

# An eye to the past, an eye to the future: The role of art in engaging with climate change in museum

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## ABSTRACT

One of the major impediments to understand and engage with climate change is the notion of it being an intangible process that occurs in elements and spatio-temporal scales that are largely inaccessible to human spatio-temporal scales. In this paper we argue that art can engage and inform publics about crucial environmental issues of the Anthropocene, and that museums occupy a formidable forum for such engagement. The authors discuss pertinent examples of how Australian museums are engaging with climate change, and the particular challenges that arise in dealing with a superwicked problem that is also of such importance to the future of life on earth, while drawing on their practice as artists creating work about climate change for museums. The authors review how museum exhibitions on climate change have negotiated the nexus between museums as institutions that have historically had their eye focused on the past, yet are increasingly turning their eye to focus on the future.

## Keywords:

Art, Climate Change, Anthropocene, Museology, Museum Studies, Science Communication

## INTRODUCTION

Museum exhibitions on climate change may be powerful instruments for facilitating civic engagement with the subject of climate change due to the unique context of social history, natural history and science museums as repositories of the past that influence public understanding and directions for possible futures.<sup>i</sup> As museums worldwide negotiate the uncharted waters of engaging with climate change, one of the strategies for engaging with such a complex subject is to involve artists in the process of creating museum exhibitions on climate change. In museums, hands-on interaction can be combined with art to create affective intuitive tools for conveying complex scientific and/or environmental data.<sup>ii</sup> While scientific data can potentially be subject to denial and misinterpretation, art can act as an alternative vehicle for environmental awareness. In a conversation with Dr Charlie Veron, former Chief Scientist of the Australian Institute of Marine Science, Veron reflected on how the hundreds of international lectures he has presented have not persuaded people to take action about climate change. He asserts that educating publics about climate change and promoting global action requires engaging

publics through emotional, rather than informational, means. Art in museums can engage through such emotive means, where climate science can be communicated by presenting climate change in affective processes that climate change within the narrative context of museums.

In an Australian context, this has been a rapidly growing area of collaborative research between museums and universities. One of the foremost projects has been the recent Australian Research Council Linkage project, *Hot Science, Global Citizens: the agency of the museum sector in climate change interventions* which “interrogated the roles of museums and science centres in climate change as places to provide information, activate and broker discussions, and decisions.”<sup>iii</sup> The project’s findings, titled ‘Nine Principles for Museums and Science Centres as Agents To Promote Understanding and Action on Climate Change’ include a provocation titled ‘Give Art A Go.’



**Figure 1:** Reefs on the Edge. (Top) left – installation show of user grasping TUI Objects. Right – installation view. Bottom – installation view.

The authors, Cameron, Hodge and Salazar, maintain that art has significant potential for how museums can engage with climate change, by “tapping deep movements of cultural sentiment, [whereby] art can be 10 years ahead of the curve, engaging with new media as well as old.”<sup>iv</sup> In light of these principles, this paper presents an overview of the authors’ creation of four works about climate change in both new and old media for museums in Australia and New Zealand: onacloV’s *InterANTARCTICA* for The Tasmanian Museum and Gallery and *Reefs on the Edge* for The Macleay Museum and Wodak’s *When I Was A Buoyant* for Puke Ariki Museum and *Violent ends: the arts of environmental anxiety* for the National Museum of Australia (NMA). The discussion presents the authors’ strategies both in representing the subject matter of climate change, and of contextualising it for presentation in a museum context.

