From mitigation to creativity: the agency of museums and science centres and the means to govern climate change

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Abstract

Climate change as a complex, scientific, cultural, ideological, and transnational issue poses a new set of challenges for museums and science centres as places to inform, and as information sources in debates and decision processes. In this paper, I draw on quantitative and qualitative research from the Australian Research Council funded Linkage project, *Hot Science, Global Citizens: the agency of the museum sector in climate change interventions*, to interrogate the potentialities for institutions to operate meaningfully and in new ways in complex media ecologies and dense mediations of political, social, scientific discourses, and expertize. In developing the concepts *liquid governmentalities* and *liquid museums*, I pose new leverage points for institutions to operate within these pluralistic and complex governmental assemblages from one of the production of science statements to reform behaviour, to systems of open peer review and as places for facilitating complex reflexivity and creative dispositions for the future in the present.

Key words: climate change governmentalities; agency; museums; information; complex reflexivity; creativity; futures

Cultural institutions, climate change and social governance

The theorization of, and research into, museums in social governance is largely founded upon cultural theorist Tony Bennett's seminal work (1995) *The Birth of the Museum*. Bennett's historical analyses of nineteenth-century museums, influenced by French philosopher Michel Foucault, showed how the early modern state saw institutions as parts of an ensemble of governmental agencies such as schools, the police and the prisons operating variously as apparatuses for civic reform (Cameron 2007, Cameron 2010b). Like Foucault, cultural theorist Zygmunt Bauman (1987) sees this ensemble as a distinctly modern means for shaping and governing social conditions through particular apparatuses and intellectual strategies. According to this formulation, museums as knowledge institutions act as sites for exercising a specific form of power and knowledge through education. From this vision of modernity, education is equated with disciplining populations by enforcing conformity and obedience to a particular elitist moral order and the rejection of localized and other knowledge systems, thereby reducing an individual's capacity to exercise his or her own moral authority.

Dominant approaches to climate change governance, globally, seek to securitize an unknown future by using bio-political rationalities to govern the atmosphere through the mitigation of greenhouse gases, and through ecological modernization rationalities and techniques, markets, carbon administrative structures and technological development to escape the ecological predicament (IPCC 2001; 2007; Steffen 2006; Mol, Sonnenfeld and Spaargaren 2009). Reading the correlation between museums and climate change using Bennett's (1995) Foucauldian reading of historical governmentality in the contemporary context, situates museums and science centres as modern, educational institutions for civic reform; that is, the deployment of bio-political rationalities and techniques to govern the atmosphere, acting as a carbon regulator, disciplining audiences to change their behaviour

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and reduce their carbon footprint, thereby using the insights of climate scientists and the science of greenhouse concentrations as persuasive mechanisms. Here, institutions become part of dominant administrative and management structures by symbolically legitimizing these visions as the only means to govern.

Many museums understand their roles as places for civic reform along these lines. The recent exhibition, *Climate Change - Your Choice* at the Australian Museum, Sydney, deploys a behavioural psychological mitigation imaginary disciplining the responsible individual to *Do Something* to reduce their carbon footprint to secure a precarious future as opposed to *Doing Nothing*, leading to inevitable climate catastrophe (Cameron 2010b).

In my co-edited collection, *Hot Topics, Public Culture, Museums*, I developed two new concepts, *liquid governmentalities* and *liquid museums* that detail a different ontology of the social, different spatial forms for governance and governmentality analysis and for museums as institutional forms in light of contemporary social conditions (Cameron 2010b). These new imaginaries for governing climate change and for institutions deploy concepts such as the space of flows, complexity, liquidity, emergence and systems theory, informed by Bauman's liquid modernity and plural power theory (1991, 2000, 2007), John Urry's global complexities (2003), Bruno Latour's analytic of the social as hybrids of the human and non-human (2005; 2005b), and Deleuze and Guattari's (1987) and DeLanda's (2006) assemblages.

Institutions and governmental projects are formulated in new ways in space and time, in relation to other governmental projects, as complex and relational, and as assemblages – components of material and expressive forms that are mobile, cohere with others, territorialize and also disperse or de-territorialize according to certain conditions and events. According to Bauman's (1991) pluralist power theory, different interest groups prevail in different issue areas and propose different governmental strategies, each exhibiting variable powers to act. To deploy Bauman's pluralist power theory and liquid modernity (1991, 2000) here, governing climate change now entails plural models of order where power is dispersed across multiple actors and dispersed sites, legitimizing the pluralization of authoritative opinion, expertize, multiple rationalities, different technologies and techniques for acting. This constellation of governmental projects, at times, leads to the emergence of more complexity and competing rationalities as to the right means to govern.

In a liquid modern frame, knowledge production and the technique of education is no longer bound to a specific apparatus, such as the school or the museum, nor are questions of agency formulated along one line, but rather pluralized governmental possibilities emerge. Interpreting Bauman's ideas, in this sense, articulates the form and shape of museums and science centres as institutional forms as dispersed, as fragmented, as interconnected, able to link and contribute to a range of different governmental strategies, rationalities and techniques. In mapping the notion of plural power theory onto museums and science centres, audiences move from being objects of intervention to being subjects for action.

These new ontologies enable us to think and also act outside the modernist vision of institutions and of governing along disciplinary lines in theory and in practice. It also allows museum and science centre staffs to look beyond the idea of legitimizing one governing plan, and to operate conceptually and practically with, and within, others on the basis of their skills, strengths, capacities and powers, also taking account of the limitations to act within particular configurations.

