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SPECIAL THEME: CURATING CLIMATE

Activate your mind and inspire action! Photo: Natural History Museum in Oslo / Jarli & Jordan.

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Preface

This special issue focuses on a crisis that will change our world even more than the crisis that we are fighting at the moment through a nearly global lockdown. Sarah Sutton begins her article by describing how American students are refusing to safe for retirement – they do not think they will ever get to this point in life. The apathy stands in great contrast to the enormous energy, the Swedish activist Greta Thunberg has been able to mobilize through school strikes for the climate since august 2018. The present Covid-19 crisis has overshadowed the climate issues in the museum field, but there is no doubt that this will be a significant task for museums in years to come.

The articles in this issue spring from the international workshop *Curating Climate - Museums as contact zones of climate research, education and activism* that took place in Oslo, Norway on the 28th and 29th October 2019. About 70 museum professionals, scholars, artists, and other stakeholders gathered for two days to share experiences and ideas on assuming the curating climate in a museum environment. The workshop was hosted by the Natural History Museum in Oslo and organized by the Curating Climate Collaboratory. The workshop venue was Tøyen Hovedgård, a historic building located in the Botanical Garden in Oslo. The garden belongs to the University of Oslo's Natural History Museum, which was at the time building its climate museum: *Klimahuset* (The Climate House Oslo).

Over two days, the climate museum field was explored and expanded through 4 keynote addresses and 20 presentations of diverse initiatives, museum projects, academic research and artistic practices. In six different sessions, the presenters and participants discussed sustainability, loss and hope, museum collections and displays, climate change communication, aesthetics and activism, environmental justice and multi-stakeholder environments.

The articles from the participants represent diverse ways to examine "curating climate" in a museum environment. The authors share their experiences, insights and analysis revealing the complex, multi-layered processes of curating climate. They also deliver very concrete suggestions on how museums can be trustworthy institutions that can transform the feeling of powerlessness and apathy to hope and action.

Read them and do something!

Bergsveinn Þórsson and Vinnie Nørskov

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Introduction

Curating Climate - Museums as contact zones of climate research, education and activism

Bergsveinn Þórsson

Museums have great potential in becoming relevant actors in raising awareness and promoting climate action. While museums have historically responded to environmental concerns in various ways, it is quite clear that we are now seeing a remarkable proliferation of perspectives and approaches to the topic. Climate change is a complex phenomenon that brings forth several challenges to how museums operate. Museums are encouraged to lead by example by developing sustainable practices to lower their carbon footprint. Museums must confront their colonial legacies, their role in industrial modernization, and their complicity in excessive consumerism. Museums need to explore and establish collaborations with local communities, experts, artists, and activists to promote diverse perspectives that capture the scientific, political, cultural, and emotional implications of accelerating climate change.

Making determined efforts to deal with the climate crisis in museums, it is of significance to consider museums as platforms where multiple stakeholders come into contact. While museums have many things in common, each institution has a unique set of relations between different interests. The museum is an environment where disciplines, theoretical approaches, practices, cultural and political interests intersect.

Looking at the intersections of stakeholders provides an opportunity to reflect on issues of authority and responsibility. It is an ongoing process of introspection for museums that can be further strengthened through convening to share ideas, experiences, and experiments. Organizing the international workshop in Oslo, the research project Curating Climate Collaboratory[1] wanted to create a sense of collective action by exploring the dynamic and transgressive field of the "climate museum".

Several climate museums or climate houses have been established over the last decade, dedicated to empowering people, raising awareness of the climate crisis and inspire action. Achieving that commitment they operate in diverse ways: From specially designed exhibition spaces and buildings, like the Jockey Club Museum of Climate Change in Hong Kong and Klimahaus Bremerhaven 8° Ost, to mobile and digital museums like the Climate Museum in New York and Climate Museum UK establishing partner-ships with institutions and organizations to host exhibitions, workshops, and events (Newell 2020).

The workshop's intention was to explore the emerging field of the climate museum as a particular concept and trace the unique and interdisciplinary platforms that connect the sciences and the humanities, academic and public spheres, research, and action. While the workshop drew inspiration from Klimahuset (Climate House Oslo), the questions explored were not only relevant to climate museums specifically, but museums in general. How is it possible to curate climatic change in a museum environment and initiate dialogue across its stakeholders? How can museums become platforms where science and education, local communities, activism and entertainment, debate and tourism interact productively? Do we need new institutions, or are established museums capable of rethinking their approaches and use their resources to foster understanding and action to engage with the climate crisis? What competencies does the museum sector need to develop to engage with the multi-scalar and complex phenomenon of climate change?

In this introduction, I will present Klimahuset, the project that inspired the workshop and was present during the two days, through discussions and close proximity. With the project, the museum initiated dialogues with multiple stakeholders and different strategies that were connected to realize a specific ambition and vision. From there, I move into a broader discussion on the complexities of the diverse and mutable contact points that need to be considered when discussing museums as contact zones of climate research, education and activism.

Klimahuset

In 2017, a winner of a competition for the design of Klimahuset was publicly announced. The winning proposal "Changing patterns" aimed to raise awareness on climate change both through its architecture and exhibition design. The competition was initiated by the University of Oslo and the Natural History Museum and was made possible with a generous donation from a Norwegian businessman (Naturhistorisk Museum 2017). From the start, the ambitious project intended to inspire action through green architecture, dissemination of evidence-based knowledge, and seeking partnership with organizations, groups, researchers and activists outside the museum. Since the opening, on the 17th June 2020, Klimahuset has been affected by the global pandemic, where the museum has had to deal with restrictions and temporarily close its doors to visitors in November. Still, after less than five months in operation, Klimahuset has had close to 19.000 visitors and organized more than 50 events (Leira & Slettemark 2021).

The building was designed by Lund Hagem Arkitekter and Atelier Oslo to be a zero-emission building where its renewable energy production compensates for the emission from construction, operation, and production of building materials. The shape of the roof optimizes solar energy production and hybrid ventilation (Futurebuilt 2020). Because of the building's design, the main exhibition space has a very high ceiling. The exhibition was the result of a collaboration between the museum staff and external exhibition designers (SixSides), with input from groups of young people and external experts on climate change.

The exhibition starts outdoors, in the Climate Garden surrounding the building, and with carved and crafted wooden poles leading to the entrance strong ties to nature are expressed. In the foyer, next to the reception, a series of photographs of people and their answer to the question "What is you favourite thing?" are presented on the wall leading to the main

Fig. 1. The section on solutions at Klimahuset. Photo by: Courtesy of Klimahuset/Jarli & Jordan.

exhibition area. Some of them are presented in short videos, linking their answers and values to the risks of ongoing climate change. Entering the main space, the visitors face the principal question of the exhibition: "What is your role in the fight against climate change?" (Leira & Slettemark 2021).

In the center of the exhibition area, three tall, skewed white walls display projected short films that run every eight minutes and give examples of the consequences of climate change concerning extreme weather, glacial melting, and extinction of species. This installation intends to provide a striking visual and auditory experience moving between small and large scales: "Be it the massive calving glaciers of Antarctica or the tiny insects that no longer pollinate our crops, from the painfully beautifully melting ice crystals to the massive hurricanes and their consequences" (Gagarín 2020).

Around the installation are four sections. The first section provides up-to-date, research-based facts on Earth's climate, covering both natural and human-induced changes. The second presents scenarios of future consequences based on increasing levels of Earth's average temperature, from a 1.5°C increase to 6°C. The third section is focused on solutions, where the visitors can choose between a variety of suggestions to how they would contribute, or participate in different types of climate actions. Based on the visitors' answers, a final display proposes what role they could have: the activist, the expert, the influencer, the innovator, or the team player. Here, the exhibition seeks to answer the introductory question: "What is your role

in the fight against climate change?" In the final section, named "Actions" the visitors are invited to formulate their own goals and demands, and to share them with friends, family, and colleagues (Leira & Slettemark 2021; Naturhistorisk Museum 2020).

Klimahuset also has an auditorium, a multi-purpose space, fit for workshops, performing arts, or film screenings. The audi-torium is intended to be a platform for events where the museum actively seeks collaborators around the themes of climate, environment, nature and sustainability. Everyone interested in collaboration is invited to send an inquiry through their website (Naturhistorisk Museum 2020). Also Klimahuset offers school children educational programs designed with the National Curriculum and its newly implemented emphasis on the environment and sustainability in mind. The educational programs are intended for groups from kindergarten to high school and take place both inside Klimahuset and in the surrounding area of the Botanical Garden (Naturhistorisk Museum 2020a).

Through the whole process, the museum was inspired by young people, making youth (14-16 years) the main target group of the exhibition. From early on, the museum was in dialogue with the environmental movement and climate activists in Norway. During the biggest Fridays For Future school strikes in Norway, on 22nd March 2019, staff from the museum photographed strikers and their posters in Oslo for an outdoor exhibition that temporarily covered the fences surrounding the construction site of Klimahuset (Naturhistorisk Museum 2019).

Klimahuset plans to become a platform for discussions and action among youth, researchers, industry, politicians, unions, artists, and activists. One example is the newly established Klimahuset youth panel, which will give advice on exhibitions and educational programs and partly organize events (Leira & Slettemark 2021). Klimahuset is a site where different strategies of climate action come into contact. The focus on finding new partnerships will surely complement the curated combination of the evidence-based exhibition, the visual and auditory installation, the learning program for school children, and the architecture. While the dissemination of scientific information is the presiding strategy at Klimahuset, collaborating with diverse partners will hopefully lead to a proliferation of approaches to the complex issue.

The changing face of climate action

The Fridays For Future movement's impact has been and still is significant in raising awareness of the imperative of climate action and the frustrating political and cultural inaction. What started as a school strike in front of the Swedish Parliament by climate activist Greta Thunberg has evolved into a global movement of over 14 million strikers in 212 countries (Fridays for Future 2021). The influence should not only be measured in numbers but their actions and how these global movements are changing the face of environmental and climate activism. What has been disproportionately represented by older white males, "the new champions of climate action are often depicted as young women", leading a movement that "incorporates the energy, concerns, and tactics of a younger generation" (Boucher, Kwan, Ottoboni & McCaffrey 2021: 2).

With young climate activists demanding to be heard, museums focusing their resources on climate understanding and action are turning their attention to young people and

their enthusiasm and disquiet (Newell 2020). Museums For Future initiative appeared quickly after the school strikes gained momentum, supporting the demonstrations, issuing their declaration, and promoting ten simple actions for museums in over eighteen different languages (Museums For Future 2020). Museums responding to the call of a younger generation reveals how the institutions can deliberately shape their role in society. Realizing the societal role of museums is an ongoing process that operates on the intersection of local and global concerns. It is a process that intricately weaves together local knowledges and experiences, scientific expertise, and diverse communication strategies.

Curating climatic change in a museum environment is a dynamic process, the contact points of diverse stakeholders and strategies are mutable and will continue to change and be challenged. The changing face of climate activism in the last two years is influencing change. Research on climate communication is providing new insights and better understanding. Furthermore, with more museums committing to tackle the climate crisis, questions about their implication and contribution to the crisis have been raised. The changing dynamics can be traced back to the early 90s when the question of how to raise awareness on climate change started to take hold in the museum sector.

