II.1

Rethinking museum/community partnerships

Science and natural history museums and the challenges of communicating climate change

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This chapter explores changing relations between communities and science and natural history museums in the United States. Using the case of climate change, I highlight some of the communication challenges faced as museums negotiate new roles in light of the needs of funders and public audiences. Museums have long traded on their role as a non-biased source for authoritative information, but recent efforts at climate change education in museums can be used to pinpoint some of the complex factors surrounding communication and messaging in museum work. This chapter explores the institutional frameworks that shape how climate change education has been communicated in museum settings and suggests a rethinking of museum work as networked and community-focussed.

In 2012, 150 natural history museum professionals, curators, educators and researchers gathered in Washington, DC, to plan and develop a research agenda for natural history museums in the 21st century (Watson & Werb, 2013). It was a complex task. Over the two-day meeting, many subgroups and breakout discussions developed different aspects of the agenda. One self-organised group decided that before a research agenda could be created, they would first need to establish some common ground for thinking about the values and beliefs that ought to characterise the natural history museum of the future. At the end of the meeting, this group presented the following manifesto:

> February 15, 2012 DRAFT
>
> Statement on the assets, public value, and potential of Natural History Institutions
>
> "*The Declaration of Interdependence*"
>
> The natural history institutions of the world affirm that:
>
> Humanity is embedded within nature and we are at a critical moment in the continuity of time.

Our collections are the direct scientific evidence for evolution and the ecological interdependence of all living things.

The human species is actively altering the Earth's natural processes and reducing its biodiversity.

As the sentient cause of these impacts, we have the urgent responsibility to give voice to the Earth's immense story and to secure a sustainable future.

WHAT WE ARE

We are places, people, collections and facilities that connect the natural world and humanity in the past, present and future. We are trusted and we are in the public trust.

DISCOVERY – We make discoveries and create knowledge

We create new knowledge, collect, study

We are a collection of experts

Our collections continue to be global resources of knowledge.

PRESERVATION – We are the keepers of the record

We are the places where our culture houses its treasures

We are a bank for information for the future

We are the archives of a changing world

AUDIENCE – We are learning institutions

We disseminate, inspire and inform

We tell the whole story

We connect art, science, nature, place and culture

We are a resource for people to take action

We are a meeting ground for science and culture

We are where children learn about the diversity of the natural world

We are places for public deliberation.

CREDIBILITY AND PUBLIC TRUST

We are owned by our public

We are trusted

WHAT WE NEED TO BE

We recognize these tenets and our assets as the basis for a framework of collaboration and action:

We will be places where the complex challenges of the future are met in an open, honest, inclusive and rational way.

We will be welcoming to all people, not just our traditional constituents.

We will actively engage our assets, science and stakeholders with local and global nature.

We will be the storytellers of humanity's origins; the interface between humans and nature.

We will reinvent ourselves to become trailheads for lifelong journeys of nature and science exploration.

We will be agents of social change and embed people in nature by giving them new eyes with which to see the world and to understand their responsibility.

We will work together.

We will catalyze a sustainable future for the planet.

We will do this before the end of the century.

(Long term vision and value, 2012)

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The statement, which resonated a sense of urgency through the intertextual reference of the title to the American Declaration of Independence (1776), later used to craft ecological variants that focussed on the interdependence of both nations and nature, was bold, and it created a buzz at

the meeting, issuing a challenge for museums to work harder and aim higher – moving beyond focussing on preserving collections to playing a more central role in social change and creating a sustainable future for the planet. The statement underscored the critical moment in history in which we are now situated, and the vital need for extreme change should humanity wish to thrive (or even just survive) in the future.