### AUSTRALIAN MUSEUMS AND CLIMATE CHANGE

In addressing these challenges, Professor Libby Robin, Senior Research Fellow at NMA, argues that while “museums are well positioned to take up the challenge of the Anthropocene” her global research on museums and climate change has found that “the story of ‘living with climate change’ has yet to be told comprehensively in any museum.”<sup>v</sup> One strategy that Robin argues for is the ability of art to bring affective engagement with such challenges of the Anthropocene, citing the exhibition *Changing Matters: The Resilience Art Exhibition* created for the Stockholm Resilience Centre’s 2008 World Congress as being uniquely able “to contribute, to interpret, examine, and raise questions about dynamic transformations using sculpture, installation, photography, video and sound.”<sup>vi</sup>

How art may contribute, interpret and examine such questions about these dynamic transformations has been largely outside the purview of how Australian museums have responded to climate change to date. Australian museums that have staged exhibitions, and/or undertaken research and/or issued direct policy statements about climate change include the NMA, Australian Museum, Museum Victoria, Questacon, Powerhouse Museum and Melbourne Planetarium. One area of emerging research is how such museums incorporate the *Hot Science, Global Citizens* ‘Nine Principles for Museums and Science Centres as Agents To Promote Understanding and Action on Climate Change.’ As these recommendations were only released in 2011, it is not yet known how the museum sector will incorporate them into their strategies of engaging with climate change. It is beyond the scope of this article to discuss each museum’s specific engagement with climate change, other than the NMA, which is discussed below in the context of the following case studies of the authors’ creation of work about climate change for museums, including the NMA.

### REEFS ON THE EDGE

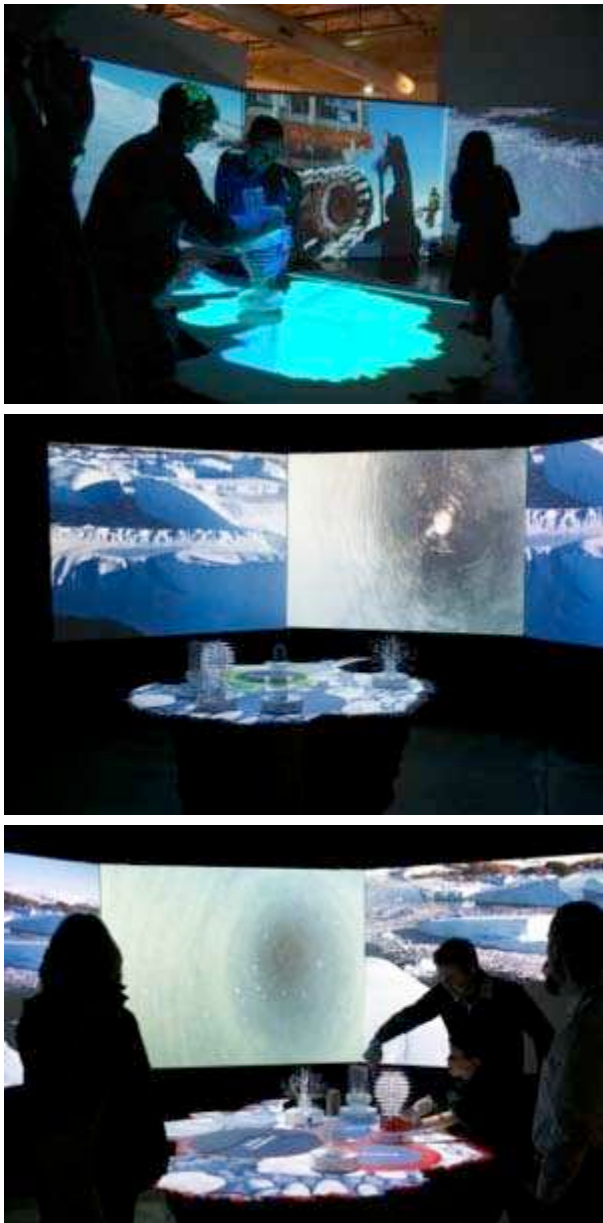
*Reefs on the Edge* is a museum installation (Fig. 1) that utilizes a cross-media platform to experiment with scientific data, underwater video and sound collected at One Tree Island Reef, located on the Great Barrier Reef (GBR) off the northeastern coast of Australia. The installation uses Tangible User Interface (TUI) technologies, multiple-channel video, painting and sound. This collaborative artwork is informed Erika Woolsey’s project that investigates the survival of young corals on the Great Barrier Reef was designed by Australian artist onacloV, and built by a team of artists and designers: Phillip Gough and Adityo Pratomo, who designed and built the TUI objects and table; Ge Wu, who edited the multiple channel video installation; and Michael Bates, who created the soundscape.