Emotions and expertise

One of the earliest examples of a museum's exhibition on climate change is the American Museum of Natural History's exhibition *Global Warming: Understanding the Forecast* that opened in 1992. The lead curators Eva Zelig and Stephanie L. Pfirman (1993) explained that the exhibition was made following the heightened awareness and discussions about global warming following the hot, dry summer of 1988. Based on evaluations on visitors' conception of global warming the exhibition's goal was to explain the science, how humans influenced the global climate system, along with studies of past climates and predictions of future climate change. The exhibition also focused on individual choices and what action visitors could take (Zelig & Pfirman, 1993).

While scientists have known about how human activity influences the planet's climate systems for a good while already, the late 80s and early 90s was a defining moment for climate awareness. Climate change entered the agenda for the "Earth Summit" in Rio de Janeiro in 1992, resulting in establishing the UN Framework Convention on Climate Change (UNFCCC) two years later. In 1988, the Intergovernmental Panel on Climate Change was established. The panel's role was to review all aspects and impacts of climate change to provide recommendations for intergovernmental decision-making drawing from scientific findings. Early climate communication was focused on explaining the science, implying that increased understanding would enable people and decision-makers to more accurately interpret complex scientific information that would, ideally, lead to better decision making. (U. S. Department of State 2002).

In *Curating the Future: Museums, Communities and Climate Change* the editors Jennifer Newell, Libby Robin and Kirsten Wehner (2017) remark that the pace of exhibitions dealing with climate change picked up alongside discussions on the topic in the public domain from the 2000s, with the focus on explaining the science behind the phenomenon. More recently, they claim, as climate change has

become a familiar topic among the public, museums have been innovative in their approach. They are "becoming more willing to explore the current and future implications of climate change for human societies", through creative perspectives, investigating affective aspects and approaching local audiences (Newell, Robin & Wehner 2017: 7).

Research on climate change communication for the past decade has consistently revealed that "throwing more and more facts about the problem at people is extremely unlikely to shift minds and hearts in any appreciable way." Instead, it is important to "incorporate what we now know about the psychological and social factors that shape individuals' engagement with this issue" (Markowitz & Guckian 2020: 36).

Two articles in this publication take on the task of incorporating psychological and sociopolitical factors to shift minds and inspire action. The article "Museums as Agents and Settings for Climate Hope" by Sarah Sutton explores the prospect and importance of museums recognizing climate emotions, feelings of grief, and despair to turn them into a sense of hope and action. Her thoughtful reflections tread new territory for museums, where competencies of understanding or dealing with psychological factors might not be present. She proposes a set of pathways for partnering and providing experiences in a museum environment to treat climate grief and despair.

In the article "Weaving Strands of Knowledge: Learning about Environmental Change in the Bhutan Himalayas" Sameer Honwad, Andrew D. Coppens, Greg DeFrancis, Marcos Stafne & Shivaraj Bhattarai describe a project that takes into consideration community-based knowledge on an equal footing with scientific knowledge. The project enabled collaboration through a shared vision, where multiple perspectives among experts and community members came together.

Authority and responsibility

Sharing authority and having meaningful conversations with their local communities is a matter of learning from others, listening and acknowledging lived experiences. It might be a difficult lesson for museums to learn, but it helps institutions realize their social role and take more responsibility for how their activities shape their visitors affectively and personally (McGhie 2019; Newell 2020). Robert Janes (2009) identifies this as one of the self-inflicted challenges that hinder museums in realizing their responsibilities as a social institution. This is what he calls "unsuitable hierarchy" that hinders collaboration, sharing of authority, and therefore, proper community engagement.

Janes identifies another self-inflicted challenge in "the fallacy of authoritative neutrality", an assumption where museum organizations believe that taking a stand risks labeling them as biased or political. The problem with claiming an objective stand is that it often involves some interests for stakeholders or ends up supporting the status quo. Instead of aspiring to the impossible task of "neutrality", museum need to take risks in the face of conflicting interests favoring the communities they serve and to include a wide diversity of publics (Janes 2009; Evans, Nicolaisen, Tougaard & Achiam 2020).

Focus on the politics of representation has revealed how museums, as colonial enterprises, have constructed histories of communities favoring dominant social groups. The analyses have contributed to claims of empowerment of minority groups and indigenous communities in museum work (Message & Witcomb 2015).

Colin Sterling and Rodney Harrison (2020) argue that climate change interventions in museums are not only about sustainability, recycling and zero-emission goals. Radical climate action "means a historical reckoning with the role museums have played in supporting the main drivers of climate breakdown – not least colonialism, capitalism (at least as we currently know it), and industrial modernity."

Two articles in this publication reflect on the authority and responsibility of museums in times of climate crisis. The article "Curating Soya: Trying, Testing and Tasting (for) a Sustainable Museum" by Magdalena Puchberger and Nina Szogs reviews the authors' experience managing a soya project at the Volkskundemuseum Vienna placing the production of soya, its transport and consumption in a global context of the climate crisis. Through the clever, multifaceted approach to soya, they investigate global mechanisms that contribute to human-induced climate change. Furthermore, they reflect on the museum's legacy and implication in the global mechanisms, through revealing the societal, political and ideological discourses present in the museum.

What gets in the way of incorporating social factors into climate change when it is about global mechanisms? Is it the "fallacy of authoritative neutrality" that hinders reflections on the complicity of museums in modern society? The article "Rethinking museum shops in the context of the climate crisis" by Jamie Larkin asks a pressing question about museum shops and the position of museums in material and commodity culture. He proposes a reconceptualization of the museum shop to be more in line with climate change interventions. There is potential to think about climate communication and action holistically that incorporates a critique of global mechanisms.

Complexity and collective action

The four articles in this publication dive into diverse ways of "curating climate" with complex implications. Museologist Fiona Cameron (2011) argues that the implications of climate change vary from society to society, disproportionately affecting nations and communities, and human and nonhuman socialities. She contends that climate change means different things to different people in different locations. For museums to engage with the challenge of climate change, they need to consider this complexity when trying to promote understanding of, and action on, climate change (Cameron 2011; Cameron & Hodge 2015). This wide range of stakeholders makes museums interesting platforms for multiple actors to meet and negotiate, collaborate or clash. Museums are complex institutions, as sites where different disciplines, theoretical approaches, practices, cultural and political interests intersect.

Despite the complexity, the museum sector, both practitioners and museologists, generally recognize museums as important spaces for climate communication and action. Numbering in the tens of thousands there are seemingly endless opportunities for collaboration, mediation and exchange of experiences. Museums are trusted institutions and can provide safe spaces for exploration, whether to connect to the local community, the natural world or cultivate creative solutions (Cameron & Hodge 2015; Newell, Robin & Wehner 2017; Newell 2020; Sutton 2020). What is needed is "the will to direct them effectively and constructively towards climate action" (McGhie 2019: 27).

In the last few years, the participation and contribution of museums to an improved, more holistic approach to climate communication and action has increased significantly. Several museums have embraced the concept of the Anthropocene as a framework to address the overarching question of human impact on the planet (Dorfman, Koster & Nyambe 2018; Þórsson 2020). There is also an increased will to create a sense of collective action, or even promote international initiatives to guide climate change interventions further. The year 2019 has been especially active. In September 2019 at the ICOM triennial conference in Kyoto, a resolution on sustainability and the implementation of Agenda 2030 was overwhelmingly supported by its members. The main point of the resolution was that the Sustainable Development Goals (SDGs) provide a beneficial framework for museums, museum workers and museum networks. Henry McGhie (2020) argues that museums benefit significantly by following global agendas such as the SDGs. They provide a shared language and have been implemented widely on a state and commercial level. The Bremerhaven Declaration on the Role of Museum in Addressing the Climate Crisis even emphasized the value of the SDGs further (Klimahaus Bremerhaven 2020).

During the planning process of the Curating Climate workshop, the organizers received overwhelming feedback to the call for contributions. Within a month from late October 2019 to late November 2019, five events connecting museums and heritage to climate change, sustainability and the future were organised in Europe: On the 24th of October, the launching of the *Climate Heritage Network* took place in Glasgow, a support network of arts, culture and heritage organisations committed to aiding their communities in tackling climate change (Climate Heritage Network 2021). On the 27th ofOctober, the FORMS forum for future-oriented museums and institutions was hosted by *Museum of Tomorrow International (MOTI)* in Amsterdam (MOTI 2021). The day after, the Curating Climate Workshop started in Oslo. On the 7th of November, the 27th Annual Conference of the *Network of European Museum Organisations (NEMO)* started, focusing on the network's advocacy work on museums and sustainability. (NEMO 2021). On the 21st of November, *We Are Museums*, a community of change-makers in the museum sector, launched their pilot event "Museums facing Extinction" in Berlin, a series of workshops aimed at creating solution-oriented actions for cultural institutions (We Are Museums 2021).

COVID-19 has slowed things down in terms of coordination, collaboration, and gathering in person. The global pandemic has hit the museum sector very hard, but many are still determined to keep the momentum going. I hope that this special issue will be a welcome contribution to the ongoing effort to improve understanding of the important, and diverse role museums can play in promoting climate understanding and action.

Notes

1. The Curating Climate Collaboratory is part of the Oslo School of Environmental Humanities (OSEH) at the University of Oslo (UiO). The collaboratory's key participants are Dominik Collet, Prof. Climate History at the Department of Archaeology, Conservation and History, UiO; Brita Brenna, Prof. Museology at the Department of Culture Studies and Oriental Languages, UiO; Torkjell Leira, project coordinator for Klimahuset the Climate House at the Natural

History Museum in Oslo; Morien Rees, Varanger Museum and chair of ICOM's working group on Sustainability; Bergsveinn Þórsson, postdoc in CoFUTURES at the Department of Culture Studies and Oriental Languages, UiO. The collaboratory is funded by OSEH. The Curating Climate workshop was hosted by the Natural History Museum in Oslo and received additional funding from UiO: Energy and HEI: Heritage Experience Initiative.

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Bergsveinn Þórsson, Ph.D.
Department of Culture Studies and Oriental Languages, University of Oslo
bergsveinn.thorsson@ikos.uio.no

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Museums as agents and settings for climate hope

Sarah W. Sutton

Abstract: *Despite the uneven distribution of the impacts of climate change, much of the World's population commonly encounters climate change evidence either directly or indirectly. For many, the dread of a slow-onset disaster of such proportions can be overwhelming. As the emotional effects of climate change appear across society, some people are driven to action, some to inaction or paralysis. Museums could be key agents in turning these emotions into action and hope, but the work is new and the research uneven. The author describes her experience of the intersection of museum work and public emotions on climate change by exploring climate change psychology, museum-public engagement through exhibits, suitability of museums for climate-emotion work, and the potential for alternative museum approaches such as programming partnerships to create hope and foster action. She recommends research questions for the museum sector, and programmatic approaches for museums exploring support services for a public moving from grief and anxiety or despair, to hope.*

Keywords: Hope, action, grief, climate change, museum.