Still, long after the meeting, I have found myself returning to the declaration and thinking about those who created it. It was a manifesto of sorts, but do they, or how do they, enact its principles? What are the challenges they face as they work for relevance and change in institutions that tend to be organisationally siloed and somewhat resistant to change? How *can* these types of museums address society's issues? I've been drawn to consider how science and natural history museum staff envision their work and how it translates to audiences through exhibitions, programming and the public face of museums; wondering about the visible disconnects between positive apolitical science and technology messaging, and the deep environmental concerns of staff scientists and educators. This chapter explores the nature of this disconnect. In this chapter I explore museum communication issues in relation to climate change exhibitions in the United States, United Kingdom and Sweden, and discuss a recent project on climate change education in museums that I've been working on for the last four years. The Climate and Urban Systems Partnership project proposes a network-based model for museum communication where, working with neighbourhood organisations, museums serve as a resource hub and catalyst to bring climate change educational materials to new audiences outside of the museum. The project offers insight into how museums might work with communities in a way that helps to transcend the limitations of the institutional constraints posed by traditional museum media formats.

Museums and communities

In an article that documented changing beliefs about the roles and purposes of museum work over 70-plus years of museum practice in the United States, Stephen Weil compellingly made a case for museums to change how they think about communication and their audiences, to move from being storehouses, or places for simple amusement, to become places that are relevant to the improvement of society; from being about something to being for somebody (Weil, 1999). This was no small task, and counter to a mode of communication and display that puts the emphasis on an objective and inherent value in objects, as specimens held in a collection. And this knowledge was never a neutral proposition – many have argued that the proliferation of museums in the 19th century, in some ways, served the desire of elites for the social education of the masses (e.g., Duncan, 1995). Tours and lectures and later outreach programmes, featuring artistic copies or trunks with physical specimens, helped new immigrants to learn about Western culture and social norms. The focus was on transmission – helping visitors to see the value of the museum and its objects and collections, without much consideration of the needs, interests and contributions of audiences and communities with whom they might wish to communicate. In the 1990s, cultural museums began a period of deep introspection about how they were representing, or not representing, different communities, their voices and histories in collections and exhibitions (Karp, Kreamer, & Lavine, 1992). Museums began to question their relevance for different sectors of the public, and challenged themselves to become more inclusive (Hirzy, 2002), to be a more relevant resource for communities (Weil, 1999) and to address critical social issues such as sustainability in the Anthropocene (Janes, 2009).

There are, of course, many mechanisms that can be used in exhibitions to create a sense of two-way communication between museum and visitor. Voting activities, feedback boards and comment books can be operationalised in myriad ways, all helping to humanise and collectivise

the experience. Museums have also experimented extensively with the voice used in labels, as the traditional third-person creates a sense of disembodied objectivity and a lack of someone with whom to argue (Ravelli, 2007).

Soliciting advice about exhibition content is a common tool used by museums to value visitor input and expertise. Dialogue groups for exhibitions with potentially difficult content have been one tool recently employed, as museums have struggled to find ways to embrace a more dialogic communication style. But in addition to consultative roles, museums have developed different ways of working with communities. Museums have experimented with co-developing exhibitions and even providing a venue for projects that showcase community members' interests, such as youth skateboarding, that clearly fall outside of a museum's expertise or collections (Dake, 2016). And in some cases, museums have partnered with community groups to help change government policies, as in a case of a museum that worked with allotment gardeners to protest the takeover of their plots by development (Zych, 2016).

Climate change in museums: Lessons from exhibitions

Examining four examples of climate change exhibitions provides a useful means to illustrate some of the tensions that have faced museums as they attempt to tackle controversial and complex social issues. The museum sector has a strong belief in its role as a place for open community dialogue and discourse, and as a trusted source for credible scientific information. In a study that suggests that museums have the potential to be key players in climate change action, Cameron and Neilson (2014) note that the public believes that museums are in a unique position in the media and political landscape; as impartial and safe places that are trusted sources of information that is somewhat less political than other media and governmental agencies. However, as Robert Janes (2009) points out, museums are rarely acknowledged in global discussions of climate change, environmental degradation, the inevitability of depleted fossil fuels and the myriad local issues concerning the well-being of particular communities.

