The Mediations of climate change: museums as citizens' media

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Abstract

Social research underlines how the mass media frames and presents environmental change and risk in ways that become contested cultural constructs embedded in deep ideological structures. While significant attention has concentrated on the mass media, less consideration has been given to examining the role of museums and science centres in communicating the science of climate change. The article looks at museums as cultural brokers in collaborative efforts around public understandings of climate change. Engaging with recent conceptualizations around citizens and public media practices, it proposes participatory design mechanisms through which the museum sector can act as change-agents in fostering a new form of public pedagogy that incorporates differing civic epistemologies around climate change education and action.

Key words: citizen's media, climate change literacy, museums, mediation.

Introduction

> Our world, our old world that we have inhabited for the last 12,000 years, has ended, even if no newspaper in North America or Europe has yet printed its scientific obituary (Mike Davis 2008).

This provocative statement by writer Mike Davis invites thinking and debate on a few fronts. First, the unsettling insinuation that we do not live in 2011 anymore (the year of this publication) but well beyond 2050; that is, if we take for given that it is the cumulative greenhouse emissions that matter the most in the process of global warming of the earth's surface and oceans. According to scientific predictions, global emissions would peak no earlier than the 2050s, only to drop to levels still higher than today by the end of the century. By that time, the world as we have known it would have changed irreversibly. In this regard, the statement also evokes William Gibson's foresight that 'the future is already here, it is just not very evenly distributed' (Gibson 1999). In relation to global climate change, the future is also already here, and also unevenly distributed. Recent World Bank estimates, for example, claim that a quarter of the population of developing countries will bear some 75 to 80 percent of the costs of damage caused by climate change (Global Humanitarian Forum 2009).

Second, there is the implicit allegation that the ethics of objectivity and neutrality in journalism can be held accountable for a lack of public consensus about the complex reality of climate change, when there is a fragile yet overwhelming consensus within scientific communities about human incidence in accelerated (gradual and abrupt) changes in environmental patterns.

Yet another implicit insinuation in Davis' remarks is that industrialized countries present different (and often-contested) views about climate change from those of developing countries. These complex and differing north-south dynamics were ever more evident at the 2009 United Nations Conference of Parties (COP-15) in Copenhagen, where the political rift between big and small actors in fact came to disallow the instauration of a post-political consensus-making institutional configuration of international climate change governance

'structured around dialogical forms of consensus formation, technocratic management and problem-focused governance, sustained by populist discursive regimes' (Swyngedouw 2010: 216).

The urgency in addressing the problem of climate change is unquestionable. As 'a new spectre haunting the "globe"' (Szerszynski and Urry 2010: 1), the question of climate change has left no discipline in the social sciences and humanities untouched. At the very core of this new age of uncertainties about the consequences of climate change is the mass media, which holds a pivotal role in public understandings of the complex interfaces and intersections between climate change, scientific knowledge and practices, and emerging forms of local and global environmental action. A wide range of recent critical studies of the social construction and framing of climate change in the mass media illustrate the point to which climate change is a heavily contested cultural construct. The framing of climate change in the mass media reinforces perceptual and ideological divides between scientific consensus on the certainty of climate change occurring at an accelerated rate because of human activity, and the framing of scepticism (or contrarianism as Anthony Giddens (2009) has recently put it), casting doubts on the science of climate change and posing reservations on the economic costs of taking action. By reproducing the picture of scientific non-closure, many big media actually become discursive practices that contest (inter) governmental measures to combat greenhouse emissions and legitimate the existing economic and social order. The media give shelter to marginal positions that lie outside the scientific consensus in a proportion way bigger than their academic weight. The result leads to inflated scepticism and denial, leading to real processes of misinformation (Diaz Nosty 2009). Also, too often, we see an obliteration of the fissures and fractures in the north-south dynamics on global climate change particularly in consensus making and the political will for developing and implementing adaptation and mitigation strategies. A large proportion of commercial mainstream media focuses on disseminating recycled scientific information (Diaz Nosty 2009) to passive audiences (consumers) about the risks and dangers of environmental change, rather than communicating the complexities of climate change, let alone engaging in learning about possibilities for climate change action. Environmental journalism focuses mostly on the information of climate change events (knowledge transfer) and less on the communication of climate change processes (knowledge exchange).

In this article I, therefore, argue that the question seems to be less about information, misinformation and over-information, and more about the differences between the information and the communication of climate change. This paper argues that community media, on the one hand, and the museum sector on the other, can fill in the gaps left by mainstream mass information media in an effective communication of climate change that leads to increased agency in tackling the pervasive and ubiquitous consequences of sustained environmental changes. In both cases, there is a potentially more prominent role in engaging citizens with climate change literacies and action. This engagement implies communicating rather that merely informing about climate change, where museum and science centres, in particular, engage in a broader 'public pedagogy' project (Giroux 2003a) that, in this particular case, may work to position these institutions in connection to communities and environmental social movements at a global and local scale.