The artwork gives museum visitors a picture of the anthropogenic impact on important but delicately balanced marine ecology of the GBR in tropical Australia. The goal of the installation is to communicate the crucial scientific data: raises in sea surface temperature will affect the lifespan of coral. The artists and designers sought to communicate this important message in an engaging and visually sophisticated manner so that users could gain knowledge about climate change in the GBR.

The title *Reefs on the Edge* incorporates the idea of the uncertain future of coral reefs as well as the geographical location of One Tree Island at the southern edge of the GBR Marine Park, where the scientific data, sound and photographs were collected for this project. Temperatures are warming most rapidly in the southern regions of the GBR so “reefs on the edge,” such as One Tree Reef may be under greater threat from ocean warming than reefs in other locations.

*Reefs on the Edge* gives museum users the opportunity to learn about climate science in an entertaining way. The method bridges the intersection of emerging technological tools and scientific data and takes up one of the recommendations of the *Hot Science, Global Citizens* research project, that to engage with climate change, “museums need to rely less on presenting audiences with information and more on creating and designing richer experiences. The emotions they aim at should have range and balance, encompassing joy, wonder, and delight, rather than just pressing the buttons of fear and guilt.”<sup>vii</sup>

The data taken specifically for this project was converted into an interactive visualization, controlled by the TUI table and objects. The installation’s interactive table helps viewers understand the effects of rising temperatures and ocean acidification. The objects’ colours change in tandem with the changes. By combining the facts of climate science with artistic story-telling, *Reefs on the Edge* aims to inform and stimulate appreciation and awareness of coral reefs and the challenges they face. *Reefs on the Edge* was exhibited as part of the *Meaning of Life: Celebrating 50 years of Biological Sciences* at the Macleay Museum (2012-2013) and *Web Directions South Design Lab Exhibition* (2011).



**Figure 2:** (Top) Users modifying data visualization using and creating sound with TUI objects, Beginning Middle, End, ANU, 2009. (Middle) installation view, Tasmanian Museum and Gallery. (Bottom) Users modifying the visualization.

## INTERANTARCTICA

Another pertinent illustration of an artwork that uses both TUI and climate change visualization is onacloV's *InterANTARCTICA*<sup>viii</sup> (Fig. 2). Entering the exhibition space housing *InterANTARCTICA*, the viewer is surrounded by a three-screen video installation of the Antarctic landscape. The viewer hears Antarctic compositions, created by other viewers via real-time audio interactions. By creating sound, the viewer engages in an additional interaction by modifying data visualization. *InterANTARCTICA* helped viewers understand critical scientific data about global warming in Australia through a multi-sensory experience.

*InterANTARCTICA* is a museum display that has been designed by onacloV and created by a team of artists, researchers and students from The University of

Sydney. The installation *InterANTARCTICA* is part of an interdisciplinary research project that provides a technological platform for the public to interact, experience and gain vital knowledge about climate change. The concept is focused on the largest ice mass on Planet Earth, Antarctica.

The environment in Antarctica is the coldest, driest and windiest continent in the world. Ice cores taken from Antarctica provide a history into climate change because the ice contains records of past climate and atmospheric changes. Ice cores "show large fluctuations in temperature and atmospheric gases stretching back over 850,000 years."<sup>ix</sup> Understanding the environment in Antarctica is of global significance since it is one of Earth's fastest warming regions.