Museums and climate hope

Climate grief, and anxiety and despair are induced by experiencing climate change impacts or anticipating them. The feelings are socio-emotional evidence of an escalating social, economic, environmental and moral crisis on this planet. While the emotions of grief and despair have built to the scale of world health issues (World Health Organization 2014), they are felt individually, by our visitors, friends, neighbors, and the members of the communities where museums act. How can we museum professionals support the necessary, sometimes uncomfortable, and rather unexpected process of individuals confronting these negative emotions, and turn them toward positive feelings resulting in climate action and hope? Most commonly museums engage the public through exhibits. Can that be enough? A shift from traditional, chronological and scientific exhibits appears necessary, and the field is exploring new approaches, but we

know too little yet to document these impacts. I propose that while we accelerate research on the ability of exhibits to help an overwhelmed public move to hope and possibly action, that we also explore programmatic approaches for faster results accessible to more of our publics. This exploration was triggered by a teaching experience. It demanded from me a blending of the personal with the professional to see new ways the museum field can connect with communities on this more personal dimension of climate impacts. This article is not a conclusion. It is a recommendation, primarily from an American perspective, and an invitation for readers to consider these new paths, explore them – perhaps with me, and certainly with peers, and then to share those paths with others.

Climate grief comes to class

Recently, in my museum studies course, a student read to the class an entry from her required daily journal: her partner was so depressed by the environmental degradation he saw as a forest manager, that she was gravely worried for his mental health. When I acknowledged that those of us in this work struggle with losses and the worry, she said it was more than that: her friends aren't planning to pay-off student loans, and they aren't saving for retirement. She isn't either, "Why bother?" she said. Other students agreed and one instantly shared a link to a recent article on climate grief and despair. Most of the others had read it and felt it reflected their fears. These students were new to climate study, but not to its threats.

My own despair surfaced and grew as I listened to them. It took a full ten days to restore my will, courage, and resources to shake that feeling. Conversations with my peers revealed similar states among their students. My email to a museum professional and conservation psychologist was returned with valuable resources and a virtual hug. Finding that corroboration and support among peers was a relief, and also a set of clues to how to be helpful to the students and others. Creating a path forward moved me past the despair to action, and back to hope. I expect that, increasingly, I and my colleagues in this work will repeat that process with peers, visitors, and communities for decades to come. In 2019 Dr. Michael E. Mann, Distinguished Professor of Atmospheric Science at Penn State, is quoted in an interview stating: "The greatest threat I see to climate action is the paralysis that comes from disengagement, disillusionment, despair" (Snow 2019). If this despair leads to paralysis, then we must pursue the alternative, because we need broad reaching action to address this crisis.

I believe museums can and should help individuals and communities turn climate grief and anxiety or despair into something positive. If the museum's role is to help communities thrive, and to do so through the thoughtful use of charitably-garnered resources and professionally-driven missions, then the responsibility to use these resources to address climate grief and anxiety is equal to the responsibility to address any critical community issues. So first we must determine how to help our communities move from negative emotions to positive and productive ones; then we must improve our understanding of how the positive emotions result in solutions. This remains less clear to me: does action foster hope or hope foster action? That relationship is the second conundrum; the first is that there is a need to address the pain and museums do not yet recognize their responsibility or power to do so.

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Climate grief and anxiety are an under-examined world health issue

Though the impacts of climate change are unevenly distributed, much of the world's population commonly encounters climate change evidence; some directly, others indirectly. Increasingly mental health professionals and climate impact observers are identifying incidences of how the experience of climate events and the anticipation of the building disaster has mental health impacts. There is growing commentary on climate change as a mental health issue, and some developments on the clinical treatment of its impacts on the human psyche. Based on a study of anxiety and mood disorders after Hurricane Katrina, The World Health Organization's report on *Gender, Climate Change & Health* identified the disproportionate impacts on women, and called for research on gender response to climate disasters and change (World Health Organization 2014: 11). The Intergovernmental Panel on Climate Change's Special Report on Global Warming of 1.5°C notes that there are not yet enough research health outcomes, including mental health, the impacts are badly understood (IPCC 2018). And the American Psychological Association (APA) report *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance* explains that while "Americans are beginning to grow familiar with climate change and its health impacts," the connections with mental health are too rarely connected or examined. It notes the clear evidence of "stress, depression, and anxiety" among the public, and that there are growing "psychological responses to climate change, such as conflict avoidance, fatalism, fear, helplessness, and resignation". It concludes that this prevents the United States from acknowledging and resolving the causes of climate change, and from doing the work to help people develop psychological resilience to its threats (Clayton, Manning, Krygsman & Speiser 2017: 4).

As socially-conscious organizations, responsible for contributing to the well-being of communities, museums have a responsibility to help the people with whom they interact to surface and understand these feelings, and to share with them ways to move toward greater comfort. This requires engagement with medical and psychological professionals and practices previously outside the museum domain but, I propose, increasingly necessary within it.

Presentation of solastalgia, moral injury, anxiety and depression

First, let us examine the emotional impacts of climate change, then we will consider how that intersects with museum work. Clinicians document themes of Solastalgia, moral injury, anxiety and depression in people experiencing the emotional impacts of climate change. Solastalgia, a term that describes the distress an individual feels when directly experiencing the impacts of environmental change on their home environment (Albrecht 2005: 45). Clinical psychologist Leslie Davenport, author of *Emotional Resilience in the Era of Climate Change* explains that moral injuries come from "an act of transgression that shatters or violates moral and ethical expectations" from, among other sources, a person's culture or beliefs, or strongly held rules for society (Davenport 2017: 107). Anxiety and depression are related to feelings of helplessness and hopelessness, with anxiety being a future-facing worry, and depression as focused on the past, perhaps because of lost places, experience or security, or for missed opportunities to change the future

path. Those who suffer from these feelings may find them overlapping and compounding. They may feel overwhelmed by anger and frustration at the real or anticipated losses of places, experiences, and potential. They may find these paralyzing if they see no path to create sufficient change. This is where Mann's inaction and disengagement take hold. One important solution is to support the building, or rebuilding, of resilience. This resilience is the capacity of a person or community to recover from a shock to a system, whether an external or internal system, and emotional, social, or physical system, among others. This resilience creates the setting for recovering positive emotions, even taking action. When a person feels they have the "ability to influence events," they are able to find a meaningful path forward, and are ready to learn from both the good and bad experiences along the way, they can take action (Davenport 2017: 110).

Museums as likely treatment partners and settings

Davenport (2017) offers seventeen clinical recommendations for "treatment" of those who feel the grief, despair, etc. Of her examples for supporting individuals as they process these emotions and build a path to resilience, eight are immediately achievable in museum settings:

- provide safe spaces for exploration,
- facilitate inquiry into unexamined beliefs that interfere with regenerative work,
- encourage connections to the natural world,
- cultivate creativity in solutions,
- teach communication skills,
- validate grief,
- teach self-care, and
- model community involvement.

This is where museums can step in to provide services that align with their missions and, in the process, support the construction of hope, even action, prescribed by climate psychologists. Museums:

- are already identified as trusted, safe spaces for the public.
- are already spaces for individual and community healing after terrible national events or local disasters.
- have critical value as places for celebration and remembrance.
- often are already investing in building skills to develop empathy among staff, visitors and the public.
- have shown their willingness to take on inequality, injustice, diversity, equity, access, and physical and intellectual and emotional challenges and disabilities.
- ready people to become critical thinkers engaged in their communities.

Museum engagement with this part of the public is an important opportunity. Climate psycholgists are learning that climate grief and anxiety are a manifestation of a person's awareness of climate change, and that individual awareness and learning about climate change are necessary for beginning to build skills and foster necessary continued action. Researcher Thomas J. Doherty (2018) writes that "Ecological worrying is a normal and expectable behavior that has been correlated with pro-environmental attitudes and behaviors and with positive personality traits, such as openness and agreeableness" (253). These are our visitors. Colleen Dilenschneider, a United States museum-sector researcher reported in the *National Awareness, Attitudes and Usage Study,* that "a person who agrees strongly that the science indicating man's role in climate

change is nearly twice as likely to visit a cultural organization […] than someone who denies man's role as a primary contributor to climate change" (Dilenschneider 2017a). Research from The Yale Center on Climate Change Communication showed that in April 2020, 26% of American adults were "very worried" about climate change (Leiserowitz *et al.* 2020). So, worrying, if correlated with positive climate values, aligns with opportunity for new thinking; people with positive climate values visit museums at nearly twice the rate as those without, and many of the people who visit museums are climate worriers. Museums can be confident that most of those who visit are aware of what is happening, are very likely experiencing climate anxiety and grief, or are susceptible to it because of their awareness of the topic. This awareness and emotion creates museums' opportunity for engagement.

Dilenschneider, and Susie Wilkening, have continually demonstrated that the public trusts museums, placing them among the very most if not the most trusted resources (Dilenschneider 2017b). More importantly, as trusted advisors, museums are expected to recommend desired behaviors. Susie Wilkening (2020) shared a datastory about museums and the COVID-19 pandemic that applies to the museums' role in the climate crisis as well.

> We *all* need respite and places that can heal us emotionally, mentally, and physically. Whether through giving us a sense of purpose, exploring what it means to be human, gaining knowledge, or allowing us to escape […] museum-goers believe museums play a key role here. (Wilkening 2020)

So, the climate-aware are museum visitors; many of them are the climate worriers. The worriers are often the ones who want to bring about change. This means some of our visitors would benefit from support for climate-emotions. This is where I believe museums' work can make a difference but, as yet, we only partially understand what support is needed.

The National Network of Ocean and Climate Change Interpreters (NNOCCI) has been studying and actively assessing how we can improve the effectiveness of climate conversations. The 2015 NNOCCI five-year report indicates that by providing interpreters with knowledge about climate science and effective communication techniques, and creating a supportive network of NNOCCI members, the interpreters gain confidence in their ability to do this challenging work. And they do it better – the process contributes to "better understanding of climate change among the people they speak to. In turn those people are more likely to take action to solve climate change." (Fraser *et al.* 2015: 1) The report also notes, however, that though the practitioners reported feeling more hopeful, among their social contacts "It seems greater understanding of climate change was more strongly associated with action than hope" (Fraser *et al.* 2015: 8). What we know so far, is that hope is associated with agency and expansive thinking, which can galvanize action (Swim, Geiger, Sweetland & Fraser 2018: 73). And we know that "Messages that instill hope in the audience can motivate commitment to engaging in action" (Swim et al. 2018:74). So, what is the relationship between action and hope? Does hope lead to action, or action lead to hope? Does it matter which comes first? The NNOCCI report says:

> […] there is growing evidence that participation in collective action can stimulate a general, long lasting positive psychological transformation within activists. Participation in collective action seems to strengthen identification with others and to

induce collective empowerment. Feelings of social connectedness, empowerment, and efficacy emerging from the participation in collective action can feed into activists' positive, agentic self-definitions and nurture the conviction that change is possible. (Bamberg, Rees & Schulte 2018)

This tells me that "which comes first - hope or action?" is the wrong question. "What is the relationship? may be the better query, with investigations of the degree of influence between them being equally valid. Perhaps the research question should be "What mix is optimal for hopeful messaging and cooperative action that fosters significant mitigation?" This is the body of research I believe museums can and should pursue alongside the climate and conservation psychologists.

Exhibits as the expected attempt to foster engagement

To date, the majority of research on museums' impact on visitor's response to climate change has been limited to exhibitions. These have been and continue to be the dominant approach to engaging the public on climate. In my experience, museum professionals have too little longitudinal information on how these experiences affect our visitors, or if exhibits are the best tools for bringing about climate engagement beyond exhibition visits.