Certainly, the museum workers who were involved in creating the Declaration of Interdependence illustrate a high degree of investment and desire for their museums to become sites for public action and engagement around important social and environmental issues. But how might this concern be enacted within their institutions? While museums now have many avenues for communication, including websites, public programmes, and printed materials, exhibitions continue to be the focal point for museum work. Exhibitions are the primary way that museums communicate to their public. They are expensive, public-facing and define the identity of a museum. Temporary exhibitions, a major attendance driver in many museums, also serve as a mechanism for marketing to new audiences and bringing in special funding to the institution. Finally, in some cases, exhibitions also serve as primary scholarship for curatorial staff. These characteristics make exhibitions particularly important and challenging media for museum communication.

The American Museum of Natural History: A fine line between urgent and scary

In an example that highlights the difficulties of presenting this topic, in 2008, the American Museum of Natural History (AMNH) presented "Climate change: The threat to life and a new energy future." The exhibition suggested a problem and a solution, but it was criticised for its ominous tone. The grim message behind a graphic illustrating a sudden strong increase of carbon emissions (the so-called hockey stick graph)[1] was amplified with the inclusion of a timeline showing when different industrial technologies emerged: climate changes are caused by human

factors. But it was a model of Manhattan of the future under three feet of water that would provide one of the arresting and memorable visual examples from the show (Mathez, 2016). The scary and strident tone caused a reviewer from the *New York Times* to call it "Apocalypse now, via diorama" (Rothstein, 2008). The exhibition focussed on explaining the science of global warming, as well as insuring that visitors understood that the threat to humans, cities and nature was indeed something to be concerned about. There were a few solutions-oriented elements, such as an action wall highlighting changes individuals could make. But the main focus of the exhibition was on explanatory scientific examples around geology, fuel and nature, and the causes and impacts of climate change. A summative evaluation for the exhibition showed that while a section on alternative energy provided a sense of hopefulness, visitors found the exhibition to be informative but worrying and sensationalised (People, places, & design research, 2009).

California academy of sciences: Keep it positive and focus on mitigation

Taking a different approach, "Altered state: Climate change in California," a 2009 exhibition at the California Academy of Sciences (CAS), presented the issue of climate change in a more upbeat manner. The exhibition provided a good overview of carbon, climate change and local impact, including segments about new technologies, changing oceans, seasonal weather changes, damage to glaciers and mass extinctions. The exhibition included a shocking physical version of the "hockey stick" graph (showing the rapid rise of carbon in relatively recent past and near future), but the tone here was more awe-inspiring than scary, as the red bar of the large graph extended right up through the ceiling height of the exhibit area. A positive tone was established with the text: "Climate change may be the biggest challenge of our lifetime but Californians are working together to cut back on CO2. We're taking action in our communities, religious organizations, schools and businesses." Focussed on mitigation strategies, the designers felt that visitors need "a pat on the back" – "they need to feel they have a real impact, and efforts should seem easy and manageable" (Pope, 2014).

Compared to the AMNH example, this exhibition struck a more positive, forward-looking tone. Broad themes and new inventions were showcased alongside individual agency and personal choices related to mitigation. The focus on individual actions and positive technological development was not coupled with a strong section on the political work that would be required to influence policy change. A kiosk provided access to Web-based information about the ideas mentioned in the exhibition. To help visitors think about how their personal decisions impact climate change, a computer station provided a mechanism for visitors to email legislators for emissions reductions measures.

This exhibition included hands-on activities geared to a family audience, including a carbon footprint calculator (a large pendulum-like scale that could be set to reflect different individual choices in transportation, house size, etc.) and a carbon café (a table with plastic food choices where flip-up labels showed facts about the carbon impacts of these foods). Visitors could move a slider bar to choose whether energy use in their home rates from 0–12 tons of carbon per year (the bar notes that the average American home uses ten). While most visitors would be hard-pressed to understand their energy use in tons, the activity provided a basic view of a carbon footprint and its relation to individual choices.