There is scientific data indicating that sea-ice around East Antarctica has been diminishing since the 1950s by a consistently greater extent than the previous 150 years.<sup>x</sup> Climatologist Jonathan T. Overpeck et al. claims that: "Sea-level rise from melting of polar ice sheets is one of the largest potential threats of future climate change."<sup>xi</sup>

In collaborating with environmental scientists, we have designed an interactive museum environment, which acts as a vehicle to display significant climate change data to a wide public audience. The installation seeks to expand knowledge through the synthesis and presentation of climate change research in an interactive museum context. *InterANTARCTICA* was exhibited at the Tasmanian Museum and Art Gallery, Hobart, Australia, 2010; Design Lab, The University of Sydney, Australia, 2009; and Beginning Middle End Exhibition, Canberra School of Art Gallery, Australian National University, 2009.

During the exhibition at the University of Sydney in October 2009, OnacloV's team undertook an evaluation to ascertain the effectiveness of the installation. The study was an opportunity to investigate how audiences understood and interacted with the work, since "usability is generally regarded as ensuring that interactive products are easy to learn, effective to use, and enjoyable from the user's perspective."<sup>xii</sup> Analyzing these key points helped to establish if the interactive interface successfully served its purpose within our exhibition.<sup>xiii</sup> Conducting an evaluation in-situ provided a unique opportunity to investigate user engagement and interaction within the framework of an exhibition setting. Interaction Design researchers have outlined the importance of user evaluations in an exhibition rather than lab-based environment.

For the report Nalco's team conducted observations and interviewed users about the exhibition. The answers were recorded using digital voice recorders and later transcribed for an in-depth evaluation. We interviewed a total of 16 interviewees, during the exhibition. We asked the interviewees 16 different questions. A diverse range of people were interviewed, including a climate change scientist, someone who has been to Antarctica seven times, design computing students, other university students and staff with varying degrees of climate change knowledge, a librarian, and other members of the public

with varying ages and demographics. Through the interviews and observations, a number of trends became apparent. The average time spent in the exhibition was 12 minutes, with individuals staying between five and 30 minutes in length. Our aim was for users to stay long enough to experience and interact with the work for five minutes or more. An average time of 12 minutes meets this aim.

### TE PAPA TONGAREWA, NEW ZEALAND TE PAPA

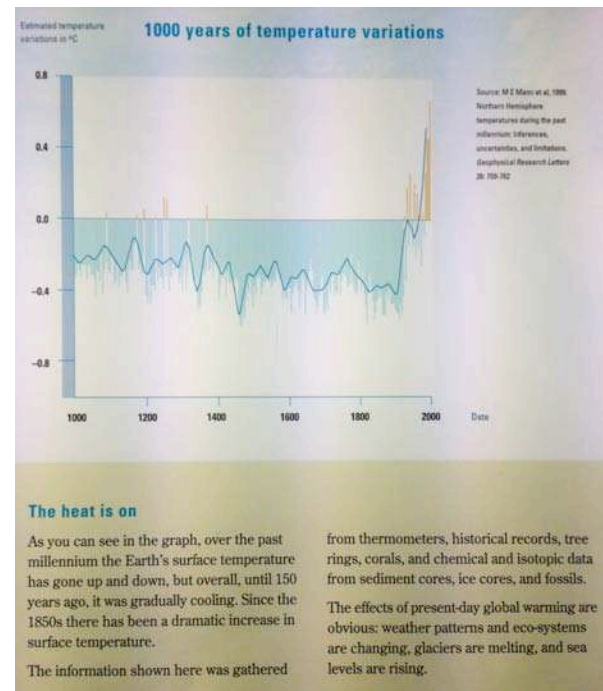
Te Papa Tongarewa is the national museum and art gallery of New Zealand, located in Wellington. Te Papa has staged specific conferences and exhibitions on climate change since 2006,<sup>xiv</sup> including a representation of the globe filled with decorated paper lanterns inscribed by school children from across New Zealand with messages about addressing climate change, staged in the lead up to the 2009 Copenhagen UN climate summit.<sup>xv</sup> The permanent installation *The Big Picture* presents video animations of past and projected future sea level rise over a satellite map of New Zealand, alongside didactic panels charting the climate change of the last 100, 1000 and 420 000 years (Fig. 3). The graph used in the “1000 years of temperature variations” panel is Michael Mann’s ‘hockey stick’ graph, so called because it shows how, over the last 1000 years, “Earth’s surface temperature...was gradually cooling” and how “since the 1850s there has been a dramatic increase in the surface temperature.”<sup>xvi</sup> (Fig. 5)



**Figure 3:** Detail from ‘The Big Picture’ panel showing the backlit graphs (left) and video animation of past and future sea level (right), Te Papa Tongarewa Museum, New Zealand, 2013.