For this to take place, museums ought to move beyond the notion of informing visitors and audiences (the vertical flow of messages) to engage with communicating with visitors (a horizontal process of dialogue and participation). In the first instance, messages (such as campaigns, even certain exhibits) only make certain information known; yet do not lead to action unless there is a process of participation. In other words, raising awareness of the existence of climate change will have little effect if there is no creation of processes for social and behavioural change. Museums must not only inform citizens, but also equip them with the right knowledges and epistemologies to participate in actions and debates around climate change.

An interesting model in this regard is the Action on Climate Change through Engagement, Networks and Tools (ACCENT) initiative.[1] Coordinated by Fondazione Idis-Città della Scienza in Italy, the 2-year project gathers and coordinates science communication and public engagement practices about climate change issues through 15 partner institutions

across Europe, mostly science and technology museums and centres. ACCENT proposes to contribute to the global campaign on climate change by moving from the 'informative' to the 'active' phase by exchanging and disseminating practices, by taking specific actions that encourage the involvement of citizens in active participation and establishing dialogue among scientists, stakeholders, and the public. As with other initiatives around the world, the ACCENT initiative, through their 'I-do' campaign, has been able to connect museums and science centres engaging with climate change action with a series of actors at a global and local scale.

Adapting to, and mitigating the process of, climate change presupposes a complex assemblage of environmental, political, economic, cultural and social practices and methods. Museum and science centres could play a significant role within these assemblages if they become adept in deploying the necessary platforms for fostering wide public debate. What is much needed, and where the museum sector can play a significant role, is in climate change literacies; that is, learning about climate change science, climate change justice and climate change action. And not just transferring new information, but learning to learn about climate change action. This is particularly important if we consider that learning how to cope (adapt, mitigate) with climate change in one place is not necessarily transferable to another place where local cultural, economic and environmental contexts might be radically different. In this regard, museums closely affiliated with local communities may have a very significant role to play as they become closely engaged in contexts where adaptation, mitigation and action on climate change actually takes place. This is, in turn, an interesting scenario that potentially can carry significant policy and funding implications for the sector.

Learning from the social construction of climate change in the media

There is no doubt that there is an increase in news coverage of climate change in the mass media, particularly in certain countries from 1995 onwards (the second IPCC Assessment Report), which for some optimists may be a reflection of a slight shift towards a more sophisticated global political imagination. However, this increase in media coverage of climate change could be explained by an entrenched logic of newsworthiness based on political events and personalities, including considerations of the right timing, significance, proximity and prominence of events. In many cases, the overload of information has translated into a saturation of message but not into effective communication that leads to more public engagement. There is significant scholarly interest in how climate change is constructed in the media (Allan, Adam & Carter 2000; Allan, 2002; Hargreaves, Lewis & Speers, 2003; Carvalho & Burgess 2005; Boykoff, Roberts and Timmons 2007; Carvalho 2007; Moser and Dilling 2007; Boykoff 2008; Boyce & Lewis, 2009; Nisbet 2009; Shanahan 2009). There is evidence to suggest that climate change has become newsworthy in the media of most OECD countries in recent years, but this is certainly not the case in many of the other 160-odd countries in the world.

An important amount of media research in several regions and countries points to some significant general conclusions. For example, in many countries there is no significant coverage of climate change in the media and, when there is, it focuses solely on environmental disasters, political events and decontextualized scientific data; news media maps, or frames, certain preferred discourses of environmental risks to others; local news agencies do not generate news not even within their own countries; and thematic treatment is mostly international. According to Ladle *et al*. (2005), among the reasons that explain the rather information-poor climate change coverage in mainstream media is that environmental editors lack sufficient understanding of scientific problems, and that they rely on other journalistic sources from a few big international press agencies rather than original scientific sources. Furthermore, information on climate change has more to do with political events that occur at a certain time (COP15 or the University of East Anglia affair, for example), rather than scientific matters of concern.[2]

If the media constitutes the main source of information, and also the most determining factor in the degree of conscience, awareness and concern of people for climate change, then the 'problem' of climate change might not be an issue for millions of people around the world

unless they are experiencing it directly in their daily life. Part of the problem is the way in which climate change is framed in the mass media through a particular linear logic that is performed through the very interaction with the information medium itself. This performative logic refers to the 'organizational, technological, and aesthetic functioning, including the ways in which media allocate material and symbolic resources and work through formal and informal rules' (Hjarvard 2007: 3 in Couldry 2008: 375). As Carvalho has demonstrated in her analysis of British newspapers,

