Museums and attacks from cyberspace: Non-linear communication in a postmodern world

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Abstract

This article examines a single virtual incident, a hostile review by climate-change sceptic journalist Andrew Bolt of an Australian Museum exhibition on climate change, to explore its implications for contemporary museums curating controversial topics. It takes both topic and attack as aspects of new conditions which science and museums alike must cope with, which include new concepts of science and society, and new communication technologies. It uses the concept of the 'postmodern condition' as a framework for understanding some crucial features of these new conditions. It sees traditional linear models of communication as dangerously limited ways for museums to operate effectively in this new highly complex and unpredictable environment. It finds that some aspects of this Exhibition had an underlying linearity that left it especially open to the attack it received, while other aspects incorporated an effective complexity that better fulfilled its aims. Yet the analysis does not offer complete safety against such attacks. On the contrary, part of the danger exposed in this analysis comes from new 'postmodern' levels of irrationality and lack of respect for science legitimated by the claims of these critics to be defenders of reason and science.

Key words: Museums and climate change, linear models of communication, complexity thinking, virtual museums, postmodern condition

Introduction

This article is an extended reflection on the implications of a single incident that occurred in the life of staff from the Australian Museum engaged in mounting a special climate change exhibition, which opened on 4 May, 2009. The formal launch was to take place in real space and real time that day, and the Australian Museum prepared the way with a web launch. But before that happened, Andrew Bolt, a climate change sceptic and journalist well-known in Australia, had launched a pre-emptive virtual strike. His hostile 'review' of the exhibition appeared on his web-site before he could have seen it, over two hours before the physical museum had opened. It had already attracted seven visitors before 9.30a.m. Bolt's blog is popular in Australia. He claimed to have over two million hits in one month in 2009 (7 December, 2009). There is no doubt that he is an influential and popular voice.

This response was not what the Australian Museum staff expected, planned for or enjoyed; yet from another perspective Bolt and his followers gave them priceless feedback for free, in many respects more useful than they could have got from well-paid consultants using carefully-selected focus groups. The exhibition itself was carefully designed and targetted for an audience with a supposedly known background of knowledge, interests and values. Bolt and his readers departed from these expectations. They did not simply distort the message, in some respects they turned it into its opposite.

This event took place outside the museum, in cyberspace. Yet far from this making the episode of marginal interest to museums, this is a new terrain museums have been moving into with extraordinary rapidity. The on-going 'digital revolution' is changing the conditions under which all knowledge institutions today must operate. It has already begun to trigger a

  ISSN 1479-8360

revolution in museum practices whose form and outcomes are still unclear, the risks as well as opportunities. The Bolt Effect is a crash course in some of the dangers.

It is important to insist at the outset that this article does not seek to adjudicate in the battle between Bolt and this museum. The Australian Museum is a partner in the Research Project in which I am involved, so I am not neutral, though I played no role in this particular exhibition. My aim instead is to understand the terms and conditions of this conflict in ways that museums like the Australian Museum can learn from. I hope to bring out things they need to know, and that requires me to look critically at what they did, as well as how Bolt responded.

That is not to say I found the exhibition poor. On the contrary, it was excellent of its kind, innovative and professional, using state-of-the-art strategies and methods for the sector. It was not incompetence that left them open to this attack, but some typical assumptions built into models underlying that competence, and blindspots about hostile tactics and assumptions that exist in the turbulent world beyond the museum's walls. That makes the analysis in this article generalizable to other museums who want to engage with controversial topics, without having to suffer the attacks of their own Bolt.

Museums as agents of communication and change

Bolt's attack is not directed at museums as such. His target is a new form of museum that has emerged only recently, in response to rapidly changing social conditions and contexts. As a shorthand, I will term this the New Museum. As some influential voices in museum studies have claimed (e.g. Witcomb 2003, Janes and Conaty 2005, Knell, McLeod and Watson 2007), museums today are undergoing revolutionary changes, responding rapidly to external forces to redefine what museums are and should be, how indeed they should respond to these forces to take on new aims and objects, and incorporate new forms and strategies of communication. Sandell (2007) argues for a role for museums in combatting prejudice and engaging with the public in active debate, while Cameron (2007) points to the conservative forces in museums that resist or negate such developments. The *Australian Museum* climate change exhibition was a creative response to these new tasks and methods, and Bolt's response was an example of some of the threats and opposition to the new museum agenda. That is the angle which gives this episode its more general interest in museology today.

In her introduction to a land-mark edited book on new forms of communication in museums, Hooper-Greenhill (1998) gave a rapid history of museum communications, especially in Britain, over the previous 50 years. In this history, museums began the period with only a limited sense of the need to communicate to a wider public. But in order to survive in conditions where public funding was no longer assured, she says, museums had to get their messages across to reach new audiences.

In this initial phase, she claims, museum communication lagged behind developments in mainstream communications theory: 'Our method on museums has not paid attention to methods used by communication and cultural theorists, and an over-reliance on behaviourist, positivist methods has failed to reveal the importance of audience decoding' (1998: 9). Crucial to the explanatory power of this more advanced method was 'the rejection of the linear communication model in favour of a transactional model where messages are formulated, exchanged and interpreted in a continuous process' (1998: 10). The model she rejects is often called the 'bullet theory' of communication effects. In its simpler forms, it has indeed been attacked and discredited many times over by communications scholars (e.g. Fiske 1982, Berger 1995). However, bullet-theories like bullets are hard to kill, and this model still survives in more complex forms in a range of communication practices.

