present, the number of recent graduates in the science-related field is decreasing in Thailand as demand increases to lead the nation to 'Thailand 4.0'. The Enjoy Science Careers exhibition was developed to encourage youths to acknowledge the importance of science and technology. It also serves as an inspiration for high school students who are deciding on their future career path.

The exhibition was designed as a travelling display that across different regions of Thailand. In contrast to a general presentation of various occupations, examples of work or skill connected to the occupations are found as hands-on activities. Visitors learned by engaging with tools or taking on the career role. From the investigation, with a significant difference  $p=0.05$  after engagement with the exhibition, participants obtained positive attitude on science as they agreed on the importance of science in developing the country and that it is possible for science to be made apparent. As for occupation decision, prior and after participating in the activities showed no differences as significant. However, visitors strongly agreed that happiness and enjoyment of learning science affect a decision on a career path in the future. This result indicated that contentment in learning science from the exhibition might be a primary factor in choosing science-related careers. Early responses from a survey of visitors revealed that over 80% of participants enjoyed hands-on activities in Enjoy Science Careers Exhibition. Many reports that the exhibition is one of the tools can enhance inspiration, curiosity and a better understanding of science and technology related careers.

# SHANII AUSTIN

When & Where:	62 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer
Title:	<b>Sophisticated strategies of science presenters</b>
Format:	Visual talk
Theme:	Stories
Area of interest:	Investigating science communication practices
Author:	<b>Shanii Austin</b> , <i>University of Western Australia</i>
Co-author(s):	Miriam Sullivan, <i>University of Western Australia</i>

Science performances, or science shows, combine scientific content with theatrical techniques to engage audiences with science. Despite the fragmented nature of the evidence of their effectiveness, science shows are commonly used in informal science learning, particularly in science centres, schools and museums. Existing research shows strong evidence to support performing science shows for informal science learning and as part of the school curriculum. Most of the literature investigating science shows has been focused on the audience, but what about the presenters who perform these shows? Semi-structured interviews were conducted with science presenters at Scitech, the Western Australian science centre, to explore how science presenters value their shows and reflect on their performance strategies. We discovered that presenters from different departments within the same organisation had different views on certain aspects of their shows. Most presenters had specific strategies for engaging high school audiences and kept the audience at the forefront of their mind, but they normally didn't consciously think about the types of demonstrations they used. While this research provides a glimpse into the mind of the science presenter, further investigation is required to understand how well this matches with the opinions of their audiences.

# CHARLOTTE AUTZEN

When & Where: [C8 3:30pm Wednesday 4 April ARCH3](#)  
Title: **Science told by ‘science’: The story of EurekAlert!**  
Format: Individual paper  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Charlotte Autzen**, *University of Southern Denmark*

For research that argues that communication is essential to the constitution of organizations (Taylor and Van Every 2000), understanding how universities practice science communication becomes essential. Polino and Castelfranchi (2012) talks about ‘the communicative turn’ in science where communication cannot be separated from the scientific enterprise itself, but is a structural and structuring feature of science. As a genre of its own, academic press release texts (Anhäuser og Wormer 2016) can provide insights into how organizations express themselves and their courses (Lynch et al. 2014; Gilpin 2008). In May 2016, the online service for academic press releases EurekAlert! celebrated 20th anniversary and the number of science stories told by research institutions from around the world surpassed 300.000. This, I propose, makes EurekAlert! the most comprehensive and collectively produced *self-portrait of science* that currently exists online. However, despite the uniqueness of this science story mosaic, little is known about the authors and the stories these write. The same goes for effects and consequences of this specific international communication practice that EurekAlert! supports. By exploring *who*, *what* and *how* science and organizational selves are communicated at EurekAlert! from 1997-2016, this paper offers a descriptive, longitudinal study of international press releases. Perhaps unsurprisingly, the study shows that the self-portrait of science is skewed with an overload of health and medicine stories based on research findings published in *PNAS*, *Science* and *Nature* and written by native-English speaking universities. It further shows though that other story subject as well as stories from Asian and European universities have increased rapidly since 2014. Such changes may lead to a more representative store of meanings available for the public construct of science. The paper rounds off by discussing the international dimension of EurekAlert! and challenges that the use of English in science communication across borders may bring.

# MELANIE BAGG

When & Where: [H8 1:45pm Friday 6 April ARCH4](#)

Title: **2500% and counting: who gives a hoot about science?**

Format: Show, tell and talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Melanie Bagg**, *Australian Academy of Science, Australia*

Co-author(s): Anna-Maria Arabia, *Australian Academy of Science*  
Robyn Diamond, *Australian Academy of Science/Media Holdings Group*

What does it take to get people who don't care about science to sit up and take notice? What questions intrigue people who don't have time to stand still? We have a way to tell the story of science, with extraordinary global appeal.

Social media is increasingly becoming the way we consume news. In the age of fake news and cynicism, the Australian Academy of Science knew it had to do something to outshout the rubbish and provide factual, accurate content in an entertaining way – you could call it credible clickbait.

The Academy has done just that, producing unique science content and growing our Facebook audience from 9,058 to more than 240,000 followers in six months (and no, we didn't buy our social likes!). This puts us right up there with major media outlets on social. Our purpose-designed videos have been viewed on Facebook 13.5 million times through widespread sharing. And our success is reaching far beyond Australian shores: the Academy is verified as a trusted education account on Weibo in China and our translated content has been viewed nearly 11 million times.

By teaming up Australia's very best scientists with Australia's top media and communications expertise, we are creating original videos and articles that are intriguing and engaging thousands of people who don't give a hoot about science. Our accessible content is rigorously fact checked, reviewed and produced to the highest quality standards.

We will present our learnings since the project launched in October 2017, and explore the latest trends in social media and how scientists and science communicators can take advantage.

Curious?

# LISA BAILEY

When & Where: [17 3:30pm Friday 6 April SDAV3](#)

Title: **Nice to MOOC you: online learning for science communication**

Format: Idea in progress

Theme: Science

Area of interest: Teaching science communication

Author: **Lisa Bailey**, *Flinders University, Australia*

Co-author(s): Peter Tangney, *Flinders University*

Do you know what online courses would appeal to students to enhance their science communication? Are you aware of current offerings that are doing a great job? Do you MOOC? If you answered yes to any of these questions – I want to speak with you!

Massively Open Online Courses (MOOCs) have exploded in popularity over the last decade. There are many examples of communication skills courses on offer from institutions across the globe, and some fantastic examples of courses on critical thinking and the history and philosophy of science. I am a Lecturer in Science Communication at Flinders University. My colleagues and I are developing an online resource that brings together practical skills of critical reasoning and the philosophy of science, using examples from contemporary scientific and social scientific research. We seek to deliver a science communication resource that we hope will resonate with a wide range of university students, and not just those studying science.

We believe that the critical reasoning skills needed to do good science, and to use scientific evidence effectively in practice, are many of the same skills either demonstrated by, or explained through, social science disciplines such as law, psychology, political studies, and even, the humanities. We are trying to develop MOOC content that uses this cross-disciplinary knowledge in a way that can engage students of all academic disciplines to better understand what science is, why it's valuable and how it can be effectively communicated and used.

In this 'idea in progress' update, I'll share our approach to creating these resources and seek feedback from PCST attendees.

# ENRICO M. BALLI

When & Where: [H4 1:45pm Friday 6 April SDAV5](#)

Title: **The role of science communication journals in America Latina**

Format: Roundtable discussion

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Enrico M. Balli**, *Sissa Medialab, Italy*

Co-author(s): Luisa Massarani, *Museu da Vida, Fiocruz, Brazil*  
Dominique Brossard, *University of Wisconsin-Madison, USA*  
Nancy Longnecker, *University of Otago, New Zealand*

The science communication research community is constantly evolving and growing, with interests spreading from citizen science to science comics, from media discourse to community engagement. A part for strong, cross-cultural topics uniting researchers' interests in the field, trends are emerging showing the need for regional platforms, bringing together researchers from geographical areas that share similar contexts and languages. Speakers in this session will focus on the specific bottom-up process which recently led the science communication scientific community in Latin America to advocate for a dedicated regional open access platform, which is leading to the creation of *JCOM América Latina*, a journal aimed to give voice their community.

# FRED BALVERT

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)  
Title: **The Floor is to the Stakeholders**  
Format: Idea in progress  
Theme: Society  
Area of interest: Investigating science communication practices  
Author: **Fred Balvert**, *Erasmus MC, Netherlands*

Traditionally, a scientific conference is a very specialized event where scientists on one, or on several closely related, fields gather to share and discuss their research. This specialist character typically makes a conference rather inaccessible for other audiences. Could such a focused event also facilitate the involvement and dialogue with societal stakeholders?

There are examples of medical conferences which feature programs for stakeholders, such as patients, companies, policymakers, students and the general audience. According to RRI principles, generally speaking, the involvement of these stakeholders should improve societal and ethical qualities of the research agenda and practice and the uptake of research results by valorization. It should also contribute to public support for research and to the attractiveness of science as a career path for young generations.

This session explores the practice of involving non-specialist stakeholders in scientific conferences. Starting from a case study, the sessions asks the questions why the organizers of conferences accommodate programs for stakeholders, which form such programs could take, and what the results of participation of stakeholders in conferences could be.

# AYELET BARAM-TSABARI

When & Where: [H1 1:45pm Friday 6 April St David Lecture Theatre](#)

Title: **What's new about public engagement with science on new media?**

Format: Grouped paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Ayelet Baram-Tsabari**, *Technion Institute of Technology, Israel*

Co-author(s): Lloyd Spencer Davis, *University of Otago, New Zealand*  
Bruce V. Lewenstein, *Cornell University, USA*  
Massimiano Bucchi, *University of Trento, Italy*

Are fake news in science a new phenomenon? Should scientists organize and fight it, and if so, how? What should the education system teach about science in order to help future citizens to evaluate and interpret online science information? These are few of the questions discussed at PESO 2017 - Public Engagement with Science Online, an international research workshop that explored interactions between sciences, publics and social media, that took place at the Technion – Israel Institute of Technology on June, 2017.

This group paper will first briefly present several of the contributions to the workshop: Lloyd Davis will discuss the rise of video as a means for science engagement, presenting unflattering finding showing that most science videos do not use the potential that web 2.0 has to offer. Bruce Lewenstein will discuss 'fake' and 'truth' and 'reliable knowledge' from an historical perspective, and their relevance to our theme of public engagement with science online. Massimiano Bucchi, will address The challenges of science communication 2.0 by talking about the crisis of mediators and visual science literacy, and Ayelet Baram-Tsabari, will seek evidence of the usefulness of science for non-scientists on social media by for examining science literacy of adults engaged with social-scientific issues online. These presentations will then be used as a trigger to discuss broader cross cutting issues, such as visualizations and video, trust and evaluation of expertise, what counts as success in public engagement in science, and thinking about local communities in connection with public engagement with science online.

Proposals from the co-authors of this presentation:

**The rise of video as a means for science engagement** Lloyd Spencer Davis, *University of Otago, New Zealand*

During the last two decades, there has been a revolution in the way people access information, with the internet becoming the most common means for gathering information about science and other topics. Every

day there are 3.5 billion searches on Google alone, including four searches every second about climate change. As science communicators, then, it behooves us to have an online presence: we have to be where the eyes are. Of all the forms of online media, video has experienced explosive growth in recent times, reflecting a dramatic change in the ease and cost of production (using inexpensive cameras and software) and the ease of distribution (through the likes of YouTube and Vimeo). This democratization of filmmaking has led to 300 hours of video being uploaded every minute of the day on YouTube, with 4.95 billion videos are viewed every day by its more than 1.3 billion users. While interactivity is frequently cited as the feature of digital media that most clearly distinguishes it from older, non-digital genres, a recent examination of 826 online science videos (Davis and León 2018) paints a different and bleaker picture. Despite the potential of online video to be an innovative and interactive means of communication, most online science videos stick to a traditional expository form of narration. Two trends in online science videos are apparent, however, that represent an alteration of narrative form in the digital age: a lack of storytelling and an increasing prominence of informal narratives associated with the proliferation of user generated content. In other words, storytelling and narrative are being subjugated for the expediency of informal expositions. Although this is not conducive to effective communication, it does create an opportunity for science communicators to exploit. Mimicking the qualities of user-generated content (i.e. making videos look amateurish but at the same time emotional and authentic) can potentially help attract viewers, which, when combined with storytelling, should enhance communication.

**Can social media handle the difference between ‘truth’ and ‘reliable knowledge’?** Bruce V. Lewenstein, Cornell University, USA

The question of how social media deals with "truth" is a question of the moment, driven by concerns about fake news. In PCST, issues like autism and vaccines, climate change, and evolution provide examples for which mainstream scientists believe the truth is clear, but for which social media makes it easy to find competing arguments. But beyond the current concerns about fake news, questions about social media and truth help us understand the nature of science, science communication, and audience responses to science communication. The key is that science isn't really about "truth," but about "reliable knowledge." In a world of competing interests and diverse information, audiences cannot know what is "true." They can only judge what is "reliable." What makes knowledge reliable are the social structures that repeat information, that show audiences how to assess that information, that provide opportunities for information to be collated and judged. Those social structures depend on social relationships. Thus the important part of "social media" isn't the media, but the social. Substantial research shows that people make judgments through motivated reasoning, situated in cultural contexts. Social relationships provide the motivation and contexts that shape how people

make meaning of the information they receive. Science communicators must attend to the social aspects of science if they are to compete in the PCST world that exists on social media.

**Credibility, expertise and the challenges of science communication 2.0** Massimiano Bucchi,  
*University of Trento, Italy*

What are the key challenges for science communication in the age of digital media? And are they entirely new or rather place in a different communicative context longstanding issues like credibility and reliability of information and the public role of expertise? Mystification for propaganda, also involving scientific content and scientists themselves, has certainly not been introduced with the internet.

In a context of 'crisis of mediators', the quality of public communication of science is - even more than in the past - highly dependent on the quality of research produced and published in specialized contexts. New research is increasingly pushed in real time into the public domain without being 'filtered', as was the case in the past decades, by professional mediators and popularizers. This inevitably connects science communication at large with trends causing major concerns in the world of research policy and academic publishing: a significant rise in the number of retracted papers (an estimated 1000% in the last 10 years, rising from 30 cases in 2002 to more than 600 only in Medline, 2016), the emergence of 'predatory journals' available to publish any content regardless of its quality, and lack of and failure in replicating studies and experiments. The contemporary communicative landscape clearly places new and greater responsibility on researchers and their institutions, who are increasingly active in communication to the 'end user' and not always prepared to deal with the dynamics and potential risks of such engagement. More in general, we could see in this landscape relevant challenges and opportunities for our research and discussions, as well as an opportunity to rethink some of our key concepts.

# AYELET BARAM-TSABARI

When & Where: [15 3:45pm Friday 6 April ARCH2](#)

Title: **What do you want to explore? Introducing personal research into a citizen science project**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Ayelet Baram-Tsabari**, *Technion Institute of Technology, Israel*

Co-author(s): Yaela N Golumbic, *Faculty of Education in Technology and Science, Technion, Haifa, Israel*  
Barak Fishbain, *Faculty of Civil and Environmental Engineering, Technion, Haifa, Israel*

Involvement of volunteers in scientific research is a broad definition often used to describe citizen science. Many such projects incorporate science communication elements by providing scientific information, exchanging scientific knowledge, and engaging with science. While different models and levels of participation in citizen science exist, the majority of projects are limited to data collection and classification tasks which are based on established protocols and instructions. These projects maintain stiff regulations in order to ensure data quality and reliability. Despite the evident importance of these regulations, they may prevent routes of personal interest and constrain research flexibility. Taking the road less traveled by, we offer here a citizen science practice, which provides participants with multiple individually-led research opportunities. We demonstrate active participation, which enables participants to study their fields of interest within the scope of the project, determine relevance to their day-to-day life, and conduct personally-practical research. An example for such implementation is demonstrated in the citizen science initiative "Sensing the Air" for monitoring air-quality in the local environment. Throughout a two-year process, we followed the activities of twenty participants, from diverse educational and social backgrounds. These activities include the use of the project platform, personal research using mobile sensors, hazard reporting and engagement in social platforms. Using interviews, questionnaires, and reports written by participants, we examine participants' requirements and identify different styles of participation. Participants' personal interests directed their studies to examine air-quality in their proximity and resulted in new insights and understanding of scientific air-quality concepts. This study emphasizes the importance of multiple opportunities for participation, tailored to the needs of diverse audiences. These opportunities for personal research further induce personal scientific inquiry, data analysis and conclusion drawing in a personalized fashion. Hence, transforming citizen science into what citizens want it to be and increasing public engagement with science.

# GERMANA BARATA

When & Where: [B6 2:30pm Wednesday 4 April ARCH1](#)

Title: **Are researchers using social media professionally? A comparative survey among fields, levels of career and universities**

Format: Individual paper

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Germana Barata**, *State University of Campinas, Brazil*

Co-author(s): Juan Pablo Alperin, *Simon Fraser University*  
Ronaldo Araújo, *Federal University of Alagoas*  
Críspulo Traviezo Rodríguez, *University of Salamanca*

Social media and digital tools have been increasingly used by researchers. The use of social media can bring a number of benefits to professionals such as visibility, public engagement, influence (community approval), communication speedy, sharing information, and being part of a social network, among others. On the other hand, society can benefit from this activity once researchers become more accessible, and contribute to make accurate information available online. Studies have indicated that researchers who establish frequent contact with the media tend to be more academically active and their presence in social media amplifies contact with experts and media, therefore it interferes positively in the academic impact of their work. Although others studies concluded that the activity in blogs or with the public has no relation with the impact of their research. Worldwide, the use scholars made of social media has been analysed, yet most of them have been conducted among social media users (as on Twitter and ResearchGate), among science bloggers or students. The survey aims to understand how professors and researchers of 4 universities in 3 countries use the social media and digital tools daily: the State University of Campinas (UNICAMP) and the Federal University of Alagoas (UFAL), both in Brazil; Simon Fraser University (SFU), in Canada; and University of Salamanca (USAL), in Spain. The results will help inform how social media can best be used to network, collaborate, discover, and communicate science among different universities, fields, and levels of career. The survey built online on FluidSurvey platform is composed by 30 questions, including respondent profile, taking around 15 minutes to be completed. It will collect data up to mid November 2017. We expect a response rate of 10% (around 736 participants).

# Yael Barel-Ben David

When & Where: [C8 3:45pm Wednesday 4 April ARCH3](#)

Title: **Are science stories inherently boring? A comparison of public engagement with science and general items on two popular news sites.**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Yael Barel-Ben David**, *Technion - Israel Institute of Technology, Israel*

Co-author(s): *Ayelet Baram-Tsabari, Faculty of Education in Science and Technology Technion – Israel Institute of Technology*  
*Erez Garty, Davidson Institute – the Educational Arm of the Weizmann Institute of Science*

In many countries the public's main source of information about science and technology is the mass media. Unfortunately, in recent years we witness the collapse of traditional journalism all over the world with science journalism being a major casualty. One potential remedy is to encourage scientists to write for news media about science. On these general news platforms scientists' stories compete for attention with other news stories on hard (e.g. politics) and entertaining (e.g. celebrity news) topics written by professional writers. Do they stand a chance?

In this research project we ask: when published on the same platform, is there a difference in public's engagement with science items written by scientists and general items written by the website's organic reporters? To measure users' behavior, we used data from Google Analytics on number of clicks, likes, comments etc. The sample included 200 science items written by 30 graduate STEM students trained to contribute popular science stories at the Davidson Institute of Science Education reporters program and published on two major Israeli news websites - 'Mako' and 'Ynet' between July 2015 to August 2017 and January 2016 to August 2017, respectively. Each science item was matched with another item on various topics, written by the websites organic reporters, and published on the same channel as the science story (e.g., tourism, health) and more or less at the same time (+/- 3 days of publication).

Based on preliminary results of 67 paired news items of the 200 collected, no significant difference in the public's engagement between the different items was found: people did not click, liked or commented more on general stories than on the science stories written by scientists. Full analysis will be presented at the conference.

# Yael Barel-Ben David

When & Where: [A1 10:45am Wednesday 4 April SDAV1](#)

Title: **Is science communication training effective? Integrating research into practice**

Format: Grouped paper

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Yael Barel-Ben David**, *Technion - Israel Institute of Technology, Israel*

Co-author(s): Dacia Herbulock, *Science Media Centre, New Zealand*  
John C. Besley, *Michigan State University*  
Ayelet Baram-Tsabari, *Faculty of Education in Science and Technology Technion – Israel Institute of Technology*

Demand for science communication training has soared in recent years, as scientists and institutions recognize the need for science to be more relevant to society. However, many training programs operate in isolation from each other and from communication researchers, which has tended to broaden the gap between research and practice. Hence, training programs are only loosely grounded in empirical studies, and we lack a coherent framework for assessing performance and integrating new learning.

From this gap emerged a need to implement research-based assessment and improvements into professional practice and the other way around, also known as Research-Practice Partnerships (RPPs). These partnerships are a two-way street, bringing research and empirical results into the practice of science communication (scicomm) training, as well as bringing the needs rising from the field of practice into the research agenda.

This group paper presents four studies: first, a collaboration between the Alan Alda Center for Communicating Science and Technion researchers addressing both participants' and practitioners' input in assessing the goals and effectiveness of the programs; next, an evaluation of long-term impacts from the New Zealand Science Media Centre's range of training programs for scientists, from multi-day intensive courses to one-on-one micro (15 min.) sessions; an examination of US scientists' views on what science communication training should address, and finally, empirical results on the effect of scicomm intervention on Israeli early career scientists' popular and academic writing skills. Altogether, these studies lay out research-based insights that could be used to establish evidenced-based pedagogy in scicomm trainings. We will address questions of integrating research based insights into practice and vice versa, aiming to create robust Researcher-Practitioner Partnerships.

Proposals from the co-authors of this presentation:

### **Interviewing North American science communication trainers on the state of the field**

Dacia Herbulock, *Science Media Centre, New Zealand*

Over recent years, as media organisations have cut back on specialist reporters, scientists increasingly find themselves competing with a wide range of general interest stories for public attention. In this environment, scientists need to be able to communicate in a succinct, confident and engaging manner -- traits which come naturally to some, but not all. When media opportunities do arise, scientists find they must do more than simply promote their work. Without essential context for their research, relating it society's concerns and current obsessions, public interest quickly evaporates. In response to these challenges, the New Zealand Science Media Centre began expanding its science communication training activities in 2012, focusing on practicing scientists in their professional context. The trainings range from two-day intensive courses to micro sessions (15 min.), with the main objective to improve the quality of interactions between scientists and the media. To-date, 700 New Zealand researchers have participated.

A 2016 collaborative research project with Victoria University of Wellington evaluated the impact of this science communication training. Scientists surveyed reported increased confidence and rated themselves as more effective communicators -- surprisingly even after just 15 minutes of training. For longer workshops, most participants showed sustained impacts one to two years post-training and many identified positive career impacts, including new research collaborations following on from media appearances. A second wave of evaluation will be completed in early 2018, with preliminary results to be presented as part of this paper.

By informing our practice with research, evaluating and sharing the results, we hope to contribute insights for future development of communication and media training activities for scientists. Our experience has convinced us that, whatever their starting point, with a modest effort and a degree of self-reflection, every scientist can learn to communicate more effectively.

### **Interviewing North American science communication trainers on the state of the field**

John C. Besley, *Michigan State University*

Recent years have witnessed renewed calls from scientific leaders beseeching their colleagues to engage with public audiences about their work and its value. This reinvigorated interest in science communication has been coupled with the growth of training organizations and programs designed to help empower and improve scientists' engagement efforts. As this training infrastructure expands, it seems increasingly valuable to understand this infrastructure so as to maximize the likelihood of its positive impacts on the scientists being trained and on the communities these scientists reach. This is especially timely as, to date,

members of the North American training community appear to operate largely in isolation from each other and without

clear understandings of what makes them similar and different from other trainers. The current lack of self-awareness and interaction among trainers hampers the community's ability to build scale, diversify reach, and identify agreed-upon best practices. The presentation will discuss results from 33 semi-structured phone interviews with North American trainers that took place during fall of 2017. These interviews were designed to unearth qualitative insights from key players in the training community about numerous issues, among them (1) their organization's origin/evolution; (2) what they seek to help scientists achieve (e.g., civic impact, individual-level behavior change, etc.); (3) what they do to help scientists identify/seek particular communication goals (e.g., helping policy-makers, empowering citizen decision-making); (4) what makes their approach different from other trainers; (5) their organization's diversity, in terms of staff composition and scientists trained; (6) near-term projections for their organization's priorities, and (7) perceived best practices. Analyses will include a descriptive component that identifies response patterns, and a conceptual component that puts responses into the broader context of insights from science communication scholarship.

**Following a science communication lesson graduate science students write better for the public, but do not use less jargon** Ayelet Baram-Tsabari, *Faculty of Education in Science and Technology Technion – Israel Institute of Technology*

We report a study using a quasi-experimental design to examine whether a science communication intervention embedded in an academic writing course in English can improve graduate students' academic and popular science writing skills. To address this issue, we designed pre- and post-assessment tasks and a scoring rubric. The pre- and post-assessment tasks included writing in contrasting genres, i.e. an academic paper abstract to assess academic writing and a press release to assess popular science writing. Students' pre- and post-assessment tasks were rated using a newly developed rubric addressing English proficiency, and academic and popular science writing skills. The rubric was based on course material, previous research and a pilot study. A quasi-experimental set-up was used with an intervention group (n=174) and non-treated groups (comparison n = 31; and control n=17). Participants were non-native English science and engineering graduate students. Findings indicated significant improvement in academic and popular science writing, as well as improvement in students' English language proficiency. However, such an improvement was not found regarding avoiding jargon - a fundamental recommendation for scientists communicating with the public. Students' vocabulary was classified using the De-Jargonizer, a jargon identifier program. Findings show a tendency to use less jargon when writing for the general audience than for experts, but not enough to be understood: an average of 10% jargon in academic text vs. an average of 6% jargon in popular science text. Such a level may hinder comprehension, as studies have shown that readers need to be familiar with 98% of words in a text to adequately understand the content. It is suggested that tools to identify and adjust jargon usage may prove practical for the teaching and learning of writing science for non-expert publics.

# Yael Barel-Ben David

When & Where: [10.15am Thursday 5 April Café picnic tables outside](#)  
Title: **There and back again – A science communicator and researcher's tale**  
Format: Speakers' corner  
Theme: Stories  
Area of interest: Applying science communication research to practice  
Author: **Yael Barel-Ben David**, *Technion - Israel Institute of Technology, Israel*

This is a story of how I became a researcher in the field of science communication.

Participating in an Alan Alda center for communicating science workshop helped me put my zigzagged academic track into a story that may remind others on the importance of keeping an open mind, flexibility and knowing your audience.

I started my academic life in the field of Biology, studying towards my master's degree in evolutionary development (AKA Evo. Devo.), conducting my own research, having a TA position and working in the Bloomfield science museum in Jerusalem. At that time, I was not aware of the field of science communication although I was practicing it almost every day. Through my work at the museum, I realized that I am more passionate talking about Biology than practicing it. I was lucky to discover an academic field that allows me to continue researching while at the same time trying to improve the way we talk about science, hoping that more will catch the 'science bug'.

Moving from quantitative research in biology to mixed-methods research in science communication, adds another aspect to my current research – it allows me to uncover the depth of what the numbers pointed to. During my PhD research project on the effect of science communication training on scientists, I suddenly realized that I am part of my research population – I am also a scientist who undergone science communication training and felt its effect on me to the point of shifting my research interest. This gave me a new perspective on science communication research having tasted from all sides – as a STEM scientist, science communication practitioner, science communication researcher and member of the public, and left me knowing there is much more to be done in trying to bridge the gap between practice and research.

# PATRICK BARRETT

When & Where: 358 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Narratives of science and community in marine ecosystem restoration: the Ōngātoro/Maketu Estuary case**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Patrick Barrett**, *The University of Waikato, NZ*

Co-author(s): Patrick Barrett, *The University of Waikato*  
Priya Kurian, *The University of Waikato*  
Naomi Simmonds, *The University of Waikato*

This is the story of the Kaituna River in the North Island of New Zealand, a river of enormous cultural and social significance from the time of the earliest Māori settlement. It is also a story of science and society interacting and reshaping each other in ways that offer significant lessons for understanding the role and place of different forms of knowledge in the quest for social and ecological sustainability. The Kaituna River was diverted in 1956 to bypass the Ōngātoro/Maketu estuary, resulting in the ecological destruction of the estuary, with devastating cultural and material consequences for the Māori tribes and communities in the area. In 2009, a major decision, involving local government, Māori and a wide range of stakeholders, was made to re-divert the River to restore the health of the Ōngātoro/Maketu Estuary, and this agreement is currently being implemented. The history of this restoration project provides an opportunity to examine the way scientific knowledge has come together with traditional knowledge to arrive at an implementable solution.

This paper scrutinises key moments in the history of negotiation over the design of the strategy to enhance our understanding of how science-based knowledge of ecosystem restoration came together with traditional Māori knowledge to improve the design and increase community support for the initiative. From a science engagement perspective we explore how, despite often fraught interactions, a dynamic engagement process allowed the central actors to share competing and conflicting narratives in an iterative process, resulting in a successful and nuanced alignment of perspectives. We argue that the Ōngātoro/Maketu Estuary restoration project provides an example of effective public communication of science that is responsive to the community and that leads to solutions that are durable and achievable.

# TRINE BENTSEN

When & Where: [F10 3:30pm Thursday 5 April SDAV6](#)

Title: **How to train your audience: research based advice on public speaking for scientists**

Format: Workshop

Theme: Science

Area of interest: Investigating science communication practices

Author: **Trine Bentsen**, *Videnskab.dk, Denmark*

Co-author(s): Peter Hyldgård, *Videnskab.dk*  
Maja Horst, *University of Copenhagen*

In this workshop, we will demonstrate and practise techniques for presenting science in a live setting to a general audience. The techniques are a result of a new big evaluation project examining different schemes with popular science presentations in Denmark. This will be the first presentation of the project in an international setting.

The workshop will demonstrate the techniques 'on stage', and invite participants to try some of them out themselves. Assisted by Professor Maja Horst we will discuss how our research results from a Danish setting can be applied in other countries. Can we find universal rules for presenting science to different audiences regardless of their different cultural or educational background?

Project description:

In Denmark, hundreds of scientists from a range of disciplines voluntarily spend their time and energy presenting their science through formalised science presentation schemes. One example is the Book a Scientist scheme, which gives everyone the opportunity to receive a visit from a scientist, free of charge. These schemes aim to engage the public, and thus increase the public knowledge about science.

The Danish science news outlet, Videnskab.dk, examined the outcome of these presentations. During the evaluation project, we assessed which presentation techniques are most suitable and efficient to use in these schemes.

We measured to what extent the audience expresses interest in the subject presented to them by scientists using a variety of presentation techniques, and then compared our results with previously published research in didactic and communications. The outcome was a series of instructional videos to teach scientists how to implement these techniques in their own presentations. We display some of the videos at the workshop. This combination of our own research and established research in communication and didactic will expand our

understanding of what characterises good and efficient oral science communication in formalised science presentation schemes.

# HELEN BERINGEN

When & Where: [F6 4:30pm Thursday 5 April ARCH1](#)

Title: **Risky business: the role of communicating science stories in emotionally-charged debates**

Format: Individual paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Helen Beringen**, *CSIRO, Australia*

The world's production of natural gas has risen each year since 2009, and global demand has been on the rise. Gas is predicted to become the second-largest global fuel source by 2035, overtaking coal. However, the debate around the impacts and opportunities of unconventional forms of onshore gas, is polarising communities globally.

As governments and industry battle to win the hearts and minds over potential gas extraction sources, what role does science play? And how can effective engagement and communication of science provide much-needed knowledge to communities on the impacts and opportunities of onshore gas, particularly gas from unconventional sources such as coal seam gas, shale gas or tight gas?

This case study from Australia's lead science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) explores how targeted engagement has supported effective communication of the key science questions asked by communities in gas regions. Research from the CSIRO's Gas Industry Social and Environmental Research Alliance has shown that people's perceptions are influenced by their knowledge of coal seam gas, and people's confidence in their knowledge about coal seam gas is a direct driver of social acceptance.

In this paper, a science communication practitioner perspective is used to share how targeted communication and engagement plays a vital role:

before research is undertaken, to ensure projects aligned with issues of concern for local communities  
during projects, to support stakeholder engagement throughout the research, and  
after research outcomes are known, to inform communities, governments and industry.

This approach builds trust, ensures relevance of the science, and assists uptake of transparent information and advice on gas development issues and opportunities.

# ANTON BINNEMAN

When & Where: [18 3:30pm Friday 6 April ARCH4](#)

Title: **Square kilometre array South Africa understanding San cosmology**

Format: Show, tell and talk

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Anton Binneman**, *Square Kilometre Array, South Africa*

SKA South Africa has signed an MOU with the South African San Council. This council represents the first peoples of South Africa and one of the oldest cultures in the world. The San peoples early ancestors walked the land where the SKA will be hosted but was driven from the land by white settlers in the 1800's. In this talk the MOU with the San council, the San peoples understanding of cosmology and their support of the SKA project will be profiled. This talk will highlight comparisons between the Indigenous knowledge systems of the San Peoples with modern Astronomy and some of the lessons learnt through the process implementing activities with the San Peoples. The presentation will make use of art, stories and artefacts sourced from local San tribes.

# ANTON BINNEMAN

When & Where: 14 3:45pm Friday 6 April ARCH1

Title: **Square kilometre array's (Meerkat) struggles with anti-science advocacy groups**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Anton Binneman**, *Square Kilometre Array, South Africa*

Co-author(s): Lorenzo Raynard, *Communications and Stakeholder Manager SKA SA*

South Africa and Australia has been selected to host the Square Kilometre Array Project (SKA). Currently, South Africa is completing MeerKAT, a 64-dish array that will be integrated into SKA Phase One. Once complete, Phase One will consist of 197 dishes that will enable revolutionary astronomical observations.

However, as with most advances there are likely to be societal impact. Within the local communities in South Africa, there is a definitive socio-economic impact evident that could be perceived as both positive and negative. The documented negative impact is centred on communication, specifically radio communication near the core and along the spiral arms; as well as the estimated loss of 130 000 hectares of agricultural land. On the other hand, positive impact includes direct investment by government and other institutions into affected towns, development of local businesses and educational institutions, and various other indirect benefits. Since commencement, the project has spent more than R250 000 000 in the Karoo area.

The focus of this paper will be on public perception. It will briefly highlight South African media content related to the SKA project, which will include a succinct analysis of associated social media. This will establish a base for a more in depth analysis of the qualitative content of two particular Facebook pages that are administrated by advocacy groups that are explicitly opposed to the SKA project. The analysis will include coding of the qualitative content of these two publically accessible Facebook pages. Then, common misconceptions and critique on the project will be clustered, which will then be compared to the facts as published by SKA South Africa. The paper will then conclude with a conceptual communications strategy that could address misconceptions that are propagated by anti-science alliance groups, using SKA and the development of MeerKAT as an example.

# JENNY BJÖRKMAN

When & Where: [E4 1:45pm Thursday 5 April SDAV1](#)

Title: **Be there. The importance of presence in a digital era.  
Stand-up and public seminars**

Format: Roundtable discussion

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Jenny Björkman**, *Riksbankens Jubileumsfond, Sweden*

Co-author(s): Alexander Gerber, *Rhine-Waal University*  
Duncan Needham, *History & Policy*  
Rebecka Lennartsson, *Stockholms stadsmuseum*  
Lotta Tomasson, *Vetenskap & Allmänhet*  
Fritte & Jenny Fritzson & Björkman, *Oslipat/Riksbankens Jubileumsfond*  
Nathalie Wierdak, *Otago Museum*

We live in an increasingly digitalized society. Social media, such as Twitter, Facebook and Instagram, have become established parts of science communication. The multiway flow of information is instantaneous, continuous, ever-present. As a contrast, in this round table discussion, we focus on the importance of physical presence in our digital era.

The need for analogue dialogue has not decreased in today's society. On the contrary – given the speed and spread of digital communication, it is essential that we at times allow ourselves to *slow* down in order to discuss complex ideas and views *with* the public. Based on examples and cases, and a report from three Swedish research-funding agencies, a panel will discuss how this can be done.

We will hear about researchers organising seminars for policymakers in order to learn from the past (History & Policy, UK); a museum that gathers researchers, politicians and citizens in order to discuss urban challenges live (Stockholm City Museum, Sweden); and a non-profit organisation working to foster dialogue between researchers and the public (VA, Public & Science, Sweden). The spotlight will also be on an event where stand-up comedians and researchers together take the stage to discuss different themes and learn something new (Riksbankens Jubileumsfond & Oslipat, Sweden). Finally a science museum will discuss their way of engage young people in a dialogue about the science of climate change and real vs virtual experiences. (Otago Museum, NZ).

The discussion will be lead by Alexander Gerber, Rhine-Waal University. All these initiatives are based on physical presence and interaction between researchers and their audience, for example school pupils, politicians the general public. In order to tackle difficult topics, fake news, misunderstandings of

research and science and even knowledge resistance, we present four ways of meeting the audience live with facts, knowledge and a keen ear.

# GWENDOLYN BLUE

When & Where: [C6 3:30pm Wednesday 4 April ARCH1](#)

Title: **Talking about reflexivity**  
Format: Individual paper  
Theme: Science  
Area of interest: Applying science communication research to practice  
Author: **Gwendolyn Blue**, *University of Calgary, Canada*

Social scientists have long recognized that reflexivity – the examination and adjustment of values, assumptions and beliefs in the face of new information and perspectives – is an important aspect of science communication.

Talking about reflexivity, however, is not easy.

From the outset, the term can be off putting as it gives the impression of ‘social science jargon.’

More substantially, the concept disrupts and challenges idealized notions of science as universal, value-free, objective and certain. At the core of reflexivity is an awareness of the contingency and limits of knowledge, of the inherent social nature of scientific investigation, and of the centrality of uncertainty and ignorance in all intellectual pursuits. Some scientists and science advocates can construe such talk as part of an ‘anti-science movement’ of postmodern scholars whose ‘frivolous’ knowledge and unnecessary verbiage threatens to undermine science.

This presentation invites discussion about advantages and challenges of promoting reflexivity in science communication. Drawing on published literature and personal experience with public engagement with climate change and genomic science, I will discuss what works and, importantly, what does not work in efforts to bring theories of reflexivity into actual instances of science communication.

# GWENDOLYN BLUE

When & Where: [H10 1:45pm Friday 6 April SDAV6](#)

Title: **Reframing climate change: a deliberative approach to public engagement with science**

Format: Workshop

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Gwendolyn Blue**, *University of Calgary, Canada*

Climate change has many different meanings, causes and solutions for different people in different places. Most existing approaches to formalized public engagement with climate change, however, draw on limited ways of understanding the issue. While citizens might be invited to explore their values and perspectives, scientific experts are often left to define the problem and implicitly propose the range of solutions. Using deliberative framing as a guiding principle, this workshop offers an alternative way of learning, talking and engaging with climate change. Drawing on pluralistic approaches from the interpretive social sciences and humanities, the intent is to open up rather than close down possible avenues for social change. This workshop helps participants examine and decide among different visions of how present and future worlds can look. The goal is to assist participants in becoming more aware of the ways in which existing assumptions, values and frames influence communication, engagement and action.

# MARIE BORAN

When & Where: [D7 11:45am Thursday 5 April ARCH3](#)

Title: **'I, for one, welcome our robot overlords': reader comments as a space for public deliberation of emerging technologies**

Format: Individual paper

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Marie Boran**, *Dublin City University, Ireland*

This study examines online comments to the most-commented upon science news articles (N=646; N=1,108; N=922) on the topic of artificial intelligence appearing on *The Guardian* website in the period September-November 2017. We evaluate the potential of the comments section as a space for public deliberation of emerging technologies by analysing 1) comment content relative to the original journalistic text and 2) inter-commenter interactions or dialogue in the course of discussing these stories on artificial intelligence.

Science journalism has a history embedded in pedagogy (Logan, 2001) that mirrors the deficit model in science communication but the advent of reader has created the possibility of dialogue. We argue audience engagement in the comment section is of value as a digital public sphere within which science can be engaged by the plurality of views and perspectives required in a post-truth age where scepticism and lack of trust in emerging technologies may be better understood in terms of social and political factors and not simply a lack of understanding of science.

Reader comments represent a unique space in that they directly follow journalistic coverage of science and technology while allowing for public participation. This pairing of a science story and reader comments creates a new relationship between the science journalist and her audience, opening up the traditional science narrative to audience involvement and “reframing of issues” (Secko, 2011).

Walsh (2015) suggests the comment section is a space for proto-deliberation of scientific issues; in the case of evidence-based advice around breastfeeding, commenters were found to engage in deliberation of scientific evidence through the lenses of social and personal experience (Len-Rios, Bhandari, & Medvedeva, 2014) while an analysis of reader comments in the *Daily Mail's coverage of Climategate* revealed how stereotypes of science and politics are appropriated in climate science discourse (Jaspal, Nerlick, & Koteyko, 2013).

# ADRIANA BRAVO WILLIAMS

When & Where: [E8 2:45pm Thursday 5 April ARCH3](#)

Title: **The importance to gain knowledge and skills through science communication**

Format: Individual paper

Theme: Society

Area of interest: Teaching science communication

Author: **Adriana Bravo Williams**, *Universidad Nacional de Mexico (UNAM), Mexico*

Much has been said about what science is, and the importance of its popularization and what the strategies for effective communication can be. However, little has been written about what students perceive and their conceptual and practical aspects that are related to this work. The National Autonomous University of Mexico has a Department with specialist in science communication with various mediums. This allows undergraduate students to collaborate their projects and for this, we provide training courses to develop their abilities and skills that apply to science communication. Some of them study communication, but there are other students from architecture, physics, graphic design, literature and psychology who are not necessarily dedicated to the communication field but still gain the experience to learn science and develop skills to communicate. I have been part of the team that has intervened in the training of students. I evaluate, compile and synthesize the opinions expressed and have been doing this for five years. It is my intention to tell my story, so I can motivate new ideas and reflect on the different responses, first in the theoretical field, secondly in the practice itself that could reconcile theory and practice.

# DOMINIQUE BROSSARD

When & Where: [B8 2:00pm Wednesday 4 April ARCH3](#)

Title: **Who do we trust and think should have a say, when it comes to controversial scientific issues such as human gene editing?**

Format: Individual paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Dominique Brossard**, *Department of Life Sciences Communication, University of Wisconsin-Madison, USA*

Co-author(s): Nicole Krause Diatram Scheufele Michael Xenos Patrice Kohl

As CRISPR-based technologies in gene editing open new ways to alter human genomes, a growing chorus has been calling for broad deliberations among lay and expert publics about consequences and responsible governance. In this study, we empirically examine what the public thinks about having various lay and expert actors inform and contribute to regulatory decisions involving controversial science. Using data from a nationally-representative survey of U.S. adults (N=1,600; completion rate=41.7%) we examined public trust in five expert and non-expert groups, regarding information about science issues. We also asked people which of these groups should have a say in the development of human gene editing regulations.

Overall, people trusted ethics experts and university scientists most as sources of information, and they trusted religious groups and industrial scientists least, with trust in citizens falling in the middle. Survey respondents most frequently identified citizens as a group that should have a say in regulation, followed by ethics experts and university scientists. There were also important value-based differences of opinion among individuals and, in some cases, attention to news media accentuated those differences. For example, individuals with higher religiosity trusted non-scientist groups more and were less likely to want scientists involved in regulation. Meanwhile, attention to political news polarized views about religious groups and university scientists among people with conflicting political ideologies.

The case for broad participation in deliberations about the consequences and governance of controversial science rests, in part, on the assumption that it increases legitimacy and trust in decision-making processes. However, our results suggest that this assumption may oversimplify the situation. Our study shows that trust and perceptions of legitimacy might not uniformly increase with each new group that participates in decision-making about scientific issues, particularly if public stakeholders perceive specific groups to be in conflict with their values.

# KAREN BROUNÉUS

When & Where: [A4 10:45am Wednesday 4 April SDAV3](#)

Title: **Mind the 'Ivory Tower–Grassroots' Gap: Science communication in post conflict societies**

Format: Roundtable discussion

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Karen Brounéus**, *Uppsala University, Department of Peace and Conflict Research, Sweden*

Co-author(s): Mariska Kappmeier, *National Centre for Peace and Conflict Studies, University of Otago*  
Stephen Knowles, *Department of Economics, University of Otago*  
David McBride, *Department of Preventive and Social Medicine, University of Otago*

In this cross-disciplinary roundtable, scholars from five different disciplines – Maori studies, Economics, Psychology, Preventive and Social Medicine, and Peace research – will discuss the challenges and possibilities of communicating science results in post conflict settings globally. The roundtable participants will share experiences, and importantly also the lack of experiences, in bridging the ivory tower–grassroots gap in their work in different places around the world, eg Rwanda, Sri Lanka, Solomon Islands and New Zealand. The roundtable will discuss the challenges of communicating science in deeply divided societies, where distrust is high and where findings might be co-opted for political purposes. Similarly, the challenges of communicating research findings to people who are sceptical of what scholars have to say, and who dismiss research results that do not fit with their own priors will be highlighted. The craft of risk communication and the imperative of community engagement and ownership in science projects – not least for later communication and implementation – will be another focus of the roundtable.

Looking ahead, creative possibilities for science communication in post conflict settings will be discussed, such as the growing importance of museums and their role in breaking through knowledge systems and social boundaries of community engagement. Throughout the roundtable, the ethics of science communication and the golden rule of doing no harm will be highlighted.

# FREDRIK BROUNEUS

When & Where: 18 3:30pm Friday 6 April ARCH4

Title: **Counteracting cross-cultural calamities when creating a comic – lessons learned from a pilot study**

Format: Show, tell and talk

Theme: Stories

Area of interest: Comparing science communication across cultures

Author: **Fredrik Brouneus**, VA (*Public & Science*), Sweden

Co-author(s): Paula Alvarado, *Uppsala Monitoring Centre (UMC)*

Medicines safety is of utmost importance to public health on a global scale. Illness due to adverse reactions, use of fake or substandard medicines or incorrect use of medicines pose a considerable burden on society, both with regards to individual suffering and financial costs to the system. To promote a safer use of medicines, basic knowledge needs to be communicated – preferably at an early age to influence behavioral patterns toward medicines. To address this challenge, the Uppsala Monitoring Centre, UMC, is developing a comic book series addressing primarily tweens (10-12-year-olds). Secondary target groups include younger as well as older children/teenagers and adult members of low literacy communities. Each issue contains a feature story on a medicines safety theme, activity pages related to the theme and a final section on basic medicines safety knowledge. In 2017 a pilot issue, on falsified medicines and the concept of side-effects, was tested in a number of different cultural settings around the world, including countries such as Armenia, Jordan, Uganda and Cabo Verde. The testing was done by means of focus groups with tweens. The comic was received with enthusiasm from its readers, and attained its communication goals. Furthermore, it received crucial feedback to improve its acceptability in the different cultural contexts. Based on the results from the pilot, the first issue was recreated from scratch. In parallel a second issue, on antibiotic resistance, was developed. In 2018, in collaboration with researchers at Lund University, the effects of the comic will be explored scientifically as part of a dissertation research project. This presentation will discuss the evolution of the comic, lessons learned from the pilot testing, and challenges encountered in communicating scientific content with audiences from a diverse set of cultural settings.

# FREDRIK BROUNEUS

When & Where: [A8 10:45am Wednesday 4 April ARCH3](#)

Title: **Public confidence in research – communication dos and don'ts for researchers**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Fredrik Brouneus**, VA (*Public & Science*), Sweden

Co-author(s): Maria Lindholm, VA (*Public & Science*)  
Ylva Norén Bretzer, *University of Gothenburg*

Together with the SOM Institute at the University of Gothenburg, the Swedish non-profit organisation VA (Public & Science) has been following public attitudes to science since 2002 in an annual national survey. Public confidence in research is generally high in Sweden. However, results show a great – and consistent – variation between research areas. Medicine invariably comes out on top, whereas education research and the humanities are at the bottom. Why is this so? What builds confidence in science and researchers? How can researchers nurture public confidence in their own field? To answer these questions, we conducted eight focus groups with members of the public in Stockholm and Gavle, Sweden. Among the participants, there was a higher confidence in research perceived to be transparent, useful (preferably with well-defined results), free from financial interests, and understandable. Being conducted by dedicated researchers with a passion for their work – who can explain *what* they are doing, and *why* they are doing it – also boosted confidence. Factors that lowered perceived confidence include fraudulent behaviour, financial interests, no apparent benefits from the research, when researchers turn out to be wrong or when they contradict each other's results. Here nutrition was repeatedly mentioned as an area with low confidence, due to inconsistent results being frequently reported in the media. Research seen as being too obscure, or too obvious, also received lower confidence ratings among participants. There was an overall positive view on researchers, with participants perceiving them to be highly intelligent, devoted to their work, creative, patient; while at the same time attributing them with stereotypical personal traits such as absentmindedness, social incompetence and an inability to explain their work to normal people. This presentation will discuss findings from the focus groups and their ramifications for researchers in their role as science communicators.

# LORENA CANO-ORÓN

When & Where: [D7 11:00am Thursday 5 April ARCH3](#)

Title: **Coverage comparison of homeopathy and acupuncture stories in Spanish digital media**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Lorena Cano-Orón**, *University of Valencia, Spain*

Co-author(s): Isabel Mendoza-Poudereux, *University of Valencia*  
Carolina Moreno-Castro, *University of Valencia*

According to the report of the Observatory of Natural Therapies in Spain (2008), acupuncture is better known and used than homeopathy, however, news production in this respect slightly reverses this correlation. Wide coverage on homeopathy in the Spanish context is justified by the closure of two widely known master studies on the matter and several skeptical driven campaigns. This research analyzes and compares the evolution of the coverage of homeopathy and acupuncture in the Spanish digital press in order to verify if the media production have different approaches for both complementary therapies. To this end, it is performed a content analysis of the informative treatment, classified as 1) *favorable* (for those considering homeopathy/acupuncture as a cure), 2) *neutral* (for aseptic or institutional treatment), 3) *skeptical* (for critical) or 4) *equidistant* (when it approaches the controversy without a predefined position).

The corpus, gathered through *MyNews*, includes all the headlines of all the news published in 391 digital media platforms during 2015-2016 that mentioned homeopathy or acupuncture. This is in gross 2,513 stories. The results show that despite the acceptance and extensive recognition of acupuncture as a complementary therapy in Spain, the campaign against alternative therapies that has occurred in recent months has not damaged the its image, in contrast to what happened with homeopathy. The difference in treatment between one therapy and the other is abysmal; while articles during the study period that mention homeopathy in the holder are mostly skeptical (57%), those mentioning acupuncture have a predominantly favorable tendency (77%). We can affirm then that the Spanish digital press has taken homeopathy as the standard-bearer of complementary therapies, focusing the controversy between conventional and alternative medicine on the homeopathy case and mostly ignoring others, such as acupuncture.

# FREDERIQUE CARCAILLET

When & Where: [G9 10:45am Friday 6 April ARCH4](#)

Title: **When researchers, students and pupils communicate science with stop-motion animation movies**

Format: Show, tell and talk

Theme: Stories

Area of interest: Teaching science communication

Author: **Frederique Carcaillet**, *University of Montpellier, France*

Stop-motion animation (also called stop-frame animation) is animation that is captured one frame at time, with physical objects that are moved between frames. When you play back the sequence of images rapidly, it creates the illusion of movement. This technique is particularly appropriate for learning how to communicate science to a large public: this requires to synthesize, to search for metaphors, to image sometimes complex concepts and to write short narratives that can be understood by a wide audience, without biasing the scientific discourse.

Since four years, I organize workshops of creation of stop-motion animation movies at Montpellier University, in France, for researchers and students who wish to disseminate to a large audience the results of their scientific research in biology or ecology, or who want take part to environmental education in their present or future careers.

These creative workshops have a threefold pedagogical purpose:

- to teach the participants the rules of scientific mediation and the handling of new materials and software in a context of group learning, non-formal, creative and pleasant which nourishes the intrinsic motivation of participants and make them want to reuse this medium.
- create attractive tools for environment education, on short time (2 to 5 minutes), viewable on the internet and broadcastable in classrooms, associations or nature interpretation centers.
- create student-ambassadors capable of conducting workshops to create stop motion animations in schools, particularly in priority education areas, so that children can take a playful interest in science and more generally in their environment.

# SALLY CARSON

When & Where: [D6 11:00am Thursday 5 April ARCH2](#)

Title: **How can citizen science support communities to expand their narrative: seashore stories from New Zealand**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Sally Carson**, *NZ Marine Studies Centre, University of Otago, NZ*

Co-author(s): *Jenny Rock, Centre for Science Communication, University of Otago*

Citizen Science (CS) is a form of informal science education where participants have the opportunity to participate in scientific research to learn scientific information, gain understanding of the nature of science, and develop their skills in the methods of science. Although new CS projects continue to be developed, the impact of these projects is not well understood. For example, what motivates involvement and how can CS be developed to facilitate both science communication and citizen-lead science enquiry?

Marine Metre Squared (Mm2), a citizen science initiative for long-term monitoring of the New Zealand seashore, aims to facilitate community engagement that leads to improved coastal management. This project strives to extend community involvement beyond data collection and support participants to recognise the value of long term data sets, investigate what the data means, formulate further questions to ask to find out more, and promote design of local studies to answer more in-depth questions.

This presentation will investigate the varied levels of involvement of schools and community groups in Mm2 through several short case studies. The origins and drivers for involvement of participants over time are discussed and a qualitative approach is used to investigate the outcomes of engagement. Factors contributing to long term involvement in the project included (1) having a clear 'why' or reason to participate (2) developing an understanding the science process (3) the importance of place (4) effective partnerships and (5) understanding of cultural connectedness. Discussion focuses on how citizen science projects can support support communities to share their stories and contextualise their science.

# MARIA LUJAN CASTRO

When & Where: 460 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Science museum not yet, but 10 years communicating sciences in the same sense**

Format: Visual talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Maria Lujan Castro**, *UNICEN, Argentina*

Co-author(s): Mayra Garcimuño, *UNICEN - CIFICEN/CONICET*

Science museums are a means of communicating sciences to a wide audience, particularly interactive science museums have recently acquired a strong role in this regard. In our city, Tandil, a medium city in the interior of the province of Buenos Aires in Argentina, does not have one of these yet, but a group of enthusiastic UNICEN teachers, researchers and students have been carrying out actions under the same premises of these for almost 10 years. Started in 2008, without having a stable physical place, the interactive and itinerant science fair Divertite Experimentando develops multiple actions in order to bring science in an entertaining, mild and challenging way to the citizens of city and the region. In particular, their temporary presentations are positively received by members of the educational community: students who are pleasantly surprised by encouraging their desire to investigate and learn about the phenomena of nature and how science studies them, and teachers who also find alternative means for the treatment of scientific subjects in the classroom. In this work we want to share the task and experience gathered from ten years of work carrying out Divertite Experimentando and the impact that it has had in the community.

# BOBBY CERINI

When & Where: [D6 11:30am Thursday 5 April ARCH2](#)  
Title: **Heroes in science: personal narratives and self-identities**  
Format: Individual paper  
Theme: Stories  
Area of interest: Building a theoretical basis for science communication  
Author: **Bobby Cerini**, *Australian Government & The Australian National University*

This presentation presents results of PhD research into science heroes as communicators of influence, exploring the life histories of a subset of those nominated as science heroes to explore narratives of identity and influence on career pathways and life-long engagement with science. It will present results relating to individuals' experiences of success and of communication and the significant issues, ideas and outcomes that arise from those experiences.

In-depth interviews were conducted with 100 individuals in Australia, the United Kingdom and North America, including 7 for the purposes of communication context. The questions asked about many aspects of participant life experiences, including early interests and pathways in science, key motivators and influencers including 'inspirational others', experiences of communicating with others in a professional context, including interactions with peers, public audiences and the media, and individual communication attitudes and approaches.

Based on analysis of this data, the thesis identifies the communication characteristics and attributes of science heroes and explores the communication practices that contribute to their relative success. Evidence is presented for the power of narrative communication techniques and the use of heroic archetypes in projecting stories of success. Evidence is also presented for the presence of powerful norms and counter-norms in science communication.

The study builds on and contributes to work exploring the nature of influence in science career pathways, providing insight into the influences of contemporary science heroes and significant factors affecting science engagement and achievement. Additionally, the thesis extends the concept of normative practices and processes within science, making a case to include communication norms and counter-norms in the understanding of contemporary science.

# BOBBY CERINI

When & Where: [G5 10:45am Friday 6 April SDAV5](#)

Title: **Emerging trends and issues in citizen science**

Format: Roundtable discussion

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Bobby Cerini**, *Australian Government & The Australian National University*

Co-author(s): Claudia Göbel, European Citizen Science Association  
Victoria Metcalf, *NZ government (OPMCSA), PSP*

Citizen science has expanded globally since the mid-1990s, marked by a proliferation of opportunities for citizens to participate in the practice, culture and narratives of science and leading to the emergence of exciting (and sometimes challenging) new areas of research, policy and narrative. This roundtable discussion will bring together a panel of international experts to reflect on current practices relating to citizen science and highlight major trends and emerging issues and opportunities for the global science communication community. What are the ethical, political, regulatory and societal implications associated with instances of citizen science? Does operating at scale in pursuit of a national science narrative compromise local and regional stories related to identity, culture and opportunity? What wicked problems are emerging, of impact, value, empowerment, liability and knowledge production, amongst others? And what issues are unfolding for citizen participants and researchers whose role is simultaneously individual and collective, unique and standardised, virtual and physical?

# GANIGAR CHEN

When & Where: 119 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Context and challenges in engaging scientists in science communication: case study from Thailand**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Ganigar Chen**, *National Science Museum, Thailand*

Within the ecosystem of science communication, scientists definitely play an important role in the equation. However, due to the nature of work, involving scientists in public science communication is still a common challenge. Communication of scientific knowledge and research information is often conducted by educators, public relations officers and media with limited input from scientists which results in only a broad information with few interesting or specific information which could be provided very well by researchers. Direct learning and sharing knowledge with scientists is also necessary in giving the public an opportunity to connect to real story and real people which would provide inspiration and understanding of the way science and technology has been developed. Science communication in Thailand is no exception to this situation, survey result reveals a number of reasons scientists do not play as much role in science communication, which should lead to a thought on how we can facilitate the scientists' involvement and at the same time ensure that they can maintain balance of research work and public contribution. This session will share various ways scientists can be involved in science communication and will discuss the findings of each approach from the perspective of scientists and from the perspective of the audience.

# GANIGAR CHEN

When & Where: [G8 10:45am Friday 6 April ARCH3](#)

Title: **Study of lifelong learning and civic science literacy of youth in Thailand**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Ganigar Chen**, *National Science Museum, Thailand*

Co-author(s): Archanya Ratana-ubol, *Chulalongkorn University, Thailand*  
Pichai Sonchaeng, *Burapha University, Thailand*

Thailand is one of many countries striving for economic development through science, technology, and innovation. Regardless of the strong government policy and support in science and formal education, the national competitiveness index including science literacy continues to be ranked below the average OECD countries, for many years. It is obvious that in the past, efforts have been focused on promoting science education and science was often considered as an important subject to study to get into a good College, rather than as part of knowledge in cultivating quality and well-informed citizens. It is likely that after compulsory education, people who did not study science or have left school for the workforce will have fewer chances and interest to be engaged in science unless there are appropriate motivation and mode to do so. This group account for 10% of the population and will become the major workforce in Thailand in the next 20 years. This study tried to investigate how the youth in different regions of Thailand have been engaged in science and technology in the lifelong learning context. It also investigated which media have the strong influence in people's informal learning settings. It also looked at their perception and interest in modern science and technology to see how well these learners are prepared for the changing world and their awareness of sustainability. The study looked at how the promotion of lifelong learning strategies in science can be adapted and be adopted for these learners in the different regions of Thailand to stimulate interest in and develop insight into the value of science in every facet of life. This will promote the development of a learning community and society.

# XI CHENG

When & Where: [E8 2:00pm Thursday 5 April ARCH3](#)

Title: **Investigation on research themes and the development trend of science communication through literature research on all published papers in PCST conference from 1989 to 2016**

Format: Individual paper

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Xi Cheng**, *University of Science and Technology of China, China*

Co-author(s): Shukun Tang, *University of Science and Technology of China*  
Yiqing Wang, *University of Science and Technology of China*  
Liangyan Pan, *University of Science and Technology of China*  
Qiao Pan, *University of Science and Technology of China*

PCST is the largest and most important conference in science communication around the world. It is a great honour that our research group at CRISP has undertaken the task of creating the PCST Archive, so that papers and abstracts from earlier PCST Conferences are now available online at the PCST website. This task included collecting all available papers of PCST conferences, classifying theme words and analysing their contents.

This paper announces the result of our analysis of past papers. It discusses our findings on the main themes, popular interests of research, its features, the trends shown by content analysis of all available PCST papers from 1989 to 2016 and the list of theme words. We will discuss the main trends and development of research in whole field of science communication. We will compare regional characteristics of science communication research in 6 countries (3 developed countries, 3 developing countries) through analysis of research interests and its development. The specific content is:

1. a classification of the main research themes to explore the focuses of all papers, and extending to the whole field of science communication. We will explain the reasons why these research interests lead to a concentration of science communication.
2. from a diachronic viewpoint, we will explore the way research interests have developed and evolved through time, doing a comparative exploration of each conference, and expanding this to the whole field of science communication.
3. we will compare the top 10 research themes from the 6 selected countries, and the trends of development over all PCST conferences. 6 represented countries will be choose to make national comparison on top 10 research themes from published papers and its' development trend in all PCST conferences. We will show the different reasons and characteristics between these countries to

access to national features on science communication.