Both of these activities, I think, reflect the difficulties of designing for a general audience. The takeaway messages are both abstract and general: Eating meat has a high impact; driving a car is worse for the environment than riding a bicycle. But the calculations behind both of these activities are actually incredibly complex. What happens to the result when you're eating locally

produced meat, or salad shipped by air? What about the water and energy inputs required to grow, pack and ship food? While visitors understand at one level that their choices have consequences, there isn't much in the exhibition to help take this understanding to the next level. No supplementary information is provided about how the calculations were determined. How does one consider the cumulative impact and trade-offs from favouring one solution vs. another?

Tekniska Museet: Showing the system

"Spelet om energin" (The energy game) is an exhibition that opened in 2010 at Tekniska Museet Stockholm (TM). It is focussed around a quest for players to reduce a person's amount of carbon dioxide emissions from 10 to 2 tons by 2050, by making a series of choices across a series of interactive games that involve food choices, shopping, travel, etc. Interspersed among the game elements are exhibits that discuss the history of energy sources and Swedish life. The exhibition builds on a historical collection of energy-related exhibits at the museum. There are models of energy sources, historical innovations, advertisements, pictures of residential and industrial energy use and displays that highlight the changing requirements, sources and regulations around energy in Sweden and beyond. The exhibition is child-friendly, and the game is hosted by animated cartoon characters conversing with visitors through signage found throughout the exhibition. Charts and graphs allow for deeper consideration of data and historical trends. Carbon calculators provided in the exhibition offer more complex explanations of assumptions and factors than were seen in the CAS example, but the serious scientific facts are livened with cartoon-like animated sketches to show, for example, changing consumption patterns of gasoline and meat consumption.

The exhibition concludes with a large and positive display featuring designers who are using recycled or energy-friendly materials in their creations. This is a nice example of an exhibition where climate change information is layered into a broader story of the history of energy. While individual agency is important to the narrative, the exhibition goes beyond individual actions to show how systems thinking, future scenarios and the complex history of energy/environment trade-offs are woven into the story of industrialisation.

Science Museum, London: Science and uncertainty

"Atmosphere: exploring climate science" opened in 2011 at the Science Museum, London (SM). It is a high-tech exhibit space with a futuristic aesthetic; slick curves, spotlights and digital lights. Exhibits focus on the science behind climate, what might happen next and options for our future. Information about the sun's energy and the causes of climate change feature in this exhibition, as does a sediment core, notes about the scientists who discovered the greenhouse effect and other key climate science-related discoveries. A positive future note is presented with potential developments that could help mitigate climate change, such as a low-carbon hydrogen cell car. In addition to strong scientific content, following trends in science education (e.g., National Research Council, 2009), the exhibition focusses on scientists and scientific discovery. Other important features of the exhibition are five interactive digital games. One of these high-tech games about mitigation asks users to alter features in a neighbourhood and then test how floods will impact it. An engineering task, the game is fun but a distant abstraction from the very real consequences of climate change impacts.

Comparing the abstract and animated experience of the flood game to the flooded Manhattan exhibit in the AMNH example illustrates a marked difference in communication strategy. Unlike the strong messaging about what can be done, and the positive technological

developments we saw in the CAS and TM examples, here, as in the earlier AMNH example, the Atmosphere exhibit centres primarily on scientific processes and highlights both what is known and what is uncertain about climate change. This is a distancing move that allows museums to step back from taking a strong stance about the urgency of the problem.

Many have pointed out danger of this approach and how the role of funders, with a stake in continuing carbon extraction, may be influencing the message (Nesbitt, 2015). Shell was the major corporate funder of the exhibition, and the insertion of a level of uncertainty is a common tactic used in messaging campaigns to diffuse the potential impact of a negative message. In recent years, the museum sector has also begun to come under fire for accepting oil and gas funding, as cultural funding has long been a strategy for tobacco and oil companies to gain some public credit (Evans, 2015). The Science Museum is not alone in being called out for its connections to big oil and its potential impact on exhibitions (Strauss, 2014). A growing call for fossil fuel divestment is currently beginning to impact museums, with several large institutions announcing divestment plans (Bagley, 2015).