This is true of Museum Studies too, and a closer look at Hooper-Greenhill's influential argument suggests why. On the one hand, we have an influential scholar in an influential book urging the end of linear models of communication in this field, in favour of non-linear, more complex models. From this time onwards, no-one could claim that museum studies were unaware of the critique of linear communication models. Yet, paradoxically, her strong statement against linearity also implies the existence of its opposite. Her account of the recent history of museum studies reports the dominance of linear models only a decade ago. Her

statement as call to arms implies that there are still many museologists who still need her critique and exhortation, or who would resist it.

Less than two decades later we can ask: has the revolution really happened? This article will argue that linear communication models are still alive and well, even in the 'New Museum', but they conflict with core aims of the New Museum in fulfilling its agenda. In highly complex communication situations, linear models can be spectacularly and dangerously inadequate, in ways the model below shows.

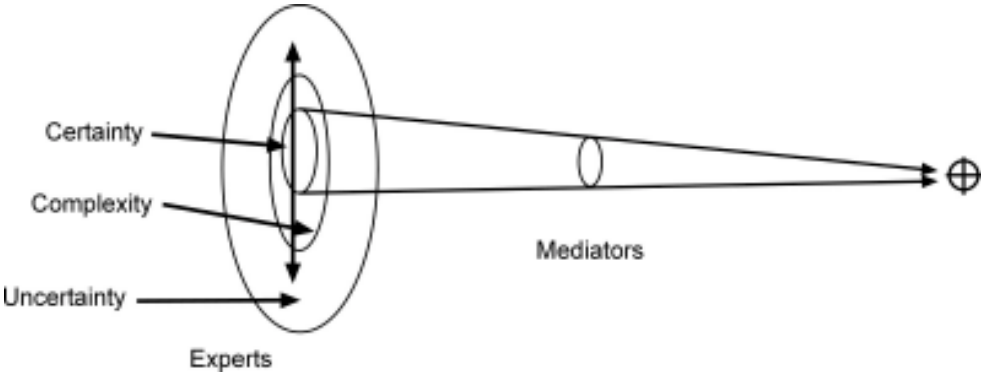

Figure 1. Linear communication and complexity and uncertainty as content

The central cone represents the constraints on communication in the linear model. In this linear model there is a diminishing amount of knowledge at successive points in the chain. The initial message is much less extensive and complex than most of what experts know, and the understanding of mediators is necessarily less than this. The maximum amount of understanding that targets are seen as capable of in this model is less again. They are passive objects of the communication, receptacles to be filled. This has been called the 'deficit' model of communication, because receivers are represented as lacking the knowledge the experts possess.

The vertical concentric disks represent what can only fit into the cone of linearity with difficulty if at all. What experts are certain of, and is simple enough to fit into a linear transmission process, only makes sense when connected to complexity and uncertainty. This is the severe dilemma linear models pose for expert communicators. In principle, they cannot communicate the understanding which makes sense of their field.

Complexity and nuance in content are hard to fit into linear models. Bullets are not good at nuance. Outside the complexity is the uncertainty that drives scientists, the problems they try to solve, the fascination of what they do not yet know. Both mediators and visitors are 'dumbed down' in the process, and the knowledge and capacity for action that they possess is rendered illegitimate.

The model has a double arrow crossing the set of concentric rings, which represents science as an interactive process of debate and discovery involving disagreement and struggle. This process is indispensible to science as a continually moving and growing enterprise, rather than just a repository of settled knowledge. Linear models are not good at seeing how to motivate people to be excited by debates, or committed to the quest for knowledge.

Museum communication of science is an aspect of the public communication of science. This adjacent or sister field has undergone a similar transformation, away from linear models towards a 'dialogic turn' (Holliman *et al* 2008). Yet here too, the 'revolution' against linearity co-exists with an effective continuation of linear models.

As one recent typical instance Burns, O'Connor and Stocklmayer attack the 'simple, linear model' of science which is 'the prevailing bias' in science communication, because

it 'does not adequately represent the science communication processes' (2003: 197). Yet they define science communication as 'the use of appropriate skills, media, activities and dialogue to produce one or more of the following personal responses to science ... awareness, enjoyment, interest, opinion-forms and understanding' (2003: 183). In spite of the multiplicity of means and effects, the single causal verb, 'produce', links producers and receivers of the communication process in the same linear, one-directional relationship as the old, discredited but still tenacious 'bullet-theory'.

Shackley and Wynne make an illuminating observation on the dilemma facing scientists around uncertainty. 'In policy contexts, many scientists are compelled to talk about uncertainty but do not wish to imply uncertainty is a serious challenge to the authority of scientific knowledge or its substantial use in policy making' (1996: 275). Their focus here is on the politics of uncertainty rather than its epistemology. They see an inverse relationship between uncertainty and authority in contexts of power. A similar relationship exists between uncertainty and authority in linear models of museum communication. This results from the one-way flow typical of linear models. Energy (authority, knowledge) can only inhere in the expert, and it must diminish inexorably as it travels towards the target. If there are other sources of knowledge and authority in mediators or 'targets', they are disruptions which disturb the flow.