In the US, early climate exhibitions were purely scientific, and found primarily at science centers and natural history museums. Often, the topic was treated as an addition to a chronological approach to examining Earth's history, not human history. This is true at both the National Museum of Natural History in Washington, DC., and the American Museum of Natural History in New York City. Both were recently reviewed and upgraded to confidently and explicitly address the science of climate change and human role in it. Both included some opportunities for self-reflection for the visitor, but no calls to action beyond examining personal practices (Sutton 2020). Such exhibits are common worldwide, what might be the evolution beyond these pragmatic approaches?

In 2018, in a natural history exhibit at the National Museum Cardiff the Youth Forum staged a "gallery takeover" *No Môr Plastic* (This name has a double meaning: *môr* means 'sea' in Welsh, so it can be read as 'No More Plastic' and 'No Sea Plastic'). They called it a museum intervention to raise awareness of and examine the issue of plastic pollution. It sprang from youth anger and frustration (Younan & Jenkins 2020). In examining the collections to prepare for their project to create a display, the students discovered that a turtle which had been found dead on the beach in 1988, had been collected and then prepared for exhibit. The taxidermist found its stomach filled with plastic – from a life ended twenty years before ocean plastic awareness reached current heights. Let's be clear: addressing plastic pollution is, on the surface, an environmental issue more than a climate one, but the actions association with consumption, waste management, sourcing materials, and failure by those responsible, are directly in line with those issues related to climate. In part because of the frustration the youth see at the lack of adult intervention, and the students' worries for their own futures, this youth committee at the museum felt this story "needed to be told more loudly and visibly" in the exhibitions on the Ocean. As they prepared to do so, the students examined the options of taking a stand against ocean plastic. They concluded that the risk of the *No Môr Plastic* intervention to upset the public "was far outweighed by the need for immediate

Fig. 1. Taxidermy sea turtle with plastic waste installation: Photo: Sarah Younan. The plastic intervention at Amgueddfa Cymru – National Museum Wales was supported by the National Lottery Heritage Fund's "Kick the Dust" initiative to enable youth-led projects in museums.

action on environmental issues" (Younan & Jenkins 2020). They could not take a neutral stance, and indeed, felt the museum could not remain neutral on any issue. They went ahead with collecting beach plastic, cleaning and processing it as if it were new collections items, and then "temporarily littering" sea-life displays with the waste. They were right about it being worth any perceived risk: in the exhibit's reflection spaces and feedback board there was an "overwhelmingly positive" response to the intervention. This reflects current study in the US on museum neutrality in the face of contested issues. Dilenschneider's research shows that museums' tendency toward neutrality in the face of a polarizing issues *compromises* their authority for people on both sides of the issue. She writes "Recent happenings suggest that when an organization's mission is pinned against a politicized topic, standing up for your mission wins" (Dilenschneider 2019). Younan and Jenkins concluded that "audiences do want to engage with challenging themes in the museum environment, and that concerns around upsetting content should be weighed up against the positive impact that an activist

Fig. 2. Sea life diorama with plastic waste. Photo: Sarah Younan. The plastic intervention at Amgueddfa Cymru – National Museum Wales was supported by the National Lottery Heritage Fund's "Kick the Dust" initiative to enable youth-led projects in museums.

museum environment can have" (Younan & Jenkins 2020).

Shiralee Hudson Hill (2020), an independent professional, has written about her experience curating the exhibit *Anthropocene* at the Art Gallery of Ontario in 2018, part of a series or exhibits and activities in partnership with three visual artists. Art exhibitions, particularly photography, have been the most common alternative approach to museum engagement on climate after natural history. Hudson Hill's experience reinforced her conviction that visual arts hold tremendous potential for encouraging people "to make personal connections with issues of planetary change. Because art activates emotions, memories, learning and meaning-making in the brain in unique and complex ways, it offers unique possibilities for artists and museums to forge pathways to engagement." (Hill 2020) Of the 128,644 visitors who commented on their experience with *Anthropocene,* twenty percent rated their experience as "superior" and fifty-six percent rated it "excellent". Yet many visitors also left the exhibition feeling worried (twenty-four percent) and saddened (twenty percent)

by the artworks (Hill 2020). Is this a cause for alarm. Perhaps not.

Neuroscience research on public response to art engagement suggests this should not be cause for disappointment but evidence that the exhibit opened a path to creating individual change. The Peabody Essex Museum in Salem, Massachusetts, US, conducts biometric studies of visitor experiences to art exhibits. Its Neuroscience Initiative team has concluded that "Creating emotional reverberations in the galleries […] is an important element to fostering visitor engagement and transformation. […] the emotional intensity must be high whether or not the experience is a pleasant one" (Peabody Essex Museum 2020).

So aesthetic approaches appear to create a human emotional state prepared for transformation. Psychologist Davenport supports this thinking that attending to something in a special way creates openings that peoples' narratives would otherwise wall off: "By loosening our investment in our story, fresh perspectives and other feelings can naturally arise in the space that is created. This kind of self-inquiry cultivates a more balance and realistic view" (Davenport 2017). In a different setting but with similar emotional intensity, Thom van Dooren (2017) examined the aspect of "hope" in a curatorial and conservation effort: *The Last Snail: Loss, hope and care for the future.* He considered meanings of hope among conservationists working to protect species, specifically endangered Hawaiian tree snails. He was concerned that hope displayed as the action of caring can perhaps be a salve that limits further, greater action. In the end he concludes "The grounded and responsible hope that we need today, hope for a world still rich in biocultural diversities of all kinds, requires this kind of care for the future" (van Dooren 2017).

I met that last snail, George, *Achatinella apexfulva.* Standing in the room with him, knowing he was the last of a species, was sobering, discouraging, and, above all, sad. Standing in the room with him next to David Sischo, hearing him tell me about the cooperative actions of the Honolulu Zoo, The Bishop Museum and the Department of Land and Natural Resources to protect native species and their habitat, *that* gave me hope. (Sutton 2017). Davenport writes about moving through the grief process, converting "distress into passion for effective action. As we begin to express our thoughts, feelings, and behavior in alignment with our deepest values, we build tremendous strength and resilience. We find ways to attend to our own integrity despite what others may do or say" (Davenport 2017). This is where I believe museums can affect the most change. Driving away from my visit with George I felt profound grief, but as the road climbed through the mountains as I crossed the island, I could see the landscape they were protecting for other Georges, and I felt a renewed commitment to my own work to create the collaborations we need for change, with museums as the heart of those collaboration.

Davenport's mention of values suggests a line of research for examining the process and experience of museums' work to align values with environmental action, and how that degree of alignment can scale commitment and effort. The Nordic Museum in Seattle, Washington, US, routinely gathers visitor responses to queries in the gallery, particularly as the relate to the Nordic values of openness, social justice, innovation and connection to nature as expressed in the exhibits. In the *Perspectives* section in the last portion of its exhibits, the museum asks visitors to share responses to prompts as a way to gauge

visitor reactions. In an exhibit that included references to climate change, nature, and open spaces, responses emphasized sustainability, respect for the environment, and the need for solutions to climate change. The staff considered this valuable for engaging non-scientists in the climate change discussion and for identifying "public interest and values that could be used more widely to inform policy maker of public interests" (Sutton 2020). This values-centered approach can be an example of how can museum exhibits, settings and programs create the opportunity for visitor self-examination that embraces new information, fully-examines feelings, and clarifies values. First, though, we must understand better how to show that these transformations take place in our spaces through our agency.

The promise of museum 'treatments' for climate grief and despair

These examples offer ideas, but the expanding climate crisis, and the anticipated expansion of mental health issues, calls museums to go far beyond exhibitions' attempts to create change. We must open more avenues. Because we understand that climate change, though global, is experienced locally, I propose that museums can offer their publics ways to address mental and planet health in their home communities. To do this, museums must actively listen to and observe the specific needs of their communities, and promote themselves as emotional partners for developing the needed interventions for helping the public move from climate despair to climate hope. Here are potentially valuable paths for partnering and providing experience that contribute to treatments for grief and despair:

Normalize mental health support and recognition of climate emotion through museums: There are emerging examples of cultural institutions broadening their research and programmatic work to include understanding brain processes and mental health. I hope we can adopt this more widely. The Peabody Essex Museum, as described earlier, hired a neuropsychologist. The Montreal Museum of Fine Art hired a therapist who sees 1200 patients a year in closed-group art therapy – all prescribed through the Canadian health system (Vartanian 2019). Rachel Tova Winer, a clinical psychologist working in Texas, leads Out Going, a therapy program that regularly visits museums and other cultural sites for group session (Winer 2019). Libraries are hiring what are now known as Library Social Workers, not to manage cases, but to help staff provide comfort, programs and access to resources for people experiencing homelessness, job loss, mental health issues, and any social concerns (Graduate School of Social Work 2018). Museums could choose to work with conservation psychologists, social psychologists, and the growing practice of climate psychologists, to provide direct service to staff and public. This work with mental health providers to offer outreach and onsite programming, may help reduce the stigma of accessing any mental health support, and can normalize the discussion of the mental health and climate emotions, just as museum professionals are trying to normalize conversation about climate change.

Offer climate support groups: Twelve-step programs are proven effective in other instances, Alcoholics Anonymous, for example. Some researchers report that similar programs in museums have had success (Simmons 2016). This makes a climate support group, with proper leadership, a legitimate program offering. Twelve-step programs are effective because they validate the emotional aspects and

they engage affected individuals' values and hopes. The processes of creating connections among like-minded individuals and providing a safe place to share experiences and find social support align with what museums do already, and this approach clearly helps those experiencing grief, despair, anxiety and worry to move from isolation and despair to a sense of community and empowerment (Bamberg, Rees & Schulte 2018).

Advocate for, and demonstrate, connecting people with nature: the separation of culture and nature is unnecessary and often harmful. Richard Louv (2017), author of *The Nature Principle* examined the health profession's "interest in the nature prescription". Medical professionals worldwide are increasingly embracing prescriptions for patients to spend time in nature (2017: 82). Museums' curated open spaces, programs with urban gardening and citizen science-in-nature as well as the field's public gardens, zoos and aquariums all support public engagement with nature. Both *The Future of Our Pasts,* the report from the International Council of Monuments and Sites (ICOMOS), and the United Nations Framework Convention on Climate Change's (UNFCCC) Sustainable Development Goals comment that these two realms are intertwined (ICOMOS 2019). It is reasonable to note that each is diminished by separation from the other, and that together they support human well-being. The "[…] integrated nature-culture approaches can advance sustainability objectives by improving conservation outcomes, fostering bio- and cultural diversity, and supporting the well-being of contemporary societies and future generations in both urban and rural areas" (ICOMOS 2019: 3). These are places for celebrating nature in ways that strengthen engagement, and feelings of commitment and protection. This is where museums can leverage their physical resources for active engagement in public health and well-being.

Name museum work as climate action: Certainly, arts and humanities institutions can be allies for scientists. Professor Richard Primack's work on phenology, using Henry David Thoreau's journal comparative entries from his time at Walden Pond in the mid nineteenth century, is the touchstone for humanities documentation supporting scientific research (Primack 2014). The Concord Museum's 2013 exhibit *Early Spring: Henry David Thoreau and Climate Change* brought scientific research from the University of Boston to a local audience focused on history and literature. The public engagement activities and new school group programs proved extremely popular. (Sutton 2015: 141). But museums can also identify work in art and humanities settings as climate action when it documents action or the consequences of inaction. The photographs by Edward Morris and Susannah Sayler, taken from around the world for the traveling exhibit *Canary Project Works on Climate Change* (2006-2009), come to mind (Morris and Sayler 2017). It was my first visceral engagement with loss in a museum exhibit: seeing images of Venice underwater stopped my heart as I stood there with them in 2008. That experience expanded my awareness and strengthened my own commitment beyond local engagement just as Hudson-Hill's *Anthropocene* did for visitors. This is climate action work because it engages the public in understanding and connecting to climate change in ways that prepare them to take action.