These climate change exhibitions illustrate some of the complexities that face the declaration of interdependence. Politics and the inevitable influence of funding intersect with the desire to provide positive messages and a fun experience for users who have come to expect that these experiences will be fun, with hands-on activities geared towards a younger audience. Also, in the process of trying to present the most agreed upon version of science, museums may be risk-averse in their interpretation of science. This point was nicely pointed out in Macdonald and Silverstone's careful analysis of the development of an exhibition about food. They argue that the demands for clear narrative structure with repeated key messages create a challenge for creating space for potentially controversial points of view to appear. A desire to provide a balanced tone and a desire to call upon a broad cadre of expert scientists for content means that opinions can become watered down into a generalised and not particularly enlightening message (Macdonald & Silverstone, 1992). If the real desire is for museums to encourage societal change, the exhibition in the science museum may not be the best strategy.

The museum audience

Designing content for exhibit experiences that might be seen as controversial is impacted by the context of funders and a desire of museums to present the most accepted and balanced point of view. But the audience for these experiences is also a moving target, and audience beliefs about climate change were a contentious issue during the time that these exhibitions were created (Abbasi, 2006). In 2008, a study that measured the American public's beliefs and attitudes around climate change was first run (Leiserowitz, Maibach, & Roser-Renouf, 2008). The "Six Americans" study suggested six categories of American adults, distinguished by their beliefs: the alarmed, the concerned, the cautious, the disengaged, the doubtful and the dismissive. About 51% of those surveyed fell into the alarmed and concerned buckets. During the years in which our example exhibitions were developed and installed, conversations among museum professionals focussed a great on how to deal with climate change deniers and convince the doubtfuls and dismissives. Yet with more media exposure as well as several large-scale weather events (i.e., superstorm Sandy impacting the United States East Coast in 2012), the public conversation has shifted rapidly, and the reality is that science museumgoers are probably already among those who were more likely to know about and believe in climate change. In 2011, one study suggested that:

- 90% of frequent museum visitors say that global warming is happening, compared to 67% of occasional visitors and 60% of non-visitors

- 66% of frequent visitors understand that global warming is caused mostly by human activities compared to 48% of occasional visitors and 50% of non-visitors
- 65% of frequent visitors understand that most scientists think that global warming is happening, compared to 47% of occasional visitors and 36% of non-visitors
- 58% of frequent visitors understand that a transition to renewable energy source is an important solution compared to 46% of occasional visitors and 42% of non-visitors (Leiserowitz & Smith, 2011)

There is still much work to be done to achieve the kind of outcomes envisioned by the declaration of interdependence. Part of the issue is that science and natural history museums are not as comfortable with controversy as history and culture museums, which have been active sites for discussions about difficult issues such as inclusion, racism and diversity (Sandell, 2002).[2] But part of the issue might also be that exhibitions continue to be the dominant way that museums engage the public.

Some museums have had a more difficult time than others in addressing their critics, but exhibitions at this time reflect an awareness of potential conflict or controversy surrounding their discussion of climate change. For example, the CAS exhibition prioritises a positive active stance but uses political cartoons to suggest the urgency and potentially controversial nature of the subject. The cartoons were posted beneath signage that said: "Climate is an angry beast and we are poking at it with sticks." One cartoon of a city street scene showed a man encountering a big cactus growing in the sidewalk. The caption read, "I'm starting to get concerned about global warming." Another, captioned, "global warming," showed a scientist walking on a desert saying, "one more study." In the bottom right corner, it said, "Hint on findings: too late." The cartoons could be seen as humorous, spot on or not to be believed, but their use allowed the museum to make a stronger curatorial statement about the human causes of climate change, which was, at the time of widespread climate denying in the United States, seen as a politically difficult statement to make in a museum context.