# ANUSUYA CHINSAMY-TURAN

When & Where: [C6 4:30pm Wednesday 4 April ARCH1](#)  
Title: **Evaluating the effectiveness of a science communication MOOC**  
Format: Individual paper  
Theme: Science  
Area of interest: Applying science communication research to practice  
Author: **Anusuya Chinsamy-Turan**, *University of Cape Town*, South Africa  
Co-author(s): Andrew Deacon, *University of Cape Town*  
Eric Jensen, *University of Warwick*  
Janet Small, *University of Cape Town*

With a longstanding commitment to public communication of her scientific research, the lead author has explored various methods over the years: popular-level talks, articles, and books. She became interested in the potential of Massive Open Online Courses (MOOCs) to reach wider audiences, permit researchers to share their work more globally, and most importantly to allow for greater access to knowledge. Together with colleagues at UCT, we developed a MOOC called 'Extinctions: Past and Present', that launched in 2017. The course includes videos in a lecture style, along with conversational interviews with scientists, and site visits to interesting places. The Extinctions MOOC ran three times in 2017 and attracted over 6,500 enrolments, from 130 different countries. While nearly half were from Europe, there was also significant enrolment in Africa (19.5%) and Asia (16.4%). Our MOOC was very well received – so much so the course currently features on the public MOOC aggregator site, Class Central's 2017 list of Top 50 MOOCs in the world out of over 7400 MOOCs from 8500 Universities worldwide.

It is well recognised that improving communication between scientists and the public calls for improved evaluation to understand what is working and why, not simply more science promotion and engagement initiatives for their own sake. Measuring the impact of science communication initiatives on target audiences requires a careful process of developing clear objectives and a linked evaluation design focus on course-relevant outcomes to inform practice. In contrast, the standard evaluations of MOOCs are driven by generic questions about audience characteristics, motivation to learn online and the online experience. Dissatisfied with the limitations of the standard approach, we developed a repeated measures evaluation (pre-, intermediate and post-experience surveys) to gauge the impact of the science engagement experience in the MOOC, as well as whether course-relevant attitudes had changed through the learning experience. Thus, we were interested in understanding the impact of the science communication, that is, 'what knowledge do people come with, and what do they take away after the learning engagement?'. The evaluation assessed

attitudes, interests and awareness relating to the topic of extinctions, in the past and in the future. Our repeated measures instrument was designed to track effects on outcomes at the individual level (i.e. individual participant responses were tracked). While not all participants responded to each survey, we were able to get over 400 respondents for both pre- and post- surveys. These data have permitted us to evaluate the shift in certain perceptions and attitudes of the participants, and allowed us to interrogate the impact of the MOOC in a level of depth that has not been achieved previously with this type of science engagement initiative.

Without effective evaluation methods, the real value of science communication practice for its intended beneficiaries cannot really be assessed. Good impact evaluation requires early planning, clear objectives from practitioners, relevant research skills and a commitment to improving practice based on outcomes of the evaluation.

# JAVIERA CISTERNAS

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)

Title: **Key elements for communication and strengthening of the relationship: first steps to develop bicultural partnerships for amphibian conservation in New Zealand**

Format: Show, tell and talk

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Javiera Cisternas**, *University of Otago, NZ*

Co-author(s): Priscilla M. Wehi, *Landcare Research, New Zealand*  
Jennifer M. Germano, *Department of Conservation, New Zealand*  
Phillip J. Bishop, *Department of Zoology, University of Otago, New Zealand*  
Nancy Longnecker, *Centre for Science Communication, University of Otago, New Zealand*

Communication, trustworthiness and understanding are essentials for bicultural partnerships, which are well-recognized tools for biodiversity conservation. New Zealand has opportunities to develop bicultural partnerships, given the legal framework that ensures Māori (New Zealand's indigenous people) are consulted on management decisions of their treasured species (taonga).

This study analyses the relationship developed between frog-researchers and two Māori tribes (iwi) during a frog conservation translocation. Frog-researchers visited the iwi involved to invite them to collect scientific data and share information about the frogs via booklets, talks and educational activities. Māori participants were interviewed to record elements of their traditional knowledge related to frogs. Moreover, the relationship of the first author with both iwi was recorded through ethnography. This information was used to identify key elements that foster the development of a strong relationship.

Our results suggest that Māori deeply appreciate the opportunity of working together with non-Māori scientists. "It's quite a privilege to be in the same company as scientists, researchers and philanthropists, ... and we encourage those kinds of relationships, ... because the knowledge that comes just keeps flowing and it all makes sense" (Interviewee 5).

Furthermore, we identified as an opportunity of sharing knowledge the activity of collecting field data together. "We were walking and touching the plants that covered the trunks in that forest when a Māori representative highlighted to me the fact that the humidity felt in those plants was different between different exposition of the trunk. Afterwards, I included this habitat feature within comparative analyses of the translocation research and

resulted in a significant feature related to the humidity conditions suitable for this frog species” (Ethnography first author).

# CLAIRE CONCANNON

When & Where: 320 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer  
Title: **Communicating science to the very young through play**  
Format: Visual talk  
Theme: Stories  
Area of interest: Applying science communication research to practice  
Author: **Claire Concannon**, *Otago Museum, NZ*  
Co-author(s): Nathalie Wierdak, *Otago Museum*  
Craig Grant, *Otago Museum*

Early childhood interactions with science shape young learners' self-conceptions and aspirations in science, as well as facilitating the development of skills that give long term learning advantages. Interestingly, recent evidence has demonstrated that even very young children are cognitively capable of hypothesis testing and causal inference, key aspects of the scientific method. However, this continues to be an audience that is poorly targeted by science engagement initiatives in New Zealand.

Here we describe the initial phases of the Kia Rapua – Science Playground pilot project aimed at very young learners (4-7 years old). Kia Rapua in Te Reo Māori means 'Go Explore!' and reflects the core idea behind the project – to create a playful environment that fosters scientific thinking by giving young children and their caregivers the ideas and materials to exercise their natural curiosity. The portable science playground will travel to four partner preschools around Dunedin.

A review of the literature provided an overview of best practice criteria for designing science activities for the very young, which have been applied to the playground design. Science for this age group is a process of exploration and questioning. Clear scientific concepts underpin the five broad themes of the playground interactives, which have been drawn from the children's environment and are designed to provide opportunity to be explored from multiple perspectives.

Early childhood educator workshops were developed around the same criteria and run with 15 preschool partner educators. Pre workshop surveys and workshop evaluation indicate that before the workshops participants had a very narrow concept of what science is and little confidence in their ability to develop their own science activities. The workshops received positive feedback and further requests indicate a continued demand. These evaluation results will be discussed as well as the challenges of applying best practice theory to practical playground design.

# CLAIRE CONCANNON

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)

Title: **Final year science communication projects for undergraduate science students**

Format: Show, tell and talk

Theme: Science

Area of interest: Teaching science communication

Author: **Claire Concannon**, *Otago Museum, NZ*

Co-author(s): Muriel Grenon, *National University of Ireland Galway*

The Cell EXPLORERS programme ([www.cellexplorers.com](http://www.cellexplorers.com)) based in the National University of Ireland Galway is an educational outreach programme that engages with the public on STEM topics. As part of the Cell EXPLORERS working model, third level education students can opt to complete science communication final year projects as part of their curricula. The students are assigned a science communication challenge from a research laboratory and are then tasked with creating, piloting and evaluating novel science communication resources. The students are guided through the project by a series of interactive self-reflective workshops and seminars. These cover key concepts and methods in the fields of science communication and science education, and aim to equip the students with skills to develop effective resources. All resources created are then piloted within the community and the students are asked to reflect on their evaluations.

This module helps to address some science communication education challenges. In today's research world there is an increasing requirement for dialogue between scientists, policy-makers and the public, thus it is necessary for future scientists to learn communication skills during their training. There is also increasing recognition that undergraduate science students should be equipped not just with their subject specific skills and knowledge but with generic positive graduate attributes that will help them in future careers. In addition, the nature of these projects require collaboration both in and outside of the university. As such the projects reflect real life challenges and act to strengthen links between the university and its surrounding community.

These projects are currently in their 4th year and more than 40 students from final year Biochemistry, Microbiology and Zoology courses have undertaken this project. Here we will outline the structure and content of the project module and discuss the results of evaluation of this module.

# TIM CORBALLIS

When & Where: [E6 2:30pm Thursday 5 April ARCH1](#)  
Title: **Climate modelling, cognitive mapping and literary form**  
Format: Individual paper  
Theme: Stories  
Area of interest: Building a theoretical basis for science communication  
Author: **Tim Corballis**, *Victoria University of Wellington, NZ*

One of the primary difficulties of communicating climate modelling research is that of locating specifically human perspectives within its results. Their spaces and durations are too large and long, their views generally ‘God’s eye’, and their themes implicitly too dystopian to allow for engagement on a subjective level—all we can do is watch from afar as the world burns. In this paper I argue that this is a representational problem. I suggest that architectural theorist Kevin Lynch’s notion of ‘cognitive mapping’, as taken up by literary critic Fredric Jameson, is a useful way to think it through. A cognitive map is a way of thinking about one’s position within a larger totality such as a city. Literary writing can be argued to offer cognitive maps of different situations by placing protagonists, say, in relation to representations of a social, economic and ethical totality, giving us imaginative tools for thinking about our own situation. An example is the detective novel: the detective moves through all parts of a city, mapping the connections between them and tracing the effects of human actions. I will engage with climate models, asking what literary forms are useful to explore human perspectives within them. What tools can literary writing offer, to: 1. connect multiple spatial and temporal scales—the human and the global; 2. dramatise cause and effect that is statistical rather than direct; and 3. relate protagonists to a setting that, like a changing climate, no longer offers a neutral backdrop for human action?

# MAVI CORELL

When & Where: 222 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Attitudes and perceptions of training teaching students about alternative and complementary medicines: a focus group study**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Mavi Corell**, *Florida Universitària, Spain*

Co-author(s): Ramón Camaño-Puig, *Universitat de València*  
Emilia Hermelinda Lopera-Pareja, *CIEMAT*  
Yolanda Cabrera, *Universitat de València*

The main objective of this research is to study the perceptions and attitudes that teacher training students have about alternative and complementary medicines (CAM) in the context of the scientific literacy of these students. In Spain, alternative and complementary medicines are being questioned and analyzed given the absence of hard scientific evidence to support them. Pre-primary and Primary Education Degrees foster the development of scientific competences as a critical attitude towards knowledge, the capacity to understand how scientific knowledge is generated and the reliability of the information as well as the sources that provide it. As trainers of future generations, the scientific expertise of the teachers repeats directly in the scientific literacy of citizenship and it is relevant to study their attitudes and perceptions towards these therapies.

A qualitative methodology was chosen, creating six focus groups with seven students in each and using a script of 10 questions. The average age of the participants was 27 years; females were predominant (85%). Different categories of answer were established. In the category of 'relationship between emotions and health/illness' we found terms such as mood, anxiety, stress, depression, sadness and suffering, alluding to emotions. Respondents considered that there are internal and external causes of diseases and illness, understanding that the internal ones are the negative emotions and stress, and the external ones being life habits and alimentation. The participants referred to the doctor as a professional with whom it is difficult to communicate and who does not attend the emotions of patients. The absence of scientific evidence was not considered a factor to distrust CAM. In conclusion, the students are in favour of CAM, although they may not have use them, because these therapies deal with the emotional needs of the patient. This indicate a lack of scientific literacy in teacher training students.

# CRAIG CORMICK

When & Where: [H8 1:45pm Friday 6 April ARCH4](#)

Title: **Changing climate x changing communities = emergency communication challenges**

Format: Show, tell and talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Craig Cormick**, *ThinkOutsideThe, Australia*

Understanding how the values of different communities frame the types of emergency services messages they are most receptive to.

A key success factor for emergency service agencies in saving lives and property is being able to communicate effectively with communities at risk. But this is becoming harder and harder.

Agencies have to adapt not just to a changing climate, but to changing communities, and to understand the changing values of different communities and how they influence the types of communication messages they are receptive to.

A study was undertaken across four diverse communities across the Australian state of Victoria, to map their attitudes towards fire services, fire risk and fire minimisation strategies such as planned burning and then compare them with each communities' values.

The communities included those who were homogeneous and long-established, and those with many newcomers or 'tree-changers' - with little fire experience or knowledge.

The research, presented as four case studies, showed that messages that were framed in accord with a communities' key values, even from a position of low trust, were much more likely to effectively engage with diverse communities and enable emergency service messages to be conveyed.

# SARAH DAVIES

When & Where: [G3 10:45am Friday 6 April St David Lecture Theatre](#)

Title: **Science communication as culture: Entertainment, interaction, and emotion**

Format: Roundtable discussion

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Sarah Davies**, *University of Copenhagen, Denmark*

Co-author(s): Megan Halpern, *Michigan State University*  
Maja Horst, *University of Copenhagen*  
Bruce Lewenstein, *Cornell University*  
David Kirby, *University of Manchester*

For several decades, science communication researchers have cautioned scientists against deficit thinking—the idea that providing information about science will straightforwardly ensure public appreciation of science. Instead, scientists and science communicators have been encouraged to embrace public engagement with science (PES), which brings with it a host of best practices, ranging from storytelling and humour to interactive exhibits to citizen deliberation.

This roundtable discusses and interrogates these developments, focusing on the increasingly dominant sense that science communication is not external to (popular) culture and wider consumption of entertainment media, but is an important part of it. Its starting point is that we should understand science communication not as a process of sharing information, but as a space of collective meaning-making. As such, the discussion will explore what it means to understand science communication as culture, and how science communication practices are being articulated in different popular culture formats.

Participants in the roundtable will briefly present work, and raise questions, around the material, emotional, cultural, and experiential aspects of science communication. This will include, for instance, the ways in which the scientific community has started employing entertainment media as vehicles for science communication, how an interactive installation was used to engage publics in discussions about the social responsibility of science, and the notion of the 'emotional labour' of public communication. These provocations will be used to trigger a general discussion of what it means to plan, practice and analyse science communication as culture.

# LIESBETH DE BAKKER

When & Where: [E7 2:15pm Thursday 5 April ARCH2](#)  
Title: **The representation of synthetic biology in Dutch media**  
Format: Individual paper  
Theme: Society  
Area of interest: Investigating science communication practices  
Author: **Liesbeth de Bakker**, *Utrecht University, Netherlands*

An important source of information about science is news media. Media do not only inform about emerging issues in society, they also shape the public agenda through their agenda setting function and frames used by journalists. By studying news media content, a greater understanding of the challenges and opportunities within the public discourse about emerging, controversial science issues, such as Synthetic Biology (SB), can be obtained.

The emerging field of Synthetic Biology (SB) is expected to bring many promising applications. However, as it is often regarded or described as a form of 'extreme genetic engineering', there are also concerns for safety, security and of an ethical nature. Hence, involving society in decision making regarding SB's potential applications, risks, and ethical issues is necessary. Until now it was largely unknown how SB is covered and framed in Dutch news media. So in this study both qualitative and quantitative methods were used to investigate SB representation in Dutch newspapers.

A total of 261 Dutch newspaper articles (published between 2000 and 2016) were analyzed for 5 aspects. These aspects were also used in similar, recent studies carried out in other European countries. They include 1) publication data, 2) motives for publication, 3) normative impression, 4) mentioned applications, risks and ethical issues, 5) and metaphor use.

Results show that SB media representation was predominantly event-based, positive, future-oriented, relatively small, and science-led. SB media coverage in other European countries shows many similarities. Findings suggest that public discourse about SB in the Netherlands and elsewhere in Europe is still in its infancy and that the current representation of SB is skewed, mainly focused on the positive, application side of the new technology. In that sense it resembles developments seen in media coverage of genetic engineering. Opportunities and challenges for the public discourse about synthetic biology will be discussed.

# LIESBETH DE BAKKER

When & Where: [F5 3:30pm Thursday 5 April SDAV2](#)

Title: **Supporting science communicators – new approaches**

Format: Roundtable discussion

Theme: Stories

Area of interest: Teaching science communication

Author: **Liesbeth de Bakker**, *Utrecht University, Netherlands*

Co-author(s): Ayelet Baram-Tsabari, *Technion – Israel Institute of Technology, Israel*  
Lotta Tomasson, *Vetenskap & Allmanhet, Sweden*  
Dacia Herbulock, *Science Media Centre & Victoria University of Wellington, NZ*  
Caroline Wehrmann, *Delft University of Technology, Netherlands*

In this session, we will discuss how challenges and opportunities in science communication can be met with innovative tools, which share a deep commitment to dialogue and audience-centered techniques. Five stories will be shared as a basis for the following group discussions.

Many scientists struggle to make their stories accessible to a general audience. Now they can rely on the free of charge and scientist-friendly De-Jargonizer, which is hosted at [scienceandpublic.com](http://scienceandpublic.com). It will suggest what vocabulary to avoid while interacting with the public.

True and profound interaction with your audience is hard to achieve. Scientists in Sweden can now use the online - Toolbox for Science Communication ([scicommttoolbox.se](http://scicommttoolbox.se)) - for inspiration, methods and support in engaging with society.

What is actually going in public discourse? In the Dutch Teaching and Learning Lab, cameras and microphones enable researchers to observe and study in detail multiple aspects of interactions and group dynamics in science dialogue.

In New Zealand a new "micro" training format for interactive communication is developed. It targets hard-to-reach scientists who are less inclined to seek out science communication training. It offers brief, intensive feedback sessions with individuals during scientific conferences, breaking down entrenched attitudes about who needs this training and why.

As science stories increasingly are being based on complex problems, we explain how practitioners, science communication experts and students analyze those complex problems together and develop strategies and tools to find solutions in Dutch 'C-labs'.

# VANESSA DE KAUWE

When & Where: [A6 11:15am Wednesday 4 April ARCH1](#)

Title: **Presenting science to young adults with intellectual disabilities: the steps of thinking**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Vanessa de Kauwe**, *Australian National University, Australia*

The fields of science and science communication have long neglected students with intellectual disabilities. Increasing attempts have been made to include students with some disabilities in science activities, shows and exhibitions. However, when it comes to intellectual disabilities, it has been a case of too little for too long. Recent research reveals that science has been withheld from students with intellectual disabilities for over 40 years in most Western countries, with the exception of some token activities. The rationale for this is twofold. First is the notion that science activities do not assist in the daily life skills which students with intellectual disabilities need. Second, intellectual disability is considered too complex and disparate for a systematic approach of science delivery to be developed.

In contrast, I hypothesize that ongoing science delivery could exercise the observational, rational and logical skills that students with intellectual disabilities find most difficult, and which they require for achieving life skills. I developed multiple science programs, and conducted a series of case studies to investigate the short term and long term effects on high school students with moderate intellectual disabilities (that is, students aged between 12 and 18, who combine social and practical impairments with a tested IQ approximating between 40 and 70). The programs were delivered to 17 students, and data regarding the impact these programs had in their daily lives were collected from the students, their parents/guardians and their teachers at multiple intervals, over a timeframe of a year (74 total participants).

This paper discusses my systematic approach for delivering and evaluating science activities for students with intellectual disabilities. The method involves intricately guiding students through the step-by-step process of observation, logical enquiry and rational response. The results unanimously indicate that such an approach is both possible and beneficial for students with intellectual disabilities.

# LEONARDO DE LA TORRE ÁVILA

When & Where: [C5 3:30pm Wednesday 4 April SDAV5](#)

Title: **Science communication the other way around: how to get scientists to understand you?**

Format: Roundtable discussion

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Leonardo de la Torre Ávila**, *The Barcelona Institute for Global Health*, Spain

Co-author(s): Franco Bagnoli, *Università degli Studi di Firenze (Italy)*  
Mitsuru Kudo, *Center for the Study of Co\* Design - Osaka University (Japan)*

Great research could start when *regular* people inspire science, when somebody – as explained by Norbert Steinhaus – reformulates, translates society's questions into a language that scientists understand. One of the methodologies that emerges from communication and understanding between civil society and science is the so-called "Science Shop". Within a Science Shop experience, universities and research centres allow citizens and civil society organizations to, raising questions, present their problems on any topic, according with the available expertise. The answer may require a simple bibliographic consultation or a specific investigation. The research is assigned to students as part of their final dissertation, under the supervision of an experienced researcher.

In a roundtable discussion, partners of InSPIRES – an ongoing project under European Commission's Horizon 2020's programme "Science with and for Society" – will debate on current experiences that present Science Shops as a powerful communication opportunity to trigger bottom-up, demand-driven research. People attending our interactive discussion will analyze how Science Shops and other "communicative science" experiences that InSPIRES partners and advisors are developing in Italy, Spain, Tunisia, Bolivia and Japan look for the best of the Science Shop tradition and more participative methodologies.

Some of the partners' background in science cafés, radio transmission, blogging and involvement of the population in citizen science projects in the Science Shop framework, will be shared on a discussion based upon a debate on Science *bi-directional* Communication. At InSPIRES we believe it is possible to build effective cooperation between science and society by supporting the growth of Science Shops and enabling the expansion of responsible participatory research and innovation in Europe and abroad, in order to tackle key societal challenges that affect the world population.

# DIOGO DE OLIVEIRA

When & Where: 2 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Building bridges between universities and society: the Magazine Lynaldo experience**

Format: Visual talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Diogo de Oliveira**, *Universidade Federal de Campina Grande, Brazil*

Co-author(s): Ludemberg Bezerra, *Universidade Federal de Campina Grande (Brasil)*  
Ana Holanda, *Universidade Federal de Campina Grande (Brasil)*

This research assumes that the role of the contemporary universities is to build bridges with society. It is the space where the needs of the population find support and practical solutions based on research that seeks to improve the well-being of all. Thus, researchers connected with reality and attentive to what happens around them produce studies that are consistent with the improvement of the conditions for the exercise of citizenship.

In this sense, within the perspective of the public communication of science, the Lynaldo Magazine is produced by students of Social Communication at the Federal University of Campina Grande. The purpose of this publication is to make the role of teachers working in research and extension, inside and outside the academic community, visible.

This research, which is in the field of Communications, starts its analysis from the traditions of science communications in the Italian Renaissance, including the French, Prussian-German and Anglo-Saxon traditions, coming to understand that science only truly reaches its function when it is shared and includes the non-researcher population into the debate on its directions, benefits and failures.

The purpose of this study is to use Lynaldo Magazine's publications to measure the scope of its subjects, its importance for the promotion of the scientific debate and its capacity to constitute a tool that encourages the university-society link. It is based on the premise that the publication of this journal favors partnerships between teachers (facilitating the accomplishment of trans, multi and interdisciplinary studies), plays a relevant role in the training of students in that it puts them in contact with researchers from different areas of knowledge and favors the inclusion of non-specialists into the debate on the science produced, largely with public money.

# LUCY DICKIE

When & Where: 322 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **When science meets politics: the case of young adults and the Predator Free 2050 goal**

Format: Visual talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Lucy Dickie**, *University of Otago, NZ*

Co-author(s): Fabien Medvecky, *University of Otago*

In mid-2016, the Predator Free 2050 goal (PF2050) was announced, outlining the plan to remove possums, rats and stoats from New Zealand by 2050. This ambitious aim has been described as the New Zealand equivalent of the Apollo mission. Introduced mammals are one of the largest threats to New Zealand's biodiversity due to the extensive damage they do to the environment.

Critics have been quick to point out the flaws of PF2050 - everything from the funding and timeframe to the proposed methods has been analysed. Words such as 'underfunded' and 'overambitious' have consistently come up. There is also a significant human element to this project; it will require the coordination of thousands of citizens across the country. With much of mainland New Zealand currently inhabited (compared to many previous eradications, which have occurred on offshore islands), public attitudes towards predator eradication will be an important consideration. Previous attempts to eradicate pests from inhabited islands have met with opposition due to the methods used and the negative side of becoming pest free.

This study looks specifically at young adults. Given the timeframe, a lot of the future work will most likely be carried out by today's 18 to 24 year olds.

Through the use of an online survey, which received nearly 1500 responses, this study looks at the attitudes of young adults towards PF2050, specifically, if they are knowledgeable about the goal, what they define as a predator and if they could see themselves participating in the future work and research. With the range of views towards predators and predator control that exist in New Zealand, this research will help establish whether young adults are supportive of the goal and, thus, how achievable it is likely to be.

# HEATHER DORAN

When & Where: [110 3:30pm Friday 6 April SDAV6](#)

Title: **Implementing responsible research and innovation at universities.  
A cultural perspective**

Format: Roundtable

Theme: Society

Area of interest: Teaching science communication

Author: **Heather Doran**, *University of Aberdeen*

Co-author(s): Anne Dijkstra, *University of Twente*  
Steve Miller, *University College London*  
Yin Lin, *China Research Institute for Science Popularization*  
Caitriona Morden, *Dublin City University*

In this round table discussion we will ask how universities can bring responsible research and innovation (RRI) into practice. We will focus on how they can foster the science-society relationship and in particular the role of science communication and engagement in this process.

The session will bring a round table discussion of representatives from two projects (The New Understanding of Communication, Learning and Engagement in Universities and Scientific Institutions - NUCLEUS - project and the RRI Tools project). The panel is keen to stimulate discussion and share practices on the global perspectives of bringing RRI in practice in various cultures.

NUCLEUS has 25 international partners from Africa, Asia and Europe. Field Trips conducted across these countries and study work has analysed how to interpret RRI in different ways, what current examples are of good practice and potential barriers ahead. Over the next two years in 10 research institutes RRI approaches will be brought into practice and analysed. Science communication and engagement is one important element of this remit.

Findings from the RRI Tools project will amplify reflections on how to enhance practices of RRI in universities further and how these resources are contributing to understanding and enhancing relationships with various groups of stakeholders in society.

This session will encourage an exchange of views from the different cultural backgrounds and professions around science and its meaning for society, in particular, its communication on societal, political and social challenges.

# SHARON DUNWOODY

When & Where: [12 3:30pm Friday 6 April SDAV1](#)

Title: **How journalists deal with scientific uncertainty and what that means for the audience**

Format: Roundtable discussion

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Sharon Dunwoody**, *School of Journalism and Mass Communication, University of Wisconsin-Madison, USA*

Co-author(s): Friederike Hendriks, *University of Munster*  
Luisa Massarani, *Coordinator, Brazilian Institute of Public Communication of Science and Technology*  
Hans Peter Peters, *Forschungszentrum Jülich*

Journalism excels at communicating what we know but finds it difficult to communicate what we don't know. That makes communication of uncertainty both important and problematic. In this roundtable panel discussion, four scholars who have contributed to the illumination of uncertainty communication will tackle two dimensions of the problem: (1) how journalists construct uncertainty statements in their stories and (2) the ways in which non-specialists "make sense" of those representations. Hans Peter Peters will focus on the meaning of scientific uncertainty in journalistic decision-making, and the rhetorical use and interpretation of uncertainty in journalistic stories. He will argue that journalists sometimes ignore scientific uncertainty while focusing on it at other times. Friedrike Hendriks' research shows that uncertainty communication can inform readers' trust judgments. Readers' trustworthiness evaluations of experts who communicate scientific information – as reflected in ratings of integrity and benevolence - depend on the expert's disclosure of such uncertainty-evoking information as study limitations and ethics. Sharon Dunwoody will reflect on narrative strategies that may more accurately convey to audiences the positions of experts on contested science issues. She will argue that, while conventional reporting practices tend to increase perceptions of uncertainty, strategies such as "weight of evidence" and "weight of experts" may allow audiences to develop a more accurate perception of the uncertainty of truth claims. Finally, Luisa Massarani will comment on our conclusions and, as someone with practical science communication experience, will help the audience apply panelists' comments to real-world situations. Format: After a brief moderator introduction, panelists will have approximately 8 minutes each to make a main point. We will then devote the rest of the session to audience discussion.

# DARRIN DURANT

When & Where: [E6 1:45pm Thursday 5 April ARCH1](#)  
Title: **Dilemmas in communicating climate science**  
Format: Individual paper  
Theme: Society  
Area of interest: Building a theoretical basis for science communication  
Author: **Darrin Durant, *University of Melbourne, Australia***

How should scientists manage the science-politics boundary when communicating science? Amongst the class of knowledge broker conceptions offered as democratic roles for managing that science-policy interface, Roger Pielke's (2007) 'honest broker' model captures the underlying ideal on offer in such models. Ideally we want our scientists to facilitate the opening up, not closing down, of policy options. But in this talk I suggest this underlying ideal of opening up the options is not all that ideal. Put provocatively, we have all been right to argue that something is wrong with deficit models of communication, and with linear models of expertise, and with technocratic models of politics. But have the answers we adopted in response to the problems with those models too often been framed by a model of democratic freedom that is easily abused? Our conference theme is about *science, stories and society*, and my worry is that the honest broker model (and its cognate knowledge-intermediary models) instantiates a *story* about scientists that does justice neither to the lived experience of communicating science or to democratic aspirations to hold power relations accountable. In this talk I articulate those worries in two moments. One, I draw upon interviews with Australian climate scientists deeply embedded in climate policy discussions. Their stories complicate easy dismissals of scientists as unrelaxing, and ask us to reflect on what we want from scientists who communicate science. Two, I suggest honest brokering relies on an easily co-opted model of freedom that appears not to address the real danger of arbitrary power in a democracy. This raises the question of how scientists best serve the public when communicating science, by expanding or reducing the scope of decisions?

# DARIA DVORZHITSKAIA

When & Where: [A8 11:30am Wednesday 4 April ARCH3](#)

Title: **'A form of sanity check': how people at CERN view science communication**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Daria Dvorzhitskaia**, *Rhine-Waal University of Applied Sciences, Germany*

Co-author(s): Alexander Gerber, *Rhine-Waal University of Applied Sciences*  
Alexander Struck, *Rhine-Waal University of Applied Sciences*  
Angelos Alexopoulos, *CERN*  
Achille Petrilli, *CERN*

The goal of this study was to explore which models of science communication prevailed in the views of people affiliated with CERN. The analytical framework of science communication models proposed by Brian Trench (2008) served as the theoretical basis. The theoretical models were operationalised into short statements. The participants were then asked to choose the most suitable continuation of the phrase 'When you publicly communicate fundamental physics, you...'. Data was collected via an anonymised online questionnaire. The respondents (N = 418) mainly worked in physics (64%), came from 60 different countries (73% from Europe) and were 30 years old or younger (63%).

The Deficit model was the most important for the majority (52%) of the respondents, excluding cases where a variant of this model (Defence or Marketing) was specified. The results suggest that, in order to represent the Deficit model more accurately, these two variants should be complemented by another one, which would encompass the desire of individual scientists to share scientific results or passion for science with the public. It is also necessary to investigate further how different models (e.g. Deficit and Dialogue) coexist in the minds of communicators.

Some interesting points were raised concerning the value added to fundamental physics by science communication. One idea was that it enabled scientists to reflect on their knowledge and goals. Another one stated that non-scientists had an unbiased, creative perspective on the subject, making it a valuable input for the common search for knowledge. Some respondents also expressed an opinion that 'science communication was the ultimate goal of any fundamental science'.

The study was carried out at CERN in March-September 2017. It set a starting point of identifying the specifics of communication in the field of fundamental physics with regard to science communication theory, providing ideas for further research on this topic.

# NANCY EDWARDS

When & Where: [B1 1:45pm Wednesday 4 April SDAV1](#)

Title: **Successful science communication about problems that cross sectors**

Format: Grouped paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Nancy Edwards**, *University of Ottawa, Canada*

Co-author(s): Susan Roelofs, *University of Ottawa*  
Maja Bertram, *University of Southern Denmark*  
Ronald Plotnikoff, *University of Newcastle*  
David Lubans, *University of Newcastle*

Science communication is essential to address complex health and social problems requiring intersectoral solutions. But many research studies concentrate on single sectors and yield sector-centric communication. This type of science communication may considerably limit the perceived utility and uptake of scientific findings from one sector to another at all levels of government (local, state, and national).

This forum will present four programmatic research initiatives that have traversed this intersectoral territory in science communication. Each will be presented as an intersectoral policy case study. The first addressed municipal and national physical activity policies in six European countries. The second mobilized district-level leadership hubs to tackle policy action in health sub-sectors for the prevention and management of HIV/AIDS in Jamaica and three Sub-Saharan African countries. The third used data from epidemiological and ergonomic studies in the health sector to recommend changes to national building codes in Canada with the aim of reducing the risk of falls and injuries. The fourth focused on making physical activity an easier choice for youth and adults in Australia. It has involved extensive work educational, sports, and recreation sectors.

Using these four case studies, the aim of these grouped talks is to consider challenges and barriers encountered in communicating science across sectors, and successful strategies for intersectoral science communication. The perspectives of target audiences that need to be considered, and the arguments and counter-arguments that surfaced and influenced science communication across sectors will be discussed. Recommendations for science communication about policy change across sectors will be presented.

Proposals from the co-authors of this presentation:

**Communicating findings about local HIV and AIDS health policies through multi-stakeholder leadership hubs in Sub-Saharan African and the Caribbean** Susan Roelofs, *University of Ottawa*

The enormous impact of HIV/AIDS has been felt by communities and on health systems in Sub-Saharan Africa and the Caribbean. Nurses in lower and middle income countries make up the largest proportion of the health workforce and are at the front lines of care, however they have had limited engagement in HIV/AIDS research and policy-making processes. This case study is from a five-year research program undertaken as a collaboration between Jamaica, Kenya, Uganda, South Africa; and Canada, which established district-level leadership hubs of researchers, nurses, policymakers, and community members. Hub members came from different levels and sub-sectors of the health care system. Hub members were engaged through participatory action research to strengthen local development of evidence-informed HIV/AIDS policies.

Communication challenges included establishing the visibility and "voice" of leadership hubs that were not considered formally-recognized entities within the health care system; positioning nurses to use project-generated research findings in their dialogue with district- and organizational-level decision-makers; and addressing the top-down approach to HIV/AIDS policy-making that was prominent in study countries. Strategies used included capacity-building workshops, evaluation projects that targeted local policies, and communication strategies to enhance sharing of findings across the four participating countries. Arguments and counter-arguments that emerged included ongoing debates about the roles of nurses in policy change and different views among research team members regarding when the analysis of findings had progressed sufficiently to share findings with hub members. Recommendations for science communication will be centred on using a participatory action research approach to engage health professionals in using evidence for organizational policy making within various sectors of the health care system.

**Effective communication between researchers and policymakers to support evidence-informed policy making in health-enhancing physical activity** Maja Bertram, *University of Southern Denmark*

Physical activity is a key determinant of health. Health-enhancing physical activity (HEPA) policies at municipal and state levels are necessary to support and sustain physical activity by individuals in their communities. Such policies are largely developed based on local contextual priorities, values and resources. Effective science communication can strengthen the use of research evidence in this policy development process.

This case study describes science communication initiatives in the six-country (Denmark, The Netherlands, Finland, Italy, Romania, Canada), five-year

(2011-2016) programmatic research project REPOPA, Research into Policy to enhance Physical Activity ([www.repopa.eu](http://www.repopa.eu)). The first activity in the project was a mapping of research evidence in existing HEPA policies. This informed interventions to facilitate research evidence use; locally tailored collaboration and policy games. Learnings from these interventions guided the development of indicators, which were vetted through a multi-country Delphi process. Final conclusions from the project were discussed in a world cafe at an international symposium with participants from academic, governmental and non-governmental organizations.

The project identified several communication challenges. Policy makers and practitioners found it difficult to find, adapt and apply relevant information from science as they developed and implemented HEPA policies. Researchers found it challenging to engage in communication with policy makers and practitioners and to deliver this information in real time. Successful science communication activities in the project involved bringing people from each corner of the research-policy-practice triangle together to talk and learn from each other.

**Communicating findings from efficacy and effectiveness trials to inform physical activity promotion in Australia** Ronald Plotnikoff, *Research Centre of Physical Activity and Nutrition, University of Newcastle* and David Lubans, *University of Newcastle*

Physical inactivity has significant effects on the mortality and morbidity of the population and health care systems. Over half of our populations are not meeting public health guidelines for physical activity. This case study of our research program describes efforts by the author (a physical activity epidemiologist and educator) to improve physical activity levels in Australia over the past decade by forging epidemiological and intervention evidence across a number of efficacy, effectiveness and dissemination trials and other studies in a variety of settings and sectors (clinical, school, workplace and community). Our Centre has over a dozen recent physical activity trials which are currently being 'scaled-up' with various practice and policy partners. Our presentation will articulate the successes and challenges of science communication in partnerships forged to disseminate interventions and programs in real-life settings. Key recommendations for science communication regarding physical activity promotion will be discussed. The importance of communicating results of implementation science studies to achieve practice improvements across settings and sectors (education, sports, recreation) will be told.

# MARIE EGGELING

When & Where: [D5 11:00am Thursday 5 April ARCH1](#)

Title: **Using videos of live surgeries to communicate medical knowledge to the public**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Marie Eggeling**, *Leibniz-Institut für Wissensmedien, Germany*

Co-author(s): Martina Bientzle, *Co-author*  
Joachim Kimmerle, *Co-author*

Educational online videos are frequently used in science communication, as they provide opportunity for inventive and purposeful transfer of scientific knowledge. In video format, content can be presented in a realistic and lively manner, or in a more schematic and explanatory way. Medical treatments like surgical operations are hard for laypeople to grasp, since they often lack the basic anatomical knowledge that is necessary to process such complex information adequately. This is particularly challenging when patients are supposed to make an informed decision about whether to undergo a certain medical treatment.

For dealing with this challenge, we used videos of online surgical operations taken from the internet platform [www.sectio-chirurgica.de](http://www.sectio-chirurgica.de). These videos present complex anatomical content by illustrating and telling stories of actual medical cases in the applied setting of a surgical operation. In an experimental study with N = 151 participants we aimed to examine under which circumstances laypeople may benefit from particular representations of complex medical information. In a 2x2 between-group design we examined the impact of the representation format (realistic vs. schematic representations), and also studied the role of the opportunity for participants to use a navigation bar (navigation option vs. no navigation option).

We found a significant increase in people's certainty regarding their hypothetical decision whether or not to undergo surgery after watching the video, indicating that such videos may support the decision-making process. In addition, the availability of a navigation bar led to a higher knowledge gain. Finally, we found that those participants who watched a realistic video experienced more negative emotions (disgust and fear) and rendered a less favorable judgment regarding the video than those who watched a schematic video. In this talk we will discuss the implications of our study for future research and practical application in science communication.

# APRIL EICHMEIER

When & Where: [F6 4:15pm Thursday 5 April ARCH1](#)

Title: **Reducing motivated reasoning on controversial science: testing which factors best promote open minded processing of information**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **April Eichmeier**, *University of Wisconsin-Madison, USA*

Co-author(s): Neil Stenhouse, *University of Wisconsin-Madison*

In this study, we investigate ways to counter a phenomenon known as motivated reasoning. Motivated reasoning happens when people think rationally about a topic, but do so in a biased way to reinforce their pre-existing views about the subject. In many areas of controversial science such as GMO crops and biofuels, motivated reasoning will often make people less likely to use the best available science in making decisions, leading to damaging outcomes for society.

Scholars have begun to investigate how dispositions such as open-minded thinking and scientific curiosity may reduce motivated reasoning about science. Previous work has generally only considered one or two factors influencing open-minded processing at a time. By considering several different factors, we make it possible to see which has the largest effect in reducing motivated reasoning. In an online experiment on a nationally representative sample of US adults, participants are presented with information on controversial scientific topics that are either aligned with or contrary to their own viewpoint. We discuss which dispositions make it more likely that individuals seriously consider the information that goes against their own views, as opposed to rejecting the message.

This work aids in the development of science communication theory by helping better understand the theoretical nature of dispositions that promote open-minded processing of scientific information. In addition, assuming that dispositions that decrease motivated reasoning can be deliberately cultivated, this work offers clues for helping increase citizens' ability to put the best available science to use, while minimizing the distorting influence of political ideology and other biasing factors.

# MARTA ENTRADAS

When & Where: [D1 10:45am Thursday 5 April St David Lecture Theatre](#)

Title: **Institutional science communication: cross-national comparative study**

Format: Grouped paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Marta Entradas**, *LSE, UK*

Co-author(s): Giuseppe Pellegrini Pellegrini, *Observe*  
Martin Bauer, *LSE*  
Pedro Russo, *Leiden University*  
John Besley, *Michigan University*

Science communication has become a crucial issue for academic and scientific institutions. Many have incorporated it into their missions, adopted policies for communication, while enhancing their communication structures to support relationships with the media, policy makers and the wider public. Still, our understanding of what institutions are doing and under what conditions is limited. Institutional commitment to science communication has, at least in some countries including Portugal or the UK, been spurred by national science and policy contexts and strongly encouraged by governments and renowned scientific institutions.

In this grouped paper, a panel of science communication researchers will present preliminary results of an international study 'MORE-PE- Mobilisation of REsources for Public Engagement' aimed at mapping science communication at the level of research institutes (RIs) in Portugal, Germany, the UK, the Netherlands, Italy, the USA, Brazil, Japan, Taiwan and China. Representative samples of RIs by areas of research were drawn using stratified random probability sampling procedures (N=1200 per country). Data collection will be complete in October 2017. This will be the first presentation of the results on the country level.

Panellists will provide an account of national institutional practices in their countries, and discuss it in light of national science and policy contexts for science communication. Each country will cover: (1) generic national policy/encouragement for PE (2) national research system and description of populations and national samples, and (3) key findings of interest, including but not limited to 'what', 'to whom', 'why' and 'under conditions' are RIs addressing non-specialists.

Proposals from the co-authors of this presentation:

**MORE-PE in Italian Research Institutions** Giuseppe Pellegrini Pellegrini, *Observe*

This talk will provide an overview of MORE-PE findings about Italian Research Institutions. The talk will cover: (1) generic national policy/encouragement for PE (2) national research system and description of populations and national samples, and (3) key findings of interest, including but not limited to ‘what’, ‘to whom’, ‘why’ and ‘under conditions’ are RIs addressing non-specialists.

**MORE-PE in UK Research Institutions** Martin Bauer, *LSE*

This talk will provide an overview of MORE-PE findings about Research Institutions in the UK. The talk will cover: (1) generic national policy/encouragement for PE (2) national research system and description of populations and national samples, and (3) key findings of interest, including but not limited to ‘what’, ‘to whom’, ‘why’ and ‘under conditions’ are RIs addressing non-specialists.

**MORE-PE in Research Institutions in the Netherlands** Pedro Russo, *Leiden University*

This talk will provide an overview of MORE-PE findings about Research Institutions in the the Netherlands. The talk will cover: (1) generic national policy/encouragement for PE (2) national research system and description of populations and national samples, and (3) key findings of interest, including but not limited to ‘what’, ‘to whom’, ‘why’ and ‘under conditions’ are RIs addressing non-specialists.

**MORE-PE in US Research Institutions** John Besley, *Michigan University*

This talk will provide an overview of MORE-PE findings about Research Institutions in the US. The talk will cover: (1) generic national policy/encouragement for PE (2) national research system and description of populations and national samples, and (3) key findings of interest, including but not limited to ‘what’, ‘to whom’, ‘why’ and ‘under conditions’ are RIs addressing non-specialists.

# CLAIRE FARRUGIA

When & Where: 480 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **A case study in supporting video and narrative based science communication to engage non-expert national audiences**

Format: Visual talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Claire Farrugia**

Co-author(s): Lisa Bailey, *Australia's Science Channel*

This poster presents a case study on how science communicators can use video and narrative-based science communication to effectively reach and engage non-expert national audiences with support of events such as SCINEMA International Science Festival.

Research suggests that narratives are easier to comprehend and audiences find them more engaging than traditional logical-scientific communication as narratives offer increased comprehension, interest and engagement (Dahlstrom, 2013). Science communicators can utilise a storytelling approach to communicate scientific ideas with great effect.

*Living Close - Parasitism* is a short film that was selected for official inclusion in the 2016 SCINEMA International Science Film Festival. Parasitism is part of a web series which uses scripted humour-based narrative videos to examine relationships in the animal world. In the case of *Parasitism*, a parasitic wasp is in a dysfunctional relationship with a cockroach, who she seduces, zombifies, and eventually kills through the birth of her offspring. The story is presented humorously through a pastiche of classic sitcom relationship tropes. Living Close was produced through a micro-grant by science communicators aiming to engage non expert audiences aged 18-35.

SCINEMA International Science Film Festival is the largest Science Film Festival in the Southern Hemisphere. Coordinated by the Australia's Science Channel, SCINEMA film festival has public screenings in Australian capital cities and also provides a grassroots program for community groups to run events for National Science Week in Australia. In 2017 there were over 300 SCINEMA screenings across Australia to an audience of approximately 37,000 people.

After the film festival, selected films are collected on Australia's Science Channel and through a partnership with the Australian Broadcasting Corporation through their online platform iView. Initiatives such as SCINEMA provide an opportunity for scripted science video content to find a larger non-expert audience.

# LAERCIO FERRACIOLI

When & Where: 413 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Formation of mediators of Science Square of Vitoria, ES, Brazil: a proposal for a conceptual approach to the hand lift equipment**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Laercio Ferracioli**, *ModeLab/Federal University of Espirito Santo, Brazil*

Co-author(s): Marceley Rodrigues, *ModeLab/Federal University of Espirito Santo*

Science Square, located in Vitória, Brazil facing the sea was opened in 1999 and is one of the four *Centres of Science, Education and Culture* linked to the Municipal Department of Education. The collection is exposed in an open area of approximately 7,500 m<sup>2</sup> with gardens and free circulation for visitors and accessibility for wheelchair users. The collection consists of equipment such as Solar Scale System, Sundial, Sound Mirror, Swings, Levers, Inclined Plane and Hand Lift.

Science Square mediators are mostly undergraduate students in Physics and develop centre activities. There is a continuous training process of new mediators for promoting the adequate attendance to visitors: besides interactivity based on a exploratory attitude focusing on discussion and dialogue with the visitor, activities include exploration of the scientific concepts involved in each equipment focusing on "*opening the black box*" strategy for each device and avoiding the classic division between theory-practice.

This presentation reports results of a conceptual approach for training mediators on the Hand Lift equipment. An Explanatory Guide was produced in the form of a plasticised insert using front and back and previously submitted to the evaluation of three judges to verify the existence of conceptual, diagram and grammatical errors.

Results revealed that the *Hand Lift Explanatory Guide* was positively evaluated by the new mediators, being better accepted than the current hand-out in use. Even non-physicists mediators reported that it was possible to understand the Explanatory Guide approach covering their conceptual doubts about the equipment. The analysis of mediators' performance in presentations after the training activity corroborated these results.

These results reaffirm the classic responsibility of training mediators of science centres and museums that must be a built-in and continued action on daily basis of these *loci* so that they can operate in resonance with their mission.

# SÓNIA FERREIRA

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)

Title: **ICATE: a strategy for infection control awareness**

Format: Show, tell and talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Sónia Ferreira**, *Association for World Innovation in Science and Health Education (AWISHE), Portugal*

Co-author(s): Ana Santos-Carvalho, *AWISHE*  
Inês Cravo Roxo, *AWISHE*  
Richard Marques, *AWISHE*  
Rui Soares, *AWISHE*  
Susana Alarico, *AWISHE*

Infection Control Awareness Through Education (ICATE) is an educational project for children, teachers and health professionals that directly tackles both: three of the eight Millennium Development Goals: (i) to help achieve universal primary education, (ii) combating HIV/AIDS, malaria, and other diseases, and (iii) to create a global partnership for development; and two of the seventeen Sustainable Development Goals: (i) ensure healthy lives and promote well-being for all at all ages, and (ii) ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Education should be understood and used as a tool for social transformation, and as a resource to achieve social, cultural and economic equality. Therefore, ICATE is a project addressed to lower-income countries and/or rural communities that brings together universities, hospitals, schools and the local communities creating collaborative learning communities (CLC). ICATE takes advantage of these CLC to facilitate the transfer of knowledge and educational expertise from the academic media to schools, hospitals and general community, empowering the population with a set of tools, which will allow them to deal and/or participate in the infection control more pro-actively. Across African and South American countries, three major issues raise the need for awareness: HIV/AIDS, Malaria and Tuberculosis. ICATE tackled these issues through a multidisciplinary team of clinicians, biologists, microbiologists and anthropologists that provided the scientific knowledge to elaborate resources, namely books, eBooks, informative flyers, and to organize courses, workshops for children, educators and general population. ICATE was already implemented in Brazil and after its implementation a partnership was created to exponentiate the impact of this project.

# ANGEL FIGUEROA PEREA

When & Where: [H6 2:45pm Friday 6 April ARCH2](#)

Title: **Communicate Science for Everyday Jose: knowing our audience**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Angel Figueroa Perea, UNAM, Mexico**

Communicate science demands passion, creativity, and constant improvement. But above all, we urgently need to listen to our audiences and stop seeing them as a passive subject. It is necessary to understand their needs, motivations, their day-to-day lives, knowledge, beliefs and concerns to better serve them.

To address this, the *General Council of Science Outreach* from *Mexico National University*, has made a particular effort to reveal the broad "picture" of Mexicans and has tried to develop different tools to produce interesting content covering science topics. To support this, for the last three years the Council has led research called "*El perfil del mexicano*", which gathers surveys, benchmarks and statistics, as well as different POVs from authors that provide a broad perspective of the audiences' social, economic and cultural reality, among other aspects.

This information also allows us to analyze why Mexicans have certain preferences/consumption patterns, religious practices, places of interest, why someone may or may not be interested in science.

Based on these results, our materials were given a boost by providing them with new elements in language and design, allowing them to be closer to realities of daily life from target audiences.

To exemplify, we publish weekly "*UNAMirada a la Ciencia*" which is a publication targeting lower income audiences with an average of a high school education. The distribution of this popular publication is national and its coverage by nature includes a variety of topics simply explained. Different versions of the materials also live in print such as posters and are distributed in the whole country.

If we want a country that is more involved in science, it is important to challenge the current dialogue, it is important to know in depth the target audience and see them not only from what we want to cover but what they want to hear.

# WIEBKE FINKLER

When & Where: [G6 11:00am Friday 6 April ARCH1](#)

Title: **The science communication of whale watching: a marketing based people-focused science communication process and impact model**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Wiebke Finkler**, *University of Otago, NZ*

High quality multimedia content and strategic planning processes lie at the heart of successful science communication. But what are the elements that make effective creative content and what are the strategic steps to implement a successful science communication initiative? The current paper focuses on the application of marketing communication to contribute towards more effective science communication, set in the context of uncontrolled explosive growth of the global whale watching industry and failure of widespread sustainable practices. The lack of sustainability in whale watching is, in part, due to poor uptake of science and ineffective public communication. The discipline, structure and focus on changing behaviour that characterize social marketing provide important lessons for making science communication in the whale watching setting more effective.

The paper presents the findings of an empirical video-based whale watching science communication study focusing on sustainable whale watching practices. It proposes a strategic marketing-based science communication format and process that can contribute towards the development of a visual rhetoric for science communication. The research demonstrates the effectiveness of well-developed science communication videos to influence people's expectations regarding close encounters and influence responsible behavioural intentions. Marketing-based science communication videos present an educational management tool for the whale watching industry by advocating sustainable practices to stakeholders, increasing awareness about impacts and managing visitor's expectations. Informed members of the public, as key whale watching stakeholders, form a significant potential compliance management opportunity that can contribute towards the sustainable development of the industry. More effective science communication focusing on communication and behavioural outcomes in the whale watching setting, and wider science communication research field, therefore, is a critical challenge.

# WIEBKE FINKLER

When & Where: [E5 1:45pm Thursday 5 April SDAV2](#)

Title: **The art and science of engagement: a global perspective on science communication through the arts**

Format: Roundtable discussion

Theme: Society

Area of interest: Investigating science communication practices

Author: **Wiebke Finkler**, *University of Otago, NZ*

Co-author(s): Wolfgang Goede, *International Science Journalist, WFSJ, TELI*  
Robert Inglis, *Jive Media*  
Eric Jensen, *University of Warwick*  
Bronwyn Bevan, *University of Washington*

Despite society's increasing dependence upon – and increasing need for – scientific solutions to global and local challenges, the diffusion, understanding, and use of science in society remains an area that is daunting and impenetrable. Use of the arts can be a powerful strategy to effectively communicate the understanding and use of scientific information to increase informed-decision making.

Research demonstrates that intellectual benefits of the arts include the development of general thinking skills and problem-solving abilities, and arts experiences help to develop a more complex network of connections in the brain. The arts engage audiences physically, intellectually, and emotionally. Increasingly, science communicators around the world are using an art-based approach to science communication through mediums such as theatre, music, parody, comics, filmmaking, photography, poetry, and storytelling to engage diverse audiences. Using the arts to effectively communicate science and advance society (not to mention the plethora of possible outcomes such as improved environments and health) is a multi-layered, innovative, culturally and linguistically appropriate approach to communicating science. This panel will include geographically and methodologically diverse examples of the use of the arts to successfully communicate science.

Further, no dedicated interest group for science engagement through the arts exists within the International Public Communication of Science and Technology network. This roundtable intends to create interest in such a group by addressing both theoretical and practical contributions of the arts to science communication, with the goal of establishing a new PCST interest group. This will be a new and unique development in the history of our organisation.

Wiebke Finkler (New Zealand) Filmmaking, soundscapes and visual rhetoric

Wolfgang Goede (Germany) Fiction, drama, cabaret

Robert Inglis (South Africa) Music (hip hop and rap), comics and film

Eric Jensen (UK) Impact evaluation, performance, social media

Bronwyn Bevan (USA) Parody, cabaret, performance art

# WIEBKE FINKLER

When & Where: [B10 1:45pm Wednesday 4 April SDAV6](#)

Title: **Science communication filmmaking and multimedia workshop**

Format: Workshop

Theme: Science

Area of interest: Teaching science communication

Author: **Wiebke Finkler**, *University of Otago, NZ*

This is a practical and hands-on workshop for science communicators wanting to engage in multimedia outreach and learn how to create engaging content for public communication, with a particular focus on video production and storytelling. While the workshop focuses on science communication filmmaking the principles can be applied to photography, podcasts/vodcasts and wider online and social media content.

The workshop (aimed at beginners) covers 1. elements of effective science communication content, 2. introduces filmmaking (including storytelling and narrative development, basic camera and editing techniques), and 3. involves hands-on exercises for participants to practice with own devices (*note: bring your own tablet, phone or camera*). Please note that examples will be demonstrated using Apple devices such as iPad and iPhones.

Participants have to register their interest for this workshop in advance by emailing:

[wiebke.finkler@otago.ac.nz](mailto:wiebke.finkler@otago.ac.nz)

# SIANA FITZJOHN

When & Where: [H8 1:45pm Friday 6 April ARCH4](#)  
Title: **Activism, Science, and the Infinite Game**  
Format: Show, tell and talk  
Theme: Stories  
Area of interest: Investigating science communication practices  
Author: **Siana Fitzjohn, *University of Otago, NZ***

The global cocktail of environmental crises has created plenty of work for environmental scientists and activists alike. Both groups are caught in a game to affect our relationship with ecosystems—how we know them, and how we live within them. Everyone plays the games differently. Environmental activists play games to affect policy, close mines and change minds. Environmental scientists play games to uncover shifting patterns of the biosphere. In socio-environmental conflicts, the games of activists and scientists overlap. My research explores the relationship between science and activism, and how each affects the games of the other. While scientific narratives remain the dominant way of framing and explaining issues like climate change, our environmental behaviour is driven by systemic inequality. ‘Systems’ of inequality can be hard to see, because they are *how* we see. They are buried in our ways of being and interacting with one another. Communications about environmental change can reinforce unjust systems, or resist them. Scientific narratives make elements of environmental conflicts visible, but they keep others invisible—this has implications for epistemic (in)justice. While science and activism each help and hinder the finite games of the other, they both affect our play in the infinite games. The games for social and environmental justice. The aim of the games is to keep the games going.

# JEAN FLETCHER

When & Where: [E6 2:00pm Thursday 5 April ARCH1](#)  
Title: **The role of story in transitioning to low carbon travel**  
Format: Individual paper  
Theme: Stories  
Area of interest: Building a theoretical basis for science communication  
Author: **Jean Fletcher**, *University of Otago, NZ*  
Co-author(s): James Higham, *University of Otago*  
Nancy Longnecker, *University of Otago*

Mitigating climate will require systemwide behavioural change. Story may be a useful tool for engaging individuals in climate change mitigation as they can depict distant futures, inspire emotional reactions, create empathy, model ideal behaviour, reinforce social norms, teach moral values and persuade. This study explored how story may be used to change expectations of future travel amongst individuals with high levels of climate change concern. Future travel was selected as an avenue to explore climate change mitigation because daily commuting and international travel behaviours will need to change in order to meet the mitigation targets set by The Paris Agreement.

At the start of 2016, 350 participants were asked to read either a short story or a textbook-styled text set in the year 2050. Following the intervention participants in both groups were more likely to change the way they described travel in 2050 to be more consistent with the information presented in the texts. However, follow-up interviews 18 months later suggest the texts were unlikely to directly result in behaviour changes. Nonetheless, our findings suggest story may be useful as a tool for getting people to start thinking about the issue of transitioning to more sustainable travel. It is also a useful tool for inspiring self-reflection and acting as a starting point for discussion. Implications of this research will be discussed.

# RENATA FONTANETTO

When & Where: [E7 2:30pm Thursday 5 April ARCH2](#)

Title: **Science in the Brazilian magazine piauí: who writes the story also has a story**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Renata Fontanetto**, *Museu da Vida, Fundação Oswaldo Cruz, Brazil*

Co-author(s): Luis Amorim, *Museu da Vida/ Casa de Oswaldo Cruz/Fundação Oswaldo Cruz*  
Marina Ramalho, *Museu da Vida/ Casa de Oswaldo Cruz/Fundação Oswaldo Cruz*

Created in 2006, piauí (a monthly magazine) is the most important of the few representatives in Brazil of the literary journalism genre. Science is one of the topics that receives attention within the magazine. Studies on media coverage of science have raised recurrent criticisms, such as: a tendency of overreaction about the results of a research; overemphasis on a positive view of science; stereotyping of scientists' image, lack of different sources and specialists, little attention given to the social construction of science, as well as other frames like controversy. By its turn, literary journalism is known for investing in long-form narratives, character detailing, contextualizing facts, describing scenes and several other resources (Wolfe, 2005; Pena, 2006). Therefore, by studying piauí's case, we aimed to understand if literary journalism could somehow tackle some science journalism's issues. Beyond a content analysis done with 43 science articles, we interviewed one of the founders of piauí, João Moreira Salles (who writes science stories for piauí and who won one of the most important brazilian prizes in journalism for a math article), and the science journalist of the magazine Bernardo Esteves. In the interview with Salles, we could notice that he is a really enthusiast of science, looking at it with curiosity but also with a cheer-leader approach. Esteves, by his turn, has a big background in science communication and science writing. In his words, he considers himself a Bruno Latour follower, questioning science and its truths. Our analysis of the published content and the interviews indicate that their own opinions as writers and journalists shape the way they will tell the story. During our presentation at PCST, we will present some fragments of the interviews, our considerations and some results from the content analysis.

# CARLOS GARCÍA

When & Where: [G6 11:15am Friday 6 April ARCH1](#)

Title: **The communication of science and technology as a tool for social inclusion. Analysis of cases in indigenous communities in Mexico**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Carlos García**, *UNAM, Mexico*

Science and technology are public goods that can and should be used to increase the social well-being of people; and to resolve economic, social, cultural, environmental and resource-preservation problems in regional, national and global issues. This paper will describe the development and implementation of a model of intercultural communication of Science, Technology and Innovation (CTI), in culturally diverse contexts, specifically in indigenous communities of Oaxaca and Michoacán, Mexico, which aims to promote equal knowledge and multicultural learning by establishing more just social relations between the different communities of the country's societies and the nation as a whole, especially the indigenous communities. The recognition and progressive development of these principles and, in general, of specific cultures depends on the ability to dialogue and learn from other cultures and knowledge (Velasco, 2006). It also proposes that knowledge is generated through social networks of innovation, which includes: a) mechanisms to ensure that knowledge is socially used to meet demands critically analyzed by the different groups involved and by means acceptable from the point of view of those who are will benefit; and b) mechanisms and procedures to ensure the participation of those with problems, from conceptualization and formulation to their solution (Olivé, 2008).

In this way, the paper is structured in three parts. In the first, an analysis of communication models of science and technology is carried out. The second part describes the epistemic and methodological approaches of the proposal of an intercultural communication model of science and technology. And finally in the third part, the case analyzes are presented in the indigenous communities in Mexico.

# EREZ GARTY

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)  
Title: **S-Factor - creative ways to communicate science**  
Format: Show, tell and talk  
Theme: Science  
Area of interest: Applying science communication research to practice  
Author: **Erez Garty**, *Davidson Institute of Science Education, Israel*  
Co-author(s): Oshrit Navon  
Revital Ahronov

TV reality contests are not only an efficient way to get high rating they are also a good way to connect people to science. We have seen numerous YouTube channels dedicated to expressing science through music, dance and comedy and decided to try and create our own X-Factor style science talent show for participants from the academy and from different fields of the art. In this contest we looked for nominees from universities, art schools, science excellence programs and followers of science Facebook pages. To those who wanted we offered scientific mentoring and screened the best 3 nominees who excelled in creativity, science accuracy and the WOW factor. The competition will take place in our annual "Connecting people to science" on December 17th (after the date of submission of this abstract) and the best show will win a small scholarship, an option to produce a video using our studio and staff and hopefully also a chance to appear on TV. During this talk I will address the process, show selected parts from the auditions and the competition (with translation to English) and the results of the competition (radio/TV interviews, video clip etc.).

# EREZ GARTY

When & Where: 389 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Increase science reporting in the media in three easy steps**

Format: Visual talk

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Erez Garty**, *Davidson Institute of Science Education, Israel*

Co-author(s): Naama Bar-On  
Merav Dvori

One of the biggest challenges in science communications is reaching the public. Some people go to scientific activities, visit science museums and research centers or subscribe to a popular science journals. Reaching and connecting the rest of the people to science, however, is quite a challenge. At the Davidson Institute of Science Education, we have established a department that managed within two years to revolutionize the Israeli science communication market, publishing scientific items written by scientists and edited by journalists every day in all platforms – Most of Israeli major news websites, TV (talk shows, children’s channel, the sports channel etc.) radio (a daily science radio show) and the social networks. Several organizations followed our lead and started publishing scientific items on the media as well. The result is an explosion of science content reaching almost every household In Israel through the TV set, radio, computer or smartphone. In this video we will describe how this revolution was done, what were our challenges and how we overcame them and present data about how people react to our science content outside of its traditional place.

