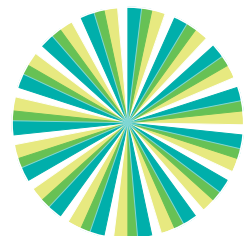


# CONFERENCE 2016

# ABSTRACTS

[WWW.SCANZ.CO.NZ](http://WWW.SCANZ.CO.NZ) | [@SCICOMNZ](https://twitter.com/SCICOMNZ) | [#SCANZ16](https://twitter.com/SCICOMNZ)



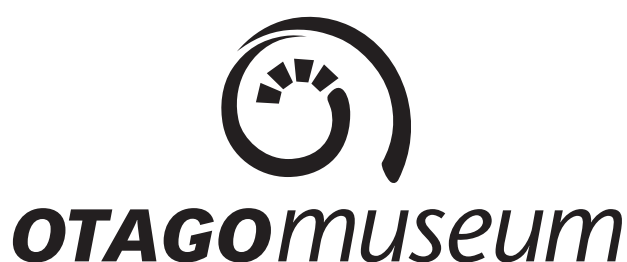
# SCANZ

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# Welcome

## Welcome to SCANZ 2016: Connecting science and society

On behalf of the Executive Committee of the Science Communicators' Association of New Zealand, I welcome you to the 2016 SCANZ conference.

This conference brings together the best, the most exciting, and the most important people working in and working on science communication in the nation, as well as some of the leading experts from around the globe.

The 2016 Conference's theme is "Connecting Science and Society". This connection is fundamental to science communication, and over the years, we have developed many ways to do this better and more creatively. This year's conference shines a light on two such ways through its special streams on Science and Art, and on Participatory and Citizen Science.

At its heart, science communication is about knowledge, it's about sharing that knowledge, it's about understanding that knowledge, and it's about being generous with all of our combined knowledge.

So over the next few days, let us be generous with our knowledge; let us share with one another, and let us learn from one another.

### Fabien Medvecky

President, SCANZ

# MASTER OF SCIENCE IN SOCIETY

Many of the most pressing scientific issues facing us today—including climate change, loss of biodiversity and how to respond to new technologies—cannot be solved using traditional scientific approaches. This 180-point Master's degree will appeal to science graduates looking to move into careers in science communication, science management and policy, or NGO advocacy; to professionals working in these areas who require further qualifications or are interested in deeper reflective practice; and to students with other degrees with a demonstrated interest in science or environmental issues.

**LAUNCH DATE:** Trimester One, 2018

**CONTACT:** [rebecca.priestley@vuw.ac.nz](mailto:rebecca.priestley@vuw.ac.nz)

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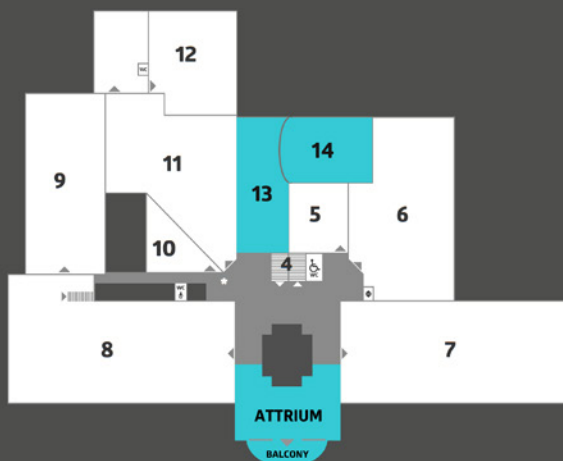


# Map THE OTAGO MUSEUM, 419 GREAT KING STREET

## THE OTAGO MUSEUM

### LEVEL 1

- WC** TOILETS
- WHEELCHAIR ACCESSIBLE TOILET
- BABY CHANGING FACILITY
- LIFT
- 4** SIR EDMUND HILLARY COLLECTION
- 5** BARCLAY THEATRE
- 6** SPECIAL EXHIBITIONS GALLERY
- 7** PACIFIC CULTURES
- 8** TĀNGATA WHENUA
- 9** 1877 GALLERY
- 10** SEARCH CENTRE
- 11** DISCOVERY WORLD
- 12** TROPICAL FOREST
- 13** BEAUTIFUL SCIENCE GALLERY
- 14** PERPETUAL GUARDIAN PLANETARIUM
- \*** DISCOVERY DESK



### GROUND LEVEL

- i** INFO DESK
- WC** TOILETS
- WHEELCHAIR ACCESSIBLE TOILET
- BABY CHANGING FACILITY
- LIFT
- CLOAKROOM
- 1** HUTTON THEATRE
- 2** KĀKĀPŌ ROOM
- 3** HUĀ ROOM
- 4** SIR EDMUND HILLARY COLLECTION



### ANNEX

CONSERVATORY THEOMIN BALCONY POSTMASTER GALLERY

The Annex building is located across the Otago Museum grounds. Exit the Museum through the main entrance and follow the walkway to the white building on the right.



# Programme

## Sunday 13<sup>th</sup> Nov

3.00–5.00 Pre-registration and poster set-up at Otago Museum, Hutton Theatre

## Monday 14<sup>th</sup> Nov

7.30 Registration and poster set-up

### 8.45 **OPENING** Hutton Theatre

8.45 Cultural welcome

8.55 Conference opening by **Dave Cull** Mayor of Dunedin

9.05 Presidents welcome **Fabien Medvecky**

### 9.10 **PLENARY** Hutton Theatre

#### **What has science communication ever done for us?**

**Richard Holliman**, Professor of Engaged Research at the Open University, UK

### 10.00 **PARTICIPATORY SCIENCE** Hutton Theatre

*Exploring the wonderful, curious world of Participatory Science* Panel discussion with **Victoria Metcalf, Sarah Morgan, Craig Grant, Barbara Anderson, Hoani Langsbury, Andrew Innes and Jonathan Kim**

### **SCIENCE TO THE PEOPLE** Kakapo Room

*Taking science to the people: Pop Up Science and Lab-in-a-Box* Panel discussion with **Kimberley Collins and Peter Dearden**

### 10.40 **MORNING TEA**

### 11.10 **ENGAGING DIFFERENT PUBLICS** Hutton Theatre

*Armed with economics and haiku* **Ceridwyn Roberts**

11.30 *Challenges in science communication to diverse communities: the changing face of GeoNet* **Caroline Little, Natalie Balfour, Abi Beatson and Brad Scott**

### **PARTICIPATORY SCIENCE** Kakapo Room

*Moth balled biological heritage: Cracking museum collections to helping halt biodiversity decline* Panel discussion with **Emma Burns, Barbara Anderson, Robert Hoare and Alison Greenway**

### 11.50 **PARTICIPATORY SCIENCE** Hutton Theatre

*QuakeScope: Training Community Leaders in Earthquake Resilience Through Games* **Brandy Alger**

12.10 *Who Participates in New Zealand Garden Bird Survey and Why?* **Nancy Longnecker, Andrea Liberatore, Eric Spurr and Catriona MacLeod**

### **PARTICIPATORY SCIENCE** Kakapo Room

*Participatory Science 101- designing participatory science projects* Workshop with **Victoria Metcalf, Sarah Morgan, Craig Grant, Barbara Anderson, Hoani Langsbury, Andrew Innes and Jonathan Kim**

### 12.35 **LUNCH**

### 1.25 **PANEL + PERFORMANCE** Hutton Theatre

*Science communication education and training: How are we preparing the next generation of science communicators?* Panel discussion with **Jacqueline Dohaney, plus others**

1.55 *iHeart Music; engaging new audiences with a musical interlude of the heart* Performance with **Derek Williamson**

### 2.25 **AFTERNOON TEA + POSTERS**

### 3.10 **ART AND SCIENCE** Hutton Theatre

*Artists and scientists on the Kermadec campaign* **Rebecca Priestley**

### 3.30 **MEDIA AND SCIENCE COMMUNICATION** Hutton Theatre

*Muddling through together* **Ann Grand, Richard Holliman, Trevor Collins and Anne Adams**

3.50 *The Sci21 open source science video platform* **Steve Pointing**

<b>4.10</b>	<b>CRISIS COMMUNICATION</b> Hutton Theatre
	"Whose Fault?" Communicating science in a time of crisis <b>Peter Griffin in talk with Paul Gorman</b>
<b>5.00</b>	End of presentations
<b>5.15</b>	<b>SOCIAL EVENT</b> Beautiful Science Gallery and Planetarium
<b>7.30</b>	End of day 1

## Tuesday 15th Nov

8.00 Registration

<b>9.00</b>	<b>PLENARY</b> Hutton Theatre
	<b>What's in a name? International perspectives on participatory and citizen science</b> <b>Poppy Lakeman-Fraser</b> , Senior Programme Coordinator for the Open Air Laboratories (OPAL) initiative, Imperial College London

<b>9.50</b>	<b>PARTICIPATORY SCIENCE</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex: Theomin Balcony	<b>EDUCATION AND TRAINING</b> Annex: Postmaster Gallery	<b>PHYSICISTS, PIXELS AND PLATFORMS</b> Annex: Conservatory
	<i>Cat tales: the social side of an international citizen science project exploring the movement and management of cats</i> <b>Heidy Kikillus</b>	<i>Views &amp; Values of NZ Garden Bird Survey Participants</i> <b>Andrea Liberatore, Catriona MacLeod, Eric Spurr and Nancy Longnecker</b>	<i>How critical is undergraduate science education?</i> <b>Christopher Vennell</b>	<i>Fight like a Physicist</i> <b>Emily Hall</b>
10.10	<i>Oral history can inspire participation in environmental projects</i> <b>Gary Rushworth</b>	<i>Engaging and retaining volunteers in the Kapiti Biodiversity Project</i> <b>Jean Fleming, Sue Blaikie, Paul Callister, Gay Hay, Jan Nisbet, Glenda Robb and Stephen Whitton</b>	<i>When scientists get media savvy: Evaluating efforts to media train researchers</i> <b>Dacia Herbulock, Rhian Salmon, John Kerr and Alexander Heyes</b>	<i>Platforms, Puzzles and Pixels Value of Video Games to Science Communication</i> <b>Steve Ting</b>