Museum communication in a 'postmodern' world

The change in models of communication Hooper-Greenhill advocates in museum studies is part of what has been called a paradigm-shift in the social sciences and the sciences more generally. The sociologist Urry called it 'the complexity turn' (2003). For him, this 'turn' now includes strands from science alongside humanities and social sciences, through ideas from chaos and compexity theory. In earlier work (e.g. Lash and Urry 1987) he had used the term 'post-modern' to talk of radical changes in the nature of social life and the theories that purport to explain it, especially the bewildering levels of complexity and change. In the interim, the term 'postmodern' has been attacked so ferociously and defined in so many different ways that it may seem unusable. Yet the complexities of the term come from and encode this history. To unpack the complexities of 'postmodernism' is a swift way into the issues at stake.

For Bolt, the term itself acts as a convenient way to gather together many issues at stake in the incident. He uses the word to refer to a set of qualities that mark a certain position: academic, left-wing, progressive, with no belief in right and wrong, out of touch with reality (e.g. Bolt 5 Feb, 24 March, 2008). Lucy and Mickler (2008) group Bolt together with some other figures on the conservative side of politics in Australia identified with this view of the word.

This group uses the term to construct the 'postmodern enemy' as a well-entrenched elite who dominate the academic scene, opposed by these few heroic Davids. Yet 'anti-postmodernists' have considerable political power. Bolt himself wrote an article (*Herald Sun* 19 November, 2003) on the award of grants by the Australian Research Council, Australia's peak research funding body, to researchers he mocked for their post-modern qualities of modish irrelevance and left-wing bias. The next year the Minister for Education, Dr Brendan Nelson, set up a process of scrutiny which gave right-wing critics the chance to veto grants on ideological grounds, which they did. Ironically, the triumph of ideology over traditional academic criteria was one of Bolt's accusations against postmodernists.

The anti-postmodern movement gained momentum and credibility from an event which happened in New York in 1995, a pre-emptive strike like Bolt's on the Australian Museum exhibition. A physicist, Alan Sokal, submitted an article to a special issue of the journal *Social Text,* on the 'Science Wars', which was duly published. After the publication, he announced that the article was a hoax, that he did not believe in its claims, and that the fact that this 'postmodernist' journal published it showed that they had no academic standards and no respect for 'truth'.

This is not the place to critique the logic of this Groucho Marx argument ('I don't want to belong to any club that would accept me as a member'): see Hodge 1999 for a fuller analysis. But there is no doubt about its rhetorical success. It was taken up as a definitive demonstration that there was indeed a dominant intellectual tradition called 'postmodernism' which was

hostile to science and truth, rejected all moral principles, and had been totally discredited. It could equally well have been taken to show that anti-postmodernism had access to formidable political and media resources to support its line, and used unscrupulous methods of argument that showed no respect for traditional values of truth in science or public debate. The Australian Museum had good reason to be concerned about Bolt's attack.

Yet as Frow (1997) points out, 'postmodernism' has never been a coherent movement with a defined body of doctrines and a well-organized group of adherents. It has been constructed more by enemies like Bolt than by any intellectual leaders. What makes it worth still using is the way that it prepares the place for careful scholarly study of a set of tendencies that seem to act with greater force in the present than they have in the past. Harvey (1990) has influentially called this not 'postmodernism' but 'the condition of postmodernity'. Whatever name this is given, eminent sociologists like Urry and Giddens (1990, 1993) urge that unprecedented features of these new conditions require new kinds of concepts and new ways of thinking: not the absence of critical thinking, but more of it, including new respect for non-linear, complex and self-reflexive forms of thought and research.

The aims and strategies of the 'New Museum' are part of the conditions of 'postmodernity' in this sense. So also is the form and content of Bolt's anti-postmodernist counter-attack, even though he would repudiate the word. 'Postmodernity' brings onto the agenda the competing new forms of science and the conflicting attitudes to it that are also at stake in this controversy.

The particular theme of the Exhibition, 'climate change', is a product to some extent of highly complex political, social, economic and technological processes continuing on from the past, taking new forms in the present. The way it is constructed as a problem, as a 'risk', is itself a product of a 'postmodern condition', according to Beck (Beck 1992, Adams, Beck and van Loon 2000). In this perspective, the efforts of science and technology to identify and eliminate risk can paradoxically have an opposite effect, increasing a sense of risk as complex and unmanageable.

In the case of climate change, this object of anxiety would not exist in the public consciousness without the work of many scientists investigating and measuring effects in the past and the present, and extrapolating them into the future. The changes themselves are not created by this science, though they have been affected by applications of earlier forms of science and technology. The awareness of them, and the strategies used to manage the problems, are distinctive features of the contemporary scene, and in this sense are usefully described as 'postmodern', as are the efforts of anti-postmodernists like Bolt.

Yet this sense of complexity does not necessarily negate or weaken the force of science. Rather, it gives it a new form and role, one which offers new connections with cultural institutions such as museums. In the words of Nobel Prize-winning scientist Ilya Prigogine:

> The 20th Century has transformed the entire planet from a finite world of certainties to an infinite world of questioning and doubt. In such a climate, it is even more necessary to cultivate human ceativity, for individuals, communities and societies can adapt to the new and transform their reality only through creative imagination and initiative. (In Perez-De Cuéllar 1996)

Prigogine here is not renouncing science, which as a Nobel Prize winner he may be assumed to understand better than Bolt and his allies. He calls for an alliance between science and humanism around a commitment to creativity. The end of certainty is not the end of science, but the contrary. This is a terrain that museums in general, and New Museums in particular, are well-equipped to explore and develop.