# EREZ GARTY

When & Where: [D10 10:45am Thursday 5 April SDAV6](#)

Title: **A scientific meal in 3 dishes**

Format: Workshop

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Erez Garty**, *Davidson Institute of Science Education, Israel*

Food is one of the topics almost anyone can relate to because, well, we all eat. The amount of science in food products is enormous, from the chemistry of baking, through the biotechnology of cheese and wine, nutrition, the effect of chocolate on the brain and of course the many myths of diets. At the Davidson Institute of Science Education we have developed a scientific meal where every dish has a scientific meaning. The first dish deals in the chemistry of food, the second dish in ecology and dilemmas of feeding the growing population of the world and the dessert in about how our food makes us feel. In this workshop I will present the three-course meal (virtually) and discuss the many aspects of each dish. This workshop was already practiced on teachers, students and chefs from the Confrérie de la Chaîne des Rôtisseurs and we are developing a MOOC these days. The workshop will include cool anecdotes, discussions, demonstrations and of course some samples for tasting. It is recommended to not to come hungry to this workshop.

# TOSS GASCOIGNE

When & Where: [G4 10:45am Friday 6 April SDAV2](#)

Title: **Research meets practice: outcomes of the Bellagio meeting**

Format: Roundtable discussion

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Toss Gascoigne**, *Australian National University, Australia*

Co-author(s): Michelle Riedlinger, *University of the Fraser Valley*  
Massimiano Bucchi, *Università di Trento*  
Maarten van de Sanden, *Delft University of Technology*  
Peter Broks, *Rhine-Waal University*

In November this year, 22 international experts participated in an intensive 3-day conference at the Rockefeller Foundation's Centre at Bellagio, Italy. After a period of rapid expansion, science communication has arrived at something of a crossroads. Where to next? The aim of the conference was to provide a fresh focus. How can researchers and practitioners work more closely and effectively, with a greater appreciation for the problems that both face?

Two weeks earlier, Massimiano Bucchi had convened a meeting in Trento with a similarly-ambitious agenda. He invited leading scholars to imagine and reflect upon the future scenarios of Science in Society, discussing the main trends and challenges for research, publishing, science communication and public engagement.

This roundtable will hear a lively conversation from 4 people involved in the meetings. Did they discover solutions? What problems were identified?

Science communicators deal with the practice and the theory of engaging governments, decision-makers and various publics in using, applying and generating scientific knowledge. How can the various publics be engaged? What are the most effective ways to get them interested and involved in the new ideas?

There is also a growing challenge of public resistance to experts and their advice. We live in a world where 'alternative facts' and confirmation bias may determine the direction of public discourse and policy actions. Discussions of post-truth and quality of science communication are often, more or less explicitly, coupled with speculations about declining trust in science per se, mistrust of scientists and their expertise, and even anti-science attitudes.

How then should science communicators act? What strategies should they employ to encourage rational consideration of significant issues, leading to appropriate policy responses?

# TOSS GASCOIGNE

When & Where: [4:45pm Wednesday 4 April St David Lecture Theatre](#)  
Title: **Two cultures: the musical**  
Format: Performance  
Theme: Society  
Area of interest: Building a theoretical basis for science communication  
Author: **Toss Gascoigne**, *Australian National University, Australia*  
Co-author(s): Jenni Metcalfe, *Australian National University*  
Craig Cormick  
Phil Dooley

The proposal is for a dramatic presentation centred on CP Snow's *Two Cultures*.

On May 7 1959, Snow delivered the Rede Lecture at Cambridge University. Snow said that society was divided in two parts, those educated in the arts and humanities, and those from science and technology. The two sides could not communicate and this had serious implications for society.

The proposal for Dunedin is a theatrical examination of this controversy. Is there a wall between the two cultures? Can people talk productively across this barrier, or is it the source of confusion, uncertainty and poor policy? Is science communication an attempt to patch over these difficulties, and can it succeed?

The play delighted the audience when it premiered at the PCST Conference in Istanbul. Now it has been revised and extended, with new character development and songs added, so it becomes *Two Cultures: the Musical!*

# MICHAEL GASTROW

When & Where: [H2 1:45pm Friday 6 April SDAV3](#)

Title: **Exploring the science-society interface in South Africa**

Format: Grouped paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Michael Gastrow**, *Human Sciences Research Council, South Africa*

Co-author(s): Anne Dijkstra, *University of Twente*  
Janice Limson, *Rhodes University*  
Lars Guenther, *University of Stellenbosch*

South Africa is a unique laboratory for the study of the science-society interface: an upper-middle-income country with the second-largest economy in Africa, characterised by a multi-ethnic society and high levels of poverty, unemployment, and inequality. The performance of advanced science at the apex levels of national institutions, for example in the domains of astronomy and biotechnology, is juxtaposed against major skills misalignments and cultural complexities in the public relationship with science. Our panel will explore aspects of the science-society relationship in South Africa through a variety of theoretical and empirical approaches, drawing on both international and local perspectives.

Our first focus area will reflect on the South African science-society relationship through the conceptual lens of 'responsible research and innovation' (RRI). We will present a case study analysis of responsible innovation RRI in South Africa, emerging from recent research of the NUCLEUS project. The second focus will be on a big science project, the Square Kilometre Array (SKA) telescope. We will reflect on recent research into the organisation's engagement with local communities, representations of the SKA in the national media, and public perceptions of the project. The third focus area will be on biotechnology and society, from a practitioner's point of view, reflecting on the complexities of developing new and socially appropriate technologies, and engaging with the South African public to diffuse these technologies. Finally, we will present an analysis of perceptions of controversial scientific fields (such as, nuclear energy, fracking, and biotechnology) for South African 'born-frees' - South Africans born since 1994, when Apartheid ended and democracy was established.

Together, these perspectives will stimulate a discussion about the science-society relationship in the South African context, and what lessons we can contribute to both South Africa and global debates.

Proposals from the co-authors of this presentation:

**Responsible innovation in South Africa: Meeting the needs of society** Anne Dijkstra, *University of Twente*

Science showing responsibility towards society by meeting the needs of society is key in current European policy making. Under the label of Responsible Research and Innovation (RRI) EU projects have been and will be funded to study as well as to stimulate responsible science-society relationships. In the NUCLEUS project, amongst others, a comparative case study was conducted for the case of South Africa. In a multi-method approach a broader cultural, international and enriched perspective of RRI was aimed for. The case study consisted of both an intensive literature study as well as semi-structured interviews. In this paper findings will be presented that provide more insight in what contributes to concepts, policies and practices of responsible research and innovation in South Africa. Notable examples will be given, as well as barriers and challenges will be discussed. First, findings show that at the conceptual level, the notion of RRI as such is quite new in the South African context, however, the ideas behind this concept are not. Many efforts under a different conceptual framing can be seen as showing responsibility towards society. Second, policies, e.g. for science education, are found to be responsive to the long-term needs of society but encounter challenges regarding budget and tackling equality and equal access to universities. Finally, at the institutional as well as individual level large efforts are dedicated to science education and communication. Still, reaching for example rural communities is challenging. Stimulating and continuing support for researchers is wanted.

**Biotechnology and RRI Exploring models at the science and society interface** Janice Limson, *Rhodes University*

In South Africa, Biotechnology is billed as a field of study that has strong potential for socio-economic impact in areas of water, health, energy and food. Within the Higher Education Institution (HEI) space it is viewed as a field of scientific research most likely to result in products and new processes. Much emphasis has been placed on the funding of both the public understanding of biotechnology and on biotechnology innovation over 15 years. In both of these nationally driven programmes, the interface between the scientist and society has largely been situated within a deficit model of communication. Direct engagement between society and the scientists in inclusive models of innovation have not yet been explored. In the HEI space internationally and certainly in South Africa biotechnology training does not make provision for engagement between scientists and the public with respect to society's perspectives or needs related to research in the field. The Responsible Research and Innovation (RRI) concept may be a model that could help unlock opportunities in this applied field of study. In this presentation we explore the RRI model in several case studies in Biotechnology postgraduate research. Examples will include the engagement between scientists and the public around early disease detection during pregnancy and water treatment technology.

The study explores the impact of the engagement on the research itself as well as the impact of the engagement on the students/researchers. We argue that for Biotechnology research, placing society at the beginning of the innovation chain, during HEI research, holds specific benefits for science students and for the outcomes of their research. This approach potentially serves as a bridge between laboratory and technology transfer of research into products for societal benefit, enhancing innovation and the likelihood for the success thereof.

**Exploring born-free South Africans' Attitudes towards scientific controversies** Lars Guenther, *University of Stellenbosch*

Research into public perceptions of science and technology has often focussed on scientific controversies (such as biotechnology or fracking), in order to inform policy decisions or to develop better communication strategies (e.g., Gaskell et al. 1999; Ho, Brossard, & Scheufele 2008). Recent trends in this field of research acknowledge that the general public consists of various social segments that have different attitudes towards scientific controversies (e.g., Bauer, 2012); among others, the age cohort of a study participant seems to affect perceptions of controversial scientific fields (Bauer, Petkova, & Boyadjieva 2000). While there is some data available for South Africa (e.g., Gastrow et al., 2016), the present study is the first to compare perceptions of different controversial scientific fields for a unique South African public: so-called born-frees. Born-frees are South Africans born since 1994, when Apartheid ended and democracy was established. Hence, the current study investigated born-free South Africans' attitudes and support for public funding of science for different controversial scientific fields (evolution, nuclear energy, fracking, medical use of marijuana, GM food, climate change, traditional healing methods, and mobile phone usage), with a special focus on which influencing factors shape these perceptions in each of these different fields. For that purpose, in the present study, 310 born-free South Africans were surveyed, using a quota plan to achieve a representative sample. The findings highlight that most born-free South Africans support the public funding of different controversial scientific fields tested in this study. However, they are more positive about climate change and nuclear energy research, and more undecided in the case of fracking and evolution. The study also shows that for each of the controversial scientific fields, unique influencing factors seem to shape perceptions, and the often-stated correlation between positive attitudes and support for public funding does not hold for all controversial issues.

# ANDREA GEIPEL

When & Where: [B6 2:15pm Wednesday 4 April ARCH1](#)

Title: **Platform politics vs. content: how we communicate science on YouTube**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Andrea Geipel**, *Munich Center for Technology in Society (TUM), Germany*

As leading social video platform, YouTube is especially known for music videos, gaming content or how-to-tutorials. However, since 2015, the number of channels in the category 'Science' went up from one Mio to 15 Mio displaying the growing number of interest in this niche topic. Prominent YouTube channels, like Vsauce, AsapSCIENCE or kurzgesagt (in a nutshell), present their videos to 3 to 12 Mio subscribers with topics like the fermi paradox or the napkin ring problem. Nevertheless, only a small number of studies give insight in how and to what extent YouTube as a platform influences science communication.

Using the example of five 'Science Channels', I argue that producers have to adapt to the platform politics of YouTube to become visible, create a community and gain success. Based on interviews, platform and video analysis as well as ethnographic methods I work out how these platform specific rules lead to a loss of relevance of the specific scientific content presented. Becoming visible is predominantly achieved by following the logics of the algorithm, that is deciding which videos are recommended to users. In addition, producers need to perform authentic and therefore coherent to their own brand and in contrast to other video producers and build networks with others.

While in newspapers, press releases and TV shows the accuracy of the content together with the reputation of the presenter wins the audience's attention and solace, YouTube in contrast, rewards authentic performance, entertainment and adherence to algorithmic logics of gaining visibility. In the end, this changes the public image of science as well as the way science will be communicated in the future.

# ANDREA GEIPEL

When & Where: [G9 10:45am Friday 6 April ARCH4](#)

Title: **Online news from the past – ancient Greece on YouTube and the seemingly revival of a holistic academic education**

Format: Show, tell and talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Andrea Geipel**, *Munich Center for Technology in Society (TUM), Germany*

Co-author(s): *Jesus Muñoz Morcillo, Karlsruhe Institute of Technology*

Popular science web videos are short, understandable and entertaining films that are explicitly been produced for the internet. This new medium comprises a great variety of producers, themes and aesthetics that are changing the production and dissemination of knowledge and the way people get in touch with it. Whenever we speak about science web videos most people think of edutainment video content on STEM topics, i.e. (Natural) Sciences, Technology, Engineering and Mathematics. The Humanities do not seem to belong to this definition, even if the research methods in the broad field of the Humanities are scientific as well: Philosophers, philologists, anthropologists, sociologists, historians, or art theorists also use hypotheses and verification methods for the production of new knowledge, which often relays on complex interdisciplinary approaches. Otherwise, we would not be able to understand the influence of platonic ideas through the ages, the changing societal function of art or the origins of today political and war conflicts, so as to mention a couple of themes. Against this background, it is very comforting to see that some YouTubers are contributing to the dissemination of general and specific knowledge on the classical antiquity, which constitutes the fundament of western civilization. In the light of this moderate but considerable trend, some questions arise. Is the YouTube content, related to Ancient Greece, reliable at all? Which are the most popular topics? And, is there a difference in the way of explaining topics and knowledge of the classical antiquity and of the STEM disciplines? In order to address these questions, we have analyzed 30 popular YouTube videos about Ancient Greece comparing the results with the main characteristics of STEM-related online videos as described in recent research. The interim results indicate that, compared to popular YouTube videos on STEM subjects, antiquity is usually presented as an area for general education rather than as a research field.

# ALEXANDER GERBER

When & Where: [C6 4:15pm Wednesday 4 April ARCH1](#)

Title: **PCST training across the world: conclusions from a curriculum analysis**

Format: Individual paper

Theme: Science

Area of interest: Teaching science communication

Author: **Alexander Gerber**, *INSCICO Rhine-Waal University, Germany*

Co-author(s): Allison Hadden, *Rhine-Waal University*

The proposed Individual Paper intends to continue a discussion from a panel session at PCST 2016, hosted by the same author, about concepts and contents of PCST training programmes around the world, which have changed alongside the seismic shifts in our profession.

In the meantime, an intellectual content analysis has been conducted by our department which allows us to typologise dozens of programmes as to how they intend to prepare the next generation of science communicators for their tasks. Based on these empirical results, which are probably the first-ever evidence-base of the global training landscape, the workshop is expected to discuss the lessons we have learned over the years from offering Bachelors and Masters's degrees or PGDs in different countries and institutional contexts, be it full- or part-time, on campus, entirely virtual or blended? What are the obstacles in updating curricula? Which methodological skill-set will professionals need?

The empirical analysis is being incorporated into a global search engine at the moment, hosted at Rhine-Waal University. Young people will soon be able to identify the programme which fits best to their needs: <http://www.scicommfinder.info/map-2> (please note that this early beta version does not include the new data yet). It is furthermore planned for January / February 2018 to produce video interviews with course leaders from around the world to showcase the variety of approaches and explain the differences between courses. Such statements could effectively be used in the proposed conference session to represent those institutions which cannot be present in Dunedin.

# LUKAS GIERTH

When & Where: [B6 2:45pm Wednesday 4 April ARCH1](#)

Title: **When motivated reasoning is reasonable: being vigilant about dubious science claims in online articles**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Lukas Gierth**, *University of Muenster, Germany*

Co-author(s): Rainer Bromme, *University of Muenster*

Amidst long standing socio-scientific controversies regarding topics such as vaccination and climate change, lay people are required to make up their mind about scientific phenomena on a regular basis. However, most people lack the necessary expertise to evaluate scientific claims on face value and instead gravitate towards the supposed evidence more in line with their own preconceived notions about these scientific topics. This form of self-serving reasoning is also known as motivated reasoning and could lead people to misweigh, misunderstand or misinterpret scientific information. However, motivated reasoning could also result in vigilance towards deception and thus improve judgment of the trustworthiness and pertinence of experts.

For example, one might not be able to scientifically verify an expert's claim about the health impacts of sugar, but if this expert is funded by Coca-Cola, one would be hesitant to believe him or her. Further, one might also be vigilant against pro-sugar claims made by this expert and thus evaluate them more closely. In this case, the motivation to not be deceived by a conflicted source would increase scrutiny towards the claim, thereby flipping the notion of motivated reasoning being a hindrance to science communication on its head – as it would lead to more and not less sophisticated reasoning.

To address these notions, we performed a between-subjects experiment. Participants were presented with an online science article dealing with the effects of sugar consumption on short-term memory. We varied the source of funding to introduce a perceived conflict of interest, as well as the claim made by the expert source resulting in three experimental conditions. Outcome variables included a trustworthiness measure, assessing perceived integrity, benevolence and expertise, and a numerical reasoning measure. Since data-collection is ongoing (current  $N=116$ , projected  $N=175$ ), we cannot report results at this moment.

# LUKAS GIERTH

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)

Title: **Stylistic elements of YouTube videos: what do users expect of science communicators?**

Format: Idea in progress

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Lukas Gierth**, *University of Muenster, Germany*

The rise of social media as a dominant information source has given new avenues for science communicators to deliver scientific information to the general audience. Compared to Twitter, Facebook and the blogosphere, YouTube has a distinct and unique format of generally short video clips. While the scientific style of communication has always removed from how lay people communicate, this disconnect becomes potentially more pronounced when entirely new platforms, such as YouTube, introduce their own stylistic elements into communication.

YouTube videos tend to be short, informal and often try to move at a quick pace, utilizing techniques such as jump cuts and easily understandable infographics, such as brightly colored circles and arrows. Nevertheless, these videos can be informative and there are several large YouTube channels focused specifically on scientific information, such as VSauce and Seeker. However, these channels are usually led by social media personalities, not researchers. It stands to question how the general audience would perceive the use of the previously described stylistic elements by researchers. Are researchers and formal science communicators expected to adhere to a more formal style, even on YouTube? Additionally, visual expression by YouTubers is not limited to videos; the thumbnails of videos are often carefully designed and can inform the decision of clicking on a video, as well as raise certain expectations users have towards the contents of a video.

To investigate these questions, I propose an experimental paradigm in which participants use a simulated, externally valid YouTube interface to research scientific information, choose videos they deem appropriate and then watch and rate these videos on relevant outcome variables, such as trustworthiness and acceptance of the scientific message. By varying the degree of YouTube-typical stylistic elements in thumbnail and video design, one could analyze these elements' main effects individually, as well as their interaction with each other.

# HELENA GONZÁLEZ BURÓN

When & Where: [E10 1:45pm Thursday 5 April SDAV6](#)  
Title: **Participatory science communication to rise scientific vocations**  
Format: Workshop  
Theme: Society  
Area of interest: Investigating science communication practices  
Author: **Helena González Burón**, *Big Van Science, Spain*  
Co-author(s): Oriol Marimon Garrido, *Big Van Science*

In the PERFORM-H2020 project, we have investigated the use of storytelling to raise scientific vocations in secondary school students through the use of three different drama-based activities: Stand-Up Comedy in Spain, Improvisation-Theatre in France and Science-Busking in the UK.

Big Van Science ([bigvanscience.com](http://bigvanscience.com)) have designed and implemented an interactive and self-mobilization participatory process (a key element to face directly the public engagement required for RRI) with secondary school students, their teachers and early career researchers with the aim of developing Science Communication Activities based on Scenic Arts. Thanks to the direct interaction generated between all of them during the designed participatory workshops, secondary school students address, in an interactive way based on scenic arts, the EU Societal Challenges and the values embedded in the Responsible Research and Innovation (RRI) such as Critical thinking and self-reflection, ethics in the research process, gender issues (leadership, entrepreneurship, digital skills) and performing skills, among others.

Through the process, the secondary school students have been actively involved in several participatory workshops to develop their own Scientific Stand-Up Comedy Shows in Spain, Improv-Shows in France and Busking activities in the UK, that have been delivered in their own schools. Thus, secondary school students have become agents to engage and to motivate other youngsters to approach STEM, becoming the new generation of Science Communicators through theater and stories.

In this workshop, Big Van Science will share the protocols of the participatory process in order to allow other Science Communicators, Science Educators, Teachers and Researchers to implement the PERFORM participatory process, enabling the generation of new groups of Secondary School Students Science Communicators.

# HELENA GONZÁLEZ BURÓN

When & Where: [4:45pm Wednesday 4 April SDAV6](#)  
Title: **Stand-up comedy to rise scientific vocations**  
Format: Performance  
Theme: Stories  
Area of interest: Applying science communication research to practice  
Author: **Helena González Burón**, *Big Van Science, Spain*  
Co-author(s): Oriol Marimon Garrido, *Big Van Science*

Young people often have a narrow concept of science and this can limit their future engagement with the subject. Many also struggle to identify, on a cultural level, with science and hence do not aspire to scientific careers. This lack of aspiration is particularly seen among girls and those from low socio-economic backgrounds. Young people do have interest in science, particularly when listening to stories that include phenomena related to everyday life, and in the way that science helps to make sense of the world.

The PERFORM H2020 project aims to develop young people's conceptions and awareness of science, scientists and scientific research. But it looks to move beyond merely increasing scientific and technological knowledge to developing a reflective knowing of science in which young people can consider its purposes, values, and how it becomes reality. After series of exploratory workshops developed in secondary schools at Barcelona, Paris, and Bristol, Big Van Science ([bigvanscience.com](http://bigvanscience.com)) developed a useful guideline to include in science shows perceptions, constraints, and ideas that teenagers have about science and its related values. The performance presented here incorporates some of these guidelines in a Stand-Up Comedy show that has been delivered in front of more than 20.000 students with very positive results in its capacity to change perceptions about science and scientists' stereotypes.

<http://www.perform-research.eu>

# BERNHARD GOODWIN

When & Where: [C8 4:15pm Wednesday 4 April ARCH3](#)  
Title: **How do recipients interact with data journalism?**  
Format: Individual paper  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Bernhard Goodwin**, *Ludwig-Maximilians-Universität, Germany*

Data journalism is an emerging field in journalism. The data presented is often from the domain of social sciences - e.g. election results, crime, conflicts. economic development. Especially in digital media, there are interactive presentations of data journalism. The present study examines how audiences interact with the given presentation of data, what principles they are following researching the data and what gratifications the results of such reception of social science communication are.

As an example for data journalism reports about migration are used because they offer different kinds of information to the recipients: (1) spatial information about places of origin, destinations and routes, (2) information about numbers of people in different categories, e.g. nationalities, legal status, (3) information of dynamics over time, (4) information about incidents and their frequencies, e.g. crimes against or by migrants.

A mixed-methods-approach is used to research the question how recipients appropriate the data: the interaction of recipients is observed with screen-capturing software, afterwards recipients are interviewed about their individual experience, strategies and gratifications. Additionally they are commenting on their own behaviour, while reviewing the observation (talk aloud protocol).

Different strategies can be devised: (1) following a given narrative in accompanying text, (2) looking for data points with close proximity to self, e.g. hometown, holiday destination, incidents one has witnessed, (3) searching for extreme values, (4) systematically browsing the presentation, (5) randomly browsing the presentation. Different gratification can be found: (1) feeling informed about the situation - though the amount of presented data can have the opposite effect; (2) enjoying aesthetics and mechanics of the interactive presentation.

# BARBARA GORMLEY

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)

Title: **Reviewing a case for the deficit model of communication during crisis pandemic communications**

Format: Idea in progress

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Barbara Gormley**, *Dublin City University, Ireland*

The facilitation of media communication is a fundamental and strategic necessity during pandemic risk situations as public health agencies rely on news media to relay accurate and important health messages for the containment and control of the disease and assurances on possible outcomes. Public interest and demand for accurate information during risk situations acutely increases, as people necessitate clear and timely answers from expert sources to critical and often complex questions, to confine immediate fears and acquire instruction. The ability of response officials to communicate in a way that connects with those listening can crucially - reduce morbidity and mortality. Research shows that during a health emergency when officials are attempting to galvanize the population to take a positive action or refrain from a harmful act, an open style of communication that secures the public's trust is most effective. Numerous studies indicate that trust is a vital component of any crisis strategy, as public suspicions in general of scientific experts and governments is increasing. Current research surrounding public engagement of science-related issues and trust in scientific communications suggest, a paradigm shift from the Deficit Model of Communication where lack of understanding and public skepticism arises from a knowledge deficit and communications that focus on improving the transfer of accurate information from experts to non-experts to fill this deficit, to a more stakeholder inclusive approach where assessing scientific risk is based on many factors as well as the scientific 'facts'.

# BARBARA GORMLEY

When & Where: [A6 11:30am Wednesday 4 April ARCH1](#)

Title: **A critical review of pre-eminent vaccine compliance and risk communication theorists**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Barbara Gormley**, *Dublin City University, Ireland*

The facilitation of media communication is a fundamental necessity during any risk situation, such as a pandemic, as public health agencies rely on news media to relay accurate and important health messages for the containment and control of the disease, and assurances on possible outcomes. Public interest and demand for accurate information during risk situations acutely increases as people necessitate clear and timely answers to important and often complex questions from expert sources, in order to confine immediate fears and acquire instruction. During public health emergencies, communications strategies are established and implemented to safeguard the population from existing or potential threats. Current research indicates that no policy for vaccine distribution is likely to succeed until public fears are addressed. Further, developing a robust public health communication system, that accurately conveys health information, contributes to crisis alleviation created through this fear. These 'crisis' being vaccine shortages and the associated risks of taking the vaccine itself. Studies cite public reluctance to comply with vaccination programmes as stemming from many issues. Media reports linking the MMR vaccine and autism that had no foundation in subsequent scientific research resulted in a low compliance in the US. The perceived health risk was considered higher than obtaining the vaccine for the preventable illnesses. Many anti-vaccination advocacy groups have utilised this balance as a reason to negate vaccination. The success of vaccine programmes is another reason cited for low compliance as individuals do not consider the risk of an illness until they contract it themselves. Pre-pandemic preparedness, effective risk communication, and media cooperation are all fundamentals of effective public health authority vaccine compliance strategies.

# WILL GRANT

When & Where: [G8 11:45am Friday 6 April ARCH3](#)

Title: **Tracking trends in demand for Australia's research workforce**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Will Grant**, *Australian National University, Australia*

Co-author(s): Inger Mewburn, *ANU*  
Hanna Suominen, *ANU & Data61/CSIRO*

PhD students and graduates are perhaps the most potent mechanism for enabling collaboration, communication and knowledge transfer between universities and industry. Yet Australia stands out amongst developed countries for the relative disinterest non-academic employers display towards PhD graduates. Australia has, as former Chief Scientist Professor Chubb noted, “one of the lowest numbers of researchers in business enterprises in developed nations.”

This is a critical issue for contemporary Australian science communication. If we are not connecting our researchers with the places in industry where they can have enormous impact - and if we are not demonstrating to Australian industry that these researchers can add enormous value to their bottom line - then we have failed in a core part of our duty.

As Chief Scientist, Professor Chubb asked if the reason for this gap was a cultural problem amongst Australian industry, or a failing in our Phd training process. For him it was both.

This paper reports on two phases of a project designed to help address both the problematic cultural perceptions and the training of our research workforce.

The first element of this project has been to map the non-academic demand for Australia’s research workforce using a machine learning-based natural language processing (ML-NLP) algorithm that can ‘read’ job advertisements and sort them according to research skills intensity. This mapping has revealed a range of unexpected findings, including a much higher demand for Australia’s research workforce than expected, yet a demand framed in terms that speak poorly to the workers desired.

Following on from this initial mapping, we are now in the production phases of a web implementation designed to better match Australia’s Phd candidate cohort with ‘dream jobs’ outside of academia.

# AMANDA GRIFFKIN

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)  
Title: **Adventures in aerial dance and physics: how we made Flying Atoms**  
Format: Show, tell and talk  
Theme: Stories  
Area of interest: Investigating science communication practices  
Author: **Amanda Griffkin, Powys Dance, Wales**

Driven by a desire to engage girls with physical sciences in Spring 2016 we made Flying Atoms, a performance for 7 to 11 year olds marrying aerial dance and physics. The show toured 20 primary schools in Powys, Wales and this year we are taking it to the Edinburgh Fringe Festival, followed by a tour in England with partners including Imperial College London, St Mary's University, University of Surrey, Science Oxford and Norwich Science Festival.

The show is multi-disciplinary in approach, combining dance, theatre, experiments, animation, stunning design and soundtrack. Having no background in science, how did we approach making the show? And how has it struck a cord with academic partners involved in the field of science communication?

St Mary's University say, "The show is unique in its genre and is an excellent way to engage young students with the not always easy concepts of physics using a multi-disciplinary and original approach". Powys Dance Director Amanda Griffkin will describe the company's process and share learning around developing innovative arts projects with science themes.

# SALLY GROSVENOR

When & Where: [D6 11:15am Thursday 5 April ARCH2](#)

Title: **How the lived experience is shaping dementia research**

Format: Individual paper

Theme: Stories

Area of interest: Influencing policies through science communication

Author: **Sally Grosvenor**, *NHMRC Cognitive Decline Partnership Centre, Australia*

Co-author(s): Jennifer Thompson, *University of Sydney, Cognitive Decline Partnership Centre*  
Meera Agar, *University of Technology Sydney*  
Kate Laver, *Flinders University, South Australia*  
Louise Heuzenroeder, *Dementia Australia*  
Susan Kurrle, *University of Sydney, Cognitive Decline Partnership Centre*

There were an estimated 46 million people living with dementia worldwide in 2015. This number is predicted to double every 20 years so that by 2050 over 130 million people will have dementia.

Governments and drug development companies around the world are channeling research dollars to find a cure for dementia however to date there has been little success. Improving the quality of life of the person living with dementia and their carers through improved quality of care in the hospital, community, and residential aged-care setting is proving to be one area where we can have a positive change.

The NHMRC Cognitive Decline Partnership Centre (CDPC) acknowledges that innovative research programs in this complex care environment are required. The voice of the person living with dementia can have real impact on how this research is driven and communicated.

Here we discuss how involving consumers (people with dementia and their care partners) in research has altered the way the CDPC communicates its findings. Consumers provide a unique understanding of effective dissemination strategies to maximise consumer and community uptake. Examples of these include addressing areas such as appropriate and inclusive language and the most appropriate formats (online, community seminars, video etc) to disseminate findings.

This presentation will provide examples of how the stories and experiences of people living with dementia have shaped how CDPC research is communicated. Two case studies: the development of the Clinical Practice Guidelines and Principles of Care for People with Dementia and the associated plain language Consumer Companion Guide, and new online resources for Advance Care Planning, will illustrate how this model of co-creation enhances research translation by providing publically accessible information about best practice care for people living with dementia.

# LARS GUENTHER

When & Where: [14 3:30pm Friday 6 April ARCH1](#)

Title: **The Draw-a-scientist test in an African context: comparing students' (stereotypical) images of scientists across university faculties**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Lars Guenther**, *CREST, Stellenbosch University, South Africa*

Co-author(s): Corlia Meyer, *CREST, Stellenbosch University*  
Marina Joubert, *CREST, Stellenbosch University*

The images that people have of science and of scientists are supposed to represent people's perceptions of scientists and their role in society (Fung, 2002; Medina-Jerez, Middleton, & Orihuela-Rabaza, 2011). Although researchers assume that (stereotypical) images that people have of scientists affect science-related career choices (Chambers, 1983; Steinke et al., 2007), very few studies have looked at this in detail. The current study not only adds to the research literature through its African context (so far, there is only one study: Mbajiorgu & Iloputaife, 2001), but also applied the Draw-a-Scientist Test (DAST; Chambers, 1983) to first-year students ( $n = 445$ ) across different faculties at a South African university (cf. Rosenthal, 1993). If the assumption that young people's perceptions of scientists influence their career choice is correct, one would expect differences in the drawings made by students who have opted for different fields of study. The findings show that South African students – in line with the international research literature – use about four stereotypical characteristics when drawing a scientist; a typical scientist, as identified in this study, is a man of uncertain age, who wears eyeglasses and a lab coat, and is surrounded by laboratory equipment. Also in this study, a low number of male students drew female scientists (only one student in this sample), and the majority of female students drew male scientists (see also Chambers, 1983; Medina-Jerez et al., 2011). Social science students drew stereotypical attributes more frequently when compared to students from other faculties, which might be explained by the lower degree of direct contact with scientists that these students have. To discuss this, the study shows that what is needed – also in an African context – is more contact between students and scientists, and contact between students and female role-models in particular (cf. Barman, 1997).

# AKIKO HAMADA-ANO

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)

Title: **The search for effective methods of engaging Pacific Ocean nations for coral reef conservation**

Format: Idea in progress

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Akiko Hamada-Ano**, *Secretariat of the Pacific Regional Environment Programme*

Co-author(s): Elizabeth Vanderburg  
Tiffany Straza

Pacific Ocean Nations are being negatively impacted by the degradation of coral reefs across the globe. 2018 marks the Third International Year of the Reefs. In the Pacific region, a major goal of the campaign will be to engage Pacific Ocean Nations in building upon existing coral reef conservation actions in support of the regional and global targets.

An initial baseline will be established through the assessment of communication products developed in the past two campaigns (1997 and 2008) to create a communication plan that ensures Pacific voices are effectively used in engaging and promoting the goals of the Third International Year of the Reefs. How does one do this with limited resources, across many nations, with multiple languages, traditions and cultures?

The presentation will be a reflection on the process of how the baseline study was conducted and what outcomes were identified leading to the development of an effective communication product.

# SUSAN HAMEL

When & Where: 200 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Outside the box**

Format: Visual talk

Theme: Society

Area of interest: Teaching science communication

Author: **Susan Hamel**, *University of Otago, NZ*

Co-author(s): Lloyd Davis, *University of Otago*  
Jesse Bering, *University of Otago*

The practice of teaching science communication via distance education has not been well-researched although there are many programs offered online. This research investigates selected distance education programmes taught by, or in association with, universities—including MOOCs, professional development courses, standalone papers, and programmes that confer qualifications.

The online education sector has grown rapidly in the last two decades buoyed by the expansion of information and communication technologies. The need for science communication has also grown, driven by rapid advances in the disciplines of genetics, biomedicine, physics, space and information technology. Distance education—with its capacity for accessibility, collaborative learning, asynchronous communication and reflection—represents a powerful tool for teaching science communication to both students and busy professionals. Although online programmes have proliferated in the 21st century, they have not been studied to any significant degree.

Our research began with a comprehensive search of the Internet to determine which programmes and papers were being offered. The programmes chosen for further study met two conditions: they were presented by (or associated with) accredited universities and delivered in the English language. We asked instructors and administrators of the selected programmes to complete a ten-question survey, accessible online through Survey Monkey. Respondents provided nominal and ordinal data about their associated programmes, including the number of instructors, student enrollment, when the course was first offered and the type of qualification offered. These data were collated and combined with details about the programmes to create a snapshot of science communication as it is taught through contemporary distance education.

This snapshot shows that science communication taught by distance education is growing and changing in scope, with papers, programmes and professional development courses choosing to emphasize differing aspects of this discipline. Our results hint at likely best practice, which is the next step in this ongoing research.

# EMMA HANISCH

When & Where: 165 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **The Effects of Photographing Wildlife on Engagement with Biodiversity Issues**

Format: Visual talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Emma Hanisch**, *University of Otago, NZ*

One of the most pressing ecological problems we face is the loss of biodiversity. Biodiversity refers to the variety, abundance, composition, distribution, and interactions of life on Earth, at genetic, species, and ecosystem levels. There are an estimated 8.7-9 million (non-bacteria) species on Earth, many of which have not been identified. But largely thanks to human activity and expansion, we may lose many of those species before we even discover them. If current extinction trends continue, we will face a new mass extinction event (75% of species lost) within 250 years if not sooner.

The first steps for conservation are appreciation for biodiversity, and understanding the problem of biodiversity loss. Conserving biodiversity on a global scale will require mass participation, so the more people who are motivated to protect it, the better. One way to achieve this is to encourage people to develop long-term personal interests in nature, ideally while doing something enjoyable. This is where wildlife photography comes in.

Photography has become an extremely popular hobby recently, thanks to the availability of digital cameras and smartphones, as well as easy photo sharing on social media. When a person photographs something, they become more engaged with it and often want to learn more. This is especially effective when the subject of the photo is an animal, since we easily form powerful emotional connections with animals. Wildlife photography also gives the photographer a reason to spend time out in nature, which on its own allows for the development of deep emotional connections with the environment.

My thesis research indicates that photographing wildlife increases awareness of biodiversity, interest in wildlife, environmental concern, and especially emotional attachment to nature. These in turn are likely to increase the likelihood of engaging in pro-environmental behavior. This is promising for communication practices around biodiversity and conservation.

# KATE HANNAH

When & Where: [D7 11:15am Thursday 5 April ARCH3](#)

Title: **Digital absenting: the impact of digitization on narratives of science communication**

Format: Individual paper

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Kate Hannah**, *Te Pūnaha Matatini*, NZ

Growing digitization of historic and contemporary sources offers new narratives, viewpoints, and perspectives to both history of science and science communication stories – but, increasingly, replicates patterns of marginalisation, leaving out or absenting the contributions, work, and lives of women, people of colour, and under-represented minorities. A recent opinion piece published in *Nature*, ‘Removal of statues of historical figures risks whitewashing history’, provides context for the importance of science-telling to directly address and respond to past and present injustices with regards to the representation of, and discourses within, science and science communication.

A critical contributing factor to this continued absenting of marginalized voices is digitization: stories of women, people of colour, and underrepresented minorities are quite literally harder to find when primarily relying on easily-accessible, already digitized sources. Mitigating against “camouflage intentionally placed” (Rossiter, 1982) requires developing techniques and approaches that notice and highlight acts of exclusion. If “one cannot use the same techniques to study the knowledge of the dominated as É the powerful” (Hill Collins, 1989), then what techniques should we use? Drawing on a review of current sources of information about women inscience in New Zealand history – from published and unpublished sources, including oral history, memoir, organizational records and histories, datasets, participant histories, – and, using both international and local historic and contemporary examples of digital absenting, I explore the impact of digital absence on contemporary science-telling.

Stories – and the power of narrative – are critical aspects of successful science communication. This is part of the Hidden Networks project, in which we seek to develop new theoretical approaches, mitigating against the effects of subjectivity and standpoint that are innately linked to focussing on individual, narrative-based, science story-telling.

# EMMA HARCOURT

When & Where: 226 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Church and the bedroom: the relationship between religious service attendance and information about the emergency contraceptive pills**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Emma Harcourt**, *University of Otago, NZ*

Co-author(s): Jesse Bering, *University of Otago*

This visual presentation consists of a poster illustrating the strong relationship between the frequency of religious service attendance and beliefs and attitudes about the emergency contraceptive pill (ECP). Exposure to factual information about ECPs in an experimental setting had a small but statistically significant effect in changing attitudes towards the medication and its users. However, participants of the experiment who stated they attended religious services more frequently were less likely to be influenced by factual information about ECPs and were the more likely to express negative beliefs and attitudes towards the medication and those who use it, regardless of which exposure group they were randomly assigned to.

I believe that this serves as an interesting example of how personal beliefs alter the way that individuals interact with scientific information and how we as science communicators must adapt our messages to different audiences. The example of religious service attendance and information about the ECP helps to illustrate a fatal flaw in the deficit model: that members of the public are not empty vessels passively receiving information, as pre-existing ideas can significantly alter how receptive the audience is to a particular message or set of facts.

# INEZ HARKER-SCHUCH

When & Where: [B7 2:15pm Wednesday 4 April ARCH2](#)

Title: **Why is early adolescence so pivotal in the climate change communication and education arena?**

Format: Individual paper

Theme: Science

Area of interest: Teaching science communication

Author: **Inez Harker-Schuch**, *The Australian National University, Australia*

Understanding post-normal socio-political problems, such as climate change. Early adolescence presents a unique opportunity for more effective interventions; particularly those of a ‘wicked problem’ nature. This paper explores the characteristics that make young adolescents (12-14 year olds) ideal targets for climate science interventions – and their pivotal role in cultivating public opinion, broadening awareness of the science and leveraging this knowledge to promote climate-friendly policy and governance. This paper examines why this age group is a vital target to foster engagement with climate mitigation and build political momentum toward reducing carbon emissions. We explore the physiological and social characteristics that make young adolescents such ideal targets – and how these characteristics can be utilised to create better communication and education tools, methods and strategies. We anticipate that that this will help educators and communicators ensure climate science communication is tailored to be cost-effective, accurately targeted and appropriately scaled to this key demographic. This work contributes to climate science communication and advances understanding of climate science communication frameworks both for this specific audience and in the broader public arena.

# SUSANNE HECKER

When & Where: [F1 3:30pm Thursday 5 April St David Lecture Theatre](#)

Title: **Citizen science communication – theory and new concepts**

Format: Grouped paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Susanne Hecker**, *Helmholtz Centre for Environmental Research UFZ, Halle-Jena-Leipzig, Germany*

Co-author(s): Bernard Schiele, *University of Quebec at Montreal, Canada*  
Bruce L. Lewenstein, *Cornell University, USA*  
Victoria Martin, *Cornell Lab of Ornithology, Cornell University, USA*  
Rachel Kelly, *Institute for Marine & Antarctic Studies, Hobart, Australia*

*“Citizen science is one of the most dramatic developments in science communication in the last generation.”*

Bruce V. Lewenstein (Lewenstein, 2016)

Citizen science and science communication are both relatively young and highly inter- and transdisciplinary fields of research (Gascoigne et al., 2010; Jordan, Crall, Gray, Phillips, & Mellor, 2015). This symposium is a first cut to explore how the respective underlying concepts intertwine in theory and practice, and brings together researchers of both fields.

Following Lewenstein’s quote, we need to ask: how does citizen science contribute to the dramatic development of science communication? What is new and innovative about it? How does citizen science touch issues like identity, democracy, scientific citizenship or social license? Undeniably, science communication in citizen science has moved from a one-way communication towards a multi-directional exchange (Trench, 2006). But how can we characterise this two-way-exchange?

From a citizen science perspective, we ask: What opportunities does science communication provide for citizen science activities beyond outreach? How can science communication empower all those involved in citizen science for enhanced exchange and reasoning? To what extent does citizen science communication intersect with formal and informal science education? Where does citizen science meet other concepts like e.g. social license? Citizen science and the process of engaging stakeholders and participants both need adequate flexibility, since dialogue and interaction might develop in unforeseen ways and need appropriate translation processes. At the same time, citizen science opens up space for learning, innovation and development.

The aim of this session is to investigate the synthesis and innovative potential of citizen science and science communication. We want to raise issues looking at theory and at best practice of citizen science communication and how we can help enhance dialogue and convergence in both disciplines, so they can continue to cross-fertilise.

Proposals from the co-authors of this presentation:

**Science and public engagement** Bernard Schiele, *Faculty of Communication, University of Quebec at Montreal, Canada*

Public Engagement (PE) refers to a two-way communication between experts (decision makers, scientists....) and laypersons, contrary to the one-way science communication (SC) which has characterized and dominated so far the relations between the scientific community (or its representatives or spokespersons) and the general public. On the one hand, from a practical point of view, PE is all about making decisions on matters that concern a community (such as managing environment, health, risk....) by bringing together a diversity of interacting competencies and interests in order to reach a consensus (through public meetings, expert-citizen panels, public hearings, deliberative forums....). Sometimes the engagement is indirect (public consultations, Internet, discussion groups....). So far three key modes of PE can be accounted for: 1) promoting dialogue : it ranges from information transmission to information exchange or critical dialogue; 2) promoting engagement: it emphasizes deliberative processes between citizens in order to reach a decision - some see in it a renewal of democracy in the form of deliberative democracy -; 3) knowledge coproduction: it brings together amateur volunteers known as citizen scientists and professional scientists on research projects in order to produce new knowledge - this process takes part in the wider transformation of knowledge production which is increasingly object-oriented, and for this reason, transdisciplinary -. This communication will present a critical review of the modes of PE as they are competing with traditional modes of science diffusion. And in doing so, it will discuss the new political role of science at stake including that of science museums.

**Citizen science, science learning, and governance** Bruce L. Lewenstein, *Dep. of Science and Technology Studies, Cornell University, USA*

Not only do citizen science and science communication intersect, but they both also intersect with informal and formal science education. Talking about citizen science gives us an opportunity to think about the intersections of these fields. In particular, to what extent do the differing goals of these different modes yield a better understanding of what science communication can accomplish? For example: Many citizen science projects are designed primarily to produce new technical knowledge; any "educational" outcome is secondary, and is limited to deficit-style knowledge acquisition. Informal science education and formal science education are both organized largely for conveying scientific information, as well as getting students and publics excited about science and motivated to continue science learning. Science communication is often based in deficit

models, though leaders in the field increasingly focus on public engagement and dialogue, highlighting the importance of the scientific community listening to and acting on the concerns of various publics. In some forms of science communication, public engagement and dialogue would ideally lead to reshaped governance of science, with communities acquiring authority to define and produce reliable knowledge. But this circles back to citizen science, for some citizen science projects are also motivated by challenges to the governance of science, with projects created specifically in response to perceived failures of environmental monitoring or technological innovation. This talk will present a conceptual model integrating these multiple modes of interaction and achievement.

**Reaching for broader societal impact with citizen science** Victoria Martin, *Cornell Lab of Ornithology, Cornell University, U.S.A.*

Citizen science has been embraced for the opportunities it presents to engage the public in the participatory model of science communication. The remarkable growth in citizen science practice in recent years has led to a substantial increase in social research on its outcomes. This body of work has shown citizen science experiences can provide many benefits for participants, such as opportunities to learn more about specific topics, and empowering people to take action on environmental issues. There is little doubt that citizen science can be propitious for both science and society. However, the potential for citizen science to engage and communicate science in the wider community - beyond the boundaries of the practice - remains unfulfilled. Many large-scale citizen science projects recruit audiences who are highly educated and are pro-science. In contrast, projects working with underserved communities usually require a higher degree of commitment from all stakeholders to ensure the benefits for participants are realized, and are consequently smaller in scale. These issues of audience type and size raise a question about the ability of citizen science to achieve broad-scale impact on society's understanding and use of new scientific knowledge. This talk will present a conceptual model for thinking about how citizen science can extend its reach and impact beyond current stakeholders and participants. Two important questions are posed: (i) how can we create effective, evidence-based strategies to draw new audiences into citizen science?, and (ii) how can we leverage citizen science to communicate science beyond those who are already involved?

**Social licence and citizen science: potential and progress** Rachel Kelly, *Institute for Marine & Antarctic Studies, Hobart, Tasmania 7001, Australia*

Social licence is an emergent concept in the marine sector and has become an important theme for development in marine industry and resource use, particularly in the context of exploring communication and stakeholder

engagement. At the same time, meaningful public and societal engagement with science and research is increasingly recognised as necessary to advance public knowledge about the marine environment and to promote stewardship of ocean spaces. Citizen science is a diversified phenomenon that is expanding rapidly in marine spaces and may create pathways for support between social groups and promote networks for collaborative decision making that can enhance outcomes for science and management. Our research is among the first attempts to link social licence theory with citizen science, aiming to produce actual practical outcomes that can be applied in ocean management. Here, we examine the role marine citizen science can play in promoting social licence in the marine realm. Firstly, through an exploration of European citizen science projects and their potential to enhance social licence for marine conservation. Secondly, we describe an Australian case-study highlighting whether diverse participant groups (i.e. divers, fishers) construct and exchange opinions via this platform and whether social licence is promoted or withheld through such exchange. We outline the potential role of social licence as a tool to foster positive engagement between marine user groups, and identify how citizen science may influence perceptions and promote social licence in the marine realm.

# SUSANNE HECKER

When & Where: [AA1 3:30pm - 5:15pm Tuesday 3 April SDAV1](#)

Title: **ImproSciComm - the art of (science) communication is improvisation**

Format: Workshop

Theme: Society

Area of interest: Teaching science communication

Author: **Susanne Hecker**, *Helmholtz Centre for Environmental Research UFZ, Halle-Jena-Leipzig, Germany*

Are you wondering how to bring your ideas across to your audience? Do you have the feeling that your vis-à-vis does not get your ideas quite as you'd like it? You even think you are a science nerd and can't connect with the outer world?

Communication between human beings is an act of creativity and a very complex thing, let alone talking about scientific research. You are supposed to find a common language – and understanding. You are told to envisage your audience, understand their needs and expectations but also consider their values and the things they care for. You are expected to speak their language without losing yours. And: We all need to re-gain the ability to listen – something that rarely seems to get enough attention.

In this workshop we will trigger your creativity and your ability to communicate by using elements of Improvisation Theater. The aim is to cross the boundaries of daily routine, create novel synapses in your brain and thus allow for ideas and refreshing energy.

You do not need any experience in Improvisation Theater but you should be ready to talk about things you are passionate about (because they are the most comfortable to talk about), exchange knowledge and participate actively.

# ROGER HELLENS

When & Where: 479 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Engagement in advanced biotechnology**

Format: Visual talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Roger Hellens**, *Queensland University of Technology, Australia*

Co-author(s): Robert Speight, *Queensland University of Technology*  
Dimitri Perrin, *Queensland University of Technology*  
Wendy Russell, *Double Arrow Consulting*

Advanced biotechnologies such as genome editing for the production of new foods, fuels and chemicals are likely to have significant social, environmental and economic implications across a range of sectors. Along with the rest of the world, Queensland researchers are using advanced biotechnology to develop innovative solutions to a variety of problems and opportunities. Given the disruptive potential of these new tools, there is a need to engage the broader community (lawmakers, media, general public) in decisions about the future directions of these scientific developments.

This project (funded by Advance Queensland) provides researcher training and opportunities for this critical engagement around advanced biotechnologies. First, through a workshop, we developed the purpose for our approach: “Engage people in genome editing and inspire them to contribute ideas on how it may or may not be used.”

We then explored a number of engagement strategies before settling on informal ‘vox pop’ survey. During National Science Week (12-20 August 2017) we collected over 80 video interviews of responses to the question: “What would \*you\* change using genome editing?”.

We will present a collation of these interviews and show how we have used these to extend the conversation in rural Queensland and on Social media.

# FRIEDERIKE HENDRIKS

When & Where: [C7 4:30pm Wednesday 4 April ARCH2](#)

Title: **Scientists' views on their own engagement in science communication and outreach activities**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Friederike Hendriks**, *University of Münster, Germany*

Co-author(s): Doris Niederhoff, *University of Münster, Germany*  
Dorothe Kienhues, *University of Münster, Germany*  
Rainer Bromme, *University of Münster, Germany*

We present an interview study that focused on views of researchers on outreach activities (OA), especially their perceptions on how taking part in OA had affected their motivations and their scientific work and their collaboration and communication with colleagues of other disciplines.

The study was conducted in the context of two large German interdisciplinary research groups in the field of biomedicine. In these groups, OA (for example exhibitions, school workshops, press releases) had been organized by science communication professionals, in close cooperation with researchers. We interviewed 75 researchers (PhD Students, PostDocs, and Professors) from several scientific fields (e.g. medicine, chemistry, mathematics, information sciences). 75% of them had actively taken part in OA at least once.

We questioned researchers on effects of OA a) on themselves and their scientific work and b) on communication and cooperation in their large research groups. In addition to open ended questions, researchers were asked to state their agreement to items on scales reaching from *not at all* (1) to *very much* (5).

We found that 45% of researchers agreed *very much* (5) that following OA they had “*experienced joy and personal satisfaction*”, but only 17% agreed (4 or 5) that they had been able to “*generate new ideas*”. Albeit OA being clearly directed at the general public, active engagement positively affected communication *within* the research groups: 35% of researchers agreed *very much* (5) that as a result from taking part in OA they could “*better understand the work of researchers from other disciplines*”.

We also inquired which effects of OA researchers assumed for the general public, and their attitudes toward communicating science.

We will discuss the importance of investigating attitudes and motivations that researchers have toward OA, and how positive attitudes toward communicating science and (their own) research might be fostered.

# SHAUN HENDY

When & Where: [10.15am Wednesday 4 April SDAV2](#)

Title: **Science! You'll never guess what happened next ...**

Format: Speakers' corner

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Shaun Hendy**, *Te Pūnaha Matatini, NZ*

Co-author(s): Kate Hannah, *Te Pūnaha Matatini, University of Auckland*  
Rebecca Priestley, *Te Pūnaha Matatini, Victoria University of Wellington*

Can scientific knowledge persist in a post-truth world? In this talk, we discuss how the strengths and weaknesses of science's distinctive values and norms play out in the modern media landscape. Scientific universalism, for example, holds that the validity of scientific claims does not depend on the status or identity of the claimant. This is a highly prized ideal, even if science fails to live up to it in practise. Yet a similar form of universalism operates on social media - any user is able to generate content - and it is apparent that this allows misinformation as well as information to propagate. To adapt to this environment, science will have to adopt a more reflexive stance towards its values, norms, and practises. Identity, values, and world-view matter more than ever in modern communications, and to adapt to this, we argue that the scientific community must embrace a more nuanced and transdisciplinary understanding of the scientific process.

# DACIA HERBULOCK

When & Where: [B2 1:45pm Wednesday 4 April SDAV2](#)

Title: **Breaking down silos: sharing outcomes from different approaches to science communication training**

Format: Roundtable discussion

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Dacia Herbulock**, *Science Media Centre (NZ), Victoria University of Wellington, NZ*

Co-author(s): Yael Barel, Technion – Israel Institute of Technology  
Todd Newman, *Alan Alda Center for Communicating Science, Stony Brook University*

Over recent years, demand for communication and media training for scientists has increased. Scientists themselves and their institutions recognize that science needs to demonstrate its relevance to society, but still find it challenging to communicate effectively outside of familiar environments. To meet this need, a diverse and large number of science communication training programs have developed around the world in order to provide guidance to scientists and STEM students on how to communicate effectively with different audiences. These programs vary in their approach and objectives and range in length - from a few hours of exposure or short workshops that meet over the course of the year, to semester-long academic courses.

Recently, researchers across a number of different disciplines have focused on the assessment of science communication trainings, and research on science communication training is becoming an active academic research field. One of the main issues that research in this field has unveiled is that programs tend to operate in isolation. As a result, there is limited discussion of best practice and limited understanding of how training programs are structured to align with specific communication goals.

We see the need to foster constructive dialogue among science communication training organizations. This roundtable discussion will bring together leading science communication training researchers and practitioners from Israel (Technion), New Zealand (Science Media Centre), and the United States (Alan Alda Center for Communicating Science) to share their approaches to science communication training as well as present data on the outcomes of these trainings.

In this session, we will invite discussion of a range of training approaches, examine the effectiveness of particular exercises for desired outcomes, consider the optimal length of training and share lessons learned. Our goal is to cultivate an ongoing dialogue in the science communication community about best practices in science communication training.

# SUSANA HERRERA

When & Where: [H5 1:45pm Friday 6 April SDAV2](#)

Title: **Science communication and socio-environmental problems: the case of water and forests**

Format: Roundtable discussion

Theme: Society

Area of interest: Investigating science communication practices

Author: **Susana Herrera**, *Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO), Mexico*

Co-author(s): Ana Claudia Nepote, *University of Mexico*  
Jennifer Metcalfe, *Director, Econnect Communication, Brisbane*  
James G. Cantrill, *Northern Michigan University*  
Alexander Gerber, *Rhine-Waal University*

The main purpose of this roundtable is to raise concern about the challenge science communication faces when the object of communication is contemporary socio-environmental problems, specifically those related to water and forests. Forests have a close relationship with water, they are very valuable water reservoirs and therefore humans depend on them. Socio-environmental issues demand interdisciplinary approaches and the articulation between global, regional and local scales. They acquire different forms and manifestations in different geographical areas with specific biophysical configurations and social contexts.

The evidence of the transformations in the balance of planetary ecosystems derived from human interventions situate the social-environmental problems as a central subject in public space. These demands not only the articulation of scientific knowledge coming from diverse disciplines, both natural and social, but also the need to relate it to specific cultural, economic and political contexts. The links between forest, water, and social life are complex. They are related to phenomena, projects and actions that affect the ecosystem's balance, the hydrological and geohydrologic cycle, and that have an impact on social life, human health, food sufficiency, and production processes, both in rural and urban context. However, they are presented worldwide in different ways in each region, and the communicators of science face different kinds of challenges.

Our aim is to give an account of these challenges faced by the communicators of different regions and latitudes involved in these problems. How to identify and define the "communicable" to non-specialized social groups? How to articulate scientific knowledge from different disciplines to account for complex socio-environmental phenomena? How to incorporate the biophysical and socio-cultural particularities of phenomena and problems?

# SUSANA HERRERA

When & Where: [G8 11:00am Friday 6 April ARCH3](#)

Title: **Science and socioenvironmental problems: discourses in the urban context of Guadalajara, Mexico**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Susana Herrera**, *Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO), Mexico*

This work, situated in the intersection between public communication of science and environmental communication, approaches the contested discourses about science in urban contexts related with socioenvironmental problems. The goal is to show the challenges presented to the science communicator due the diversity of narratives about the role of science set out by different involved social actors. The case of study has been the Metropolitan Area of Guadalajara, in Jalisco, México.

The understanding of particularities of socioenvironmental problems in urban contexts demands knowledge from very diverse sources: specialized scientific knowledge, from both natural and social sciences, as well as the knowledge associated with the experience of the city residents and other social actors. As it will be shown, science is perceived, valued and represented differently and in diverse forms across discourses which come from actors situated in different specific social contexts, and hence it acquires diverse connotations and attributions.

Critical discourse analysis has been applied as theoretical and methodological perspective for analyzing workshops, meetings and interviews with scientists, citizen organizations, museographers and journalists, all of them involved in science communication activities or projects related with socioenvironmental problems. It has been possible to identify the way these actors discursively construct science and scientific knowledge, as well as the role they play in comprehension, explanation and possible solutions of socioenvironmental urban problematics. Main challenges, obstacles and problems about “what” and “how” to communicate, from the specific field of science communication have also been identified.

The analysis has shown some coincidences among social actors’ discourses: demanding a mediator role from science communicators, considering they should question science communication models that place knowledge in the center of communication, placing instead socioenvironmental problematic in the first place,

and promoting dialogue between multiple disciplinary perspectives as well as interlocution between specialized knowledge and knowledge built from experience.

# PER HETLAND

When & Where: [15 3:30pm Friday 6 April ARCH2](#)

Title: **Building knowledge infrastructures for citizen science: the quest for reciprocity**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Per Hetland**, *University of Oslo, Norway*

This paper focuses on building knowledge infrastructures for citizen science, and the importance of reciprocity. Knowledge infrastructures facilitate collaboration between scientists, volunteers, and administrators across disciplines and organizational boundaries. In Norway, the establishment of species observation (SO) gave a new opportunity for volunteers to participate in a national mapping activity and has facilitated bridging activities between science and different publics in new manners. With SO, a successful knowledge infrastructure has been established between the scientific community, the volunteers, and conservation authorities. The mapping of biodiversity has been made into a very large collaborative enterprise.

This paper reports on a web survey about SO with 404 respondents and answers the following research question: How do volunteers perceive their engagement in citizen science and how does one build knowledge infrastructures that facilitate reciprocity?

Within citizen science, the participants' motivation to participate is much studied. However, we will claim that by building knowledge infrastructures that facilitate reciprocity, one builds a long-lasting relationship between the participants and the activity undertaken. These kinds of relationships do not primarily build on a one-way motivation to contribute, but on a reciprocal relationship where all parties gain something.

Two findings are crucial. First, the new knowledge infrastructure facilitates both uploading and downloading information; downloading information is a very important activity—examples are private field diaries, searching for information, looking at recent records, looking at statistics, and looking at catalogues. Second, the users emphasize both individual interests and collective action. Individual interests include competition, displaying their own pictures, studying others' pictures, learning something new, spending more time outdoors, increasing their own knowledge, and most importantly, keeping track of their own records. Collective action includes contributing to species mapping, contributing to research, and collaborating with other naturalists.

# MATTHEW HICKMAN

When & Where: [H6 2:15pm Friday 6 April ARCH2](#)

Title: **Understanding ‘trusted intermediaries’ in order to broaden participation**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Matthew Hickman, Wellcome Trust, UK**

Wellcome is keen that people of all backgrounds should be able to engage with science on their own terms. In recent years, we have focused on working with organisations and individuals who have established relationships with the audiences that we would like to reach; in particular, children and young people affected by socioeconomic disadvantage. This seems to be an effective way of reaching more diverse audiences, as compared with simply asking or funding established science communicators to do ‘more’/extend their reach.

This presentation will share findings from two pieces of research we recently commissioned:

1. How we need to frame ‘science’ to youth workers across the UK so that they include it in their activities with children and young people, taking into account youth workers’ circumstances and motivations.
2. The impact on children and young people affected by disadvantage when we train youth workers on how to deliver science engagement activities.

In each instance, the clear message is that ‘context matters’. Youth workers’ activities are driven by the different and complex needs of the children and young people that they work with. While for the young people themselves, the relationship between how the science is presented and their own ‘science background’ is central to understanding their response to the topic.

Much of this work is underpinned by Archer’s work around science capital. In this framing, we are motivated by the opportunity that Wellcome has to influence the ‘field’ that encompasses children and young people affected by disadvantage.

# MATTHEW HICKMAN

When & Where: 212 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Science Learning+: understanding the value of informal science experiences**

Format: Visual talk

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Matthew Hickman**, *Wellcome Trust, UK*

In 2014, Wellcome, the National Science Foundation (NSF) and the Economic and Social Research Council (ESRC) launched the \$12 million / £7.5 million [Science Learning+ initiative](#). Science Learning+ seeks to make a transformational step to improve the knowledge base and practice of informal science, technology, engineering and mathematics (STEM) learning (ISL), to better understand, strengthen, and coordinate STEM engagement and learning. One of the key aims of Science Learning+ is to help facilitate relationships between those who deliver STEM public programs and engagement activities ("practitioners") and those who undertake research into those activities ("researchers").

We initially funded 11 small-scale, 'Planning Grant' projects with the intent of helping the development of new ideas around improving our understanding of ISL and forging partnerships between researchers and practitioners, and US and UK/Irish organisations.

In 2017 we made larger Partnership Grant awards to five projects. Each project is a collaboration between researchers and practitioners and between organisations based in the US and the UK/Ireland. The projects are investigating a range of ISL experiences and their impacts, including:

- youth educators in science visitor attractions

- the role of embodied cognition in developing interactive science exhibits aimed at young children

- different ways of engaging audiences via citizen science

- leveraging interest in other topics (like the arts) to build interest in science

- how ISL experiences can help underrepresented youth to navigate STEM pathways.

These are all 3-5 year projects in their early stages and this presentation will be an opportunity to find out more about the projects and the work of Wellcome, NSF and ESRC in supporting understanding about ISL.

# MATTHEW HICKMAN

When & Where: [B5 1:45pm Wednesday 4 April SDAV5](#)

Title: **Engaging the STEM-excluded: critical perspectives on broadening participation**

Format: Roundtable discussion

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Matthew Hickman**, *Wellcome Trust, UK*

Co-author(s): Bronwyn Bevan, *University of Washington*  
Graham Walker, *Australian National University*  
Robert Inglis, *Jive Media Africa*  
Craig Tomlinson, *BBC Children in Need*

The aim of the session is to share and explore participants' different ways of including diverse audiences in STEM. We want to collectively develop a shared understanding of the wisdom from and problems with practice, and use research to support the design and implementation of experiences and settings that reach the STEM-excluded.