<b>10.30</b>	<b>MORNING TEA</b>
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<b>11.00</b>	<b>PARTICIPATORY SCIENCE</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex: Theomin Balcony	<b>ADVOCACY AND REFLECTION</b> Annex: Postmaster Gallery	<b>PHYSICISTS, PIXELS AND PLATFORMS</b> Annex: Conservatory
	<i>What scientists think about public? Analysis of Iranian Biotechnologists point of view about public and its relation with science and technology</i> <b>Zarrin Zardar</b>	<i>Soil - Just Dig It!</i> <b>Andrea Soanes and Cathy Bunting</b>	<i>Science advocacy meets urban development and conservation. The case of the Titirangi kauri</i> <b>Cate Macinnis-Ng</b>	<i>Ground Effect - Making Ag Science relatable</i> <b>Panel Discussion with Penny Clark-Hall, Dr Ants Roberts and Mike Manning</b>
11.20	<i>The Limits of Citizen Science</i> <b>Joan Leach</b>	<i>Engagement through experience: participatory research for native frog conservation in New Zealand</i> <b>Javiera Cisternas, Phillip J. Bishop, Luke J. Easton and Nancy Longnecker</b>	<i>Using a self-reflective approach for environmental reporting: learning while doing</i> <b>Jackie Le Roux</b>	

11.45	<b>HEALTH</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex - Theomin Balcony	<b>ANALYSING THE PRESENT / IMAGINING THE FUTURE</b> Annex - Postmaster Gallery	
12.05	Surviving the Zombie Apocalypse; a popular culture lifestyle improvement course <b>Derek Williamson, Andrew J Martin, Tracy Durksen, Julia Kiss and Paul Ginns</b>	Climate champion farmers, integrating deficit, dialogue and participatory science engagement <b>Jennifer Metcalfe</b>	'I am not the anomaly' - An exploration of communication received by atypical breast cancer patients during their treatment in New Zealand. <b>Emma Schranz</b>	
	Perception of homeopathy by homeopathy users in New Zealand <b>Manon Knapen</b>	Science and rural communities - engaging farmers at the 'water' table <b>Rachel Griffiths</b>	Visualising the future: Use of short stories to imagine climate change futures. <b>Jean Fletcher, James Higham and Nancy Longnecker</b>	
12.25	<b>LUNCH + AGM</b>			
1.20	<b>ETHICAL NORMS AND NEW THINKING</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex - Theomin Balcony	<b>RESONANCE AND PLACE</b> Annex - Postmaster Gallery	<b>EXPLORE AND ENGAGE</b> Annex - Conservatory
1.40	The ethical norms of science communication <b>Fabien Medvecky</b>	GeoTrips - a new website for locating and exploring New Zealand's geology and landforms <b>Julian Thomson</b>	Telling stories that resonate and influence... and how to avoid the dreaded "So what?" <b>Penny Fairbrother</b>	Tomahawk Lagoon monitoring programme – exploring waterways participatory science <b>Andrew Innes and Jonathan Kim</b>
	Science Capital and 'starting thought from women's lives': new ways of thinking about 'the problem with girls' in science <b>Kate Hannah</b>	Science communication - a tour guide's perspective <b>Warren Hurley</b>	How where we are shapes who we are: The case of the Antarctic scientist <b>Guy Frederick</b>	Science for Supper, a model for undergraduate community engagement. <b>Dave Warren, Esther Haynes, Geoffrey Weal and Noah Hensley</b>
2.00	<b>CITIZENS AND THE PUBLIC</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex - Theomin Balcony	<b>PARTICIPATORY SCIENCE</b> Annex - Postmaster Gallery	
2.20	How much science does an ordinary citizen need to know? <b>Toss Gascoigne</b>	Inter-generational Research – RFID Tagging of Pilots Beach Penguin Population <b>Hoani Langsbury</b>	Raising Scientific Participation in Secondary Schools <b>Judith Bateup</b>	
	Hype at work in public science <b>Tara Roberson</b>	A Wellington Marine Citizen Science Platform <b>Nicole Miller</b>	North East Valley Living Rooms Project - Participatory Community Science <b>Tim Bishop and Alex King</b>	
2.45	<b>AFTERNOON TEA</b>			
3.10	<b>RELEVANT KNOWLEDGE AND CULTURE</b> Hutton Theatre	<b>PARTICIPATORY SCIENCE</b> Annex - Theomin Balcony	<b>CHANGING ATTITUDES</b> Annex - Postmaster Gallery	<b>COMMUNICATION WORKSHOP</b> Annex - Conservatory
3.30	The need to know: How adults find out about relevant science and technology <b>Leone Rennie, Sue Stockmayer and John Gilbert</b>	Using citizen science to engage the public in morepork conservation <b>Alison Evans</b>	The Collision of Science and Civil Disobedience <b>Siana Fitzjohn</b>	Why won't they just vaccinate? An emerging infectious disease risk communication workshop <b>Workshop with Jennifer Manyweathers, Mel Taylor and Nancy Longnecker</b>
	Taking the sting out of freshwater management <b>Elizabeth Connor</b>	Family Science: Shared experiences engaging adults and their children with science and technology <b>Ashleigh Fox, Rod Hare, Niki Osborne</b>	Simplifying Sustainability - an Introduction to One Planet Living <b>Carolyn Cox</b>	
3.50	When a science story becomes a cultural narrative: the case of the Chatham Island black robin <b>Sophie Fern</b>	By community for community: the story of a Whaitua committee <b>Sheryl Miller</b>	Can entrenched attitudes be changed? Animal agriculture, sustainability, and overcoming preconceptions <b>Vibhuti Patel</b>	



- 4.15** **NATIONAL SCIENCE CHALLENGES** Hutton Theatre  
*Public Engagement in the National Science Challenges – what's happening and why?* Panel discussion led by Rhian Salmon
- 5.00** **PERFORMANCE** Hutton Theatre  
*The Two Cultures, and science communication. A play by* Toss Gascoigne and Jenni Metcalfe
- 5.30** End of day 2
- 7.00** **CONFERENCE DINNER** The Savoy, 50 Princes Street  
*With a science performance "Chill out!" by* Amadeo Enriquez Ballesterio

## Wednesday 16<sup>th</sup> Nov

- 8.00** Registration
- 9.00** **PLENARY** Hutton Theatre  
**"ArtScience" ... "SciArt" : What do we mean and what does it matter?**  
 Jenny Rock, Lecturer, Centre for Science Communication, University of Otago
- 9.50** **ART AND SCIENCE** Hutton Theatre  
*Comics and cartoons as public communication of science* Carlos Teixeira, Duarte EC, Oliveira AJ, Silva BMA, Iwata K, Srivastava PK, Garcia J, Vasconcelos S and Santos AA  
*Project Tiktaalik: Using cartoon and comics as a science learning tool* Nasreen Mitu  
*To illustrate or to investigate? Revealing the art-science nexus through line and light* Monica Peters
- 10.10**
- 10.30**
- 10.50** **MORNING TEA**
- 11.20** **ART AND SCIENCE** Hutton Theatre  
*Artvs-Science Interactions in Antarctica V2.0: Action, Distance and Scale* Craig Stevens, Gabby O'Connor and Katharine Allard  
*The Uncertainty of Knowledge and the Religion of Science* Craig Hilton
- 11.40**
- 12.00** **CONFERENCE CLOSING**
- 12.30** Conference ends

# Plenary presentations

Jenny Rock

## **"ArtScience" ... "SciArt" : What do we mean and what does it matter?**

Some would say these things are proof that we have left the 2 culture divide in the dust. Others would say it shows the exact opposite. This 3-part talk breaks down the trend in art-science interaction, seeks meaning in its parts, and then explores how can we do things better.

Poppy Lakeman Fraser

@PopLF

## **What's in a name? International perspectives on participatory and citizen science**

*"What's in a name? That which  
we call a rose*

*By any other name would smell as  
sweet."*

*Romeo and Juliet (II, ii, 1-2)*

Labelling can create a common language with which we can communicate, it can help us understand a subject better, but it also bears challenges- as Shakespeare so eloquently encapsulates.

Volunteer involvement in the scientific endeavour means different things to different people and it can vary across sectors and across continents. This talk will delve into the historical context of participatory and citizen science, explore how the field has grown into the many guises in which it exists and how trade-offs between science communication and scientific research can be navigated.

Using examples from the Open Air Laboratories (OPAL) network, one of the largest public participation programmes in the UK, Dr Lakeman Fraser will take you on a journey through the drivers, deliverables and aspirations of OPAL as it approaches its tenth year in operation. With collaboration at the heart of the network she explores what we can learn from practice in New Zealand and how communities of practitioners from Europe, the US and Australia are joining forces to pioneer new approaches to drive the discipline forward.

Richard Holliman

@science\_engage

## **What has science communication ever done for us?**

As science communicators we live in exciting and challenging times. While effective communication remains at the heart of good science, what we mean by this has evolved rapidly in recent years. Digital technologies, profoundly social in use, have expanded (not replaced) the repertoires of science communicators and extended the potential for a greater number of stakeholders to participate. On a similar timescale, policy makers have intervened to reshape the ways that universities relate to, and are informed by, wider society. Talk of engagement, openness, responsiveness and citizenship now permeate discussions about contemporary science communication. These ongoing changes raise important issues for science communicators. What measures can we put in place to support those communicating, to recognise and reward excellence, and to show the continued relevance of our work as communication professionals? In this keynote address, I will explore these issues in the context of a programme of organisational change designed to embed the practices of communication and engagement within the culture of research at the Open University, UK.

# Paper presentations

Alison Evans

## Using citizen science to engage the public in morepork conservation.

Despite being relatively common in most parts of New Zealand, morepork are not often heard on Banks Peninsula. Last summer, we studied where morepork lived, whether they were breeding successfully and how morepork used forest remnants on Banks Peninsula. As a part of this study, we needed to engage the public and find out where morepork were calling. We also built nest boxes with the Menz Shed to put up in trees for the morepork. We used the media to encourage the public to report calls to us and to start conservation actions that would protect their habitat. Learning how to involve the community in conservation projects through effective science communication can be a powerful advocacy tool and lead to some unexpected conservation gains. Clearly communicating the goals of our project was an important part of motivating the public to become involved in collecting information for us. We used a variety of 'citizen science' methods to promote the project and capture the information. Not all of the tactics were successful in capturing information about morepork and some reporting methods were more frequently used than others. Despite some limitations surrounding the information collected, we now have a better idea of where morepork are and aren't on the peninsula and there is a much higher awareness surrounding morepork conservation and what actions are necessary to secure their survival.