Institutional structures, the notion of change and movement, are restructured through the notion of the *liquid institution*; as a configuration, I argue this better captures the complexity of contemporary social arrangements. Deleuze and Guattari (1987) and DeLanda's (2006) assemblages provide the conceptual tools to conceive of institutional forms as dispersed, interconnected, mobile and emergent, operating within the pluralized governmental arrangements and rationalities, deploying different technologies and techniques for governing climate change. Institutions are no longer solely conceived as hierarchical, closed or fixed to a physical location. As governmental assemblages, institutions can be thought of as made up of components of material (buildings; people; computers; exhibitions, collections; geographical location; funding etc.) and expressive forms (practices and capacities such as an institutional mission; expressions of legitimacy; expertise; trust; authority; networks; dispositions; aspirations; contracts; brand etc.) operating as, and in dynamic, gathering or

assembling and disassembling processes that transcend national boundaries. Each of these components, within institutional assemblages, operate as matter in flows as a mobile configuration that is at once diverse, distributed, at times uncoordinated, and exhibiting varying capacities.

Thinking of institutional forms and programming in new ways allows us to explore creatively the multifarious ways in which museums have the powers and capacities to intervene in debates and decision processes beyond the normative *biopolitical, science and technological* lessons. By looking at museums according to a different optic (liquidity theory and assemblages), we can view institutions and interventions as processes, as emergent, and the multifarious ways they might be shaped, or plug into, embed and disperse their activities within broader governing networks. It also allows for a more complex and nuanced analysis of the ways multifarious actors within institutions, and those outside, envision institutional possibilities for acting on climate change in other governmental arrangements.

Such as device also enables institutional staff to think of their institutions in practical terms; accordingly, as a series of unique material and expressive forms and how they might operate more specifically within, and with other, governmental assemblages. Here, I move from a critique of what the museum does to that of an institution's emergent possibilities.

Because the *liquid institution* can no longer be reduced to a fixed and closed hierarchy of functional interdependencies, an organization, and indeed audiences, can be thought of in terms of their capacities, desires, relations and variable powers they embody as actors with others within a mobile, open, interacting system. Moreover, the Deleuzian rhizome (Deleuze and Guattari, 1987) can be mobilized here, as a useful analogy to consider the ability and multifarious capacities an institution has to plug into, and intervene in, climate change as a form of soft power. Rather than operating as hard, disciplinary power, the museum as rhizomic operates as soft power, ceaselessly establishing connections with other governmental assemblages through chains, organizations of power, and various entities, struggles and movements. In the museum context, this could involve the formulation of visions, strategies and practices with a focus on the means to embed and disperse various programmes and actions across relational chains as part of collective arrangements.

These complex and relational concepts are more relevant organizational imaginaries for a highly mobile, fluid, globalizing, complex, networked world (Cameron, 2008), one largely driven by the digital media revolution and neo-liberal arrangements. These new ontologies are entirely appropriate for acting on climate change because, as a phenomenon, it is at once local and global, highly mobile, ideologically and governmentally complex.

The concern of this paper then, is to examine the potential, emergent roles of natural history museums, science museums and science centres as information sources and as 'places to inform' within governmental information and media assemblages through the variable and sometimes conflicting visions, desires, needs and expectations of audiences against those of institutional staff and CEOs.

To do this, I use quantitative and qualitative research from our online survey conducted across Australia, New Jersey and New York in the USA. This was a general demographic survey involving 2,100 participants (1500 in Australia and 600 in the US); focus group research with museum and science centre audiences involving 12 groups in Sydney, Melbourne and Jersey City convened on the basis of six groups of older and younger families and six groups of adults (single income no children, 35 to 60 years; double income no children 25 to 30 years). This was complemented with a series of one-on-one institutional interviews with CEOs from the five partnering institutions and a series of interviews with staff in visitor services; curatorial; science communication; and education.

Museums and science centres as governing mechanisms within information flows and the media landscape

The focus group findings, across all the samples, demonstrate strong links between information provision in the mode 'to be informed', and education as the dissemination of information, as the most popular option for climate change effectivity. For some, it was seen to be important to establish climate change issues as part of formal education by 'making

it part of a curriculum in the schools.[1] For others, the emphases were on more informal strategies, like those of the science centre and the museum. A number justified their selection by arguing for the primacy of education: 'if more people are educated, then they will do other things on this list'.[2] Education was viewed as a precursor to decision-making; empowering the individual to weigh up the options, make their own informed decisions and facilitate broad-based mobilization:

> You start to educate yourself and you start to educate your family and everybody moves together in that way ... it's our nature, it kind of comes automatically. We want to work together in this way so then we can have a sustainable life for everyone.[3]

Some participants were more circumspect with regard to the effectiveness of education, drawing a distinction between knowing about something and doing something about it.[4] Here, audiences reframed governing through pedagogy from a modernist formation as disciplinary, to sources of raw material to inform their own reflexive practices building their own capacities to think and act.

Despite the emphases on education as the provision of information, survey respondents had little confidence in the dominant institutional information sources on climate change. Eighty-one per cent lacked confidence in information from corporations because they are driven by a 'profit motive' and a further 66 per cent were sceptical of information sourced from government because they were seen as having specific vested interests that have a focus on the 'short termism' of the election cycle (Cameron *et al*. 2011).