People who do not typically attend our institutions or events may face many obstacles, both socioeconomic and cultural, that can influence if and how they engage with STEM (including workforce participation, learning, civic discussion). The nature of the obstacles will vary according to country, ethnic heritage, socioeconomic background, and much more besides. Yet these factors operate in most countries to consistently and persistently exclude some audiences from STEM.

Traditionally, those working in science engagement have struggled to reach people excluded from science, and can sometimes exacerbate their exclusion. For example, in high-income countries, the burden of expectation is typically on the audiences to choose to engage with an intervention of some form. It's now clear that this approach only reaches discrete groups of people – usually, those who are already interested in the topic being explored – and marginalizes those experiencing disadvantage.

In this session, you will be invited to explore the nature of the obstacles your intended audiences face and the outcomes you want to achieve with them. By sharing our experiences we will consider, together, how to make science and science communication more inclusive. It will provide the opportunity for critical reflection and constructive discussion, with a view to:

1. embedding opportunities to engage with science in existing programs and venues (rather than creating new ones)

2. designing asset-based programs that are relevant, building on the cultural and intellectual resources of the target audience and
3. empowering disadvantaged groups to create, drive and deliver their own content and/or programs.

# JACQUI HOEPNER

When & Where: [G8 11:15am Friday 6 April ARCH3](#)

Title: **You need to shut up: research silencing and its implications for public health policy**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Jacqui Hoepner**, *The Australian National University, Australia*

This paper investigates responses to enquiry that disrupts normative public health positions and the implications of these attacks for public health policy.

Qualitative interviews were conducted with 16 researchers whose work elicited controversy and silencing attempts from public health proponents and interest groups. A mixed-methods analysis of the data was used to determine shared themes, discourses and characteristics within the dataset.

Silencing attempts reveal limits to data-driven policy, as maintaining a 'unified voice' on contentious public health positions matters more than data. Silencing responses were primarily initiated by academic colleagues, and ranged from private cautioning, spreading misinformation in peer reviewed journals and mainstream media, to research misconduct allegations and conflict of interest claims.

While public health policy is increasingly data-driven, particularly controversial research—around e-cigarettes, obesity, sugar and addiction, among others—can be deemed so dangerous that evidence no longer matters. The selected cases share a seemingly visceral response characterised by an inability to engage with evidence in a critical or rational manner. The reaction is one of silencing or shutting down the offending research, not understanding or consolidating knowledge. This shutting down can severely impede evidence-based policy, as 'conventional wisdom' and 'status quo' takes precedence.

Attempts to silence unpalatable findings can severely curtail researchers' ability to shift public health policies, despite rigorous, compelling data. When research challenges a public health 'status quo', existing players will employ silencing tactics to punish the rulebreaker: truth is the first casualty of war.

# JENNY HOGAN

When & Where: 442 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Crowdsourcing the storytelling: competitions in quantum film and fiction**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Jenny Hogan**, *National University of Singapore, Singapore*

Co-author(s): Ariane Koek  
Michael Brooks

Quantum Shorts is an annual competition that has run since 2012, alternating between calls for short films and flash fiction that draw on the ideas and themes of quantum physics. Organised by the Centre for Quantum Technologies at the National University of Singapore as a public engagement initiative, Quantum Shorts aims to inspire and encourage learning about quantum physics. The contest exists through a website at <http://shorts.quantumlah.org> that hosts resources and submissions. Film entries have also been presented at live events.

We will tell the story of how the contest has built reach through partnerships and share results of a survey of 121 participants. To investigate how the contest affected attitudes, we asked people how Quantum Shorts stories and films made them feel. Of 377 selections from a set list, 69% were for impacts associated with being inspired, curious, and interested in further study. Less than 2% were for negative impacts, namely feeling confused about quantum physics or pessimistic about technology.

We seek to exchange ideas with organisers of similar events about the opportunities and pitfalls of using fiction for communication and techniques to evaluate the impact of such outreach.

# MARKÉTA HRABÁNKOVÁ

When & Where: [E7 2:45pm Thursday 5 April ARCH2](#)

Title: **Does the big natural science metanarrative exist? Are there any trends in publicity, what topics are journalists interested in and the public consumes? Media content as a way of defining of the Czech natural sciences.**

Format: Individual paper

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Markéta Hrabánková**, *Charles University in Prague, Czech Republic*

Science communication is a wide communication field which can be differently perceived and practiced country from country. Narration and storytelling are crucial pillars of science communication from practical as well as theoretical point of view. This work is focused on the science communication practiced in the Czech Republic and its reflection in Czech media landscape. The main research questions are: Do any trends exist in media publicity of natural sciences in the Czech Republic? Is it possible to discover any specific topics/stories repeatedly used by media? Among others this paper describes the Czech media landscape and media opportunities for the topic of science. This knowledge supports the research goal – the effort to find out the way how are the natural sciences presented through chosen Czech media. Main research method was quantitative content analysis aimed at investigating potentially existing publicity trends as well as most often media topics. Qualitative narrative analysis was chosen as a method whose objective was among others to give an answer on the third research question: Do the natural sciences have their own big metanarrative or is this term just a relic of the narratology? Detailed reading of generated media contents leads us to an existing narratives displayed by media which resulted in a statement about existence or nonexistence of the big natural sciences metanarrative. Findings of this paper can be transferred to the practice of science communication of variable natural science institutions as well as scientists. They have a potential to support an efficacy and attractivity of content presenting science to a wider audience.

# CHUN-JU HUANG

- When & Where: 90 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer
- Title: **What science story do they tell? - A comparative study of how science was presented in three different types of Taiwan's TV programs**
- Format: Visual talk
- Theme: Stories
- Area of interest: Investigating science communication practices
- Author: **Chun-Ju Huang**, *General Education Center, National Chung Cheng University, Taiwan*
- Co-author(s): Yin-Yueh Lo, *General Education Center, National Chung Cheng University, Taiwan*  
Miao-Ju Jian, *Department of Communication, National Chung Cheng University, Taiwan*

Merging science into everyday life is the key reference for science communication. To understand whether science has been integrated into our daily life, popular culture has played the role of a boundary object whilst also being regarded as a sensor probe. A TV program is one of the most common channels for popular culture. This study explores what science has been regarded as to elements in Taiwan's TV programs, and examines the implication through the comparison of different types of TV genres.

This study focuses on a medical issue. Based on different proportion of scientific knowledge in TV programs, we identified three types of genres: "Medical knowledge program", "medical TV drama series" and "soap opera related to medicine". We sampled six episodes for every genre, each of around 60 minutes, as per the types of genres of the analyzed targets. All the episodes were divided into different "scenes" as analysis units, and we adopted the thematic content analysis method to investigate science images shown in the three programs. With the theoretical background, the four categories included the technoscience knowledge, collective emotion, personal mood, and the human cultural environment, which were then developed as the framework to explore the features of the different genres.

The preliminary conclusions suggest: With the different science knowledge proportion within the three genres, they will focus on the different aspects of medical activities. "Medical knowledge program" will accompany with less emotion, context, culture, and vice versa than "medical TV drama series" and "soap opera related to medicine". Thus, how to adjust the appropriate science images among the preciseness of science knowledge, the authenticity of the medical activity, and the attraction for the public, will also be addressed in this paper.

# KAREN HYTEN

When & Where: 368 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **What about climate change? The absence of climate change from science communication in New Zealand national parks**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Karen Hytten**, *Massey University, NZ*

The visitor centers in New Zealand national parks tell many stories. Stories about how New Zealand separated from Gondwanaland millions of years ago, stories about the life cycles of New Zealand's many unique plants and animals, stories about Māori taonga (treasured things) and wāhi tapu (sacred places), stories about early European settlers, and stories about the impacts of introduced species and effort to address them. However, a story that is almost entirely absent from the science communication in New Zealand national parks is the story of human-induced climate change. Arguably one of the greatest challenges faced by contemporary society, climate change is already having a significant impact on New Zealand's national parks. This paper presents a comprehensive analysis of the public education materials in five New Zealand national parks: Egmont, Tongariro, Arthur's Pass, Westland Tai Poutini and Aoraki/Mt Cook. It was found that while the visitor centers in these parks provide a rich and diverse range of public education materials, there is currently no attempt to communicate climate change science, or the impacts that climate change is having on New Zealand's ecosystems. It is argued that this is a significant omission which needs to be addressed, and that national parks offer a unique opportunity to communicate about climate change in new and different ways.

# YUKO IKKATAI

When & Where: [A7 10:45am Wednesday 4 April ARCH2](#)

Title: **Science crowdfunding in Japan: its characteristics and future problems**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Yuko Ikkatai**, *Shiga University, Japan*

Co-author(s): Hiromi Yokoyama, *The University of Tokyo*

‘Crowdfunding’ is a process of raising funds on the Internet. In academia, crowdfunding is developing as a way to obtain research funding. In 2012, a donation-based academic crowdfunding platform called Experiment.com was launched in the US. In Japan, the reward-based academic crowdfunding platform, academist, was launched in 2014. As of September 2017, Experiment.com had funded 730 projects, with a total funding of \$7,508,114; academist funded 41 projects, providing a total funding of 57,713,294 yen. The sites that crowdfund research funds, where citizens directly support scientific projects, have processes that are quite different from traditional scientific processes, in that no form of expert peer-review is present. In place of this academic requirement, Experiment.com requires collegial endorsement at the time of application. In addition, both Experiment.com and academist are staffed by individuals with scientific backgrounds. In the natural sciences, it is desirable for the result of the funded research to be contributed to a peer-reviewed journal; however, the products of crowdfunding do not necessarily lend themselves to publication in a journal. Other forms of presentation of one’s achievements are available, such as outreach presentations. This paper focuses on the unique characteristics of science crowdfunding. We will discuss why Japanese scientists have challenged science crowdfunding, why those in Japan that support it do so, and what is the perception gap in science crowdfunding in Japan, between scientists and the public.

# ROBERT INGLIS

When & Where: 376 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Where no one has gone before: a journey into the nano world**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Robert Inglis**, *The Yazi Centre for Science and Society in Africa, South Africa*

Co-author(s): Mthuthuzeli Zamxaka, *South African Agency for Science and Technology Advancement*  
Anthony Lelliott, *University of the Witwatersrand*

The world of nano-science and nanotechnology exist outside our lived experience. Nanotechnologists, wearing white lab coats and swilling tubes of amber liquid reveal little of the incredible stories of how matter, manipulated at the scale of billionths of a meter is impacting people's lives.

Jive Media Africa responded to a call from the Nanotechnology Public Engagement Programme (NPEP) at the South African Agency for Science and Technology Advancement (SAASTA) to make this invisible world, visible. Using a comics and cartoons approach, four stories were created for distribution across South Africa on large, highly visual posters.

The campaign was aimed at school learners, and aimed to harness the power of identification and imagination through visual story-telling to reveal the hidden world of nanotechnology. Each poster dealt with an application of nanotechnology – starting with a problem being faced in a developing context and proceeding into a journey through scale as two protagonists became smaller and smaller until they were at the scale of the unique scientific principles being employed in the technology. Topics included water treatment in low-resource settings through application of antimicrobial silver, the development of super-efficient photo-voltaic cells, the creation of gas monitoring devices for use in mining and targeted drug delivery through bio-engineering gold nano-particles.

This highly visual poster presentation will showcase the work and research undertaken into its efficacy as a science communication tool. It will reflect on the campaign with a view to sharing innovative approaches to making complex and inaccessible information clear and relevant to audiences in low resource settings.

# ROBERT INGLIS

When & Where: [G9 10:45am Friday 6 April ARCH4](#)

Title: **Stories can save lives: breaking through stigma with video stories**

Format: Show, tell and talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Robert Inglis**, *The Yazi Centre for Science and Society in Africa, South Africa*

Co-author(s): Jacob Bor, *Boston University School of Public Health*

If the HIV and AIDS epidemic has an epicenter, it is southern Africa and the province of KwaZulu-Natal. In the small rural village of Matubatuba, the average life expectancy dropped below 49. Lives were shattered and families torn apart as literally thousands of people died. A generation grew up surrounded by death and disease and little hope for the future.

In 2004, with the introduction of antiretroviral therapy, the situation started to change. Over the past 13 years, life expectancy has been on the rise and the most recent data demonstrates it is now pushing 67 years. But how can this dramatic story be told to the young people who grew up in the shadow of HIV and AIDS? The stigma is massive, and the numerical concepts of average life expectancy, and the physiological details of antiretroviral therapy are complex.

Stories can save lives. Researchers from Boston University who were based at the Africa Health Research Institute in Mtubatuba, partnered with multi-media science communication specialists Jive Media Africa, to film the stories of people who were living long lives due to antiretroviral therapy. It was their hope that the personal narratives of people who had survived and thrived in spite of HIV could be used to encourage young people to see a different future for themselves, and to take steps to secure their futures through HIV testing and treatment. Through mixed methods research the results and impacts of the approach were measured.

Using participatory approaches to create compelling media is the subject of this show, tell and talk presentation. A short excerpt of the video will be screened and the results of the research shared along with insights about the science communication considerations, including critical aspects such as streamlining production processes, securing informed consent and ethical considerations.

# ROBERT INGLIS

When & Where: [AA3 3:30pm - 5:15pm Tuesday 3 April SDAV3](#)

Title: **Whose story is it anyway? Participatory approaches to science engagement**

Format: Workshop

Theme: Society

Area of interest: Investigating science communication practices

Author: **Robert Inglis**, *The Yazi Centre for Science and Society in Africa, South Africa*

Despite awareness of negative impacts of deficit-model science communication (in which the scientist is seen as the knowledge-holder, and the target audience seen simply as the passive recipient), a huge number of science communication initiatives continue to use this mode. Not only is it often ineffective and regularly damaging, but it limits possibilities for the creation of new knowledge and active participation by society in science.

The deficit model has strong parallels to the concept of "banking education" used by education theorist and activist Paulo Freire to describe and critique traditional education systems. Paulo Freire was concerned about the extent to which these modes of engagement tend to entrench, rather than transform, the status quo. Paulo Friere proposed that it is through active participation in processes which transform their worlds, that members of society can, through "cycles of action and reflection" gain "critical consciousness" and come to understand the problems and needs within their realities.

The proposed workshop will be highly interactive with the aim of exploring some basic elements of participatory processes to encourage new approaches to science engagement and collaborative knowledge production. Inspired by Paulo Freirean methodologies, these will include; Defining the issues/s (by eliciting personal experiences of participants to bring them into personal engagement with the problems), (b) Exploring the issues through various creative strategies, (Photo voice, songwriting, participatory video) and finally, sharing those learnings through events or engagement activities.

Robert Inglis is an award-winning science communication practitioner with over 15 years' experience in creating opportunities for audiences to become involved in and understand scientific research. He has used a range of participatory methods including; citizen science research on adolescent health, science related song-writing and performance, community radio collaborations between learners and researchers and co-creation of film and other media.

# KAISU INNANEN

When & Where: [B6 2:00pm Wednesday 4 April ARCH1](#)  
Title: **Tweet or perish**  
Format: Individual paper  
Theme: Science  
Area of interest: Applying science communication research to practice  
Author: **Kaisu Innanen, University of Oulu, Finland**

There are varying reasons behind researchers' motivation to participate in science communication: traditional duty to disseminate knowledge, deliberating engagement goals, and visibility demands from institutions and research funders that are intensifying globally. Mediatization entails the belief that visibility promotes societal support and competitiveness. But what kind of effect these demands have on researchers' science communication efforts?

This paper presents preliminary findings of an analysis on data collected in summer 2017 with semi-structured interviews of 17 researchers and 13 science communication professionals. Preliminary findings indicate that researchers' attitudes are changing and researchers feel pressure/duty to participate in science communication. For many interviewees reason for this was the research funders. Typical belief was that funders implicitly value visibility. The belief seemed to gain strength from visibility-hype connected to social media. The common narrative was: "For funding issues it's very important to have good image of your work and existence in social media". When faced with a question of this kind of motivation towards science communication being just self-serving, many interviewees stated the competitive structures of academia but also claimed to approve funders' ultimate goal to foster dialog with science and society.

Preliminary findings incorporate important notion: the researchers share the belief that funders value visibility whether this is known fact or not, and are willing to act accordingly. The findings seem to relate to the blurred concepts of communication, engagement and impact online, and the continual lack of solid, evaluation instrument of (digital) impact as part of research assessments. The parties don't exactly know the gain.

Further findings will be presented and discussed from the viewpoint of conceptualisations of science communication distributed globally by institutions and funders. Important aspects of discussion addresses the communication practitioners' encouragement of researchers' science communication efforts: the beliefs about funders' understanding of science communication foster motivation and action.

# KAISU INNANEN

When & Where: [G9 10:45am Friday 6 April ARCH4](#)

Title: **Blog&Tweet turns – changing the culture of science communication**

Format: Show, tell and talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Kaisu Innanen**, *University of Oulu, Finland*

Scholars of science communication have argued that scientific community lacks a culture of genuine science communication and public engagement. With widened scope on public relations research it has been suggested that scientists' participation in science communication via social media should be valued, measured and manageable. This also requires a strategic management approach including strong commitment from the (research) director, the establishment of social media teams, the implementation of guidelines, ongoing training, integration of goals, and measurement.

This paper describes actions put into practice with researchers in a multidisciplinary and interorganisational research project, organized in five research teams, and the researchers' perceptions on new practice.

The research teams are given monthly Blog&Tweet-turns. On their turn, following a joint schedule, a team has to deliver blogs and tweets about their research integrated with the projects and funders overall communication goals. When the turn is about to change, the measurement i.e. impact numbers (viewers of blogs, reactions on tweets) are shared and praised. The teams are trained by communication professionals with ongoing support. This includes informal discussions that ease the adoption of new roles as researchers engage in science communication online. The PI of the research project shows example and writes science blogs regularly.

According to preliminary findings on semi-structured interviews of 13 communication professionals and 17 researchers, collected in summer 2017, easy access for support and contact with communication professionals is the most important supportive action. Researchers also appreciate the equality of attention for research teams and topics. The systems simplicity makes the participation manageable and division of labour reasonable which furthers commitment to the turn-taking. Clear majority of researchers plan to have contact with communication professionals in future.

It would be interesting to know how could online turn-taking be scaled up e.g. to a faculty's communication agenda?

# ALAN IRWIN

When & Where: [B8 2:15pm Wednesday 4 April ARCH3](#)  
Title: **Citizen science: a new knowledge politics?**  
Format: Individual paper  
Theme: Science  
Area of interest: Building a theoretical basis for science communication  
Author: **Alan Irwin, Copenhagen Business School, Denmark**

The growth of world-wide activity in citizen science represents one of the most important recent developments within the broad field of science communication and citizen-science relations. The 2015 inaugural conference of the Citizen Science Association, held in California, brought together over 600 people. There is a European Citizen Science Association (ECSA) supported by organizations from over 10 countries, and, since 2014, an Australian Citizen Science Association (ACSA). As the European association expresses its future vision: 'in 2020, citizens in Europe are valued and empowered as key actors in advancing knowledge and innovation and thus supporting sustainable development in our world.' Meanwhile, the Zooniverse website lists a wide range of projects: all dedicated to the concept and practice of 'people-powered research'. And, based upon a recent inventory prepared by Monica Peters for the NZ Landcare trust, it seems that citizen science projects are flourishing across New Zealand.

This is a remarkable movement within the landscape of public communication with science and technology. Certainly, it is worth reflecting upon its implications for science communication as a field of research and practice. More specifically, the question I wish to explore in this presentation concerns the relationship between citizen science and more 'mainstream' scientific practice. Put simply, does citizen science represent simply an extension of science by other means or does it raise new questions concerning the nature of 'knowledge politics'? While critical social scientists and other commentators might view citizen science as primarily a means of extended knowledge-gathering, it is also important to consider the larger possibilities for citizen science: as a way of developing new knowledge practices, shifting the institutional boundaries around science, and raising new questions and new perspectives.

# ADRIANA IWATA

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)

Title: **The comics as a tool to inform scientific concepts about glass in an interesting and playful way**

Format: Show, tell and talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Adriana Iwata**, *UniFederal University of São Carlos, Brazil*

Co-author(s): Karina Lupetti, *University of São Carlos, Brazil*  
Ana Cândida Rodrigues, *University of São Carlos, Brazil*

Comics is an entertainment and culture form well known worldwide and has as main feature the unity between image and text. Story telling with variable themes and drawing techniques involves the reader with a dynamic plot and charismatic characters. The comics is directed for all ages and can also be used as a tool to inform about science in a funny way. The insertion of scientific concepts in an interesting and playful way to motivate and increase the interest about the scientific topics mentioned in the story, one of the main purposes of science communication. Thinking about the positive points for the use of comics in science communication, the comic series called “Glass Comics” was developed in partnership with Center for Research, Technology and Education in Vitreous Materials - CeRTEV, a research center localized at Federal University of São Carlos – UFSCar, in Brazil.

The series comprises five numbers at all. The comic is about three characters: the protagonist Vinicius, a smart and curious boy who loves playing games, his elder brother Mateus, researcher of CeRTEV and the responsible for the explanation of scientific concepts and Luísa, Vinicius’s friend and an intelligent girl who likes to tease him. Each number is a complete story and it mentions a different topic within the glass universe: the number 1 is about the definition, history and applications of glass, the number 2 explains the glass recycling process and production of a glass bottle on an industrial scale, the number 3 talks about the principle of the optical fiber and applications, the number 4 talks about bioglass and main applications in medical field and the number 5 will illustrate the Age of Glass.

# SIKKE JANSMA

When & Where: [G7 11:00am Friday 6 April ARCH2](#)

Title: **Frankenstein food? The legitimation processes of GM Food in the Netherlands**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Sikke Jansma**, *University of Twente, Netherlands*

Co-author(s): Jordy Gosselt, *University of Twente*  
Kimberly Kuipers, *University of Twente*

Genetically modified (GM) food has been the subject of public controversy ever since its first application in the 1970s. In general, new technological innovations, such as GM food, are often confronted with doubts or resistance from society. Gaining legitimacy among the general public helps in overcoming this and, therefore, plays a key role in the establishment or survival of an innovation. Focusing on the case of GM food in the Netherlands, we studied how the process of legitimation in the public discourse has evolved by applying the four pillars of legitimation derived from institutional literature: normative, cognitive, regulative and pragmatic. We conducted a qualitative media-analysis, analyzing 287 articles of nine Dutch newspapers in the period of 1996-2016. The results show that all four pillars of legitimation are apparent in the public discourse, and that they form a useful framework to organize the information published in the media. With regard to the case of GM food, we found that the sentiment of the debate was mostly negative and centered around the normative pillar (ethical considerations). Also the cognitive (explanation of GM food) pillar was addressed in a negative way, albeit to a lesser extent. The pragmatic (usefulness) and regulative (rules and regulations) pillars were hardly addressed by the media, but respectively in a positive and neutral way. This study gives insights in which pillars, or domains, to focus on for increasing the legitimacy of GM food. Furthermore, from a theoretical perspective we propose to use the pillars of legitimacy as a framework to analyze and compare the public debate of different technological innovations.

# HARRIET JARLETT

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)  
Title: **Creating new heroes: promoting CERN in the post-Higgs era**  
Format: Show, tell and talk  
Theme: Stories  
Area of interest: Investigating science communication practices  
Author: **Harriet Jarlett, CERN, Switzerland**

We all know that the best stories have a hero.

For years, CERN's hero was the Higgs boson. Physicists had a quest: to find this elusive particle using the world's largest machine, the Large Hadron Collider. When the hero was discovered in 2012, CERN and particle physics made front-page news worldwide.

But five years on, what now? Communicating in the absence of discoveries such as the Higgs can be a challenge. Yet it can also be an opportunity: a chance to highlight CERN's diverse experiments as well as the laboratory's impact of CERN on society. We can let new heroes shine.

One such hero emerged: a little-known nuclear physics facility at CERN called ISOLDE. This facility, with a wealth of history, was in the midst of a dramatic upgrade. What's more, it is soon welcoming MEDICIS – a new experiment at the forefront of medical research. Here, scientists will produce rare, exotic isotopes for doctors and hospitals, to help to diagnose and treat cancer in better and more effective ways than ever before. Naturally CERN's particle physics remains revolutionary, yet now CERN has a nuclear physics hero to promote too.

But how to introduce this hero to the world? We'll explain how, after two years of interviews, filming, script rewrites and staff turnover, we produced a cross-media content package, titled Meet ISOLDE.

Developing a mini documentary series was new for CERN but tackled some of our big content questions – such as how to keep visitors on our website for longer. Our approach, results and lessons learnt will offer valuable insights for science communication practitioners.

Join our "show, tell and talk" session to find out how CERN's new hero was received and whether there were any villains along the way...

# ERIC JENSEN

When & Where: [G6 10:45am Friday 6 April ARCH1](#)

Title: **Preaching to scientifically converted audiences: evaluating social inclusion at science festivals and events**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Eric Jensen**, *University of Warwick, UK*

Co-author(s): Eric Kennedy, *Arizona State University*

Scientific institutions internationally are increasingly embracing values of social inclusivity and public engagement with science. But how do these dimensions of social inclusion and public engagement with science intersect? Science festivals and events have rapidly expanded in recent years as an outgrowth of these values, aiming to engage and educate the public about scientific topics and research. While resources invested in public engagement with science by scientists, universities, and governments are admirable in principle; this study indicates that their ambition to broaden the reach of science may be going unrealized in practice. Using data from three major UK science festivals, we demonstrate such events are disproportionately reaching economically privileged and educated audiences already invested in science, as opposed to diverse and broadly representative samples of the general public. Our results demonstrate that these science festivals are falling short of their aims to make science accessible to a broad audience. There is a clear need for improved practices and on-going evaluation to ensure science festivals include those who are not already scientifically converted. To complement these findings, results are presented from recent research conducted with a diverse range of young people in different European countries around their responses to science communication events. This European Commission-funded research project (PERFORM - [perform-research.eu](http://perform-research.eu)) shows another potential side to science communication events, revealing the role of participatory approaches in developing social inclusive science communication. Meanwhile, this same research project highlights new social inclusion challenges relating to the role of social media in engaging young people with science in the contemporary age.

# ERIC JENSEN

When & Where: [C10 3:30pm Wednesday 4 April SDAV6](#)

Title: **How to evaluate science communication impact using survey methods**

Format: Workshop

Theme: Science

Area of interest: Investigating science communication practices

Author: **Eric Jensen**, *University of Warwick, UK*

Co-author(s): Joseph Roche, *Trinity College Dublin*  
Eric Kennedy, *Arizona State University*  
Brady Wagoner, *University of Aalborg*

Are you feeling uncertain about how to set up a survey-based impact evaluation of science communication events, exhibitions or activities, or looking to explore your options? Surveys can be a great tool for learning about science communication audience expectations, quality of experience and impact. However, accurate measurement of audience outcomes requires following principles of survey research methodology that have been developed over decades of research in the social sciences. This workshop presents some of the highlights from this existing body of knowledge, identifying the strengths and weaknesses of different options. This event includes presentations some 'top tips' on how to design good questionnaires and observation-based evaluations, as well as time for discussion to address the specific challenges that attendees face. In addition, the workshop addresses the role of longitudinal methods in evaluating impacts with questionnaires. This practical workshop offers a very brief introduction to good practice in questionnaire design for science communication evaluation. This includes how to evaluate existing survey questions and develop new ones for quantitative evaluations. The workshop will be present methods and results from a number of key European science communication examples, including the European Commission-funded PERFORM project ([perform-research.eu](http://perform-research.eu)) and European Researchers Night.

# REBECCA JOHN

When & Where: 315 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Exploring perceptions about the educational use of augmented reality**

Format: Visual talk

Theme: Science

Area of interest: Teaching science communication

Author: **Rebecca John**, *Centre for Science Communication, University of Otago, NZ*

Co-author(s): Nancy Longnecker, *Centre for Science Communication, University of Otago*  
Ross Johnston, *Centre for Science Communication, University of Otago*

Augmented Reality (AR) is an emerging technology that could benefit learning experiences in an interactive and collaborative manner. AR superimposes graphic content onto a real view of the world, shaping the way we perceive and interpret information. This study explored the benefits and challenges of using AR as an educational tool, in particular with science and technology education.

The science communicated in this study focused on climate change and evolution through a prehistoric journey of Antarctica. A geological perspective showcases palaeontological discoveries of fossils found in Antarctica. The augmentation of fossils aimed to enhance visual storytelling by bringing the fossils to life. The exploration of fossils and palaeo-puzzles further enhanced scientific enquiry skills for tactile and visual learners.

Analysis of the literature and interview data revealed trends in AR benefiting spatial learning and storytelling enhanced by the immersive properties of AR. Creating stories through the lens of AR explores new possibilities to communicate science through 3D storytelling. Findings are discussed in relation to the interactive benefits of virtual models and animations that aimed to visualise scientific processes and phenomena by annotating the physical environment.

Educators and IT designers were interviewed to explore their perceptions on the production and use of AR for education purposes. Educators who were interviewed confirmed that AR was effective for learning through the creation of digital content to augment more traditional two-dimensional representations. IT designers interviewed emphasised the importance of blending real and digital content to benefit intuitive and immersive experiences.

# MARINA JOUBERT

When & Where: [C7 4:15pm Wednesday 4 April ARCH2](#)  
Title: **Scientists' ambivalence about public communication**  
Format: Individual paper  
Theme: Science  
Area of interest: Applying science communication research to practice  
Author: **Marina Joubert**, *Stellenbosch University, South Africa*

In 1977, American sociologist Rae Goodell wrote in “*The visible scientist*” that the scientific community was “a morass of conflicting and changing attitudes on the subject of communicating with society”, and that this was fuelling scientists’ doubts regarding public prominence. Forty years later, scientists continue to face conflicting norms and expectations as far as their public profiles are concerned, leading to lingering ambivalence about public visibility.

In this paper, I will reflect on contradictory views about scientists’ public visibility as reported in recent science communication literature, followed by my own findings on how publicly visible scientists in South Africa respond to these contradictions and tensions. I will present some of the influences that compel scientists to go public with their research, as well as the factors that continue to constrain their public visibility. I will show how scientists still adhere to some of the ‘rules’ for going public that was suggested by Goodell in 1977, while some of these rules have been thrown overboard in a fast-changing science communication landscape in a developing country setting.

# EVA KALMAR

When & Where: [17 3:30pm Friday 6 April SDAV3](#)

Title: **Collaboration readiness of transdisciplinary collaborations**

Format: Idea in progress

Theme: Science

Area of interest: Investigating science communication practices

Author: **Eva Kalmar**, *Science Education & Communication, TU Delft, Netherlands*

Collaboration has become the most supported form of scientific research, funding agencies prefer transdisciplinary international collaborations. Today, scientific inquiry is almost unimaginable without research groups from different scientific domains working together due to the growth of knowledge, high specialization of scientific domains and quickly changing technology. The scientific problems to be solved are complex in nature as are the social aspects of these challenges. The formation of transdisciplinary coalitions may sound straightforward since we all tend to think that we know what collaboration is or means, but the success of these alliances is not in all cases guaranteed as well as the deployment of science communication processes.

The factors determining the success and effectiveness of transdisciplinary and intersectoral collaborations are spanning across different (personal, interpersonal, organizational, technological and socio-political) levels, making the management of these kinds of projects an ill-defined and complex problem. These collaborations create new expectations, alter roles and shift communication practices for its members. The collaborating partners have to adjust to new social, organizational and management settings, and adopt to the new collaboration-facilitating technologies. Organizations that lack the ability of and adaptive culture of sharing and collaborating have a large potential to resist to these adjustments and adaptation processes, and limit the effectiveness of the collaboration as a whole.

We propose, that next to the technology readiness levels, collaboration readiness levels of research teams, organizations or companies can be measured and needs to be used within innovation processes. In this *Idea in progress session*, I would like to present our preliminary results of the Science Communication research within the Dutch Blockchain Coalition. A clear example of business to business type Science Communication happening in an uncertain world of an uncertain technology, performed by uncertain engineers, business developers and policy makers in opaque collaboration processes.

# KEI KANO

When & Where: [16 3:30pm Friday 6 April ARCH3](#)

Title: **Public engagement-oriented science education practices and research - using TV programs broadcasted by NHK in Japan**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Kei Kano**, *Shiga University, Japan*

Co-author(s): Eri Mizumachi, *Osaka University*  
Takayuki Shiose, *Kyoto University*  
Shinichi Takeuchi, *NHK Educational Corporation*

The OECD PISA Framework (2015) defines the scientific literacy as " the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen." A scientifically literate person is willing to engage in reasoned discourse about science and technology. The indicators for promoting and monitoring Responsible Research and Innovation (RRI) in EU (2015) includes science education goals: one of the goals is boosting interest in science among children and young people with the purpose of either recruiting them to a research career or allowing them to contribute to a science-literate society, that is, to become scientific citizens. Thus, recently, science education or scientific literacy has been more likely to belong to public engagement (PE).

In this situation, in Japan, we have developed two PE-oriented science education TV programs: "Think Like a Crow -Scientific Method-" and "Viewpoint Science: Make it and See!" broadcasted by NHK (counterpart of BBC in UK, ABC in Australia etc.), and participatory PE-oriented workshops using the TV programs and their related board games, in order to foster the scientific mindsets and viewpoints of students and their parents. One of the TV programs, Viewpoint Science, awarded "US International Film & Video Festival Gold Camera Award" and "Good Design Award" in Japan. The participatory PE-oriented workshops awarded "Prize for Science and Technology (Public Understanding Promotion Category)" by the Japanese Ministry of Education, Culture, Sports, Science and Technology. We have been trying to export the workshops to other countries and have just implemented them in Indonesia.

From the viewpoint of science communication research, we have focused on assessing scientific mindsets and viewpoint, using a rubric, one of the evaluation methods. The rubric we have developed could bring participants clear criteria or standards for them to easily understand or improve their scientific mindsets and viewpoint.

# LARS KÖNIG

When & Where: [D7 10:45am Thursday 5 April ARCH3](#)

Title: **“To Trust or Not To Trust?” - Exploring the Credibility and Trustworthiness of Science Communicators in Online Video Lectures**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Lars König**, *University of Münster, Germany*

Co-author(s): Regina Jucks, *University of Münster*

Online Video Lectures (OVLs) are a form of science communication with the potential to reach hundreds of thousands of people all over the world. In recent years, the number of available OVLs has grown rapidly and various hosting platforms have come into existence. Public universities (e.g., Coursera.com), business companies (e.g., Udacity.com) and private individuals (e.g., YouTube.com) use these platforms to upload and broadcast their self-produced OVLs.

In the science communication community, OVLs have triggered many positive reactions, mainly because OVLs are perceived as a cost-efficient educational tool and numerous prestigious institutions (e.g., Harvard University) have already started to produce their own OVLs. However, most science communication experts have neglected a risk that is associated with OVLs: There is no generally accepted gate-keeping institution that guarantees that OVLs provide reliable information. In the worst case, OVLs can be misused to manipulate the attitudes and behaviors of their audiences.

How do OVL users decide whether they can trust an OVL? To answer this question, we developed an OVL and varied (a) the professional affiliations of the shown science communicator and (b) the scientific evidence he presented, resulting in a 2x2 between-subject experimental design. After watching, 143 participants rated the OVL on various outcome variables, ranging from the credibility of the provided information to the likability of the science communicator.

Results showed that the professional affiliations of the science communicator and the scientific evidence that he presented interact with each other and jointly influence the perceived likability ( $F(1, 139) = 4.213, p = .042$ ) and Machiavellianism ( $F(1, 139) = 4.596, p = .034$ ) of the science communicator as well as the educational quality of the OVL ( $F(1, 139) = 4.790, p = .030$ ). We discuss our further findings and develop best practice guidelines for science communicators who want to produce OVLs.

# ERIC KENNEDY

When & Where: [G7 11:30am Friday 6 April ARCH2](#)

Title: **Communicating disasters: after action reviews as a genre of science communication**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Eric Kennedy**, *Arizona State University, USA*

Around the globe, emergency services are tasked with responding to a wide range of disasters. Whether floods, hurricanes, earthquakes, or terrorist attacks, these events are nearly always characterized by an imperfect response. This has spurred on a specific genre of scientific communication, the “after action report,” used by governments and emergency response agencies to determine where their responses fell short and how to act more effectively in the future. This genre of communication is meant to reach several audiences (including governments, the public, and the responders themselves), and simultaneously share lessons learned while avoiding the potential for accusations and admissions of guilt or insufficiency. Moreover, there’s a recent trend to after action reports that emphasize learning rather than placing blame.

In this paper, I consider a series of after action reports on major wildfires that occurred over the past 15 years. I argue that these reports represent a distinct genre of scientific communication worth investigating, and identify the ‘language’ of the after action report. Using a comparative analysis, I argue that there are more and less productive formats of the after action report, and I identify best practices for this genre of communication that could lead to better learning and emergency response.

# JOHN KERR

When & Where: [H6 2:30pm Friday 6 April ARCH2](#)

Title: **Attitudes towards science in New Zealand: psychological factors and implications for science communication**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **John Kerr**, *Victoria University Wellington, NZ*

People don't always see eye to eye despite having access to the same information. Our worldviews and values can influence how we attend to and interpret scientific information. Understanding when and how these factors come into play is critical to effective science communication, especially when dealing with contentious, publically debated issues.

This talk will report the results of a survey of New Zealand students, revealing how ideological attitudes about freedom and equality are linked to opinions on scientific issues covered in the media (such as climate change, vaccination, and genetic modification). Specifically, we find that individuals who endorse authoritarian and conformist views, or who value a hierarchical society, are more likely disagree with the scientific consensus. A lack of trust in scientists partially explains these relationships in some, but not all cases.

The findings underscore the importance of building trust but also offer insights into how messages about contentious scientific issues (for example vaccination campaigns) can be framed so as not to conflict with deeply held values and social attitudes.

# ISABELLE KINGSLEY

When & Where: 161 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **A new tool to evaluate impacts of science communication on scientific literacy**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Isabelle Kingsley**, *University of NSW, Australia*

Co-author(s): Carol Oliver, *University of New South Wales*  
Martin Van Kranendonk, *University of New South Wales*

What evidence do we have that science communication improves scientific literacy? To date, the standard questionnaire has been the 'go to' instrument for measuring scientific literacy and impacts of science communication. However, researchers in the field are pointing to the need for more sensitive instruments (Cronje et al., 2011; Crall et al., 2013; Brossard et al., 2005).

We report on the development and testing of a new instrument—a digital game—designed to measure scientific literacy. Scientific literacy, as defined by Jon D. Miller (1983), involves knowledge of scientific constructs, understanding of the nature of science (NOS) and understanding of the societal impacts of science. This instrument focuses on the *understanding of NOS* dimension of Miller's definition, which—we argue to some extent—is at the heart of scientific literacy.

This new tool is based on a Teachable Agent (TA), a learning technology, which uses the social metaphor of teaching a computer agent by creating a concept map that serves as the agent's 'brain' (Schwartz and Arena, 2009). Concept maps are visual representations of knowledge used to measure changes in cognitive structure—that is, changes in or development of meanings of concepts (Novak and Gowin, 1984). Using concept maps and TAs, this instrument identifies the validity and complexity of ideas held by subjects about NOS and measures any changes in their cognitive structure, pre and post science communication activity, by comparing the choices they make in producing their concept maps to 'teach' their TA.

The instrument automatically scores concept maps via an algorithm, making it scalable and just as fast and easy to use as traditional questionnaires.

This study indicates that this instrument may be more sensitive and accurate than questionnaires at measuring the impacts of science communication on scientific literacy. Validation as well as further testing is required.

# ISABELLE KINGSLEY

When & Where: [C6 4:00pm Wednesday 4 April ARCH1](#)

Title: **Questioning assumptions: the evidence gap in science communication**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Isabelle Kingsley**, *University of NSW, Australia*

Co-author(s): Carol Oliver, *University of New South Wales*  
Martin Van Kranendonk, *University of New South Wales*

Around the world, governments, institutions and organisations are increasingly focussing on supporting science communication initiatives to ensure the public is interested in science, scientifically literate and better able to understand its importance and relevance to society.

Yet, there is little evidence to support the assumed benefits of science communication.

First, there is a general lack of scientific rigour applied to the evaluation of science communication — “ ... for a data-driven enterprise, science demands very few data from communicators of science, either to craft and frame appropriate messages and message content or to evaluate the impact of messages on scientific knowledge or behaviour” (Borchelt, 2001).

Secondly, some studies have found slight decreases in public scientific literacy after participation in science communication activities. For example, our pilot study measured scientific literacy pre and post activity and found that participants demonstrated a slight decrease in understanding of scientific practice (Kingsley et al., 2017). The results align with the findings from two other studies that identified slight decreases in participants’ scientific literacy after participating in citizen science projects (Brossard et al., 2005; Cronje et al., 2011).

We should not assume that any science communication is effective and beneficial for the public. There is a need for more rigorous research to measure the effectiveness of science communication in achieving objectives. These objectives can range from changing public knowledge and understanding, attitudes and perceptions of science, or simply attracting a large number to an event. There is also the need to identify the types of activities that are most effective at achieving these objectives, and the need to better understand our audience — from the educated choir to the uneducated curious. We need to grow our evidence base, which will provide important insights by which the field can enhance its efforts and more effectively direct future investment.

# MANON KNAPEN

When & Where: [A6 10:45am Wednesday 4 April ARCH1](#)

Title: **The scientific basis of homeopathy, where is the (mis)communication?**

Format: Individual paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Manon Knapen**, *University of Otago, NZ*

Co-author(s): Fabien Medvecky, *University of Otago*

Homeopathy is an alternative medicine whose efficacy is subject to controversies due to the lack of peer-reviewed studies. Indeed, a 2015 systematic review by the Australian NHMRC (among others) concluded that there is no evidence that homeopathic treatments are more effective than the placebo effect.

Despite the absence of evidence behind the efficacy of homeopathic remedies, there is an increasing number of users worldwide. The central concern with the increasing use of homeopathic remedies is the risk that individuals with serious or life-threatening illnesses will forego effective treatment from conventional medicine.

Drawing on interviews and a national survey, this paper provides an insight into homeopathy users' perception of the scientific basis of homeopathy. This provides a deeper understating of what homeopathy users take homeopathy to be and what the term 'scientific' means to them, how they access and assess information about homeopathy, and how trust is formed around the efficacy of this form of treatment.

Understanding why homeopathy users choose to use homeopathic remedies despite the lack of scientific evidence will help develop better strategies for communicating the implications of using homeopathy. This work could potentially be extended to other alternative medicines where similar risks to public health are present.

# AYUMI KOSO

When & Where: 148 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **How Japanese academic and research institutions communicate scientific information to the public: the rise of news releases**

Format: Visual talk

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Ayumi Koso**, *National Institutes for the Humanities, Japan*

Press offices of Western academic and research institutions are relying less on news releases and mainstream media to disseminate scientific information. In contrast, news releases from press offices of leading Japanese research and academic institutions are steadily increasing and sent to press clubs, a closed media outlet membership system, serving as a gateway for media access to scientific information. This study seeks to quantify this trend and explore the role that press officers and press offices play in the process of communicating research to the media through news releases.

A survey about the use of news releases as a way to disseminate research was sent out to 350 press offices of Japanese research institutions, public universities, and private universities to examine the popularity, and the production and dissemination process of news releases in Japanese research and academic institutions.

Analysis of the data suggests that in the academic year 2016, more than half of Japanese research and academic institution press offices informed the media about their research stories via news releases. In addition, news release drafts are often written by researchers, and press offices tend to send news releases to their local press clubs rather than to individual reporters or media outlets. The results will be discussed in relation to the absence of trained or specialized press officers in press offices of Japanese research and academic institutions, and press clubs.

# CHIH-HSIUNG KU

When & Where: 425 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **The arousal of “Hot cognition” in science explanation and judgement**

Format: Visual talk

Theme: Society

Area of interest: Teaching science communication

Author: **Chih-Hsiung Ku**, *National Dong Hwa University, Taiwan*

Co-author(s): Dong-Chi Sun

The concept of rationality in science has been an important issue in the domain of science philosophy, and has been a focus in science education research also. The purpose of this study was to explore the arousal of hot cognition on children’s judgment of scientific explanations under the intervention of social norms. The self-designed instruments “Rationality of scientific explanation test”, “Self-perception test” and “Group discussion worksheet” were utilized to investigate the effect of arousal of hot cognition on children’s judgment of scientific explanations. The main finding revealed that the extent to which hot cognition was aroused and affected children’s judgment of scientific explanations was influenced by class social norms. After the small group discussion, most subjects make sense their behavior with hot cognition on judgment. Analysis of children’s self-perception regarding their judgment of the rationality of scientific explanations revealed that the majority of subjects believed that they were less influenced by social norms than their peers.

# MITSURU KUDO

When & Where: [E8 2:15pm Thursday 5 April ARCH3](#)

Title: **A qualitative study of reflective accounts of a science communication training programme provided by its former trainees**

Format: Individual paper

Theme: Society

Area of interest: Teaching science communication

Author: **Mitsuru Kudo**, *Osaka University, Japan*

Co-author(s): Eri Mizumachi, *Osaka University*  
Ekou Yagi, *Osaka University*

At Osaka University, Japan, we run a postgraduate minor programme that delivers a range of courses in which students from a range of disciplinary backgrounds work together to tackle emerging questions concerning science-society relations and science communication through social scientific approaches. The programme places emphasis on developing students' capacity for working across academic, industrial, public and government sectors towards collaborative and socially responsible innovation, so that the graduates can make use of their learning in the programme in their professional careers after graduation. In order for us to better understand what aspects of our educational programme are regarded as the most valuable by relevant professionals in the real-world science communication situations, we have been conducting small scale interview research with the programme graduates to explore how they retrospectively look back at their learning in the programme and evaluate it in light of a set of skills and expertise required in their current professions. Although the interview research is still in progress, we already have started to capture a number of both expected and somewhat unexpected comments that point to strengths and limitations of our educational programme. For example, one of the noticeable characteristics of many courses provided in the programme, which is multi-disciplinary student-centred discussion, is regarded by the interviewed graduates as highly effective in equipping students with skills in cross-disciplinary communication. At the same time, they are also aware that learning primarily through discussion by students from diverse disciplinary backgrounds tends to divert the focus of the discussion away from cautiously evaluating the rationale and feasibility of ideas presented in the discussion, which would be of critical importance in the real-world professions. In this presentation, we report on some of the notable preliminary findings and discuss how they should be taken into account in further developing the programme.

# ROD LAMBERTS

When & Where: [H6 2:00pm Friday 6 April ARCH2](#)  
Title: **National surveys: if you're going to bother, bother hard!**  
Format: Individual paper  
Theme: Science  
Area of interest: Influencing policies through science communication  
Author: **Rod Lamberts**, *CPAS, The Australian National University, Australia*  
Co-author(s): Lyndal Byford, *Acting CEO, The Australian Science Media Centre*

Periodic national public surveys of beliefs and attitudes to science can provide countries with excellent snapshots of the status and condition of science in the public psyche. These kinds of surveys can help inform policy, identify areas of national science communication need, and provide guidance for areas of new research.

But such surveys rarely go the extra mile and directly compare public beliefs and attitudes with those of other stakeholders critical to national science communication discussions, such as scientists and journalists.

By teaming up with science communication practitioners from the Australian Science Media Centre, academics from the Australian National Centre for the Public Awareness of Science, have attempted to bridge this gap.

In this session we outline not just some eye-widening results of the collaboration between these two national centres, we also highlight the pros and cons of doing such research, and even ask the question: just how useful are these surveys anyway?

# SUNGTAO LEE

When & Where: 16 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **How college students respond to cyber scientific research information in Taiwan**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Sungtao Lee**, *National Taichung University of Education, Taiwan*

Co-author(s): Yuyun Nien, *National Taichung University of Education*

This study explored college students' related competencies while they contact different scientific research information within internet environment. Six copies of science news text under three different themes (disease prevention, medical treatment, and healthy diet) with academic research information were edited from local newspapers as the research tool. Sixty-seven college students with basic science background were invited to participate in this internet survey and ten open-ended questions were designed to examine their reading performances. A qualitative analysis approach was adopted with an inter-rater reliability ranged from 0.72~0.89 and basic statistics were calculated for comparisons. The results indicated that subject students tended to find keywords from the title, introduction or conclusion within the news text. Additionally, some reading comprehension difficulties were observed from their understandings of research conclusions, terminologies and inquiry procedures despite their science education background and proper inferences for the research hypothesis. Furthermore, the communication purposes of these science news were more interpretively and constructively perceived compared with information transmission and students revealed limited doubt for the news text structures in science communication, although they did show critical attitude toward the inquiry procedures mentioned within the texts. Finally, most students were inclined to believe the research reports and will adjust their deeds accordingly. Some implications for science communication and education will be discussed in the presentation.

# ALISON LEIGH

When & Where: [D9 10:45am Thursday 5 April SDAV5](#)

Title: **What's the Buzz? - a selection of outstanding science story telling in film, television and streaming video**

Format: Workshop

Theme: Stories

Area of interest: Teaching science communication

Author: **Alison Leigh**, *World Congress of Science and Factual Producers, Australia*

Thanks to new technology and new platforms, just about anyone can be a broadcaster, producer, presenter or distributor these days, creating literally millions of hours of science content.

So how can you engage and hold on to an increasingly fragmented audience ? How can you stand out above the noise ? No matter how significant your message you need a strong and coherent narrative to cut through and make an impact.

As Editorial Director of the World Congress of Science and Factual Producers I see hundreds of hours of science content every year, from feature films and documentaries and network television to You Tube channels and streaming video. Each year I collaborate with leading practitioners of science story telling to share the most outstanding current examples of innovative and creative science story telling with our members.

I will choose a few films to discuss with you in the context of:

Story telling: The power of narratives

Visual story telling and communication

Techniques of science communication

Science: Scientists and Communication

Society: Science, art and popular culture

*What's the Buzz?* will be a look at some of the most innovative, most acclaimed and most successful examples of storytelling on scientific topics in film, television and streaming video.

# YUH-YUH LI

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)  
Title: **The study of communication strategies of climate change risk**  
Format: Idea in progress  
Theme: Society  
Area of interest: Comparing science communication across cultures  
Author: **Yuh-Yuh Li**, *National Sun Yat-sen University, Taiwan*

The development of science and technology sometimes is accompanied by unexpected consequences, such as environmental problems of climate changes and air pollutions. Government often would like public to acknowledge the dangers of potential environmental risks, but it is also critical to frame these information about risks so that public will not overwhelmed by these risks and thus oppose the development of science and technology. This research seeks to examine the effects of two risk communicate strategies: the exposure of factual knowledge and the exposure of scientists' consensus. The first strategy of factual knowledge is to assess how subjective knowledge works on public attitude. The second strategy, consensus information, is to assess how scientists' consensus influence public attitude. Our research assumes that the effectiveness will be dependent upon personal cultural identity. This research, in this regard, considers the significance of personal cultural background when it comes to the usage of risk communication strategy. Surveys of university students will be done with both the treatment group and control group to compare the treatment effect. The results will be compared across countries who conducted similar surveys. It is expected that the project will broaden our understanding of public risk perception, and we can develop a tailored local risk communication strategy for local communities.

# HONGLIN LI

When & Where: [A8 11:00am Wednesday 4 April ARCH3](#)

Title: **The investigation and analysis of scientists' engagement in popular science writing in China**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Honglin Li**, *China Research Institute for Science Popularization, China*

Co-author(s): Ling Chen

Promoting the combination of scientific research and science popularization, encouraging and guiding scientists to participate in science popularization, especially in popular science writing is one of the initiatives in the field of science communication in China. Based on questionnaire survey and panel interviews, this research tries to know the current situation of scientists' engagement in popular science writing, their problems and requirements. According to the investigation, Chinese scientists widely believe that it is their responsibility to participate in popular science writing and they show strong willingness to that. However, they don't engage in popular science writing accordingly actively, and even if involved in it, the form is quite traditional. Interest and social responsibility play as the main motivation for them to participate in popular science writing. The lack of time and energy, imperfect assessment and incentive mechanism are the main obstacles. And on the demand side, the scientists expect a better policy environment and incentives and corresponding training and services. Based on the above research, this paper puts forward relevant countermeasures and suggestions to promote scientists to participate in popular science writing.

# CHI-LIN

When & Where: 145 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Using animal storytelling to communicate undergraduate students' understanding of the human-nature relationship**

Format: Visual talk

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Chi-I Lin**, *National Sun Yat-sen University, Taiwan*

The rich meanings and knowledge passed on in the metaphoric forms of art and stories have long provided a source for our understanding of humans' relationship with the natural world. The approach of storytelling conveys real events, knowledge, comment on human behavior, and communal values through symbolic narrative forms. Analogized with the local daily news concerning endangered or abused animals, the use of storytelling is expected to bridge the emotional and intellectual understanding about the interdependence between human beings and their natural community. The purpose of this study is to investigate the effect of using storytelling, focusing on the thematic topic of animals, as an integrated part of learning about animal sciences, based in a museum's natural history hall, while also reflecting on human impact and one's place in nature. This study mainly addresses the following questions: what are the changes in the students' perceptions concerning human-animal kinship? How does developing human-animal kinship influence one's attitude toward nature? The hypothesis proposed in this study is that animal storytelling in the museum has the potential to facilitate a positive correlation between a sense of animal kinship and pro-environmental attitudes. As the mechanism of storytelling engages an analogy of different time and space, it serves as a vehicle for channeling different attitudes and activates past-present and science-art in dialogue. In this study, the Personal Meaning Map (PMM) is employed to collect the students' perceptions of wild animals. The NEP scale is used to collect students' environmental attitudes. The participants are 36 university students enrolled on a course entitled "Interpretation in the museum: animal studies and environmental education". The students are engaged in creative storytelling activities. This study expects that new perspectives may be forged in defining humanity in relation to the non-human world. The implications of this study will be discussed.

# RIINA LINNA

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)

Title: **Trying to find more variety and increase popular appeal in processes**

Format: Show, tell and talk

Theme: Stories

Area of interest: Teaching science communication

Author: **Riina Linna**, *The Museum of Technology, Finland*

Techland is a new permanent exhibition in the Museum of Technology (Helsinki, Finland). Exhibition highlights the role of technology, industry and innovation during the last 100+ years. Finnish industry is exceptionally strong in developing new and improving old processes. We quickly realized that an exhibition so heavy on processes requires multiple ways communicating them. In the presentation I intend to discuss how and why we chose the methods that we used.

## *Animation*

Purification of clean water uses animation that visualizes water in the process at different stages. Done on a single 60" screen and combining interactive elements.

Manufacturing polyethylene in a dual reactor process in gif-animation.

Side streams of industrial processes in gif-animation showing the history and development of an oil refinery area.

## *Print*

Waste water purification process chart in relatively traditional style but located in the visitor toilets.

Flash smelting process using the original patent drawing as a visual starting point.

## *Video*

Pictures of stages of mining compiled into a video projected into a "rock wall" in mining milieu.

Steel manufacturing process divided on five tablet sized screens with accompanying short explanations.

Recycling metal presented alongside of a crushed Fiat 127.

## *Display case*

Metal supply chain is told with a combination of a flow chart and objects and specimens in a round display case.

All forms of visualization adhered to the visual and architectural standards of the exhibition. Looking attractive and a strong relationship to the real objects about the phenomena was stressed. Our overall aim in the exhibition is to inspire visitors of all ages to consider their relationship with technology. Emphasis was on atmosphere and experiences. To succeed in our general goals for the exhibition we didn't have to ditch processes or even process charts. But we did have to think of visualizations so that overall

impression is not repetitive, full of charts and big words.

# THEO LIPFERT

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)

Title: **Small screen science: mobile video as a platform for explaining gravitational waves**

Format: Show, tell and talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Theo Lipfert**, *Montana State University, USA*

Co-author(s): Catherine Trainor, *Montana State University*

Short video optimized for smartphones is a successful and popular method of communication. On social media, these mobile-friendly videos generate more interaction and engagement than the same videos on desktop or laptop computers, and more clicks, “likes” and “re-tweets” than text-based content or still images.

Our study seeks to determine whether the strategies that have made mobile-friendly video a “hot trend” can be used to explain complex topics such as the recent discovery of gravitational waves. Our “Show, Tell, and Talk” will present the results of our research into the communication of science on Facebook and Twitter using the codes and conventions of non-science video content.

Our first tests are stylistic: we will compare videos with identical content about the discovery of gravitational waves but with variations in format: text dominant, still image slide show dominant, and video dominant. Next, we will compare alternate story structures. Using the lessons learned in our stylistic tests, we will construct three videos that explore different stories: one historical (Einstein was right!), one technical (This is how LIGO detected gravitational waves) and one that showcases feelings of “awe” (this is how gravitational waves unlock the mysteries of the universe). We will use the established metrics of engagement from each social media platform to describe the results.

Finally, we will provide a blueprint for how communicators can conduct similar tests for the public dissemination of science. We will instruct the audience on how to develop effective video content and a methodical testing strategy. We will explain which metrics to track on Facebook and Twitter. By using our “style + story” methodology, scientists can learn which strategies drive the most engagement for the communication of their research.

# SATU LIPPONEN

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)

Title: **Think tanks for or against science: examples of recent anti-science rhetorics**

Format: Show, tell and talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Satu Lipponen**, *Cancer Society of Finland, Finland*

Think tanks are a part of the active stakeholders participating in discussion about science. They often help in building up the so-called 'echo chamber' with reports and other interventions in the public sphere. Think tanks are used to influence both media and public opinion. Industry-supported think tanks blur people's opinions with science. This is a challenge for policy makers, media and science journalism.

The aim was to identify existing and new schemes typical of the think tanks close to industries, with a special focus on how the tobacco industry tactic of discrediting science evolves. This was done by comparing the rhetoric used in published reports and publicity operations in three cases. According to preliminary results think tanks are actively used to influence public opinion. Basic rhetorical stratagems include criticism of regulation, strong support for freedom of choice, and the separation of state from free market economy mechanisms. In Europe, there seems to be an ongoing attack against civil society aimed at strengthening anti-science attitudes.

It is important to bring into public discussion how think tanks are funded and what sort of agenda they have in public. Journalists of specific interest in research, scientific methods and medical topics are critical stakeholders. More coverage is needed of industry ties to think tanks, as the public and journalists are not aware of these connections.

# SATU LIPPONEN

When & Where: [19 3:30pm Friday 6 April SDAV5](#)

Title: **Mistakes, fun, creativity - reinventing the idea of a meeting**

Format: Workshop

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Satu Lipponen**, *Cancer Society of Finland, Finland*

Co-author(s): Mikko Myllykoski, *Science Centre Heureka*  
Orlando Werffeli, *Annexio Ltd*  
Wolfgang Goede, *Free lance science journalist*

This workshop puts the focus on the audience. It explores ways to increase collaborative knowledge production. Can we learn from mistakes and turn them into innovations?

1. Confession Session - What if instead of listing your successes you reveal your worst mistakes? Join a 'Confession Session' where we share learning from mistakes – our own and those of others. Honest peer learning boosts professional identity and bridges generations. Mistakes are not a problem; learning from them is. Let's maximize the learning process. The throwable microphone (Catchbox) will make this participatory session dynamic, enjoyable, and therapeutic.

2. Can serious be fun? - Engaging researchers in conferences is a challenge, so let's throw in a few disruptive novelties. We can add collaborative elements to meetings to increase knowledge sharing and to strengthen policy implementation. Innovation/ Implementation Labs are deliberative exchange structures in face-to-face meetings. The aim is to exercise problem solving together and find the best policy options to apply.

3. How to increase collaboration in online meetings? - The future of our working habits looks promising: we're spending less time in offices or in transit, and more in the field - doing the work that matters. So let's make sure we use technology to our full advantage and not lose the human factors of meeting face-to-face. This active 10-minute session will increase your virtual toolkit, equipping you for the most collaborative and constructive meetings you've had.

# XIANGDONG LIU

When & Where: [F6 4:00pm Thursday 5 April ARCH1](#)

Title: **Constructing the framework of risk governance for free opening science and technology centers in China**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Xiangdong Liu**, *National Academy for Innovation Strategy, CAST, China*

Co-author(s): Hongwei Wang, *National Academy for Innovation Strategy, CAST*  
Xiang Li, *National Academy for Innovation Strategy, CAST*

Chinese government have been putting force in the free opening of science and technology centers since 2015. The free opening policy led to a series of problems and potential problems such as policy risk, safety risk, financial risk and consensus risk, all of them have been increasing sharply in the recent 2 years. However, attention to these risks are extremely poor and essential system for risk control was not well constructed. Based on a survey to the free opening science and technology centers in China which was conducted by National Academy for Innovation Strategy at the national level, this research made identification, evaluation and typology to current risks in free opening science and technology centers. Furthermore, thanks to the efficient data collection and the sufficient analysis to the raw data, a co-governance system based on stakeholders was proposed in this paper to promote the work of free opening in continually.

# CAROLINA LLORENTE

When & Where: [G6 11:30am Friday 6 April ARCH1](#)

Title: **Social participation in science: the perspective of third sector organizations**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Carolina Llorente**, *Communication and Society Studies Centre, Pompeu Fabra University, Spain*

Co-author(s): *Gema Revuelta, Pompeu Fabra University*  
*Mar Carrió, Pompeu Fabra University*

The social relevance of scientific research has led to evaluate the utility of including society in the research process, also in order to design adequate strategies. The active participation of different actors in solving a given problem fosters a vision of a shared future and helps the better acceptance of the scientific and technological limitations.

Establishing dialogues that bring together scientists and different stakeholders provides the opportunity to jointly understand and analyze global issues and make decisions accordingly. Often platforms and associations are consulted or engaged in studies as representatives of diverse societal views and concerns.

The main objective of our study was to diagnose the current state of the participation of Civil Society Organizations (CSOs) and Third Sector associations throughout the R&D&I process. We want to identify what their current role is and what they consider this role should be. To this aim, we interviewed 30 CSOs managers and representatives based in Spain.

From these interviews, we conclude that patient and environmental associations have a more active role in R&D&I process than other CSOs. They especially contribute as subjects of study, funders, providing data or in field work. CSOs representatives generally view a clear positive relationship between their participation in research and the main activity of the organization. However, most of them consider this association useful only in social science research.

On the other hand, the great majority of CSOs representatives do not want research's main tasks to be done inside their organization. Instead, they prefer to associate with universities or research centres in some way. For instance, through agreements to develop doctoral or master's theses in the framework of their activity, or as part of advisory boards.