Andrea Liberatore, Catriona MacLeod, Eric Spurr, Nancy Longnecker

## Views & Values of NZ Garden Bird Survey Participants

In June/July 2016, the New Zealand public contributed to the tenth year of data collection for the NZ Garden Bird Survey (NZ GBS), a nationwide citizen science project which aims to monitor NZ garden bird populations. In January 2016, a questionnaire was administered to current and past participants of NZ GBS in order to better understand those who take part. More than 2100 people responded, giving insights into their views and values.

This talk examines respondents' views on biodiversity, native species, pest control and where responsibility lies for bird management and monitoring in New Zealand. Results reveal that 46% of respondents report they are already affected by biodiversity loss. An additional 48% believe they or their children will be affected in the future. Respondents also self-reported efforts to create habitat for birds when they make changes to their garden (75%). We will reveal respondents' favourite garden bird and examine their involvement in other bird-focused citizen science programmes. These results give insight into whether participant views are aligned with NZ GBS objectives, which in turn can help NZ GBS further understand, empower and enable its participants. Demographics and rationale for participation in NZ GBS will be discussed in a partner talk.

## Andrea Soanes, Cathy Bunting Soil - Just Dig It!

Soil – it's something we tend to take for granted. But earlier this year thousands of primary school students got their hands dirty learning more about this important resource as part of Primary Science Week. To support the initiative, the Science Learning Hub ([www.sciencelearn.org.nz](http://www.sciencelearn.org.nz)) brought together a wide range of engaging resources, including a real-time portal where students and communities could load their own scientific data. The result was wider engagement in the value and diversity of New Zealand soils and some of the important research in this area. The Hub is a long-standing, award-winning project currently funded as part of the Government's Science in Society Strategy. It offers science communication initiatives a robust online infrastructure and extensive connections into schools and wider communities.

## Andrew Innes, Dr Jonathan Kim Tomahawk Lagoon monitoring programme – exploring waterways participatory science

Tomahawk Lagoon is a water way of significant ecological and recreational value to the wider Otago coastal community. There are community health concerns over historical and recent nutrient

discharges and related frequent algal blooms, often comprising cyanobacteria species which are known to produce toxins. Severe blooms were reported in 2012 and 2014. The Otago Regional Council does no regular water quality monitoring except for visual inspections for blooms and algal counts when blooms occur. So little information exists on the ecological health of the lagoon (status or trends), which is a DoC reserve and host to wildlife including fish and birds.

The participatory science platform provided an opportunity to address the Lagoon health and prompted the formation of the Tomahawk Lagoon Health team. The project aim is to survey the water quality (WQ) of the upper (northern) Tomahawk Lagoon over a 12 month period and investigate how, through monitoring of the physical, chemical and biological aspects of the ecosystem, the environmental health of the lagoon can be assessed by the community.

The team includes students and teachers from Tahuna Normal Intermediate, Bayfield High School and John McGlashan College, community members from ECOTAGO/OCES as well as water quality experts from University of Otago, Otago Regional Council (ORC) and Department of Conservation (DOC), Otago Fish and Game.

This monitoring programme is designed to facilitate long term data collection, support committed community partnerships, and create systems to report back to the wider Tomahawk community about the environmental health of the Tomahawk ecosystem. Andrew and Jonathan will share what this project has meant to the local community, including school students as well as to scientists.

Ann Grand, Richard Holliman, Trevor Collins, Anne Adams

## Muddling through together

Digital technologies have shattered the public sphere: the agora is no longer the only place to which people can go to meet and debate. Multiple engagements and conversations can now occur in multiple virtual spaces that can come to them and be co-created by them. However, despite the increasing ubiquity of digital media and social networking technologies, our research shows that few

researchers identify such tools as routes for engagement with communities, while at the same time, the increasing expectation that researchers will engage through digital means demands the development of new skills and new identities and changing cultures of engagement.

In a series of interviews with active researchers at a UK university, we identified that the expectation of digital engagement is causing researchers to examine their identity as researchers, creating evolving ecosystems of mutual support; a culture in which researchers 'muddle through' together, communalising their expertise to create the systems that will enable them to move among, and have an impact on, different communities. From our findings, we identified three 'ideal types' of digital engager; I will discuss how we used these ideal types to help researchers characterise themselves as digital engagers and from that characterisation, develop and maintain mutually beneficial relationships with others.

**Ashleigh Fox, Rod Hare, Niki Osborne**

### **Family Science: Shared experiences engaging adults and their children with science and technology**

In 2015 we received a local grant under the Unlocking Curious Minds contestable fund, to trial our concept of Family Science Workshops. We based this on the theoretical framework of FEAST, an EU-funded project which aimed to engage parents and family in the informal process of a child's learning.

Leveraging off the work of Futureintech and its volunteer Ambassadors, we approached Auckland primary schools with limited access to resources for extra-curricular science activities. Our objectives were to create opportunities for young scientists to engage with the community, and to use the existing family dynamics to provide a safe space for both adults and children to discover more about the role of science and technology in their daily lives.

Over 6 months we ran 20 workshops across 5 schools. We gathered feedback from participants and teachers, measuring grass-roots engagement with science and technology issues.

We share our refined delivery model,

which is based on well-established teaching practices and learning theory. We cover the challenges faced and the lessons learned, which are informing our future workshop development. There is also scope to build a 'family science' community which we could draw upon for more in-depth discussion and debate in the future.

**Brandy Alger**

### **QuakeScape: Training Community Leaders in Earthquake Resilience Through Games**

QuakeCoRE, in partnership with UC Quake Centre, is developing an earthquake resilience escape room outreach programme. Escape rooms are a new global phenomenon based on interactive scenario based problem solving. Our earthquake resilience escape room activity, QuakeScape, will share earthquake resilience knowledge with teams via a series of fun logic puzzles, once the teams have solved the puzzles there will be a facilitated discussion to help the participants gain a deeper understanding of earthquake resilience in their context as well as from the wider NZ perspective. QuakeScape will be a versatile multi levelled experience that can be used with a variety of demographics, from community organisations, such as councils, to secondary school students.

**Carlos Teixeira**

### **Comics and cartoons as public communication of science**

This proposal is related to the assumption that comics and cartoons that use short texts written in simplified language constitute a textual genre. Has the objective to relate the experience with a traveling exhibition of comics and cartoons of science communication and the experience with the development of a comics electronic magazine that use mediated communication to share to young students information about the water (sponsored by the National Water Agency – Brazilian Government). The exhibition displayed at Hands on Science (Turkey, 2012) and Public Communication of Science and Technology (2014) Conferences, shows works of two Brazilians cartoonists and one from India (this, a PhD in Organic

Chemistry). Comics has a non-formal approach, use the language of art communication (drawings), simplified language, short texts and humour. Science comics and cartoons has the objective to translate scientific information into drawings and common language. It works with the assumption that comics and cartoons are tools and resources that can arouse the curiosity and scientific interest. The short and direct texts of science comics and cartoons combine scientific information with objective language, streamlined and often double entendre and the style of writing directed to the lay public in journalistic format.

**Caroline Little, Dr Natalie Balfour, Dr Abi Beatson, Brad Scott**

### **Challenges in science communication to diverse communities: the changing face of GeoNet**

GeoNet, New Zealand's Geological Hazard Monitoring Network (funded by EQC) has recently become a teenager boasting 15 years of learning and growth in science communication. Along the way, GeoNet has navigated crises, such as, the Christchurch earthquake sequence, regional tsunami and eruptions at White Island, Ruapehu, Raoul Island and Tongariro volcanoes. These events have prompted changes in the way we communicate both in the style and mediums we use, while still valuing and utilising traditional methods. An increasing challenge we face is how to build and support the diverse range of people in the GeoNet community. This panel discussion consists of four of the GeoNet team whose expertise include, social science, seismology and volcanology, and who all have a wealth of experience in science communication. The discussion will include examples, lessons learned, and future opportunities over two themes:

- Building communities using networks, social media platforms, and 150 years of citizen science.
- Adapting science communication to suit diverse audiences, including engagement with public governance, education and research sectors, and the general public.

Carolyn Cox

## **Simplifying Sustainability - an Introduction to One Planet Living**

Sustainability is complicated. Translating the needs of future generations into decisions made every day at a personal, business or community level can feel too hard. What often results is a very fragmented approach to implementing sustainable solutions.

The One Planet Living framework, based on ten easy-to-grasp sustainability principles, is providing a way of overcoming this. In this session we examine how our scientific knowledge about the state of our environment and human health can be translated into a One Planet Living approach.

One Planet Living, which is based on ecological footprinting and a vision of a world in which people enjoy happy, healthy lives within the natural limits of the planet, provides a practical road map for those seeking a better way to live, manage their community or to do business. By breaking sustainability down in a simple and effective way organisations can easily plan for, communicate and measure progress towards sustainability at both a strategic and operational level.

Developed in the UK by Bioregional the framework is now being adopted by communities and organisations across the world. We'll look at how Unitec Institute of Technology, the first New Zealand organisation to adopt the framework, is using it.

Cate Macinnis-Ng

## **Science advocacy meets urban development and conservation. The case of the Titirangi kauri**

On the fringe of the Waitakere Ranges, the leafy suburb of west Auckland, Titirangi, is known for its established kauri forest overlooking Manukau Harbour. Residents enjoy the bush surrounds and the biodiversity they support. However, as the population of Auckland grows, development of remaining bush blocks is threatening trees and ecosystems. In March 2015, the Titirangi kauri came to prominence a developer attempted to fell several centuries-old trees including a

kauri and a rimu. The kauri was a healthy individual in a known kauri dieback zone and the neighbours and community were horrified that the plants were not better protected and mitigating measures seemed inadequate.