A further 57 per cent of our sample was suspicious of information derived from commercial media because they were seen as sources that sensationalize and supply a one-dimensional story. Despite an evident lack of confidence in commercial media in particular, the Australian and US public in our sample were in the position of relying on the media—newspapers, radio, TV, and increasingly the Internet, to source information on climate change awareness. That is, in determining the degree of risk climate change poses, the options for action, justifications for inaction and the state of scientific risk predictions (Cameron *et al*, 2011). Here, many noted links between media reporting and politics in which the former acted as an advocate for particular policy positions.

Cultural institutions, such as museums and science centres, are not prominent in people's minds as information sources on climate change but they are seen as potentially one of the most trusted. Sixty-nine per cent of the Australian, and 65 per cent for the US sample, viewed science organizations as the most trusted followed by cultural institutions, museums and science centres at 55 per cent and 56 per cent respectively (Cameron *et al*, 2009).

In these complex, pluralistic and conflicting information scapes, museums and science centres were seen as having the capacity to act in governmental assemblages by providing a different perspective on the debate, thereby having the potential to open debates up to other points of view beyond mainstream positions;

> …the government wouldn't put this in the museum because if they want to make a decision on policy, they put it on TV or newspapers … people go to the museum to get a different perspective on other media, not just from the government.[5]

Here the expressive forms of an institution - its trustworthiness, its expertise and perceived impartiality - frames the capacity to intervene in debates and media flows marked by a high level of distrust and scepticism because it is perceived as lacking a political agenda and therefore vested interests; 'I think trust [with museums] … whereas you don't have that for say the government, politicians.'[6]

In the media landscape, and in public debates, both institutional staff and CEOs positioned their institutions within these assemblages as sitting between the various vested agendas of governmental formal politics, that of a particular political cause and activist programmes connected with non-government organizations, and corporate interests. This position, and indeed perceived social responsibility, was described by many CEOs as moderator and intermediary between the various conflicting agendas, as an honest voice of reason between the extremes of views.

> …the museum: it's one of those parts of society that's seen to not be particularly biased by either government or commerce or vested interests .... we can in public debate and in the media side of things provide a balanced view, a level head ... moderating the extremes ... what can be hysteria in different directions, an over-reaction in various ways ... an honest broker in the media debate is really important ... we've yet to figure that role out.[7]

Many of those interviewed were uncertain about how to do this, noting that climate change offered a set of particular and new challenges for institutions due to the highly complex, ideological, agenda driven and divisive nature of the debates around the causes, solutions and the reasons for action and inaction. In an institutional culture, that is conflict-averse; as one that trades on impartiality as a source of its capacity as an agent of empowerment; views information as politically neutral; where communication is based on a one-way, bullet point model (Hodge, 2009); and where content is produced through synthesis, simplification and the removal of complexity, climate change gestures towards a need for a more radical rethinking of the positioning and the political work of the museum within governmental information assemblages. This argument is expanded in Cameron and Deslandes' article in this issue.

In clarifying the various possible agencies of institutions in these complex debates, one CEO made a clear distinction between that of commentator, as one that reports analyses and comments, drawing a line between their role to inform, to offer critical comment, and that of making directive statements about how to proceed. 'I think our role is synthesizer ... a translator, rather than a direct commentator. Commentator ... we have to be careful of that role ... when making statements about how it should be.'[8]

Further, the trans-national, cosmo-political and complex character of climate change as a discourse and as a subject for action within global governmental and information assemblages, challenges institutions in their spatial orientation, and towards the trans-nationalization of their activities as, 'it requires a global response and complicating factors like the financial crisis, trade objectives, like conflict ... are sitting in the road of understanding and dealing with that problem.'[9]

The problem of impartiality as an expressive form

Most institutional interviewees quoted impartiality as a normative imperative shaping the museum's practices, an ideal horizon to which its activities should be directed and one regularly identified as a source of public trust. Finding the middle ground of 'balanced' and of 'impartial' was particularly challenging. The communication of a complex ideological climate change, and the notion of climate change itself as a nebulous concept, inevitably challenges the cultivation of objectivity, its lesser impartiality, and its expression, a 'balanced view'.

> It's conceptually difficult in science communication ... climate change is a terribly dangerously neutral expression, climate always changes ... abnormal, unusual, anthropogenic it complicates debates about cause ... It's very hard to maintain a level of 'objectivity' in the debate for something that is so subjective.[10]

Institutions struggle to find their place within this rapidly shifting terrain because timeliness, responsiveness and complexity operate against the considered, settled institutional ethos. Formulating an impartial position was seen as an antidote to the potential risks to an institution's credibility.[11] To navigate their way through these complexities as a means of assuring impartiality, many institutions operate as a compass to locate conservative positions within the debate as a way of buffering themselves against potential politicization - the deterritorialization of trust and therefore legitimacy. That is, by cautiously gauging the state of debates and attempting to create solid, reliable information through the production of narrative featuring safe, established positions, '...trust could be lost if you promote particular views that are perhaps not mainstream.'[12] Impartiality and balance in content production, and the positioning of the institution as an intermediary in governmental debates, involved the presentation of the most widely accepted and secure positions being read by many as this

'safe point'. Locating a safe point in debates, in particular around climate science, was recognized as first an alternative to the climate problematic and, secondly, as a delicate balance between not hopping into 'bed with a vested interest group' and 'not biting the hand that feeds you.'[13] An interesting twist on the impartiality of the institution was noted by one interviewee, who contended that, because of the' inherent conservatism' of the institution and the slowness with which it responds to change, the appearance of impartiality and of being unbiased are, in fact, default positions.[14]