The challenge seems to be, then, how best to engage and activate current and new audiences who were already pre-disposed to conversations about climate change and sustainability, and how to position the museum and its resources in these conversations, especially if the goal is to foster a continuing dialogue within a particular community (Cameron, 2005, 2013). Research suggests that it is not knowledge but rather identity, social norms and community influence that are consistently predictive variables when examining environmentally-friendly behaviours (Abbasi, 2006; Shandas & Messer, 2008; Allen & Crowley, 2017). Focussing on presenting climate change messaging derived from mass-media-centric perspectives to a general and generic museum audience missed the great possibilities of museums as potential mediators of social change (Salazar, 2011).

Museums communicating climate change: Beyond the exhibition

Climate and Urban Systems Partnership (CUSP) is an example of a museum-based project that explores a changing relationship between museum and community. Devoted to increasing the adoption of effective, high quality educational programmes and resources related to the science and impacts of climate change, the project includes museums in four Northeast American cities (New York, Philadelphia, Pittsburgh and Washington, DC). Museums serve as network hubs to support community outreach and test whether and how museums can be used as catalysts in their communities, to help energise climate change education in informal learning organisations. Programming is designed around three concepts: framing for relevance, participation and systems thinking (Allen & Crowley, 2017). Importantly, programme work asks museums

to design educational information to be relevant to issues of interest and concern to specific community organisations and neighbourhood-level groups. What do city residents care about? What are the issues, topics and activities with which residents personally and socially identify? And then, how will climate change impact these interests? It is a targeted, coordinated approach that relies on connecting personal passions and interests to urban systems and how cities will be impacted by a changing climate (Schneider et al., 2014).

Urban learning networks as community partners

By using this approach, information about climate change becomes available through a broad range of learning experiences in different city settings. The goal is to create a relevant, city-wide approach to improving the state of climate literacy in the urban environment. The CUSP approach involves the creation of networks that are convened by the museums and include community-based groups with varying relations to climate change or environmental interests. These so-called "Urban learning networks" work on different kinds of climate change education projects that relate to their constituents and that include museum-based resources. Partners vary in each city but include advocacy groups, city utility or government agencies, informal educators at other museums, zoos, botanic gardens or afterschool or in-school educational providers. Most of the organisations involved are cultural institutions, nonprofits or environmental organisations. Local network participants do not necessarily have climate change education as an outcome of their work. In early planning, one example that was utilised was a hypothetical kayaking group. Kayakers are not an environmentally-focussed group by design, but the group might be concerned about climate change impacts on kayaking. For example, climate change increases the number of extreme rain events, which, given the out-of-date and undersised sewage infrastructure in some cities, would cause more days of unsafe paddling water due to combined sewage overflow. In this way, activities proposed by museum developers could tap into a pre-existing interest in a range of affinity, geographic or cultural groups in the city.

Rethinking outreach: Testing different communication strategies

The key to this approach is that the project does not target a typical museum-going audience. Climate education resources from the museum filter through the network and their constituents. The museum works to find ways to help other organisations tap into museum resources and in the process is able to reach potentially non-museum-going audiences. This requires a rethinking of the ways that museums design activities and communication strategies. The traditional mechanisms of museum outreach, either access to specimens or artefacts, or teacher/docent-led presentation of materials, would not be valued by these audiences.

Each of the four cities in the project has taken on the development of a different communication strategy within its network. In subsequent years, these strategies (which included digital tools, festival kits, neighbourhood strategies and professional development) were tested in the other CUSP cities with changes to suit the particular local needs of each city's network. For example, as a digital tool project, the New York Hall of Science created a user-generated map of the city that incorporates layers about city infrastructure, flood plains and green roofs and garden projects. Network members also integrate the map into their programming, from uploading citizen science data to sharing stories and pictures via the map. Signage projects and mass media campaigns were tested by the Philadelphia museum the Franklin Institute, with community members asked to participate in a social media photo contest that highlighted the fact that the city will be hotter and wetter due to climate change.

