- FEATURE REVIEW -

NEW ATLANTIS: BRINGING SCIENCE TO THE THEATRE AND THE THEATRE TO SCIENTISTS

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Abstract:

An immersive theatre show set in the future provided an opportunity for scientists to try out a different form of public engagement, alongside informing members of the public about climate change. The experiences of one particular area of the show (related to the polar regions and floating island communities) are discussed. Feedback suggested that the scientists involved rated the experience highly and found it thought provoking, although more involvement in the creative process earlier on in the show's development would have been beneficial.

Keywords:

Immersive theatre, climate change, floating islands, science communication.

"Agents of New Atlantis. Your time has come." Audience members enter a futuristic building made of sharp, triangular, glass edges to have their palms scanned as they are registered as agents. In the walkways above the main auditorium, mysterious scientists in jumpsuits hurry around and a stock exchange-style information board flashes up the environmental issues of the day. The agents are told they have a big decision to make.

An immersive theatre show staged by the LAS Theatre Company, 'New Atlantis' was held over seven nights in London's Crystal exhibition building. During the performance the audience acted as agents of a fictitious organisation, 'New Atlantis', an international body in the style of the United Nations but with a portfolio for water relations. Set in 2050, the audience's ultimate role was to vote on a future leader for the organisation, but not until they had had time to wander the building and meet the various departments vying for their vote. It was this part that made the show truly different as each department contained various scientists and engineers, ready to be questioned and to inform about the state of the planet and the advances being made in 2050. The twist, however, was that although the department heads and many of the 'New Atlantis' staff were actors, the scientists and engineers were not. Each of us was there to talk about what we do in real life, although with some adaptations to allow for the developments made by 2050. From a scientist's point of view, hearing the initial description of the project sounded fascinating but also took a bit of a leap of faith even from a keen advocate of outreach. The added element of theatre provided opportunities for engagement that a standard talk to school children or the public would not but also was a very new concept for many of the scientists involved, myself included. The endless enthusiasm of the creative producer, Andy Franzkowiak and producer Barra Collins, however, kept motivation high despite some uncertainty about the end goal.

Figure 1 - Audience members observe a leadership debate at the 'New Atlantis' headquarters before being allowed to freely explore the rest of the building and visit the scientists. (Image by Andy Franzkowiak, LAS Theatre)

Figure 2 - Audience members in a focus group with representatives from Pennine Water to discuss the future of London's water supply. (Image Andy Franzkowiak, LAS Theatre)

I first met Andy Franzkowiak a year and half before the show and even from our initial discussions it quickly became very clear that he and his colleagues had a different way of thinking and working to that which I was used to in academia and science. There was much more time available to discuss potential options, no matter how ambitious, nothing was seen as impossible. This did at times feel to me that the way in which the show was going to fit together was very uncertain and often changing, but this did mean that we had many ideas to work with when some fell through and were able to take our area of the show anywhere we wanted to. It was this blend of scientists, engineers and creative minds that made 'New Atlantis' a unique project to be involved with.

For some research groups putting their work into the context of 2050 meant making some assumptions that work they hope to achieve had already been done. For example, it was suggested that in 2050, a development process of producing a flu vaccine from algae would also produce waste that can be recycled and used to manufacture greener biofuels. However, for those with a polar focus this was slightly more difficult. Suggesting that there may be no more summer sea ice in the Arctic didn't seem so far-fetched but Antarctica was a more tricky case. Explaining that Antarctica was land based and therefore would change on a much slower timescale than the Arctic was news to many audience members but actually suggesting what could have happened to the continent was not something that could be done with any level of confidence. Therefore, the group within the show that I was part of (a joint effort between the Centre for Polar Observation and Modelling and the Institute of Risk and Disaster Reduction at University College London) decided to focus on three key areas:

1) The Antarctic Treaty

The Protocol on Environmental Protection to the Antarctic Treaty will be open for review in 2048 (*Protocol on Environmental Protection to the Antarctic Treaty*, 1991), which is two years before the 'New Atlantis' scenario. Agents were told that the treaty renegotiations had not been successful and 'New Atlantis' had stepped in to try and moderate them. The audience were then asked to contribute to the discussions surrounding the renegotiation of the treaty and offer opinions on the possibility of using the continent of Antarctica for resources, specifically thinking about mining. The issues of ownership and governance were hinted at but the audience members were allowed to guide the discussion themselves and form their own opinions, culminating in a vote on how they felt the situation should be dealt with. The results of this are shown in Figure 3. The audience were mostly split between a 'business as usual' scenario of leaving Antarctica as a wilderness but with scientific research allowed, and a provisional investigation of the minerals available from Antarctica.