The problem, however, is that, for many, climate change presented a particular challenge to the museum's position of impartiality, given its nature as an issue that demanded radical transformation at the personal and systemic level:

> I think that's a really big challenge for the museum with climate change, because we're seen as politics neutral. Or we're seen as not vested. As soon as we start saying, "We all need to change dramatically", I think we'll be put in a camp, politically or environmentally or by association.[15]

Tensions between authoritative and credible content: museums and science centres as assemblies of peer review

Because climate change debates move quickly and are often conflicting, audiences cited judgements about the relative credibility of sources as new forms of quality assurance for institutions in governmental assemblages as expressive and material forms as opposed to hard, authoritative, objective content. Audiences deemed the former as central to their own reflexive self-formation, where decision-making is primarily formulated around self-actualization, a departure from modernist educative imperatives of reform and obedience. Here audiences conceive institutions' potential in media governmental assemblages as part of systems of peer review, not just in terms of the science, but also in regards to a range of debates and positions. A peer review process was articulated by the focus group participants in regards to institutional agency as contributing to the research assessment process in reviewing the evidence, the credibility of the research, and weighting the various debates and sources. Here, audiences articulate a new formulation of institutional trust and credibility in the 'to be informed mode' as peer reviewers.

> I have a certain amount of confidence in the information … there's a certain way it is researched, they've got to confirm where they've got their information from and to get it to a point it had to go through so many different educated professors and specialists in their field that there's a certain amount of credibility that goes along with it …[16]

The function of authoritative information and certainties, according to institutional staff, was one of pastoral care, liberating individuals from a fear of the future by helping them to form their own opinions, 'If we can give people skills and attitudes and a sense of confidence about the future that will be very important.'[17] Here, slippages emerge in terms of how institutions are viewed in governmental information assemblages - the former as assemblies of peer review, the latter as authoritative. Trust, as an expressive form, is also re-formulated based on the presentation of a range of views in a quality assurance mode as opposed to a safe point - a protectionist consensual stance where all other positions and ideologies are rendered invisible.

Many interviewees, including CEOs and audiences alike, acknowledged that this new subject matter was inherently complex and political, a field in which conflicting governmental rationalities and propositions with different ideologies and beliefs operate on each other, often defying consensual solutions. Here, audiences articulate peer review with a deliberative modality, one that works against the capture of these agendas by the institution and, instead, seeks to present them all; that is, not just those of science, rather also, the interests at stake and the power relations within each of these governmental options with a view to their examination and to making decisions. This argument is further expanded in Cameron and Deslandes, 2011, this issue. Although a deliberative model (Benhabib, 1996; Dryzek, 2002)

acknowledges plural rationalities, this modality still moves towards a consensual position as a means to govern. Therefore, many still believe that consensus is possible on which directed action might be based, and certitudes available if the complexities of the various positions are clarified and synthesized.

> There [are] so many variants and everyone's got different views and some views are more idealistic than realistic, so it's really hard to tell and since all this media, it's so filtered as well. It's hard to get out what it is that's actually going on.[18]

In turn, many CEOs articulated their potential unique contribution to debates as mediating controversies, untangling the complexities and illuminating them to supply the necessary certitudes.

> In many areas of public debate, there's lots of heat and not much light, what is desperately needed is a trusted source of information that people can turn to understand issues better ... museums are in a great position to be part of public dialogue. I'd like to see this happening ... it's a responsibility we have.[19]

While acknowledging the complexities and difficulties of providing certitudes within conflicting science research information, their roles in governmental assemblages around the material form of science information was expressed variably between different forms of the museum. For many science centre CEOs, science is the only legitimate content source and organizing narrative from which actions and solutions could be formulated. Responsibility as an expressive form in these governing arrangements was articulated in terms of providing certain science, rather than the wider presentation of a range of views and their ideological framing.

> Media ... it's confusing ... Antarctica is growing, ... is it getting thinner? All those viewpoints have been put forward, it's hard to make sense of confusing messaging ... complicated issues like climate change; it is challenging to know what's going on ... it's very clear that scientists understand.[20]

This is in contrast to our research, which indicates an emerging tension between the institutional views of science and audiences' expectations on how institutions should contribute to science debates. Audiences contend that institutions must acknowledge the complexities of science debates, including those of deniers arguing that institutions must present all arguments, and lending weight to different theories.

> The quality of the science by scientists that believe in global warming is good, not necessarily as good as the people that would say it's natural ... you've got to take both sides into consideration ... you can't unequivocally say one's right and one's wrong, you've got to lend different weights to different theories.[21]

However, a democratic remit in climate change science debates was considered a threat to institutional trust for many, because of its political implications. While many CEOs make the link between multifarious and conflicting ideologies within public debates and that of audiences, the production of certitudes from the default position of science continues to operates as the trust component, a way of containing the political and the subject matter's inherent ideological complexity;

> People understand there is a range of viewpoints … it's a complex issue, they often then overlay the issue with their own prejudice or viewpoint ... this is where trust gets eroded ... if you are coming from a strong green perspective and government is not doing enough, then you tend to be distrustful of what government is doing. People from another perspective might trust the same viewpoints ... it depends where you're coming from and the issue, but generally the Australian public hold scientists in high regard.[22]

Clearly, the complexities of climate change science research and its variable potential politicizing effects challenges institutions' *modi operandi* in regards to their desire to produce certitudes from a clear position of the science and also to ensure that the contours of the political are carefully managed. Some CEOs articulated their role as one of re-packaging science to create certitudes, rather than articulating its ideological complexities and conflicts; 'When you repackage science, scientists tend to get twitchy ... they are only comfortable talking in their precise language about their precise area.'[23]

Science certitudes, within an institutional setting, thus involve the production of a smooth space where the science is cleansed of its controversial elements, its ideological framing, and its diversity and variability. Clearly, institutions are still not comfortable with the interaction of different viewpoints. Instead, they set apart difference and attempt to provide definitive statements reflecting the continuation of the certain, modernist museum in an uncertain world.