As another example, responding to the needs of network organisations, many community-based organisations attend festivals around the city. In addition to providing information about their organisation, simple hands-on activities are often available. A festival kit project created approachable and hands-on activities used to facilitate conversations about locally relevant issues that have a relation to climate change that could be used by network organisations at temporary festival events. The Pittsburgh museum partner, the Carnegie Museum of Natural History, developed kits related to topics such as the temperature effects of alternative roofing materials, the carbon footprint of mass-transit versus car-centred transit systems, and urban stormwater management. With kits distributed among the booths of several community organisations active in local environmental issues, visitors have multiple opportunities for interactive learning and conversation about climate change and their city within a short time frame.

Participatory, relevant, connected

These projects relate in some ways to some programmatic activities that museums might engage in, but they fall outside the scope of traditional museum media in some important ways. The goal for the project is to grow the network of concerned and informed organisations that can then influence their constituents. Network development and support was a key part of the project, and each of the four cities experimented with different ways to grow and support their networks (Steiner, 2016).

The development of these kits provided the CUSP team a way to better engage network members in thinking about climate change issues that are relevant to their constituents, as well as thinking about the delivery of informal education activities themselves, and while the museum had long created such activities and had exhibit departments who could easily produce high-quality kits, the CUSP team wanted to use the kit development process as a way to engage network members in thinking about the issues around climate change, the educational needs of their audiences, and their own roles as content deliverers. Network members were stationed alongside other members at festivals, and this process of seeing colleagues work with audiences using the kits created a learning opportunity and a common experience upon which they could draw in designing new kits, thereby further strengthening the network and helping network members feel more confident about their ability to share the CUSP message about climate change in relation to the issues of their own organisation. Through this process, we heard network members moving from statements like: "I don't know what climate change is" to "I don't see how this activity is related to climate change" to being able to thoughtfully discuss impacts, causes and solutions (Steiner, 2016).

Exhibit designers or other museum staff help with specific aspects of these projects, but education-oriented staff are in charge as network developers and managers. They are partners in the network, and in this work, focussing on participation, relevance and connectedness, they are museum professionals that model a new kind of relationship-centred, socially-focussed museum (Silverman, 2010; Salazar, 2011). The emphasis in the project is on creating a place for conversation and dialogue, not prioritising the unidirectional sharing of information (Sandell, 2002). Local community-based organisations and stakeholders (a heterogeneous and multidisciplinary group) engage in many learning opportunities, such as: workshops, quarterly "Ask a climate scientist" webinars, Climate News alerts, a monthly seminar series, kit design challenges and networking. Through project activities, a network strengthens, and diverse groups or organisations benefit from collaboration beyond the initial scope of the project.

As CUSP requires a reorientation of how museums typically envision their work with audiences, some unusual programmatic choices have resulted. The Philadelphia museum team asked their marketing department for money to build a special bike for a neighbourhood bike rally.

It was a multi-person powered contraption with umbrellas that opened and shut as the wheels turned. It was not a familiar activity for the education department, and marketing and finance department staff asked questions like, how on earth is this part of a climate change education project? Where's the science? Where's the education? The bike was a silly thing really, but the team sensed that it was an essential part of the project for climate change education the museum was working on. The bike promoted the CUSP project and ostensibly highlighted the fact that the city would be much wetter in the future due to climate change, but the bike's real purpose was to build credibility in the community network. The neighbourhood had an annual bike parade, and to participate in this activity was about belonging and being a part of the neighbourhood: to participate was to build community. Once guided by their own educational motives and perspectives, here the team has had to step back from being the primary driver of programming. Museums have had to find ways to connect with network partners and to really see themselves not as a provider of services to, or for, a community, but to see themselves as one of many within the community who are working for change.

By working with a network of other organisations, the museum was forced to think more broadly about its impacts and outcomes. Unlike traditional forms of museum outreach, providing educational programmes that highlight the museums' resources, the CUSP model puts the focus more squarely on the museum being a side-by-side part of the learning community. This means that the museum is asked to cede some communicative authority, and to engage, as Brenda Dervin suggests, in true dialogue with their network partners and their constituents, looking to understand and address differences in priorities, beliefs and understandings, instead of pushing out messages designed solely with the museum's own mandate in mind (Agarwal, 2012). This has been a challenging project for the museums. Museums struggled with their roles as conveners of CUSP networks, wondering how they could engage network members in feeling empowered and validated in the network to take ownership of joint activities. Mini-grant funding was used to provide network members with additional opportunities to pursue new ideas that emerged through CUSP work. In one city, over the course of several years of instability in the host museum, the network was able to sustain itself after leadership changes within the museum partner. Across all of the museum partners, we have seen that the CUSP network process has been able to inform future projects, both in the development of new educational work with existing network partners and also in the use of the CUSP framework for determining strategic areas of work in museum-wide activities.