> operations of codification of [climate change] into media discourse are directed by the perceived interest and social impact of a topic, as well as other "news values", economic considerations and editorial lines. Particular values and worldviews are produced, reproduced and transformed in media discourses [while] others are excluded from them. (Carvalho 2007: 223)

These particular values and worldviews are the frames through which climate change becomes newsworthy and encoded to be transmitted to the public. As Nisbet argues, frames act as 'interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it' (Nisbet 2008). Audiences rely on frames to make sense of and discuss climate change and this is even more important in museums whose audiences could be regarded as 'eventive publics' (Lury & Lash 2007 in Marres 2008), that is, 'publics that exist only as moving, dynamic, asynchronous entities, and that could not possibly exist in a static form' (Marres 2008: 27). Undoubtedly the mass media in many countries contribute to opening up public debate, yet there are also high levels of generalized mistrust toward the media. What people know about climate change affects the way informed judgements are made, especially as climate change continues to expand in the public domain shifting from being a matter of fact to a matter of concern (Latour 1999). In an important study about public understandings of science in the media, Hargreaves, Lewis and Speers (2003) provide a tentative map of the way people in the UK learn about science from the media, based on the premise that an important proportion of most people claim they do want to have a say about science policy, rather than simply leaving it to the experts. So, do people learn enough about climate change in the mass media to have informed opinions? (Hargreaves, Lewis & Speers 2003: 6).

This article does not set to answer this question but to examine how asking these types of questions offers opportunities for the museum sector to play a relevant role in the public understanding of science and the communication of climate change. The challenges for museums and science and technology centres are manyfold, considering their communication and education role, and the fact that, as a sector, it has higher levels of trust by audiences and visitors. Being safe places to say unsafe things (Heumann-Gurian 1995; Baird 2007; Cameron 2008), museums and science and technology centres have a role to play in supporting the creation of political and public consensus for action, especially when there is an ambivalent public opinion in times of economic uncertainty that casts doubts over the merits of long-term action (and economic investment) on climate change. The question of whether people learn enough about climate change in the mass media to have informed opinions could be expanded to an inquiry into how and why the museum sector could allow for a radical 'frame transformation' (Goffman 1974) to take place. What role could museums play to facilitate a process whereby current framings of climate change, as framed by the mass media, could be transformed into new meaningful frames of action? One way to begin addressing these matters is to move beyond a mediacentric perspective in the analysis of climate change communication.

From media to mediations of climate change

One of the lessons to be learnt is to focus not on the media but on the mediations of climate change. Fighting climate change needs not only independent reporting and well-informed media, but also citizens' media; not only awareness campaigns but deep civic-driven processes of social change. This is particularly important when considering the existing 'information gaps' between global and local levels where there is robust information at a

global level 'but much weaker information at a local level, where the actors in [climate change] adaptation are' (Huq 2008 in Nightingale, 2008). This disjuncture between the global and the local is, in fact, an extremely problematic question in many current theorizations on citizenship. Contemporary political theories of citizenship speak of subjects that are defined as citizens by their daily political actions and engagements rather than their legal status. Citizenship is conceived 'as a form of identification, a type of political identity [and] something to be constructed, not empirically given' (Mouffe 1992: 231). Along this line, Clemencia Rodriguez has articulated a normative view of citizens' media defined by practice rather than status, in which citizens produce communication spaces where they

> learn to manipulate their own languages, codes, signs, and symbols, empowering them to name the world in their own terms [triggering] processes that allow citizens to re-codify their contexts and selves [and giving] citizens the opportunity to restructure their identities into empowered subjectivities strongly connected to local cultures and driven by well-defined, achievable, utopias… Citizens' media are the media citizens use to activate communication processes which shape their local communities. (Rodriguez 2011: 38-40)

Citizen's media perform at their best as 'antibodies of commercial mainstream media' (Lewis, 1993) engaged in a 'politics of the quotidian' (McClure 1992), where social subjects can claim a space for their public voices as they correct the distortions and bias of mainstream media that would otherwise remain unchallenged. Citizen's media in their broadest sense reinstate the local dimension; they do not have to reach all audiences, they do not have to talk to everyone. This entails shifting the focus to empowering communities to take action on climate change themselves based on their own informed decision-making processes in a process of dialogue with climate change science and policy. In this regard, citizen's media, from radio to digital social media/networking, provide a relevant platform to rethink civic action and, on the other hand, recognize the unacknowledged cultural contingencies of scientific knowledge (and by extension, how they are presented, for example, in museums or science centres).