Governing climate change as a problem to be solved – is the science of climate change enough?

Within mainstream governmental assemblages, climate change science and science information remain the primary techniques used to announce the problem of warming as increased concentrations of greenhouse gases in the atmosphere, and as a pretext for action. Within this governmental rationality, mitigation – the measurement of greenhouse gases and the assessment of acceptable concentrations in the atmosphere around forecasted levels of warming – remains the proposed solution. Many of the CEOs spoke of the link between certain science and the production of definitive solutions and where institutions' primary responsibility was as a preventative mitigation mechanism. The operation of institutions in governmental assemblages around greenhouse gas mitigation was two-part. The first was in terms of an institution's own practice, where the very credibility of the institutions' statements on sustainability and climate change were dependent on the initiatives undertaken by the institution to reduce their own carbon footprint.[24]

The second technique, in which institutions saw themselves operating in governmental assemblages, is geared to managing the atmosphere through their science communicative function. Communication strategies were posited on the notion of first untangling the complexities of the science from which clear and direct messages for action might be formulated, that could then be used to persuade their constituency to reduce their carbon footprint. Here, institutions use techniques to calibrate the carbon footprint of audiences, formulating them as species bodies to be adjusted according to Foucault's biopolitical imaginary (2008) to bring the environment back into balance; '...the challenge ... is to reinforce, strengthen views, change behaviours ... it's an applied area the museum hasn't had much to say...'[25]

For the majority of institutional staff, particularly those in science centres, their greatest potential impact as a governing entity was articulated as one of mitigator, using science as a lever to change the behaviour of individuals and populations. Here, impact is measured in terms of modern concepts of power, behavioural change and civic reform using techniques of direct messaging operating in capillary action through their staff, to audiences in partnership with other organizations, communities and schools.

> The ideal interventions would be to change the behaviours and attitudes of visitors, members and staff. Science centres are not great places to go and get knowledge, they work better in attitudinal change ... they have enormous potential because of the reach, the numbers of people who visit, we can affect behaviours in countries around the world ... [this is] a significant collective impact.*[26]*

In global governmental mitigation assemblages, many saw their effectivity as part of a cosmo-political science centre mitigation movement, able to effect behavioural change on a global level, and to build a green global citizenry.

> Our mission talks about impact that strengthens communities and inspires global stewardship. We talk about the impact funnel being the wide end, if you will, who comes through the door and on the narrow end at the end of their visit, the process of life-long learning.[27]

The link between behavioural change and the impact factor for some science centre CEOs, although targeted to civic reform, had a deeper, complex, more rhizomic form, linking techniques of carbon counting to audiences' own lives and practices as a precursor to thinking about the larger issues and about ways to live in the world differently. Persuasion as an expressive form was factored in as a series of steps that both articulate the viewer as active in forming their own opinions, and in shifting their attention from disinterest, to prompt her/him to reflexivity, to action.

> To move from disinterest or curiosity to interest to insight to action ... the world is not going to be a different or better place unless people do things differently having thought about it and reflected on things differently, so that's our impact funnel.[28]

Natural history museum staff, however, described their greatest potential impact in regards to governing climate change as biodiversity documentation mechanisms.[29]

Similarly, institutions are imagined by audiences in their mode to inform, and in mitigation efforts to stabilize the atmosphere in governmental assemblages, as a science translator and as a place to offer alternative options. Interestingly, many expressed an unwavering faith in climate change science as a discipline that can save populations from climate catastrophe and institutions as places integral to this salvage operation: 'as an arm of the scientific community museums can provide information about alternative real alternatives as a form of education that we can understand.'[30] In its mode to translate the science of greenhouse gas concentrations and perceived predictive future scenarios under various degrees of warming, climatology was seen to be able to produce various mitigation and adaptation alternatives as well as a linear trajectory between cause and effect; '…the scientific community produced the information ... the education kicks in … and disseminated ... You've got to let the population know what the cause and effect is, like smoking.'[31]

While for many, science holds the key to governing and solving global climate change, others articulated effectivity beyond a simplistic imaginary of direct messaging based on greenhouse gas calculations and associated carbon reduction strategies. Rather, solutions were articulated within a broader scientific remit – the variable views and mitigation research in various science disciplines beyond that of climatology. Here, institutions, for many, have a potential agency in detailing the problem; the range of views and research of scientists and how each proposed to fix the problem as a call for a new form of scientific citizenship as one knowledgeable about the social relations of science, technology and the politics of expertise (Barry, 2001: 127-8). 'I'd like to see what's happening with scientists right now, how that will directly affect the problem ... how that is actually going to fix the problem. Like carbon capture and storage underground...'[32]

This is in contrast to the simplistic messaging favoured by many institutions, in which they detail their role as producers of scientific statements as opposed to peer reviewers as a range of views expressed and examined. Moreover, where institutional staff argue for expressive forms based on a persuasive modality to responsibilitize their audiences to think otherwise and therefore act, focus group participants articulated this as a motivational paradigm to assist their own self-reflexive formation through their freedom to chose, evaluate and make up their own minds; 'Institutions motivate people … they come here, they see it, they say what can I do, this is what you can do…'[33]

In the move from awareness to action, audiences' self reflexive formation operates through assembling information, materials and practices to which museums contribute, as individuals govern their conduct by calculating the advantages and disadvantages of courses of action on themselves. 'People want to know what they're going to get out of it if they make changes for their family, their community, future generations.'[34]

The mitigation imaginary, so prevalent in the institutional setting, privileges science and the physical over culture, puts human and culture in the service of managing the

atmosphere according to a Foucauldian biopolitical philosophy, where humans are defined in terms of species bodies (Foucault 2008) made responsible to reduce their carbon footprint. Climate change, nature and culture are presented as ideologically empty and, therefore, politically neutral.