# YIN-YUEH LO

When & Where: [E7 1:45pm Thursday 5 April ARCH2](#)

Title: **Scientists' beliefs about science and the public in different cultures**

Format: Individual paper

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Yin-Yueh Lo**, *National Chung Cheng University, Taiwan*

Co-author(s): Hans Peter Peters, *Research Center Juelich, Germany*

Scientists were often criticized of assuming a one-way, educational approach in public science communication with superior scientific knowledge flowing from science to a passive lay public suffering from a knowledge "deficit". However, recent conceptions of science communication emphasize active and diverse publics, discourses involving scientists and laypeople, co-construction of knowledge, and public participation in the governance of S&T – ideas often summarized under the label of "public engagement". The question arises to what extent scientists have adopted these ideas, some of which may challenge traditional views of scientific autonomy.

This paper provides some answers to this question with a particular focus on cross-cultural differences. Such differences may result from a time lag caused by the diffusion of the public engagement ideas from the Anglo-Saxon world, where they originated, to other countries. Differences may also result because the adoption of public engagement is more or less compatible with different national science cultures, in particular the demand for scientific autonomy.

In an online survey of scientists in Taiwan, Germany and the USA (n=815) we asked about scientists' beliefs and preferences regarding the public, the relationship of science and the public, and public communication of science.

The survey shows clear differences between Taiwanese and Western scientists. Taiwanese scientists have more skeptical views of the public than their Western colleagues, and more strongly want to guide public opinion. Western scientists distinguish more clearly between scholarly communication and public communication than Taiwanese scientists who, surprisingly, are more prepared to accept public participation in science. Professional autonomy may thus be less important for Taiwanese than Western scientists. In the Taiwanese case, accepting participatory public engagement is probably less an attempt to create a new kind

of science-public relationship (as in the Anglo-Saxon approach) but rather the consequence of a science system traditionally prone to external demands.

# YIN-YUEH LO

When & Where: 65 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **The creation of story authenticity—a case study of the Taiwanese fictional medical program “Wake Up”**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Yin-Yueh Lo**, *National Chung Cheng University, Taiwan*

Co-author(s): Chun Ju Huang, *National Chung Cheng University, Taiwan*

Public representations of science and medicine are not only influenced by communication about actual scientific projects, findings, or explanations of medical problems. They are also shaped by novels, movies or TV dramas that focus on science-related topics and include scientists or medical professionals as characters. The question is whether fiction mostly proliferates a contorted image of science and medicine, or whether it contributes to a more comprehensive image.

This paper analyses the case of the popular Taiwanese fictional TV series “Wake Up” that centers on an anesthesiologist. We explored the production of the medical scenes, in particular the important role of the medical consultant. Results are based on a content analysis of the series and on interviews with the producer and the medical consultant, an anesthesiologist himself.

Medical knowledge is only peripherally presented in the program; its focus is on the social practice of medicine. The story reveals the injustice of the management hierarchy in a hospital and displays ethical conflicts in clinical practice. The main function of the medical consultant was to ensure authenticity of the atmosphere in the clinical scenes. The producer was very concerned about the clinical authenticity of the scenes, not because he was genuinely interested in accuracy but because he expected authenticity to enhance the entertaining function of the fictional story by increasing empathy of the audience.

Two main conclusions can be drawn: Fictional stories may help the audience understand the organizational context of science or medicine. And story producers show an interest in scientific/medical authenticity because they anticipate a positive effect on audience success. To better understand the actual effects of scientific/medical authenticity in fiction the next phase of our study will focus on audience reception.

# NANCY LONGNECKER

When & Where: [15 4:00pm Friday 6 April ARCH2](#)  
Title: **Support for citizen scientists through social media**  
Format: Individual paper  
Theme: Society  
Area of interest: Applying science communication research to practice  
Author: **Nancy Longnecker**, *University of Otago, NZ*  
Co-author(s): *Andrea Liberatore, University of Otago*

The use of citizen science as a means of data collection has greatly increased over recent years. Recruitment and retention of volunteer participants is vital to the success of these projects and can be a time-intensive task for project managers. This research explores the use of social media to nurture a Community of Practice (CoP) for citizen scientists involved in the New Zealand Garden Bird Survey (NZGBS). CoPs create a space where people can share knowledge, excitement, stories and ideas about a particular topic and at the same time have been shown to facilitate deepening knowledge and the development of expertise. CoPs are especially useful for novices and for a dispersed group of participants.

A Facebook group was set up to support the NZGBS. Over its first two years, the development of the NZGBS online community enabled its geographically dispersed volunteers to interact with each other and share their common passion as bird lovers. The group has also provided a forum where members of all expertise levels can learn from and support each other in a way that requires little input from project managers.

This presentation reports results of a questionnaire of about 200 members of the NZGBS Facebook group as well as content analysis of interactions within the Facebook group of more than 2600 members. It will showcase some of the benefits and challenges of online support for citizen scientists and ultimately feature tips and lessons that can be applied to other projects.

# EMILIA HERMELINDA LOPERA-PAREJA

When & Where: [E8 1:45pm Thursday 5 April ARCH3](#)

Title: **Evaluation of attitudes toward CAM among budding science storytellers: medicine, nursing, journalism and teaching undergraduate students**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Emilia Hermelinda Lopera-Pareja**, *CIEMAT, Spain*

Co-author(s): Carolina Moreno-Castro, *University of Valencia*

Complementary and Alternative Medicines (CAM) encompass a wide and diverse array of techniques and, although most of them only provide well-being and comfort, others can directly influence health and, consequently, are not exempt of risks. These risks can even lead to death in the case of very serious diseases, such as cancer, if patients abandon conventional therapies to be treated exclusively with alternative ones. At present, there is a heated debate on this issue in Spain whose social evolution and political regulation might depend on how CAM are communicated in the coming years in several spheres of interest such as medicine itself, but also the media and even in formal education. The main objective of this paper is precisely to explore the attitudes and beliefs toward CAM among medicine, nursing, journalism and teaching students in their key role as budding science storytellers in communicating and/or managing the use of these therapies in the near future. For this purpose, a validated Spanish version of the 10-item *Complementary and Alternative Medicines Health Belief Questionnaire* (CHBQ) -7 point Likert scale- was administered for the first time to a sample of 234 medicine, nursing, journalism and teaching undergraduate students at different universities of Valencia (Spain). Because the maximum score on the CHBQ is 70, a positive attitude toward CAM was predefined as a total mean score of 35. Our results showed positive attitudes among students since the CHBQ overall mean score was 41.7 (standard deviation= 11). On the other hand, journalism and medicine students reported certain degree of criticism or caution - a lower mean score (34.2 and 37.8, respectively). These findings can be helpful in addressing CAM management, policymaking and communication processes.

# JULIA LORKE

When & Where: [F7 4:15pm Thursday 5 April ARCH2](#)  
Title: **From 'old media' to interactive radio?**  
Format: Individual paper  
Theme: Society  
Area of interest: Investigating science communication practices  
Author: **Julia Lorke**, *The Natural History Museum, London, UK*

Currently we are in the fourth stage of the story of radio and its public (Bonini, 2014); social networking sites (SNS) such as Facebook or Twitter have made the public audible, visible and connected. This also means that radio can be participative; listeners can become producers and as a result producers become curators. Social networking sites allow horizontal communication and therefore seem like the ideal platform to enable dialogue between science and technology radio makers and their listeners.

This study explores in a comparative analysis whether science and technology radio programmes have already entered this fourth stage in reality or if these programmes only facilitate SNS to promote their products and increase their audiences. Do SNS enable science journalism to switch from deficit to dialogue? A quantitative and qualitative analysis investigates the websites and social media activities of nine science and technology radio programmes and one science podcast in Germany and the UK.

The results show that additional content is provided on most websites and functions to share content on SNS are embedded in all but one website. However, for further interaction users are mainly referred to SNS presences of stations or presenters; engagement with the listeners on a programme level is rare.

A comparison of two in-depth case studies, BBC Radio 4 *Inside Science* and BBC World Service *Click*, reveals how different approaches within one corporation can be and that horizontal communication between science and technology radio programmes and their audiences is not only possible but also has influenced the content and the production process of science and technology radio programmes.

Bonini, T. (2014): The new role of radio and its public in the age of social network sites. *First Monday*, Volume 19, Number 6

Lorke, J. (2017): Von »Old Media« zum interaktiven Radio?. *Info7*, No. 2, pp. 48-51

# JULIA LORKE

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **Introducing LEARN CitSci – Exploring youth participation in citizen science**

Format: Idea in progress

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Julia Lorke**, *The Natural History Museum, London, UK*

Co-author(s): Lucy Robinson, *The Natural History Museum, London, UK*  
Heidi Ballard & Déana Scipio, *University of California, Davis, US*  
Christothea Herodotou Maria Aristeidou, *The Open University, UK*  
Alison Young & Rebecca Johnson, *California Academy of Sciences, US*  
Lila Higgins, *Natural History Museum of Los Angeles County, US*  
Grant Miller, *The University of Oxford, UK*

The Learning and Environmental science Agency Research Network for Citizen Science (LEARN CitSci) is a collaborative research programme studying the learning outcomes of participation in citizen science and crowdsourcing for young people aged 5-19 years.

Using the framework of Environmental Science Agency [1], we will study three settings in which young people take part in citizen science: 1) long-term monitoring projects, 2) short-term events such as BioBlitz, and 3) online or mobile-enabled projects.

The Environmental Science Agency (ESA) research framework is adapted from Basu and Barton's concept of Critical Science Agency [2] and aims to investigate and support "the ability to use experiences in environmental science to make positive changes in one's life, landscape and community" [3].

The development of ESA can be observed as:

Deepening understanding of environmental science content and practice.

Identifying an area of one's own expertise in environmental science.

Using experiences in community and citizen science as a foundation for change.

We will employ mixed methods research to characterize the settings and activities in these programmes, to capture the learning processes, and to identify how programme features and settings in NHM-led citizen science projects foster or hinder the development of ESA.

LEARN CitSci brings together citizen science practitioners and educational researchers from six organisations: University of California, Davis; California Academy of Sciences; Natural History Museum of Los Angeles County; The Natural History Museum, London; The Open University; The University of Oxford.

This project is funded by the National Science Foundation and Wellcome with the UK Economic and Social Research Council.

[1] H. Ballard, C. Dixon, E. Harris (2017). *Biological Conservation*, 208: 65-75

[2] Basu, S. J., Barton, A. C., Clairmont, N., & Locke, D. (2009). *Cultural Studies of Science Education*, 4: 345-371

[3] UC Davis Center for Community and Citizen Science (2016). *Fostering Environmental Science Agency*.

Research brief [https://yccs.ucdavis.edu/sites/default/files/resources/CCS\\_YCCS\\_Research\\_Brief\\_ESA\\_Final.pdf](https://yccs.ucdavis.edu/sites/default/files/resources/CCS_YCCS_Research_Brief_ESA_Final.pdf)

# KARINA LUPETTI

When & Where: [5:30pm Wednesday 4 April St David Lecture Theatre](#)

Title: **Vitreous sounds**

Format: Performance

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Karina Lupetti**, *Federal University of São Carlos, Brazil*

Co-author(s): Ariel Rodrigues, *Federal University of São Carlos*  
Zildmara Rodrigues, *Federal University of São Carlos*  
Joel Andrade, *Federal University of São Carlos*  
Antonio Brambilla, *Federal University of São Carlos*  
Rosemeire Silva, *Federal University of São Carlos*  
Maxuel Souza, *Federal University of São Carlos*

Vitreous Sounds is the name of a project that comprises an orchestra of blind musicians among others with normal vision and their musical glass instruments developed by a glass maker. Brazilian popular musics were chosen to be played in special occasions such as science and cultural events. The musics are broadcast as background of UFSCar's Radio Program called Vitreous Minute with short narratives about glass science. Since 2016, the Center for Research, Technology and Education in Vitreous Materials and Nucleus Ouroboros of Science Communication have a partnership to developed this project that was presented for hundreds of people . Musical instruments made of glass including various flutes, a chime and a wine glass organ and others idiophon musical instruments, such as caxixi, xequere and a berimbau were created since then. These pieces were made of borosilicate glass, molten in an oxidant flame and sculpted by the glass maker of the Chemistry Department of Federal University of São Carlos, by the other hand, the wine glass organ was tuned by adding water in the glasses. In July 2016, the glass instruments were played by the Ouroboros's musician in a play of the group called Peter Q Pan. Q= Chemist. The orchestra, now with 8 members, is going on playing with a mixture of conventional and glass instruments, thinking about science, maths, chemical constitution of the materials and mainly the harmony and the beauty of the vitreous sounds. The propose is playing 30 minutes of Brazilian popular songs with the conventional and glass instruments, showing also the glass science during the presentation with talks, slides and experiments.

# JENNIFER MANYWEATHERS

When & Where: [D6 10:45am Thursday 5 April ARCH2](#)

Title: **“Monitoring disease risk is not a huge priority, but herd health, that’s sort of important”: Beyond a top down approach, using farming stories to develop a farmer-led disease surveillance system.**

Format: Individual paper

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Jennifer Manyweathers**, *Charles Sturt University, Australia*

Co-author(s): Marta Hernandez-Jover, *Charles Sturt University*  
Aditi Mankad, *CSIRO Land and Water*  
Barton Loechel, *CSIRO Land and Water*  
Heleen Kruger, *Australian Bureau of Agricultural and Resources Economics and Science*  
Yiheyis Maru, *CSIRO Land and Water*

Australia’s animal industries rely on their ‘clean and green’ status: free from many diseases that are endemic elsewhere in the world. This status is fragile, relying on a mixture of pre-border, border and post-border control activities. On-farm surveillance is a key component of the post-border control activities. An incursion of Foot and Mouth Disease (FMD) virus into susceptible livestock, such as beef and dairy cattle, sheep, goats and pigs, would have devastating impacts on farming families and communities as well as Australian domestic and international markets.

Research has established that by reducing the time between initial infection and when the disease is first detected, the duration of the outbreak and consequently the financial and emotional impact can be significantly reduced. However, this relies on understanding more about the stories behind farmer practices and attitudes towards animal health, which influence the capacity for early detection.

This project aims to build a clearer understanding of these stories behind behaviour, practices and attitudes of farmers around their animals’ health. Initially, segments of the different livestock industries will be identified, according to the risk they face of an FMD outbreak, in relation to potential exposure and capacity to respond to such an outbreak. Risk characterisation data will be collected via a survey and followed by detailed social, institutional and behavioural network analyses to inform the development of an innovative tailored pilot surveillance program. The program will be created within the context of each producer group, based on agricultural innovations systems and aimed at establishing a farmer-led, partnership model to improve on-farm disease surveillance. This bottom up model will allow for individual stories and farming approaches to

inform the development of the surveillance program, creating a trust based model for better national disease surveillance for Australia's animal industries.

# JENNIFER MANYWEATHERS

When & Where: [AA2 3:30pm - 5:15pm Tuesday 3 April SDAV2](#)

Title: **Why won't they just vaccinate? An infectious disease risk communication workshop based on a story about a virus, a vaccine and fear**

Format: Workshop

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Jennifer Manyweathers**, *Charles Sturt University, Australia*

Co-author(s): Nancy Longnecker, *Otago University, New Zealand*  
Mel Taylor, *Macquarie University, Australia*

As new disease threats continue to emerge, the creation of risk mitigation strategies relies on clear, timely and proactive communication. The problem is that discourse between various publics and authorities can become mired in distrust and can result in outbreaks of increased severity and duration, wasted resources, and lost opportunities for participatory risk mitigation planning and discussion.

This workshop, based on the story of an actual emerging infectious disease outbreak spreading from animals to humans in Australia, will examine differing worldviews of the stakeholders involved in the discourse, and provide a platform for discussion of the role of risk perception and authority in situations of risk.

Using real data and dialogue, workshop participants will be divided into stakeholder groups, including the scientists who develop the protective vaccine, the pharmaceutical company that manufacture it, vets who administer the vaccine and animal owners deciding whether or not to vaccinate their animals. As the disease outbreak story unfolds, stakeholders will be given more information and required to make key decisions, while deliberating on communication approaches. The workshop concludes with an opportunity for discussion around risk communication and an overview of the key stages of the outbreak story.

While the unfolding story closely follows an emerging, infectious, animal-origin disease outbreak, the principles considered will be applicable to any discourse around risk and mitigation and will broaden participants' understanding of possible approaches to risk communication.

# KATHARINA MARINO

When & Where: 371 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Frequensea: making the intangible tangible**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **Katharina Marino**, *Centre for Science Communication, University of Otago, NZ*

Co-author(s): Jenny Rock, *University of Otago*

Far from being a void of silence, the ocean is bustling with life and has a thriving language of its own. Acoustics are vital to whales' and dolphins' underwater lives, but as human activities in marine environments increase, so does the noise.

The goal of the sci-art installation, *frequensea*, was to make the intangible effects of marine noise pollution tangible to the lay public. This novel form of science communication aimed to evaluate how visitors interact and contribute to the co-constructed installation, and how much this model influences awareness and understanding.

Using an open-concept exhibition space, visitors contributed to the main portion of the exhibition by adding to the installation and creating a 'sound network' out of elastic strings. As visitors entered the exhibition they chose different colour elastics representing different sources of noise pollution. They were instructed to attach the strings between two rows of columns to create a web of visualised noise. As more individuals added strings, it became progressively more difficult to navigate from one end of the space to the other - physically modelling the interference of marine noise pollution in cetaceans' ability to efficiently perform basic necessities (including communication, navigation and hunting or foraging for food).

In 10 days, the exhibition hosted nearly 1100 visitors. Observational data gauged how long participants stayed in the string model of noise, how they navigated the space and if they interacted with other individuals. Spot observations were also taken to determine length of engagement with additional exhibition components (video, sound clips and science data visualisations). Exit surveys were completed by visitors to assess previous awareness of marine noise pollution and benefit of exhibition components.

Together this data will help determine if participating in and physically modelling the intangible issue of marine noise pollution can help individuals understand its effect on whales and dolphins.

# ILSE MARSCHALEK

When & Where: 132 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Paper, scissors, playdough: an experiment in using creative methods for the collaborative design of instruments for responsible industrial innovation**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **Ilse Marschalek**, *Centre for Social Innovation, Germany*

Co-author(s): Maria Schrammel, *Center for Social Innovation*  
Raffael Himmelsbach, *National Technical University of Norway*  
Kaisa Granqvist, *Center for Social Innovation*  
Ralf Lindner, *The Fraunhofer Institute for Systems and Innovation Research*  
Angela Simone, *Fondazione Bassetti*  
Francesco Lescai, *Aarhus University*

Industry is an important site of techno-scientific development, yet interventions to fostering public engagement have mostly focused on academic institutions. The Horizon2020-funded project SMART-map aims to develop tools that enable research-intensive businesses to engage with societal values and expectations throughout their innovation processes. Our presentation reports on the project's quest to design a creative workshop format, which we implemented in six workshops that took place during the first half of 2017, each in different European city. The workshops were shaped by the requirement to enable an eye-level dialogue between actors from academia, industry, the funding and regulatory sector, and civil society, which we identified as interested or affected by – but not necessarily aware of – advances in a given technological field (precision medicine, synthetic biology and 3D printing for medical applications). Moreover, these participants had to deliver concrete tools after one and a half day only. We adopted a creative design method that led around 20 participants through a series of activities, from defining key objectives for ecological and societal responsibility in their technology area, to designing and building physical mockups of tools to achieve these objectives in an industrial research setting. These mock ups were the results of interactive brainstorming and prototyping sessions, in which small groups worked on tangible objects with all kinds of craft materials. Although experience told us that the workshops were too short in duration to deliver sufficiently fine-tuned tools that would be ready for implementation in a company, it showed that this intense, creative method affords deep insight into a given industry sector and the work necessary to jointly define societal needs across different stakeholder perspectives.

Further co-authors: Daniel Bachlechner; Melek Akca Prill; Mari Carmen Álvarez; Javier García Planells; Anna Pellizzone; Enikő Demény; Péter Kakuk; Sally Randles; Mohammad Hajhashem; Rosalind Le Feuvre; Alexander Degelsegger

# MYRIAM MARTI-SANCHEZ

When & Where: [16 4:30pm Friday 6 April ARCH3](#)

Title: **"It actually works for me": the presence of homeopathy in the Spanish digital press**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Myriam Marti-Sanchez**, *ESIC Business and Marketing School, Spain*

Co-author(s): Vanessa Roger-Monzo, *Business and Marketing School*  
Ramon Camaño-Puig, *University of Valencia*  
Mavi Corell-Domenech, *Florida Universitaria (Valencia)*

Instinctively, when a person with migraines to whom they prescribe a homeopathic treatment feels the improvement, he or she tends to make an automatic association: "It actually works for me." However, the brain tends to interpret correlative facts as causal, amongst many other factors.

Homeopathy, included in the list of 139 pseudotherapies recognized since 2011 by the Spanish Ministry of Health, has not shown effectiveness beyond placebo, so it is very likely that the improvement after its application is due to this effect.

The aim of this study is to analyse and evaluate the treatment of the Spanish digital press on information articles related to homeopathy.

To address the research, a content analysis of journal articles published between January 1st, 2012 and December 31st, 2016 on homeopathy has been developed in the three most widely read digital press of general information and ideological orientation of Spain: El País, El Mundo and ABC.

The initial search returned 292 results. After examining all the articles, there were only selected those in which the different uses of homeopathy were treated with detail. Due to the term "homeopathy" has been used metaphorically or superficially, without deepening in the therapy, 115 articles have finally been included in this study. After completing the sample, the corpus was examined with the content analysis and proceeded to obtain data.

The results make possible to clarify the role of media in the transmission of information on homeopathy and to propose a whitepaper of good practices aimed to provide contents for journalism which are useful for health and well-being of the population.

# VICTORIA MARTIN

When & Where: [15 4:15pm Friday 6 April ARCH2](#)

Title: **How can we engage more diverse audiences in large-scale citizen science projects for broader societal impact?**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Victoria Martin**, *Cornell University, USA*

Co-author(s): Rick Bonney, *Cornell University*  
David Bonter, *Cornell University*  
Emma Greig, *Cornell University*  
Bruce Lewenstein, *Cornell University*  
Drew Margolin, *Cornell University*  
Tina Phillips, *Cornell University*

Citizen science programs operating at large scales typically attract thousands of participants, across sizeable geographic areas (regional, national and global). Many people make well-intentioned yet lofty claims about the *societal impacts* these programs can achieve as a tool for engaging and communicating science with the public. However, it has become apparent that the potential reach of large-scale citizen science may be stifled by the types of adult audiences that typically participate (who often share characteristics with others in the same project, such as age, gender, education, and/or interest in science).

There are many reasons why particular types of people are more likely to participate in large-scale citizen science. To achieve the societal-level impacts many projects (and the field at large) aspire to, a concerted effort is needed to ensure greater diversity of participants and audiences. Yet, for many citizen science projects, incorporating diversity into their engagement and communication strategies is no simple task given the practical constraints on time, resources and within-project expertise. This paper presents work-in-progress exploring how we can better understand and engage audiences who are under-represented in large-scale citizen science, and how important participants' social networks are for diffusing new scientific knowledge arising from citizen science.

Using a case study from the Cornell Lab of Ornithology, this research explores one of the Lab's large-scale citizen science projects, Project FeederWatch ([feederwatch.org](http://feederwatch.org)), which currently attracts more than 20,000 participants in the U.S. and Canada annually. A mixed-method approach is being used to examine: (i) how to engage younger participants than the typical "FeederWatcher" (i.e. usually over 50 years old), and (ii) how potential participants' social networks might be useful to communicate new scientific knowledge with audiences beyond those directly involved. This research addresses several questions in the U.S.

National Academy of Sciences' 2017 research agenda for science communication.

# KAITLYN MARTIN

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)

Title: **Engagement for digital native storytellers: making students the science communicators**

Format: Show, tell and talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Kaitlyn Martin**, *Centre for Science Communication, University of Otago, NZ*

Co-author(s): Lloyd Davis, *University of Otago*  
Susan Sandretto, *University of Otago*

Students around the world are losing their passion for science, and they're losing it at school. Like many countries who do not require science in every year of schooling, New Zealand only requires science to be taken up to Year 10 (of 13) in high school. After this, students must actively choose to stay in science classes or drop the subject - forever. In order to engage students before they choose to stay or leave science, we are testing a new type of initiative in Otago that brings communication into the science classroom. We know that our current adolescents are digital native storytellers - accustomed to curating their lives with photos, videos, and stories on social media. In this project, students become the science communicators as they create their own science films on common mobile devices. Does the process of planning, filming, editing, and presenting their own science films engage students in an untapped learning experience? We hypothesize that through making their own science films, students will become more actively engaged in the interpretation, understanding, and presentation of scientific information which could affect their choice to stay in science.

# MAGGIE MARX

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)  
Title: **Do you speak politician? Lessons from PRIME**  
Format: Show, tell and talk  
Theme: Society  
Area of interest: Influencing policies through science communication  
Author: **Maggie Marx, University of Cape Town, South Africa**

The Programme for Improving Mental Healthcare (PRIME) has had great success, but also many failures, in influencing healthcare policy in its five low-and middle-income study countries. Its evidence-based research has shown on many occasions that integrating mental healthcare into primary care is both effective and economical, yet many decision makers resist applying our findings.

As research uptake officer for this research consortium, I've been researching the best way to effectively communicate our research to policymakers, and am busy developing what we call a policy pack. Rather than just disseminating an 8-page policy brief, the policy pack offers the same information in a variety of mediums in order to cater to the great variety of decision makers within every government and organisation.

The Building Capacity to Use Research Evidence Programme (BCURE) recently stated that "policymakers in low- and middle-income countries often lack the capacity to effectively access, appraise and apply research when making decisions" and that "capacity is just one element of a tapestry of factors that block or disincentivise evidence-informed policymaking."

PRIME has also found, through interviews with its government partners in its study countries, that time and capacity prevent high-level policymakers from successfully consuming our academically published research through equally jargon-heavy and lengthy policy briefs. By relooking our approach to the policy brief, often the only opportunity to drive a specific message home, and making its contents more accessible, we hope to increase the uptake of valuable research into policy and practice.

# LUISA MASSARANI

When & Where: [A3 10:45am Wednesday 4 April St David Lecture Theatre](#)

Title: **Mapping science communication research globally: trends, gaps, challenges and opportunities**

Format: Roundtable discussion

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Luisa Massarani**, *Brazilian Institute of Public Communication of Science and Technology*

Co-author(s): Alexander Gerber, *Rhine-Waal University, Germany*  
Jenni Metcalfe, *Econnect Communication, Australia*  
Lars Guenther, *Stellenbosch University, South Africa*  
Marina Joubert, *Stellenbosch University South Africa*

Although science communication in various forms likely predates the institutionalisation of science, the formal academic research of science communication goes back some 50 years. While there are three academic journals dedicated to the field, many relevant research articles are scattered over thousands of journals. Science communication research, like science communication practice, is a very diverse field. Scholars from different disciplines often work more in parallel than together.

Despite it being almost impossible to capture the developments of the whole research field over the last decades, the participants in this roundtable will discuss their studies, which have attempted to analyse various parts of the science communication research picture. These studies shed light on the general trends and opportunities offered by science communication research to-date, but also identify significant gaps and needs in the research field.

Lars Guenther and Marina Joubert will discuss their study, which identified the trends, challenges and gaps by analysing research papers from the three journals dedicated to the field, *Public Understanding of Science*, *Journal of Science Communication* and *Science Communication*. Alexander Gerber and Jenni Metcalfe will discuss the unpublished research results of the INSCICO team's content analysis of more than 3,000 texts, review of grey literature, and two-stage interviews with 34 leading science communication researchers from all continents. Luisa Massarani will present the results of a study, which identified and analysed 609 science communication papers from 80 journals that were written by 1,081 authors from 232 Latin America or related institutions.

The studies explore the opportunities and needs, and trends and gaps of the current science communication research field. The presenters will also discuss the relevant outcomes of discussions on science

communication research being held at the Rockefeller Foundation-supported mini conference being held in November 2017.

# LOURDES MATEOS ESPEJEL

When & Where: [D5 11:45am Thursday 5 April ARCH1](#)

Title: **The meaningful power of emojis to understand public perceptions of science**

Format: Individual paper

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Lourdes Mateos Espejel**, *Benemérita Universidad Autónoma del Estado de Puebla, Mexico*

Co-author(s): Helga Lissette Ochoa Cáceres, *Tecnológico de Monterrey Campus Puebla*  
Helios José Roberto Valencia Ortega, *Benemérita Universidad Autónoma del Estado de Puebla*  
S.R. Casolco, *Universidad Autónoma del Estado de Morelos*

An emerging Z generation is dealing every day with excessive audio-visual texts that shape the way this generation communicate to each other and perceive the reality. All this new ways of communications are result of the fast advance of science and technology. Social media and apps like whatsapp or messenger are showing that in order to communicate a meaning, Z generation prefers to use images than words. Specifically emojis. That is why the present work consisted on using emojis to obtain Z generation's perceptions of science. Based in consumer behavior theories and qualitative research, focus groups sessions were conducted in Mexico. Each one was integrated by young people between 18 to 20 years old. As part of the test young people were asked to select emojis that in their opinion could explain the concepts of science and scientist. As expected emojis like man's face with glasses was selected by young people, because this emoji represented study and intelligence; but also other emojis were selected, like the pile of poo, because it represented boredom. Also we asked young people to draw an emoji that could represent the science and a scientist. With this methodology and results our contribution consists on generate a basis of knowledge to generate the right meanings to deliver signification of science and technology for the young audiences. To use emojis in social media campaigns can reinforce and create positive perceptions of science and scientists and contrarrest the negative ones.

# CHRISTINE MAUELSHAGEN

When & Where: [A7 11:00am Wednesday 4 April ARCH2](#)

Title: **Making the invisible visible: Photo-interview techniques in science communication**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Christine Mauelshagen**, *RWTH Aachen University*, Germany

Co-author(s): Eva-Maria Jakobs, *RWTH Aachen University*

Innovative and complex technologies and research are often behind many peoples' vision (e.g. on power grid technologies). However, they play an important role as society becomes increasingly dependent on technology research with its opportunities and risks being part of controversial public debates. Thus, the role of scientists as communicators of complex research topics has become increasingly important. The question is: How can complex technologies and research topics be communicated by scientists?

This paper discusses the photo-interview technique as a tool for communicating research on complex technologies. It uses the example of new direct current (DC) technology investigated at the research campus "Flexible Electrical Networks" (FEN) at RWTH Aachen University. DC technology plays an important role in the development of future energy supply systems, but is unpopular outside the research field, being a mostly unknown, "invisible" technology.

The photo-interview technique was adapted for science communication: FEN-researchers (n=5) were asked to take five photos related to the research campus and five related to DC technology in summer 2017. Afterwards, they were asked to comment on their photos in a semi-structured in-depth interview addressing questions about the overall vision of FEN, pros and cons of DC technology, and photo-specific questions, e.g. reasons for image selection and personal connection to the subject. The interviews were recorded, transcribed, and analyzed qualitatively.

The study indicates two main benefits. First, the results describe research from a very personal perspective. By combining pictures and individual quotes, photo-interview techniques can be used to create highly personal stories and make the invisible visible. Another effect is that the interviewer acquires a deeper understanding of the discussed technology and project. Limitations of the approach arise from the fact that researchers are not trained to create stories and present their work in this way. Thus, compulsory science communication trainings should be part of engineering education.

# CHRISTINE MAUELSHAGEN

When & Where: 257 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **The science communication lab: an expert-based study on design requirements for technology exhibitions**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Christine Mauelshagen**, *RWTH Aachen University*, Germany

Co-author(s): Eva-Maria Jakobs, *RWTH Aachen University*  
Samir Reynolds, *University of Waterloo*

## *Background*

This contribution deals with studies on designing and evaluating scientific exhibitions in an informal learning environment using different science communication formats. The lessons learned will be used to design an exhibition focusing on the issue of energy technologies, especially power distribution grids. The exhibition is part of the research campus "Flexible Electrical Networks" at RWTH Aachen University, Germany. The exhibition-project's aim is developing and testing new (digital) science communication formats for innovative and complex energy technologies – the so-called "science communication lab". The study investigates two research questions: How should exhibits on complex technologies be designed? and How can science communication formats for complex technologies in exhibitions be evaluated?

## *Methods*

First, a quantitative online survey was set up to reach a wide range of experts on museum design and curation (n=29). The survey contained questions about the museum experience, exhibition design for complex scientific topics, and science museums' and centers' target groups. The dataset was analyzed statistically. To gain further insight into the topic, curators and designers from well-known technology and science museums were interviewed (n=4). The semi-structured expert interviews contained questions about exhibition designs for complex technologies, science communication, and evaluation. All interviews were recorded and transcribed. The dataset was analyzed by qualitative content analysis. Both datasets were collected in summer 2017.

## *Results*

The results serve as input for the exhibition concept and ways of communicating complex scientific topics using different science communication formats while providing valuable input for evaluation. E.g., the results provide helpful hints about the importance of various descriptors of a museum exhibit – such as thought-provoking or entertaining – and the design of hands-on exhibits. Further selected results refer to

topic-focused exhibition content, target groups, or establishing a personal connection to the visitor linked to his everyday life.

# MERRYN MCKINNON

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)

Title: **Science communication for citizen scientists: fostering community capacity for environmental leadership**

Format: Show, tell and talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Merryn McKinnon**, *Australian National University, Australia*

Co-author(s): Jennifer Loder, *ReefCheck Australia*  
Angela Dean, *Australian National University*  
Karen Vella, *Queensland University of Technology*

Reef Check Australia (RCA) has a legacy of citizen science activities, having coordinated and trained volunteers to undertake reef health surveys across Queensland for over 15 years. Through the collaborations with these citizens and partners, RCA has a validated data set on indicators of reef health which can be used to complement traditional research and monitoring. Now, through a new Reef Ambassador community outreach program, RCA aims to develop a more holistic version of citizen science. Can citizens also become effective advocates for the science they do? Can they empower local communities to take action?

Between 2015 and 2017 RCA recruited and trained 37 Reef Ambassadors. Each ambassador attended a workshop which provided training in reef science, science communication and event delivery. After the completion of the workshop, the Reef Ambassadors coordinate or contribute to community outreach events to build community awareness about local reefs and RCA's work. The Ambassadors also provide information and opportunities to empower local individuals to contribute to reef conservation.

This presentation will outline the key findings from preliminary evaluations of the Reef Ambassador program based on pre- and post-training surveys and interviews with the Ambassadors. To explore the potential impact of outreach activities, short surveys were also conducted with community members who engaged with Reef Ambassadors at events. The results presented here are part of an ongoing program which seeks to translate citizen science into a means of fostering community capacity for environmental leadership. It provides insights into how citizen science and science communication can 'join forces' to enact positive outcomes for communities, science and the environment.

# MERRYN MCKINNON

When & Where: [A10 10:45am Wednesday 4 April SDAV6](#)

Title: **Science communication and gender: challenges, opportunities and stereotypes**

Format: Workshop

Theme: Science

Area of interest: Teaching science communication

Author: **Merryn McKinnon**, *Australian National University, Australia*

Co-author(s): Christine O'Connell, *Stony Brook University*

Does gender matter when it comes to science communication? Does the development of science communication skills influence men differently to women? This session will first present preliminary findings of an international research collaboration between the Alan Alda Center for Communicating Science at Stony Brook University and the Centre for the Public Awareness of Science at the Australian National University. This collaboration is exploring the potential impacts of gender on the development of science communication skills. One study looked at how communication skills such as empathy and focus, two cornerstones of effective communication practice, manifest differently in men and women. Another involved focus groups and workshops for women in STEM, identifying issues and solutions, and exploring exercises that target self-perception and reframe gender stereotypes.

This session will examine current perceptions and stereotypes in science communication and demonstrate the interactive and engaging exercises used in these studies. These exercises are drawn from well-established improvisation for theatre techniques and grounded in science communication theory and practice. Participants will gain an understanding of their own gendered communication stereotypes, how they may manifest in practice, and perception of others. This workshop will highlight how to make effective choices in how we communicate, as well as identify strategies for empowering effective communication. This workshop is recommended for any science communicator, teacher or trainer of science communication.

# MERRYN MCKINNON

When & Where: [F2 3:30pm Thursday 5 April SDAV3](#)

Title: **Building Public Understanding of Population Health Science: Insights from a unique new collaboration**

Format: Roundtable discussion

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Merryn McKinnon**, *Australian National University, Australia*

Co-author(s): Samantha Rowbotham, *University of Sydney*  
Will Grant, *Australian National University*  
Anita Beck, *Questacon - The National Science and Technology Centre*  
Christine O'Connell, *Stony Brook University New York*  
Andrew Pleasant, *Health Literacy Media*

If science communication theory and practice were applied to population health science, what would happen? This roundtable discussion explores an innovative partnership between the Australian Prevention Partnership Centre and the Centre for the Public Awareness of Science at the Australian National University. The first of its kind internationally, this project is attempting to build a new field of population health science communication.

The purpose of public health policies is to keep people healthy and out of hospital. But do the public accept this premise? Indeed, do they think about health policy at all? Population health science aims to provide equitable health outcomes for all publics, but the communication originating from population health tends to focus on policy makers. Science communicators may work with policy makers, but their primary audience are the various publics. This project aimed to blend the two audiences via a variety of internships, producing communication outputs about population health science created by professionals external to population health.

These internships have explored the use of podcasts as a mechanism for telling the stories of the science which underpin policy; how fundamental concepts of public health can be explored via a science centre exhibit, and the sometimes curious relationship between science communication and journalism. This roundtable discussion will explore the utility of 'population health science communication' as a field, and the assumptions, barriers and opportunities that were discovered along the way.

# PEDRO MEDINA-ROSAS

When & Where: 302 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Vive el arrecife. First interactive exhibition on Mexican coral reefs to improve their conservation**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Pedro Medina-Rosas**, *Universidad de Guadalajara, Mexico*

Mexico is a privileged country due to its location in the tropics and having coastlines in two oceans, where coral reefs develop and flourish, having a direct and indirect impact on the use of resources that sustain national economy. However, it is remarkable the ignorance that the general public has on marine organisms and phenomena associated with coral reefs.

The purpose of the exhibition is to improve the awareness about the critical current situation of the coral reefs in Mexico and the world. It is important to show the positive and negative impact we can have on coral reefs, even if we live in a city far from the ocean. The approach chosen is focused on the experience of the visitors, from kids to elderly, where they learn and be aware of the importance of the coral reefs by feeling and experiencing the diversity of organisms and processes involved in coral reefs.

This exhibition was designed by a team of scientists and educators, designers and science communicators as an educational experience to show the concepts included in coral reefs in a way that they could learn but also experience the environment through a sensorial visit. Additionally, visitors are invited to make a commitment with coral reefs by means of simple daily activities to improve the chances of having coral reefs in the future. The website [www.viveelarrecife.com](http://www.viveelarrecife.com) includes activities for schools and visitors.

This is the first traveling exhibition about coral reefs in Mexico, and will be presented in science museums and spaces increasing the chances to reach more people and improving the knowledge on coral reefs in the country, which could help in their protection as well as their conservation.

# FABIEN MEDVECKY

When & Where: [11 3:30pm Friday 6 April St David Lecture Theatre](#)  
Title: **Talking about values in science communication**  
Format: Roundtable discussion  
Theme: Society  
Area of interest: Building a theoretical basis for science communication  
Author: **Fabien Medvecky**, *University of Otago, NZ*  
Co-author(s): Massimiano Bucchi, *University of Trento*  
Joan Leach, *Australian National University*  
Michael Dahlstrom, *Iowa State University*

This panel asks ‘what is the role of value in science communication?’ One of the main motivations for communicating science is a decision-making one; that we, as individuals and as societies, can make informed decisions; evidence-based, scientifically informed decisions to be exact. However, we know it is empirically false that people (real ones, not the homo-economicus type) make decisions based primarily on evidence and information. While people often use and appeal to scientific information in their decision-making, people do not usually make scientific information primary when making decisions. That’s not to say we don’t make informed decisions. It’s rather that what people take as information in their decision-making is often ‘extra-scientific’ value-driven information. This value-driven information comes in many shapes and sizes, such as ethical (what we take to be morally good or bad), economic (how much things are worth to us in terms of exchangeable resources), and aesthetic (what we view as beautiful, enriching etc). And although science communicators recognise that these values matter, they don’t communicate them very often. Yet we know a lot about values, from ethical theories to empirical economics. Importantly, we don’t make this value-driven information as explicit nor as prominent as we do the scientific information, despite its prominence in people’s decision-making.

In this panel Prof Massimiano Bucchi, Prof Joan Leach, Assoc Prof Michael Dahlstrom and Dr Fabien Medvecky will discuss: what is the role of value in science communication? If we want science communication to remain meaningful to decision-making, we need to tackle this value discussion, and we equally need to reflect on the value(s) of science communication itself.

# ANA LUCIA MENA

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)

Title: **Musical tales: one composer in residence and three movements of science**

Format: Show, tell and talk

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Ana Lucia Mena**, *Instituto Gulbenkian de Ciencia, Portugal*

Science and art projects are becoming more and more popular, bringing together the scientific and artistic communities. These projects may involve artistic residences in research centres, where artists and scientists can engage with each other in a routinely basis for a short period of time. Works of art gain shape as outcomes of such interaction. However, it is not that common to find musical pieces inspired by science and composed within the frame of an artistic residence.

The artistic residence of the French-Dutch composer Camille van Lunen at the Instituto Gulbenkian de Ciência (IGC), in Portugal, is one of such rare examples. With complete freedom to interact with scientists from that biological research institute, Camille was inspired to compose the piece “Quatuor pour l’Aurore des Temps”. This musical piece has three movements that address cell division, crystallization of proteins, and a viral attack to a cell. To create it, the composer had to understand the biological basis of these processes, and to imagine how they would sound if one could hear them.

Contrary to what happens with a painting or a sculpture, which once finished is ready to be exhibited, the performance of a musical piece requires further work from the musical perspective. In the pre-premiere of this piece the composer and a scientist joined hands to talk about the science and the creative process behind this piece to an audience composed of lay public and scientists.

In this communication I will reflect on the work developed during this artistic residence, the impact it had in the scientific community, and the challenges faced to present this science & music project to the public. The premier of “Quatuor pour l’Aurore des Temps” can be heard here: <https://youtu.be/B1CwAEzUpEI>

# ISABEL MENDOZA-POUDEREUX

When & Where: [E7 2:00pm Thursday 5 April ARCH2](#)

Title: **Stories of complementary therapies in the Spanish digital newspapers**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Isabel Mendoza-Poudereux**, *Universidad de Valencia*, Spain

Co-author(s): Lorena Cano-Orón, *Universidad de Valencia*  
Carolina Moreno-Castro, *Universidad de Valencia*

Use and acceptance of complementary therapies in Spain have in recent years earned attention among the public opinion, due to the heavily charged controversy between skeptics and promoters. For that matter, the relevance of stories production on the matter is fundamental for the polarization of citizens views. Official data available on the number and/or use of these therapies are scarce. Briefly, a study prepared in 2008 by the Observatory of Natural Therapies and the report prepared by the Spanish Government Health Division in 2011. Here, the total recount of alternative therapies to be found in Spain is established as 139, however the extent of their use and knowledge by Spaniards is still uncertain. Therefore, the main objective of this research is to analyze the volume of news generated by the media about those therapies in order to be able to: firstly, detect the therapies with more media resonance and, secondly, to relate them with their actual use.

A search of all the news published in 388 digital media gathered in MyNews database with any of the 139 therapies mentioned during 2015-2016 period was carried out, giving rise to a gross sample of more than 23,400 stories; this is carefully quantitatively analyzed.

Results obtained until now show that 35% of the therapies have absolute no media presence during the period studied and only 20% of them appear in more than 100 different stories.

The study shows that the volume of press generated on complementary therapies does not necessarily follow their use pattern among Spanish population; therefore, it is impossible to establish a direct correlation between press impact and use. Complementary therapies use in Spain is not affected by its depiction in the press.

# VICTORIA METCALF

When & Where: 15 4:30pm Friday 6 April ARCH2

Title: **When curious citizens lead science – the paradigm shift arising from participatory science**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Victoria Metcalf**, *Office of the Prime Minister's Chief Science Advisor, New Zealand*

Co-author(s): Kristiann Allen, *Office of the Prime Minister*  
Craig Grant, *Otago Museum*  
Josh Richardson, *Venture Taranaki Limited*  
Sarah Morgan, *COMET Auckland*

Science is central to our daily lives and the global problems we currently face. A scientifically engaged society is critical, as is a socially engaged science sector. In response to this need, the Participatory Science Platform (PSP) has been piloted for the last three years in three New Zealand regions (South Auckland, Taranaki and Otago). The model is a world-first in its dedicated funding and national scope and is part of 'Curious Minds' ([www.curiousminds.nz](http://www.curiousminds.nz)), a government-funded suite of initiatives recognising the importance of science and technology to New Zealand's future.

Participatory science allows young people, their families and the wider community to connect with science and technology in a project-based fashion, where anyone can be fully involved in the scientific research process. Within the PSP, communities work on projects meaningful to them in partnership with scientists and educators, harnessing local knowledge and providing quality learning opportunities, whilst doing robust science. The eighty-odd projects funded to date are diverse, but all have two-way engagement and communication of what they are doing at their core, using both informal and formal methods.

As National Coordinator for the PSP, I travel to the pilot regions to understand its impact. Indications are these projects are creating a paradigm shift in how science communication, science, and education are performed, whilst also empowering and building communities through the localised learning and solutions focus.

Our platform bridges the gap between scientists and communities, democratises and can improve the science process, and recognises many expertise and knowledge sources, including cultural knowledge. The local and less formalised approaches to science communication offer many benefits.

Benefits extend well beyond engaging with science and technology. This approach also spans the curriculum, and teaches young people citizenship, teamwork and transdisciplinarity.

The PSP model thus, has the potential to positively influence the science:society nexus.

# JENNIFER METCALFE

When & Where: [E1 1:45pm Thursday 5 April St David Lecture Theatre](#)

Title: **International perspectives on science communication theory and practice**

Format: Grouped paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Jennifer Metcalfe**, *Econnect Pty Ltd, Australia*

Co-author(s): Joan Leach, *Australian National University*  
Brian Trench, *PCST*  
Bruce Lewenstein, *Cornell University*

In November 2017, 22 international experts participated in an intensive 3-day conference at the Rockefeller Foundation's Centre at Bellagio, Italy.

The meeting examined the current state of science communication, and considered the theoretical basis for science communication research and practice, as well identifying the means for building stronger links between practitioners and researchers.

In this session, 4 speakers will explore in detail the issues coming out of the Bellagio meeting:

Professor Joan Leach will discuss 'Publics for science communication: the problematic for the field'. This is a paper prepared by Joan and other Bellagio participants: Emily Dawson, Luz Helena Oviedo, Rick Borcheldt, Cary Funk.

Professor Brian Trench will discuss ' Perspectives for science communication research'. This paper is prepared by Brian and other Bellagio participants: Toss Gascoigne, Alex Gerber, Felicity Mellor, Maarten van der Sanden.

Professor Bruce Lewenstein will discuss 'Science communication as a field'. This paper is prepared by Brian and other Bellagio participants: Peter Broks, Emily Dawson, Lloyd Davis, Niels Mejlgaard, and Martin Storksdieck.

Jenni Metcalfe will discuss 'Collaboration between science communication scholars and practitioners'. This paper is prepared by Jenni and other Bellagio participants: Ayelet Baram-Tsabari, Marta Entradas, Marina Joubert, Luisa Massarani, Michelle Reidlinger

Proposals from the co-authors of this presentation:

**Collaboration between science communication scholars and practitioners** Jenni Metcalfe, *Econnect Pty Ltd*

The public remain a key problematic for those interested in science communication. By 'problematic' we mean (after Atkins and Skeggs) that 'the public' (including in a plural form) remains a key problem around which the field of science communication is constituted and that, in a sense, the field just can't get away from it. That is not to say however, that there is a shared view on how the problem of the public is understood. In addition - as others have pointed out - in seeming to position activities, practitioners, researchers and policies between science and the public(s) the field of science communication contributes to the creation of public(s) as distinct somehow from science, and as both distinct from society. Instead of re-hashing the now extensive literature on publics in relation to science communication we discuss two ways of thinking about publics that we believe characterise much of how publics are understood in science communication. We also set out what we believe to be the 'weak spots' in these two positions to conclude that how publics are understood matters for science communication even as the field attempts to move past definitions of public.

**Publics for science communication: the problematic for the field** Joan Leach, *Australian National University*

The public remain a key problematic for those interested in science communication. By 'problematic' we mean (after Atkins and Skeggs) that 'the public' (including in a plural form) remains a key problem around which the field of science communication is constituted and that, in a sense, the field just can't get away from it. That is not to say however, that there is a shared view on how the problem of the public is understood. In addition - as others have pointed out - in seeming to position activities, practitioners, researchers and policies between science and the public(s) the field of science communication contributes to the creation of public(s) as distinct somehow from science, and as both distinct from society. Instead of re-hashing the now extensive literature on publics in relation to science communication we discuss two ways of thinking about publics that we believe characterise much of how publics are understood in science communication. We also set out what we believe to be the 'weak spots' in these two positions to conclude that how publics are understood matters for science communication even as the field attempts to move past definitions of public.

**Perspectives for science communication research** Brian Trench, *PCST*

We present a summary of the multiplying objects of science communication research and of the many perspectives from which researchers may view these objects. Our aim is less to provide a guide to the state of the art than to indicate the options, including little-tried or emerging options, that are open to the researcher examining the expanding field of practices. We envisage the researcher looking through adjustable lenses or

filters - sets of analytical frames and research modes - that highlight or bring into focus different objects and different aspects of those objects.

**Science communication as a field** Bruce Lewenstein, *Cornell University*

Is science communication a field? As we recognized at Bellagio, no consensus has emerged. Some see it as tied to institutions like universities and research institutes, others focus on informal learning and experience sites like museums, yet others look primarily to media outlets both traditional and new. In this presentation, we suggest that we can best think of science communication as a space in the world where many things happen, from scientists giving public lectures to YouTube channels about theoretical mathematics to science festivals to comedians hosting science-focused radio shows, etc., etc., etc. The science communication space has dimensions, such as the level of engagement for participants, the geographic distribution of the activity, the length and recurrence of activities, the particular tools and skills used. This presentation will lay out some of the dimensions.

# STEVE MILLER

When & Where: [C1 3:30pm Wednesday 4 April SDAV1](#)

Title: **Communicating science across cultures: session 1 of 2 - Astronomy and voyaging**

Format: Grouped paper

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Steve Miller**, *University College London, UK*

Co-author(s): Caroline Cook, *Otago Museum*  
Kalepa Baybayan, *Polynesia Voyaging Society*  
Nancy Longnecker, *University of Otago*  
Steven Tingay, *Curtin University*

Considerable efforts have been put into understanding how different publics make sense of matters scientific (broadly understood) and how they relate to their existing systems of knowledge and belief. Practices in science communication and engagement have been developed to allow for these varied understandings and to enable ordinary citizens to participate in projects and decisions that involve considerable input from science.

A lot of this work, however, has been concentrated on situations where both the scientific community and their fellow citizens have similar cultural backgrounds, and where there is at least some consensus that science is “a good thing”, in terms of problem solving and economic and social well-being. Increasingly, however, the science communication community is facing situations where shared cultural backgrounds and beliefs cannot be assumed.

These two linked sessions set out to explore these situations, to exchange ideas and noteworthy practices, and to deepen the understanding of the PCST community itself on what it means to communicate about science “across” cultures.

Given the location of PCST2018 in Aotearoa (New Zealand), the South-Western point of the “Polynesian Triangle”, the first of these two sessions particularly features science communication in a Polynesian context. And there will, for at least part of this session, be a concentration on astronomy and its relationship with the people and peopling of Polynesia.

Proposals from the co-authors of this presentation:

**Creating Tuhura, a bi-cultural science centre at the Otago Museum** Caroline Cook, *Otago Museum*

Otago Museum has its signature planetarium show Marama a Whetu (Light of the Stars), which explains Māori sky lore, myths and legends relating to the southern night sky. Like many museums around the world, the Otago Museum embraces the idea of inspiring the next generation of curious minds. Since 1996 we have operated a hands-on science centre called Discovery World which was joined by an immersive tropical environment "Tropical Forest" in 2007. By 2015 the facility was showing its age, and a decision was made to completely renovate and re-furbish it. A key idea underpinning the re-development of the centre was the inclusion of a Kāi Tahu cosmological framework that would provide an interface between indigenous and scientific knowledge, whilst remaining at heart an inspirational science learning environment. In our presentation we will outline the challenges we overcame during planning, build and operation of the new centre, which is scheduled to open on 1st December 2017.

Co-authors: Rachel Wesley & Samantha Botting, Otago Museum

**Polynesian navigation and astronomy: The voyage of the Hokulea 2013-2017** Kalepa Baybayan, *Polynesia Voyaging Society*

The settlement of the many islands of Oceania brought to close the great human migration that began with tribal communities moving out of Africa. At the eastern edge of the Asian continent these oceanic explorers constructed durable watercraft with the use of primitive tools and developed a system of navigation that utilized visual clues and human senses. What drove human exploration into the last great frontier? In 2017, following in the wake of that tradition, the sailing canoe Hokulea, successfully completed a 4-year round-the-world voyage to learn about the planet and collect stories of hope from the communities it visited. Hokulea's World-Wide-Voyage is a story of collaboration between culture, science, history, and technology. As scientist and protestors struggle to allow the TMT telescope project to start construction, can culture and science find a way forward and can Hawaii's newest science center, 'Imiloa, be part of a solution that honors the traditions of exploration while fostering respect for native beliefs? At 'Imiloa, we integrate indigenous Hawaiian perspectives and modern science education by design, in the belief that embracing multiple "ways of knowing" strengthens our understanding of the world. The Western lens tends to examine phenomena in discrete component parts, literally atom by atom. By contrast, the native Hawaiian worldview looks at nature more holistically, within the context of culture, language and place. This holistic approach can make science learning more effective. It is one of the reasons we currently see a premium placed on interdisciplinary scholarship...and why we recognize that current challenges in conservation or climate change, for example, cannot be solved if addressed solely from a science perspective. 'Imiloa was created to respond to the

Western dichotomy view of "science" vs. "culture," by providing a space where the two can coalesce, where culture makes science relevant, and where new and improved solutions become possible. Co-author: Ka'iu Kimura, Director 'Imiloa Center

**A museum exhibition about Te Koronga Māori Science Research Healthy environment, healthy people** Nancy Longnecker, *University of Otago*

The University of Otago's Centre for Science Communication and Te Koronga Māori Science Research Theme and the Otago Museum collaborated to create and display a temporary exhibition: Healthy Environment, Healthy People. The exhibits illustrate research of Māori and non-Māori scientists, with each researcher bringing their own perspective to enhance the collaborations and improve outcomes. Exhibits represent a range of topics, including natural product chemistry, archeology, taonga and cultural well being, moth taxonomy, frog conservation, the marine environment and Māori voyages.

New Zealand has legislative recognition of Māori ownership of lands in the Treaty of Waitangi, signed in 1840. In a national survey by Nielsen in 2014, 40% of New Zealanders agreed with the statement, 'Mātauranga Māori (Māori knowledge) has a role in science', 25% of New Zealanders disagreed and another 35% neither agreed nor disagreed. There is scope for improvement of New Zealanders' appreciation of the value of mātauranga Māori in the science realm. One aim of this exhibition which is open to the public in the Otago Museum is to increase public awareness of the value of mātauranga Māori in explaining the world we live in. This presentation will discuss impact of visiting this exhibition and associated education programmes on awareness about mātauranga Māori and potentially on changing attitudes. Collaborative efforts are an effective way for researchers to engage with the public and a museum exhibition can provide access to research information for visitors from many walks of life.

Co-authors: Jeanette Wikaira (Te Koronga Māori Research Theme; University of Otago) and Rachel Wesley (Otago Museum)

**Ilgarijiri – things belonging to the sky: connecting Australian Indigenous artists and astrophysicists** Steven Tingay, *Curtin University*

"Ilgarijiri - Things Belonging to the Sky", is a collaborative project between Australian Indigenous artists and astrophysicists, initiated during the 2009 International Year of Astronomy. Artists and scientists came together to explore their different understandings of the night sky and the Universe. The project connects the ancient and the modern and aims to promote reconciliation between Indigenous and non-indigenous peoples in Australia through the night sky, a view of the Universe shared by all peoples on Earth. Following a series of group activities, the artists produced interpretations of their experiences, typically in the "dot art"

painting style. The paintings formed an exhibition that toured around Australia and South Africa in 2009/10. We repeated this process in 2014, teaming up with Indigenous South African artists to create the Shard Sky project for the Square Kilometre Array project. In this paper I describe the process the project followed, show highlights of the art produced and tell the stories of the paintings, and describe the positive outcomes of the project in bringing together two very different sections of Australian society.

# STEVE MILLER

When & Where: [G1 10:45am Friday 6 April SDAV1](#)

Title: **Communicating science across cultures: session 2 - Heritage and engagement**

Format: Grouped paper

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Steve Miller**, *University College London, UK*

Co-author(s): Tibisay Sankatsing Nava, *University of Leiden*  
Marina Joubert, *Stellenbosch University*  
Pedro Russo, *University of Leiden*

Considerable efforts have been put into understanding how different publics make sense of matters scientific (broadly understood) and how they relate to their existing systems of knowledge and belief. Practices in science communication and engagement have been developed to allow for these varied understandings and to enable ordinary citizens to participate in projects and decisions that involve considerable input from science.

A lot of this work, however, has been concentrated on situations where both the scientific community and their fellow citizens have similar cultural backgrounds, and where there is at least some consensus that science is “a good thing”, in terms of problem solving and economic and social well-being. Increasingly, however, the science communication community is facing situations where shared cultural backgrounds and beliefs cannot be assumed.

These two linked sessions set out to explore these situations, to exchange ideas and noteworthy practices, and to deepen the understanding of the PCST community itself on what it means to communicate about science “across” cultures. This second of the two sessions looks at a number of case studies including from the Caribbean and South Africa.

Proposals from the co-authors of this presentation:

**Engaging communities across the caribbean with heritage and archaeology research** Tibisay Sankatsing Nava, *University of Leiden*

The Caribbean archipelago is a diverse region composed of many different islands, cultures, languages, ethnicities and histories. Caribbean indigenous histories are increasingly threatened. One of the main

challenges in heritage management across the Caribbean is raising local understanding of, (and engagement with) the importance of protecting local heritage resources. NEXUS 1492 ([www.nexus1492.eu](http://www.nexus1492.eu)), an ERC-Synergy research project led by Leiden University, rewrites Caribbean pre-colonial history from the perspective of the Amerindian through archaeology, archaeometry, geochemistry, heritage and network science, and explores how the indigenous past can be positively incorporated in cultural heritage across the diverse Caribbean islands. To this end, NEXUS 1492 engages local Caribbean societies through a variety of public engagement projects, to stimulate a sense of ownership and ensure a sustainable future for Caribbean heritage on a local, regional and global scale. One of these projects is the Pan-Atlantic exhibition Caribbean Ties, that is co-developed and will be launched simultaneously by 10+ institutions in the Caribbean and in Europe.

### **South Africa compels scientists to engage** Marina Joubert, Stellenbosch University

A complicated and interlinked set of factors influence if, when and how scientists engage with external audiences. A recent South African study reveals that the science engagement behaviour of local scientists are, to an extent, shaped by similar factors compared to earlier studies around the world. Importantly, however, there are also unique influences - linked to the country's politics, cultural composition, bio-physical environment and socio-economic challenges - that compel scientists towards engaging with external audiences. The study demonstrates the importance of population group, cultural resonance and language - factors that have largely been overlooked in earlier studies of scientists' public communication behaviour. This presentation will review how demographics, personal attitudes and the environments where they work influence scientists' public communication behaviour, with an emphasis on the specific influences at work in South Africa. The study provides new insights relevant to policymakers and research managers interested in improving the frequency and quality of interaction between scientists and public audiences, particularly in developing countries.

### **Universe awareness a cross-cultural programme to inspire every child with astronomy** Pedro Russo, *University of Leiden*

Universe Awareness (UNAWA - [www.unawe.org](http://www.unawe.org)) is a pioneering global education programme targeted at young children, particularly those from a disadvantaged background. UNAWA uses the beauty and grandeur of the Universe to encourage young children to develop an interest in science and technology and foster their sense of global citizenship from the earliest age. UNAWA is built around a large international community of astronomers, educators, students and teachers connected virtually by a common vision: to use astronomy to inspire and educate children around the world. The UNAWA network connects over 2000 individuals to share ideas, resources and best practices and work together across geographical, social and cultural divides to develop and implement educational activities in over 64 countries. This makes it a truly transnational collaborative programme in science education. UNAWA resources are available for free under the Creative Commons

License in a range of formats for ease of use, localisation, adaptation, and translation and are co-created by and for the global UNAWE community. An important task of the International Office is to support the further development, localisation and distribution of resources from local programmes that can be further adapted to meet the global community needs.

# RONEN MIR

When & Where: [5:30pm Wednesday 4 April SDAV1](#)

Title: **Uncle Albert's kosher dill pickle – telling the story of Albert Einstein through science experiments, music, humour and audience participation**

Format: Performance

Theme: Stories

Area of interest: Teaching science communication

Author: **Ronen Mir**, *Weizmann Institute of Science, Israel*

This performance is the life story and discoveries of Albert Einstein through spectacular science demonstrations that have been developed to meet the need for connecting daily life phenomena with its scientific substance.

Using daily objects, one learns about Astrophysics, Atmospheric Physics, Newton's Laws, Gravity, Chemistry, Waves and Sound, Fire and Ballistics. The

performances use lots of humour, surprising effects, and awe-inspiring actions. The audience is an active participant contributing to the science demonstration. The participants take home ideas for safe experiments they can use to demonstrate science.

This performance has been successfully performed in the US, South Africa, Ethiopia, Brazil and Israel, for science professionals and teachers, policy makers, grandparents and grandchildren programs, and school assemblies of all ages.

Science Demonstrations - Science demonstrations are older than science museums. They were brought to the forefront of entertainment from the XVI century onwards. Today they are used to convey messages about science and modern research in science museums and informal learning environments.

Connecting science to daily life - Science is sometimes taught in schools and delivered to the public detached from their lives. Yet there is so much science in everything we develop and do; our entire existence is based on science. These science demonstrations visually demonstrate and explains the deep roots and explanations of everyday phenomena in science.