It is not the aim of this article to summarize the thousands of citizens' media initiatives around the world, but to stress the importance of moving from the media to the mediations in examining how climate change is communicated. Yet there are interesting initiatives that can be mentioned which are looking to activate communication processes to shape local environments and responses to abrupt climate change variation. One interesting case study is Africa Adapt, a regional network of knowledge sharing for climate change adaptation, based in Ghana, and aimed at facilitating the flow of climate change adaptation knowledge for sustainable livelihoods between researchers, policy makers, civil society organizations and communities who are vulnerable to climate variability and change across West Africa.[3] Recently launched in 2009, the project comes to fill in a gap for the lack of public information on climate change (by the media and other public institutions). The project is based around strategies of communication for social change that use radio-based programming and dialogues in local languages, developed with community radio broadcasters across the continent. This is complemented with face-to-face meetings bringing people together to exchange ideas and overcome challenges, and a mobile alert service letting people without easy web-access know the latest news.

So the questions I am interested in asking have to do with identifying the point at which museums purposely cultivate processes of transformation and empowerment in their visitors and audiences and thereby creating a space where citizens may enact and perform their citizenship on a day-to-day basis. How could museums be thought of as 'citizens' media'? That is, as mediators that facilitate the transformation of individuals into citizens and how these citizen-audiences activate communication processes of social change, which shape their local communities with regards to pressing questions about climate change. In other words, how museums make possible the occurrence of what Engin Isin calls 'acts of citizenship' or 'those moments when regardless of status and substance, subjects constitute themselves as citizens' (Isin 2008). This invites thinking into the ways museums and science

centres develop programming that inspire subjects to 'become citizens' as claimants of climate justice and its given rights and responsibilities. For 'frame transformations' to take place, Tarrow argues, 'new values may have to be planted and nurtured, old meanings or understandings jettisoned, and erroneous beliefs or 'misframings' reframed' (Tarrow 1992: 188).

The problem with much communication research on the social construction (framing) of climate change in the media is its failure to address its own mediacentric perspectives. In this regard, it is of critical importance to rethink the way museums conceptualize a move beyond a 'media consumption' perspective in a media-saturated society dominated by large-scale media institutions, to concentrate on the social mediations and processes that take place around media. Mediations shape positions in social and political structures. They take the form of translations between languages, genres, and cultures, and describe negotiations in contested spaces or at certain moments in history (Martin-Barbero 1993). This entails moving from the texts to the contexts of climate change communication. Such a move also implies moving beyond a mass audience approach to concentrate on the specificity of local experiences because communicating climate change must be understood within processes of socio-cultural mobilization. Martin Barbero's (1993) proposal, to move from the media to the processes of mediation, emphasizes the socio-cultural interventions that emerge from the use and practice of media, which in turn define cultural production and reception. For Martin-Barbero, the media are spaces for mediation and this for him entails looking at how culture is negotiated and is an object of transactions in a variety of contexts.

The question that arises, then, is how to conceptualize the museum as mediation encrusted within everyday social practices. An additional question is how museums and science centres can move from the media representation/construction of climate change, to a more encompassing focus on the mediations and assemblages constructed in the ontologies and epistemologies of climate change. Climate change is a story based on experiences. It is not just disembodied information without storytellers. And a storyteller cannot tell a story without listeners. Over 80 years ago John Dewey wrote that 'vision is a spectator; hearing is a participator' (Dewey 1927). Climate change debates and interventions are intrinsically about voice and listening. There is often a tension, a disconnection, between those who speak and those who listen and an over simplification of the notion of participation. I have discussed elsewhere (Salazar 2010) Jenkins' assertions that, while interactivity is a property of the technology, participation is a property of culture and how listening, unlike speaking, encompasses a reciprocal, embodied nature that is 'embedded in an intersubjective space of perception' (Couldry 2006: 6). Therefore museums and science centres play an important role in creating these intersubjective spaces of 'communication and association' in order to 'interest the public in the public interest' where the basis for engaging climate change is not information, but conversation and the cultivation of a 'culture of communication' (Dewey 1927). This move from the media to the mediations also entails a consideration of issues of 'cognitive justice' in terms of whose knowledge is being presented, used and embodied in the communication of climate change. In other words, whose story is being told and who is telling the story of climate change.

Cognitive justice and civic epistemologies

The question of climate change storytelling becomes relevant when inquiring what people know about climate change, how is this knowledge acquired and whose knowledge is it anyway. A significant amount of the information that is produced and reproduced by the mass media (and the question is to what extent by other cultural agents and institutions such as, for example, science museums and centres) is based on a single way of knowing about the environment, based on the established paradigms of Western science. As such, the danger in current mass media representations of climate change is the failure to provide publics with a way to challenge dominant discourses based on hegemonic scientific cultures, in order to recognize that the ways of producing knowledge, including science, are multiple, complex, chaotic, spatial and embedded in local social solidarities. In considering how every culture has its own ways of assembling local knowledge, David Turnbull (2007) has argued that all