Use historic achievements to model success against great odds: We can use the history of human kind's achievements to instill hope

of an even greater achievement now. In the United States, citizens heeded Rachel Carson's warnings and made significant environmental progress in reducing chemical pesticide use and managing and monitoring water quality. Around the world countries have put humans on the moon and far out into space; and worked together to nearly heal the hole in the ozone layer. Local stories of overcoming disasters and local histories of adapting to changing weather or climate conditions provide examples of how others have succeeded and we can too. Consider He'eia fish pond on O'ahu in the state of Hawai'i. This ecosystem-driven, sustainable food site is over 60 acres of enclosed water at the edge of the island. It was built by the community with stone and coral, finished with wood and palm, to be a sustainable and shared food source in the community – 800 years ago.

Fifty years ago, it was damaged by a hurricane and abandoned. A decade ago, the community began its restoration. On three occasions I joined the staff of this small nonprofit, and some fifty of its hundreds of weekly volunteers, to restore this fish pond. We passed coral rocks hand-to-hand to rebuild its walls, cleared acres of invasive trees and then prepared them for construction of traditional structures. Now it is beginning to produce sustainably-harvested fish again. That experience was clear evidence that there is so much that can be accomplished, and that it can be a measurable accomplishment. Certainly, the experience was another example of action inspiring hope in me.

Conclusion

There is enough background research and individual examples of programs, research, action and exhibits to suggest a role for museums in addressing climate emotions – to diminish the negative and amplify the positive. I believe we need to pursue two avenues simultaneously to advance public engagement on climate action through museums: 1) recognize that exhibitions cannot remain our primary public engagement on the human role and experience in climate change, and 2) expand partnerships with climate and conservation psychologists to radically advance hope.

First, exhibits. Their costs are high and their reach is limited. We must expand beyond this possibly over-valued tool. And, if we are to continue to use them, we must understand their true impacts on visitor action by conducting collaborative longitudinal studies. Time is too short to invest in these vehicles without maximizing their impact.

Second, establishing the roles and value of museums' partnerships with climate and conservation psychologists. If we actively engage in their research for public support, we can help us all understand the relationship between hope and action, and how museum experiences create the opportunity for visitor self-examination in ways that build hope, and how those experiences support the alignment of values with environmental action. Eventually we will identify the climate grief and anxiety interventions that are most closely aligned with growing climate hope.

Occasionally I revisit those feelings that overwhelmed me in talking with my students. Even a glimpse of the remembered worry reminds me that there is such value in museum-climate work to the present and future health of our communities and the world.

Ten days after that student's remark, I paused the original class syllabus. Studying climate grief and hope had renewed my faith in collective and cooperative action for healing and progress, and I was prepared to hear the full extent of their feelings. We each

spoke about where we find climate grief and loss; this acknowledged shared feelings of that pain. We identified frustration and anger in our lives where others appear not to be listening or caring, and reviewed the climate communication skills we were learning during the semester for engaging with those who think differently or want to argue. We thought about how the class has helped each of us be more aware, feel more knowledgeable and less isolated, and feel more confident in our own abilities and more informed about where to put our efforts; and to value the collective action that helps us cope and has the greatest impacts for creating a thriving, just and healthy world. We did the things a museum can do, and it worked.

Now, grief *and* hope appear in the syllabus at the beginning of both my courses. Since that course ended, my resources on this topic have increased and my understanding continues to grow. The assignments and discussions emphasize the importance of allowing time and space to process – emotionally – all that they and I are encountering, whether as part of the class or in daily life.

I still require journaling because it revealed the difficulty to begin with, but now I ask students to complete the entries in nature or with it at their side. I ask them to use this time with nature to process what we are learning and sharing in class so that they can recharge themselves as wells of hope for themselves and for others.

And I will do the same.

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Sarah W. Sutton, LEED-AP
Principal of Sustainable Museums,
Washington, USA.
https://sustainablemuseums.net/
sarah@sustainablemuseums.net

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Rethinking museum shops in the context of the climate crisis

Jamie Larkin

Abstract: *This paper critically evaluates the role of the museum shop in the context of the climate crisis. Specifically, it considers how museum shops might be reconceptualized as an important facet of visitor communication within the emerging category of climate museums. Theoretically, the paper references the conceptual linkages of material and commodity culture in relation to climate issues, while practically, it frames the shop as a space that can both support exhibition messaging and prompt behavioral changes among visitors that might help reduce their planetary impact. These claims are explored with reference to the concepts of "gestalt" and "nudge" theory. The paper presents three approaches for effecting such changes: 1. Extended exhibition messaging through shop products; 2. Consistency of tone between exhibition and shop spaces; 3. Imposing limits on the shop space to convey environmental messages. Ultimately, the paper argues for the shop as a more integral cultural component of the museum complex.*

Keywords: climate museums, museum shops, museum activism, climate crisis, consumption.

In this paper I discuss the museum shop in the context of museum responses to the climate crisis. My remarks are directed towards museums and exhibitions dealing with the changing climate, but particularly the nascent concept of the climate museum. Few climate museums currently exist, but this is likely to change with increased focus on strategies to mitigate the climate crisis and to the rethink the role of the museum in contemporary society.[1] For those that do exist, their emergence can be viewed in the context of recent trends of museum activism that seek to address societal issues, such as homelessness, migration and changing norms of gender and sexuality (e.g. Janes & Sandell 2019). These museums aim to effect change and, in many ways, to enact new, discursive forms of museum practice, departing from the passivity bound up in traditional notions of museum neutrality. In the context of the activist museum, it is vitally important that the core values for which the organization advocates are inherent across every facet of its operations, presenting opportunities to reconceptualize visitor communication in different forms throughout

the museum complex. As such, this paper contributes to a broader discussion about how we might radically rethink the museum in the context of the climate crisis, specifically the role the museum shop might play.

The precise notion of what a climate museum should be, or the practices it should deploy, has yet to be fully developed, although innovative methods of communicating the climate crisis have emerged within the museum sector and the academy. These range from exhibitions that convey lessons from climate science and attempt to inspire action (e.g. Newell *et al.* 2017a), to radical proposals of disrupting established intellectual frameworks by "ecologizing" the museum through highlighting the interconnected nature of human and non-human relationships (Cameron 2015). A common characteristic of such approaches is holistic thinking, moving beyond scientific explanations and solutions and recognizing the social and political inequities – both local and global – that need to be addressed as part of a comprehensive approach to climate action. For climate museums to be embedded within their communities means they will respond dynamically to these needs and act in myriad different ways. Thus, while some climate museums will develop commercial infrastructure to which this paper directly speaks, emerging museums, particularly in the Global South, may develop alternative models of museum practice. Hopefully, the core tenet of this paper – ensuring consistency of curatorial messaging across all aspects of the museum complex – will have some relevance in both contexts.

While engagement surrounding museums and the climate crisis is producing innovative research, attention tends to be focused in two areas: effectively communicating with audiences through exhibitions and reducing the carbon footprint of museum operations (particularly related to curatorial activities). Much less attention is paid to rethinking the broader visitor infrastructure to support both climate messaging and forms of carbon reduction. While museum amenities have assumed an increasingly important part of museum operations in recent years, their value is primarily tied to the visitor experience, rather than their capacity to contribute to curatorial messaging. While there are exceptions (for example, see Macleod 2005 on museum architecture), amenities like the admissions desk, the information kiosk, the museum shop, the cafeteria, restrooms, or parking and transport accessibility have received little attention regarding their capacity to communicate curatorial messages. The latent potential of these areas has been emphasized in recent work on the museum lobby by Laursen *et al* (2016), which argues for its role as a transformational visitor space. Consequently, there is little discussion on the relevance and appropriateness of these amenities, or whether we should attempt to radically reimagine them in relation to emerging themes of museum practice.[2]

As such, this paper responds to Cameron's (2015: 16) call "to produce knowledge and cognitive frames that will give rise to new ways of thinking and acting" to empower museum responses to the climate crisis. I contend that the shop can play a crucial role in climate museums' visitor communication largely due to the museum's subject matter. Given that modern society is entwined with the carbon economy which has precipitated the climate crisis, visitors to climate museums are arguably more fundamentally implicated in the subject at hand than other museums. Such museums describe climate processes – historical, contemporaneous, and crucially, future-oriented

– that create a binding conceptual framework that explicitly links material culture in the exhibition space and commodities in the museum shop as being produced by and being part of the same system. For example, an exhibit of coal in the gallery and a plastic bottle in the shop can be conceptually linked in a way that other museum exhibitions may struggle to do.

To realize such new perspectives, I argue we need to deconstruct barriers between "cultural" and "commercial" museum space and think more seriously about the shop as a site of representation, where products may reinforce exhibition messages, but also as a space of action, wherein visitors can be prompted to make lifestyle changes to reduce their planetary impact. I explore these issues through the concepts of "gestalt" and "nudge" theory. "Gestalt", developed by Falk & Dierking (2013), posits that the museum experience is made up of an interplay of contexts, and therefore the quality of visitor amenities is as important as exhibition galleries in ensuring visitor satisfaction. Here, I consider whether reframing "gestalt" through an overtly curatorial lens can apply an intellectual framework across the museum complex which would expand legitimate areas of curatorial communication, resulting in shops becoming a more holistic part of the museum's messaging. "Nudge" theory (Thaler & Sustein, 2009), drawn from behavioural economics, is premised on designing free choice environments to encourage users to make specific decisions, often based on what is perceived to be in their best interests. I consider whether specific "nudges" can be utilized within the museum shop to direct visitors to products that support messages they've encountered in the exhibition galleries.

Ultimately, this paper asks whether the museum shop can be reconceived as a dynamic environment for visitors to connect their experience in exhibition galleries to decisions they make as consumers, thereby more fruitfully connecting museum narratives to their everyday lives and behaviours. More ambitiously, this entails reconceptualizing the museum by reframing it as a relational space, in which the whole complex is subject to curatorial practices that constitute "networks of related things and their significance, rather than delivering knowledge from a single vantage point" (Newell *et al.,* 2017b: 2), democratizing different types of knowledge transfer throughout the museum complex.

Museum shops and the visitor experience

The museum shop has become integral to museum operations in the Global North, as both part of the visitor experience and as an important economic asset. This is evident in the ubiquitous presence of museum shops, particularly in the UK and USA, and positive visitor attitudes towards them (Larkin 2016b: 308-311). It is also seen in the significance of commercial revenues to museums: a professionally run museum shop can generate around 10% of a museum's income (Jill Fenwick, personal communication, 24 November 2020), while museum retailing in the UK produces in excess of £100m per annum for the sector (Neville 2013). Moreover, there is a growing realization of the importance of museum shops as a visitor amenity, and one in which curators, artists, and artisans have begun to take an interest (Fitch Little 2019), creating new possibilities for how the shop can influence visitors. This ties into the growing sophistication of museum retailing which moves it beyond the traditional space of

commodified memory and into a more creative forum that can foster visitor identity-work in a similar manner as the exhibition galleries (cf. Macdonald 2012).