Bolt from the blue: Andrew Bolt and the Australian Museum climate change exhibition

This background gives a vantage point for understanding better the implications of the episode that generated this article. Andrew Bolt's 'review' of the Australian Museum climate change exhibition appeared at 6.31a.m. on the morning of 4 May, 2009. My object of analysis is not only the web event. It exists in three overlapping forms, needing different methods to analyse three kinds of data. First there is Bolt's virtual visit to the exhibition as it existed in cyber-

space, including the museum's own self-presentation on the net. Then there is the exhibition itself, as a set of texts that encode meanings in different semiotic media. This exhibition was first mounted in Sydney, then transported to SciTech, in Perth, Western Australia. Finally there is the exhibition recreated in the minds and interactions of visitors, requiring a more ethnographic dimension to the semiotic analysis.

I begin with a lengthy quotation from Bolt's blog of 4 May, 2009, a text so rich and complex that in this article I can barely scratch its surface. Under the heading 'The museum of myths' Bolt wrote:

> The Australia Museum in Sydney has an interactive exhibition on global warming that perfectly symbolizes this new faith
>
> - *Whether you're confused about climate change or just want the latest information, this new interactive exhibition takes you on a surprising trip through two possible scenarios: one where nothing has been done to combat climate change and the other showing how nations, communities and individuals can take positive action to help save the planet…*
>
> Note
>
> - The exhibition's utter certainty that the world is warming, and its failure to concede there's a debate.
> - The apocalyptic fear-mongering tone
> - The suggestion that the ice-caps are melting, when Antarctic ice has been growing, and Arctic ice is now back to near normal extent
> - The linking of naughty hamburgers to this 'warming', rather than, say, the child's future job, car, overseas travel, or something much harder to attack or give up Frauds. What is this doing in a museum? Witness the decline of science

1) Battles in cyberspace

As is the way with cyberspace, there is no indication of where Bolt was located when he wrote this, but since he lived in Melbourne, Victoria, we can guess that he was not in Sydney, and had no intention of attending the exhibition in the flesh. Traditionalists as he presents himself might feel troubled by this tactic: to dismiss an exhibition he did not see. Bolt's ambush did not wait for the exhibition to open. From this text we should not suppose that he will ever visit the museum he condemns so trenchantly.

Yet in doing so he shows an effortless mastery of the new ('postmodern') conventions of the digital world. In effect, he compresses or reverses time, 'seeing' the exhibition before it has had time to open, throwing it aside before it has had a chance to be used. He collapses the material and the virtual exhibitions, producing a hybrid 'postmodern' form in which the virtual has replaced the physical, and left no traces of the process. This was not the intention of the Museum in constructing this virtual extension of the exhibit, but it is a danger the strategy leaves them open to. When the New Museum wanders into cyber-space it cannot control what it will find there. Bolt displays the characteristics of a digital native. That quality was what the Museum supposedly hoped to find.

The 'digital revolution' is so young that if it were a human it would not be entitled to vote, yet its impact on museums is already huge. Museums have been early, vigorous and creative adopters (e.g McShane 2005, Arthur 2009). It has impacted on many aspects of the Museum's activities (see e.g. Cameron and Kenderdine 2007). Castells (1996) announced 'virtuality' as the new logic of future society. Museums are further down that path than most other cultural institutions.

Against the predictable anxiety in traditional museums that virtual technologies are a threat to the core of the museum activity, Marty (2007) argued that the relationship between the virtual and the physical experience of the museum can be positive. Each can enhance the other. But Marty has in mind an interaction between the two modes which includes the museum space. Bolt responded to the Museum text by using it to replace the museum experience, creating a counter-experience designed to deter potential visitors.

Another revealing tactic is that he quotes the words of the museum exactly, before he goes on to give his commentary. This is so commonplace an example of the potentialities of the new information technologies that it is almost invisible. Bolt had only to use an ordinary search engine to find this posting, and cut and paste the text onto his blog. The effect of this is to take the text out of its original context, where interpretations can be constrained by aspects of its context, and expose it to a new, hostile, inappropriate audience. Bolt would never use Derrida's term deconstruction to describe his practice but he illustrates what happens when pieces of text are dislocated from their originary location and allowed to migrate to other locations.

In the process, he illustrates one tenet of the new communications paradigm, that messages do not have a single, pre-determined effect, but are modified by the responses of the audience. In this case, it can be assumed that the Museum expected a positive response to their message, from anyone who cared to open it. Here Bolt is confident that he has only to quote the message to his community to arouse a vehemently negative. As the comments quickly show, he was right.

Eight responses to Bolt were posted before the Museum doors opened at 9.30a.m. Seven agreed with Bolt, but 'Penguin' wrote a lengthy critical response. There was a total of 31 responses to these early posts, 14 of which were virulent attacks on 'Penguin'. That is, 30 of 31 responses strongly agreed with Bolt. The only one against him was massively attacked. Bolt is not responsible for his followers, but this evidence suggests that they do not have an ideal model of 'debate'.

This provides us with data on a new phenomenon of cyberculture, the 'virtual community'. This group is called into life by Bolt's Blog, and it dissolves after the event, except insofar as it is preserved in the amber of cyberspace, able to be summoned at will by myself or the Museum as well as any other interested person, until the blog is taken down. Just as Bolt can use the Museum text for his own purposes, other readers can read and use the blog comments for their own purposes. I will quote only the first response, posted at 7.57a.m. by 'Elsie of Brisbane':

> And ranks of little primary schoolchildren will be alighting from buses with their eager brainwashed teachers, and will queue to melt the ice-caps. The parents will have signed slips of paper and handed over money to allow their children to go on this 'educational outing'. The Climate change gospel will then be taken home and spread to their families. If I lived in Sydney I would protest loudly.