In the second part of this article, I pose the question of whether stabilizing the climate along these lines is, indeed, the desired or ultimate goal for museums and science centres in governmental assemblages, or whether climate change as a concept operates as means to engage a broader range of other deeper and richer frames encompassing a range of reflexive processes and creative goals.

From a problem to be solved, to complex reflexivity and creative imaginaries

Many focus group participants expressed a desire for institutions to offer a more critical and deeper contextualization of climate change debates connected to knowledge production, to the evaluation of the various claims of risk and its management, to decision-making processes and to activist sensibilities. One of the valued potential traits as a reflexive mechanism in climate change was, accordingly, the ability for institutions to present a historical trajectory and contextualized view of climate change linked to activist claims, so that by 'show[ing] the process, the background and how conclusions are made, it teaches you step by step how they got to that process … how they came to that conclusion and how to get it to work.'[35]

This subject position gestures towards what Felix Guattari (2000) argues requires a re-inventing of whole network of different types of relations in which subjects, the audience themselves, are partially constitutive of subjectivity itself. That is, rather than creating science statements as containers of phenomena, they extrapolate the relationalities of different variables inherent in climate change human and non-human systems as non-linear processes that act on each other as modes of production, events and processes (Urry, 2003).

Further to this, climate scientist Mike Hulme (2009: xxii) argues that climate change operates as a threat to our lives and lifestyles based on our variable views of nature, our judgements about scientific analysis, perceptions of risk and ideas about what is at stake, such as consumption, economic growth, sovereignty, species extinction, or the poor or distant others, their predicaments and our responsibilities.

Hulme (2009) explained his position further by contending that climate change, as a metaphor, has done its work, rather, now, offering an opportunity to connect with the deeper ideological issues, values and power relations about what is at stake for the various actors, as a means to make progress. Climate change debates are essentially disputes around defining the contours, and establishing the conditions about how to live in the world. Hulme (2009) regards the current mitigation approach as a shallow, elite-driven and short-term administrative process.

> If politics is the contest of the delineation of the contours of the social, economic and cultural; that is to say, the establishment of the conditions for how we shall live, then we don't have much of it at the moment. We have the "administration of things", and the best that we can manage is elite-driven technocratic tinkering.

So, how might institutions refashion themselves and offer new leverage points in climate change debates and decision-making when the contested nature of climate change is posed in terms of our ideologies, value positions, views of the world, nature, the economy, risk perceptions and our ethical frameworks? How might we arrive at the creative opportunities suggested by Hulme? How can institutional efforts shift their 'political' work to provide information and to inform from a primarily linear science mitigation strategy to a philosophical exploration of the status of our larger conceptualizations of climate change? This interrogation must include the critical analysis of the different epistemological constructions in disciplines, varying from economics, ethics, politics and humanities and through different knowledge systems, and that of the personal positions and ideologies of their constituencies (see Hulme 2009 in regards to science and science engagement).

The liquid imaginary allows us to think differently about institutions and their roles in governmental assemblages. Institutions as a liquid form have the ability to operate as dispersed and mobile entities across plural governmental assemblages as material and expressive forms, and in climate change as gestured by Hulme. This process can be achieved by contributing to, and by assembling, the ideological positions, views, authoritative opinion, beliefs and values, techniques and technologies of others posing multifarious models on the means to govern, and interrogating the larger questions about how we might live in the world differently, and future lifestyle options.

In governmental assemblages of science, museums and science centres can contribute to the revision of the material forms of science production and of climate change as a cultural phenomenon. Latour's actor-networks (2005) offers the means to conceptualize this process in an expressive and material form, by reformulating science and cultural knowledge around climate change as complex interactions between the non-human and the human, where science is no longer dialectically opposed to culture but becomes culture and where cultural responses and nature act on each other as a trail of associations. Actor networks, as a modality for content revision, also act against information as certain, solid, fixed and stable and allow institutions to deal with climate change information as mobile, fluid and non-linear. It also allows institutions to move beyond the production of authoritative information based on dominant, hegemonic narratives of science and to activate the cultural, deploying other expressive sensibilities of reflexivity, critique, revision, affect, polysemy, relationality and imagination operating variously as informants, peer reviewers, translators, facilitators, commentators, mediators, brokers, relationalists and futurists. In short, climate change operates as the raw material that can be put to work in various ways in our individual private and collective public sphere projects.