2) Sub- and supra- glacial melt

A common question from the audience was about how the poles had changed over the last few decades (so between 2015 to 2050). This allowed us to draw in some of the work that was being done in 2015 and would still be relevant in 2050. Sudden ice shelf collapses such as that of the Larsen B Ice Shelf in 2002 were discussed and ways in which scientists are using computer models to simulate the surface melt on ice shelves were demonstrated. In addition, it was explained how the lakes formed by this surface melt may have been a factor in the collapse of the Larsen B Ice Shelf. The relevance of the appearance of these lakes on the Larsen C Ice Shelf and the possibility that they could be a precursor to ice shelf collapse and the importance of monitoring them could

then be discussed. Ways in which surface melt and its path below the ice sheet on Greenland could be monitored were also demonstrated, with field equipment available for the audience to see.

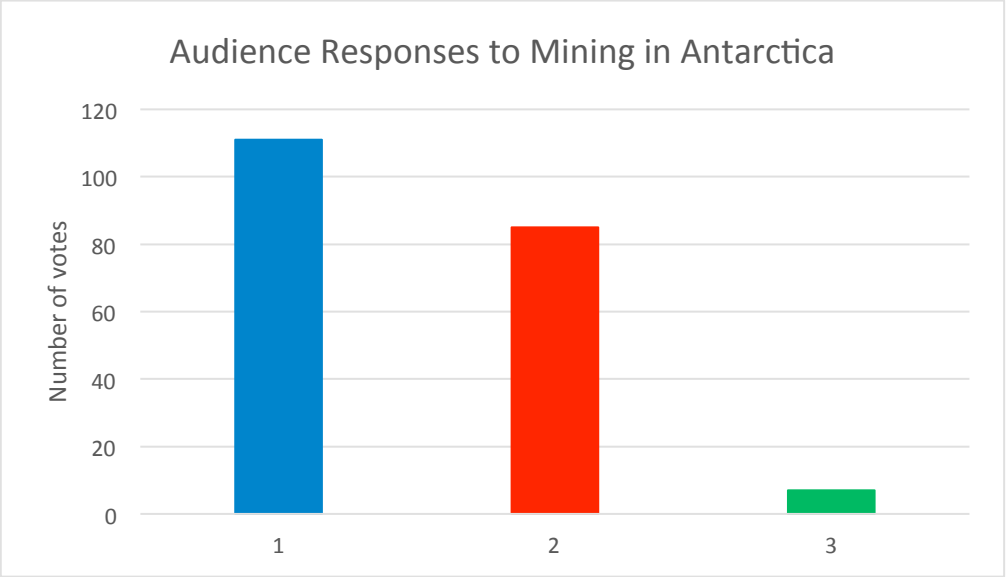

Figure 3 - Audience choices for the future of mining in Antarctica. Option 1 was to close Antarctica off and only use it for scientific purposes, with option 2 being to take 10 years to investigate the geology of the continent more thoroughly and establish if mining is a viable possibility and option 3 being to open Antarctica up to a 'free for all' for anyone who wants to mine.

Although the work described was generally based solely in 2015, few of the audience were aware of the current state of the poles or polar research so not a great deal of adaptation to the 2050 world was needed. This was thought to be a reasonable approach given the speed at which the poles (especially the areas with grounded ice) are expected to change. As this was work that had been done by scientists in the show it was good to be able to talk about that directly (all be it within the context of the show) so that things were always able to be brought back round to what we do and thus being as scientifically accurate as possible rather than being completely in a hypothetical future world.

3) Floating island communities

Linking into the discussions of ice loss, sea level rise and governance of areas such as Antarctica that have uncertain sovereignty claims the final theme of this group revolved around the possibility of creating floating island states to house island communities displaced by sea level rise. This was a possibility that many of the audience had never considered; both 'floating' and 'islands' were mentioned in the top one hundred words for "most interesting thought/idea taken away from the show" (Hou, 2015).

The idea of people being displaced by sea level rise and the possibility of floating island states was demonstrated through the use of a multi-level model in a fish tank filled with water and prompted questions not just about ownership and legal issues, but also more practical issues such as construction.

Figure 4 - Scientists of the Antarctic room debate the future of the Antarctic treaty, before asking the audience to contribute their thoughts. (Image Andy Franzkowiak, LAS Theatre.)

It was areas of the show such as those about the floating islands that drew in both the common associations of the word 'Atlantis' with submerged islands and water related disaster along with the actual namesake of the show - Sir Francis Bacon's 1627 utopian novel. Bacon's *New Atlantis* depicts an early vision of the modern research university and portrays a community with a zeal for human discovery and knowledge, ideas that our 'New Atlantis' was modelled on. It was the ability to lead the audience into debating issues such as those related to floating islands and Antarctica that made the show a very different experience from scientists simply informing the public of facts. It allowed the audience to question who is best placed to make decisions on global issues, and whether or not scientists should be policy advocates.