Making science accessible and fun - Everyone can do experiments. Studying about our world is interesting and can be a lot of fun. These science demonstrations are full of humour, delivering surprising effects using food, water, fire, wind and air.

# RONEN MIR

When & Where: [C4 3:30pm Wednesday 4 April SDAV3](#)

Title: **High level science learning centers – innovative community project to develop young science experts and science communicators**

Format: Grouped paper

Theme: Society

Area of interest: Teaching science communication

Author: **Ronen Mir**, *Weizmann Institute of Science, Israel*

Co-author(s): Erez Garty, *Davidson Institute for Science Education, Israel*  
Alemayehu Abera, *Steam Village Initiative Ethiopia*  
Debby Mir, *Rambam Medical Center*

The story of implementing high level Science Learning Centers for High School students is unfolded. These regional University-School Informal-Formal strategic partnerships bring all Science students, twice weekly, to the Centers, to study all Physics and Chemistry as an integral part of their scheduled classes. In each Center a large team of dedicated teachers, all with advanced scientific research experience, expand and deepen the Science curriculum, providing the students a deep understanding of Science. Students perform numerous experiments using advanced laboratory equipment. From their measurement the students infer the scientific theory, solve problems and exams.

The story of developing three Schwartz/Reisman Science Education Centers in Israel, serving 3,000 students, a collaboration of major municipalities, high schools and the Weizmann Institute of Science is described. The difficulties of the concept will be addressed.

The mentoring process between Israel and Ethiopia that has recently resulted in development of three Shared Science Campuses in Ethiopia's cities is addressed.

Initial Assessment results show that students develop into Science Experts and Science advocates who are eager to communicate Science with their Community. Assessment results examining the goals and the outcomes of these projects will be presented.

Proposals from the co-authors of this presentation:

**The Science of Anything** Erez Garty, *Davidson Institute for Science Education, Israel*

One of the best ways to connect people to science is by tying it to their own fields of interests. People who love soccer would prefer hearing about soccer, people who enjoy cooking will prefer to read about cooking tips and almost everyone will read the latest gossip about Kim Kardashian. In order to help teachers

connect their students to science we have developed a course called "The science of anything" where we give them tools to communicate scientific studies to their students by tying it to everyday life. In this talk I will demonstrate creative ways of communicating science and connecting it to everyday life using "content hooks" and stories everyone know from the news, based on my experience with this course.

**Developing Science Shared Campuses in Ethiopia** Alemayehu Abera, *Steam Village Initiative Ethiopia*

We have developed 5 new Science Shared Campuses in Ethiopia, following the mentoring process with Israel. High School students come from the region served to study high level science at the Center, which is equipped with advanced equipment and staffed with dedicated Science teachers. This is in addition to the Network of 3 Science Museums and 13 Science Laboratory Centers that we have developed

**The Role of a Science Communicator in a Large Hospital Setting** Debby Mir, *Rambam Medical Center*

Can an in-house science communicator help a hospital achieve its goals and development plans?

We examine the expectations, role, tasks, tools and potential conflicts of a science communicator in presenting research and project development to a diverse layperson audience (press releases, donor reports, general public) through different media channels and technologies.

# RONEN MIR

When & Where: [E2 1:45pm Thursday 5 April SDAV3](#)

Title: **Outdoor science parks and experiences - increasing community participation and building new society partnerships**

Format: Roundtable discussion

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Ronen Mir**, *Weizmann Institute of Science, Israel*

Co-author(s): Mikko Myllykoski, *Heureka, Finland*  
Graham Walker, *Australian National University*  
Elaine Reynoso, *Universum, Mexico*

The implementation of Outdoor Science Parks and Outdoor Experiences by Science Centers has recently evolved to enable strategic society partnerships. These allow Science Centers to extend their outreach to new and often underserved audiences.

Experts from Science Centers across the Globe will describe their Outdoor Science Experiences projects and the effect they have on developing Society partnerships. The Clore Garden of Science, Noble Energy Science Park in Israel will be described, and Science Parks in Toronto as well. Galilei park in Finland will be described in general (northern conditions), and then about a very specific citizen science project performed last summer. It relates to the Innocence Project and to the psychology of the eyewitness. Science Circus Africa – Science Shows, DIY travelling exhibits and outdoor displays implemented with several African nations will be described. The expansion project of Universum in Mexico will be described, including outdoor exhibits and activities for passers-by and disadvantaged audience. The Ecological path highlighting unique ecosystem embedded in Lava rock will be shown.

This session is targeted at those who wish to consider the advantages and different viewpoints of Outdoor Science Parks for their Centers. Initial assessment results will also be shown. Questions raised include:

Synthesis and analysis of what outdoor settings can deliver.

The relative value and cost of indoor versus outdoor exhibits and activities.

Using Outdoor Science Parks to set up strategic sector partnerships

Innovative educational programs in outdoor science park settings.

How do outdoor science parks allow science centers to extend their reach to underserved audiences?

The motivation for developing Outdoor Science Parks is presented. The significance of being outdoors and the choice of themes and exhibit ideas suited for the outdoors are discussed. Since Outdoor Science

Parksand Experiences do not require buildings, their implementation may be speedy and economical and appeal to underrepresented audiences.

# M P RAM MOHAN

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)

Title: **Motives, opinions and communication – perspectives from the field study of Kakrapar Atomic Power Station (KAPS) in Gujarat, India**

Format: Idea in progress

Theme: Stories

Area of interest: Investigating science communication practices

Author: **M P Ram Mohan**, *Indian Institute of Management Ahmedabad, India*

Nuclear energy is expected to account for an increasingly important share of India's power structure in the future. However, the sector faces a number of challenges including its social acceptability at the local level. In the past especially since the Fukushima disaster in 2011, local opposition resulted in significant project delays and additional costs. Surprisingly, very few studies so far studied public opinions and views towards nuclear energy in a fully satisfactory manner in India. The present study addresses these issues by adopting a mixed-methods –both qualitative and quantitative – approach to study local opinions and views towards nuclear energy, and communication between stakeholders in the vicinity of Kakrapar Atomic Power Station (KAPS) in Gujarat, India. The surrounding area of KAPS constitutes a fertile ground to study the scale of local opposition or support towards nuclear energy, as well as their underpinning motives. Strengthening the study, a "Level-1" incident occurred in KAPS Unit 1 in 2016, which resulted in the shutdown of its reactor, while two more units (3 & 4) are under construction since 2010. A series of Focus Group Discussions (FGD) were conducted in 10 villages located within a 10km radius of the nuclear plant, whose analysis is sought to help the production of relevant categories to inform the design of a quantitative survey (n=500).

# CAITRIONA MORDAN

When & Where: [E3 1:45pm Thursday 5 April SDAV5](#)

Title: **The role of society in science: insights into responsibility, integrity and stakeholder values**

Format: Roundtable discussion

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Caitriona Mordan**, *Dublin City University, Ireland*

Co-author(s): Padraig Murphy, *Dublin City University*  
Heather Doran, *University of Aberdeen*  
Peter Broks, *Rhine-Waal University*  
Yin Lin, *China Research Instit. for Science Popularization*  
Shadrack Mkansi, *South Africa National Research Foundation*

Values are an essential part of scientific integrity – values related to producing reliable empirical knowledge (e.g. not fabricating results or manipulating data) and also values related to acceptable social behaviour (e.g. about human experimentation). We have an expectation that scientists should be responsible towards their own research practice as well as responsible to the wider scientific community and society more generally.

Responsible Research and Innovation (RRI) is currently a major focus for European funding. According to the European Commission RRI implies that stakeholders “work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society”. However, each stakeholder in the scientific process will also have its own set of values, its own ideas of integrity. RRI is not about what each stakeholder group knows in the process. It is about coming together at the start of the process so the values of the stakeholder group are represented - it is not about any stakeholder group conforming in a revolutionary way what they aim to achieve but achieving it in a different way - together.

NUCLEUS is a four year RRI project funded by the European Commission. This panel will draw on the evidence from the project to examine this issue of integrity. The NUCLEUS Field Trips revealed that stakeholder integrity is an essential component in developing sustainable, resilient relationships. By providing mechanisms to share values/expectations of all societal actors, trust can be built, carving the way for RRI approaches to be embedded systematically in institutions. Panellists will share approaches adopted by 10 institutions to recognise and appreciate stakeholder values, to build trust and carve the way for RRI approaches to be embedded systematically in scientific institutions.

# CAROLINA MORENO

When & Where: 318 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Who tells the science stories in Spain? Survey among the members of associations of science communicators**

Format: Visual talk

Theme: Stories

Area of interest: Comparing science communication across cultures

Author: **Carolina Moreno**, *University of Valencia, Spain*

Co-author(s): Tony Calvo Roy, *Spanish Association of Science Communication*  
Pilar Perla Mateo, *Heraldo de Aragón Newspaper*  
Gonzalo Remiro Ródenas, *Spanish Association of Science Communication*  
Pampa García Molina, *Spanish Association of Science Communication*  
Natalia Ruíz Zelmanovitch, *Spanish Association of Science Communication*  
Belén Laspra, *University of Michigan*

**Objective:** In order to better understand the profession of science communicator in Spain, the Spanish Association of Science Communication, together with the Association of Journalists of Environmental Information (APIA), the National Association of Health Journalists (ANIS), the Catalan Association of Science Communication (ACCC); and the Galician association DivulgACCIÓN have conducted a survey among all their members.

**Methodology:** The online study was carried out during the month of May 2017. The questionnaire had 29 questions about the professional activity of science communicators in Spain. The survey was sent to a universe of 1,489 associates, and it was answered by 317 (self-selected sample).

**Results:** Among the main results of the survey, we can highlight that: more than half of the science communicators (56%) live in two autonomous communities: Catalonia (29%) and Madrid (26.8%). Added to those living in Galicia (19.6%), they represent 75%. Three quarters of all the science communicators in Spain develop their professional activity in these three autonomous regions. When we look at gender division, 55% are men and 45%, women. The average age of all respondents is 44 years. The 46.88%, are men, and 40.57%, women.

In terms of academic training, 29.7% are graduates; 33.4% are postgraduates; and 29.7% are doctors. The 41% of the respondents have studied a degree in mathematics, physics, chemistry or biology; 27%, journalism or communication; and the main areas in which they develop their profession are: journalism (33.60%), digital communication (30.20%) and organization of outreach activities (22.10%).

Conclusions: The profile of the science communicator in Spain is a male in his 40s, living in Barcelona, who has studied a scientific career, and works as a science journalist.

# CAROLINA MORENO

When & Where: [A6 11:00am Wednesday 4 April ARCH1](#)

Title: **A study about knowledge and attitudes towards complementary and alternative medicine (CAM) among teacher training students: a pilot study based on open ended questionnaires**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Carolina Moreno**, *University of Valencia, Spain*

Co-author(s): Emilia Lopera-Pareja, *Research Unit in Scientific Culture of the CIEMAT*  
Mavi Corell-Doménech, *Florida University*

The main objective of this research is to improve the methodological tool for assessing the attitudes and knowledge of university students about CAM.

A pilot study was carried out in which 209 surveys of teacher training students from Florida University (Valencia, Spain), were completed. The questionnaire used is known as the Complementary and Alternative Medicines Health Belief Questionnaire (CHBQ) and was designed and validated by Lie and Boker in 2004. The CHBQ consists of ten closed-ended items based on a Likert scale (1-7). In addition, were included three open-ended questions for a qualitative study. The responses to the closed-ended questions were analysed using the SPSS program and the answers to the open-ended questions were evaluated using the corpus linguistics software T-LAB 9. 1.

According to the results of the CHBQ, the students surveyed are undecided about their beliefs and perceptions of CAM with a slight tendency towards been in favour. They don't believe that CAM are a threat to public health and they consider that they include ideas and methods that conventional medicines could benefit from. As regards the qualitative results, a large percentage of students said that their knowledge of CAM was by word of mouth: friends (61.2%), family (60.3%) and acquaintances or neighbours (43.1%). The students surveyed have a favourable impression of CAM as 'natural' and distrust scientific medicine for using 'chemical' drugs with harmful side effects.

This pilot study has gleaned a great deal of information about the attitudes and knowledge of CAM held by teacher training students. It illustrates the usefulness of combining quantitative and qualitative questions for future studies. This instrument is more robust and yields more detailed information.

# LINDIE MULLER

When & Where: 208 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **A five year qualitative and quantitative assessment of science engagement by NRF|SAASTA**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **Lindie Muller**, *National Research Foundation, South Africa*

The South African Agency for Science and Technology Advancement (SAASTA), a business unit of the National Research Foundation (NRF) in South Africa, was tasked to drive science engagement on behalf of the Department of Science and Technology (DST). Science engagement in this context, relates to activities that are focused on three main target audiences; school-going learners, educators, and members of the public. These activities are further segregated into science-related educational, awareness, and communications interventions, with the ultimate objective of advancing science in society.

This proposed poster will provide an overview of a quantitative and qualitative assessment of science engagement driven by SAASTA over a five-year period for the 'Science in Society' theme. The first section of the poster will display the quantitative data that will include the types of engagement activities, the major themes, and the number of people reached within the nine different provinces that constitutes South Africa and how this fits into science in society. The second section will reflect on the outcome of several qualitative analyses conducted by the SAASTA Monitoring and Evaluation Division on a number of these interventions. Finally, the poster will conclude with best practice guidelines for science engagement, with an integrated communications component that could possibly contribute towards the improvement of the scientific community's ability to effectively communicate their findings to a variety of target audiences and, ultimately, enhance science engagement.

# DEBASHISH MUNSHI

When & Where: [E6 2:15pm Thursday 5 April ARCH1](#)

Title: **Framing futures through fiction and folklore: weaving past and prospective narratives of public understanding of climate science**

Format: Individual paper

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Debashish Munshi**, *University of Waikato, NZ*

Co-author(s): Priya Kurian, *University of Waikato*  
Sandra Morrison, *University of Waikato*

Some of the best contemporary science fiction writers such as Margaret Atwood, Paolo Bacigalupito, Emmi Itäranta, David Mitchell, and Saci Lloyd, to name a few, have made amazing use of climate science research to project the future and trigger action on climate change. At the same time, traditional storytellers are also drawing into the deep recesses of folklore to chart maps of a changing climate to prepare people for the future.

In this paper we explore the convergences and divergences between the rapidly emerging genre of climate fiction, or cli-fi as it is popularly called, and community legends of the past to gain insights into productive ways of furthering public engagement on climate science. In doing so, we build on our culture-centred framework of public engagement on climate adaptation which holds significant implications for science communication.

Drawing on a critical reading of science fiction texts as well as a discourse analysis of interviews with communities in New Zealand, especially Maori, we examine how insights from fiction and folklore may resonate with scientific understandings of climate change impacts on the ocean, land, and atmosphere. We weave together narratives from science, fiction and folklore to inform culturally nuanced strategies for climate adaptation. Such an exercise lies at the heart of Futures Studies which, as Sardar (2006: 60) says, aims “not so much to predict the future (a highly hazardous exercise) but to anticipate possible futures and work towards shaping the most desirable ones.”

# PADRAIG MURPHY

When & Where: [D5 11:30am Thursday 5 April ARCH1](#)

Title: **Telling stories through the soundscapes of nanotechnology media**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Padraig Murphy**, *Dublin City University, Ireland*

Co-author(s): *Norah Campbell, Trinity College Dublin*  
*Cormac Deane, Dún Laoghaire Institute for Art, Design and Technology*

When watching a video about a new technology how closely do you listen to the sounds or voiceover? There is little research on how audio is represented in nano-products or research.

Research institutions that explore nano-enhanced innovations and companies that develop and market them are part of a lucrative global nano-industry. A report by IndustryARC predicts that the global revenue of the nano-industry will grow to 13 billion USD by 2021.

'Nanotechnology media' is defined here as either a low-production promotional video from a nanotechnology research facility; or a high-end advert for a product with nano-enhancement; or simple lab techniques, with accompanying graphics for learning purposes; or infotainment, either directly using, or adopting techniques from, Hollywood and the gaming industries.

We draw from a *Nature Nanotechnology* paper by the authors where 100+ nanotech media samples from advertising, outreach promotion, education and entertainment were reviewed (Campbell, et al, 2017). We subsequently extended our analysis to focus on sound effects in nano-related computer games.

We categorised sound first on the basis of the spatial, music soundtrack, voiceover and the concept of synchresis (the extent of whether or not sound FX matched onscreen action). Within this schema we looked at room tone, gender voice, electro-sounds, the choice of electronica or orchestral. What results is a continuum from the familiar to the strange and alien. Analysis is informed by theories of embodied cognition, film studies and sonic branding to look at the paradoxes of fear and awe produced by sound.

Concerns persist about nanotechnology based on safety, security, ethics and societal impact. Science communication practitioners will find our typology of sound useful when considering promotional soundtracks. Researchers will see further evidence of a new technological landscape and discourse capable of playing with our emotions, making the familiar strange and vice versa.

# SANDRA MURRIELLO

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **Indigenous languages in Patagonia: a travelling exhibition**

Format: Idea in progress

Theme: Science

Area of interest: Investigating science communication practices

Author: **Sandra Murriello**, *National University of Río Negro, Argentina*

Co-author(s): Máximo Farro, *Museo de La Plata, UNLP*  
Marisa Malvestitti, *IIDYPCA, UNRN*  
Anahí Mariluán, *IIDYPCA, UNRN*

Patagonia, the southern region of Argentina and Chile, is the ancestral territory for several indigenous communities nearly lead to extinction in the last centuries. As a consequence, many of their languages almost disappeared and were replaced by Spanish tongue for communication purposes. In some cases, we only have as historical records written vocabularies -many of them never published- documented in their territories by colonial agents such as explorers, missionaries and state officials. Besides, in Argentinian museums and current exhibitions on indigenous people, their languages are rarely mentioned so nowadays they almost remain unknown for the occidental society. Nevertheless, the surviving indigenous communities, i.e. the *Mapuches*, still speak their original language, the *Mapuzungun*, and are trying to revitalize and refunctionalize it, a process also observable in other smaller speech communities of *Tehuelche*, *Selk'nam* or *Qawesqar*.

As part of a research programme lead by linguists, anthropologists, historians, musicians and science communicators, we are planning a travelling exhibition about these communities' languages, in order to display their structures, sounds, meanings and relations, set up in a collaborative way. The aim of the exhibition is to make visible the process of documentation and communication of these languages in the foundational period of Argentina and Chile as nation-states, when the agents mentioned above played a central role, as well as some indigenous mediators and translators who helped them to record the languages. One of the project's goals is to take this exhibition through the Patagonian museums, universities and cultural centres. In this communication, we describe our idea and present some records in order to discuss the strategies to communicate indigenous languages in a museum exhibition context and share the experiences that other colleagues and institutions may have.

# SANDRA MURRIELLO

- When & Where: 18 3:30pm Friday 6 April ARCH4
- Title: **Stories about earthquakes and eruptions in Andean Patagonia**
- Format: Show, tell and talk
- Theme: Stories
- Area of interest: Investigating science communication practices
- Author: **Sandra Murriello**, *National University of Río Negro, Argentina*
- Co-author(s): Liliana Pierucci, *CITECDE,UNRN*  
Mariano Nuñez Freire, *CITECDE,UNRN*  
María Elena Apa, *CITECDE;UNRN*  
Bárbara Erak, *CITECDE,UNRN*  
Carolina Salazar Marin, *CITECDE,UNRN*

Andean Patagonia, a tourist destination in Argentina and Chile, is a region with an important volcanic and seismic activity but the public policy about disasters prevention is weak as it was evidenced by the consequences of the last volcanic eruptions (Chaitén,2008; Puyehue, 2011; Calbuco, 2015). Besides, the consequences of these events, and the previous, are not well referenced in official regional history and they are also completely absent in the touristic information. In spite of this, people who lived seismic and/or volcanic events remember the facts with detail and have their own stories about the moment and its consequences. As we believe that this information is useful to prevent future disasters or to know what to do in an emergence situation, we are working on recovering experiences, memories and records by different strategies (inquiries, interviews, artistic interventions, etc.). These stories, in words, in pictures or in videos, are being posted in a virtual repository with free access that operates as a space of collective memory about earthquakes and volcanic eruptions in this region ([www.volcanes.com.ar](http://www.volcanes.com.ar)). It is necessary to say that there is no previous research about this topic in our country and that there is no other digital site to disseminate these vital experiences. This presentation aims to discuss the relevance of this kind of communication strategies (virtual spaces) to share different stories and visions about catastrophic events and its potential role in prevention.

# AKEMI NAGAO

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)

Title: **An approach to scientific literacy through chemical experiments using wine and metaphoric representations**

Format: Show, tell and talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Akemi Nagao**, *Salesian Polytechnic, Japan*

These days, we can have easy access to various kinds of scientific information via internet news, TV, and social networking services. However, many people often feel at a loss to choose what to believe among overwhelming amount of information. This is particularly true in the field of science news because they do not have enough opportunities to be exposed to scientific mindset. It is highly important for us to encourage them to form better science literacy.

My proposal aims to assist general people to naturally form a scientific way of thinking by presenting a few unique chemical experiments in which I use wine and other objects familiar to general people. I will also introduce some interesting metaphoric ways to liken basic chemical principles and reactions to human behaviours.

I hope that this unique attempt will encourage many people to feel science more closer to them and how scientific knowledge can help them to make appropriate decisions in many aspects of their daily life.

# AQUILES NEGRETE

When & Where: [D5 10:45am Thursday 5 April ARCH1](#)

Title: **The use of narratives (photo-comic) as a means to communicate information about use, treatment and conservation of water in Mexico**

Format: Individual paper

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Aquiles Negrete**, *UNAM, Mexico*

Co-author(s): Claudia Cecilia Lartigue, *Ingeniería-UNAM*

My research is oriented to explore the characteristics that a narrative text for science communication should observe. As I mentioned in previous work, from my perspective science communication via narratives has to follow a series of rules similarly as it happens in other narrative genera such as thrillers, horror, historic novel, comedy, etc. In this sense, “SciCom Narratives” could be considered as a new narrative genera with own characteristics and rules. Therefore, it is important to generate more knowledge that enables us to provide a solid theoretical body around narratives for science communication.

In this research we propose that photo-comics narratives represent an opportunity to communicate scientific information to the general public in a reliable and economic way. We used these narratives to communicate to the academic community at Autonomous National University of Mexico (UNAM) information about efficient water management activities and also to promote PUMAGUA, the Program of the UNAM in charge of water management at the University. Using the Retell, Identify, Remember and Contextualize information (RIRC) method (a method that uses memory tasks to assess learning) we tested the efficiency of this kind of illustrated narratives to communicate scientific information. We found statistical evidence that participants acquired information regarding water use using this media.

# ANA NEPOTE

When & Where: [C3 3:30pm Wednesday 4 April SDAV2](#)

Title: **The soul of Latin-American science communication**

Format: Roundtable discussion

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Ana Nepote**, *UNAM, Mexico*

Co-author(s): Luisa Massarani, *Museu da Vida, Fiocruz and SciDev.Net*  
Elaine Reynoso, *UNAM*  
Dominique Brossard, *University of Wisconsin - Madison*  
Sandra Murriello, *Universidad Nacional de Rio Negro*

This session is organized by RedPOP, the Latin American Network for Science Communication in Latin America and the Caribbean, as part of a partnership with the PCST Network.

Latin America and the Caribbean has started having initiatives in the academic field of Public Communication of Science and Technology (PCST) of at least 30 years in countries such as Mexico and Brazil. Lately, the field has been consolidating and taking shape, in diverse biological areas, while facing different challenges, such as political and economic instability, unstable democracies and cultural complexity.

In the last five years, there has been a major effort to systematize the vast experience that exists in PCST in the region. As result of an effort led by RedPOP in collaboration with organizations in the region, there is a greater knowledge of available training programs in science communication. Additionally, a diagnosis of the current situation of the practical activities in science communication has been performed, which constitutes the first record of the academic production in PCST in the region and map of the related public policies implemented and in some cases, forgotten.

In this roundtable, members of the PCST scientific committee who work in Latin American institutions and REDPOP members will participate: Luisa Massarani, Ana Claudia Nepote, Luz Helena Oviedo, Elaine Reynoso and Sandra Murriello; will present the scope and challenges that the public communication of science faces in the region. In a conversation moderated by Dominique Brossard, they will talk about the status of PCST in the region and some of the challenges that need to be addressed. This roundtable will present a “snapshot” of the multiplicity of experiences in the region while presenting some possibilities for opening up opportunities for senior and young Latin American science communicators to engage with other regions of the world.

# ROSMARIE KATRIN NEUMANN

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)

Title: **Adoption and implementation of scientific knowledge into peatland policy – does it work?**

Format: Show, tell and talk

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Rosmarie Katrin Neumann**, *Impact Dialog and University of Newcastle, Germany*

Co-author(s): Mark Reed, *Newcastle University*  
Jeremy Phillipson, *Newcastle University*

Evidence-based policy development is important to ensure up-to-date and robust knowledge is integrated into environmental legislation. To ensure that scientific evidence is taken into account for environmental policy-making, science-policy communication, exchange and its co-production is vital. Two case studies of science-policy dialogue around peatland ecosystem services (UK and Germany) were studied and analysed via literature review, social network analysis (SNA), Bayesian network, questionnaires, participatory observation and stakeholder workshops. Within the social network and Bayesian network analysis, all actors in the two case studies were interviewed and the social network was analysed according to characteristics of knowledge exchange and relationships between the actors. Proxies for trust and effectiveness of communication were used. Stakeholder workshops for each case study enabled triangulation of data and allowed for social learning amongst participants through discussions to reflect on lessons learnt. Questionnaires were sent to ~ 100 international peatland policy makers to study their perspective on effective stakeholder communication. Results of the study show that the one-way model of communication was used more widely than a two-way dialogue model. A mismatch between transmission of knowledge and receiving of knowledge can be demonstrated. Scientific evidence is taken into account when stakeholders have been in a regular and ongoing exchange of knowledge. Proxies for trust are positively correlated with uptake of scientific knowledge into political decision-making. This study provides a basis for improving knowledge adoption and implementation strategies in the field of ecosystem services, conservation and beyond. The methods used in this study enable the analysis of existing science-policy network structures, to determine if they enable science-policy knowledge exchange or co-generation, as well as conditions (such as trust between network actors) that facilitate successful knowledge exchange for evidenced-based decision-making.

# FRANK NUIJENS

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)  
Title: **Science writing as designing: an educational experiment**  
Format: Show, tell and talk  
Theme: Stories  
Area of interest: Teaching science communication  
Author: **Frank Nuijens**, *Delft University of Technology, Netherlands*  
Co-author(s): Steven Flipse, *Delft University of Technology*

Telling stories is an important method of connecting science and society. These stories are often told by journalists as intermediaries. Students of science communication learn the "rules and regulations" of journalism and its formats. But journalism can be a conservative field that finds it difficult to move with their audience with any agility, in terms of stories told and (social) media used. Audiences nowadays partly develop their own ways of media use and news sharing.

In our science journalism course in the Master of Science Communication at Delft University of Technology, we challenged the traditional form of journalism in our curriculum. Students were no longer asked, based on a sequence of preset assignments, to write a feature article about a certain technological topic and target audience. Instead they were asked to work in groups on an interaction that would help scientists engage with a specific target audience (the public, policy makers, businesses etc.) using one of the principles or challenges of science journalism: balance, framing, fact-checking, process of science, critical thinking, jargon avoidance or objectivity. The method of developing this interaction was through a simple six-step design process, in which the students in a design thinking way explore, develop and test the various ideas for scientists sharing their stories with various audiences in various ways. Moreover, they were asked to critically reflect on traditional media and media use.

In this talk we will evaluate this teaching method and the usefulness of both its outcomes for the field of science communication and the educational benefits of treating science journalism not as a static set of rules but as a set of principles that can be used in a design process to create connections between science and society.

# THOMAS NYGREN

When & Where: [B8 1:45pm Wednesday 4 April ARCH3](#)

Title: **The News Evaluator – fostering source criticism through citizen science**

Format: Individual paper

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Thomas Nygren**, *Uppsala University, Sweden*

Co-author(s): Fredrik Brounéus, *VA (Public & Science)*

In recent years, “fake news” has been a hot topic in the public debate in many countries. Digital channels are being used systematically to spread propaganda and disinformation for a number of reasons, affecting not least young people. But to better grasp of the magnitude of the challenge, the actual news feeds of adolescents – and their perceived credibility – need to be explored scientifically. Only then will we have a solid base upon which to build teaching initiatives and materials to guide young citizens on how to navigate their digital news.

During two weeks in September 2017, 6,000 pupils aged between 13–19 helped researchers explore the hitherto unanswered question: "How trustworthy are adolescents' newsfeeds?" in the Swedish citizen science project *The News Evaluator*. The pupils acted as research assistants, using scientific methods to categorise and evaluate online news in their own newsfeeds. To support the pupils in the research process, a digital tool was developed. Based upon principles that research has shown to be fundamental to digital source criticism, the tool guides the user through the evaluation process. This way the user will also be trained to think and act in a more reflective way when interacting with digital news.

The pupils submitted almost 6000 evaluated news items to *The News Evaluator* database. Afterwards, they were encouraged to explore the database through interactive graphics, comparing for example the news' genres, credibility scores, domains and social media sources. Our preliminary findings highlights how pupils' news feeds hold a lot of credible hard news from established media. But we also find that news reports on scientific discoveries and research in their feeds may be less credible. We also find that news shared in social media may hold more biased information than information found in pupils' favorite news sites.

# RUTH O'CONNOR

When & Where: [B8 2:30pm Wednesday 4 April ARCH3](#)

Title: **Valuing good engagement process and individual outcomes in decision-maker engagement with science**

Format: Individual paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Ruth O'Connor**, *Australian National University, Australia*

Co-author(s): Joan Leach, *Australian National University*  
Fabien Medvecky, *University of Otago*  
Lilly Lim-Camacho, *CSIRO*  
Jeanne Nel, *Vrije Universiteit*

The science communication discourse in relation to public policy has largely focussed—for good reason—on how to democratise decision-making processes around controversial issues. This focus has contributed to the framing of decision-makers as stakeholders or sponsors of engagement. Here we use two case studies to illustrate an alternative view of decision-makers as diverse publics directly engaging with science to foster informed decision-making. One case describes regional Australian natural resource managers engaging with climate change adaptation science, the other South African water resource decision-makers engaging with freshwater conservation science.

The case studies suggest that both the processes and outcomes of science engagement can have value to individual decision-makers and their institutions. Decision-makers valued engagement processes that improved their access to science and enabled them to deliberate and reflect upon the implications and application of science. The practical and local knowledge of co-participants was critical in this but not always explicitly recognised. Likewise the process of selecting science content by groups facilitating engagement was not always transparent. We suggest evaluation of decision-maker engagement processes should therefore include transparency of knowledge selection and how deliberation and reflection were enabled.

While decision-makers valued the processes of engagement, their key pre-occupation was achieving on-ground impact, such as species protection. We will discuss why such expectations from engagement are problematic and point to alternatives found in the cases. These include outcomes for individuals and institutions such as development of new ways of framing and approaching problems, learning, and better professional networks. These findings suggest work is needed to better articulate the valuable outcomes of engagement and explore how they may contribute to both better decisions and desired on-ground impacts.

# RUTH O'CONNOR

When & Where: [A5 10:45am Wednesday 4 April SDAV5](#)

Title: **An exploration of science communication in the world of decision-makers**

Format: Roundtable discussion

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Ruth O'Connor**, *Australian National University, Australia*

Co-author(s): Alan Irwin, *Copenhagen Business School*  
Dominique Brossard, *University of Wisconsin*  
Jennifer Manyweathers, *Charles Sturt University*  
Birte Fähnrich, *Zeppelin University*

Science can inform public policy, planning and management decisions in myriad ways from how to deal with a local water contamination crisis to managing transport infrastructure in the face of climate change. Despite this, little attention has been paid to the linkages between science communication and decision making.

In this panel we seek to start building a richer picture of who decision-makers are, how they access science, what they do with it, and the implications for science communication as a discipline.

We will bring to the table a range of perspectives including a scholarly perspective on how decision-makers fit in our current view of science in society (Professor Alan Irwin), perspectives on decision-makers working in environmental management in Australia and South Africa (Ruth O'Connor) and the perspectives from science communicators who have targeted decision-makers as audiences in their professional roles.

The types of questions that will be discussed include:

- a. How do decision-makers engage with science?
- b. What role does science communication play in decision-making? What role should it play?
- c. What forms of science communication are likely to have greater institutional impact?
- d. In what ways do decision-makers also engage in science communication?
- e. What are the implications of the above for our current framing of decision-makers in science communication research?

The aim of the discussion is to start building a more nuanced conceptualisation of the roles of institutionally based decision-makers in science communication including the role of science communication in decision-making.

# KATHRYN OHARA

When & Where: [H3 1:45pm Friday 6 April SDAV1](#)

Title: **A sizeable shift: exploring new boundaries for science journalists and science communicators**

Format: Roundtable discussion

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Kathryn OHara**, *Carleton University School of Journalism and Communication, Canada*

Co-author(s): Brian Trench, *PCST, Science Communications, Ireland*  
Daniela Oviedo, *Centre for Ethics in Science Journalism, Italy*  
Michelle Riedlinger, *University of the Fraser Valley, Canada*  
Manuel Lino, *Freelance science journalist, Mexico*

This group discussion will consider the prospects for science journalism and science communication as the science communication sector continues to grow and the job market for science journalism falters, addressing a central issue in the future of science journalism and the possible consequences for science communication. Those attending will join a discussion with panelists who have, in different ways and in different regions, lived through the overlapping and partly shared histories of science journalism (SJ) and science communication (SC). SJ as an internationally recognized specialism surfaced from the 1970s onwards, Science Communication has grown world-wide since the 1990s, also becoming a distinct arena of professional practice. Personnel and ideas have migrated between the two fields and recent challenges to science journalism, notably from structural changes in media industries, have contributed further to this movement between the sectors; for example, science journalists have increasingly taken up roles in scientific, education and cultural institutions, including in SC training and education. At the same time, separate structures of representation and networking have evolved and boundary definitions between SC and SJ have sometimes been contentious. Do science journalists moving from media organizations to writing and other client-based communication roles in institutions remain journalists? Are the boundaries between SJ and SC being implicitly redrawn or do they need to be explicitly redefined? The guiding questions for this discussion, however, will be focused on the future: How are relations between SJ and SC likely to develop? What new paths can be explored so that the two fields enjoy a peaceful co-existence? What are the obstacles to them being good neighbours? What bearing will scientific integrity have on their professional practices?

# KATHRYN OHARA

When & Where: [C7 4:00pm Wednesday 4 April ARCH2](#)

Title: **Not my understanding: survey of Canadian scientists' views on public engagement**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Kathryn OHara**, *Carleton University School of Journalism and Communication, Canada*

Co-author(s): John Besley, *Associate Prof, Michigan State University, USA*

How do Canada's taxpayer-funded scientists interpret public engagement? Does demonstrating science to assorted audiences as an outreach activity also include demonstrating for science when government policies are seen to be hostile to the research enterprise? Does an activity like 2017's international March for Science attract or repel the normally non-activist natural science researcher. This survey set out to look at this and other issues in a 'random' questionnaire covering types of public engagement, and motivation to talk science with the public at large, with interest groups and policy makers. Of particular and timely interest us is how scientists perceive their role as advocates or activists for science if and when scientific evidence is discounted, derided or denied by publics or politicians.

This Qualtrix survey is the largest of its kind in Canada with questionnaires sent in the autumn of 2017 to all academics the National Science and Engineering Research Council (NSERC) reported having received a Discovery Grant between 2012 and 2017 (N = ~7,000). About n = ~1,130 completed the survey. Around 16%.

Questions probed past engagement behavior, future willingness to engage, views about engagement, and views about specific choices that scientists might make as part of engagement activities.

This survey follows on Canada's experience with 'muzzling' of federal scientists under previous governments, the current state of promised openness and transparency in matters of science as a public concern, the recent appointment of a Chief Scientist and the incentives for scientists to understand, define and embrace engagement activities across a wide spectrum. The results will be useful in understanding barriers to engagement, in funding wider dissemination of relevant research and for defining clearer objectives in the training of researchers in communicating their work and their rationale to media, publics and policy makers.

# ZAHRA OLIPHANT

When & Where: [C6 3:45pm Wednesday 4 April ARCH1](#)

Title: **Jamaica: Assessing Science Communication at the Post-Graduate Level**

Format: Individual paper

Theme: Science

Area of interest: Teaching science communication

Author: **Zahra Oliphant**, *Ministry of Science Energy and Technology, Jamaica*

Jamaica places high value on the importance of Science education since pre-independence. The first batch of 11 students graduated from the Science faculty of the University of the West Indies (UWI) in 1949 and by 2000, the institution had produced more than 9000 science students. This has positioned the university as the leading research institution in the country.

Although the quality of scientific research institutions in Jamaica ranks 52 of 137 (Global Competitive index 2017/18), the number of scientific publications/million population (<10) consistently underperforms below the target set by the country. Analysis of post-graduate statistics from UWI showed that, from 2010 to 2017, although the number of post-graduates increased cumulatively (538 produced by 2017), the number of Science and Technology publications is <100 per year (mean: 96.12).

An ongoing survey of current and past postgraduate students, has so far indicated that all respondents consider it important that their work be published. For those who indicated that they have not yet published, reasons for not doing so included lack of time, lack of motivation and negative feedback from their supervisor.

The Science and Technology curriculum at UWI is heavily focused on the subject matter while little attention is given to the need for a scientist to communicate their research to the outside world. This has been observed for courses at both undergraduate and post-graduate levels. The key questions of this research paper are:

To what extent is the importance of science communication emphasised in post-graduate studies?

What factors negatively influence a post-graduate's decision to publish?

What measures can be put in place to ensure that a higher percentage of post-graduate students publish their research findings?

The University of the West Indies will be used as a model for answering the above questions using data available from the University, as well as findings of an ongoing post-graduate survey.

# ZAHRA OLIPHANT

When & Where: 141 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Science in Jamaica: setting the baseline for improvement**

Format: Visual talk

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Zahra Oliphant**, *Ministry of Science Energy and Technology, Jamaica*

Within the western hemisphere, Jamaica has a history of scientific 'firsts', being among the first to commercialize electricity and to build a residential piped water system. Jamaica has contributed globally to the emerging field of nutraceuticals, particularly as it relates to diabetes and anti-cancer treatment. However, in light of the country's scientific achievements, investment in scientific Research and Development (R&D) is low, amounting to less than 1% of GDP. This is also evinced by the low number of patents filed annually, averaging only 10 per million population.

In order for government, public bodies and investors to increase their level of investment in R&D, the importance of Science and Technology (S&T) has to be effectively communicated to these entities. Additionally, the public's role in decision-making for S&T is underscored by how effectively the importance of science is communicated to the populace. It has been demonstrated in other jurisdictions that low public awareness of science is a reflection of low levels of R&D investment at the policy level. It is therefore important that the level of scientific awareness and literacy of the Jamaican populace be determined as this will set the baseline against which the effectiveness of future science programmes can be measured.

The poster for this visual talk will highlight the following as it relates to Jamaica:

- History of Science and Scientific Achievements

- Low R&D investments

- Structure of the National S&T Survey to be carried out

- Results of the pilot S&T survey on the public's attitudes and awareness of science.

- Preliminary conclusions linking public's attitudes, knowledge and awareness of Science to low R&D investments, as well as, how effectively science is being communicated to the public based on pilot survey results.

Future Outlook: How the results of the national survey will assist the country with improving science communication and increasing investments in science.

# JUAN C. ORTIZ

When & Where: [D6 11:45am Thursday 5 April ARCH2](#)

Title: **Recognising the importance of story scouting and crafting to maximise stakeholders engagement in the Great Barrier Reef**

Format: Roundtable discussion

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Juan C. Ortiz**, *University of Queensland, Australia*

Co-author(s): Danette Langbecker Rebecca E. Holt

In this proposal we reviewed the health literature and identified key principles for the care of patients with chronic conditions that could be applied to environmental management. We propose a new framework that draws from the health, social and environmental sciences to enhance the effectiveness of environmental management by maximising stakeholder engagement. The basic framework was adapted from a chronic disease management model by positioning the reef as analogous to a chronic disease patient and the reefs' associated stakeholders to the patients' family. Tools available to managers for stakeholder engagement were extended to utilise pride as a catalyst for behaviour change, highlighting small gains and incorporating positive framing approaches. Within this frame work, we identified the need for scouting and crafting stake holders specific good news stories that are likely to trigger the most effective emotional response and potentially lead to sustained behavioural change. This is more than just translating scientific results to inform stakeholders. This is about actively sourcing and combining information from multiple sources to identify locally relevant good news stories that would otherwise be missed in the current system. When applying the framework to the management of the Great Barrier Reef in Australia, we noticed that in the present governance of the GBR the identification of good news stories is currently scattered among several roles. We conclude that for the proposed framework to be effective, formal recognition in the governance system for the need of story scouting and crafting as well as personnel exclusively dedicated to this role is essential for maximising the effectiveness of environmental management.

# SOFIA OTERO

When & Where: [18 3:30pm Friday 6 April ARCH4](#)

Title: **What are girls curious about when it comes to nature?**

Format: Show, tell and talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Sofia Otero**, *University of Chile, Chile*

Co-author(s): Luz Fariña, *Andean Geothermal Centre of Excellence - Universidad de Chile*  
Nelida Pohl, *Institute of Ecology and Biodiversity - Universidad de Chile*

The project “Julieta in the Land of Girls” consists mainly on an original game set for girls (age 7 to 11 year-old) that aims to awaken their desire to explore the environment through play, and expose them to a role – being a scientist - that has often been dominated by the male gender in popular culture and academia. These game sets (activity book, backpack, flashlight, collecting jar, magnifying glass, among others) were distributed freely through an online lottery. To participate, girls had to send questions about the Chilean Andes, climate, plants and animals. Over 500 questions were received -all answered by female scientists-, which lead us to an enormous information treasure: what are girls curious about when it comes to nature? With questions like: “Why does the red tide occur and what should we do to stop it”, “Why God thought of creating lakes?”, and “Why clouds float if water weights more than air?”, we explored which science topics the girls are most interested in, conducting a content analysis to identify the types of questions they ask (why, how, what would happen if), their topics of interest and risk-related and media-related concerns. The results give a clue on how to better communicate the excitement for science to girls, with an emphasis in the communication of risk-related issues. The project “Julieta in the land of girls” was created by a group of science communicator practitioners, and consisted on the creation of the game set, and a series of workshops and field trips to national reserves with girls and female scientists.

# SOFIA OTERO

When & Where: 298 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Science against the wall**

Format: Visual talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Sofia Otero**, *University of Chile, Chile*

Co-author(s): Luz Fariña, *Geothermal Centre of Excellence - Universidad de Chile*

Science needs to go out into the public space to be socialized, and mural art is a powerful tool to popularize content in local communities: it brings information to everyday contexts, it embellishes the street, tells stories, and its creation implies the synthesis of concepts to facilitate their understanding. With the scientific-educational mural “Volcanoes of Chile”, the Andean Geothermal Centre of Excellence (CEGA) created a 300 m<sup>2</sup> art work that was the resulting product of several conversation sessions between three graffiti artists, two geologists and a science communicator. The objective of the piece was to provoke the interest of pedestrians in what lies beneath our mountain range, and to draw attention to our diverse geology. At the beginning, the scientists involved wanted to fit as much information as possible in the mural, the science communicator wanted to keep it simple, and the artists where still trying to understand what ‘subduction’ meant and if ‘pyroclastics’ could be represented in fluor colors or not. The final work, which is a mixture of giant infographics and hiper realistic recreations, is the result of a negotiation process where mutual curiosity and respect about each expert expertise was the clue to a successful large-scale pop science street art experiment. The mural is currently available for public school guided visits with geologists among requests, as an effort to bring the secrets of the volcanoes closer to the urban citizen.

# SOFIA OTERO

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)

Title: **Science and art: evaluating public perception of the mural "Volcanoes of Chile"**

Format: Idea in progress

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Sofia Otero**, *University of Chile, Chile*

Co-author(s): Luz Farina, *University of Chile*

In September 2017 the Andean Geothermal Centre of Excellence launched the mural “Volcanoes of Chile”, along with Metro de Santiago in one of its subway stations. The 300m<sup>2</sup> artwork – which includes hyper realistic images and gigantic infographics- is the first educative science mural of the city, and is located at a very busy corner of Santiago’s city center. The content and design of this mural was a cooperative work between geologists and artists, mediated by science communicators from CEGA. Over its four walls, it presents: types of volcanoes, volcanoes close to Santiago; historic volcanic eruptions, geothermal energy; and the plate subduction process. Our idea is to evaluate the public perception of this work, what is really the mural takeaway for the audience? We intend to work with two specific groups: workers from the sector adjacent to the mural (restaurants, clothes shops, etc) and residents nearby, separating the answers by gender and age to determine the appropriation of the message in different audiences. We propose a research method by open interviews to determine: What caught their attention about the mural? Which images do they like most? Which topics they identified? The answers will be an input to improve future murals we are planning to develop in the country, guiding us in how to show better scientific contents in public spaces, so that the messages are better understood by the public.

# GIUSEPPE PELLEGRINI

When & Where: [C7 3:45pm Wednesday 4 April ARCH2](#)  
Title: **Scientist as communicators: a study on the role of researchers in the public space of communication**  
Format: Individual paper  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Giuseppe Pellegrini**, *Observe Science in Society, Italy*  
Co-author(s): *Andrea Rubin, Università Cattolica Milano*

Research on Public Communication of Science and Technology (PCST) has been focused on non-experts and mediators so far. The role of scientists as communicators has not been extensively explored yet. Although most of them are involved in communicative practices and there are no very accurate studies on how scientists communicate in the public sphere.

To address this issue, a study aimed to evaluate the researcher communication strategies in public events has been developed. The research was carried out as part of SHARPER (SHaring Researcher's Passions for Excellence and Results), an Italian project developed in the framework of the European Researcher's Night funded by the European Commission.

During these events, from 2014 to 2017, information about researcher expectation, preparation and communication strategies were collected. Moreover, the study recorded information on the event organization, management and development. All the outcomes were collected using an ethnographic approach, a type of qualitative research method that combines immersive observation and directed one-on-one interviews.

The results of the study showed several communication strategies that can be combined based on the researchers skills to adopt different communication styles and instruments.

Analyzing different formats of communication, the observation showed how scientists played their role in communicating science to non-experts in different contexts: from formal to informal situation.

Overall the outcomes of this research allow to define some profiles of communicative scientists in their interaction with the public.

# DYAH RATNA PERMATASARI

When & Where: 78 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Hearing colors, coloring sounds: developing awareness of synesthesia phenomenon**

Format: Visual talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Dyah Ratna Permatasari**, *DoctoRabbit Science Inc., Indonesia*

Co-author(s): Andra Semesta, *DoctoRabbit Science Inc.*

Normally, when we hearing sounds we just use our ear to sense it. But not for a synesthete, people who possess a synesthesia ability. It is a psychological phenomenon to sense something using two or more senses, i.e. hearing colors, colorful numbers, tasting shapes, smelling sounds, etc. It comes from Greek words: *syn* means together and *aesthesis* means perception, therefore synesthesia could also be called joined perception. It is a multisensory connection in the brain.

The second writer of this presentation, Andra Semesta, is a synesthete artist who make a painting while listening music. The colors he chose depend on the music he heard. Scientifically, Isaac Newton has described that “the distribution of white light in spectrum of colors is analogous to the musical distribution of tones in an octave” (*Campen, C.V.*, Hidden Sense: Synesthesia in Art and Science, 2008). Perhaps that what Vincent van Gogh, the famous painter, perceived when he comparing the sounds of piano keys with colors.

We tried to bring this interesting phenomenon to public through a fun live painting, where the audiences were encouraged to make painting while listening music. Audiences were varied from kindergarten students to adult.

They tried to connect the music they heard with colors and shape they drew. They can feel to be a synesthete although they may not.

This program’s objective is to give awareness of synesthesia phenomenon that is not well known in Indonesia. Synesthesia is real and we should aware that it is a hidden sense. It is not a disease, in fact it is a gifted ability.

# DYAH RATNA PERMATASARI

When & Where: [H9 1:45pm Friday 6 April SDAV4](#)

Title: **Synesthesia live painting show: developing public awareness of synesthesia phenomenon**

Format: Workshop

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Dyah Ratna Permatasari**, *DoctoRabbit Science Inc., Indonesia*

Co-author(s): Andra Semesta, *DoctoRabbit Science Inc.*

Synesthesia (or *synaesthesia*) is a psychological phenomenon that may not be popular in developing countries like Indonesia. It is an ability of sense something using two or more senses, that may look weird for lay public. Sometimes it is seen as a disease.

Scientifically, synesthesia could be explained using neurology. It comes from Greek words: *syn* means together and *aesthesia* means perception, therefore synesthesia could also be called joined perception. It is a multisensory connection in the brain.

There are various types of synesthesia, the last report stated more than 60 types of synesthesia have been discovered. It is considered a special gift since there is 4.4 percent of world population estimated to have this phenomenon (Safran AB, Sanda N. Color synesthesia. Insight into perception, emotion, and consciousness. *Current Opinion in Neurology*. 2015).

We have developed a live painting show by Andra Semesta, the co-author of this abstract who happened to be a synesthete, that showed the synesthesia process of his painting while hearing music. The live painting show would take around 7 to 10 minutes.

We also invite the audience to join the activity to draw using crayon while hearing the same music. We could see why the colors are chosen by the painters. Would the chosen colors be the same? That is the game of this show. Then, we could easily share the information regarding synesthesia to the audience.

# HANS PETER PETERS

When & Where: [C7 3:30pm Wednesday 4 April ARCH2](#)

Title: **Natural and social scientists relate differently with the public and take roles in different kinds of media stories. Evidence from surveys in Brazil and Germany**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Hans Peter Peters**, *Research Center Juelich, Germany*

Co-author(s): Luisa Massarani, *Brazilian Institute of PCST, Brazil*

Scientists are important actors in the public communication of science. Many studies have focused on them because the authors assumed that the quality of PCST depended on scientists' contributions but diagnosed obstacles such as "scientific barriers" (Dunwoody & Ryan 1985), a "lure of the media" (Weingart 2012) or a "deficit model" view of the public. Recently, specific characteristics in the science-media interfaces of individual research communities have received interest. However, most of these studies focused on a single research community such as climate scientists; studies applying a straight comparative approach remain rare.

In our paper we compare the relationship of scientists with the public in two broad areas of scholarship – natural and social sciences. We are interested whether natural and social scientists conceptualize their relationship with the public differently and whether they are approached by journalists in different ways. We conducted online surveys of academic researchers in Brazil (n=956) and Germany (n=1,509), using samples that comprised natural and social scientists.

While there are some striking differences between Brazilian and German researchers in general, the pattern of differences between natural and social scientists is similar. In both countries, social scientists consider scholarly communication less separated from public communication than natural scientists. They also interact more frequently with journalists and enjoy more freedom from organizational interference with their media contacts than natural scientists. Social scientists tend to be approached by journalists as "experts" in stories dealing with social problems while natural scientists are more often contacted for stories about research.

The study suggests that natural and social scientists face different challenges in PCST. The social contextualization of scientific knowledge may be a key problem of natural scientists; maintaining their identity as researcher and demonstrating the scientific basis of their expert comments on social issues may be a typical challenge for social scientists.

# LINDA J. PFEIFFER

When & Where: [B7 1:45pm Wednesday 4 April ARCH2](#)

Title: **Failure to engage: analysis of climate risks to food and agriculture in the American press**

Format: Individual paper

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Linda J. Pfeiffer**, *Purdue University, USA*

Co-author(s): Erica M. Ballmer, *Purdue University*

Media scholars have struggled to effectively communicate the risks of climate change to the American public. In 2016, less than half of all Americans accepted anthropogenic causes of climate change, and only one-third considered themselves personally at risk. Health framing has provided one promising avenue to increase personal relevance and motivate public concern. Potentially, climate risks to food could inspire similar engagement. Public opinion polling shows that Americans correlate food insecurity with climate change – primarily in distant developing countries. No known studies have examined how journalists characterize climate risks to food and agriculture in U.S. news. A national news search of climate, agriculture, and/or food (January 1 through June 30, 2016) yielded 124 news stories. This study addressed: How do journalists frame climate risks to food and agriculture in the U.S.? Are food frames paired with proximity cues to inspire personal relevance? Who are the primary sources that journalists use to characterize climate risks to food and agriculture, and what frames do they utilize? Findings reflected an emphasis on *economics*, *agriculture*, *sustainability*, *energy* and *health*, followed by *concern for future generations*, with *food solution* and *food risk* frames being the least prominent. A significant association between food frames and geographic proximity cues was found, with *food risk* frames being associated with global impacts, and *food solution* frames reflecting national focus. Respectively, sources included scientists, government agencies, the public, NGOs, and politicians. A source by frame analysis identified a significant association (Chi-square,  $p < .001$ ). Of interest, *food risk* and *solution* frames diverged. Source utilization of *agriculture* and *food risk* frames was in the expected range. Yet, scientists employed significantly more *food solution* frames, while government agencies, the public, and politicians utilized significantly less discussion of *food solutions*. Combined findings demonstrate relatively minimal reporting of proximate food risks to U.S. citizens.

# LARA POENARU

When & Where: 467 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Contextual model of learning in science museums – learning mathematics in Ponto UFMG Itinerant Museum**

Format: Visual talk

Theme: Science

Area of interest: Teaching science communication

Author: **Lara Poenaru**, *Instituto Federal de Educação, Ciência e Tecnologia do Pará, Brazil*

Co-author(s): Tania Margarida Lima Costa, *Brazil, UFMG*

Science museums have consolidated themselves as informal places of Science communication. Owing to its social role and its commitment with scientific knowledge, it is necessary to understand the strategies those museums, especially Ponto UFMG Itinerant Museum, use, aiming to reach the learning process mediated by scientific and cultural artifacts that compose the museum exhibit. According with Falk & Dierking, the motivational and emotional cues are extremely relevant to the construction of "new" knowledge. Under that perspective, the Museum has prepared several activities displayed on its exhibits using the theme Mathematics, as 2017 was the national year of mathematics in Brazil.

Taking into consideration that only 11% of the students in Brazil showed the expected proficiency in this signature when finishing high school, we hope to understand how the interactive activities proposed by the museum can motivate the visitors in relating mathematics concepts with daily activities, therefore influencing the learning.

In the hope of answering the central questions of this research, it was held an investigative work with 15 primary school students, with ages between 10 and 12 years old that presented learning disability. For two months, several activities and scientific interventions were performed in the Museum. It was analyzed, under the perspective of contextual learning model (Falk & Dierking, 2000), the emotional cues and specific skills involved in the interaction between the research participants and the scientific and cultural artifacts, the intrinsic motivations that permeate the sociocultural space-time and the self-notion over the learning process.

Our analysis showed the importance of the motivational cues during the educational processes held in not-formal spaces of learning. It was noticed an improvement in the academic performance qualitatively detected as related by the teachers, and quantitatively as proved by the scores in the school tests.

# REBECCA PRIESTLEY

When & Where: [C8 4:00pm Wednesday 4 April ARCH3](#)

Title: **Where science meets the headlines: a decade of the New Zealand Science Media Centre**

Format: Individual paper

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Rebecca Priestley**, *Victoria University of Wellington, NZ*

Co-author(s): Dacia Herbulock, *NZ Science Media Centre / Science in Society group, Victoria University of Wellington*

A decade ago, New Zealand's Science Media Centre launched as part of a government strategy to engage citizens with science and technology. It adapted the model pioneered by the UK's Science Media Centre, linking experts drawn from across the science system directly with journalists in response to breaking news and emerging research results.

However, in New Zealand's fragmented media landscape, specialist science reporters have always been rare and relentless restructuring of newsrooms has led to extremely high journalist turnover in recent years. In this context, many aspects of the UK's model (including privileging a capital city-based, centralized press pool) needed to be radically altered to meet local conditions. This research, by a New Zealand Science Media Centre advisor and an academic who was working as a science journalist at the time the NZSMC was formed, draws on archival sources, surveys of media, and in-depth interviews to examine a decade of operations of the New Zealand Science Media Centre and highlight how the New Zealand model differs from European models, such as the UK and German models, already discussed in the literature. A wider critique of international SMC models is timely as other nations consider adopting – or adapting – the SMC model to their country.

As part of this presentation, Priestley will reflect on her own experience working in science journalism before and after the introduction of the New Zealand Science Media Centre.

# ACHINTYA RAO

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)

Title: **Relevance-distance as a model for evaluating the engagement potential for different fields of scientific research**

Format: Show, tell and talk

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Achintya Rao**, *UWE Bristol, UK*

Co-author(s): Emma Weitkamp, *UWE Bristol*  
Clare Wilkinson, *UWE Bristol*  
Erik Stengler, *UWE Bristol*  
Christine Sutton, *CERN*

In the extensive study of the relationship between science and society, academia has often addressed fields of research that have the potential for having a direct or an immediate impact on day-to-day human life. Such a narrow perspective, despite the diversity of fields studied, has resulted in an orthodoxy within some science-communication discourse that sees two-way engagement as an ideal that must be upheld by all. In this paper, we argue that fields of research that are farther away from affecting daily human life (areas of fundamental research or the so-called “basic sciences”) are not necessarily in a similar position vis-à-vis their relationship with wider society as fields such as climate science or biomedicine. We construct a concept known as “relevance-distance”, noting that most academic research into public engagement draws upon examples from fields that have a “Proximal” relevance to everyday human life. We explore, through empirical data collection, how particle physicists at CERN conceptualise their relationship with the so-called “outside world”. We further explore whether these scientists find their own research influenced through public engagement (the outcomes of two-way engagement) and whether they consider it possible for members of wider society (non-specialists) to participate in particle-physics research. We find that the community perceives a large distance between itself and the public. Our findings indicate that particle physicists largely feel that the public is not able to contribute to scientific research, and that they do not particularly benefit (scientifically) from engagement with the public.

# ELAINE REYNOSO

When & Where: [D3 10:45am Thursday 5 April SDAV2](#)

Title: **What knowledge and skills define a professional science communicator?**

Format: Roundtable discussion

Theme: Science

Area of interest: Teaching science communication

Author: **Elaine Reynoso**, *Universidad Nacional Autónoma de México, Mexico*

Co-author(s): Toss Gascoigne, *Australian National University, Australia*  
Alexander Gerber, *Rhine-Waal University, Germany*  
Luisa Massarani, *Brazilian Institute of PCST*  
Ana Claudia Nepote, *RedPOP and ENES Morelia, UNAM*

Science communicators are required to do an increasing number of tasks, such as constructing a website, planning an exhibition, writing a media release, engaging with different groups of stakeholders such as industry, policy makers and NGOs. Those involved in research or evaluation of exhibits, programmes and activities, encounter methodologically increasing complex approaches which require social science research skills.

How much science do science communicators need in order to perform such tasks properly and how multidisciplinary should this background be?, Can we talk about basic concepts and paradigms, an understanding about the processes, how science works and its role in society?, What other fields of knowledge and skills do science communicators need?

There are no definite formulas for designing courses and programmes with the purpose of preparing future professional science communicators. The social and cultural context, human and technical resources of the institution offering the programmes and the desired profiles of the graduates are determining factors. However the answer to questions such as the ones mentioned above are essential as a starting point.

Panelists from different backgrounds who have contributed to the development of the field over the years, be it as practitioners or as advisors and creators for science communication programmes, will share their points of view.

# MICHELLE RIEDLINGER

When & Where: [D2 10:45am Thursday 5 April SDAV1](#)

Title: **The role of professional science communication associations in supporting science communicators and legitimising science communication practices**

Format: Roundtable discussion

Theme: Science

Area of interest: Investigating science communication practices

Author: **Michelle Riedlinger**, *University of the Fraser Valley, Canada*

Co-author(s): Germana Barata, *Simon Fraser University/University of Campinas*

Science communicators have important and emerging roles to play as curators of research content, catalysts to engage the public in science concerning their health, wellbeing and prosperity, and even advocates for improved science and evidence-based policies. The “social” web has also mobilized bloggers, vloggers, and social media practitioners; these communicators may not be trained or identify as science communicators but they can have a substantial impact on the direction of the public’s engagement with science. National associations of science communication have important roles to play in attracting new classes of communicators engaged in the participatory and pluralistic media landscape, and promoting ethical communication practices. In this roundtable, we explore the role of national science communication associations and networks in legitimating and supporting the many and diverse forms of science communication. We also examine the potential for national science communication associations to recognise and support the activities of non-conventional science communicators who are engaging with publics and policy makers. We ask: where are the boundaries of association membership? What image of science communication are these associations communicating? How do professional science communication associations support those entering the field to be most relevant for both science and society? How can associations attract writers with other areas of expertise to engage in evidence-based reporting? The answers to these questions and others have important implications for professional practices, ethics, training, and mentoring in the field of science communication.

Participants: Marina Joubert (South Africa), Fabien Medvecky (New Zealand), Michelle Riedlinger (Canada), and Maarten van der Sanden (The Netherlands)

# MICHELLE RIEDLINGER

When & Where: [14 4:00pm Friday 6 April ARCH1](#)

Title: **Science advocacy in Australia: A Twitter analysis of the March for Science**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Michelle Riedlinger**, *University of the Fraser Valley, Canada*

Co-author(s): Brenda Moon, *Queensland University of Technology*

Organisers of the global March for Science, held on 22 April 2017 claim to have brought together over 1 million scientists and non-scientists from over 600 countries to advocate for science. While nearly 10, 000 people took part in the Marches for Science in Australia, little research has looked outside of the scientific community to identify who in the general population was advocating for science, and what they were advocating for. We identified and analysed 28,134 Tweets from 7,822 different Australian Twitter accounts during April 2017 that contained one of the keywords “marchforscience” or “march4science”. These Tweets were extracted from the TrISMA infrastructure managed by Alex Bruns and colleagues, which tracks all public tweets by the approximately four million Australian Twitter users identified on an ongoing basis. The following initial findings will be expanded on in the presentation. The top ten Twitter accounts, contributing over 3,185 Tweets (11%) to the total Tweets in our sample, belonged to individuals who self-identified as researchers (science and social science), as advocates (science, the environment, health and gender equality) and with the public service. Through a linguistic analysis of moral imperatives (e.g. should, need to, and must) we found that participants were mostly calling on the wider Australian community to march for greater evidence-informed policy making and greater funding support for science. Scientists were called on to work more closely with politicians and society, engage dialogue on controversial issues, support greater diversity within the scientific community, and recognise the limitations of science. Many Tweets focussed on ontological concerns, or what politicians, science, scientists, and the Australian community should or need to “be”, and contrasted this to perceived current deficits. The implications for science and society research and for public engagement practitioners will be discussed.