knowledge traditions, including science, are assemblages of local knowledges. For Turnbull, 'the salient differences between them lie in the ways in which they deploy social strategies and technical devices to move and assemble these knowledges, thereby creating their own knowledge spaces through linking people, practices and places' (Turnbull 2007:142). This is important if we concede that participation and voice do not necessarily lead to epistemic changes. To move beyond, there is a need to think of cognitive diversity among those agents of definition. In this regard, there is still a significant lack of 'cognitive justice' (Visvanathan 2005) in climate change debates. By cognitive justice, Visvanathan introduces a major ethical dimension to the communication of climate change (and science more generally) by questioning the lack of the dialogue (acknowledgement) between the different knowledges and perspectives held by scientific knowledge and other epistemologies. Visvanathan argues for a cognitive justice approach for the right for different forms of knowledge and their associated practices and ways of being to coexist. As Brown and Gaventa (2008) demonstrate, 'cognitive justice' and how different ways of knowing are linked in policy deliberations 'has implications for how we integrate our own diverse approaches to knowledge, and what forms of knowledge are considered legitimate in our global policy outputs' (Brown and Gaventa 2008: 11).

Yet questioning the nature of expertise does not imply an anti-science or anti-technology agenda, but a reframing of what constitutes dominant expertise; recognizing new synergies between expert and lay knowledges and the framing of knowledge. This points not only to epistemic divergences, but also to deep ontological differences. This is a strong reason to acknowledge that cultural perspectives 'need to be brought to bear on studies of climate change risk perception' (Carvalho & Burgess 2005: 1460).

A cognitive justice approach also entails paying attention to the 'civic epistemologies' (Jasanoff 2005) of climate change. For Jasanoff, the authority of science is not a given and scientific knowledge comes to be authoritative in precise and specific political settings. In so arguing, Jasanoff claims that the 'public understanding of science' framework obliterates lay and other forms of knowledge; it 'diminishes civic agency, erases history, neglects culture and privileges people's knowledge of isolated facts (or their ignorance of such facts) over the mastery of more complex frames of meaning. It reduces human cognition to a one-dimensional scale. It makes no allowance for the multivalency of interpretation' (Jasanoff 2005: 270).

Jasanoff (2010) has also argued that 'climate change produces discordances in established ways of understanding the human place in nature' and that accordingly, 'science has helped establish climate change as a global phenomenon, but in the process they detached knowledge from meaning' (Jasanoff 2010: 234). Therefore, cultural perspectives on the epistemologies of climate change also lead to the consideration of Indigenous and traditional knowledges systems and their relevance to current understandings of (and possibly to local responses to) climate change.

This can be demonstrated by recent studies (Macchi 2008) that look at traditional and indigenous people in climate change policy documents, such as the United Nations Framework Convention on Climate Change (UNFCCC) (1992), the Kyoto Protocol and the Clean Development Mechanism (1998), the Stern Review (2006) or the Fourth IPCC Report (2007). All these documents agree that the costs of climate change will fall inequitably on the world's poorest and most disadvantaged people. However, references to traditional and indigenous peoples in these documents focus almost exclusively on indigenous communities living in developed countries, i.e. in North America, Europe, Australia and New Zealand and the sub-Arctic regions. The majority of traditional and indigenous peoples who live in the tropical (developing) world get very little or no consideration. Furthermore, while all the analyzed documents put their emphasis on monetary, knowledge and technology transfer from developed to developing countries, traditional and indigenous peoples' own coping and adaptive strategies are rarely recognized (Macchi 2008).

Museums, therefore, play a fundamental role in addressing the application of complex thought in educational contexts in an ongoing quest to address the crucial issue of preparing human beings to tackle the challenge of complexity (Morin 2001). Museums are, in essence, the right space to 'create pedagogical conditions that foster forms of self and social critique

as part of a broader project of constructing alternative desires and critical modes of thinking, on the one hand, and democratic agents of change, on the other' (Giroux 2003b: 160). This is of particular importance in times where millions of people are informed about science from the media, making the communication of scientific development and inquiry an important aspect of democratic life (Hargreaves, Lewis and Speers 2003).

In this particular regard, and together with a better understanding how citizens media practices offer alternative and participatory models of civic-driven change, the museum sector should pay more attention to the nature and form of strategies used by climate action groups to bring about changes in public policy, industry practices, lifestyle and consumer practices. Climate change-actions are no longer confined to activism in the public policy domain. There is a new focus on facilitating learning and change in household and consumer domains and museums are well positioned as connectors and catalysers. The Liberty Science Center in New Jersey, for example, tackles this issue in innovative ways, rethinking the pervasiveness and ubiquity of climate change and, therefore, not only exhibiting climate change as a topic in itself, but also embedding it within every other exhibition, such as those on urban infrastructures, cooking and energy, thus grounding climate change as an issue connected to the topics and relevance of a visitor's daily life. As Shove (2010) suggests,

> changing the terms in which problems are cast is also vital: however subtle, switching language matters. Simple pedagogic techniques, like talking about the services energy makes possible – cooking, lighting, heating and cooling – and not "energy" itself, turns attention to the histories and trajectories of what people do, locating this not as an outcome of individual choice but as part and parcel of a much more extensive process of sociotechnical change.