In this presentation, I will explain the value of the vegetation in Titirangi, including carbon storage, water cycle modulation, erosion prevention and habitat provision. I will also talk about my role as an expert witness in the ongoing case brought by the neighbours against Auckland Council and the developers.

Ceridwyn Roberts

## **Armed with economics and haiku**

Government policy analysts face enormous challenges. Understanding the science is one thing; explaining the science and its implications to a minister is another. Ceridwyn Roberts from Motu Economic and Public Policy Research Trust will explain Motu's methods of disseminating research to government in the hope of causing conversation and change in the corridors of power.

Christopher Vennell

## **How critical is undergraduate science education?**

Recent debates in science communication have discussed teaching 'about science' as opposed to simply teaching traditional 'textbook knowledge' of science. What does teaching students 'about science' look like? To what extent are students already learning 'about science' in a university science education? Susanna Priest has put forward the concept of Critical Science Literacy to suggest what such an approach to science education should cover and why this approach is increasingly necessary. This paper assesses the levels of Critical Science Literacy content at top universities and asks whether students will encounter these topics by the time they have completed their undergraduate degrees. To compliment the research, we produced a series of short animations that covered Critical Science Literacy topics. These animations could be used to fill potential 'gaps' in university curricula deficient in Critical Science Literacy content.

Craig Hilton

## **The Uncertainty of Knowledge and the Religion of Science**

All knowledge is theory but in our experience (including through experimentation by ourselves and by scientists) we learn that not all theories are equally weighted. We learn that some theories are more useful at predicting things. We ditch theories that are not useful. Scientists can be as hypothesis-driven as anyone. In addition, the hype behind science creates a problem for true cultural engagement with science.

Knowledge is always uncertain as is science, but science works for the most part. However, sometimes people expect too much from science; they expect absolute knowledge, which leads to disappointment. I believe this public misunderstanding of science and scientific method is the main barrier that prevents true engagement with science and technology. Art can engage with this concept.

I propose a public collaborative and interactive art event. The Atheist Pride March pits the uncertainty of knowledge against the certainty of dogma (of any kind) and thus emphasises the uncertainty of science. If this project is successful, November 16th will be declared Atheist Pride Day and proud infidels will wear ape suits to work in respect to their ancestors.

The talk will discuss the proposed work and the concepts behind the work.

Craig Stevens, Gabby O'Connor and Katharine Allard

## **Art-vs-Science Interactions in Antarctica V2.0: Action, Distance and Scale**

At the 2015 Conference we described our adventures at the interface of art and science where we embedded an artist in a science expedition to Antarctic sea ice. The work has undergone a substantial acceleration in the wake of this first foray. Here we update the community and consider the interface between art and science at different scales of separation to see if/how the result varies. The agents (and authors) in the present experiment have a >5 year collaborative history. This has seen a quartet of parallel



arcs evolving with themes being (i) representation of the cryosphere and its mechanics, (ii) complexity in collaboration, (iii) repurposing materials and (iv) utilisation of these threads in teaching. The collaboration has been used in an educational context using co-production by students where the art-vs-science team to produce bona fide art pieces at the same time as meeting educational outcomes. We are now using the interaction to explore questions about the nature of collaboration and this will be the focus of the new presentation.

Dacia Herbulock, Alexander Heyes, John Kerr, Dr Rhian Salmon

### **When scientists get media savvy: Evaluating efforts to media train researchers**

Over recent years, the Science Media Centre (NZ) has expanded its science communication training activities for researchers in an effort to encourage improved interactions between scientists and the media. To evaluate the impact of these activities and other SMC resources, we conducted a survey of participating researchers and media professionals.

The survey also included questions about broader attitudes towards science (for journalists and editors), and media and public communication of research (for scientists) within participants' respective organisations.

Researchers surveyed reported increased confidence, ability to communicate more effectively and largely positive experiences with media following the Science Media SAVVY workshops. Most have ongoing, recent interactions with media and report high willingness to respond to media queries. Many identified positive career impacts resulting from engagement with media, including new research collaborations.

Media surveyed reported largely positive attitudes to science and demand for more science-related content within newsrooms. Environment, health and technology/innovation were the most popular areas of interest, with high interest in science-related content overall.

With several hundred researchers having attended Science Media SAVVY workshops, the results will inform future

development of the programme and offer valuable insights for the science sector's media and communication training efforts.

Dave Warren, Esther Haynes, Geoffrey Weal and Noah Hensley

### **Science for Supper, a model for undergraduate community engagement.**

Science for Supper is an MBIE funded project to engage with school children and whanau through evening based hands on activities. The activities were based on ideas developed by the chemistry and physics outreach coordinators and developed by two PhD students into engaging 2 hour sessions around 'light and colour' and 'energy'. The project also allowed undergraduate students an opportunity to take part in community engagement, something that can be difficult to timetable.

The presentation will outline the project, lessons that were learnt about how to run a successful session and finish with the thoughts of the two PhD leaders and some of the undergraduate participants about their experiences.

Derek Williamson, Andrew J Martin, Tracy Durksen, Julia Kiss, Paul Ginns

### **Surviving the Zombie Apocalypse; a popular culture lifestyle improvement course**

The Museum of Human Disease ran a program entitled "Surviving the Zombie Apocalypse" to engage families and youth audiences in understanding the implications of health decisions from hand washing to cannibalism. This paper will present the results of several investigations carried out during the program looking at the effectiveness of the event in impacting science valuing, motivation and health decision making and lessons learned about future Museum programs.

### **Elizabeth Connor, Wendy Boyce Taking the sting out of freshwater management**

The health of our waterways is one of New Zealand's most complex and pressing issues, affecting our environment, economy

and way of life. Efforts to come up with solutions that meet the needs of all the stakeholders are often fraught with conflict as strong opinions and values clash. Regional council staff who have the job of bringing together different views and generating solutions often bear the brunt of this.

In our presentation Wendy and I would like to present some highlights from our workshop series helping regional council staff to develop positive productive collaborations in the face of conflict and charged emotions. The resources were developed in partnership with the Ministry for the Environment and toured around Regional Councils across New Zealand in 2015.

Our approach is all about empathy - understanding the perspective of others and listening before giving your opinion. This might seem obvious but it's surprisingly rare to see. Drawing from our experience in community engagement and audience-focused communication we have developed a set of simple tools and frameworks to 'operationalise' empathy in the field. We use story to understand different perspectives, emotional diagnostic tools to identify audience triggers and metaphors to communicate in an audience-focused way.

### **Emily Hall Fight like a Physicist**

In 2013, I worked with Year 12 and 13 high school students teaching Physics concepts through karate. I used this work, workshops to the public at 2014 New Zealand International Science Festival, and a survey of Physics knowledge amongst martial artists for my Masters of Science Communication thesis (2015). Presently, I have been working in a Year 11 Physical Education class to teach them Physics practically during PE. Year 11 is the year last year of compulsory Science education in the school that I am working with so interventions in this year can help encourage students to choose Science as an option. This work was encouraged by the school as they participate in Sport in Education (SiE) (an initiative of Sport New Zealand) and also the Active Education program which grew from the SiE project. The students were pre and post tested in common misconceptions based on the Force Concept Inventory. By November, I

will have had two groups of approximately 20 students through the karate unit and be able to compare their results to pre and post testing (beginning and end of year) that is being done with the entire Year 11 cohort (approx. 80 students).

**Emma Schranz**

### **'I am not the anomaly' - An exploration of communication received by atypical breast cancer patients during their treatment in New Zealand.**

The world of breast cancer is pink, female-centric and aimed at the older demographic. Whilst we must communicate effectively to the majority, these characteristics do not represent everyone diagnosed with breast cancer in New Zealand (i.e. Maori/Pacific, men, pre-menopausal young women and women without children). Research shows the failure to include, thus inadvertently exclude, patients who fall outside of the majority results in a significantly negative influence on clinical and psychosocial outcomes.

NZ Breast Cancer Foundation statistics show approximately 20 men and 400 women under the age of 44 are diagnosed with breast cancers each year, and yet these atypical patients are largely unrepresented in current breast cancer communication campaigns. With diagnoses figures increasing by approximately 18% in New Zealand over the last decade alone, there are simply too many outlier patients for this issue to remain unaddressed.

By exploring the experiences of support service and medical professionals, this talk highlights the gaps in current breast cancer communication and encourages more effective models of knowledge exchange and positive inclusive communication to atypical patients. The aim is to ensure that no further patient receiving breast cancer treatment in New Zealand feels isolated because the communication they receive doesn't pertain to them.

**Fabien Medvecky, Joan Leach**

### **The ethical norms of science communication**

What makes science communication moral? Science communication is often presented as having a special moral role to play in society, but what makes science communication moral and what might it mean for science communicators to act ethically? This paper will review the various ethical norms that play into science communication, from the norms of science to the norms of communication to the norms of journalism. We will discuss what each of these norms demands of science communication before considering where science communication might draw its ethical grounding from? We will then discuss these various ethical norms for points of tension and for points of convergence, and draw on this discussion to suggest what we might want from an ethical framework for science communication.

**Francis Wevers**

### **Building Science Communication from the ground up**

Describing the development of the Sir Paul Callaghan Eureka Awards, the Junior Eureka Pilot Programme and the Middle School Programme and the Eureka Alumni Trust; achievements to date and introducing a presentation from the 2016 Sir Paul Callaghan Eureka Premier Award Winner.

**Gary Rushworth**

### **Oral history can inspire participation in environmental projects**

Regulatory authorities use scientific data to make important decisions on environmental issues. This process is poorly understood by the general public. However, scientific approaches which involve local communities can improve decision making. For example, a community led oral history project in the UK investigated perceived threats to the sustainable use of a popular lake. This was achieved by interviewing a wide range of stakeholders, including: scientists, businesses, conservationists, residents, and regulatory authorities. Archived materials (e.g. newspaper

cuttings and photographs) were also used. While oral history places current conditions into context, quantitative approaches are often required. Citizen science can provide useful data while developing good working relationships with communities. For example, citizen monitoring projects have reported pollution incidents to regulators. In New Zealand the Cultural Heath Index for Rivers and Streams utilizes citizen science and oral history approaches. The strong oral tradition of iwi (tribes) is used to describe the cultural importance of different components of ecosystems (e.g. key species). This facilitates the setting of key objectives, such as improvements in water quality and access to traditional food gathering areas.