Bolt is unlikely to have edited Elsie's text, so on this evidence we can say that Elsie writes well. The language is without errors and with literary flourishes. We can judge that Elsie probably falls into the demographic museums like to attract: probably tertiary-educated, familiar with digital technology. If she is in Bolt's camp, then the Museum should worry. She ought to be sympathetic to the exhibition.

She does not invoke the theme of 'postmodernism'. Her target would be better described, in Bolt's lexicon, as 'political correctness'. She presents herself as a liberator, protecting young children from an oppressive system which controls them and their teachers, and parents as well. The angle is different to Bolt's but complementary, drawing on the potent trope of 'freedom' which has formed a key part in the rhetorical tool-kit of the Neo-Liberal right, as Orestes and Conway have shown for USA (2010).

2. The logic of climate-change denial

Bolt does not rely only on the self-evident absurdity (from his point of view) of the Museum view. He gives a list of comments which conveniently give the key assumptions of his counter-view.

Diagnostically this is pure gold for the Museum. These are the design features of the Bolt Anti-Climate change Interpretative Machine, which cumulatively allow the intended message of the museum to be inverted.

The first is diagnostically and strategically the most important, so concentrated and complex that it deserves to be quoted again: 'Note: The exhibition's utter certainty that the world is warming, and its failure to concede there's a debate'.

We may note his own certainty, just as 'utter' as the certainty of the Museum which he opposes. Here, as elsewhere, contradiction is not a problem for his argument. However, this is not a sufficient counter to his point. 'Certainty' is a quality of the museum text he analyses, and of the Exhibition itself, as we will see when we get to it. It is also, I suggested, a casualty of linear models of communication. It is likely to go missing when power and authority are at stake, as Shackley and Wynne (1996) argued.

The problem with this argument is that it has too much grounding in the core values of science itself. Another climate change sceptic, Don Aitkin (2008: 3), quotes Nobel-Prize winning physicist Richard Feynman (1999: 111):

> A scientist is never certain. We all know that. We know that all our statements are approximate statements with different degrees of certainty; that when a statement is made, the question is not whether it is true or false, but rather how likely it is to be true or false.

The title of Feynman's book, from which this quotation comes, points to why he as a top scientist should want to insist on this position: *The Pleasure of Finding Things Out.* Great scientists like Feynman are great not because they are more certain than the rest of us, but because they have such a drive to find things out, sustained by the intrinsic pleasure of the search. It is a relevant drive for a museum, too. The slogan for the Australian Museum, for instance, is 'Nature. Culture. Discover': 'discover', not 'be certain.' Its Mission statement has a similar message: 'To inspire the exploration of nature and cultures'.

The problem of excessive certainty is not just a debating point, though it may be for Bolt. It is a dilemma for a linear approach, as shown in figure 1, or a stimulus and challenge, as Feynman and Prigogine claim. Complexity and uncertainty are intrinsic to science. That is not to say that science is only uncertain, or that there is a single point of balance between the two. On the contrary, the range of ages and educational backgrounds of a normal museum audience requires a range, not a single point. But Bolt has a case, that the Museum is skewed too far towards certainty, even if he is equally skewed towards certainty in his own direction.

Bolt attaches a claim about 'debates' to his critique of excessive certainty: 'its failure to concede there's a debate'. This is linguistically complex, the nucleus of a larger strategy which has proved hard to counter. The argument for debate is persuasive, since whatever position one may maintain on climate change, it is beyond doubt that there is a debate, in fact many debates, raging outside the walls of the museum. But Bolt frames his call for a debate with two qualifiers. 'Concede' implies that to have a debate is already an admission of defeat. This makes the issue of debate, rather than its theme, the object of contention. The call for a debate, then, is a double message: Debate us, but if you do we will have already won. 'Failure' then wraps this double message inside a similar double message. 'Success' for you will be to admit defeat. 'Failure' to do so is still failure. The Sceptics have a win-win scenario, constructing a lose-lose scenario for their opponents, before a word is said.

Technically it would be relatively easy for the Museum to include a debate in this Exhibition. Quotations from sceptics could be posted along the walls. Bolt's own words could be inside the Exhibition instead of outside, as now. Quotations from other Australian climate change sceptics/deniers like Ian Plimer, Cardinal Pell or Don Aitkin could join his. These are only dangerous according to a linear model of communication, in terms of which visitors are assumed to be helpless, passive victims of these messages. In non-linear practice, visitors could just as easily invert them as Bolt inverted the import of the Museum's message. A non-linear model solves this apparent problem by showing that it is not the problem it seems.

But the problem with a complexity approach is that it points out further complications. A recent experience of the UK Science Museum illustrates the stakes, and the complexity and unpredictability of the outcomes. I will not attempt a comprehensive analysis of this event. It

will suffice to make a connection via a news report. Under the headline *Public Scepticism prompts Science Museum to re-name climate exhibition*, journalist Ben Webster of *The Times* wrote (24 March, 2010):

> The Science Museum is revising the content of its new climate science gallery to reflect the wave of scepticism that has engulfed the issue in recent weeks.
>
> The museum is abandoning its previous practice of trying to persuade visitors of the dangers of global warming. It is instead adopting a neutral position, acknowledging that there are legitimate doubts about the impact of man-made emissions on the climate.