The museum sector worldwide continues to rise to the challenge of remaining and becoming relevant to the communities they relate to. In presenting the social, economic, and ethical dimensions of climate change, museums could become resources of hope from the moment they allow 'acts of citizenship' to happen, incentivizing, persuading and encouraging individuals to rethink their engagement with their natural and human environments (Shove 2010). In pursuing this agenda, museums extend their role as 'democratic agents of change' to foster a radical change in the way we live (and consume), in particular in advanced liberal democracies.

Conclusions

In posing many questions, and no concrete ways for responding to them, my intention in this article is not to reinvent the wheel, nor to insinuate that museum theorists and practitioners have not raised similar questions before. As Cameron (2010) argues, for the past two decades 'the new museology has often expressed the need for museums to deal with complex political and social issues, arguing that museums must develop a function of critique and see themselves as a forum for debate'. Eilean Hooper Greenhill envisions the museum in the future 'as a process or an experience' rather than a mere building, which 'moves as a set of processes into the spaces, the concerns and the ambitions of communities' (Hooper-Greenhill 2000: 152-153). Echoing this vision, Sandell asserts that museums 'can impact positively on the lives of disadvantaged or marginalized individuals, act as a catalyst of social regeneration and as a vehicle for empowerment with specific communities and also contribute towards the creation of more equitable societies' (Sandell, 2002: 4).

Ways of knowing about climate change cannot be disembodied and abstract (as often presented by the media), but rich in feeling, in intuition, and connection to the larger social and historical context (Morin 2001). For this to take place, museums/science centres can capitalize on the cultural shift occurring in which people want museums to recognize and value the expertise of lay knowledges on climate change, rather than just serving as providers of authoritative content.

The intention of this article is to provide a framework to rethink museums and science centres as 'resources of hope' (Ginsburg 2000). Museums and science/art centres continue to determine in great measure our understandings and social constructions of societies' past

and present. Increasingly, museums and science/arts centres have also become key agents in the representation, speculation and simulation of possible futures, from the utopian to the dystopic. There is a significant potential for the museum sector to develop programming that communicates the human dimensions of climate change, not only the scientific facts. In becoming resources of hope, museums become spaces where 'people's fragmented, uncertain, incomplete narratives of agency' on and around climate change can be 'valued, preserved and made available for exchange, while being related analytically to wider contexts of power' (Couldry 2006).

Museums must learn to listen if they are to stand up to the challenge of providing the political imagination required to address climate change policy-making and action and help stop fuelling the turbulence in the airways about the uncertainty of anthropogenic causes of climate change. There is much to be learnt about the research evidence that suggests how discursive constructions and reproduction of scientific claims in the media are strongly entangled in ideological standpoints that legitimate 'a program of action vis-à-vis a given social and political order' (Carvalho 2007), where ideology 'works as a powerful selection device in deciding what is scientific news, i.e. what the relevant "facts" are, and who are the authorized "agents of definition" of science matters' (Carvalho 2007). In this sense, museums can take a significant role in programming and include cultural perspectives on the epistemologies of climate change, opening up spaces for civic epistemologies to be brought to a space where diverse cognitive understandings of climate change can be learnt, acting as new resources for climate change literacies and fostering a culture of communication, not information. Yet again, in rendering visions of hope museums can play a prominent role in developing narrative strategies for moving beyond the apocalyptic imaginary and attaching situated meanings back to climate change knowledge, through a process of frame transformation, creating spaces of intersubjective and embedded experiences, opening mechanisms for approaches to climate change that also include indigenous and traditional knowledges.

The long-term relevance of museums into the second decade of the twenty-first century rests, in great measure, on linkages with external organizations (including citizen action groups) as part of rhizomatic civil society networks as they negotiate boundaries drawn by markets and states, acting as catalysts and junctures for a variety of movements and organizations. It also rests on opportunities for creating richer, deeper and immersive experiences for visitors, inspiring ways for fostering action on key issues that affect their lives, such as climate change. In this regard, museums will move from being permanent institutions to being mobile, networked tactical institutions aiming to broker consensus rather than delivering truth on climate change.

Received: 14 June 2011
Finally accepted: 5 August 2011

Notes

1 ACCENT project is an initiative of the European Union which was developed between April 1st 2009 – and March 31st 2011 More information: http://www.i-do-climate.eu/en/home/

2 The press coverage of the Climatic Research Unit email controversy (called 'Climategate' by the media) during November 2009 saw thousands of emails and other documents from the Climatic Research Unit at the University of East Anglia (UEA) made public (source: http://en.wikipedia.org/wiki/Climatic_Research_Unit_email_controversy). This coincided with the press coverage leading up to and during the United Nations Climate Change Conference Conference of Parties 15 in Copengahen in December 2009.