Visitor desires to acquire material from sites has been evident as long as forms of tourism have existed, from the sale of pilgrim badges in the Middles Ages to early visitors to George Washington's Mount Vernon, who collected sticks from the estate to fashion their own souvenirs (Bird, Jr 2013). Acquiring cultural or natural tokens in this way is an intensely anthropological means of understanding the world by placing oneself in relation to it, connoting both proof of experience and acting as aide memoire. These desires were formalized in museums earlier than is typically understood (Larkin 2016a), and by 1900 civic museums in the UK commonly sold some combination of postcards, catalogues, books and prints to visitors. Modern museum shop infrastructure emerged in the 1960s, reflecting norms of consumer culture. Retailing intensified as museums were drawn into the burgeoning tourist economy of the 1970s and 80s, and it was during this period that the museum shop gained a reputation for selling poor quality mass-produced souvenirs (often colloquially referred to as "tat"). Since the late 1990s, shops have become a more prominent feature of the museum experience in terms of their size, sophistication and ubiquity. Shop lines expanded to include items "inspired" by museum collections and products designed by contemporary artists, blurring the boundaries between museum piece and commodity.[3] Similarly, the scope of products has increased with a focus on consumables such as food and drink. It is important to note that retailing varies across respective museum sectors according to size and resources. For larger museums, retailing is generally a combination of mass-produced, souvenir items and bespoke products developed exclusively for the institution.

Crucially, the development of designated retailing areas within the museum complex produced spaces with the capacity to influence visitors' experience, not only in terms of general satisfaction but also their understanding of messages emanating from exhibitions. The significance of this can be understood in relation to the rich literature discussing shopping as a means of identity construction (e.g. Miller 1998). With specific reference to the museum, Macdonald (2012) has noted that the shop parallels the exhibition space, with both displaying objects with a common cultural referent[4] using a similar infrastructure of display, meaning the shop provides an auxiliary space of representation in which "culture" is translated into popular form. Meanwhile, the differences between the spaces may expand the ways that visitors can relate to what they have seen in the galleries. The shop is a tactile space[5] where visitors can touch, purchase, and take away items, thus extending engagement beyond the site. Shops offer other modes of engagement, including sensory (taste, olfactory); the sale of local products (e.g. handicrafts) that expose visitors to regional cultural discourses; and offer additional forms of cultural consumption (i.e. sale of an author's books at a literary museum). Thus, the museum shop can work as an "orienting space" (McIntyre 2010: 189) which helps visitors shape the memory of their experience, but it is also a space where objects and themes are translated into contemporary form, providing ways for visitors to incorporate them into their everyday lives. Museum shops have a particular potency as they are often the final part of the visitor experience, and thus act as a liminal space between the museum and the everyday world.

Yet there persists a separation between the museum shop and the traditional "curatorial" operations of the museum that occur in the exhibition galleries. While curators have become more receptive to involvement in shop consultation in recent years, there still exists a conceptual divide whereby the shop is framed primarily as a part of the overall visitor experience, and as an economic agent in museum management handbooks. When considering the climate museum, we have the opportunity to bridge these divides by imagining how the shop can constitute part of a holistic experience in which it is strategically framed to engage visitors in the climate crisis and act as a forum to prompt action.

Holistic museum messaging: "gestalt" and "nudge"

In terms of reconceptualizing the role of the museum shop to more effectively support exhibition messaging, there are two key concepts that I want to explore: "Gestalt" – a concept familiar within the museum studies literature - and "nudge" theory, drawn from behavioural economics. I want to consider how we might deploy these concepts differently within the museum complex ("gestalt") and the shop itself ("nudge") to create a holistic form of "cultural" messaging in which the shop is an important aspect of the museum's climate communication.

The concept of "gestalt" was developed by Falk and Dierking (2013 [1992]), who proposed that visitors experience the museum as the sum of its parts, or "gestalt" – an organized whole – and therefore encounters with any facet of the museum, from the website, to the restrooms, to the galleries, should be of the same quality of experience. They suggest that "in rating the museum experience, the average visitor deems the quality of the gift shop and food service to be as important, if not more important, than the quality of the artifacts or exhibition design" (2013: 90). Falk and Dierking's work elevated the wider museum complex within the field of museum management and prompted reflections on the broader understanding of the experience. Their specific comments on the museum shop emphasize its role in terms of visitor satisfaction, and when referring explicitly to the issue of environmental sustainability, allude to the importance of consistent messaging across the complex: "this commitment must exist not just in the 'talk' of exhibitions but equally in the practices of shops and food services." (2013: 187).

However, Falk and Dierking's notion of "gestalt" is premised in ensuring each context the visitor experiences are as attuned as possible to maximize their *satisfaction.* Thus, whilst contributing to the overall experience, these contexts (e.g. curatorial, visitor services), still functioned autonomously in terms of their respective aims (i.e. the shop tasked primarily with generating revenue).[6] Instead, I contend that we should adapt the notion of "gestalt" so that it is inflected with a commitment to upholding rigorous curatorial messaging across the entire museum complex. This is with a view to creating a truly holistic form of visitor communication that permeates the museum complex, so that the museum shop has *as much* of a responsibility for communicating curatorial messages to visitors as the exhibition galleries.

Such an approach calls for closer connections between the cultural and the commercial, presenting opportunities for museums to reconsider the relationship of different types of material culture. Such relationships are not novel; connections span the history of the modern museum project, from the

links between the Great Exhibition and the emergence of the Department Store (Cummings & Lewandowska 2000) to contemporary art projects that place commercial spaces within exhibition areas (e.g. Meschac Gaba's "Museum of Contemporary African Art"). Prompting this notion of a curatorially inflected "gestalt" may allow us to think more closely about these relationships, which might help realize Merritt's (2014) observation that, "the museum store is a natural extension of our relationship to the objects we preserve in museums." To understand objects in this way is to democratize the relations between things and to open up a broader scope of communicative possibilities within the museum.

The second concept I want to consider is "nudge" theory, drawing from behavioural economics. In their book, *Nudge,* Thaler and Sustein (2009) make the case that any environment in which people make choices cannot be "neutral" or value-free. Such environments have been purposefully constructed so there is some degree of inherent (albeit perhaps passive) bias in how choices are presented to consumers which can influence how they act. The authors provide a number of examples to support their argument, such as how the display of food options in a cafeteria influences the choices diners make. Thus, Thaler and Sustein suggest that in contexts where there might be a public benefit (i.e. preventing childhood obesity), environments can be constructed that provide consumers with a range of options, but which encourage them to make choices that are more beneficial to their health, finances, or general wellbeing.

There has been limited application of "nudge" theory in the museum literature, but the museum shop itself is a prime example of a choice environment. Within retail, nudging is a commonly employed practice: customers are encouraged to increase their spending through framing strategies such as product placement, spotlighted products, and multi-buy deals. In this context, the shop manager is the "choice architect" who arranges the environment to achieve specific aims. Generally, the primary aim of the shop is to maximize profit to support the museum's financial health (see Komarac et al. 2019), although this is within broad parameters of the "appropriateness" of retailing. Thus, we encounter a context in which shop managers may be incentivized to promote products with a larger profit margin and less relevance to the "curatorial" aspects of the museum, than one which is more relevant but generates less revenue. As with "gestalt", we may ask whether "nudging", as currently employed works within the best interests of the museum.

Here, I am interested in exploring how the concepts of "gestalt" and "nudge" can be deployed together in the context of museum retailing. Conceived simply, we might ask whether adopting a curatorially-inflected "gestalt" across the museum complex could result in shops becoming a more effective tool for consolidating key exhibition themes. And could "nudging" be repurposed to direct visitors to products that support messages encountered in the exhibition space?

This approach is based on deconstructing different types of museum space and forms of museum messaging, arguing for greater curatorial synergy between them. It draws on the work of McIntyre (2010), who discusses the importance of designing museum retail environments as "integral" to the experience. McIntyre employs the idea of "gestalt", but more purposefully thinks about the linkages between spaces to ensure a sense of congruity for the visitor. He does this by considering

how cultural and commercial spaces can be designed so that they can work together to produce an appropriate "flow" and form a "synergistic" balance of experiences (2010: 181). My approach similarly advocates for more integral thinking but differs from McIntyre in that it argues for greater permeability *between* exhibition and shop spaces, and that the shop should be more explicitly curated to shape the onsite and post-visit experience. This approach still provides the visitor with choices and the ability to engage in subjective meaning-making in the shop, but through more purposefully selected products and joined-up curatorial thinking, it presents visitors with opportunities to make purchases that may potentially increase the impact of their visit.

In the context of the climate museum, this approach has the capacity to influence visitors' cognitive and behavioral approaches to the climate crisis. This type of engagement might be fruitful in the context of climate education, where there is concern regarding the difficulty of communicating the climate crisis which many experience as an abstract threat (Morton 2019: 14-16). By attempting to create more joined-up messaging across the museum complex, the museum shop presents a forum to link abstract concepts to commodities; a way to combine museum practice with everyday life.

Reframing the museum shop

In attempting to reframe the museum shop, there are a number of approaches that could be employed to draw closer connections between spaces and produce more holistic messaging. Here, I outline three examples of adapting shop practices and consider the efficacy each might have in practice. These examples have been developed through ethnographic work during my Ph.D. research and refined with subsequent visits to museum shops and informal interviews with a number of retail managers throughout the UK.

Approach 1: Extending exhibition messaging through shop products

Shop products should support and extend exhibition messaging as effectively as possible. Products should be selected with a clear understanding as to how visitors might use and interpret them, and how they contribute to the wider museum experience. While there are instances of informed retailing in the sector, this approach calls for a more circumspect, curatorial involvement in retailing. This can be realized in a number of ways, spanning passive and active curatorial agency.

On a basic level this means considering the aesthetic, educational, utilitarian and mnemonic qualities of objects. Moreover, it means thinking through how shop objects help visitors develop connections to exhibition narratives and themes. This would necessitate curators actively collaborating with shop managers to develop specific exhibition messages in ways that go beyond a passive "check-box" exercise of appropriateness.[7] For example, an exhibition might highlight individual climate stories, while the shop products prompt visitors to directly connect and engage with this aspect of the exhibition. These connections could be raised in the exhibition galleries, while the experience might be extended by continuing interpretive content into the shop space, linking product(s) back to themes explored in the exhibition. This could be achieved in colour coordinated areas of the shop, or linked visually, with product display areas using the same typography as exhibition interpretation.[8] More expansively,

an exhibition on the ecological importance of bees, for example, could be explicitly tied to shop products - artificial bee nests and seeds of bee friendly flowers - that "nudge" visitors to put principles learned in the exhibition galleries into practice. This would establish a more joined-up visitor experience and a context to frame products as a legitimate part of the curatorial process, prompting visitor participation to "complete" the museum experience.