Webster quoted Director Chris Rapley:

> We have come to realize, given the way this subject has been so polarized over the past 3 to 4 months, that we need to be respectful and welcoming of all views on it.

In another source Rapley is quoted giving a less diplomatic, more angry response:

> There is a tyranny at work here. My impression is that where scientists know there are big uncertainties, they are afraid to emphasize them because people will misunderstand them. The evidence is that when they confess to them, they are exploited.

Rapley's text illustrates Shackley and Wynne's propositions about science and certainty. 'Debate' is constructed in this polemical situation as 'concession', admitting a previous 'failure', to use Bolt's framework. Rapley identifies the power at play, the 'tyranny' exercized by so-called proponents of freedom, claiming to speak on behalf of 'the public'. Similarly, Bolt in Australia has formidable forces in support. Strategically, the Australian Museum likewise may feel they have no room for manoeuvre.

Yet Rapley's response would have been stronger if it had come earlier, from a museum position which incorporated complexity and respect for diversity of viewpoints as central to its mission. In linear analysis, there can be only two directions, forwards and backwards. Non-linear thinking is not fully protected from the hostility of a Bolt, yet complexity is a safer position to defend, as well as a better reflection of the irreducible and productive complexity of the contemporary world.

3. The bullet model and museum communication practices

Bolt may not be always scrupulous in his use of arguments, but it is important for the Museum to recognize where he has a point. In this case the Museum showed a tendency towards a linear model of communication that left them vulnerable. I quote the opening statement again:

> Whether you're confused about climate change or just want the latest information, this new interactive exhibition takes you on a surprising trip through two possible scenarios: one where nothing has been done to combat climate change and the other showing how nations, communities and individuals can take positive action to help save the planet.

This text constructs the reader as occupying one of two positions in a deficit model of communication: either 'confused' and needing the Museum's cool, clear experts to straighten them up, or ignorant (though only a little), grateful for the Museum's superior knowledge. The text promises to act on this supposed subject, 'taking' you on a trip. The trip offers 'surprise' but no other pleasure, and the options are strictly controlled, in a sharply binary scheme. Elsie of Brisbane had reasons for resisting what is presented as a coercive experience, with a choice that is almost no choice.

This quality is not confined to the online version of the Exhibition. A small group from the *Hot Science* team carried out a semiotic analysis of the physical exhibition in 2009, the author plus Dr Fiona Cameron, Director of the project, and Research Assistants Dr Carol

Image: 'Corridor of Doom', Australian Museum. Photo by Dr Carol Farbotko

Farbotko and Dr Ben Dibley. The Exhibition was later sent to SciTech in Western Australia, where the present author viewed it again. The overwhelming first impression of the Exhibition, beamed onto visitors by many codes, is that this is an Exhibition with a message, packaged by a sender to impact in a linear way on a passive receiver.

The image is taken from the entrance to a corridor which encapsulates the message and drives it home. It shows a simple structure. Two walls run along and define a space which is also a pathway, leading to a vanishing point at the end, like the end of history. Each wall is organized by the same principle, a journey through time, over 70 years, starting with 'TODAY' in big letters to the left. The left hand side is the world as it will become '(if we) **DO NOTHING'.** The world on the right hand side is the world as it will be if we '**DO SOMETHING'.** I call this the Corridor of Doom effect.

Between these walls, running to an image on the far wall, is a bare carpet, well worn, containing nothing else. It is empty space. Semiotically, emptiness is just as full of meaning as any kind of fullness. In this case, it allows the eye to pass rapidly to see the inevitable end in the beginning, along with various stages along the way. It is a space of rationality in the present, a place outside of space and time, where a visitor can choose one or other option, but not neither.

This could be a space visitors could cross, to link the two sides, but no pathways are suggested or offered. This space divides rather than unites. But the end of this corridor is not an infinity of space or time. From the opening vantage point, the whole exhibition can be seen as from a god-like perspective. The viewer is offered the position of a god, the power of omniscience. In fact, the Corridor of Doom incorporates an illusion that the distance covered is greater than it is, and that the future will come quicker. The walls are at an angle. They look as if they get closer at the end, but the distance between them at the end is twice what it is at the beginning.

On either side of the corridor the message is unrelenting: lots of written text, with lots of big writing to emphasize key points. For instance, a huge sign indicates the meaning of the left-hand wall: 'Do Nothing ... explore a future in which we do nothing about climate change'. The size of 'Do Nothing' is the visual equivalent of a shout. The semiotic style, at least of this part of the exhibition, has only one mode, full throttle. This is grammatically an imperative, though puzzlingly here it is an instruction to do nothing. How does that message fit the apparently clear ideology of the Exhibition, which wants visitors to do something?

This vision is not only coercive, it is also inevitably short on facts. These are two scenarios, and scenarios are problematic tools of scientific method. They are good at producing dramatic visions, but they rely on linear logics and depend on an accuracy of inputs that good scientists know is unattainable. In computing there is a common phrase GIGO, Garbage In, Garbage Out, to describe the dependence of computor predictions on good data. Chaos theorist Edward Lorenz (1993) used the image of the 'butterfly effect' to describe the problem of 'sensitivity to initial conditions': the increasing effect of extremely small differences in the starting point of a computer run on later outcomes. According to Lorenz, the input in highly complex situations can never be good enough, except within broad parameters. This is so with linear climate change predictions.