# WILL RIFKIN

When & Where: [G7 11:15am Friday 6 April ARCH2](#)

Title: **Social license and two narratives of science communication in Australia's gasfield communities**

Format: Individual paper

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Will Rifkin**, *University of Newcastle, Australia*

Co-author(s): Lucy Mercer-Mapstone, *University of Queensland*  
Martin Espig, *University of Queensland*

White trucks kick up dust in lanes across farmers' fields. Pipes and pumping equipment are being placed to extract salty water and release natural gas from coal seams 300 metres below the surface of Queensland, Australia's Darling Downs agricultural region.

The operator may be gaining a 'social license' among half of the town's residents, surveys suggest. Reassurances from staff of the gas company and the government regulator provide one 'science communication narrative' about natural gas and groundwater. Additionally, each of thousands of farmers receives annual compensation of \$5,000 plus for every well on their land.

One 'community science communication narrative' reflects disquiet about possible environmental and health impacts among the generally conservative, long-term, rural landholders. That is shared by a mix of more recently arrived residents of the estates from which the protest group, Lock the Gate, emerged.

Where the 'government and industry' narrative addresses an apparent lack of understanding of the science, this 'community' narrative suggests a more fundamental societal debate relating to land rights, procedural fairness, and distributive justice - not the usual fodder of science communication.

We explored these dynamics by addressing: (1) dialogue processes involving resource companies and communities near their operations; (2) residents' experiences of living with uncertainty about groundwater impacts of development of this natural gas; and (3) concepts related to 'participation status' in expert-nonexpert communication. Case material includes interviews of residents and experts in community engagement as well as community survey data.

Reconciling the two narratives seems to require dialogue as a process of mutual learning and validation of individual worth and experience for both community members and scientific actors. Science communicators

can re-imagine their role as supporting a participation status for all parties that enables questioning, understanding, and shaping of investigations into possible environmental and health effects.

# WILL RIFKIN

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)

Title: **Psychosocial stress due to environmental and health concerns: what should be our risk communication research agenda?**

Format: Idea in progress

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Will Rifkin**, *University of Newcastle, Australia*

Co-author(s): Kathy Witt, *University of Queensland*

How can risk communication keep a population informed but not unnecessarily alarmed? How does one obtain the authorisation from government and industry – and the personal confidence as a science communicator - to provide levels of transparency that are increasingly sought by communities, the media, and other stakeholders? The focus of this ‘idea in progress’ discussion is on what research can help to answer these questions.

Consider recent cases of concern about possible environmental and health effects from - the fire-fighting foam referred to as ‘PFAS’, development of natural gas from onshore reservoirs in North America, Europe, Australia, and elsewhere, and construction of wind farms.

Concerns of nearby residents can be traced to distrust of large corporations, distrust of government agencies, perceived lack of transparency, domains where the science is not perceived to be definitive - even though it may suggest little or no impact, and feelings of disenfranchisement.

In these instances, a growing body of literature suggests a rise in psychosocial stress among concerned residents in nearby communities. Some in government, industry, and the community see stress as being the predominant, near-term, health impact. Stress can increase the body’s allostatic load, which then contributes to the development of cardiovascular disease and other ailments.

Psychosocial stress can be exacerbated if residents are experiencing a boom-bust economic cycle and if they feel that they are living in a ‘contaminated’ zone, which suggests that their home may have lost its value, creating financial stress for the family. Additionally, hostility and distrust in communities can incur stress, defensiveness, and increased turnover among community liaison staff from industry or government. That can exacerbate levels of stress experienced in the community, a sort of vicious cycle.

With such a wicked problem for risk communication, what should be key elements of our research agenda?

# JAN RIISE

When & Where: [13 3:30pm Friday 6 April SDAV2](#)

Title: **Creating the stories together**

Format: Roundtable discussion

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Jan Riise**, *Mistra Urban Futures, Sweden*

Co-author(s): Padraig Murphy, *City University Dublin*  
Jennie Metcalfe, *e-connect*  
Alexander Gerber, *Rhine Waal University*  
Yael Barel, *Hebrew University of Jerusalem*

Many global and societal challenges, as expressed e.g. in the Sustainable Development Goals and the New Urban Agenda, call for increased collaboration between academics, citizens and practitioners in public and private organisations. 'Responsible Research and Innovation' has become a concept within the European Union, encompassing the change in agenda-setting, the need for open access and a research design that includes issues like gender equality, governance and public engagement.

Complex issues, some called 'wicked problems', need collaborative efforts and new, transdisciplinary knowledge to be solved. Co-production, or co-creation, of knowledge has developed as a methodology, not least in sustainable urban development contexts.

Measuring the societal impact of such endeavours is challenging as there are considerable uncertainties in attribution and timescales, and that case studies and surveys are the only methods to be used. But there is some support for the idea that the actual networking that transdisciplinary projects produce is valuable.

The science communication professionals in such contexts find themselves in a new and challenging environment. This is not about 'building bridges' from science to public and policy, through media releases and festivals. It is about exploring together the ground beneath the bridges, well outside everyone's own comfort zone. Science communication experts may find a new and very important role for engagement, direction, coaching and developing new formats for making the collectively produced knowledge possible to produce and then accessible to new audiences. It is not just about telling the story, it is about creating it.

The round table session will discuss the new role for science communication experts and researchers, from perspectives such as:

Engagement; Participation; Project Design; and Communication Research questions.

# PATRICIA RIOS

When & Where: [G6 11:45am Friday 6 April ARCH1](#)

Title: **Policy design and implementation; an inclusive model to promote public participation**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Patricia Rios**, *Liu Institute - University of British Columbia, Canada*

The design of the city requires the expertise and knowledge from different disciplines, the participation of representatives from private and public institutions, practitioners, engagement specialists and the public itself. Despite the solid intention to include the community and stakeholders in the urban policy process, public engagement continues to be a disorganized and highly inefficient formal requisite. People are usually involved in the final stages of the implementation process, addressing mainly superficial issues while there is a lack of awareness of critical issues, causes and concerns that impact the sustainable development of the city.

This proposal visualizes urban policy as an opportunity to engage in a positive dialogue, to involve the community, develop partnerships to collaborate and incorporate each stakeholder's view to the maximum extent possible. This research analyses the theory of the urban policy process and state of the art public participation spectrum. Further on, evaluates how public participation has been introduced in cities from developing countries. The final outcome is an enhanced, efficient and flexible policy design and implementation model that bridges the public's opinion and scientific knowledge. The model rests on the engagement and communication tools of the Participatory Design method (mostly used in urban design) and the Strategic Design Method (developed to address public policy), that have proven to be highly effective co-creation approaches that promote empathy, create awareness, connect and empower the community.

The model benefits a wide range of groups: from researchers and people interested in public communication, to policy makers, engagement specialists and the community itself. Integrating science communication and public participation allows us to build a platform where the community's opinion is integrated with scientific expertise building a cohesive decision-making process that addresses real concerns with feasible solutions.

# TARA ROBERSON

When & Where: [D4 10:45am Thursday 5 April SDAV3](#)

Title: **Can hype be a force for good? – Debating the benefits and drawbacks of science hype**

Format: Roundtable discussion

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Tara Roberson**, *Australian National University, Australia*

Co-author(s): Sujatha Raman, *University of Nottingham*  
Megan Munsie, *University of Melbourne; Stem Cells Australia*  
Heather Bray, *University of Adelaide*  
David Kirby, *University of Manchester*

Science popularisation can be characterised as a process by which we marshal resources and shape social and political discourse in support of scientific research. The drive to become popular can lead researchers and institutions to draw upon an often-criticised tactic: hype. Hype, or simplified and sensationalised science, appears to be inescapable in science communication with examples extending from viral social media accounts and ‘breakthrough’-themed press releases, to the mediated claims of the celebrity scientist.

The potentially negative effects of hype are familiar in science communication literature. The question is whether hype always a distortion and a lie, or can it be redeemed? In this roundtable, our participants will look at whether there is some good to be had from hype. In the face of this less judgemental, more pragmatic review of science hype, they will draw on their individual expertise and experience to explore how we define hype, how it works, and the implications of its use.

*As part of the roundtable A/Prof Sujatha Raman (Nottingham University) will explore how hype has helped make visible the challenge of antimicrobial resistance and the responsibilities entailed by this hype; A/Prof Megan Munsie (University of Melbourne; Stem Cells Australia) will discuss how hype influences our expectations of emerging technologies in fuelling the hopes of those seeking a solution and enabling an industry based on enthusiasm; Dr Heather Bray (University of Adelaide) will discuss how hype influences public discussions about innovations in agriculture; and Dr David Kirby (University of Manchester) will explore how hype helps establish new research and emerging technology through virtual prototyping.*

Roundtable curator *PhD candidate Tara Roberson (Australian National University)* will draw on her thesis research on science hype to guide the roundtable discussion and debate whether the benefits derived from hype can offset the drawbacks.

# JOSEPH ROCHE

When & Where: [B4 1:45pm Wednesday 4 April SDAV3](#)

Title: **Evaluating science communication across cultures: European Researchers' Night**

Format: Roundtable discussion

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Joseph Roche**, *Trinity College Dublin, Ireland*

Co-author(s): Eric Jensen, *University of Warwick*  
Leonardo Alfonsi, *University of Perugia*  
Giuseppe Pellegrini, *University of Padova*

European Researchers' Night is an annual science communication event that takes place in more than 300 cities across Europe. The aim of the event is to: bring researchers closer to the general public, support the public recognition of researchers, encourage young people to embark on research careers and increase awareness of the impact that research has on society. European Researchers' Night events are usually organised by universities, science centres and museums and engage more than 1 million European citizens each year. Since it was first held in 2005, European Researchers' Night has received more than €40 million of European Commission funding. It will continue receiving funding until at least the end of the Horizon 2020 funding programme. Despite having more than a decade of events across Europe to draw upon, there have been few significant attempts to compare the experiences of participants in different countries. This roundtable discussion will consist of a 75-minute session exploring empirical evaluations of European Researchers' Night from several cultural perspectives. Dr Eric Jensen (University of Warwick), Dr Joseph Roche (Trinity College Dublin), Dr Leonardo Alfonsi (University of Perugia) and Dr Giuseppe Pellegrini (University of Padova) will be joined in the discussion by a representative of the European Commission to discuss work undertaken in Ireland, Scotland and Italy to coordinate evaluations of European Researchers' Night. This initiative has implications for other international collaborative efforts at science communication evaluation.

# JOSEPH ROCHE

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **The challenges of establishing a national citizen science association**

Format: Idea in progress

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Joseph Roche**, *Trinity College Dublin, Ireland*

Co-author(s): Nicola Davis, *Trinity College Dublin*

This talk will focus on efforts to establish a national citizen science association in Ireland. Ireland has a small but growing number of people working in citizen science, from dedicated research teams to local schools and community groups. The establishment of a national citizen science association would help researchers and research organisations in Ireland to participate in international research collaborations on citizen science projects. The association will take the form of a non-profit organisation similar to national citizen science associations that have recently been established in other European countries and will be modelled on the European Citizen Science Association. Embedding the association in a research environment at a university ensures that research is a fundamental part of the association's activities while also helping the association to avail of the services and resources of the university. The association will be a hub for citizen science researchers to launch research projects, prepare funding proposals and influence policy through science communication. Feedback from the audience will be welcomed to help shape the development of this work.

# JENNY ROCK

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)

Title: **Co-creating science communication: how important is facilitation for ‘democratisation’?**

Format: Show, tell and talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Jenny Rock**, *University of Otago, NZ*

Co-author(s): Ali Rogers, *U Otago*

Contemporary science communication aims to include society’s stories about science, including its contextualisations of and contributions to science. If we really value such collaborative contribution to the representation of science, how can we help enable it in more authoritative spaces, beyond the casual arena of street-based conversation and social media commenting?

Creative representation including visual narratives can provide effective avenues for the public to document and share perspectives and knowledge. Co-creating formal exhibitions of such material could build collaborative practice in science communication and produce constructive mutual (democratised) interactions. Such interactions could develop between participants from the collective ‘public’, to the professional expert, and the formal institution.

What might such ‘enabled co-creation’ look like? And how might it be streamlined to overcome our perpetual constraints of time and money? We share the design, implementation and assessment of a platform for co-creating science communication exhibits. Two case studies are used as illustrations: (1) an exhibition co-created between a citizen water quality monitoring group and a postgraduate student in science communication; and (2) exhibitions of a community arts project on biodiversity conservation management. Broadly, we identified multiple challenges and successes of the disrupted hierarchies associated with co-creation. Specifically, our results contribute to a putative framework of critical attributes for platforms facilitating co-created science communication exhibitions.

# VANESSA ROGER-MONZO

When & Where: [16 3:45pm Friday 6 April ARCH3](#)

Title: **“It won’t hurt you. It’s natural”**: the treatment of alternative therapies in Spanish women’s magazines

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Vanessa Roger-Monzo**, *ESIC Business & Marketing School, Spain*

Co-author(s): Myriam Marti-Sanchez, *ESIC Business & Marketing School*  
Isabel Mendoza-Poudereux, *University of Valencia*  
Yolanda Cabrera Garcia-Ochoa, *University of Valencia*

The model of idealising women frequently includes physical, attitudinal and behavioral factors. They can vary according to age and the personal moment where women find themselves. In order to reach that perfection, women’s magazines recommend that their target readership follow anything that sounds “natural”, obtaining in this way the cherished balance between body and soul and their total realization as women.

In 2011, the Spanish Ministry of Health published a report on natural therapies with the aim of classifying these techniques and compile the scientific evidence hitherto. The study included 139 types of practices with scarce scientific evidence beyond the placebo effect. Although most therapies are harmless, they are not absolutely exempt from risks.

This study aims to analyse and assess the treatment of alternative therapies that Spanish women’s monthly magazines offer. The research will analyse a content analysis of the ten most read magazines in Spain, according to Spain’s *Estudio General de Medios (Media General Studies)*: 3,530,000 monthly readers between October 2016 to March 2017: Vogue, Elle, Cosmopolitan, Divinity, Glamour, Telva, AR, Woman, Clara and Marie Claire. The corpus includes the content of natural therapies between 1 January 2015 and 31 December 2016. The search, after 90% of the scrutiny, has resulted in 498 units.

The results of the research demonstrate the role of yoga as the most frequent alternative therapy appearing in women’s magazines, with 35% of results, followed by meditation (20%) and Pilates (11%). The use of CAM is mainly related to stress. Regarding the sources of information, the scarce use of documentary sources to elaborate contents on the CAM is verified and the use of unauthorized personal sources or with conflict of interests (celebrities and CAM experts) is verified to support this type of content.

# VANESSA ROGER-MONZO

When & Where: 247 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Youtube: to be or not to be science**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **Vanessa Roger-Monzo**, *ESIC Business & Marketing School, Spain*

Co-author(s): Myriam Marti-Sanchez, *ESIC Business & Marketing School*

Lorena Cano-Oron, *University of Valencia*

Yolanda Cabrera Garcia-Ochoa, *University of Valencia*

The objective of this communication is to analyze the use of the youtube channel Alternative Therapies and Natural Remedies (in its Spanish version) as a platform for the dissemination of content around issues of apparent scientific interest.

A corpus of 40 videos has been compiled to carry out the study, the 20 most popular ones and the 20 less watched, obtained on July 14, 2017. The results confirm the use of the channel as a platform to position itself in favour of alternative therapies, but, above all, to generate marketing-oriented content to attract web traffic for commercial purposes. Besides, we verified that this channel contributes to the social spread of pseudoscientific topics with a total lack of precision in the information and the subsequent risks that this entails for the society.

The method of analysis has been based on the download, viewing and recording of the most relevant data for the investigation.

After analysing the audiovisual production and the quality of the videos, we found common characteristics that are repeated in the treatment of the information and its audiovisual production.

And we found that 100% of the sample are videos of amateur production with impersonal direction, low-resolution images, non-professional voiceover and, in short, unappealing results.

Furthermore, we examine what the motivation of the creators of these videos is: if they try to influence, report or take positions on the open debate concerning the efficiency of these therapies. Additionally, we analyse ideas and images they transmit to the social imaginary through different communication strategies.

# KATHLEEN ROSE

When & Where: [17 3:30pm Friday 6 April SDAV3](#)

Title: **Public opinion of evolution: different approaches to measuring evolution beliefs**

Format: Idea in progress

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Kathleen Rose**, *University of Wisconsin-Madison, USA*

Co-author(s): Michael Xenos, *University of Wisconsin-Madison*  
Dominique Brossard, *University of Wisconsin-Madison*  
Dietram Scheufele, *University of Wisconsin-Madison*

In 2010, the National Science Board's (NSB) Science and Engineering Indicators excluded questions about evolution from both the report and their measure of scientific knowledge (NSB, 2016). While this decision generated "flak" from the broader community (Bhattacharjee, 2010), the NSB argued that the consistently low U.S. score on the human evolution questions indicated they were not a reliable measure of scientific knowledge. The NSB has also tested two versions of the question: "human beings, as we know them today, developed from earlier species of animals" with and without the preface "according to the theory of evolution." As scores improved with the theory of evolution wording, the NSB concluded that the question reflected beliefs instead of knowledge where "many people know basic facts about evolution and science without believing in human evolution" (NSB, 2016, p. 48).

Beyond differences in knowledge scores, additional research has demonstrated that compared to Europe, U.S. views are strongly driven by religious beliefs, political ideology, and "genetic literacy" (Miller, Scott, & Okamoto, 2006). While there is a clear division in the U.S. between evolution knowledge and belief, empirical questions remain as to what factors drive the discrepancy between knowing the "basic facts," yet believing otherwise.

Using data gathered from a nationally representative survey of U.S. adults in early 2017 (N=1,600; completion rate=41.7%), we explore differences in evolution knowledge and beliefs. Modifying the NSB experiment, we asked about human evolution by itself and prefaced with "according to scientists." Respondents were then categorized into one of four groups based on their own beliefs and their views of the science. Results indicate that the discrepancies between expert views and their own are driven by values (e.g., religion), news use, discussion networks, and knowledge, among other factors. We discuss the implications of these groupings for public opinion about controversial topics.

# KATHLEEN ROSE

When & Where: [A8 11:45am Wednesday 4 April ARCH3](#)

Title: **Comparison of graduate students and tenure-track faculty in levels of and attitudes toward public science communication engagement**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Kathleen Rose**, *University of Wisconsin-Madison, USA*

Co-author(s): Emily Howell, *University of Wisconsin-Madison*  
Dominique Brossard, *University of Wisconsin-Madison*  
Michael Xenos, *University of Wisconsin-Madison*  
Dietram Scheufele, *University of Wisconsin-Madison*  
Julia Nepper, *University of Wisconsin-Madison*

Productive communication between scientists and the public is beneficial to both scientists and the public. Much research focuses on the impact of engagement on the public, and recent efforts have aimed to both understand and increase scientists' participation in public communication. These efforts have largely focused on the activities of scientists in professional settings such as industry scientists and academic faculty. While these studies are informative, the field lacks information on science graduate students.

As a first step towards exploring science communication in the scientist-in-training population, we examined perceptions and engagement in science and engineering graduate students. We surveyed the graduate student population at a research-intensive U.S. institution, in early 2017 (N=1,036; completion rate=16.6%), and compared these results with those from a 2016 survey of tenure-track science faculty at UW-Madison (N=373; completion rate=30%). Participants were asked about their familiarity with various media, their engagement in public science communication (PSC), and attitudes towards PSC and the public. We found that graduate student respondents were more likely than faculty to view social media as a tool for engaging with the public and other scientists, and were also more likely to post or comment on science-related content. In contrast, faculty were more likely to engage in public outreach (non-academic scientific communication, excluding social media) than graduate students. Overall, this first look suggests there are some cohort changes in terms of how graduate students engage compared to tenure-track faculty, with graduate students more frequently using forms of online engagement.

Broadly, we find that graduate students' perceptions of the value and usefulness of PSC are favorable. We discuss factors that may affect these perceptions, and findings, and possible strategies for increasing

competency and engagement in science communication across researchers at multiple levels of their academic career.

# XENIA RUEDA

When & Where: [14 4:15pm Friday 6 April ARCH1](#)

Title: **From the communication of science and technology to the social appropriation of knowledge**

Format: Individual paper

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Xenia Rueda**, *UNAM, Mexico*

The aim of this paper is to show the application of the intercultural communication model of science and technology that promotes the Social Appropriation of Science, Technology and Innovation (ASCTel), implemented in the community of San Pedro and San Pablo Ayutla Mixe of the state of Oaxaca, Mexico, through the Project funded by the National Council of Science and Technology of Mexico (CONACyT).

The paper is divided into three parts. The first one describes the conceptual framework in which epistemic equity and deliberative dialogue are considered as the basis for establishing social innovation networks that build projects in search of the Social Appropriation of Science, Technology and Innovation. The second part presents the necessary elements to constitute a model of intercultural communication that promotes dialogue and especially communication in order to constitute demands and public participation of all those affected from a diverse, pluralistic and just perspective for the benefit of the communities. Finally, the third section describes the actors and communities that participate in the deliberative dialogue of the problems that affect the San Pedro and San Pablo Ayutla Mixe community from the perspective of epistemic equity.

The project was developed from three transversal axes to fulfill the main objective. Consensus conferences were held, bringing together interested groups to analyze the benefits and consequences of scientific practice and their relationship to their daily lives. Subsequently, workshops were held in which extensive and argumentative discussions were held on some scientific and technological practices that have an implication in society, in order to provide information to the community. Finally, sociocultural networks were established, which sought to realize the appropriation of knowledge that in turn generate social innovations, that arise, are developed and are implemented within the community itself, for their own benefit.

# ELLEN RYKERS

When & Where: 176 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Communicating conservation with detection dogs**

Format: Visual talk

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Ellen Rykers**, *University of Otago, NZ*

Co-author(s): Nancy Longnecker, *University of Otago*

Biodiversity decline in New Zealand is an underreported issue. More than 80% of the native birds are facing extinction, and 94% of the land is home to introduced mammalian predators. Public support and awareness is essential to effectively address these issues. Thus, there is a need to develop novel tools for enhancing public awareness and attracting new audiences to conservation.

One method widely used to engage the public with conservation is the adoption of a charismatic flagship species, with the most famous example being the World Wildlife Fund's panda. In New Zealand, there is the kiwi – but many of the other threatened native species are neither recognised nor encountered by the general public.

The New Zealand Department of Conservation 'employs' around 80 dogs as part of its Conservation Dogs Programme. Conservation dogs are trained to sniff out either endangered species (e.g. kiwi, whio) or introduced pests (e.g. rats, stoats), thereby assisting with species monitoring and safeguarding pest-free sanctuaries. Could 'cute and cuddly' dogs function as a conservation flagship, acting as a 'hook' to engage more amongst the New Zealand public with conservation?

This poster will share an excerpt of an article about conservation dogs written as the creative component of a MSciComm and presents research investigating the influence of detection dogs on conservation communication, based on results from an online questionnaire. This exploration of the New Zealand Conservation Dogs Programme acts as a case study for conservation marketing and using flagship species to communicate science.

# NURIA SALADIE

When & Where: [AA4 3:30pm - 5:15pm Tuesday 3 April SDAV4](#)

Title: **Landing on reality though a future scenario: a case on responsible research**

Format: Workshop

Theme: Society

Area of interest: Teaching science communication

Author: **Nuria Saladie**, *Pompeu Fabra University, Spain*

Co-author(s): Gema Revuelta, *Pompeu Fabra University*  
Carolina Llorente, *Pompeu Fabra University*

In this workshop, we will share with participants the methodology used in the HEIRRI project (*Higher Education Institutions and Responsible Research and Innovation*) for teaching Responsible Research and Innovation (RRI). This project aims at creating training programmes and materials to teach university students, from all levels (undergraduate, PhD, master degree, summer school, MOOC), how to apply an RRI perspective into their research. The methodologies used in HEIRRI are centred in the participant, and promote critical thinking, reflection and multidisciplinary working. The session will start with the screening of a video about a future scenario, the purpose of which is to make participants think and wonder about R+D+I in terms of “whys” and “hows” . From then on, participants will take the lead and suggest related research projects, always under an RRI approach. Workshops organisers will help participants to include an RRI perspective to the various research project proposals. The last part of the session will be a moderated debate on the ideas born during the session.

# NURIA SALADIE

When & Where: [F3 3:30pm Thursday 5 April SDAV5](#)

Title: **Training on RRI: experiences on responsibility**

Format: Roundtable discussion

Theme: Society

Area of interest: Teaching science communication

Author: **Nuria Saladie**, *Pompeu Fabra University, Spain*

Co-author(s): Gema Revuelta, *Pompeu Fabra University*  
Steve Miller, *University College London*  
Alexander Gerber, *Rhine-Waal University*  
Frank Kupper, *Athena Institute – VU University*

Curator: Gema Revuelta, director of the Science, Communication and Society Studies Centre from Pompeu Fabra University and Coordinator of the European project HEIRRI (Higher Education Institutions and Responsible Research and Innovation).

Panellists: Steve Miller, University College London; Alexander Gerber, Rhine-Waal University; Frank Kupper, Athena Institute – VU University; Núria Saladié, Pompeu Fabra University.

While Responsible Research and Innovation (RRI) has been promoted from top-down and bottom-up impulses, the need for strong and high-quality training on the holistic meaning of RRI and how to put it into practice has become, more than ever, a necessity. This panel will talk about different European initiatives on RRI training, and a recent study by Rhine-Waal that compares European RRI policies and practices with those in Africa and Asia. Furthermore, the panelists will share their personal experiences with offering courses on RRI at university level, in order to explain the opportunities and challenges of these RRI trainings, both institutionally and regarding the participants' attitude. The definition of RRI is still under construction, so putting in common the different approaches that experts on the field have experienced will surely be an enriching exercise.

# RHIAN SALMON

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **Reflexive practice: radicalising how scientists approach communication**

Format: Idea in progress

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Rhian Salmon**, *Victoria University of Wellington, NZ*

Co-author(s): Jo Bailey, *Victoria University of Wellington*  
Rebecca Priestley, *Victoria University of Wellington*

Te Punaha Matatini (TPM), a Centre of Research Excellence focused on Complexity, Risk and Uncertainty, is fortunate to boast some of New Zealand's top scientist communicators in its cross-disciplinary, cross-institutional, research team. It also takes real engagement seriously – and is demonstrating this by funding a PhD scholarship specifically focused on evaluating and re-designing its approach to science communication.

TPM researchers (like many researchers) currently invest significant time and resources into science communication but have limited capacity to evaluate, peer-review, and improve these activities. This project builds on a recent paper by Salmon et al (2017), which proposes an approach to transforming public engagement by scientists through reflexive analysis of their activities. The PhD project aims to test this theory in practice.

This mixed methods research project has three parallel strands: theoretical, practical, and reflexive, and will contribute towards building a new theoretical model for public engagement by scientists. Using TPM as a case study, it will involve unpacking assumptions related to engagement activities, clear articulation of appropriate and measureable objectives, and development of integrated qualitative and quantitative methods for evaluation.

The project will take a human-centred design approach and involve engaging practising scientists (and information recipients) in reflexive journaling; interviews; focus groups and other design ethnography processes; as well as research into relevant theoretical frameworks; development of evaluation instruments; use of data analytics to identify networks and measure the propagation of outreach efforts and the development and evaluation of a new engagement activity (as a form of design research).

In addition to learning from the evaluation data itself, our goal is to see if this project leads to a more sophisticated approach (by both individuals and organisations) to science communication, and how

the attitudes, objectives and practices of those involved change through the experience of being involved in this project.

# RHIAN SALMON

When & Where: [B7 2:30pm Wednesday 4 April ARCH2](#)

Title: **Climate change engagement in the “Deep South challenge”**: integrating theory into practice

Format: Individual paper

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Rhian Salmon**, *Victoria University of Wellington, NZ*

Co-author(s): Joanna Goven, *Victoria University of Wellington*

In 2013, new government investment in science research led to the creation of “National Science Challenges” that were expected to “respond to the most important, national-scale issues and opportunities identified by science stakeholders and the New Zealand public” and “have major and enduring benefits for New Zealand”. The resultant eleven cross-disciplinary, collaborative research programmes are primarily focused on human health and living conditions, environmental issues, and science innovation. The Challenges are not only meant to be informed by the priorities of New Zealand’s publics, but “public outreach, communication, public engagement, and education activities” are also expected. Knowledge transfer and effective public and end-user engagement are fundamental to the Mission of every Challenge.

We will discuss the prioritization and development of “Engagement” within one of these Challenges, the Deep South Challenge, which has a mission “to transform the way New Zealanders adapt, manage risk, and thrive in a changing climate”. The goal of the associated Engagement Strategy is to “improve New Zealanders’ ability and capacity to make decisions informed by DSC-related research”.

The presentation will explore tensions between delivering a robust and theoretically-grounded engagement strategy with the need to meet (or manage) “outreach” expectations from the science community, government funders, and different publics and end-users, and issues associated with connecting this publics-oriented mission with its core science research culture.

The presentation will use examples of engagement activities in the Deep South Challenge to illustrate different models for science engagement in practice, including a focus on dialogue, co-production and evaluation, and outline how this action research is contributing to bridging the theory-practice divide often experienced in science communication.

# DAVID SALT

When & Where: [B6 1:45pm Wednesday 4 April ARCH1](#)

Title: **The 'dinosaur' magazine in the age of social media**

Format: Individual paper

Theme: Science

Area of interest: Influencing policies through science communication

Author: **David Salt**, *Centre of Excellence for Environmental Decisions, Australia*

Does the newsletter or research magazine have a place in the age of social media? These days anyone can tweet, blog or instagram to everyone in real time at the touch of a button. Newsletters and magazines takes weeks or months to produce and, when they do eventually come out, who has time to read them? Why bother?

The ARC Centre of Excellence for Environmental Decisions has been producing it's research magazine *Decision Point* for ten years (and has put out over 100 issues). It goes to over 6,000 subscribers and has helped build a community of interest around environmental decision science (a term that didn't even exist prior to the magazine). It has helped build and support a network of scientists, managers and policy makers that has transformed many aspects of environmental policy and management both within Australia and overseas.

In this paper, David Salt, the Editor of *Decision Point*, will describe the unique value that a research magazine can impart to an institution and network. In the age of the internet, the magazine may seem like a 'dinosaur' form of comms yet there is still enormous value in this old fossil. If done well, it can establish and consolidate a brand, create and sustain a community of interest and act as a symbol. And, it's your best handout at every networking event (try handing out a tweet). David will present evidence on the impact of *Decision Point* and reflect on the necessary ingredients of effectiveness for a research magazine.

# TIBISAY SANKATSING NAVA

When & Where: 37 4:45pm [Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer](#)

Title: **Caribbean ties: co-developing a new narrative on indigenous heritage in the Caribbean and beyond**

Format: Visual talk

Theme: Stories

Area of interest: Comparing science communication across cultures

Author: **Tibisay Sankatsing Nava**, *Leiden University, Netherlands*

Co-author(s): Corinne Hofman, *Leiden University*  
Arlene Alvarez, *Museo Arqueológico Regional Altos de Chavón*  
Eduard Dresscher, *Fundacion 1403 Aruba*

A consortium of institutional partners in the Caribbean has come together to co-create a pan-Caribbean exhibition on Amerindian Heritage called *Caribbean Ties: A shared indigenous past, a common present and an inclusive future*.

The Caribbean Ties project was initiated by the ERC-Synergy NEXUS 1492 together with several Caribbean and European institutions. NEXUS 1492 is an interdisciplinary research project (across sciences) that contributes to rewriting a crucial chapter in global history by focusing on transformations of indigenous, Amerindian cultures and societies across the historical divide of 1492, through archaeology, network science, geochemistry, and heritage research, with a specific focus on sharing the scientific research methods and results with the public.

The exhibition will be launched simultaneously in at least 10 countries in May 2019. The design of the exhibition allows each local partner to select the appropriate modules for their exhibition space constraints, local context and budget. The exhibition is co-designed with all consortium partners from across the Caribbean and Europe. Each exhibition is led locally and includes locally relevant content provided by each leading partner, with the aim to positively incorporate Amerindian heritage in Caribbean and European culture. An extension of the exhibition online will provide additional information that ties all local exhibitions together.

In this talk we will focus specifically on the development of inclusive narratives and practices for public engagement of science in a diverse landscape of communities, cultures, histories and languages in the Caribbean.

# TIBISAY SANKATSING NAVA

When & Where: [D5 11:15am Thursday 5 April ARCH1](#)

Title: **Co-creating an Amerindian Heritage Research Exhibition with Caribbean and European Museums**

Format: Individual paper

Theme: Stories

Area of interest: Comparing science communication across cultures

Author: **Tibisay Sankatsing Nava**, *Leiden University, Netherlands*

Co-author(s): Corinne Hofman, *Leiden University*  
Arlene Alvarez, *Museo Arqueológico Regional Altos de Chavón*

NEXUS1492 (Leiden University) is co-creating a collaborative exhibition on indigenous heritage in the Caribbean. The pan-Caribbean exhibition Caribbean Ties, which fosters partnerships, bridges research and collections and is driven by people in the region, is one of the major public endeavors of the ERC-Synergy NEXUS1492 project and more than 10 regional partners in the Caribbean and in Europe.

The exhibition and accompanying public engagement programme is titled “Caribbean Ties: A shared Amerindian past, a common present and an inclusive future”, and emphasizes continuity and change across the Caribbean and uses indigenous heritage to help build an inclusive Caribbean society. This project will launch in at least 10 sites across the Caribbean simultaneously: each partner is participating in the co-development of a common story that will be presented in each location. At the same time, partners co-create a locally relevant component with their local target audience.

NEXUS 1492 is an ERC Synergy research project that contributes to rewriting Caribbean pre-colonial history from the perspective of the Amerindian. Through archaeology, archaeometry, geochemistry, heritage and network science research, NEXUS 1492 explores how the indigenous past can be positively incorporated in cultural heritage across the diverse region of the Caribbean.

In this talk we explore the development of this public engagement with science project from two key perspectives: lessons learned in co-creating research-based exhibitions with diverse partners, comparing best practices in public engagement across the Caribbean and the co-development of a relevant and sustainable international public engagement programme in a diverse landscape of islands, cultures and languages.

# ADRIANA SANTOS

When & Where: [17 3:30pm Friday 6 April SDAV3](#)

Title: **Uses of public communication in the scientific culture of Brazil and Canada: a comparative study between The Federal University of Uberlandia and The University of Ottawa**

Format: Idea in progress

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Adriana Santos**, *Federal University of Uberlândia, Brazil*

Co-author(s): Mirna Tonus, *Universidade Federal de Uberlândia*

The article has a proposal is to conduct a comparative study of scientific culture in Brazil and Canada, observing the uses of Science, Public Communication, and technology transference (innovation) at the University of Ottawa and Federal University of Uberlandia, aiming at approaching the interrelation between academic production and its media popularization to make science popular. Such proposal is based on the conception that universities and research institutes develop a significant quantity of scientific production, but no data shows if these productions overcome the universities borders, particularly through media and diverse actions of popular science. The problematic that supports the proposal is the fact that the institutions must have their communicational proposal in conformity with the public interest and also with the guidelines of Public Communication. In addition, it is specifically important for popular science and technology transference to be focused on science popularization. The study considers that the concept of Public Communication of Science (PCS) is little discussed among researchers and professionals in the field of communication. It understands that PCS must go beyond the process of scientific dissemination and be understood as an area of communication focused on the wide dissemination of science, technology, innovation and scientific knowledge in order to popularize knowledge and bring science closer to the citizen. The initial results indicate that the efforts of most institutions are limited to the simple use of specialized / scientific journalism as an unique feature to promote access and enable the right to information on science and technology.

# ADRIANA SANTOS

When & Where: 305 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Thinking science: initiatives of public communication for the scientific culture in Brazil**

Format: Visual talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Adriana Santos**, *Federal University of Uberlândia, Brazil*

Co-author(s): Adriana Cristina Omena dos Santos, *Federal University of Uberlândia - University of Ottawa*  
Daniela Avila Malagolli, *Federal University of Uberlândia*

The poster discusses the public policies of the popularization of science and the interrelationship between academic production and its dissemination. It studies, therefore, the public communication of the science (PCS) like one of the characteristics of creation and consolidation of the scientific culture of the countries. It considers that the ideal model of PCS goes beyond the process of scientific dissemination and seeks an interaction of the public with the process of knowledge construction since. The study used a descriptive research and documentary survey about events of great insertion and visibility that happen in Brazil: the Pint of Science and the National Salon of Scientific Divulcation, both with a proposal to approach the science of the population and to discuss the impacts of the science in the society. The pint of Science is an international event that aims to provide interesting, fun and relevant discussions on the latest scientific research in an accessible format for the public. It was first organized in 2013 in England and spread to different countries. It happened for the first time in Brazil in Brazil in 2015 through the University of São Paulo. The second edition took place in 2016 and in 2017 the Pint of Science took place in 100 cities involving 11 countries. In Brazil, it was present in 22 cities in more than 10 Brazilian states and involved several teaching and research. The National Salon is a Brazilian initiative whose main objective is to promote scientific dissemination, national culture and integration among students, teachers, researchers and the community in general. The activities carried out to seek to approximate the production of academic knowledge of the Brazilian social reality. It has been organized in 2009, 2010, 2013, 2015 and 2017. It involves different sectors and institutions of Society in the organization.

# MARK SARVARY

When & Where: [C2 3:30pm Wednesday 4 April St David Lecture Theatre](#)

Title: **Turning undergraduates into science storytellers. What are the best practices?**

Format: Roundtable discussion

Theme: Stories

Area of interest: Teaching science communication

Author: **Mark Sarvary**, *Cornell University, USA*

Co-author(s): Kathleen Gifford, *Science Cabaret/Cornell University*  
Bruce Lewenstein, *Cornell University*

What is the role of science communication in the undergraduate science curriculum? This international panel will discuss key issues in teaching science communication at the undergraduate level, and how to bring public communication of science into science education.

Join this roundtable discussion with Merryn McKinnon and Will Grant from the Australian National University, Fabien Medvecky from the University of Otago, NZ, Kitty Gifford and Mark Sarvary from Cornell University, USA. Bruce Lewenstein from Cornell University will moderate the discussion.

Dr. Sarvary and Ms. Gifford organized this roundtable after they developed a course at Cornell University (USA) for science undergraduates covering how to build a science communication strategy plan. Their goal was to understand how undergraduates consume and produce scientific information, and to develop methods to teach communication skills to the next generation of science scholars.

Roundtable participants will discuss how scientific storytelling can be taught at an undergraduate level, and exchange ideas about how digital natives use technologies for science communication. Panelists will also discuss student involvement in public science events outside of the university walls. Instructors who teach science communication are especially encouraged to join this discussion, and bring ideas what has worked and what has failed in their classrooms. We look forward to discussing this topic with fellow science communication instructors, researchers and experts in this field.

# GERALDINE SATRE BUISSON

When & Where: [E6 2:45pm Thursday 5 April ARCH1](#)

Title: **Pulling out prematurely: Donald Trump and the Paris Agreement - a cross-country comparison of climate change narratives in legacy media**

Format: Individual paper

Theme: Stories

Area of interest: Influencing policies through science communication

Author: **Geraldine Satre Buisson**, *Imperial College London, UK*

Climate change is one policy arena where science and cultural beliefs are deeply intertwined. In some countries (the United States especially, and the United Kingdom to a lesser extent), this intersection is expressed sharply along political partisan lines. Drawing on narrative policy theory, this paper looks at the way in which we make sense of this entanglement in the form of stories that we tell as social groups, relayed by the media and influential public figures. Tracing how these different narratives emerge and influence policy is of key importance to climate science communicators.

Using the case study of President Trump's announcement in June 2017 that the United States would be leaving the Paris Agreement, I analyse the narratives that were deployed by the governments of three countries (the United Kingdom, France and Germany) to react to the same policy event, as well as assess the extent to which these stories were adopted or contested in legacy media.

I first conduct a narrative analysis of the speeches made by respective heads of states to identify the range of characters, types of plots, and narrative themes employed to react to President Trump's announcement. I then compare these official narratives to those disseminated in the media, through the analysis of 150 press articles published in 18 daily newspapers in the weeks following the announcement. I find that, in spite of the united front presented by France, Germany, and the United Kingdom in their determination to pursue coordinated climate policies at the international level, the very relevance of nation states as the main actors of climate change mitigation is challenged in the press through the emergence of alternate stories about the role of cities, communities, or businesses as translators of scientific knowledge into political action.

# BERNARD SCHIELE

When & Where: [A7 11:45am Wednesday 4 April ARCH2](#)

Title: **How to innovate in science communication in complex societies**

Format: Individual paper

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Bernard Schiele**, *UQAM Montreal, Canada*

If social complexity is proportional to the number of interactions within a given society, ours is undoubtedly complex. In our complex societies, traditional modes of science diffusion are not as effective as we would like them to be as a result of at least two self-reinforcing factors: first, circulating information, true or false, validated or not, is always susceptible of emerging in public discourse, which we call the mirror effect; second, the sciences continue to develop, giving birth to new fields of specialty, further widening the gap, not only between scientists and laypersons, but also between researchers themselves, which we call the archipelago effect. Therefore, we must invent new modes of knowledge diffusion, in line with the redistribution of interrelations between actors and social groups, the development of means of communication, and the progress of knowledge. This talk will present some of the new modes of science communication, or knowledge diffusion, that are being developed and experimented today to meet the challenges of our modernity.

# ALEXANDRE SCHIELE

When & Where: [16 4:00pm Friday 6 April ARCH3](#)

Title: **Science/pseudoscience TV series, a comparison**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Alexandre Schiele**, *University of Quebec at Montreal (UQAM), Canada*

Since the end of World War 2, science education, science mediation and science communication has been the order of the day. With the growing importance of science and technology within our societies, in all fields, it was posited that reason, science and a scientific mind were among the major conditions for continuously growing economies and continuously rising living condition. Science and scientists had a powerful voice, while everything and everyone that was deemed outside the mainstream, including pseudoscience and cranks, were confined to the fringe. Alternative values and ideas existed and strived, but they were mainly relegated to escapist fiction, and, for their most part, depreciated. However, in the past two decades or so, pseudoscience and cranks have gained a foothold in the mainstream and have now become a staple of mass media, even on historically science-orientated networks. For sure debunking still exists, but it is increasingly confined to the fringe: pseudoscience and cranks have not only become established fixtures of primetime television, they are less and less denounced, criticized or even confronted. Simply put, cranks now present their ideas without contradiction while the success of these shows bring in a steady flow of revenues if they secure a contract with a major. The result has been the marginalization of shows that even simply draw on science as a mean of entertainment.

In order to better understand this puzzle, which is unfortunately too often avoided by science communication, the object of this talk will be the comparison of the structure of a highly successful pseudoscience TV series on a mainstream network, *Ancient Aliens*, running continuously since 2009, to that of recent and more traditionally science-oriented TV series also playing on mainstream networks. Understanding their success may contribute to the improvement of science communication and to the counteracting of mainstream pseudoscience.

# SIMON SCHNEIDER

When & Where: [17 3:30pm Friday 6 April SDAV3](#)

Title: **Cultural pre-conceptions and their Implications on earth science education**

Format: Idea in progress

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Simon Schneider**, *University of Potsdam, Germany*

Over the last decades the public debate about climate change, sustainability, and other global environmental issues was focused solely on perspectives from the Earth sciences, on economic demands and societal challenges. Some scholars see the working programme for climate research of the EU as an example, which seems to be “characterized by its exclusion of human (cultural, ethical and spiritual) dimensions and is simply interested in monitoring and technical and socioeconomic engineering of solution policy” (Bergmann, 2010:17). Only recently cultural studies and theology have been introduced into relevant research, but a deeper understanding of “how human environmental attitudes get shaped and what causes those attitudes to change through time” (Kareiva; 2008: 2757) is still missing. While scientists agree, that there “... is also ample evidence that distinct cultural and religious values of individuals and whole societies influence their perception and tolerance of risk as well as their capacity to cope with environmental hazard” (Gerten, 2010:39f), education and communication research have not yet focused on how these risks and hazards are transported into the public in respect to various socio-political environments. Within this session, we want to discuss ways to gain a better understanding of how cultural preconceptions influence science education and science communication.

# LINDA SELLOU

When & Where: [A7 11:15am Wednesday 4 April ARCH2](#)

Title: **Rojak science: a gastronomical path to science communication in Singapore**

Format: Individual paper

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Linda Sellou**, *National University of Singapore, Singapore*

Co-author(s): Kim Yong Lim, *National University of Singapore*

The city-state of Singapore may be described as a nation of high achievers, be it in economics, technology or even education. Singapore is also a profoundly multicultural and multilingual society that has four official languages (English, Mandarin, Malay and Tamil). The communication of science, in this Rojak (a Malay term for “eclectic mix”) society, brings its own challenges. However, one thing connects everyone and makes everything simpler: food!

We organised a series of outreach events that focused on the science of cooking. The targeted audiences were school children, families and professionals. The programme was developed and conducted with science and engineering undergraduates. Our primary goal was to reinvent local delights to emphasise science. Another was to engage the different social communities. The initiative allowed the undergraduates to infuse their respective cultural backgrounds into the task of science communication. This led to the development of culturally informed strategies to reach and engage diverse audiences.

This talk discusses the development of this programme, the various interactions with the different audiences and the impact on all the stakeholders.

# LEI SHI

When & Where: 396 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Assessment on the science communication effect of S&T contest:  
A case study of 31st China Adolescents Science & Technology and Innovation  
Contest (CASTIC)**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Lei Shi**, *National Academy of Innovation Strategy, China  
Association for Science and Technology*

Science & technology and innovation contest is a popular form to conduct science communication because it can constantly attract media and audience' attention, and mobilize more resources among institutes, universities, schools, science centers and museums in the long run. How to assess the science communication effect of the contest is an interesting question with value of theoretical exploration and practical implication. Based on the relevant theory and the purpose of the contest, the assessment of science communication effect is undertaken, It concludes 3 aspects including education, engagement and entertainment.

During the contest, a survey was conducted from August to September in 2016. Online questionnaires were distributed to the attendees of the 31st CASTIC(n=622), 326 was responded. The survey consists of questions concerning the effect of science communication on its function of education, engagement and entertainment. With the questionnaire survey and interviews, the paper aims to answer how the participants educated about science, how they engaged in the science project and how they entertain during the contest, finally generalizing the assessment of the science communication effect.

The findings are that on the metrics of education, over 70% participants reported their skills and interest of science are strengthened and their knowledge of science is enlarged. On the metrics of engagement, participants who took less than 3 months and 3-6 moth to prepare for the project are 42.9% and 25% respectively. 32.1% participants received trainings over 3 times. On the metrics of entertainment, practical experience activities are the most popular content during the contest.

# AMY SMITH

When & Where: 393 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Public perceptions of genetic engineering in New Zealand**

Format: Visual talk

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Amy Smith**, *Otago University, NZ*

Co-author(s): Jesse Bering, *University of Otago*

The first commercially available biotech crop available to consumers was the “Flavr Savr” tomato in 1994, a crop that could be ripened whilst still on the vine, unlike conventional tomatoes which must be harvested whilst still green and treated with ethylene to encourage ripening. Canned and paste tomato products derived from Flavr Savr cost 20% less to produce, thus costing the consumer less. The product was discontinued in 1998 due to erroneous public health concerns, despite promising early sales. The success of genetically engineered crops depends on how well genetic engineering is perceived by prospective consumers.

This report describes an empirical study of the perceptions of genetically engineered crops, which agricultural application is most acceptable, and how perceptions change when presented with new information. We assessed three key factors: trust, familiarity, and concern

Participants began by answering questions to establish their familiarity with genetic engineering and asked how they felt about it. They were randomly assigned to one of three conditions – each representing viable applications of genetic engineering (*increased nutritional value, insect pest resistance, and herbicide resistance*); after reading a short vignette about the purpose of their designated application, their opinion of the technology was then reassessed to determine if their perception of genetic engineering had changed.

Early trends suggest that most New Zealanders possess some level of understanding of what genetic engineering is and expressed some reservation about its use. However, their level of concern appears to vary by the utilitarian purpose of this technology, being more accepting of biotech applications that directly benefit themselves or the environment.

# BROOKE SMITH

When & Where: [B3 1:45pm Wednesday 4 April St David Lecture Theatre](#)

Title: **Systemic support for scientists' communication and engagement**

Format: Roundtable discussion

Theme: Science

Area of interest: Comparing science communication across cultures

Author: **Brooke Smith**, *The Kavli Foundation, USA*

Co-author(s): Eric Marshall, *The Kavli Foundation*  
John Besley, *Michigan State University*  
Bruce Lewenstein, *Cornell University*  
Marina Joubert, *Stellenbosch University*  
Joan Leach, *Australian National University*

Many scientists want to connect with the public, but their efforts to do so are not always easy or effective. Visionary programs and institutions are leading the way identifying the support needed to enable scientists' connections with the public. However, the current appetite by -- and demand for -- scientists to do this exceeds the capacity of those who facilitate quality communication and engagement efforts. More can be done to ensure that those who support scientists are networked, sharing best practices, and supported by a reliable infrastructure.

Between December 2017 and May 2018, U.S. based philanthropic foundations will convene a series of small workshops to explore the entire system of people who support scientists' engagement and communication efforts in order to explore how this system can be most effective and sustainable. Four workshops will focus on the following communities and institutions of support: communication trainers, universities, scientific societies, and facilitators of public engagement. The discussions will examine where each system is thriving, the limits people within the system face and what can be done to ensure their efforts are commensurate with the demand for quality communication and engagement support.

This roundtable aims to connect the ideas and findings from these U.S. focused workshops with international perspectives and experiences. Speakers will include both workshop participants and international leaders. Discussion is intended to share ideas, highlight strategies that have worked across continents, and spark cross cultural collaborations to collectively support scientists - all across the research enterprise - to engage and communicate.

# DANIEL SOLIS

When & Where: 178 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Perspectives towards a science centre's redevelopment**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Daniel Solis**, *University of Otago, NZ*

Co-author(s): Nancy Longnecker, *Centre for Science Communication, University of Otago*  
David A. W. Hutchinson, *The Dodd-Walls Centre, University of Otago*

Otago Museum's Discovery World was a science centre that received 65,000 visitors annually. With over 20 years of existence, it was completely revamped in 2017. This research gives voice to three groups in relation to Discovery World and its redevelopment: 227 visitors were asked open questions to describe Discovery World; 18 children, chosen for their interest in science and outreach, participated in focus groups and created collaborative Strengths, Weaknesses, Opportunities and Threats (SWOT) Analyses about the Light Zone, a space dedicated to light and electromagnetism; 10 museum staff, representative of decision makers and floor staff, provided input via a semi-structured interview about Discovery World and its redevelopment. Visitors stated they arrived expecting to have fun and left liking more topics on animals, biology and earth. Tropical Forest, a warm venue with live butterflies, was the favourite site. In the exhibits zone, science engagement and learning had a strong presence, mainly through the Light Zone, the Mind Game exhibit and the Science Shows. Complementing the visitor surveys, the Focus Groups stated that successful exhibits at the Light Zone were visually attractive, allowed audience participation and interaction among visitors. They also suggested having better links between exhibits and using challenges to increase interactivity. The latter matches other visitors' perspectives, since the only non-Light Zone exhibit that was often mentioned (Mind Game) was probably the most challenging one. The Museum Staff showed a variety of thoughts about the redevelopment and characteristics of good exhibits; however, the Plasma Room (a subsection of the Light Zone) was mentioned as a favourite by all. Good exhibits are characterised by staff as those that do not break easily and are engaging while being more than a game.

# EKAPONG SRIPAORAYA

When & Where: 81 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Effectiveness of NSM Science Caravan as a science outreach for rural communities in Thailand**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Ekapong Sripaoraya**, *University of Otago, NZ*

Co-author(s): Nancy Longnecker, *Centre for Science Communication, University of Otago*  
Peter Dearden, *Department of Biochemistry, University of Otago*  
Ian Griffin, *Otago Museum, Dunedin, New Zealand*

The present research examines outcomes of a science outreach program of the National Science Museum, Thailand (NSM), *Science Caravan*. The *Science Caravan* was established with the aim of promoting awareness of science and technology, and especially broadening and enhancing the attention and engagement of school students in Thai rural communities with science. The specific aims of this research include investigating participant attitudes and motivation toward science and technology, particularly regarding the principles of science in everyday life. The study examined school children 12 – 18 years old in an attempt to understand whether participation in the *Science Caravan* activity affects attitudes and motivation toward science.

In this study, attitude measurements are focused on three scales: (1) *Personal interest in science*, (2) *Perspective about the value of science* and (3) *Intention of future participation*. Motivation measurements are focused on three scales:

(1) *Intrinsic motivation*, (2) *Self-efficacy* and (3) *Self-determination*. Students were randomly selected to complete surveys before and after participating in *Science Caravan* activities. Analysis of preliminary data from a pilot study of 107 students shows that there is a difference in the attitude measurement scale that reflects *Personal interest in science* between pre-test and post-test. Even though there is no difference in scales of motivation for learning science overall, there were differences between males and females in junior and senior levels. Furthermore, there is a strong positive relationship between the attitudinal scale *Perspective about the value of science* and the motivational scale *Intrinsic motivation*. The full data set will be accumulated by sampling the 1,500 participants of the *Science Caravan*, which reaches 12 locations in all five regions of Thailand. The results from the full data set will be presented.

# NANTIDA SRIPAORAYA

When & Where: 82 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Skills and knowledge development of programme presenters who participate in science outreach**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Nantida Sripaoraya**, *Centre for Science Communication, University of Otago, NZ*

Co-author(s): Rachel Spronken-Smith, *Higher Education Development Centre, University of Otago*  
Nancy Longnecker, *Centre for Science Communication, University of Otago*

The National Science Museum, Thailand (NSM) brings 70 -100 science exhibits and activities to local communities in at least twenty Thai provinces each year through a programme called the NSM *Science Caravan*. This programme involves students from local high schools or universities who volunteer to assist as presenters with the *Science Caravan*. They receive two days of training in basic science communication and natural science and then present with *Science Caravan* for four days. Over more than ten years, about 10,000 presenters have facilitated and encouraged approximately 1,000,000 visitors to be actively involved in science activities.

Presenters of science outreach are influential through their facilitation and encouragement of participants to interact with activities. Three important skills or areas of knowledge required by presenters when they interact with visitors include insights about their visitors, communication skills, and scientific content. This research investigates whether skills, abilities, and knowledge are developed and retained among science outreach current and alumni presenters. Observations of current presenters during their training and four days of presenting will involve an instrument developed to examine essential elements of science communication. Seventy-two presenters will be observed in 12 locations across Thailand to determine whether their science communication skills improve over their short time of presenting. Early responses from a survey of alumni presenters revealed that over 80% found being a presenter increased their confidence and ability to teach others. It also increased their likelihood of discussing and sharing ideas about science. Importantly, many report that they still use the skills and abilities that they developed as presenters.

# CHRISTINA STANDERFER

When & Where: [F7 4:00pm Thursday 5 April ARCH2](#)

Title: **Increasing awareness of women's health services: the continued need for face-to-face communication**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Christina Standerfer**, *University of Arkansas Clinton School of Public Service, USA*

Co-author(s): Joseph Schafer, *WinRock International*  
Akaylah Jones, *Independent Consultant*

In 2016, the Arkansas (US) Department of Health (ADH) contracted with the University of Arkansas Clinton School of Public Service (UACS) to conduct a needs assessment of its BreastCare program. According to the ADH website, the BreastCare program “provides breast and cervical cancer screening and diagnostic services for eligible Arkansas women” with a mission of increasing “the rate of early detection of breast and cervical cancer and reduce the morbidity and mortality rates among women in Arkansas by lowering barriers to screening that result from lack of information, financial means, or access to quality services” ([www.healthy.arkansas.gov](http://www.healthy.arkansas.gov)).

The purpose of this needs assessment was threefold: 1) to determine needs of current and past BreastCare program providers; 2) to determine current women’s health needs of Arkansan women between the ages of 40-64; 3) to determine best ways to raise awareness of women’s health care services available to women living in Arkansas.

Methods used to gather data included telephone interviews with providers, telephone surveys with Arkansas women between the ages of 40 and 64, and two focus groups with Latina women.

In this paper, we report the findings related to raising awareness of women’s health care services. These findings suggest that while the proliferation of social media might imply that the best ways to spread the word about advances in medicine and science are through mediated messages (Facebook, Twitter, Instagram, etc.), the power of face-to-face interactions should not be discounted or underestimated.

# VERONICA STEVENSON

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)

Title: **Science communication: how to get from the lab bench to the stock exchange**

Format: Show, tell and talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Veronica Stevenson**, *Humble Bee Ltd, NZ*

Technological advancements permeate nearly every sector and industry, and a strengthening public trend is putting academic researchers under increasing pressure to show the commercial relevance of their research. We are also seeing increasing interest from venture capital funds and high net-worth individuals in the potential of science-based intellectual property. Despite their desire to find and work with each other, the gap between scientists and business remains vast. Effective science communication is key to bridging the divide, especially as the way in which research is evaluated for public funding has shifted towards the applied. A growing awareness of this fact is beginning to shape the way stories are told by researchers as they're seeking funding, and it is changing the types of research that are being done.

This presentation will provide practical insights from real-world projects at the interface between science and business. How does the investment community differ from other science communication audiences? What format do researchers need to use when starting a conversation with investors? As academic institutions become more industry R&D focused what will this mean for the future of pure research?

Veronica Stevenson is a biotechnology entrepreneur who has used science communication to bring different institutions, disciplines and private equity together on a commercial research and development project. She has for the last two years mentored at KiwiNets' workshop 'Get Funded' a that teaches academics how to tell the applied story of their work.

# TIFFANY STRAZA

When & Where: [G9 10:45am Friday 6 April ARCH4](#)

Title: **Visualising Pacific women in ocean science and management**

Format: Show, tell and talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Tiffany Straza**, *United Nations Environment Programme, Kenya*

Co-author(s): Sefanaia Nawadra, *UN Environment*  
Nanette Woonton, *Secretariat of the Pacific Regional Environment Programme (SPREP)*

Women at all levels contribute to ocean management, use, conservation and science, but the number of Pacific scientists is low. According to the Global Ocean Science Report, the Oceania region is represented in less than 6% of ocean science publications annually and this region has one of the lowest proportions of female representation. Pressures against the selection of science careers include lack of awareness, a perceived Western or masculine nature of science, and importantly academic grade-based competition for scholarships which can strongly influence future options.

Including women's voices in science and governance requires key strategies acknowledging social and cultural traditions. In the Pacific islands, there is a broad range of female ownership of ocean-related activities and inclusivity in ocean management, with underrepresentation in senior governance roles.

Again and again, we see that young women and girls choose career paths after seeing the success of someone with whom they identify, and this visualisation is especially critical for technical careers. By seeing how women connect with the ocean, we can identify ways to nurture those connections and strategies to incorporate women's views and knowledge for effective integrated ocean management.

We describe the creation of a partnered initiative combining the documentation of stories by and about Pacific women as well as a global dialogue, "Healers of Our Ocean", involving 17 international agencies and held at the first United Nations Ocean Conference, which set the global agenda for Sustainable Development Goal 14.

We consider the effectiveness of these stories for increasing the visibility of Pacific female ocean leaders to equip more women to choose these career paths and to demonstrate to development partners the need to (1) support science education within the Small Island Developing States and (2) to include women's opinions and ocean uses in integrated ocean management decisions.

# TIFFANY STRAZA

When & Where: [F6 3:45pm Thursday 5 April ARCH1](#)

Title: **Short and swift: equipping policy-makers with regional science**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Tiffany Straza**, *United Nations Environment Programme, Kenya*

Co-author(s): Sefanaia Nawadra, *UN Environment*  
Nanette Woonton, *Secretariat of the Pacific Regional Environment Programme (SPREP)*  
Tommy Moore, *Secretariat of the Pacific Regional Environment Programme (SPREP)*

In small countries and particularly in developing regions, national staff have broad areas of responsibility and limited time or training to incorporate scientific findings. Science advisory councils are a rarity and a luxury. Competition for the attention of policy-makers places great demands on the perceived quality of sources, type of information, and mode of presentation.

We present the case of assistance provided during the Pacific regional preparations for the first United Nations Ocean Conference, which set the global agenda for Sustainable Development Goal 14. Fourteen island countries, 7 territories and 5 metropolitan countries with presence in the region required relevant, recent information — about a young scientific field in a data-poor region with a strong cultural identity with the ocean. Communication practices had to take into account the sensitive balance between perceptions of science and traditional/indigenous knowledge, with the rate of change of populations and environmental conditions often outpacing the creation and transmission of knowledge.

Stories formed integral components of policy briefings to both engage policy-makers and meet their negotiation needs, with these stories incorporating and relying upon recent data. We discuss the particular type and nature of communication required by policy-makers in Pacific Small Island Developing States, to encourage greater inclusion of scientific findings in the development agenda and to facilitate a more powerful, joint regional position.

Communicators seeking to engage national governments face the challenge of creating access and trust. Intergovernmental organisations (IGOs) have direct relationships with policy-makers and existing relationships with regional governance and technical agencies. We describe the mechanisms of building and maintaining these institutional connections, demands on the ownership of text provided, and successful methods to generate future engagement with the policy audience and with the scientific subjects.

# AHMET K. SUERDEM

When & Where: [18 3:30pm Friday 6 April ARCH4](#)

Title: **Mining secondary datasets for mapping science culture: cross-cultural and longitudinal comparison of EU; China and India**

Format: Show, tell and talk

Theme: Society

Area of interest: Applying science communication research to practice

Author: **Ahmet K. Suerdem**

Co-author(s): Martin W. Bauer, *London School of Economics, UK*

## *Introduction*

Advances in ST are major elements of social change as they essentially transform the way people live, organize, exchange and communicate. However, the link between ST performance and social change does not occur in a linear sequence but is embedded in the societal environment it shapes. Stocks and flows of knowledge and cultural climate in a society affect the level of creativity and innovation. Innovation performance reflects the problem-solving capacity of a society which is highly embedded in its “cultural repertoire”. Cultural repertoires provide symbols of meaning and practices selectively used by group members to construct “strategies of action”. Understanding the cultural repertoires can give us an idea about how the knowledge stock and symbol systems of a society works to orient social, cultural and economic interactions and how these orientations differ over time and across various cultures. While science maybe a global affair, science culture remains local.