**Guy Frederick**

### **How where we are shapes who we are: The case of the Antarctic scientist**

The effect of place on identity is well explored particularly with respect to home environment and childhood development. This Science Communication Masters thesis presents a twist, exploring the relationship between people and their place of work. The research examines the role of Antarctica in shaping scientists who work there, questioning the current paradigm where science as a field of enquiry is largely considered independent of people and place. The research method involves a two-stage process of scientists writing a letter to Antarctica, supplemented by interviews, and identifies three primary themes defining Antarctica as a place: Community, Connectivity and Clarity. A research-informed artwork operating as a "field handbook" forms the creative component of the thesis. A follow-on project in 2017 will gather postcards written TO Antarctica, and invite wide interaction from those working in Antarctica to share their personal stories. These reflections, accompanied by photographic portraits and filming of the participants, will gather impressions and insights of what the continent means to those who live and breathe it, collectively telling a story of Antarctica's contemporary human experience.

Heidy Kikillus

### **Cat tales: the social side of an international citizen science project exploring the movement and management of cats**

"Without cats, there would be no reason for Facebook" – this is just one of the answers that we received when we asked New Zealanders to tell us their cat stories. Cat Tracker is an international citizen science project investigating the movement and management of pet cats. It was established in the USA and has expanded through collaborators to other countries. In New Zealand we have run a social survey alongside the GPS tracking of pet cats. The social survey has explored attitudes towards and management of domestic cats, including an open-ended section where participants are encouraged to "tell us your cat story". Previous social surveys on urban wildlife have shown that the stories people tell about animals can reveal a great deal about the nature of their affectional bond with animals they know as individuals. Conversely, stories can also reveal negative attitudes and concerns about management practices. This talk will highlight some of the themes that emerged from the cat stories, from adventures of individual cats, public attitudes towards cats and their management, and the story of how the information collected has influenced policy on cat management.

Hoani Langsbury

### **Inter-generational Research – RFID Tagging of Pilots Beach Penguin Population.**

Blue Penguins are nesting at Pilot's Beach but there is limited information about population structure and reproductive success. Some of the questions we have are; How many pairs are nesting at Pilot's Beach? What is their annual breeding success at Pilots Beach? What husbandry or species management opportunities can be gained from having accurate data on individual Little Penguins?

With the help of the community and students supported by our Participatory Science Platform (PSP) funding, the Pukekura Trust has committed to tag the entire population of Little Penguins that nest or fledge at Pilots Beach forever. A research initiative with its roots in inter-

generational thinking! Statistically this means no assumptions or inferences as we will track every single bird in the colony.

Hoani will outline the Trust's participatory science journey in this presentation and how the community is integral to this project.

Jackie Le Roux

### **Using a self-reflective approach for environmental reporting: learning while doing**

The Ministry for the Environment and Statistics New Zealand collaborate to produce national environmental reports as set out in the Environmental Reporting Act 2015. This conference presentation will use our two recent reports to discuss our self-reflective practice of continual improvements to better meet our customers' needs.

Our first whole-of-environment report Environment Aotearoa 2015 was targeted to all New Zealanders. We've since engaged with customers to narrow down our target audience and refine our understanding of what information they want and how they want it communicated to them. Our prioritised customers have a range of technical skills and want information communicated in a variety of ways, ranging from summary statistics to raw data.

We will share how we've begun to incorporate these learnings into the Marine Domain Report 2016, which will be published in October. It encompasses four products with different levels of detail and specificity:

- an infographic, providing a high level visual summary of the key points
- a pdf report, which tells the whole marine environmental story
- webpages which focus on each measure that makes up the story
- datasets and metadata, including information about the quality of data and methodology.

Javiera Cisternas, Phillip J. Bishop, Luke J. Easton, Nancy Longnecker

### **Engagement through experience: participatory research for native frog conservation in New Zealand**

Community relations and public awareness are recognised as key goals for effective native frog conservation in New Zealand. However, how do you communicate the importance of conserving an animal that has cryptic colouration, nocturnal habits and a limited distribution? We present a participatory research project between the University of Otago frog research group and 23 high school students from the Northland region. Using a citizen science framework, the participants attended two consecutive days of training sessions, followed by a fieldtrip to collect microhabitat data for *Leiopelma hochstetteri*. Results follow similar patterns reported for other wild populations of this species, validating the use of these data for management purposes.

To explore participants' perceptions, we conducted a mind map activity before and after the project. The data suggest that the field experience generated an emotional link with the frogs and promoted greater depth of participant understanding of collaborative research (e.g. "communities can do research" and "everyone working together for a common cause").

This project exemplifies the feasibility of generating useful natural history information for frog management while empowering participants as ambassadors of amphibian conservation through their experience of being scientists for a day.

Jean Fleming, Sue Blaikie, Paul Callister, Gay Hay, Jan Nisbet, Glenda Robb, Stephen Whitton

### **Engaging and retaining volunteers in the Kapiti Biodiversity Project**

The Kapiti Biodiversity Project aims to restore habitats and wildlife on the Kapiti Coast, between Pukerua Bay and Raumati South. This area includes a working farm in the Queen Elizabeth Park and on Whareroa Farm Reserve. The Ministry for the Environment have funded the project, which includes pest control for the whole area, and monitoring of bird,



reptile, weta and native fish numbers. The three main groups involved in the project already had a core set of volunteers, but new volunteers from the local communities have been recruited. Volunteers work on trap construction and monitoring, bird counts, seed and cutting collection and potting on of purchased plants, as well as planting out. This presentation will discuss who our volunteers are, their incentives to participate and the skills and expertise they bring to the project. Although scientific advisors are available to guide participants, it is likely the volunteers on the ground will ultimately determine the success of the project.

Jean Fletcher, James Higham,  
Nancy Longnecker

### **Visualising the future: Use of short stories to imagine climate change futures.**

Stories can provide concrete and contextualized mental images of what different futures could look like. To test the impact of stories on people perception of climate change risk, 401 participants read either a short story or textbook-like narrative as part of an online survey which ran from February 25 to May 5, 2016. Both narratives were set in the year 2050 and described a New Zealand that had transitioned to more sustainable methods of travel.

Preliminary results suggest that both the story and textbook-like narrative were able to improve people's self-reported ability to visualize the year 2050. There was no correlation between people's ability to visualize the future and their climate change concern, perhaps because sixty-five percent of respondents reported that they were already very concerned about climate change. About 20% of participants either incorporated elements of the narratives into their post answers or commented wishfully about the narratives' world. Implications of this research in terms of how it could be used to promote sustainable lifestyles will be discussed.

Jennifer Metcalfe

### **Climate champion farmers, integrating deficit, dialogue and participatory science engagement**

My paper explores the Climate Champion program of farmers to look at the relationships between the farmers, scientists, and the representatives from research and development institution who participate in or support the program. I examine the discourse of these participants during an interactive workshop to determine the styles of science engagement that are taking place.

I used a thematic content analysis of the data to determine the nature of engagement between the three groups compared to science communication models of deficit, dialogue and participatory engagement. For major themes emerging, I used a lexical qualitative analysis to look at how patterns of words and phrases describe the motivations, nature and type of engagement. Further, my paper examines how each group of actors (farmers, scientists, R&D funding agency representatives) perceives the other and whether there is also any reciprocity in perspectives.

Joan Leach, Will Grant

### **The Limits of Citizen Science**

Citizen Science—both as an idea and a fundable agenda for doing science publically—is popular internationally. The science communication research community is making great strides in analysing what works and what doesn't inside citizen science projects and developing evaluation criteria to help guide the development of projects. But questions linger about what it means to be a 'citizen science' project vs just another research project. Discussions about the quality of citizen science projects are swamped by the multiple aims and goals of participants as well as funders. This paper looks to three limit cases of citizen science to clarify the fundamental features of what is called 'citizen science' and to develop a normative framework for evaluating quality in citizen science projects. By looking at limit cases—extreme examples—we pick out what we argue are some of the essential features of citizen science and clarify how they should be

evaluated. The three cases we analyse are the National Indigenous Genomics Project in Australia, Infrasound research, and citizen science before the L'Aquila earthquake. Each case brings out a series of principles and characteristics that trouble an easy categorisation of citizen science but may encourage better science communication in this burgeoning area.

Judith Bateup

### **Raising Scientific Participation in Secondary Schools**

There is concern over the decline in young people choosing a path towards a career in the sciences. This has been linked to decreasing numbers of secondary school pupils taking optional science subjects. Over the last fifteen years a programme of Microbiology and Immunology outreach has been developed to address this issue. During this time the programme has had many different forms, aiming to optimise competence and confidence in science, covering workshops for teachers through to presentations in the classroom from year 2 to year 11. A focus on the year 11 curriculum has resulted in thousands of secondary school pupils experiencing science in the university context. The journey involved in developing this outreach programme to promote awareness, understanding and participation in science in secondary schools will be presented.

Julian Thomson

### **GeoTrips - a new website for locating and exploring New Zealand's geology and landforms**

GeoTrips is a GNS Science initiative that shows geology enthusiasts where they can go in New Zealand to explore the landforms and geological outcrops. The content is co-created by the geoscience community and is aimed at non specialists such as teachers, students, travellers and the general public.

The aim of the site is to encourage investigation and discovery in the natural environment, and the information provided for each 'GeoTrip' includes location, images, background information, 'what to look for', access, safety and links for follow up.

Users will be able to rate the GeoTrips, comment on them, and discuss their discoveries and observations.

In this presentation, Julian Thomson, the outreach educator and science communicator for GNS Science, will explain the background to this project and opportunities that it offers to gather New Zealand geological information into an easily accessible and user friendly online platform.