This part of the exhibition is strongly text-based, with lots of words and few images, mostly diagrams. This is inevitable because of its topic. The future has not happened yet to provide artefacts or images. The message is clear, for those with time and background enough to read it, but it is didactic and demanding, not engaging. The message is easy to evade, by visitors who need only to exert their power to not bother to look. That is likely to include a large proportion of the target audience.

4. Complex readings

To complement this reading of the dominant meaning of the exhibition, I carried out an ethnographic reading, tracking a family of visitors to the SciTech version in Perth in 2010, a mother, Elizabeth, and her three children, Tatiana, 11, Michael, 7 and Maria, 5. They are not offered as 'typical'. A larger sample would be needed to make that claim, though the Museum's own audience research came up with a similar picture. What was important about their responses was that it was as if they visited a third exhibition, equally different from the Museum's intended view and Bolt's antagonistic one. It makes the point that multiple viewpoints can have positive consequences, not just negative ones. Complexity is an everyday reality, which linear models try to work over to fit their prescribed forms. Complexity is not necessarily a problem. It can be a solution.

This family did not pause long enough at the entrance to be impressed by the Corridor of Doom. Maria enjoyed a distorting mirror outside the Exhibition itself, which showed her fatter and thinner, taller and shorter, like Alice in Wonderland. At five years old she was too young for most of the exhibit, and too young to draw a lesson from the mirror, that human perception is unreliable, and seeing should not always be believing.

Tatiana looked upwards, fascinated by sculptures suspended above made from recycled plastic items, lit by coloured lights and looking like some undersea fantasy. She found out their story and was impressed. 'It's not just pretty, it's stuff', she said. They become her favourite part of the exhibition.

She and the others glanced to the left, and glimpsed through the wall the exhibits there that illustrated the gloomy world that would be left after 70 years of 'doing nothing'. Included in the exhibits that none of them looked at were stuffed animals from the Museum's extensive collection, skilfully adapted to carry a message of doom. The skill was wasted, however, because like the Museum's observation group, the whole family gravitated towards the right hand wall, through which could be seen some interactive exhibits. This, and the messages it carried, became the 'meaning' of the exhibition for them. The knowledge packed into the corridor, on both walls, was wasted on them, as for the Museum's observation group.

One exhibit particularly aroused Bolt's ire, what he called the 'naughty hamburger' story. The 'What's a carbon footprint?' display was an interactive touch-screen exhibit, in which visitors could discover the environmental cost of some everyday activities, including a meal in a restaurant, by following stages in the production chain. This was not a hamburger, incidentally, nor a fast food restaurant. The point made through the exercise supported traditional family values that Bolt could hardly attack: eating at home is better.

The scientific basis for the exhibit was the idea of a production chain, longer and requiring more energy than most adults or children are likely to be aware of. 'Naughty hamburgers' was Bolt's phrase, not the exhibit's. Production chain analysis is sound, uncontroversial science which delivers exciting insights. These insights are valid for a range of environmental issues beyond climate change. They arise out of an activity children can carry out, asking questions well within their scope.

For good or ill, these children did not pause long at that game. Michael's favourite was one in which a player nominates to be the leader of a country, from a choice including Australia and India. Michael chose India, and played with great concentration. When I asked him what he was doing he replied to my surprise that he was trying to lose money.

The game proposed various actions for the putative world leader, and gave the option of finding out the costs of each under the categories of environmental impact, money, and popularity. Michael invented a simpler version of the game, in which he chose the option that was least profitable. At age seven he had absorbed the lesson that the most reliable indicator of environmentally friendly policies was that they made a loss. Bolt and Elsie of Brisbane would have been appalled. The Museum might have been disappointed, too, at this aberrant reading. Yet Michael was engrossed in the game, testing out his over-powerful theory of environmental policies.

Another exhibit was more problematic. A futuristic cylinder carried the Logo CCNN, the initials for Climate Change News Network, but suggestively like the well-known CNN network. This futuristic device projected disaster news stories from 2050, with voice-overs reflecting on the poor decisions taken today which had such devastating consequences for the middle of the 21st century.

These images dramatized the scenarios in the Corridor of Doom, and could be condemned from Bolt's point of view as 'not science'. Clearly they are not science. They use the power of modern media to create powerful, persuasive images. If Bolt had actually visited the museum and seen this exhibit, his denunciation of 'fraud' would have seemed justified.

Yet paradoxically, this aspect of the exhibition is more defensible than the Corridor of Doom. The placards along the Corridor use semiotic signifiers of science, as used in classrooms, to give authority to products of scenarios that are projections, not truths. Cumulatively they impose a view that science speaks with one voice about both sides of this stark choice.

A deliberately fake news story, however, is more within their scope. Tatiana and Michael watched it briefly and enjoyed it in its own terms, as a fiction of a kind they were familiar with. This one has good production values, at the service of disaster stories which are engaging and dramatic. Their faces showed no traces of anxiety at what Bolt called 'fear-mongering'. The vulnerable visitors he was protecting had nothing in common with Elizabeth's children.

Both these exhibits were produced by one multi-media company, Art of Multimedia (AOM). In their web page they described the brief that they received: 'Messages about climate change are quite complex,' explains Dr Catherine Cooper, exhibition project co-ordinator at the Australian Museum. 'We had all this content we wanted to include, which would have been impossible to do in a more traditional display'.