## *Method*

In this study, we will present ongoing research arising from the international project MACAS (mapping the cultural authority of science). We generate science culture indicators using existing nationally representative survey data measured in different contexts - a database curated in the MACAS project. The increasing availability of large scale longitudinal datasets (WVS, ESS, EB, etc...) produced for different purposes opens new horizons for indicator development. Traditional indicator development is largely following psychometric attitude research and deductive operationalization of a conceptual framework. However, this approach imposes an “etic” structure depending on generalizations about human behaviour assumed to be universal and links these to exogenous factors such as economic or ecological conditions. The structure of cultural constructs is more likely to be endogenously determined (emic) and we must expect that the relations between indicators vary according to contexts. Data mining and secondary analysis offers possibilities for revealing latent structures through inductive pattern detection techniques and abductive interpretation to guide future research. Like any technology, data once collected and documented enjoys a degree of

interpretative flexibility: the use of data is not determined by its design. We can use data collected for one purpose, use for a different purpose. Our study will focus on the analysis of Eurobarometer Science and Technology surveys collected through different four waves from 2001 to 2013 (EB 55.2; CCEB 2002.3; EB 63.1 and EB 78.1, EB79.2; N=1000 per country); China Science Surveys 2010 & 2015 (n=2000 per 32 province) and the 2004 India Science Survey (n=1000 per 29 province). Altogether database consists more than 350 thousand observations. We are planning to extend the database to more than one million observations since similar datasets are available for Africa, Latin America and USA.

*Analysis: data mining*

1. Pre-process the data to increase the analytical quality: After collating the data from different datasets, we identify common variables to prepare a codebook. These variables are then explored through univariate and multivariate analysis for testing parametric assumptions and outliers. We then analyse missing values for MCAR; MAR and MNAR patterns and treated missing values and outliers accordingly.
2. Explore the constructs: We checked the distribution of the data to create new composite variables based on existing ones to form a final integrated dataset containing different constructs of science culture (i.e. attitudes, science literacy, cultural participation, interest). While assuming the uni-dimensionality for some of these constructs, we checked for multi-dimensionality of evaluative-attitude construct which included a large number of items through Principal Component Analysis.
3. Psychometric quality of the constructs: As a first step we conducted a Confirmatory Factor Analysis (latent variable analysis) involving the aforementioned dimensions to check the stability of the structure over the countries and survey waves. We relaxed the orthogonality assumption and allowed the correlations between the dimensions to vary across countries. The model fit was above the benchmarks and regression weights were similar for most of the countries across different waves indicating a stability in the dimensional structure. However, correlations between different dimensions largely varied to reflect science culture differences across different contexts.

Cluster analysis of the correlational structure to detect the groupings of countries as combinations of different science culture components. Hence, our analysis does not compare countries across aggregated scales but search for patterns according to the relations between them. The culture of science is vested in relation among relations.

# JAN SWIERKOWSKI

When & Where: [F7 3:30pm Thursday 5 April ARCH2](#)  
Title: **Multimodal metaphors in science communication**  
Format: Individual paper  
Theme: Stories  
Area of interest: Applying science communication research to practice  
Author: **Jan Swierkowski**, *Universidade Católica Portuguesa, Portugal*

In the era of visual culture the scientific world described by equations is incomprehensible for most of the society because it lacks qualitative representation of its main ideas. There is a need of a multimodal language for communicating science.

The results of research and analysis show that when scientists solve complicated problems in order to understand the unknown they often use heuristics methods that include metaphors (Miller, 2000). The theoretical background of this fact lays in sciences of cognition and the idea that the way we perceive the Universe has a largely metaphorical character. The essence of ‘*a metaphor*’ is to understand and experience one thing in the terms of the other (Lakoff, Johnson 1980). Moreover when people conceptualize their experience, especially for new phenomena that has never been observed and cannot be understood otherwise, they usually rely on metaphors (Dudzikowa, Czerepaniak-Walczak, 2009).

Following this reasoning I suggest that in the Digital Era in which ‘digital, electronic, and visual expressions’ became a form of literacy (Gentry, McAdams, 2013), multimodal metaphors ‘whose target and source are each represented exclusively or predominantly in different modes’ (i.e. written or spoken language, visuals, sound, music etc.) (Forceville 2009) can form basis of new scientific stories and serve as modern translations from scientific to layman language.

I try to understand how these multimodal metaphors can be methodologically created/curated with the use of conceptual blending theory (Turner, Fauconnier, 2002) and presented as art, performance or Digital Storytelling based on the work of an interdisciplinary experimental group ‘Institute B61’ that I established in 2009. Since then B61 has been conducting intensive art and science experimental research that has resulted in the formulation of over 50 multimodal metaphors of scientific phenomena, most of them presented as spectacular pop-up activities to more than 20,000 volunteers from 5 countries.

# FRANZISKA THIELE

When & Where: [A8 11:15am Wednesday 4 April ARCH3](#)  
Title: **The email as a stress factor for academics**  
Format: Individual paper  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Franziska Thiele**, *University of Rostock, Germany*  
Co-author(s): Corinna Lühje, *University of Rostock*

Although the email is an essential part of scholarly communication, it has gained little attention in scholarly communication research. Studies on organizational practice found that emails can be a distraction and contribute to a feeling of overload and stress (Barley et. al., 2011; Boswell & Olson-Buchanan, 2007; Chelsey, 2005; Mark et al., 2012). This paper wants to investigate, if the research findings from organizational labour can be expanded to the context of academic labour and identify if different academic status groups apply different coping strategies.

As its theoretical framework this work makes recourse to the field theory of Bourdieu (1992) and the mediatization approach by Krotz (2007), which says that technological media change influences human communication, interaction and social as well as cultural reality.

To answer the research questions 54 German scientists from different disciplines and academic status groups were interviewed in qualitative interviews.

Across disciplines the email was the most commonly used tool in mediated communication. It accelerated and facilitated international co-operations and helped to organize and structure work. The amount of emails as well as the time spend on them rose with the status of the interviewed person and contributed to a feeling of overload and stress, which was enhanced by using mobile media. But the structural power coming with a professor's status gave them more possibilities to reduce email-induced stress (e.g. by outsourcing email-related tasks to secretaries) than post-docs had: "I have an office and they are always inside [my email] [...] otherwise I would choke, I could not process them" (8044, professor).

The results show that the findings from organizational research can be expanded to academic labour. Though the email is of great relevance for scientific communication, it is also a disruptive factor and becomes more problematic with rising media mobility and rising status.

# FRANZISKA THIELE

When & Where: 172 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Reasons for use and disuse of academic social networking sites**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Franziska Thiele**, *University of Rostock, Germany*

Co-author(s): Corinna Lühje, *University of Rostock*

The academic social networking sites (ASNS) ResearchGate and Academia are gaining more and more popularity among researchers (Van Noorden, 2014). They offer the opportunity to easily upload and access publications as well as for academic self-marketing. They have the potential to significantly change scientific communication. But why do researchers actually use ASNS?

Though the number of studies on ResearchGate and Academia is increasing, those identifying reasons for using ASNS (like sharing publications, increasing citations or contact colleagues) mostly apply a quantitative approach (Meishar-Tal & Pieterse, 2017; Muscanell & Utz, 2017; Van Noorden, 2014). This study wants to add to the findings from a qualitative perspective. It identifies reasons for researchers to (not) use the two platforms with the uses and gratification approach by Katz et al. (1973) as its theoretical basis. To identify the reasons 54 German scientists from different status groups and disciplines were interviewed in qualitative interviews in 2016-2017.

28 of the participants had ASNS accounts: 17 used ResearchGate and three Academia.edu exclusively, while nine had accounts in both networks. Most interviewees reported to make little use of the platforms. If they did, it was to access and share publications, network, increase their visibility and learn more about the impact of their publications. Doctoral students rather followed interesting people and accessed publications, while postdocs and professors shared them and tried to increase their visibility. With the impact factor of a publication or comments left by others researchers quickly get feedback on their research, they would otherwise not receive. ASNS furthermore enhance self-marketing and networking opportunities and seem to gain importance as scientific communication tools.

# NICOLE TONDREAU

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)

Title: **Report on mega-drought in Chile (or how to win the hearts and minds of decision makers)**

Format: Show, tell and talk

Theme: Science

Area of interest: Influencing policies through science communication

Author: **Nicole Tondreau**, *Center for Climate and Resilience Research, Chile*

The long and extensive drought that has affected Chile since 2010 is an unprecedented event in the country's history. Given this scenario, a group of social and natural scientists from the Center for Climate and Resilience Research, known as (CR)2, undertook interdisciplinary research to explain the causes and impacts of the phenomenon, which they refer to as a "mega-drought."

Defying academic logic, (CR)2 decided to present the research carried out over almost three years by disseminating the findings in a science divulgation report aimed at decision makers and released on late 2015, rather than publishing a scientific paper in an academic journal.

The effort was a collaboration between scientists and the center's communications unit. The report was reviewed by an editorial committee made up of a journalist, a project engineer and the director and deputy director of (CR)2. The communications staff was responsible for the graphic design, and rose to the challenge of transforming scientific graphs into understandable and attractive graphic content.

It should be noted that the first paper on the causes and impacts of the "mega-drought" appeared on late 2017, almost two years after the report was published, so the product cited by other scientists during that period was the divulgation report itself.

The report was widely covered in the media, largely because it was presented to the President of Chile, Michelle Bachelet, at La Moneda Palace and also due to an effective media campaign. The "mega-drought" concept was successfully instilled among members of the media and decision makers, lending support to the initial decision to present this substantial research, on a topic of political, economic and social importance for the country, in the report format.

# SIMON TOROK

When & Where: [B9 1:45pm Wednesday 4 April ARCH4](#)  
Title: **Communicating contested science**  
Format: Show, tell and talk  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Simon Torok**, *Scientell, Australia*  
Co-author(s): Paul Holper, *Scientell*

There are challenges associated with effectively communicating the science and impacts of environmental research, such as climate change and threatened species. These subjects are complex, controversial and often hotly debated, but also prone to public fatigue.

The communication of information to support decision-makers has the added difficulty associated with using and translating research into appropriate responses or action.

The rapidly changing media landscape has created new opportunities and challenges for communicating science. For example, climate change media reports in Australia increased 30-fold between 2003 and 2007, leading to increased awareness but also public (and news editor) fatigue. Evolving media composition, from the decrease in specialist rounds to the increase in alternative news sources and new media platforms, has changed how we communicate science.

Traditional science communication assumed a deficit model and bestowed privilege on the expert knowledge of the scientist. More recently, science communication has attempted to address the needs of stakeholders through strategic planning and formal processes that enable more inclusion and dialogue between scientists and the community. The changing approach is driven in large part by legitimate demands from society for increased accountability and transparency.

To address these challenges and make the most of opportunities to better communicate contested science, we need to move beyond dissemination of results and information transmission (web site, media, newsletters, brochures, seminars), and use new tools, communication theory, and successful practices to move towards dialogue (interaction, data accessibility, events, synthesis and emphasis of research, solutions-focus, and use of a variety of media channels).

This presentation will draw on examples of communication of climate change, threatened species, and other high-profile areas. By incorporating communication theory into practical communication activities, drawing on

techniques that work well, and monitoring and evaluating science communication activities we have a better chance of communicating contested science in ways that achieve change.

# BRIAN TRENCH

When & Where: [F4 3:30pm Thursday 5 April SDAV1](#)

Title: **Big challenges for small countries in science communication**

Format: Roundtable discussion

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Brian Trench**, *Dublin City University, Ireland*

Co-author(s): Marta Entradas, *SciComPT, Portugal*  
Per Hetland, *University of Oslo, Norway*  
Fabien Medvecky, *SCANZ*  
Padraig Murphy, *Dublin City University*  
Sofia Otero, *University of Chile*

Science communication programmes, policies and practices have been spreading internationally for over two decades. A series of panels at PCST 2014 considered how this was happening, applying common criteria for reports from a dozen countries. Journal papers and special editions, and book chapters, have described the spread, more often stressing similarities than differences.

Less attention has been paid to the political, economic, cultural and geographical factors that affect how wide and how deep the development of science communication is in particular countries. Nation-states tend to set boundaries and structures for science communication, as they do for other institutional and cultural developments. One factor shaping science communication may be the size and status of a country, that is, whether it has a central or peripheral standing in a region or continent, or in the world.

This panel of science communicators and science communication scholars from smaller countries will discuss the disadvantages and possible advantages for these countries in adopting and promoting science communication for their needs.

Among the issues for consideration are, *on the one hand*: the strong influence of larger, more powerful neighbours, and the perceived need to follow their example; the requirement of smaller countries to “talk up” their scientific achievements; the pressure in smaller countries for communities to conform to the national agenda; relatively smaller funds for scientific research in general, and for science communication in particular (though with exceptions); less historical depth in scientific institutions. And, *on the other hand*: the relative ease of forming national networks and building inter-sectoral relations; relatively immediate access to power-holders and –influencers; greater agility and flexibility, allowing ‘turn moments’ in policy for science

communication. The panelists will reflect on the experience of their countries with reference to these issues and to the political contexts which influence how they arise in those countries.

# BRIAN TRENCH

When & Where: [G10 10:45am Friday 6 April SDAV6](#)  
Title: **Little lessons in science communication: a game of cards**  
Format: Workshop  
Theme: Society  
Area of interest: Applying science communication research to practice  
Author: **Brian Trench**, *Dublin City University, Ireland*  
Co-author(s): Maja Horst, *University of Copenhagen*  
Birte Faehnrich, *Zeppelin University, Germany*

Suggestions and concerns about improving relations between research and practice in science communication are part of the normal diet at PCST conferences. These events have long been an important platform for forming and deepening such relations both at conceptual and community levels. Presentations on evaluation of science events, but also coffee-break exchanges between researchers and practitioners, are among the many ways in which research-practice relations are stimulated and developed.

Many individuals straddle these activities and this workshop is presented by three researcher-trainer-practitioners. As part of a wider, necessary exploration of the tools and methods to make research and practice accessible, relevant and open to each other, the workshop demonstrates and seeks to deepen a method for presenting theoretical insights in forms that make them memorable, and available to science communication practice.

In this workshop, we will present key principles and insights in short phrases, which can be used to stimulate discussion of guidelines to practice. We will distribute a sample of such phrases on cards to the workshop participants, interpret and order them and add to them in similar manner. Groups will be given ten prepared cards, will select five of these, and will add five of their own. In an iterative and interactive process, we will select and re-shuffle the cards to produce either a succinct summary of science communication wisdom, or a representation of many possible and contradictory approaches to science communication.

*Sample cards:* The public is never *the* problem; There is no such thing as a dumb question; Controversy can be a support to science communication; Coffee and chance are key components of scientific discovery; Science gains from knowing and acknowledging its limits; The public has a right to know how science *really* works; Scientific culture is more than a set of numbers.

# JESSICA TURNER-SKOFF

When & Where: [A7 11:30am Wednesday 4 April ARCH2](#)

Title: **Taking the science stories to the people: reaching diverse audiences through venue changes**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Jessica Turner-Skoff**, *The Morton Arboretum, USA*

Co-author(s): Alexandra Prokuda, *Chicago Council on Science and Technology*  
Krisztina Eleki, *Chicago Council on Science and Technology*

The Chicago Council on Science and Technology (C2ST) is a not-for-profit organization that strives to increase the scientific literacy of Chicago's citizens through live storytelling and interactions with the public. Unlike most informal science education (ISE) organizations, such as museums, zoos and arboreta, C2ST relies on local partners for venue locations. According to The National Academy of Sciences, connecting with and engaging a diverse audience is one of the five goals of science communication. However, a historic challenge for ISE outreach is engaging diverse populations. C2ST works towards inclusivity with their programming and storytelling for the approximate 10 million residents of the Chicagoland area.

Previous to July 2015, C2ST hosted a majority of its programming at a university in downtown Chicago. In late 2015, C2ST started varying the locations of their programming throughout the Chicago Metropolitan area. This shift in location presented a unique opportunity to study the effects of venue variation on audience composition. Using data from post-surveys from C2ST's attendees, we evaluated measures of diversity, defined as age, ethnicity, and education level, prior to July 2015 (pre-shift) and post July 2015 (post-shift). Venue location was classified as the zip code of the venue.

The distributions of all three diversity measures were significantly different between C2ST's pre-shift attendees and post-shift attendees ( $p < 0.05$ ). A generalized linear regression demonstrated that the ethnicity of C2ST's attendees varied significantly with the location of the venues, suggesting that venue variation increased the ethnic diversity of the audience. ISEs are important tools for increasing the scientific literacy of society and can be improved by using evidence-based methods. Together these results show that shifting the location of ISE outreach may be a valuable strategy for reaching traditionally underrepresented communities in urban centers. We outline a strategy that other ISEs can implement to increase audience reach.

# JESSICA TURNER-SKOFF

When & Where: [E9 1:45pm Thursday 5 April ARCH4](#)

Title: **Translating life science research to stories: using media channels for broader impact and increased audience reach**

Format: Show, tell and talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Jessica Turner-Skoff**, *The Morton Arboretum, USA*

Co-author(s): Kelley Regan, *The Morton Arboretum*  
Patricia MacMillan, *The Morton Arboretum*  
Nicole Cavender, *The Morton Arboretum*

Organizations focused on life science are often challenged with sharing scientific discoveries and milestones with the broader public. The Morton Arboretum is a botanical garden with a strong interest in connecting its scientific expertise and research to its visitor base (>1 million per year) and to an external audience through diverse channels. This organization is developing a solution to overcome this challenge.

With the goal to communicate more impactful stories about its science and conservation work, an institutional strategic initiative was launched in 2017, starting with the establishment of a cross-departmental science communication team. Roles and responsibilities were clearly defined, followed by the identification and analysis of priority audiences and the appropriate media channels to reach them: 1) Scientists and Peers; 2) Curious or Affinitive; and the 3) General Public. Next, a systematic process was put in place to objectively evaluate research discoveries, such as those published in peer-reviewed scientific journals, and stories that align with both the Arboretum's messaging priorities and the media's interest. This process included a method to translate the raw science into language appropriate for the targeted audience.

This process, although early in its development, has already increased in reach and impact. For example, messages developed around research and conservation work with oaks and other endangered trees has reached all three targeted audiences. Metrics comparing the first nine months of 2017 to 2016 indicate a successful trend. For this time frame, there has been a 104% increase in media references to The Morton Arboretum's expertise.

The science communication team is continuously refining how the science work can be translated for the general public. There are challenges that remain including interpretation, matching media's interest, and the limited capacity of staff. A broader professional discussion could address these challenges as we work to bring the stories of science to society.

# CHAMMIKA UDALAGAMA

When & Where: [A9 10:45am Wednesday 4 April ARCH4](#)  
Title: **Communicating science in stealth**  
Format: Show, tell and talk  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Chammika Udalagama**, *Department of Physics, National University of Singapore, Singapore*  
Co-author(s): Meng Ho Tan, *Department of Physics, NUS*

"*Science is not boring after all. I feel smarter now. everything makes so much sense. ...*" So claimed a student in the end-of-course feedback for '*How the Ocean Works*'.

'*How the Ocean Works*' is a general education module (GEM) offered by the Department of Physics at NUS. GEMs are meant for students from all faculties of the University and require no pre-requisites. A typical cohort consists of about 150 students, half of whom are from the Faculty of Arts and Social Sciences. Most of these students have had no formal training in science.

'*How the Ocean Works*' introduces many concepts from physics, chemistry, and mathematics. However, we try to do this in stealth, in the guise of wanting to understand the ocean. This and the other strategies employed seems to work. '*How the Ocean Works*' has been offered for five years and has enjoyed remarkably positive feedback in that time. While this feedback is encouraging, has the experience made a lasting impact on the student? For instance, has it changed the perception of the science, in non-science majors? Are they less intimidated by science? Or more ready to take other science courses. Would they recommend the study of science to their peers, family or friends? These we feel are more significant measures of a course. This talk will first address our claim of teaching science in stealth. We will then attempt to assess if we have made a long-term difference in our students' perception of science.

# MANUEL VALENÇA

When & Where: [E8 2:30pm Thursday 5 April ARCH3](#)

Title: **Who are the science communicators? Profiling backgrounds, practices and aspirations of a professional community**

Format: Individual paper

Theme: Science

Area of interest: Investigating science communication practices

Author: **Manuel Valença**, *ISCTE - Instituto Universitário de Lisboa, Portugal*

Co-author(s): Marta Entradas, *London School of Economics*  
Martin Bauer, *London School of Economics*

Science communication has expanded significantly in the last decades in response to society demands. We can see this expansion in increasing communication structures, practices and individual practitioners. While the communication practice has received some attention, less is known about the community of individuals that take onboard science communication. What roles do they have? What is their motivation and ethos?

We ran a survey with the PCST registered members to learn about this community. The chosen methodology introduced a sampling bias, which was accepted in view of the difficulty of individually listing such a diverse and dispersed community. The online survey was distributed between 14 of April and 12 of August of 2016, having collected 335 responses.

The survey was structured around four main areas: a) Individual background (main professional activity, country, etc); b) Communication practices (types of activities, audiences, etc); c) Professional ethos (what is a 'good' science communicator's skill set, etc.); d) Future expectations (career aspirations, work satisfaction, etc).

Multivariate statistical analysis shows, for example: I) A high diversity in professional activities (science journalists, scientists, PR/Communication professionals, museum technicians, etc); II) Differences in the perceived science communicator's main role according to the respondent's professional activity; III) Differences in the level of work satisfaction by world region (the respondents' countries were organized into five world regions). In this presentation, we will discuss main findings, and ways of researching this rather dispersed community with a view of understanding their role in science communication.

# MAARTEN VAN DER SANDEN

When & Where: [A2 10:45am Wednesday 4 April SDAV2](#)

Title: **Science communication: the heartbeat of collaboration in science & technology development**

Format: Roundtable discussion

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Maarten van der Sanden**, *Delft University of Technology, Netherlands*

Co-author(s): Sarah Davies, *University of Copenhagen*  
Frank Nuijens, *Delft University of Technology*  
Edward Duca, *University of Malta*  
Eva Kalmar, *Delft University of Technology*

The successful development of science and technology heavily depends on the ability and opportunities of scientists, engineers, R&D developers, policy makers and citizens to collaborate with their colleagues, peers, alliances, in business-to-business relations and business-to-consumer relations.

We can see science communication as enabler of that collaboration in the context of innovation. But if we focus on this role of science communication, what kind of new science communication challenges do we face? What are differences in perspectives of all kinds of actors involved, like scientists, media, industry, citizens and policymakers? How could we take these into account?

And on a more abstract level: what is the connection between all these various forms of collaboration at various levels? What are the advantages and drawbacks of this collaboration point of view, practically and theoretically? How does collaboration develop the identity of science and technology and its actors and what could we learn from each other?

To structure the round table session, all 5 participants will shortly introduce a concrete example of collaboration in science and technology, highlighting a different perspective: the public, media, scientists, policy or business. These examples will be central in discussing the above questions. All attendants to the session are invited to take part in the discussion to explore the role of science communication as the heartbeat of collaboration in science and technology development.

# RAMASAMY VENUGOPAL

When & Where: [H7 1:45pm Friday 6 April ARCH3](#)

Title: **Communicating 'science for development': getting scientists, communicators and policy makers on board**

Format: Idea in progress

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Ramasamy Venugopal**, *International Astronomical Union's Office of Astronomy for Development, Cape Town, South Africa*

Our modern, technological world owes much to science research and investment. But in the recent past, science has alienated itself from the public and public support for science is dwindling in several countries. The relevance of pure science research is being increasingly questioned. Curiosity about the natural world is no longer an accepted justification for science investments.

Recently, a handful of organizations from various disciplines (Physics for Development, Data for development, Astronomy for Development) have taken the lead on using and shaping scientific knowledge and expertise to contribute to the United Nations Sustainable Development Goals (SDG). Using science to directly impact on the world's biggest challenges could both bolster the public view of science and scientists as well as bring science closer to the people.

Since 2011, our team at the Office of Astronomy for Development has been operating in the above-mentioned space, coordinating projects that use astronomy to benefit society. Anecdotally, we have encountered public appreciation but also confusion (Astronomy FOR development is frequently confused with development of the field of Astronomy). Communicating 'Astronomy for development' also requires a balance between messages on its applications, skills, research etc. All fields of science can contribute to the SDGs. Thus, science communicators and their respective fields stand to benefit from appropriating the science for development angle. Adopting such a narrative and making it mainstream, in turn, influences and will be influenced by policy makers and the scientists.

I would like to discuss the challenges, risks and rewards of pushing the idea of science for development. How does it influence policy, research and perceptions of science? Communicating science for development also requires an understanding of development and requires interactions and collaborations with associated fields such as economics, behavioural sciences, human rights, health etc. thus potentially broadening the scope of science communication.

# RAMASAMY VENUGOPAL

When & Where: 428 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Communicating 'astronomy for development':  
approaches to communicate the relevance of science to society**

Format: Visual talk

Theme: Stories

Area of interest: Applying science communication research to practice

Author: **Ramasamy Venugopal**, *International Astronomical  
Union's Office of Astronomy for Development, Cape Town, South Africa*

Astronomy is one of the most appealing topics in Science. From time immemorial, humans have been pondering questions about the origin of the universe, life outside Earth etc. As the field has progressed, bigger and bigger investments have been necessary for further breakthroughs. These investments have become harder to justify, especially for developing countries who are pouring money into the field in order to attract students to STEM as well as generate exciting science. (As one observer put it, "a blackhole somewhere in space is not going to put food on my table"). Even the various spin-off technologies produced by Astronomy research are insufficient justification.

The Office of Astronomy for Development (OAD) was setup in South Africa to mobilize the human and financial resources to use Astronomy as a tool to tackle the biggest challenges of the world. The OAD is working with experts from astronomy as well as a number of social science fields to contribute to the UN Sustainable Development Goals (SDG).

This poster will describe some of the methods employed by the OAD when communicating this (fairly new) idea of using Astronomy for Development. As we have discovered, people find it rather difficult to connect Astronomy with development issues. It is frequently confused with the development of the field of Astronomy, especially when communicating with non-native English speakers. In describing our work, we have found it quite useful to first inspire the public with the grandeur of the universe and to connect with them emotionally. Even when the details are not clear to them, people are excited by the big idea and the possibilities. We use examples and stories of communities and people whose lives have been changed by the OAD. Through this visual talk, I also want to engage with the scicomm community on their experiences.

# RAMASAMY VENUGOPAL

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)

Title: **Does astronomy really inspire and change perspectives? A randomized controlled study of an astronomy outreach program**

Format: Show, tell and talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Ramasamy Venugopal**, *International Astronomical Union's Office of Astronomy for Development, Cape Town, South Africa*

Co-author(s): Kodai Fukushima, *Hosei University, Tokyo, Japan*

Astronomy and Space topics are perceived as holding universal fascination. It is widely considered that exposure to such topics inspires people, changes their perspective and leads to an uptake in science and STEM subjects. Stargazing parties, public astronomy talks and other astronomy/space events constitute some of the most common, public, scicomm events around the world. Astronomy communicators and astronomers frequently engage with children and the general public to teach, demonstrate, and talk about Astronomy. But very rarely is the impact of such communication evaluated rigorously and scientifically. There is a need for more rigorous evaluation methods which would reveal the successes and failures of current methods and tools of astronomy communication and whether they might lead to any inadvertent harm.

In this presentation, I will share our team's implementation of a pilot Randomized Controlled Trial carried out in Cape Town, South Africa to test whether exposure to an astronomy intervention affects empathy and altruism in children (that is, whether astronomy induces a perspective of 'One Global Humanity', espoused by Carl Sagan and often quoted by astronomy communicators). The analysis of the data was carried out by an independent team based in USA. The pilot's main objective was to demonstrate that it is possible to use such methods to evaluate the impact of science communication in an inexpensive manner. And encourage other projects funded by the office to carry out their own evaluations. We are also developing a Trial Handbook as a guide for others who can repeat this particular experiment.

# CASIMIRO VIZZINI

When & Where: [C9 3:30pm Wednesday 4 April ARCH4](#)

Title: **PERFORM**

Format: Idea in progress

Theme: Science

Area of interest: Investigating science communication practices

Author: **Casimiro Vizzini**, *Participatory Engagement with Scientific and Technological Research through Performance, UNESCO, Spain*

Co-author(s): Marga Gual Soler, AAAS  
Isabel Ruiz Mallén, *Open University of Catalonia*

PERFORM aims to investigate the effects of the use of innovative science education methods based on performing arts in fostering young peoples' motivations and engagement with science, technology, engineering, and mathematics (STEM) in secondary schools in France, Spain and the United Kingdom. PERFORM takes action to overcome the remaining distance between young people and science and break the outdated unidirectional model of scientific knowledge transfer. The project explores a creative, participatory educational process through the use of scenic arts with secondary school students, their teachers and early career researchers, who get actively involved in experiencing science in a completely new way. We work with multi-disciplinary cohorts of researchers in a reflective process, exploring the history of scientific ethics and philosophy, responsible research and innovation, communication and engagement skills. Researchers are taken on a journey from theory to practice, engaging them in continuous reflection on their experience in the context of their lives as scientists. PERFORM analyses how such human-centred, science-arts educational approach contributes to foster young people's motivations towards science learning (especially girls) and strengthen the transversal competences they will need for STEM careers and jobs. PERFORM works through UNESCO to translate the research results into policy briefs to Member States for widespread policy adoption beyond the three pilot countries. [www.perform-research.eu](http://www.perform-research.eu)

# STEFANIE WAHL

When & Where: [G7 11:45am Friday 6 April ARCH2](#)

Title: **Communicating with the public during natural disasters in Europe**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Stefanie Wahl**, *Freie Universitaet Berlin, Germany*

Co-author(s): Karolin Bauer, *Freie Universitaet Berlin*  
Lars Gerhold, *Freie Universitaet Berlin*

During natural disasters such as floodings or storm events, emergency management agencies are required to inform the public about the ongoing situation (Beneito-Montagut et al., 2013). This is ideally based on a communication concept or strategy that fits public's information needs and increases people's participation during an event (Alexander, 2014). Besides television and radio, social media technologies can serve as an effective tool to share situation reports, but also to receive useful information from people in the affected area (Starbird et al., 2010; Vieweg et al., 2010). Nevertheless, it is yet not known what concepts are best suited to communicate situation reports to the public and vice versa (Beneito-Montagut et al., 2013).

In order to explore existing concepts, good practices as well as possible constraints for European emergency management agencies when exchanging situation reports with the public during disaster events, we thus ask:

1. What concepts do European public authorities use for public communication of situation reports?
2. How does the public participate in this communication?
3. What challenges do arise, when providing and receiving situation reports to or from the public?

To answer these questions, we conducted semi-structured qualitative interviews with crisis communications experts of emergency management agencies (e.g. ministries, fire brigades, police, security regions) in Austria (n = 4), France (n = 2), Denmark (n = 3), Italy (n = 4), the Netherlands (n = 4), Poland (n = 4) and the United Kingdom (n = 3) in 2017. Interviews were analyzed using an inductive-deductive coding scheme (Mayring, 2000).

By comparing different communication concepts, we will point out differences and similarities between all seven countries, e.g. how authorities handle respectively verify information about the situation they have received from the public. Based on our findings, we will discuss recommendations for public communication during natural disaster events.

# STEFANIE WAHL

When & Where: 380 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Tweeting uncertainty during Hurricane Irma**

Format: Visual talk

Theme: Science

Area of interest: Investigating science communication practices

Author: **Stefanie Wahl**, *Freie Universitaet Berlin, Germany*

Co-author(s): Thomas Kox, *Freie Universitaet Berlin*  
Lars Gerhold, *Freie Universitaet Berlin*

When managing natural disasters such as hurricanes, national hydro-meteorological services and/or emergency management agencies (referred to as EMAs) need to warn and inform the public about emerging or ongoing situations (Beneito-Montagut et al., 2013). Especially social-media technologies such as Twitter are effective tools to quickly share information about the actual situation (Alexander, 2014; Starbird et al., 2010). Nevertheless, EMAs deal with different kinds of uncertainties when communicating with the public, including aspects of non-knowledge or stochastic variability (NRC, 2006). Possible examples are hurricane pathways, flooded areas or public response actions. Addressing these different kinds of uncertain information during extreme weather situations contributes to disaster management efforts and strengthens EMA's credibility (Hughes & Chauhan, 2015).

Therefore we ask in this paper how EMAs handle uncertain information in such situations as part of their risk and crisis communication strategies. Our analysis is based on a qualitative content analysis of EMA crisis communication in Florida during hurricane "Irma" using Twitter data. "Irma" was a category 5 hurricane which affected the Caribbean and Southern USA in 2017 – one of the most powerful hurricanes of recent years (NOAA, 2017).

Results show that EMAs address the issue of uncertainties in weather forecasts by giving process information, i.e. constantly updating and clarifying the ongoing situation. Accordingly, some tweets include separate timestamps or emphasize that the given information is preliminary. Additionally they use different visuals to represent uncertainty (e.g. infographics, maps, gifs), e.g. regarding hurricane pathways as well as potentially affected areas and populations. Still, addressing uncertainties remains challenging for some public authorities.

Based on our findings, we will discuss and develop recommendations to further improve crisis communication efforts of authorities in extreme weather events.

# GRAHAM WALKER

When & Where: [14 4:45pm Friday 6 April ARCH1](#)

Title: **If you want to go far, go together – partnerships to create African science centres**

Format: Individual paper

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Graham Walker**, CPAS, Australian National University, Australia

As science communication becomes a global endeavour, organisations in affluent developed and poorer developing countries are establishing partnerships to build science communication capacity. It seems both apt and morally responsible that societies that place value on communicating science should share such practices with disadvantaged societies in which it is absent. This raises practical questions, e.g. which models are effective; what are the barriers and promoters to building capacity? In addition, there are deeper philosophical questions with profound practical implications – e.g. how can programs be relevant, acknowledge place and culture, ensure ownership, and not repeat colonialist mistakes? Critically, which approaches do organisations in developing countries want?

This paper addresses these questions using a case study of an Australian National University capacity building program *Science Circus Africa* which aims to develop science centres, science outreach programs and broader science communication capacity across Africa. While science journalism, training of scientists and other forms of science communication are developing across the continent, science centres and informal science learning and programs to develop them are sadly lacking – the vast area between South Africa and Egypt has only three science centres. *Science Circus Africa* – working hand in hand with passionate African partners – is making progress to change that.

The program includes training and outreach projects reaching over 68,000 people in seven countries – with the African organisations trained now reaching far more – along with intensive training for African science communicators in Australia. To answer the questions above, longitudinal quantitative and qualitative research on the training program will be presented – focussing on the often-overlooked viewpoints of trainees – along with reflections on programs in Africa which the author has been running since 2003. This evidence will be distilled to establish the qualities of effective science communication capacity building for the developing world.

# GRAHAM WALKER

When & Where: [5:30pm Thursday 5 April St David Lecture Theatre](#)  
Title: **Getting all emotional about communicating science**  
Format: Performance  
Theme: Science  
Area of interest: Investigating science communication practices  
Author: **Graham Walker**, *CPAS, Australian National University, Australia*

Emotions are a key aspect of effective science communication (Davies & Horst, 2016), but which emotions are critical and what is the underlying mechanism of eliciting them? This performance answers this question using the medium of ‘science shows’ – presentations combining live science demonstrations with dramatic delivery – as used in science centres globally. Although a common science communication method, science shows receive little theoretical analysis. The performance will showcase the role of emotions and motivational states including surprise, interest, enjoyment, awe, curiosity and intrinsic motivation, based on the presenter's PhD research. These psychological states will be illustrated via intriguing, entertaining and interactive demonstrations in a performance that fuses science show presenting with insights from emotion psychology relevant to science communication.

Recently, psychologists have broken down emotions into their component parts or ‘triggers’, termed appraisal theories of emotion. By dissecting emotions into the mental appraisals that lead to them, science communicators can fine-tune how they elicit them. The performance will discuss these appraisals and show how they can be manipulated, especially through the use of performance techniques, props and demonstrations – however links to other forms of science communication will also be made. Understanding relationships between emotions is also key for making them effective tools for science communicators. For example, how surprise leads to curiosity, or the tandem role of interest and enjoyment during play experiences or instances of psychological ‘flow’. These relationships will be brought to life vividly in the performance.

Science communicators and psychologists tackle common problems, however sharing between the disciplines is often limited. This performance addresses this shortcoming, while presenting ideas from contemporary emotion and motivation psychology that science communicators can use in their research and practice. However, in keeping with the format of the session, these fundamental ideas in communication will be very much performed.

# JULIA WALLACE

When & Where: [F9 3:30pm Thursday 5 April ARCH4](#)

Title: **Age-specific opportunities and challenges found engaging the public in science**

Format: Show, tell and talk

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Julia Wallace**, *Carleton University, Canada*

Co-author(s): Pam Wolff, *Carleton University, Ottawa, Ontario, Canada*

Science communication and public engagement activities are often geared towards children and their caregivers. Science centres and museums tend to focus on the hands-on and dazzling, exciting curiosity while catering to a child's brief attention span.

These techniques are particularly unsuited to seniors, however. This increasing, and increasingly influential demographic, also deserves the opportunity to be informed despite the fast pace of scientific advance. Discoveries in the fields of ageing and health care may be particularly relevant, but many seniors show a desire to keep informed of all aspects of scientific advances from nanotechnology to cosmology. To meet this need, the material must be presented in an accessible manner, without having its complexity masked or stripped away.

Both cases - captivating children and keeping seniors connected and informed - are critically important to the science community. Recognition of the value of fundamental science waxes and wanes among politicians, but public and political views are often a self-reinforcing loop, and an informed and engaged population is the best defence against the devaluation of science and evidence based decision-making.

Carleton University has outreach programs to bring science to all ages, from mini-courses and summer day camps for children, to Science Cafes geared towards adults, to Learning in Retirement programs for seniors. We will share and discuss the opportunities and challenges we found engaging with audiences of all ages.

# GUOYAN WANG

When & Where: [F7 4:30pm Thursday 5 April ARCH2](#)

Title: **Empirical study on the golden ratio in Chinese landscape paintings**

Format: Individual paper

Theme: Society

Area of interest: Comparing science communication across cultures

Author: **Guoyan Wang**, *University of Science and Technology of China, China*

Co-author(s): Jiafei Shen, *University of Science and Technology of China*

The golden ratio plays an important role in harmonious aesthetics. However, because of ambiguity in empirical evidence, it is often critiqued and thus quite controversial. Some researchers have attempted to analyze the golden ratio using a large variety of persuasive analytical methods of sample statistics but have only obtained evidence against the golden section in art. Examples of the golden ratio in both the natural and man-made world can always be found while no persuasive empirical evidence has been presented thus far.

The object of this study is one of the oldest visual arts: Chinese landscape paintings, which convey the eastern beauty of “psychological harmony”. Using computer image recognizing and processing technology to quantitatively analyze their typical characteristics, we analyze 710 paintings from the Palace Museum and the National Art Museum of China. In particular, we apply blank-leaving to comprehensively analyze the pixels of the paintings. The data shows that the quantified blank-leaving in classical landscape paintings is in accordance with the golden ratio of mathematics. The paintings range in date over thousands of years and this emphasizes a stable painting composition style, thus providing statistical, empirical evidence for the universality of the golden ratio in Chinese landscape paintings.

In addition, the data reveals that, in the past century, the blank-leaving of modern landscape paintings has gradually deviated from the golden ratio and the painting composition style has shown a trend of diversification. This reflects that classical visual arts have been greatly impacted by the modern pluralistic trend of thought.

# MICHEL WATSON

When & Where: [H6 1:45pm Friday 6 April ARCH2](#)

Title: **Defining public attitudes and understanding of human gene therapy in Australia**

Format: Individual paper

Theme: Society

Area of interest: Influencing policies through science communication

Author: **Michel Watson**, *Australian National University, Australia*

At a time where gene-editing tools and technology are becoming more efficient and cheaper, human gene therapy has never been more readily available to the public. It is therefore crucial to understand the public's attitudes and awareness surrounding this technology in order to better align our regulations and policy with what Australian citizens deem acceptable. A national online survey was published late 2017 to assess the Australian public's attitude towards, and currently held beliefs of human gene therapy. A summary of the results from this survey will be presented at the 2018 Public Communication of Science and Technology Conference, Dunedin. As this therapy raises clear risks and ethics which will affect all citizens, the public must be allowed to have their say in the future regulations of this therapy. This survey will help contribute to the development of policy around the regulation of human gene therapy technology and its practices in Australia.

# FRANZISCA WEDER

When & Where: 151 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **Public problematization of water supply and the risk of scarcity**

Format: Visual talk

Theme: Society

Area of interest: Investigating science communication practices

Author: **Franziska Weder**, *Alpen-Adria University of Klagenfurt, Austria*

Co-author(s): Denise Voci, *Alpen-Adria University of Klagenfurt*

By 2025, half of the world's population, which is 1.8 billion people, will be living in water-stressed areas and an estimated two-thirds of the world population will be confronted with the unavailability of sufficient (drinking) water to meet their own needs (WHO, 2015; UN, 2014). Water supply and water scarcity are complex, sometimes abstract, global as well as very specific, local and regional problems, which often have invisible symptoms and require long-term solutions.

As often mentioned in the sustainability debate (see Dade & Hassenzahl, 2013; Allen, 2016; Godeman & Michelsen as an example), the key to sustainable development is that an issue is problematized in the public and stakeholders are involved in consumption/use, maintenance, cost recovery, and continuing support to realize sustainable resource management.

Whereas dry countries and regions (USA/California, Southern & Western Europe or Australia) are constantly facing water scarcity as one of the major effects of climate change, water-rich countries (Central Europe, Canada or New Zealand) seem to be not directly affected by physical scarcity of water. But interestingly enough, there seems no difference regarding the degree of problematization and therewith awareness of water scarcity as a "problem".

The question for us is how to stimulate the power of public deliberation and conversations about enablers and barriers of sustainable water supply with evidence based information & data – even in countries where water scarcity is not an experienced reality yet or strategically kept away from the public agenda?

In our visual talk we will offer a video clip with some "impressive" bits of qualitative interviews which were conducted in Australia & across Europe in 2015-2017 with farmers, irrigators, politicians, activists, scientists and lay persons, pointing out the problem of individual numbness as well as unconsciousness in water consumption and conservation and the missing link to sustainability.

# FRANZISCA WEDER

When & Where: [F7 3:45pm Thursday 5 April ARCH2](#)

Title: **Reflexivity on contradictions**

Format: Individual paper

Theme: Stories

Area of interest: Building a theoretical basis for science communication

Author: **Franziska Weder**, *Alpen-Adria University of Klagenfurt, Austria*

Co-author(s): Larissa Krainer, *Alpen-Adria University of Klagenfurt*

With our presentation, we discuss how and how much “sustainability communication” challenges so far debated concepts of science communication. We put journalists, bloggers and communication strategists on the stage and ask for the potential as well as barriers of communicating sustainability in the media.

The state of art in science communication as well sustainability science right now includes remarkable breadth (Krcmar et al., 2016). However, this creates complicated challenges for those interested in sustainability communication (Dade & Hassenzahl, 2013; Allen, 2016). Sustainability communication requires a transdisciplinary approach (Godeman & Michelsen, 2011) which implies critical methods (Downing et al., 1995) like intervention research (Lerchester & Krainer, 2016) and story tracking with narrative interviews (Weder, 2017). Thus, we asked journalists, blogger and PR people in Central Europe (n = 25, 2009; n = 50, 2017) to tell the stories they relate to sustainable development and discuss the potential and barriers in communicating about and for sustainable development.

The interviewees point out economic interest of media corporations, short-term orientation and local interests as the main barriers in communicating an issue like sustainability. Their stories show that science communication in today’s public media needs critical journalism with a deeper understanding of ethics. Here, sustainability related issues can acts as “best practices” by showing contradictions in our society and critique of our social order.

By knowing about the selectivity of the interviewed communicators as the major limitation of our study, the sustainability issue seems to challenge science communication and related research. It not only marks a new type of “content” that has to be communicated. Journalists in particular realize that with their reporting on sustainability related issues and by offering reflexivity on existing paradoxes and contradictions, they contribute to sustainable development as well.

# FRANZISCA WEDER

When & Where: [D8 10:45am Thursday 5 April ARCH4](#)  
Title: **Metaphors for the “commons” in the media**  
Format: Idea in progress  
Theme: Stories  
Area of interest: Comparing science communication across cultures  
Author: **Franziska Weder**, *Alpen-Adria University of Klagenfurt, Austria*  
Co-author(s): *Nikolá Dobric, Alpen-Adria University of Klagenfurt*

What a nice title: Communicating the Sustainable Development Goals – For Everyone![1] However, not only the United Nations offer tools, means and workshops like this to communicate sustainability and the related 17 “goals”. National and international consultants advice to tell the “sustainability story”, use “pics more than words” or other strategies to “associate your brand with sustainability”. Nevertheless, coming from a science communication perspective, we seem to just beginning to get to grips with the gravity of the challenge of communicating sustainability.

At this stage, we're "trapped" in a pilot study on value-based messages about environmental goods (air, water and soil) in the media and how they change as they travel in the public sphere, understood as „sphere of influence created when different individuals engage each other in communication – through conversation, argument, debate, and questions – about subjects of shared concern or that affect a wider community" (Cox, 2013, p. 6). Therefore, we would love to put our idea and first insights from the pilot study up for discussion at PCTS and learn about arguments and metaphors for the "commons" (in general and related to the SDGs) in the scientific, political, and economic discourse as well as in the media - and about the differences across cultures.

[1] <http://www.un.org/webcast/pdfs/160421pm-sdgs-com.pdf>, 28.09.2017.

# CAROLINE WEHRMANN

When & Where: [G2 10:45am Friday 6 April SDAV3](#)

Title: **The story of our science communication curricula: to be continued**

Format: Roundtable discussion

Theme: Science

Area of interest: Teaching science communication

Author: **Caroline Wehrmann**, *Delft University of Technology, Netherlands*

Co-author(s): Miriam Sullivan, *University of West Australia, Australia*  
Liesbeth de Bakker, *Utrecht University, The Netherlands*  
Henk Mulder, *University of Groningen, The Netherlands*  
Todd Newman, *Stony Brook University, New York*

In this session we will share stories about our efforts and challenges to (re)design our science communication master programs and invite your feedback. As we are from different institutes, on several parts-of-the-world, from universities of technology and 'classical' universities, just starting or with 15+ years of experience, we will reflect and share potential solutions from different perspectives; based on student, alumni and staff evaluations.

One main problem concerns the tension between what 'the university wants' (strong theoretical grounding, students going on to PhD-research) and what most students want (practical job experience and skills). How can we balance practical and theoretical components in our curricula? Do we focus on training students for non-research jobs in science communication requiring academic levels, or do we find ways to prepare students for both academic and professional careers?

Secondly, in response to an increasing demand for science communicators among key stakeholders, we would like to guide our students through different career paths and help them discover new job opportunities. How to build a coherent curriculum that offers a sound basis for that? Should we provide students with a wide range of skills and a broad multidisciplinary knowledge? Do we have to guide them in their personal professional development? Or do we focus on teaching students how to innovate and find approaches to new problems?

We could specialize, and collaborate with other SC programs to offer students a wide range of opportunities. But what to expect from exchange programs? What are benefits and pitfalls for students and staff? How to make our programs accessible to the growing number of international students with various backgrounds and interests? And can we still cater to domestic labour markets if we teach in English?

*We appreciate your help in writing the next chapter in the story of our curricula!*

# PENNY WILSON

When & Where: [F6 3:30pm Thursday 5 April ARCH1](#)

Title: **When a risk message fails – telling the story of raw milk in Australia**

Format: Individual paper

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Penny Wilson**, *Australian National Centre for the Public Awareness of Science, ANU*

Raw milk sale is prohibited in Australia; the risk of illness and death is considered too great to legally sell this “fragile” product. However, there is a continued desire to source and consume raw milk for reasons such as health, taste, belief, history, nostalgia.

The official risk message from scientists/ regulators is that the potential for harm is too great to allow the legal sale of raw milk.

The producers of raw milk are also knowledgeable and informed, relying on handed-down wisdom, formal learning, networks of support, trial and error. Many have always drunk raw milk, appreciating taste and texture, decrying the commercially available alternatives. However, the producers acknowledge the potential for risk in the raw milk product while understanding the optimum conditions for managing the complexity of milk’s microbiology.

So if producers and scientists/ regulators all recognise the risks in raw milk, what is wrong with the risk message?

Boholm and Corvellec (2011) developed the Relational Theory of Risk to examine the underpinning reasons for risk communication to miss the mark. I took the theory and reimagined its use, asking interviewees what they saw as the risks surrounding raw milk and who or what the risk would impact.

This presentation draws from extensive interviews exploring the stories of producers and consumers, those who see raw milk as the norm; and scientists/ regulators those for whom raw milk represents a potential risk. My work may enable reduced risk for consumers, increased awareness of milk-drinking practices amongst producers and regulators, and the possibility of revised regulations and new legal frameworks.

# LEON YUFENG WU

When & Where: [C8 4:30pm Wednesday 4 April ARCH3](#)

Title: **Insights from a brand new cooperation model: science edu-communication through frame analysis of the project - Difference Science News in Taiwan**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Leon Yufeng Wu**, *Chung Yuan Christian University, Taiwan*

Co-author(s): Pin-Sheng Li, *National Taiwan Normal University*  
Chun-Yen Chang, *National Taiwan Normal University*

Science Edu-Communication is a model implementing new production and research avenues in modern science communication. Scholars have identified that the fields of science education and science communication share the same goal of promoting public understanding of science. The project Different Science News (DSN) is a milestone achievement and practice of science edu-communication in Taiwan, because science educators are actively involved as facilitators between both journalists and scientists during the production of the science news. The DSN series has produced more than 200 science news segments and reached more than 60 million viewers since 2014. Although the series has demonstrated successful outreach during the past 3-year cooperation period, we have encountered various conflicts in production due to different frames and perspectives of what the science news should be. Through interviewing and frame analysis, we examined the conflicts that resulted from divergent frames. The result showed that journalists hold wider frames toward science news. They demonstrated frames of awareness (A) and enjoyment (E) (i.e., in order to catch audiences' attention), and reinforced understanding (U) and interest (I).

Scientists and science educators also held on understanding (U), but the accuracy and correctness of the information were their concerns (e.g., detailed information in the charts, precise facts demonstrated in the animation, and presented scenes. The conflicts concerning awareness (A), enjoyment (E), understanding (U) and scene between science educators and journalists occurred in the earlier stage of production. The conflicts concerning understanding (U) and scene between scientists and journalists occurred in the later stage of production. Different frames did cause conflicts. The findings also showed that journalists' frames did not follow deficit model, scientists and science educators did, however. Strategies for better mitigation will be discussed.

# LIFEN YAO

When & Where: [10.15am Wednesday 4 April Café picnic tables outside](#)

Title: **"China" imagination in science fiction – Take personal handphone system roaming future as an example**

Format: Speakers' corner

Theme: Stories

Area of interest: Comparing science communication across cultures

Author: **LiFen Yao**

Prophetic features of science fiction are very strong. Taking Chinese science fiction work *Personal Handphone System* (PHS) *roaming future* as an example, this paper studies the influence of science fiction on the future of the country. As a Book of 1980s, namely *Personal Handphone System roaming future*, it gives the basic idea of realizing national rejuvenation in twenty-first Century—scientific and technological innovation may be the fundamental motive force to decide the progress of the nation. It can be said that the development in China after thirty years coincides with the prediction of the book. This article holds that the evolution of Chinese images in science fiction reflects the history of Chinese social development, and science fiction has a stimulating effect on the development of science and society.

# SARA YEO

When & Where: [B7 2:00pm Wednesday 4 April ARCH2](#)

Title: **The Influence of temperature on #ClimateChange and #GlobalWarming discourses on Twitter**

Format: Individual paper

Theme: Science

Area of interest: Building a theoretical basis for science communication

Author: **Sara Yeo**, *University of Utah, USA*

Co-author(s): Zachary Handlos, *Georgia Institute of Technology*  
Alexandra Karambelas, *Columbia University*  
Leona Su, *University of Utah*  
Kathleen Rose, *University of Wisconsin-Madison*  
Dominique Brossard, *University of Wisconsin-Madison*  
Kyle Griffin, *Riskpulse*

Research suggests people associate different concepts with the terms “global warming” and “climate change.” We test this claim using Twitter content and supervised learning software to categorize tweets by topic. We explore differences in Twitter discourses that employ the terms “global warming” and “climate change” over time (January 1, 2012 to March 31, 2014). These data were combined with temperature records to test the extent to which temperature was associated with online discussions. We then used two case studies to examine the relationship between extreme temperature events and Twitter content: a “cold surge” (January 2014) and a “heat wave” (March 2012). We found that the topic of discussion was an important factor in whether messages about global warming or climate change were more prevalent. While more reactions to global warming were observed for topics related to weather and energy, more climate change tweets were about environmental and political issues. Consistent with previous research, our findings also showed that posts about global warming (but not climate change) were significantly correlated with anomalous temperature and impacted by seasonality. This result was further supported in our case study of the “heat wave,” where a statistically significant correlation between anomalous temperature and global warming reactions was observed. The “cold surge” case study supported our finding that political statements appear to be associated with more climate change tweets relative to global warming. Overall, these findings underscore the importance of considering how communication on social media may translate into concerns among lay publics. Depending on the policy issue at hand, it may be important to develop messages using the appropriate term that resonates with people’s existing schema.

# DONG HEE YEO

When & Where: [G7 10:45am Friday 6 April ARCH2](#)

Title: **Study on enhancing the public confidence in nuclear safety regulations in Korea : the case study of effective communications with the public**

Format: Individual paper

Theme: Society

Area of interest: Investigating science communication practices

Author: **Dong Hee Yeo**, *Institute of Nuclear Safety, Korea*

This proposal was designed to investigate the possibility of more efficiently communicate with the public about nuclear regulations in terms of enhancing the transparency of the regulatory body.

More specifically, by looking into the case study regarding public information, this study aimed at examining how the Korean regulatory body make in terms of enhancing public acceptance of regulatory decision-making.

The NSSC (Nuclear Safety and Security Commission) as a Korean nuclear regulatory body, has tried to enhance transparency in its regulations. Since 2013, it has formed the council group for a nuclear safety meeting in 5 areas where nuclear installations are located, in order to regularly communicate with local residents on nuclear safety related matters. And, in 2016 the NSSC established a nuclear safety information center whose online portal is providing regulatory documents for the public.

However, despite the NSSC's endeavor to communicate with the public, the reliability of the regulatory decision has still been challenged. For example, regarding the regulatory approval of the license renewal of a reactor, civic groups and ordinary citizens filed an administrative litigation, insisting the approval be withdrawn.

In this respect, it is important for the regulatory body to have public acceptance of its decision-making based on such scientific regulatory activities as safety reviews and inspections.

Then, how does the Korean regulatory body improve communications with the public and increase the public acceptance in its regulatory actions?

This research address suggestions that the Korean regulatory body should inform the public about the procedures as well as results of the surveillance of nuclear safety in order to increase public confidence through foreign case analysis such as the public information body and the U.S. public hearing which is broadcasted over the internet.

# HIROMI YOKOYAMA

When & Where: 18 3:30pm Friday 6 April ARCH4

Title: **Why do female Japanese students not study mathematical and physical sciences?**

Format: Show, tell and talk

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Hiromi Yokoyama**, *The University of Tokyo, Kavli IPMU, Japan*

Co-author(s): Yuko Ikkatai, *The University of Tokyo, Kavli IPMU*

In Japan, the percentage of female scientific researchers is extremely low, at 15.3% (for comparison, in Russia it is 40.3%; in the UK, 27.4%, in Italy, 36.0% and in the US, 34.3%). Within the natural sciences, there are a relatively large number of female students, 40% in the biology department, but women comprise less than 10% of the total number of students in the physics, mathematics and information technology departments. Over the past 10 years, the Japanese government has undertaken many projects to encourage women to study in the science and technology departments. Regardless of these efforts, the percentage of female students who enter the fields of physics, mathematics and information technology has not increased. The percentage of women in physics departments is over 50% in Italy, which leads to the conclusion that there are cultural differences between Japan and the rest of the world. We investigated whether social factors unique to Japan inhibit Japanese female students from studying sciences. We held a workshop with women researchers in the fields of physics, mathematics and information technology, discussing the factors that may inhibit women, and provide the results in this paper.

# TANGYAO ZHANG

When & Where: [F8 3:30pm Thursday 5 April ARCH3](#)

Title: **Government credibility in a post-expert world: a case study of GMO communications in China**

Format: Idea in progress

Theme: Society

Area of interest: Building a theoretical basis for science communication

Author: **Tangyao Zhang**, *The Australian National University, Australia*

Food security has gained much attention as one of the most significant issues in China in the 21st century. In order to make China's food supply more secure, genetic modification technologies were have been raised as a potential solution. According to peer-reviewed scientific research, genetically modified organisms (GMOs), especially those approved by government agencies (e.g. FDA), are likely safe for human daily consuming. However, there is considerable public disquiet about the safety of GMOs in China. The opposition can be found in multiple sources including mainstream media, governmental documents (e.g. import restriction), research publications, social media, and person-to-person communications.

Currently, I am investigating stakeholders and communication mechanisms of GMO in China as my postgraduate research project, and a part of my research results indicate an inverse correlation between frequency and intensity of government-oriented GMO communication activities and the government's decision making processes on scientific policy. This result suggests a new research question which will examine roles of government-oriented scientific research and communication, and some government credibility theories\* could be introduced to build a conceptual framework to elucidate this phenomenon in China. \*George Chrysochoidis, Anna Strada & Athanasios Krystallis (2009) *Public trust in institutions and information sources regarding risk management and communication: towards integrating extant knowledge*, *Journal of Risk Research*, 12:2, 137-185

# TANGYAO ZHANG

When & Where: [10.15am Thursday 5 April SDAV2](#)

Title: **Science Communication in Tertiary Student Recruitment**

Format: Speakers' corner

Theme: Stories

Area of interest: Investigating science communication practices

Author: **Tangyao Zhang**, *The Australian National University, Australia*

Inspiring future science students is one of the missions of science communication. On one hand, established science marketing and communication practical strategies are vital for universities to recruit students who will study science at tertiary level. On the other hand, science communication is a fast-growing discipline which is creating more and more career opportunities in the education industry. Therefore, it is important to investigate science communication practice for tertiary student recruitment.

In this talk, I would like to introduce and elucidate my stories and experiences in communicating science for student recruitment purposes as a staff member of the ANU Joint Colleges of Science. These experiences include video storytelling strategies, social media management as well as a comparison of livestream videos with conventional short videos on social media platforms. In addition, I would like to point out some complicated and critical issues we are facing in practice, such as communicating science in indigenous and multicultural contexts.

# LEI ZHU

When & Where: 429 4:45pm Wednesday and Thursday 4 & 5 April St David Theatre Complex Foyer

Title: **The effectiveness of photographs to communicate science in a Chinese national park**

Format: Visual talk

Theme: Science

Area of interest: Applying science communication research to practice

Author: **Lei Zhu**, *Centre for Science Communication, University of Otago, NZ*

Co-author(s): Lloyd S. Davis, *University of Otago*

The potential of high-quality photographs to enhance science communication is often disregarded and seldom tested. In this study, we focused on the effectiveness that photographs can have for enhancing science communication on signage within Xixi National Wetland Park, China. We evaluated effectiveness to communicate science using a series of variables: general attractiveness of the signs to the visitors, satisfaction and understanding from reading the signs, as well as recall of the information presented on the signs.

High-quality and poor-quality photographs were determined *a priori* from a selection of photographs evaluated by a panel of photographers based upon technical and creative criteria. Three manipulated signs with the same text concerning the Common Kingfisher (*Alcedo atthis*) were then tested successively. A high-quality photograph and a poor-quality one appeared on the first two signs, respectively. As a control, the park's logo was used in place of a photo on the third sign. Visitors in the park were asked to complete a questionnaire after reading the signs.

We found that a high-quality photograph made the signage more attractive, increasing reading satisfaction and understanding. Irrespective of quality, the use of a photograph helped visitors remember more information on the signs compared to the control condition.

We conclude that the presence and qualities of photographs indeed significantly influence the effectiveness of science communication. However, the degree of that effectiveness varied depending upon the visitors' different interests in birds (avid bird watchers, a general interest in birds, and no interest in birds). Those with a general interest were most positively influenced by using a high-quality photograph, while visitors with no interest in birds were unlikely even to read a sign with a poor-quality photograph. Hence, high-quality photographs are most effective for communication of science.



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# SURVEY

# PCST PARTICIPANT MEMBERSHIP SURVEY, DUNEDIN



Dear Colleagues,

Science communication is a flourishing field of activity. Communication practitioners, media people, communication researchers and academics of all colours and flags have come to PCST in beautiful Dunedin. It is great that you came and we'd like you to take part in a short enquiry.

We are undertaking a survey of PCST members and participants, to understand where you are coming from, your working conditions, how you think about science communication, and how you see the future of the field.

Do please complete this short questionnaire here [[goo.gl/P2DmRV](https://goo.gl/P2DmRV)], even if you have done so in previous years.

With your help, we will be able to map the growing field of science communication around the Globe. From the previous PCST meeting in Istanbul 2016 [n=335] we know a few things about our community already:

- About 10% of us are active 'science journalists', 15% are scientists who occasionally communicate with the public, 7% identify as PR professionals, and 6% are communicators with an occasional science beat. 62% are academics and researchers without a specific communication brief.
- 46% of us are more than 10 years on the beat, 18% less than 5 years; and 30% more than 15 years.
- 33% have a university degree and on the job training in communication; another 33% have a university degree including a communication degree.
- Our median age is 43 years; two thirds of us are younger than 50 years of age;
- We are 58% women, and 42% men; 69% identify politically as Left or left-of-centre;
- Two thirds of us are in full-time employment and a further 20% work precariously, either part-time or freelance. Two thirds of us reported no change in employment over the past 5 years, and increasing opportunities.

For a more complete report, follow the questionnaire on the link above.

A handwritten signature in blue ink, appearing to read 'MWB'.

Martin W Bauer (London School of Economics; member of PCST Science community)

Marta Entradas (ISCTE; LSE Marie-Curie Research Fellow)

Manuel Valenca (ISCTE, Communication Researcher)