The majority of scientists participating in the show had not done any kind of public engagement that collaborated with the arts before (Hou, 2015). For many this was the attraction – often it is not too hard to gain public engagement opportunities to work with school children but something that has a much wider demographic and also the opportunity to do something more innovative seemed like the perfect challenge. 'New Atlantis' forced those involved to question why we do things, where our research was headed in the longer term and ways in which we can get the public to think about and question what we do. It also provided opportunities to meet and work with those in areas that on the surface seemed completely unrelated. The friendly rivalries between

the departments and their scientists also grew during the show, and this provided ample opportunity to discover other areas of research and made this a truly interdisciplinary project. We were all there because we had connections to water but finding glaciologists working with those in naval architecture and space rover engineers provided a chance to see where individual disciplines fit into the bigger picture, and also provided a stark reminder of how all of our jobs and the wider world may change in the coming decades.

Despite being given no acting training and only having a quick dress rehearsal, most scientists seemed to fall into their 2050 roles quite comfortably. The setting of the show in a building such as The Crystal certainly added to the feeling that we were in 2050 both for the scientists and the audience, many of whom mentioned the building positively in review forms (Hou, 2015). White's discussion of immersive theatre suggests that engagement with the environment can be an important part of the audience experience; with the site significantly affecting the atmosphere of performances (White, 2012) and this was certainly the case for 'New Atlantis'. The Crystal, situated Royal Victoria Dock in east London is home to the world's largest exhibition on the future of cities, as well as being one of the world's most sustainable buildings and events venues (thecrystal.org), and thus its clean and futuristic feel added a great deal to the event and the set certainly aided the participants in getting into character.

This is not to suggest that taking part in the show was always straightforward for those participating. The nature of the project meant that ideas changed significantly from the initial discussions I had with '2071' also received similarly mixed reactions as 'New Atlantis', with descriptions ranging from comments on its dryness to characterisations of it being compelling and throughout the process. How much the scientists were expected to act and adapt their rhetoric to the 2050 world we had created only became clear as we reached the dress rehearsal and even then this was something that grew during the show. This clearly was a cause of frustration for some and general feedback after the show suggested that involving the scientists earlier in the planning process to avoid having to fit science to the story would be beneficial, as well as having more time to work with the actors and plan the spaces.

Despite any difficulties the show clearly developed throughout the run and the overwhelming response from the scientists was that they enjoyed the experience, with the mean response to the post-show survey being 5 (out of a maximum of 5) for enjoyment and 4 for finding the experience thought provoking (Hou, 2015). It certainly opened my eyes to a whole new side of outreach and ways to communicate science to the general public. The time commitment was quite large (although over a short period) and there was a reasonable amount of preparation required but in terms of the interesting discussions it generated, questions it made me ask about my own work and the general enjoyment factor I certainly would recommend similar projects to fellow scientists.

The reaction from the audience was generally positive too - 95% of those surveyed after the show agreed or strongly agreed that they found the show enjoyable. In addition, 93.1% found the show to be thought provoking; with 70.7% agreeing that the show had increased their support for environmental conservation. Many of those surveyed suggested a range of actions that they would go home and carry out as a result of the show, including reducing personal water usage, eating less meat and joining a political party (Hou, 2015). There had been some concern from those participating that the audience reached would be similar to those that they spoke to at other science events but the post-show survey showed this not to be the case. 76.2% of those surveyed

stated that they never or rarely attend events on climate change or conservation and 40.4% stated that they never or rarely attend any science events.

Despite positive responses from the audience, the reactions of critics were somewhat mixed. *The Guardian* gave the show two stars out of five, stating that, "you could learn more from spending 80 minutes online" (Gardner, 2015: online). *London City Nights* questioned the anti-climactic ending of the performance but thought that 'New Atlantis' "succeeds at being extremely interesting, teaching me all about the sobering long-term effects of environmental damage" (Unattributed, 2015: online). *The Londonist*, despite feeling disconnected to the political parties being represented gave the performance three stars out of five, and seemed to have connected positively with the scientific content: "Yet for us non-scientists, the discussions are still accessible, interactive and well-pitched" (Hargeaves, 2015: online). Key here was the outcome that they felt that 'New Atlantis' "gives you a shed load of content to think and talk about afterwards" (ibid).

Having scientists talking about the future means that similarities can be drawn between 'New Atlantis' and Professor Chris Rapley's 2014 play '2071'. Although in a more traditional format of Rapley speaking directly to a seated audience, '2071' gave a dramatized view of the future from a scientist and as such had a similar scientific basis to 'New Atlantis' (see Cavendish [2014] for discussion). '2071' received similarly mixed reactions to 'New Atlantis', with descriptions ranging from comments on its dryness to characterisations of it being compelling. Both productions also follow an increasing public interest in the lives of scientists through films such as *The Theory of Everything* (James Marsh, 2011) and *The Imitation Game* (Morten Tyldum, 2014). This is clearly a format with potential for audience enjoyment as well as being informative but there is some way to go to convince many that science can be entertaining for all and not just "a treat for boffins" (Sierz, 2015: online). Despite having a wide-ranging critical reception, the post-show reviews show that the experience clearly provided positive outcomes for scientists and audiences alike. Although the critical reception suggests that the dramatic format needed work, the fact that audience members left with things to talk about and actions that they aimed to take as a result of the show suggest that this format has potential for future productions.

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