3 http://www.africa-adapt.net/AA/

References

Allan, S., (2002) *Media, Risk and Science*, Maidenhead: McGraw-Hill.

Allan, S., Adam, B. and Carter, C., (2000) *Environmental Risks and the Media*, London and New York: Routledge.

Baird, A. (2007) 'Museums in a Changing Climate—Museums and Climate Change: Bringing the big messages home through institutional collaboration'. <http://136.154.202.120/UserFiles/File/National%20Conference/2007/AndyBaird_ConferencePaper07.pdf>

Boyce, T. and Lewis, J., (2009) *Media and Climate Change*, Oxford: Peter Lang.

Boykoff, M. T., (2008), 'Media and Scientific Communication: a Case of Climate Change', *Geological Society*, London: Special Publications, 305, 11-18.

Boykoff, M., Roberts, T., and Timmons J., (2007) 'Media Coverage of Climate Change: Current Trends, Strengths, Weaknesses', United Nations Development Programme Human Development Report 2007.

Brown, D., and Gaventa J., (2008) 'Constructing Transnational Action Research Networks: Observations and Reflections from the Case of the Citizenship DRC', *IDS Working Paper* 302, Sussex: Institute of Development Studies.

Cameron, F., (2008) 'Safe Places for Unsafe Ideas? History and Science Museums, Hot Topics and Moral Predicaments', in Terwey, M. (ed.) *Social History in Museums*' Journal of the Social History Curators Group, 32, 5-16.

Cameron, F., (2010) 'Introduction', in Cameron, F. and Kelly, L. (eds) *Hot Topics, Public Culture, Museums*, Newcastle-upon-Tyne, UK: Cambridge Scholars Publishing, 1-17.

Carvalho A., (2007) 'Ideological cultures and media discourses on scientific knowledge: re-reading news on climate change', *Public Understanding of Science*, 16 223-43.

Carvalho, A. and Burgess, J., (2005) 'Cultural Circuits of Climate Change in U.K. Broadsheet Newspapers, 1985-2003', *Risk Analysis*, 25 (6), 1457-69.

Couldry, N., (2006) *Listening Beyond the Echoes: Media, Ethics and Agency in an Uncertain World*, Boulder, CO: Paradigm.

Couldry, N., (2008) 'Mediatization or Mediation? Alternative Understandings of the Emergent Space of Digital Storytelling', *New Media & Society*, 10 (3), 373-391.

Davis, M. (2008) 'Living on the Ice Shelf: Humanity's Meltdown', <http://www.tomdispatch.com/post/174949>

Dewey, J., (1927) *The Public and its Problems*, New York: Holt.

Díaz Nosty, B., (2009) 'Cambio climático, consenso científico y construcción mediática. Los paradigmas de la comunicación para la sostenibilidad', Revista Latina de Comunicación Social, 64, 99-119, La Laguna (Tenerife): Universidad de La Laguna.

Gibson, W., (1999) 'The Science in Science Fiction', *Talk of the Nation*, NPR, 30 November 1999, <http://www.npr.org/templates/story/story.php?storyId=1067220>

Giddens, A., (2009) *The Politics of Climate Change*, Cambridge: Polity Press.

Ginsburg, F., (2000) [1997] 'Resources of Hope: Learning from the Local in the Age of Gobalization, in Smith C. and Ward G. (eds), *Indigenous Cultures in an interconnected World*, Sydney: Allen & Unwin.

Giroux, H., (2003a) 'Public Pedagogy and the Politics of Resistance: Notes on a Critical Theory of Educational Struggle', *Educational Philosophy and Theory*, 35 (1), 5-16.

Giroux, H., (2003b) 'Youth, Higher Education and the Crisis of Public Time: Educated Hope and the Possibility of a Democratic Future', *Social Identities*, 9 (2), 141-168.

Global Humanitarian Forum (2009) Human Impact of Climate Change Report. <http://www.ghf-geneva.org/>

Goffman, E., (1974) *Frame Analysis: An Essay on the Organization of Experience*, London: Harper and Row.

Hargreaves I., Lewis, J., and Speers, T., (2003) Towards a Better Map: Science, the Public and the Media, London: Economic and Social Research Council.

Heumann-Gurian, E., (1995) 'A blurring of the boundaries, *Curator*, 38 (1) 31–37.

Hooper-Greenhill, E., (2007) *Museums and Education: Purpose, Pedagogy, Performance*, New York and London: Routledge.

Hooper-Greenhill, E. (2000) 'Communication and Communities: Changing Paradigms in Museum Pedagogy', in Linquist, S. (ed.) *Museums of Modern Science*, Massachusetts, Watson Publishing International, 179-88.