Kate Hannah

### **Science Capital and 'starting thought from women's lives': new ways of thinking about 'the problem with girls' in science**

In June 2015, the British Nobel Prize-winning biochemist Tim Hunt described his "problem with girls...you fall in love with them, they fall in love with you, and when you criticize them, they cry." Science has a 'problem with girls' – the under-representation of women in science, technology, engineering, and maths - which typically couched as critique of girls' and women's choices, and a tendency to denigrate stereotypically 'feminine' or female pursuits, appearances, presentations, and representations. New approaches to the understanding of public engagement with science, and feminist theoretical methodologies can shed light on critical faults with current science communication discourses. Drawing upon British and New Zealand case studies, this paper suggests practices and methods that move science communication beyond deficit models, into a grounded praxis that starts thought in girls' lives.

Léonie Rennie, Sue Stocklmayer, John Gilbert

### **The need to know: How adults find out about relevant science and technology**

This paper is part of a larger study that explores the range of ways in which adults set out to find information about issues that arise in their lives. Using a case study approach, we investigated how adults who did not have the requisite scientific background responded to the need to find

relevant and understandable information to address their needs and concerns about a personal issue. We discuss the range of resources that were sought and how they were assessed, and the value of these resources in assisting the adult to resolve their issue. Using a cross-case analysis, we developed a framework to describe the patterns of learning and we identified where and why resource provision proved unsatisfactory. In this presentation, we will outline the findings for a subset of the case studies with a particular focus on medical and environmental issues. We draw implications about the quality and accessibility of the resources and then make recommendations for the improved communication of science among these resources.

Manon Knapen, Fabien Medvecky

### **Perception of homeopathy by homeopathy users in New Zealand**

The efficacy of homeopathy is subject to controversies. While the scientific community says that homeopathic remedies are not scientifically proven to work, there is an increasing number of users worldwide. As far as New Zealand is concerned, there is little information about homeopathy users or what their view of homeopathy is. To remedy this gap, we carried out a survey designed to get insight into who uses homeopathic remedies in New Zealand and their views on the efficacy and scientific basis of homeopathy vis-à-vis conventional medicine. This paper presents the results of our survey and discusses implications for NZ's health communicators.

Monica Peters

### **To illustrate or to investigate? Revealing the art-science nexus through line and light.**

The nexus between art and science is an indeterminate space that has been variously investigated and conceptualised. Botanical illustrations, for example, historically provided a means to simultaneously aid species identification while also showcasing the skill of the artist in depicting the floral wonders of the world. Photography has long played an

intriguing role in the art-science interface on account of the chemistry of producing imagery as well as the increasingly fine scale at which images can be produced. This presentation draws from over a decade of art practice by the author, primarily in the form of ephemeral works on paper: drawings, prints, artist's books and photograms. The works centre on better understanding both the structure of nature and the nature of the structures (i.e. science) we place on nature in order to find meaning and coherence. Synergies and contrasts with the practices of other artists who also traverse the disciplines of art and science will also be discussed.

Nancy Longnecker, Andrea Liberatore, Eric Spurr, Catriona MacLeod

### **Who Participates in New Zealand Garden Bird Survey and Why?**

The New Zealand Garden Bird Survey (NZ GBS) is a citizen science project that provides a snapshot of numbers of bird species across NZ each winter. About 3,500 people participate each year. Who are they, why do they participate and how do they fit into NZ's conservation and citizen science landscape?

Demographics, backgrounds and motivations of NZ GBS participants are presented from a January 2016 questionnaire which produced over 2100 responses from current and past contributors. Compared to the NZ population, respondents are disproportionately female, with tertiary education and older, with 85% of questionnaire respondents aged 50+ years. Respondents self-reported expertise regarding birds on a scale from novice to expert and included the entire spectrum, a finding corroborated by examination of discussions on a related Facebook group.

Reasons for participation and benefits include responses such as "I am keen to help provide information that can be used for conservation" and "Made me more aware of which bird species were present in my garden". Views and values of respondents are shared in a companion talk at SCANZ. A better understanding of participants, including individuals' motivations for participation can help target future recruitment and support

existing participants through a community of practice.

Nasreen Mitu

### **Project Tiktaalik: Using cartoon and comics as a science learning tool**

This session will introduce PROJECT TIKTAALIK, a science education project from STE(Arts)M perspective, based in Bangladesh. We recognize the lack of attractive local supplementary science materials and textbook based science education in Bangladesh. With a view to popularize Science beyond formal classrooms, this project was launched which aims to develop printed and web-based science learning materials in cartoon and comic format that meets local and global needs. Considering the wide popularity of cartoon and comics among kids, this project particularly gives a special emphasis on Science comics. Hence, the first book from this project titled as 'Newton's three laws' has been published in February 2016 as the first science comic in Bangladesh. Also, one most circulated teen magazine 'Kishor Alo' (have monthly around 60 thousand circulation) has started to publish comic pages regularly under this project. Right now, we are working on web materials and more upcoming publications of PROJECT TIKTAALIK. Besides that, we are planning to extend our focus towards interactive games and other apps as well.

Nicole Miller

### **A Wellington Marine Citizen Science Platform**

The Wellington Harbour and rugged South Coast with the Taputeranga marine reserve are iconic Wellington landmarks and contribute to a strong and diverse marine community. Divers and snorkelers in particular have a privileged view of an otherwise invisible world and can engage the wider public through photos, videos and other records.

Observations and data collected by volunteers and lay persons add up to a snapshot or baseline of the marine environment. Over time systematic and careful observations provide a powerful tool to showcase even small and slow changes in the marine environment that would otherwise go unnoticed, a

phenomenon often referred to as 'shifting baseline'. Citizen science has become a powerful tool internationally for engaging marine enthusiasts and the public in marine projects.

With marine experts, science communicators and a range of organisations based in Wellington there is an opportunity to engage citizen scientists from young to old, marine experts, and the wider public in collaborative and innovative ways.

Recreational divers, supported by the local Underwater Club have established a citizen science project monitoring giant kelp as an initial step towards a wider marine citizen science platform.

Penny Fairbrother

### **Telling stories that resonate and influence... and how to avoid the dreaded "So what?"**

Greater Wellington Regional Council's (GWRC) Environmental Science Strategy has a vision to empower decision-making through science. The third goal of this strategy is to engage and empower stakeholders and community. We aim to do this by:

- Listening and responding to the needs of our stakeholders and communities
- Being forward thinking and innovative in the way we communicate science, and
- Translating our science into stories that resonate with people.

To tell an effective story, the context and why it matters (the "so what?") is crucial – not only to understanding the message of the story, but also whether it resonates with the audience and influences their behaviour.

To make this happen, councils need staff with the commitment and mandate to work across organisational and other boundaries. For GWRC this is being achieved.

Rachel Griffiths

### **Science and rural communities - engaging farmers at the 'water' table**

Wai Care is a community based water quality monitoring 'citizen science' programme that has been in existence

since 2000 in the Auckland Region. Most recently the programme has been a key engagement tool in the rural advisory space to engage with landowners and rural communities around water quality issues. We will share our stories, learnings, resources, and outcomes (so far) from using the Wai Care model.

Rebecca Priestley

### **Artists and scientists on the Kermadec campaign**

In 2015 the New Zealand government announced its plans for the Kermadec Ocean Sanctuary - a 620,000 square kilometre no-take zone surrounding the Kermadec Islands, which lie between New Zealand's North Island and Tonga. This decision was the result of a five year campaign, led by Pew Charitable Trusts, WWF and Forest and Bird. As part of this ongoing campaign, Pew supported artists, scientists, and science communicators to travel to the Kermadecs with the New Zealand military. This presentation looks at the dynamics between artists and scientists - and the military - on the Kermadec campaign.

Sheryl Miller

### **By community for community: the story of a Whaitua committee**

The Awarua-o-Porirua Whaitua (TAoPW) committee was established in December 2014 as part of Greater Wellington Regional Council's innovative collaborative approach to managing the region's freshwater resources. There are four phases of work to be completed; TAoPW committee have completed phases one and two - the introduction and information gathering phases. They are now in phase three which is identifying community values and attributes that will feed into management options.

The committee have been out and about getting the lie of the land, heard the history of local iwi, been inundated with all types/forms of information on science, society and infrastructure with an intent to better understand the complexities of the catchment. This process has in itself revealed challenges with the dissemination of sometimes complex information to inform decision making.

One of the committee's crucial tasks has been connecting the community with the science, these challenges will need to be further rationalised to support informed engagement and input into the decision making process.

**Siana Fitzjohn**

### **The Collision of Science and Civil Disobedience**

The escalating climate and ecological crises have created a space where science and activism align. My research explores the ways that science and activism can inform, legitimise, or delegitimise one another. While scientists attempt to convey the urgency of environmental conditions to society, activist groups attempt to intervene in political, corporate, and social systems to change our behaviour. Activists often engage in civil disobedience to highlight and combat harmful operations. These controversial acts of civil disobedience can push matters of scientific concern into the limelight. This creates an opportunity to raise public consciousness and understanding of biosocial issues. The way that science is incorporated into the discussion of civil disobedience may have implications for how scientists and activists can best affect change in this irreducibly complex world.

**Sophie Fern**

### **When a science story becomes a cultural narrative: the case of the Chatham Island black robin.**

In the 1980s, the Chatham Island black robin was the rarest bird in the world, with only five individuals living precariously on one island.

In a 2016 survey asking whether they had heard of the robins, 75 percent of respondents said that they had. And, the responses showed, that if respondents had heard of the robins they knew the whole story including details such as the names of the main actors. It seems that the narrative of the conservation of these birds has transcended the sphere of science and has become embedded into the wider New Zealand cultural narrative.

Using the story of the Chatham Island black robin as a case study, this paper discusses this transition and offers comment on other

science stories that may follow a similar path and eventually also become cultural narratives.

**Steve Pointing**

### **The Sci21 open source science video platform**

The Sci21 video series has proved to be extremely popular with the general public, with over 20,000 kiwis every week watching our on demand content. The Sci21 'brand' has recently diversified to allow young and emerging science communicators to upload self-made content to a site that facilitates high viewing metrics, and other initiatives include instructional videos on how to perform science experiments and even a foray into science comedy. This presentation explains the processes of assessing market demand, project setup, implementation and ongoing improvements based upon interaction with the public. These insights should help others that may be considering a similar venture.