To do all these things, and to engage climate change meaningfully in a way gestured to by audiences, institutions must account for the relations between climate change, ideology and power relations, all institutional hot spots. Further, in all of these processes, audiences are recomposed, according to Guattari, as individual and collective subjectivities in the context of these new techno-scientific and geopolitical co-ordinates (in Conley, 2009). That is, rather than treating audiences as passive species bodies to be reformed, museums need to acknowledge the creative potential of their audiences as valued actors having valued opinions and expertise, skills, capacities, desires, expectations, reflexive capabilities and imagination. In particular, a complex reflexive imaginary gives rise to many new and refashioned structures, including those of expert systems (Lash *et al*. 1996). The refashioning of expertise along plural lines, opens up a space to consider climate change as a contemporary social, cultural and cognitive condition from diverse governmental positions.

Clearly however, there are tensions between audiences' and institutions' views about the role of institutions in this process. Audiences articulate a desire to engage in critical thinking, to reflect on, review the various ideological positions and, where reflexive self-formation operates through an examination of the climate complexities, to see the strengths and weaknesses in the scientific and social imaginary of the future-present. That is, opposed to the cautionary strategy employed by many institutions, which involves smoothing out the complexities of climate change against the one-dimensional notion of science to understand the workings of nature, and as the lever for reform. Beyond this, institutions can play a role in formulating a new expressive sensibility, complex reflexivity, to accommodate multiple narratives of governance and their multiplicities, multiple orders (Law and Mol 2002) and multiple effects (Deleuze and Guattari, 1987) in their own terms, as part of group performances. Institutions can make possible new forms of cooperation as a way of considering climate change as a creative opportunity to think otherwise about the way we want to live in the world and in the future.

A desire for a complex, reflexive and creative disposition resides in many audiences. One of the perceived values of museums and science centres for audiences in a complex conceptual debate is the potential to assemble multifarious views, to detail the various positions and their complexities as a space in which creative opportunities might be found; 'you can probably get a good handle on what's going on [with climate change and its various impacts and implications for communities], which might take you a few years even to get the

information otherwise.'[36] Here, audiences value the views of others, recognizing that climate change is a highly variable and value-laden concept. Balance is reworked as an expressive and material form within the deliberative frame as a range of views to be expressed and examined; 'So it would be good to see a balance [of views and debates] and I think it would just add to the whole point of going to the museum or science centre to see all sides.'[37]

Audiences expressed a desire to examine both the views and different knowledges from scientific experts, along with those of the local and experiential as a position from which negotiations can be made; 'to see quite a few different views will make people think ... why do these people have these views, why do the scientists have these views … a whole range of views from different backgrounds.'[38] A range of views, along with their complex ideologies and subject positions and exchanges across the sectors for focus group participants, allows a range of creative options to emerge and be captured within these processes of collective intelligence.

> A wide range of ideas is good ... all these parties have good ideas you can collect. So in a way, different people will collect the good ideas and then they can just utilize that to do something or give them an option.[39]

Herein, for many the opportunity to present the variable dispositions, ideologies and options offered a mediated view of the future as a series of creative pathways rather than as a certitude; 'That gives us an awareness then of different ideals and different thoughts and different options.'[40]

Within this new modality, museums for many act materially as alternative media, in translating the complexities and the multifarious governmental options as future imaginaries into an accessible language, whether that is textual, experiential and effectual. As one discussant explained; '...museums are a way of making not very accessible information accessible to a wide cross section of people who might not know and not come across that … the physical things as well … a way to experience.'[41]

The web is both the material and expressive form of these new social arrangements, bound up in the concepts of liquidity and assemblage. On a practical level, the web for many is perceived of as the preferred information delivery system because of its accessibility. The expression of institutional trustworthiness in these debates, and on the net, is based on the idea of expertize, the credibility of sources and source transparency;

> ...on the net people face the problem of deciphering reliable sources, while at once recognizing the advantage of having access to a range of sources around ideological positions, values and approaches to build up a better picture of the issue. (Cameron and Mengler, 2009)

Here, institutions can capitalize on this medium as a diagram for new political and social futures and how they might be imagined because of its modality as ephemeral, as dialogic, as relational and as transnational. They have the ability to assemble the ideological positions and interests of stakeholders and audiences, their narratives of agency and of creating a space to challenge the dominant rationalities of science, of nature, of progress as well as discussions around climate change as a contemporary condition.

The web, as an open, relational space and social media, as a technology and technique for self-expression, has the potential to activate this new liquid institutional imaginary as assemblies of peer review in conjunction with assemblies of public review announced by scientist Ulrich Pöschl (2010). This could be achieved by enabling and facilitating a richer and thicker dialogic process that can then be fed into the review, weighting and quality assurance processes. The question of authorship and mode of address is central to the re-positioning of institutions within a peer review process, from one deploying an information deficit model to one of credible peer-reviewed sources collectively producing the raw materials for individuals' own projects and those of the collective. The reframing of the expression of authority along these lines by some museum CEOs has the potential to allow institutions to operate more assertively within the climate change debate and decision-making process.

> All text will be authored so that the visitor will know whether it's the museum voice, where a synthesis of views or quoting, or an opinion from another source. So, we will be very careful if we are expressing strong views about say, climatology, we make sure that they're sourced clearly so somebody can go and verify ... one of the dangers is that museums often use anonymous wall text or document text and the visitor doesn't really know whose voice they're hearing. In climate change this matters.[42]

Audiences articulated this new imaginary of climate change governance and institutions as liquid, as relational and as complexity, in re-imagining the latter's communication function, arguing that institutions need to be better at complexity: '...all parts of climate change, they are intertwined, you can't really look at one without examining the others...'[43]

Conclusions

So how can institutions move beyond this impasse? That is to move beyond the tradition of trust attached to certain and reliable information at a safe point bereft of ideology and potential contentiousness and to represent uncertainty, facilitate the complex reflexive, creative and future-orientated thinking demanded by climate change. A major limitation is the belief that information can be impartial (Barry 2001); that climate change information and research can be rendered politically neutral; and that information can operate as a fixed stable and certain entity. Rather, institutions need to view information as a political technology integral to the political work of the museum, one demonstrated in the current preoccupation with mitigation governance.