Elements of this approach were evident at the Klimalab exhibition at the Nobel Peace Center in Oslo (5 April – 21 November, 2019). The exhibition consisted of a series of installations and interactive exhibits, prompting the visitor to consider their relationship to climate and drawing them into a range of artistic, scientific and social dialogues (fig. 1). The Center's shop supported the exhibition through the sale of carefully selected commodities. Few commodities had an explicit souvenir focus; they were primarily products that visitors could use to make lifestyle changes. Items for sale included reusable crockery and cutlery, laundry bags to prevent microplastics leaching into water systems, products made from recycled ocean plastics, and books that explored notions of environmental and social justice. Some products were presented in a way that introduced curatorial interpretation into the shop, extending exhibition messaging by creating opportunities to "nudge" visitors into purchases that could prompt positive behavioural changes (fig. 2). Despite this, the shop was still physically separate from the exhibition space without cues that drew the visitor into the shop as part of the experience; more could have been done in this context to conceptually link the two spaces.

The importance of the congruence of exhibition messaging and shop products is evident when the relationship between curatorial and shop space breaks down. For example, in 2018, The Deep, an aquarium in Hull, UK, had a small exhibition highlighting to visitors the dangers of plastic to sea life. However, upon leaving through the shop it was clear that many products for sale were made of plastic and would ultimately exacerbate the problems identified in the exhibition. In this instance, the disconnect between exhibition galleries and shop space produced a dissonance in terms of the messages both conveyed. This discrepancy was evident to staff and the aquarium has subsequently made strides in stocking shop products that support key exhibition messaging.[9]

Approach 2. Ensuring congruent tone between exhibition and shop spaces

The second approach is establishing an appropriate tone within the shop. A core tenet of retailing is to provide consumers with positive experiences and in the museum shop context this typically means helping visitors codify their museum visit as an enjoyable experience. As such, shop products often have a degree of levity, such as English Heritage's cartoon depiction of English history, and in some instances this strategy runs counter to the cultural expression in the exhibition galleries, prompting a disjunction. For example, in 2014 the National Museum of the Royal Navy in Portsmouth, UK, opened its "HMS: Hear My Story" exhibition, which painted a complex understanding of naval life involving heroism, tragedy and sacrifice. By contrast, the shop stocked products depicting a populist, jolly and flippant view of the navy. The shop tone was in stark contrast to the exhibition galleries and signified the end of

Fig. 1. Klimalab exhibition (April 2019 - November 2019), Nobel Peace Center, Oslo. Photo: Ursula Münster.

the museum experience, placing the visitor firmly within a commodified tourist context, highlighting divisions between curatorial and commercial parts of the site. Similar issues were evident during the opening of the 9/11 Memorial Museum in New York (Chung 2014). With such an abrupt transition, visitor mental modes may more readily shift registers, from an intangible, value-based perspective in the exhibition to an economic one in the shop. McIntyre's work highlights similar problems of congruity by stressing differences between areas of high and low engagement, which he designates "hot" and "cold" environments, and which have the capacity to disrupt the "flow" of visitor experience (see also Thaler & Sustein below: p. 30). In both instances, this disjuncture is the point at which there is a breakdown in "curatorial" gestalt, and the consequence is that it produces different types of space.

Regarding the climate museum, it is vital to consider ways of constructing a shop tone that is appropriately matched to the exhibition. A consistent tone has the capacity to support contexts for interchange between curatorial and commercial spaces that connects the two as a part of the same holistic experience. On the one hand, an exhibition may frame the climate

Fig. 2. Product for sale in Klimalab exhibition shop framed with curatorial messaging. Photo: Jamie Larkin.

crisis as a form of negative heritage and convey a somber mood with the hope of prompting visitor action. In such cases, this should not be undercut in the shop by an overtly commercial refraction of the climate crisis. By contrast, with the emergence of "climate grief", and its impact on mental wellbeing, the shop may be framed as a respite and be purposefully crafted to support messages of optimism and become a site for action (in response to the call of the exhibition). Here, a curatorially-inflected "gestalt" can ensure a carefully calibrated tone acts as a "nudging" mechanism, by creating a space which prompts visitors to adopt a particular attitude at the end of the visit wherein key exhibition messages can be reinforced. The crucial point here is to develop a clear understanding of how the tone within exhibition and commercial spaces interacts to support a consistent message.

An congruent example of the joined-up experience this consistency of tone can create was evident at the Olafur Eliasson retrospective "In real life" at Tate Modern, London (July 2019- January 2020). A collaboration between the artist's studio and the museum catering manager resulted in a three-course vegetarian menu available in the museum's restaurants throughout the exhibition. The menu, "made from sustainable, seasonal, mostly organic ingredients"[10] noting the carbon footprint of each item, reflected the climate focused nature of Eliasson's work and produced a resonance of messaging between exhibition and amenity space.

Fig. 3. Product for sale at New Forest Heritage Center displaying The New Forest Marque. Photo: courtesy of Mel Glossop.

3. Constraints: imposing limits on retailing

The final approach relates to a more activist rendering of the museum shop, which involves creating retail environments that adhere to particular constraints, to highlight climate issues and attempt to affect the visitor in specific ways. Some retail constraints are emerging as museums adopt ethical policies, often following trading guidelines promulgated by professional bodies. But under this proposal the effect would be more visceral and would render a palpably different shop experience.

For climate museums, an effective constraint may relate to contemporary

consumption. In the Global North the rate of consumption is that individual needs contribute disproportionately to global carbon emissions (Berners Lee, 2010: 7). Within the museum sector consumption is exacerbated through the museum shop with cycles of commodities generating a carbon footprint consisting of production and shipping (often from areas of manufacture in the Global South). Moreover, there are often multiple ways of consuming single exhibition objects through shop commodities. Thus, the ability of the visitor to leave an exhibition space having experienced objects framed by a discourse of preservation and longevity, to be presented with a cornucopia of products to consume, potentially undercuts key messages concerning the need to significantly alter consumption habits. Moreover, when discussing decision-making, Thaler and Sustein (2009) refer to consumers existing in a hot and cold state (in which they are agitated - with many choices, or passive - with fewer choices). In this context, museum visitors move from a "cold" environment of the exhibition space to a "hot" environment of the shop, in which many options are typically presented to them. Such transitions, Thaler and Sustein contend, encourage visitors to act with "temptation and mindlessness" (2009: 43–56).

In this context, could a climate museum impose constraints on its retailing and convey this to visitors? For example, could the shop be stocked with a limited range of products that adhere to rigorous sustainability criteria, or that are circular by design, or only stock products which fall below a particular carbon footprint (cf. Berners Lee, 2010)? To link to existing movements, could the shop be set up to indicate what living a one tonne life might look like?[11] Such a move is particularly important given that "museums perform the knowledge they create" (Kirshenblatt-Gimblett, 1998), and in some sense this proposal performs museum knowledge by actively disciplining commercial activity. To frame the shop in this way would explicitly bring this area into focus of a curatorially-inflected "gestalt" in terms of applying a rubric of care and preservation to both exhibition galleries and commercial areas, and "nudge" visitors towards the kind of consumption society will need to adopt to meaningfully address the climate crisis. Examples of the rudiments of this idea can be seen in various eco-labelling schemes. For example, the New Forest Heritage Centre, in Lyndhurst, sells products with a New Forest Marque, an accreditation scheme meaning they have been produced in the local area, sustaining the local environment and community (fig. 3).

Considering these three approaches, which are by no means exhaustive and overlap significantly, we might argue for the museum shop to become a dynamic site of action. To truly achieve this aim would necessitate a conceptual re-orientation of the shop in which its rationale is flipped from that of primarily generating revenue to one that principally supports museum communication. Thus, we may conceive of it as a space with a greater concern for visitors to effectively extend their experience through products which *may* generate revenue, rather than be encouraged to consume an abundance of products driven primarily by the profit motive.

Problems of implementation

In a practical sense, changes that fundamentally alter the role and function of museum infrastructure would necessitate a philosophical change at an organizational level. It would potentially mean deconstructing traditional

hierarchies (in terms of museum roles) and broadening the understanding of how the museum communicates with its audience. Such changes would mean facilitating closer and more dynamic working relationships between curators, museum educators, and retail managers, to promote joined up thinking and implement new intellectual frameworks across the organization. To some extent, it challenges the authority of certain types of material culture as the primary instrument of knowledge within the museum.

While some museums are beginning to make such moves, conceptual divisions between cultural and commercial functions within the museum remain normalized. The emergence of climate museums in the mode of the activist museum has the possibility to disrupt established notions of museum practice, particularly the way the museum communicates with visitors. Such activist museums operate in ways that break boundaries in terms of what museums can say, how they can say it, and whose voices are heard when it comes to cultural preservation and storytelling. A greater fluidity of intellectual messaging across the museum complex, as presented here, may prompt a breaking out of embedded "mental models" (Emerson 2019). Such a departure from established museum models may even be essential to confront problems of communicating the existential threat of the climate crisis which challenges traditional ways of thinking and acting (cf. Morton 2019).

A significant problem here concerns revenue generated through this modified retailing paradigm. In the UK, museums are increasingly reliant on earned income as a component of their financial resilience (National Campaign for the Arts 2020). Such new models might not necessarily translate to reduced revenue – indeed, a more holistic connection between exhibition and shop may stimulate increased spend as visitors feel part of an "authentic" climate discourse – but existing models do provide an established template for profitability. Similarly, while industry suppliers are working towards increasing sustainable products, at present these tend to have a higher price point making moves to greener retailing an economic trade off. So reconceptualizing the museum shop in this way means pragmatically evaluating its role within the organization's income generating strategy.

Reflecting on these issues in the context of COVID-19, the crisis has exposed vulnerabilities of current museum funding models. Museums with extensive on-site monetization operations that incentivize mass consumption, including blockbuster exhibitions, memberships, museum shops, cafes, etc., have had their income severely curtailed during lockdown. Museums that have adapted most successfully to these new conditions are those that have been able to monetize forms of digital engagement. This digital shift means that museum funding models emerging from this global pandemic may be diversified, incorporating non-site dependent revenues, making the museum shop less financially imperative and a more malleable tool to support exhibition messaging.

Conclusion

In this paper, I have considered how climate museums and climate exhibitions might reconceptualize their retailing operations to more effectively communicate messages and prompt action among visitors. My aim was to think critically about repurposing the concepts of "gestalt" and "nudge" theory, and ways that climate museums can produce discourses that

run throughout the organization in a more holistic way. The ideas presented here are a provocation – to try to prompt a different way of thinking – but it could be argued that they still fit firmly within an established paradigm of mass consumption that we need to address as a society, to the point at which we can begin to question whether retailing in museums is appropriate at all.

Therefore, we may need an even more radical approach to reimagine what the museum shop is, and question what an evolution of the shop concept might look like. Could alternatives be "maker spaces" or skills workshops, in which museum mementos are supplied by crafts workshops taught by local artisans and principles of the circular economy are practiced? The rudiments of such an approach might lie in initiatives linking nature, commerce and the museum, like Ceredigion Museum's "Hadau" project, which created educational programs to produce greenwood crafts that would be sold in the museum shop and promote sustainability and social enterprise.[12]

The nascent climate museum has the capacity to make significant strides in this area, in part, because of the emergence of the concept and the lack of established practices surrounding this type of museum. In their emergence, alongside radical opportunities to think about engaging exhibition practice, such places have the capacity to produce a model for a new type of dynamic, intellectually engaged, connected museum complex, within which the shop plays and important part in contributing to the organization's curatorial goals.