**Steve Ting**

### **Platforms, Puzzles and Pixels Value of Video Games to Science Communication**

How would you like to craft your own mansion in the sky? Maybe explore and try to restart an ancient ecosystem? Or even run and maintain your own space program?

In 2013 Grand Theft Auto 5 became the fastest entertainment property to hit \$1 Billion in sales...after only three days, destroying many previous records that were traditionally held by motion-picture films. With Hollywood freaking out and more and more people being introduced to games via mobile technology, the Age of Video games as our dominant form of entertainment has arrived. Should we take a step back from our gaming devices (or busy lives as science communicators) and ask ourselves if some of these mainstream games have any value to the world of science communication?

Steve will examine their potential value by navigating through the violent, charming and sometimes downright confusing world

of video games. From mainstream titles to indie games, he will give examples of unique games and gameplay that should leave any science communicator excited about the future.

**Tara Roberson**

### **Hype at work in public science**

Simplified and sensationalised science, or hype, appears to be inevitable in science communication with everyday examples extending from viral social media accounts and 'breakthrough'-themed press releases to the mediated claims of the celebrity scientist. While research on this subject has developed our understanding of how hype occurs there is uncertainty as to whether we should encourage its use (Nerlich, Elliott, Larson, 2009) (Caulfield, 2005) (Nielsen, Jøregensen, Jantzen, & Christensen, 2007).

To amplify to this uncertainty, opinions around the use of hype are diversifying. Some tension exists around the popular science media account I F\*\*king Love Science with some writers labelling it a 'failure' of science communication (Koberlein, 2015). In other examples, press releases (Sumner et al., 2014), press officers (Meyer, 2015) and non-specialist journalists (Willis, 2015) are put forward as sources of hype.

To add to the confusion, scientists and science communicators must also consider the basic need for publicity for research in order to justify public funding and to raise awareness within research institutions that have an increasingly commercialised model of operation (Nerlich, 2012). Does the use of hype affect public support for science? Should we be concerned about its prevalence in communication tactics?

I am investigating how hype occurs in science communication by examining NASA campaigns, which popularise science in the process of reframing information for select audiences (Hilgartner, 1990) (Nisbet, 2007) (Hellsten & Nerlich, 2008). In this paper, I offer a snapshot of 'hype at work in public science'. This snapshot both answers and raises further questions for strategic communication in science demonstrating that hype is not simple and it will not simply go away.



Toss Gascoigne

## How much science does an ordinary citizen need to know?

How important is it for them to know whether the sun goes round the Earth, or vice versa? To understand the difference between a bacterium and a virus? To be able to explain how aeroplanes fly, or the causes of climate change? Or to know the Second Law of Thermodynamics (as CP Snow suggested)?

Do they need to know facts, understand processes, or be good at using Google? In selecting numbers in a lottery, is it important for people to know that the chance of five consecutive numbers being drawn from the barrel is exactly the same as five random numbers?

Is an appreciation of the scientific method enough?

Is ignorance of basic science and the way scientists operate causing resistance to the introduction of policies on climate change, vaccination and fluoridisation of water?

The session will present the results of an international survey which asked respondents to say whether they thought knowing scientific facts and have some understanding of the scientific process is important. It then invited them to expand their answers by nominating the factual knowledge and the aspects of the scientific method citizens needed.

The results have interesting implications for the work of science communicators.

Vibhuti Patel

## Can entrenched attitudes be changed? Animal agriculture, sustainability, and overcoming preconceptions

The meat industry is a driving force behind almost every category of environmental damage; deforestation, water use, pollution, and species extinction. Perhaps the most significant is the magnitude of its role in the greatest and most pressing issue of our time: climate change. Meat production emits more greenhouse gases than the entire transport sector, which speeds species extinction and disrupts climate on a global scale. In fact, the literature agrees that the 2°C climate target will be impossible to meet without a global shift towards a plant-based diet.

Despite this, public recognition of the livestock sector as a significant contributor to environmental degradation is low, as the unpopularity of meat reduction contributes to a huge lack of coverage among the media and NGO discourse. This hinders our potential for mitigation – and presents an interesting opportunity for research.

Using an experimental approach, I investigated audience response to messages about animal agriculture framed as an environmental issue. My results indicate that the environmental frame is novel, valuable, and has the potential not only to alter attitudes, but also habitual behaviours. This raises several avenues for further research and real-world application, to contribute to a healthier environment for all of us.

Warren Hurley

## Science communication - a tour guide's perspective

More than 3 million international visitors arrive in New Zealand every year. Many of them use the services of a tour guide to add to their experience of the places they are visiting. When a tour guide isn't talking about history or making bad jokes, then they are most often talking about science. Theories and data from geology, botany, ecology, geography, agricultural science, meteorology and much more are presented to visitors in ways that they - apparently - readily accept. How do tour guides do this? Can other science communicators adopt these practices?

Zarrin Zardar

## What scientists think about public? Analysis of Iranian Biotechnologists point of view about public and its relation with science and technology

This paper aims to analyse how Iranian biotechnologists think about public and answers two main questions: what is biotechnologists' vision about position of public in medicalization of science and technology and what their idea is about public understanding of science.

To achieve this goal, data gathered by semi-structured in-depth interviews with 14 biotechnologists selected through non-random purposive sampling and snowball

sampling, June – July 2015, were analysed using thematic analysis. Biotechnologists selected by two main criteria: being a prominent scientist in national scale (pioneers and recent scientists who had a remarkable achievement in their field) and ongoing interactions with media.

According to the findings of interview section, Biotechnologists' point of view toward relation of the public and science coincides with "public understanding deficiency Model". Their source of knowledge about public understanding of biotechnology is life experience and other countries experience. Most of interviewed scientists aren't interested in direct contact with public. They ignore public's role in science and technology nevertheless, they are looking for public attention and advocacy. It seems that this challenge rooted in contradiction between traditional values of scientific society and the need of public support for research projects.

# Panels and workshops

Emma Burns, Barbara Anderson,  
Robert Hoare, Alison Greenway

## **Moth balled biological heritage: Cracking museum collections to helping halt biodiversity decline**

Internationally moths and butterflies provide the most robust and convincing evidence for biotic responses to environmental change, land-use change, habitat loss, climate change and the effect of changes in the quality and quantity of artificial light on biodiversity. But in New Zealand our understanding of biotic responses to global environmental change has fallen behind. A critical lack of historic distribution data exists and without accurate historic data of where species existed we cannot detect changes in species distributions through time and evidence environmental changes. What valuable historic data that does exist is lying latent in many of the Museum and CRI collections around New Zealand. These identified and dated specimens represent a glimpse into the past ecosystem that is irreplaceable.

There are three main goals within the Moths and Museums plan, firstly to liberate the data in collections across the country in order to build a picture of New Zealand's ecological past. Secondly, this data set will inform the basis of a nationwide recording scheme to monitor change into the future. Pivotal to the success of this project, the third goal is to generate involvement with individuals and communities in moth monitoring and cracking the collection data to help reaffirm the importance but declining understanding around the culture of collecting. Last century's citizen science de jour and now vital window into New Zealand's biological past.

Jacqueline Dohaney

## **Science communication education and training: How are we preparing the next generation of science communicators?**

I would like to propose a panel discussion which discusses the important topic of science communication education and training. Science communication (as a field of study and practice) is still a relatively new discipline. Undergraduate and graduate teaching is available in only

select few institutions in New Zealand. Additionally, professional communication training of scientists, while available, is still not a common practice for most scientists. I would like to bring together a diverse group of science communication teachers and researchers to discuss the current state of education in our country.

Kimberley Collins, Peter Dearden

## **Taking science to the people: Pop Up Science and Lab-in-a-Box**

Positive interaction between science and the public is key to improving science literacy and support for STEM in society. Such positive interactions are critical to empower people to make choices about the tidal wave of science-related issues that will affect future society. Science and scientists must be accessible, and present, rather than sequestered in research and educational issues.

Here we will discuss two platforms for engaging science and society that aim to take science to people and places that are hard to reach. Pop Up Science and Lab-in-a-box both aim to engage with people in their communities, ensuring that science and scientists are present to support teaching and research.

Penny Clark-Hall, Mike Manning

## **Ground Effect - Making Ag Science relatable**

Ravensdown's agricultural science publication Ground effect, which goes out to farmers, shareholders, government and industry covers practical agricultural science topics to innovative science and engages industry leaders, farmers and scientists alike to share their stories, advice and lessons learned.

It's designed with the reader in mind, using info-graphics and powerful imagery to help tell the story.

I propose we present/discuss the magazine's impact in it's early days (up to edition 3) as a panel with our Chief Scientific Officer, Dr Ants Roberts, General Manager of Innovation, Mike Manning and Editor, Penny Clark-Hall.

You can find an online downloadable version below.

<http://www.ravensdown.co.nz/in-the-community/ground-effect-autumn-2016>

Rhian Salmon

## **Public Engagement in the National Science Challenges – what's happening and why?**

The National Science Challenges provide government funding to "researchers to tackle some of the biggest science-based issues and opportunities facing New Zealand". A significant component of this involves "engagement", to ensure that the research does indeed end up benefitting New Zealanders. It is, however, up the Challenges themselves to figure out how to do this. A wide range of approaches are being planned, including utilising traditional media and outreach mechanisms, dialogue activities, exhibitions, art-science collaborations, education programmes, citizen science, and community focused co-production initiatives. This panel will bring together people involved in these activities from a range of perspectives to delve deeper into what exactly is happening, how science communication researchers and professionals can get involved, and what impact the activities might be having.

Tim Bishop and Alex King

## **North East Valley Living Rooms Project - Participatory Community Science**

The Valley Community Workspace is hosting a community science project to better understand how we can be warm and healthy in our homes, at an affordable price. This topic has a lot of interest in our North Dunedin community! We want to understand how to achieve good temperatures and to control dampness, to promote good health and prevent mould. The building industry may have us believe that this is a solved problem, but our everyday experience, and BRANZ research, tells us otherwise. We are starting with a study of indoor temperatures and humidities experienced today in our community, and working with the local Makerspace to develop internet connected data loggers and data-driven home maintenance and upgrade analysis. We are bringing together curious minds, observing our heating and ventilation practices, and contributing to international research and the community. We include young people, single people, families, retired people and others.