Extending the work

By reviewing climate change exhibition examples and seeing how the message has been softened, generalised and otherwise subjected to the influence of politics helps us to reflect on the best ways to make use of limited museum communication resources to make more significant impacts on community change.

Exploring the issue of climate change in museums poses a real challenge for those who work in museums and feel strongly committed to the social charge suggested in the Declaration of Interdependence – for museums to be a stronger voice in the global scientific community that is fighting for change to protect the future of the planet. Museums have long traded on their role as a non-biased source for authoritative information, but these examples highlight the complex negotiations that are at work behind the design of exhibition experiences. Creating a message that balances the needs for content and curiosity, funders' requirements and fun, within a context of a market-driven edutainment enterprise, is difficult. Figuring out which audience, and how to successfully target the appropriate audiences, makes the process even more complex.

In this chapter I wanted to bring together extended exhibition examples and examples of educational practices for several reasons. Critical museology has been used to expose the complex political workings of exhibitions, and having detailed examples of our work is important for the field. Too often museums think of their impact in terms of the visitor who walks through the door, and success on the admissions income generated. In the past, exhibitions were the only place where a museum connected with their audience. In this time of our rapidly changing media landscape, an onsite exhibition experience is but one of many potential locations for a connection. It may be that museum dynamics have not yet begun to align financial models with these new realities. As our exhibition examples suggest, providing a content-rich exploration of controversial or difficult content is not necessarily in line with the desires of a day visitor. And with a topic like climate change, where the science, the impacts and public attitudes change so quickly, exhibitions can be out of date the day they open. For museums to remain relevant as an educational or civic partner in a community, they must find a balance between serving the needs of a casual family or social audience and the demands of providing trustworthy and timely scientific information.

The CUSP project extends how we think about our work in museums in a couple of important ways. Rather than our traditional view of learning taking place at the individual or family level, as we do in a museum experience, the project looks at learning at a community level. Project activities may involve the museum being one step removed from the actual learning situation, and work with network members on how to facilitate these learning activities has important ramifications for learning at the network level. The project asks museums to take on a leadership role in the creation and support of networks, fostering new connections, sharing and hopefully, new communities of practice in the process.

In this process, it is hoped that museums might begin to see themselves not as competitors in a field of limited audiences but as part of an ecosystem of organisations all working to improve the lives of everyone in the community. In this, the museums are redefining their value to the community, not merely providing interpretive content to new audiences, but by working through other organisations to provide resources that tap into authentic needs of their constituents.

Finally, and most importantly perhaps, the new approach enacted by the CUSP project worked to leverage the resources of museums and informal learning organisations to catalyse new discussions about climate change. By focussing on sending resources out of the museum, the project asks museums to think differently about their potential role in the communities in which they live. As the project team grapples with new modes of communication, they encounter issues that raise issues about some of our foundational beliefs about museum communication strategies and the role of museums in our society. Museums are at an interesting juncture, looking for ways to be agents of change while still living within the bounds of institutional frames that value the repository of artefacts and large numbers of visitors through the gate. The climate change example points towards a troubling shift in museum practice but perhaps also suggests a potential way forward to a more energised and relevant community-based focus for museum work.

Notes

1 See Mann (2013) for a discussion of how the hockey stick graph became an influential icon of debates about climate change.
2 One exception in the science museum world was the exhibition "*Race: Are we so different*?" This widely touring exhibition made use of advisory boards and extensive staff training to help support dialogue with visitors and the community (Cole, 2014).

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