**Figure 4:** *When I Was A Buoyant*, Puke Ariki Museum, Taranaki, 2013.



**Figure 5:** Detail from ‘The Big Picture’ panel showing Michael Mann’s ‘hockey stick’ graph, Te Papa Tongarewa Museum, New Zealand, 2013.

Wodak’s research at Te Papa was undertaken as part of his 2013 Artist Residency at *SCANZ 2013: 3rd Nature*, at Western Institute of Technology, Taranaki, New Zealand. SCANZ is biannual residency about “acknowledging the environmental crisis” and responding through “engaging with Maori and indigenous peoples” and “engaging the Sciences and Hybrid Arts.”<sup>xvii</sup> As part of his residency, Wodak realised *When I Was A Buoyant*, a photographic portrait that maps Mann’s ‘hockey stick’ graph onto the human body, using the area from fingertip to shoulder to represent the years 1000-1900, and the rapid vertical height rise from the shoulder to the top of the head to represent 1900-today. *When I Was A Buoyant* was exhibited in Puke Ariki Museum, Taranaki as part of *3rd nature*, the group exhibition of SCANZ participants (Fig. 4). Interspersing artists’ work on climate change throughout a museums’ existing permanent exhibits represents more fluid and responsive exhibition programming, as it allows for timely work to be incorporated into the dominant narratives of a museum, outside of museum programming which ordinarily is determined up to five years in advance.

### VIOLENT ENDS: THE ARTS OF ENVIRONMENTAL ANXIETY

In contrast, Australia’s equivalent to Te Papa, the NMA in Canberra, has not staged exhibitions directly on climate change, but has blogged and published on the subject,<sup>xviii</sup> and has staged events about climate change. The foremost event in this regard was *Violent ends: the arts of environmental anxiety*, a 2009 symposium of performances, poetry, lectures and film screenings by artists, poets, dancers, singers, scientists, film makers, historians, creative writers and cultural theorists. In his role as Production Manager and Stage Manager, Wodak

worked with the presenters<sup>xix</sup> and performers<sup>xx</sup> to produce and stage their work, so as to purposefully oscillate between academic presentations by climate scientists, recitations by poets, performances by musicians and film screenings.

*Violent ends* took place in the context of NMA's People and the Environment programme, which explores "how museums and objects can help Australians better understand how we are inherently inter-connected with each other and with the rest of the natural world, with the aim of helping to build more culturally and ecologically resilient and sustainable communities."<sup>xxi</sup> The different modes of presentation, from the visual and performing arts, to cultural theorists and scientists, aimed to present multi-faceted engagement with climate change, in line with the multi-faceted nature of this superwicked problem.

The NMA's current work in this area includes the 2013 conference Collecting the Future: Museums, Communities and Climate Change<sup>xxii</sup> staged with the American Museum of Natural History (AMNH), which explored museums' roles in engaging with climate change. This partnership between NMA and AMNH demonstrates the breadth of interest in exploring how museums can engage with climate change – testified by the involvement of partner museums and universities across Australia, Sweden, Canada and USA.