This research also demonstrates that museums and science centres are engaged in complex media ecologies and, therefore, are embedded in dense mediations of political, social and scientific discourses and expertise. All these things question institutional strategies around the deployment of their expertize, practices and capacities in the field of climate change politics against the aspiration of impartiality.

To align themselves more closely to climate change as complexity and, accordingly, to contemporary knowledge practices, institutions will be required to reframe their position of impartiality around the dense political subject of climate change as well as their conflict-averse position from one that involves shutting down of zones of dissensus and the containment of the political and to direct action in a particular direction. Conflict and potential controversy is rather re-read as a productive modality, to engage climate change meaningfully as a concept; as ideology, as a condition; its various solutions; as a creative discourse and as a future imaginary (Cameron 2010b). Institutions must become a space where conflicting views and options may be raised, examined, reflected and discussed and various actors might be assembled. Latour's (2005) object-orientated democracies act as an imaginary to conceptualize the generation and the gathering together of a range of views around climate change as an expression of individuals' self politics and the collective, rather than something to be controlled, minimized and accordingly eliminated (Cameron 2008). One CEO recognized this impasse, posing an alternative future for institutions as active agents within debates through relinquishing the need to control and contain. 'It's got to become a two-way thing. We've got to stop being control freaks and being afraid of debate ... we can't control it, we become participants and observers and learners...'[44]

This requires a shift in the residual faith in enlightenment science and the modern museum against a more radical refashioning of the institution as a liquid form within plural governmental assemblages, one that recognizes complex ideological dispositions and power relations, reflexivity, creativity and is temporally mobile, crossing past-present-future trajectories. Guattari argues that changes in our mental ecology are required with regard to processes of subjectification and in social ecology that has the potential to bring forth the creative power of the human and the social (referenced in Conley 2009: 52). These changes, according to Guattari, are the prerequisites to improving environmental ecology and imbuing faith in the creative abilities of the social inside and outside institutions (Conley 2009: 52). To this end, Guattari puts pressure on fields and institutions that create subjectivities to retrain their own sensibilities first before intervening with others, their audiences (Conley 2009: 125).

Here *liquid institutions* are challenged to consider the various ways components (material and expressive forms), practices and capacities can assemble in various climate change governmental assemblages, taking account of the various inhibitors or deterritorizing elements and contradictions, as and in systems of open peer review in science assemblages and around a range of other debates and decision-making processes; in mitigation initiatives; in reflexive processes examining climate change as a cultural condition; and in planning around future lifestyle options. Institutions have the potential to operate as attractors, as part of group performances, and as actors along with other agencies in mapping out the social world, and relations to the physical, to human futures.

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Notes

[1] HSGC Focus Group Transcript, LSC#1

[2] HSGC Focus Group Transcript, LSC#2

[3] HSGC Focus Group Transcript, AM#1.

[4] HSGC Focus Group Transcript, AM#3

[5] HSGC Focus Group Transcript, AM#4

[6] HSGC Focus Group Transcript, AM#3

[7] HSGC Interview Transcript, AM#2sm

[8] HSGC Interview Transcript, AM#2sm

[9] HSGC Interview Transcript, AM#2sm

[10] HSGC Interview Transcript, AM#2sm

[11] HSGC Interview Transcript, MV#3sm; HSGC Interview Transcript, QU #3r

[12] HSGC Interview Transcript, QU #2sm

[13] HSGC Interview Transcript, AM#2sm

[14] HSGC Interview Transcript, MV#5r

[15] HSGC Interview Transcript, MV#5r

[16] HSGC Focus Group Transcript, AM#1

[17] HSGC Interview Transcript, PHM #3e

[18] HSGC Focus Group Transcript, AM#2

[19] HSGC Interview Transcript, MV#3sm

[20] HSGC Interview Transcript, QU #2sm

[21] HSGC Focus Group Transcript, AM#3

[22] HSGC Interview Transcript, AM#2sm

[23] HSGC Interview Transcript, AM#2sm

[24] HSGC Interview Transcript, MV#3sm

[25] HSGC Interview Transcript, AM#3c

[26] HSGC Interview Transcript, QU #2sm

[27] HSGC Interview Transcript, LSC#3c

[28] HSGC Interview Transcript, LSC#3c

[29] HSGC Interview Transcript, AM#3c

[30] HSGC Focus Group Transcript, AM#3

[31] HSGC Focus Group Transcript, AM#3

[32] HSGC Focus Group Transcript, AM#4

[33] HSGC Focus Group Transcript, AM#3

[34] HSGC Focus Group Transcript, AM#4

[35] HSGC Focus Group Transcript, AM#1

[36] HSGC Focus Group Transcript, AM#1

[37] HSGC Focus Group Transcript, AM#4

[38] HSGC Focus Group Transcript, 1 AM#1

[39] HSGC Focus Group Transcript, 4 AM#4

[40] HSGC Focus Group Transcript, AM#3

[41] HSGC Focus Group Transcript, 1 AM#1

[42] HSGC Interview Transcript, AM#2sm

[43] HSGC Focus Group Transcript, MV#1

[44] HSGC Interview Transcript, AM#2

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