Victoria Metcalf, Sarah Morgan,  
Craig Grant, Barbara Anderson,  
Hoani Langsbury, Andrew Innes,  
Jonathan Kim

### **Exploring the wonderful, curious world of Participatory Science**

In a world first, participatory science projects are now being trialled within New Zealand through the Participatory Science Platform (PSP). This is part of Curious Minds, a suite of new and existing initiatives recognising the importance of science and technology to New Zealand's future. Curious Minds contains four actions: enhancing the role of education, public engaging with science and technology, science sector engaging with the public, with the PSP as the integrating action. Within the PSP, communities are able to work on projects that are meaningful to them in partnership with scientists and educators.

What does participatory science involve? What projects are underway? How is it making a difference to people and communities? What are the lessons we have learned thus far from establishing a national pilot?

We will explore what Curious Minds and the PSP are in a panel discussion. We'll hear about pilot implementation from the National Coordinator, Dr Victoria Metcalf, and the perspective of regional implementation from the South Auckland and Otago pilot area managers Dr Sarah Morgan and Dr Craig Grant. Diverse PSP projects will be showcased, including by Dr Barbara Anderson and Hoani Langsbury, and they will share their experiences of citizen science communication. There will be ample opportunity for questions.

Jennifer Manyweathers, Mel  
Taylor, Nancy Longnecker

### **Why won't they just vaccinate? An emerging infectious disease risk communication workshop**

As new disease continue to emerge, adoption of risk mitigation strategies relies on clear, timely, proactive communication. However, discourse between various publics and authorities can become mired in distrust, resulting in outbreaks of increased severity and duration, wasted

resources, and lost opportunities for participatory risk mitigation planning and discussion.

This workshop, based on an actual emerging infectious disease outbreak spreading from animals to humans, examines differing worldviews of stakeholders involved, and provides a platform for discussion of the role of risk perception and authority.

Using real data, workshop participants will be divided into 5 stakeholder groups: scientists who develop a protective vaccine, the pharmaceutical company that manufacture it, vets who administer the vaccine, animal owners who elect whether to vaccinate their animals or not. Advancing through the disease outbreak scenario, stakeholders will receive progressively more information and be required to make key decisions and deliberate on communication approaches. A brief summary of the key stages of the communication surrounding the actual disease outbreak on which the workshop is based will be provided.

The principles considered within this workshop will be applicable to any discourse around risk and mitigation, broadening participants' understanding of possible approaches to risk communication.

Victoria Metcalf, Sarah Morgan,  
Craig Grant, Barbara Anderson

### **Participatory Science 101- designing participatory science projects**

Wicked problems face us and the world we live in. Science is central to both our daily lives and many of these global problems we face. In a world first, participatory science projects are now being trialled within New Zealand through the Participatory Science Platform (PSP). This is part of Curious Minds, a suite of new and existing initiatives recognising the importance of science and technology to New Zealand's future. Within the PSP, communities are able to work on projects that are meaningful to them in partnership with scientists and educators.

In this interactive workshop, participants will have the opportunity to brainstorm their own potential community science projects. Working through a series of fun group exercises led by National

Coordinator for Participatory Science, Dr Victoria Metcalf and with mentoring by those who have been involved in the PSP, including Dr Sarah Morgan (South Auckland pilot area manager), Dr Craig Grant (Otago) and those who have led PS projects, you'll get to explore the different elements of a participatory science project, understand the difference between the PSP and Unlocking Curious Minds funding streams and examine how to innovatively communicate the outcomes (citizen science communication).

# Performances

Derek Williamson

## **iHeart Music; engaging new audiences with a musical interlude of the heart**

In 2011 the Museum of Human Disease recorded visitors heart beats, played them to jazz musicians who improvised tunes for our audiences. This presentation will discuss the successes of this event and the follow-up web-streaming event to remote venues around Australia. What did we learn, whose life did we save and who did we reach?

Toss Gascoigne, Jenni Metcalfe

## **The Two Cultures, and science communication**

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 ruling classes tended to be educated in the humanities. Without any understanding of science, they were ill-equipped to frame policies that would lead to a prosperous modern Britain.

Their ignorance of science was compounded by their lack of interest, and their contempt for scientists who 'lacked culture and education'. Snow wondered how many of them could explain the Second Law of Thermodynamics. The Two Cultures ignited a controversy that rages today.

The proposal 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? Was this the beginning of the noble profession of science communication?

The play is in development, and the proposal is for a 45 minute session presenting a substantial extract to be followed by a discussion. Some of the cast have already been appointed, others will be recruited from conference participants.



# Posters

Ali Rogers and Jenny Rock

## Community Co-Creation of Museum Exhibitions

Co-creation is an emerging field within science communication in which the community is afforded control over traditionally specialist processes such as exhibition creation. This allows the community to communicate science themselves, increasing engagement through investment and ownership. This poster presents findings on the process of community co-created science communication in the form of a museum exhibition. It describes the experiential implementation of two different co-creation projects which are used as case-studies. Findings presented demonstrate how much the process and outcome of co-creation can vary between projects, and highlight both the positive (e.g. encouragement of critical thinking in participants) and persisting challenges (e.g. definition of co-creation itself, and the expected roles of participants) of co-creation in the production of museum exhibitions. Resulting recommendations for museums intending on co-creating are also suggested based on the findings.

Brooklyn Le Comte, Te Aomihia Reedy

## Learning to kōrero science

Brooklyn and Te Aomihia from Whakarewarewa School have investigated a question with scientists from Scion. This poster shows the process and thinking, as well as what communication worked best for helping them work through this science process together.

Caroline Little, Natalie Balfour, Brad Scott

## Felt it? The evolution of century old citizen science with changing technology and communication practices for earthquakes

Citizen science is not a new development in the discipline of seismology but it has changed significantly over the last 100+ years. Since 1810, reports of personal experiences following earthquakes have

been used to determine the location of earthquakes and the amount of shaking around the world. New Zealand started collating reports from large earthquakes into maps following the 1848 M7.4 Marlborough earthquake. Initial reports were from personal accounts, such as drawings, letters and newspaper articles. After those, more systematic surveys were conducted to allow for continuity of reports and comparison between events. These reports lead to the development of the Modified Mercalli Intensity scale in 1931 that is still used today. As technology changed we moved from collecting surveys via the local Postmaster, to door-knocking surveys after an event and postal returns, to filling in forms on a website and more recently using mobile applications. However, with societies changing expectations and New Zealand's multicultural population we have recently developed "Felt it, Rapid" a quick, cartoon-based, reporting tool for both mobile and the web. This reduces lengthy forms to a few clicks or swipes.

Emma Harcourt

## Myths and Misconceptions about the Morning After Pill: What are people saying and why should we care?

The morning after pill (levonorgestrel) is a very safe and effective emergency contraceptive - but it arouses an intensely negative emotional response from the public, the media, and medical professionals. The stated rationale for this response is that there is allegedly no scientific consensus on how levonorgestrel works as an emergency contraceptive; to those who believe that personhood begins at conception, the idea that this drug might prevent a newly forming embryo from successfully implanting in the uterus is morally unacceptable.

There is little evidence that the morning after pill prevents a pregnancy if taken after ovulation, suggesting that the prevention of ovulation is the main and potentially only biological mechanism through which this medication acts as a contraceptive. My research is designed to assess whether the proposed mechanism of action truly is the cause of the intense

negative response to the medication, or if other factors such as religiosity, gender, or conservatism are to blame.

Saahier Parker

## The Development of new Indicators for the Measurement of the South African Public Understanding of Science

South Africa has seen 22 years of democracy that significantly changed the political and social landscape of this country. The RSA government has made significant efforts to correct the injustices of the past, ensuring equality for all, establishing economic reform policies and strategies of promoting equal access to services and resources. However, South Africa as a nation still faces many challenges including high poverty, unemployment and a drastic shortage of an adequately skilled workforce are just some of the many pressing issues inherited in the new South Africa.

It is widely accepted that science and technology plays a major role in the economic development, and eventual social development of a country. In South Africa, technology has a crucial part to play in economic growth, employment creation, social development, and democracy building, toward the development of a highly skilled workforce entrusted with laying the foundations of a globally competitive knowledge economy. However key toward harnessing the power of S&T remains understanding public support, understanding and attitudes toward science and technology.

This paper presents the results from the first nationally representative survey of the South African Public Understanding of Science. It further proposes the use of 6 new indices that provide additional insight to the evolving social landscape in South Africa and the challenges facing science policy makers into the 21st century.

Spiros Kitsinelis

### **Clicks for Ideas – Employing Artistic Photography for Communicating Science to the General Public**

A novel way for communicating science to the general public through artistic photography is presented here. The collaboration of a scientist and a photographer bringing together scientific ideas, science writing and the artistic view through a camera lens led to an original project presented to the Athenian public.

Susan Rapley

### **#365ScienceSelfies: Smashing stereotypes, one snapshot at a time**

Public perceptions of scientists can influence young people's decisions to pursue science as a career, and levels of trust in science disseminated to the public (e.g. Losh, 2010; Besley, 2015). Multiple social media campaigns, often in the form of "hashtags," have arisen recently. These campaigns can be in response to stereotypes and/or aim to address them with reality, by sharing images of real scientists working. Here, I will reflect on 6 months of partaking in one of these campaigns, the #365ScienceSelfies concept. Additionally, I will investigate whether this project (or others) may have altered perceptions about scientists through online polling. I will also suggest some future actions that such campaigns may employ to reach a relevant audience.

Susan Waugh

### **Museums as a place to connect citizens and science**

Museums in the 21st century are venues that foster enquiry and debate, covering social history, arts, cultural identity, and natural history topics among others, there is often 'something for everyone' in museum venues. As such, citizen science projects would seem a natural avenue to engage museum audiences with issues about our environment and biodiversity. I discuss how Te Papa uses its digital, events and exhibition platforms to connect with audiences on science topics, its use of citizen science forums, and lessons and outcomes from the last 5 years in this area.

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