## CONCLUSION AND FUTURE WORK

Despite increased interest globally in exploring how museums can engage with climate change, the role of art in such engagement is seldom incorporated into this re-evaluation of museology. Art about climate change created specifically for a museum context may offer both the emotive and intuitive understanding afforded by art, in tandem with the spirited inquiry that distinguishes such "cultural heritage organisations as agents of public good."<sup>xxiii</sup> In the context of the urgent need to increase awareness and prompt global action against climate change, art installations and events in museums, such as *Reefs on the Edge*, *InterANTARCTICA*, *When I Was A Buoyant* and *Violent Ends* are a necessary means by which the complex terrain of climate change can be presented to the public.<sup>xxiv</sup>

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<sup>iii</sup> *Hot Science, Global Citizens: the agency of the museum sector in climate change interventions* homepage <http://ics.uws.edu.au/hotscience/index.php/about> (accessed 29 May 2012).

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<sup>vi</sup> Robin, Libby 'The Art of Resilience', *Violent ends: the arts of environmental anxiety*, National Museum of Australia, 2009 [http://www.nma.gov.au/history/research/conferences\\_and\\_seminars/violent\\_ends2/the\\_art\\_of\\_resilience](http://www.nma.gov.au/history/research/conferences_and_seminars/violent_ends2/the_art_of_resilience) (accessed 29 May 2012).

<sup>vii</sup> Ibid 4, p18.

<sup>viii</sup> InterANTARCTICA: [www.interantarctica.com](http://www.interantarctica.com) (accessed 29 May 2012).

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<sup>xii</sup> Vom Lehn, D., et Al. Engaging Constable: Revealing Art with New Technology, Proc. of CHI 07. ACM, 2007, 1485-1497.

<sup>xiii</sup> Sharp H. Rogers Y. and Preece J. *Interaction Design - beyond Human-Computer Interaction* (2nd edition), John Wiley & Sons Ltd, 2000:8-20.

<sup>xiv</sup> Conferences include Victoria University's Climate Change and Governance Conference 2006; The Royal Society of New Zealand's Climate Change Conference, 2006; the New Zealand Climate Change Centre's Climate Change Adaptation Conference, 2009; and the New Zealand Climate Change Research Institute's Climate Futures: Pathways for Society Conference, 2011.

<sup>xv</sup> The exhibit is described in 'NZ schoolchildren cast their 'vote' on climate change at Te Papa' <http://www.wwf.org.nz/?2980/NZ-schoolchildren-cast-their-vote-on-climate-change-at-Te-Papa> (accessed April 10, 2011)

<sup>xvi</sup> From 'The Big Picture' panel showing Michael Mann's 'hockey stick' graph, Te Papa Tongarewa Museum, New Zealand, 2013.

<sup>xvii</sup> SCANZ homepage: <http://www.intercreate.org/> (accessed 22 November 2013).

<sup>xviii</sup> The People & Environment Blog: Climate change <http://pateblog.nma.gov.au/category/climate-change/> NMA blogs on CC – josh to insert Climate change was also one of the subjects in the 2008 Behind The Lines exhibition of political cartoons: [http://www.nma.gov.au/exhibitions/behind\\_the\\_lines\\_2008\\_the\\_years\\_best\\_cartoons/climate\\_change](http://www.nma.gov.au/exhibitions/behind_the_lines_2008_the_years_best_cartoons/climate_change) (accessed 22 November 2013).

<sup>xix</sup> The presenters were: Professor Deborah Bird Rose, William Fox, Professor Tom Griffiths, Dr Roger Hillman, Mandy Martin, Dr Kate Rigby, Dr Libby Robin, Professor Will Steffen, Dr Carolyn Strange, Dr Thom Van Dooren.

<sup>xx</sup> The performers were: James Shannon, Laura Boynes, Chorus of Women and Wayfarers Australia.

<sup>xxi</sup> The People and the Environment, Kirsten Wehner, [http://www.nma.gov.au/history/pate/our\\_people/kirsten\\_wehner](http://www.nma.gov.au/history/pate/our_people/kirsten_wehner) (accessed 22 November 2013).

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<sup>xxii</sup> Conference homepage: <http://www.amnh.org/our-research/anthropology/news-events/collecting-the-future> (accessed 22 November 2013).

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