Isin, E., (2008) 'Theorizing Acts of Citizenship', in Isin, E., and Nielsen, G. (eds) *Theorizing Acts of Citizenship*, London & New York: Zed Books.

Jasanoff, S., (2005) *Designs on Nature: Science and Democracy in Europe and the United States*, Princeton: Princeton University Press.

Jasanoff, S., (2010) 'A New Climate for Society', *Theory, Culture & Society*. 27 (2–3), 233–53.

Ladle, R.J., Jepson, P. and Whittaker, R., (2005) 'Scientists and the media: the struggle for legitimacy in climate change and conservation science', *Interdisciplinary Science Reviews*, 30 (3), 231-40.

Leach, M.; Scoones, I. and Wynne, B., (2005) *Science and Citizens: Globalization and the Challenge of Engagement*, London: Zed Books.

Lewis, P., (1993) Alternative Media: Linking Global and Local, Reports and Papers in Mass Communication No.107, Paris: UNESCO.

Macchi M., (2008) 'Indigenous and Traditional Peoples and Climate Change: Issues Paper', Geneva: International Union for the Conservation of Nature.

<http://indigenouspeoplesissues.com/attachments/2090_indigemous_peoples_climate_change.pdf>

Marres N., (2008) 'The Making of Climate publics: Eco-homes as Material Devices of Publicity', in Moser I., and Asdal K., (eds) *Distinktion*, Scandinavian Journal of Social Theory, 16, 27-46.

Martín-Barbero, J., (1993) *Communication, Culture and Hegemony: From the Media to Mediations*, London: Sage.

McClure, K., (1992) 'On the Subject of Rights: Pluralism, Plurality and Political Identity', in Mouffe, C. (ed.) *Dimensions of Radical Democracy: Pluralism, Citizenship, Community*, 108-25, London: Verso.

Morin, E., (2001) *Seven Complex Lessons in Education for the Future*, Paris: UNESCO.

Moser, S. C. and Dilling L., (2007) *Creating a Cimate for Change: Communicating Climate Change and Facilitating Social Change*, Cambridge: Cambridge University Press.

Mouffe, C., (1992) *Dimensions of Radical Democracy: Pluralism, Citizenship, Community*, London: Verso.

Nightingale, K., (2008) 'Southern Collaboration 'Key to Adaptation', *SciDev Net*, June, 13, 2008.

Nisbet, M., (2009) 'Communicating Climate Change: Why Frames Matter for Public Engagement', <http://www.environmentmagazine.org/March-April 2009/Nisbet-full.html>

Rodriguez, C., (2011 in press), 'Disrupting Violence: Citizens' *Media in Contexts of Armed Conflict in Colombia*, New Jersey: Hampton Press.

Salazar, J.F., (2010) 'Digital Stories and Emerging Citizens' Media Practices by Migrant Youth in Western Sydney', *3CMedia Journal of Citizen's, Community and Third Sector Media*, 54-70, Brisbane: Community Broadcasting Foundation.

Sandell, R., (2002) 'Museums and the Combating of Social Inequality: Roles, Responsibilities, Resistance', in *Museums, Society, Inequality*, 3-25, London: Routledge.

Shanahan, M., (2009) *Too Little, too Late? Media Coverage of Climate Change Around the World*, London: International Institute for the Environment.

Shove, E., (2010) 'Sociology in a Changing Climate', Sociological Research Online, 15 (3), <http://www.socresonline.org.uk/15/3/12.html>

Stern, N., (2006) *The Economics of Climate Change: The Stern Review*, Cambridge: University Press.

Swyngedouw, E., (2010) 'Apocalypse Forever? Post-political Populism and the Spectre of Climate Change', Theory, *Culture & Society*, 27 (2–3), 213–32.

Szerszynski, B. and Urry J., (2010) 'Changing Climates: Introduction', *Theory, Culture & Society*, 27 (2–3), 1-8.

Tarrow, S., (1992) 'Mentalities, Political Cultures and Collective Action Frames', in Morris A. D., and Mueller C. M., (eds) *Frontiers in Social Movement Theory*, 174-202, New Haven: Yale University Press.

Turnbull, D., (2007) 'Maps Narratives and Trails: Performativity, Hodology and Distributed Knowledges in Complex Adaptive Systems - An Approach to Emergent Mapping', *Geographical Research*, 45 (2), 140–9.

United Nations (1992) United Nations Framework Convention on Climate Change (UNFCCC), <http://unfccc.int/resource/docs/convkp/conveng.pdf>

Visvanathan, S., (2005) 'Knowledge, Justice and Democracy', in Leach, M., Scoones, I., and Wynne, B., (eds) *Science and Citizens: Globalization and the Challenge of Engagement*, 83-94, London: Zed Books.

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