This brief asks for a linearity it did not get. Dr Cooper identifies complexity of messages and excess of content as the problems. In practice, however, our brief ethnographic analysis shows how these exhibits allow an energizing form of complexity, in which what visitors bring to them is a vital element. Less content from the science can be included in this scheme, but there is more overall complexity, not less. That complexity includes actions and responses of visitors which are too unpredictable for a linear model. Yet this is the range of responses of the citizens the visitors must become, if the Museum's aspirations are to be fulfilled. The Museum got what it needed from these professionals, not what they asked for: complex communication utilising new technologies, not new tools for the old linear messages.

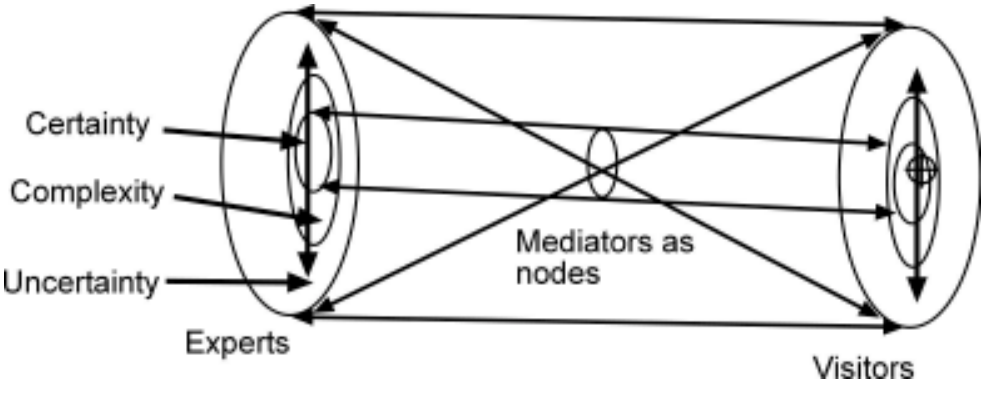

Figure 2. Non-Linear cylinder of Communication of complexity and uncertainty

Conclusion

By way of a conclusion, I adapt my earlier model for linear communication into a more complex and interactive non-linear form:

> This model encodes the idea of equivalent complexity of experts and audiences, with meaning flowing in both directions. Neither experts nor audience are homogenous, but organized in comparable ways around poles of contention, mediated by debate or divided by polemics. Divisions within the communities from which visitors come are no greater or smaller than among experts. That fact needs to be built into the model, not idealized out of it. The system is held together in this picture by mediators, who act as nodes in a network society binding experts and citizens, in a virtual community in which the museum can play a significant role.

In these transactions, all participants have crucial roles to play, not simply in understanding issues like climate change, but also becoming part of a single better-informed, more complex

and flexible community that is humanity's best hope of coping with whatever the future throws at us. Ironically, the climate-change sceptics/deniers are probably right that the world in 70 years' time will look unrecognizably different from the world now, and from the best guesses anyone can make. That includes their complacent and dangerous prediction that things will be pretty much the same as now.

In a sense, this incident may not seem to repay the attention I have given it in this article. Bolt's attack did not lead to closure of the exhibition. It seemed to come and go without great effect. Yet, I have set the analysis in a wider context because his attack was part of a wider phenomenon, and the strategic lessons are urgent and important. The complexity is irreducible, and its study cannot be deferred to a later point in a more orderly linear analysis. The problems with dealing with the global challenge of climate change are social and political as well as scientific from the outset. The social problems cannot wait till all the science is settled, not because science is consumed in a paralysing universal doubt but because science is not a single fixed body of knowledge on all aspects of this highly complex problem.

Museums are shifting towards a more significant role in these debates because they were already major institutions, pressured towards change or irrelevance by many highly complex external forces. To play these roles, they will reach out to means which are at hand or under development. They are big enough players to affect that development as well as draw on it. The attack from Bolt's position likewise comes from this complex, dynamic present, not from a self-contained tradition preserved unchanging from the past, as Bolt's rhetoric claims. Bolt is as much a post-modern phenomenon as are his targets. For both sides in this skirmish, non-linear models and strategies will prove ever more important, in a world that will not become any less complex for the foreseeable future.

Received: 14 June 2011
Finally accepted: 5 August 2011

Notes

[1] The author gratefully acknowledges the support of the Australian Research Council for the Linkage Project Hot Science, Global Citizens: the agency of the museum sector in climate change interventions, directed by Dr Fiona Cameron. The author would especially like to thank Lynda Kelly, of the Australian Museum, for originally bringing the central incident to his attention: to Dr. Fiona Cameron, Dr Carol Farbotko and Dr Ben Dibley for participating in the ethnography, and Dr Ben Dibley for other research assistance.

[2] All references to Bolt's blog can be found at the relevant date on the Herald Sun web site (heraldsun.com.au)

[3] Alice Hooker-Strand blog: http://tinyurl.com/y95w6w6, accessed 14-03-2011

[4] Not their real names. I am grateful for their cooperation and permission to use their comments as data.

[5] http://australianmuseum.net.au/BlogPost/Audience-Research-Blog/What-did-vistors-think-about-the-climate-change-exhibition, accessed 14-03-2011, managed by Lynda Kelly of the Australian Museum.

[6] http://artofmedia.com.au

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