Notes

1. The Museums and Climate Network currently lists the following under their heading 'Climate museums': Climate Museum, New York; Klimahuset, Oslo; Klimahaus Bremerhaven 8° Ost, Bremerhaven; Jockey Museum of Climate Change, Hong Kong; Museum of Tomorrow, Rio de Janeiro; Museum of Water (travelling exhibition). Not listed here is the Climate Museum, London (pop-up museum). More information on the museums can be found here: https://mccnetwork.org/climate-museums
2. A broader example of this is Gurian's (2001) call for museums to become more community focused 'mixed use' spaces. While Gurian doesn't make the explicit connection, there are a number of ways in which we can imagine museum visitor amenities as hosting broader social services (i.e. food bank, postal services).
3. See for example, Tate Modern, London and its Tate Edit shop, which is described as selling 'Carefully chosen artists products, limited editions, design objects and items for the home'. See: https://www.tate.org.uk/visit/tate-modern/tate-edit-shop
4. For example, the Rosetta Stone and a replica of the Rosetta Stone are both referents of Ancient Egypt.
5. As noted by Sweetman, *et al.* (2020), museums which contain collections that are tactile stimulate more effective memory response in visitors. To extend their work, presumably a tactile environment like the museum shop is therefore a forum that has the potential to codify memory more effectively than a traditional ocular-centric gallery to which it may be attached.
6. Here, an understanding of the museum shop would be to generate as much revenue for the museum as possible, while satisfying visitor desires by offering products with some relationship to the site. Here, economic and visitor satisfaction metrics would be paramount versus curatorial agendas.
7. A discussion with a London-based National Museum revealed that curators often review

products for appropriateness (i.e. to avoid egregious errors of representation), but rarely do they actively inform retail strategy in terms of curatorial insight

8. There is precedent for this in the British Museum's Grenville Room which stylistically models the galleries surrounding it.
9. More details may be found here: https://www.thedeep.co.uk/conservation/conservation-projects/united-kingdom/not-so-fantastic-plastic
10. Information on Artist Set Menu available at: https://www.tate.org.uk/whats-on/tate-modern/exhibition/olafur-eliasson/artist-set-menu-olafur-eliasson-real-life
11. Information on the One Tonne Life project available at: https://onetonnelife.com/about-the-project/
12. Details about this project can be found on the Tir Coed website: http://tircoed.org.uk/galleries/hadau-craft-project

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Jamie Larkin, Ph.D.
Assistant Professor of Creative and Cultural Industries
Chapman University, Orange, California, USA
jlarkin@chapman.edu

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Curating soya: Trying, testing and tasting (for) a sustainable museum

Magdalena Puchberger & Nina Szogs

Abstract: *The Volkskundemuseum Vienna has been subject to large conceptual changes and now focuses on its social role and contribution to an inclusive and democratic society. The soya project came to the museum coincidentally when a hidden historical conjuncture was revealed and offered an intriguing way to include the topic of climate change into the museum's agenda. The analogue and digital interactive formats in the soya project deal with the global contexts of climate change by analysing the social, economic and cultural role of the soya bean in our everyday lives. The authors present and discuss the inclusive museum approach, multisensory social programmes and the idea of a digital add-on exhibition on a small budget.*

Keywords: Soya, climate change, curating climate, relational museum, democratic museum, permanent exhibition, social programme, online exhibition, cultural analysis, sensory ethnography

Curating soya in an ethnographic museum

The Volkskundemuseum Vienna is Austria's biggest ethnographic folk art and folk life museum and was founded in 1895. Since 1917, it has been located in the baroque Gartenpalais (Garden palace) Schönborn in the 8th district, near universities, theatres and other cultural institutions. In 1995, the permanent exhibition was renewed and reassembled and the museum aspired to get ready for the next millennium.

Twenty-five years and three museum directors later, the museum has changed – and has had to change. Although, or maybe because of, being chronically underfunded, the museum is seeking to find its niche in the realm of the rich museum culture in Vienna and among the different museum approaches in the federal museums. Similarly, the museum is renegotiating its position in popular culture research and cultural analysis in Austria and within the diverse network of European ethnographic museums. In this process, one of the main principles has been established that defines the Volkskundemuseum Vienna as a public and open house.

Following this institutional restructuring process, the Volkskundemuseum Vienna[1] took

an institutional *gap year* in 2020 to reconsider the status quo further and conceptually define the ways the museum wants to work in the future. There were, consequently, no exhibitions planned for this period, but the work with the museum's collections was intensified, as was the conceptual planning of the future orientation of the museum regarding research, public engagement, co-operations, formats and much more. The museum aims to figure out how to contribute to a peaceful, equal and inclusive society that faces changing societal, ecological, *epidemical,* global and local conditions and times that are finite and critical. It seems to be existential, particularly for a small museum, to follow the guidelines of sustainability on financial, social and ecological levels. The careful and innovative employment of the museum's resources (such as collections, building, staff and networks) is crucial.

From 2018 onwards, we, the authors, started to follow these guidelines in our project *Soya. Knowledge – Society – City,* which is a small interdisciplinary and experimental project at the Volkskundemuseum Vienna. The soya project uses the exceptional significance that the Gartenpalais Schönborn holds for the history of soya production in Europe. Friedrich Haberlandt, a professor of agriculture, grew the very first soya plants of the Habsburg monarchy in the garden of the palais and laid – as a dominant narrative in Central Europe claims[2] – the foundation of the global dissemination of soya.

This unique historical conjuncture initiated a multifaceted project on soya, focusing on the global and local contexts of farming, health and food security, the reasons for and the consequences of climate change, and on climate justice. The project offers online and offline visitors and readers diverse approaches to soya, informed by analyses and inputs from a great variety of actors in the field. The project further aims to connect knowledge and everyday practices from different people, such as scientists, activists and practitioners.

In this article, we will introduce you to our project, including the considerations and reflections of a museum of the future and its societal responsibilities and possibilities. Firstly, we will provide insights into the history and present situation of the Volkskundemuseum Vienna and how both are related to the field of soya. Secondly, we will elaborate and reflect on our soya concept and current formats in the project. In a third step, we will discuss our future plans on how to use and complement the given objects, structures, texts and narratives in the museum's permanent exhibition.

The role of ethnographic museums for the dissemination, production and exchange of knowledge in the field of climate change

Ethnographic museums, particularly because of their troubled past, hold specific responsibilities for social justice in a global society. This concerns ethnological museums that have collected objects and stories under brutal or, at least, questionable circumstances in Europe's colonialist past. Accordingly, some museums now seek to offer communities a chance to convey their messages, for example, how they are affected by climate change and social injustice, and turn their museum "into a zone of real collaboration and supportive engagement across boundaries" (Newell 2017: 49).

Similar to these considerations, the Volkskundemuseum Vienna is in a constant process of redefining its role as an urban museum in Vienna, reflecting and dealing with its problematic role during the two dictatorships of Austrofascism and National Socialism in

Austria (Puchberger & Johler 2016: 183–225). How does a museum deal with its past and become an urban place for activism? In the museum's point of view, this is only possible when using inclusive and democratic museum approaches, such as those of a *radically democratic museum* and a *relational museum*.

According to museum theorist Nora Sternfeld, a radically democratic museum requires five major tasks and processes:[3] a) challenging archives (and collections), b) occupying space, c) organising a counter-public, d) producing (and offering) alternative knowledge, and e) radicalising cultural/museum education (Sternfeld 2018:37). She suggests understanding museums as a field of manifold negotiations and conflicts about existing conditions, such as the given infrastructure, the permanent exhibition and collections. A museum, furthermore, must integrate and reflect on societal, political or ideological discourses that are represented in the museum's publications or guided tours and workshops.

A relational museum, in the definition that we apply for our project, relates to specific (circum)stances, i.e. not being objective or equidistant but political and activist. The museum, thus, relates to themes and objects it presents and positions itself in the field. The challenge is to communicate these positions transparently and comprehensively, for example, by relating and connecting them to the living world and everyday life of visitors and guests. The authors in the introduction to the book *Curating the Future* summarise the concept of a relational museum very fittingly for the purposes of climate (inter)action:

> A relational museum develops its authority through supporting and curating networks of related things and their significance, rather than delivering knowledge from a single vantage point. Museums are increasingly open to a flow in and out of the museum's structure, where audiences and collections, curators and designers are all in conversation in a mutually informing way, sharing authority. (Newell *et al.* 2017: 2)

The importance of these approaches lies – not only in the case of climate change – in their empowering role for different groups of people. The social role and its significance for the democracy of museums is increasingly understood as one of the key tasks, because, as a quote from the joint conference introduction of the German Museum Association and the Network of European Museum Associations summarises: "[...] museums contribute through their daily business to society in dealing with questions that are connected to social cohesion, social inclusion and social diversity" (Conference: Museums and Social Responsibility: Values Revisited).

Consequently, the Volkskundemuseum Vienna's aim is to increase agency or, even before that, show that people have agency. At the same time, we walk a thin line between understanding that we can indeed make a change, while not releasing the major drivers of climate change from any liability. Hence, the task of the Volkskundemuseum Vienna when dealing with climate change is also to understand and analyse global mechanisms that cause climate change. For these purposes, soya has proved to be a useful tool and vehicle in the case of the Volkskundemuseum Vienna.

Volkskundemuseum Vienna: Framing soya (his)stories

The history of the Volkskundemuseum Vienna and the history of soya culminate in a very specific and long forgotten way. The building of the Volkskundemuseum Vienna is the

frame of these two stories that are so tightly related – in the space and personal ties of the respective founding figures. This relationship was revealed to us coincidentally. In November 2017, the manager of research and development at the Central European non-governmental organisation *DonauSoja* approached the Volkskundemuseum Vienna with a surprising request. His organisation wished to install a commemorative plaque on the façade of the museum building to remember the "European soya pioneer Friedrich Haberlandt".

Although we had to reject this request, it had aroused our curiosity.[4] This was due to the fact that the so-called soya pioneer, Friedrich Haberlandt (1826–1878), shared his family name with one of the founders and first director of the Volkskundemuseum Vienna, Michael Haberlandt (1860–1940), and his son and successor as director, Arthur Haberlandt (1889–1964).

Not only was the agronomist and expert on plant cultivation, Friedrich Haberlandt, the father of Michael and grandfather of Arthur Haberlandt, but it was also revealed that the first location of a soya plantation in Vienna (and in Austria) was indeed in the Gartenpalais Schönborn, the home of the Volkskundemuseum Vienna today. The Gartenpalais Schönborn was then the first domicile of the newly founded Viennese University of Agriculture.

Soya plants: First contact at the world exhibition in Vienna in 1873

Friedrich Haberlandt, the expert on plant cultivation and then first principal of the University of Agriculture, discovered soya beans and plants in the Chinese and Japanese sections at the world exhibition in Vienna in 1873 (Thiel 1872:1; N.N. 1873:1). He was fascinated by this plant and its potential regarding cultivation and people's nutrition from the beginning. Haberlandt was sure that soya would help the Habsburg monarchy to foster its agricultural standing in Europe and the world and bring essential advances in solving nutritional challenges of the monarchy (Puchberger 2019:24). His first basic and fundamental work on that subject *Die Sojabohne* (The Soya Bean; Haberlandt 1878) united the results of growing trials at Gartenpalais Schönborn and all over the monarchy with his predictions on the utilisations and patriotic benefits of this "miraculous alien" ("wunderthätiger Fremdling", 1878:113).

Although Friedrich Haberlandt's success in growing and distributing soya in Austria, the monarchy and Europe was only mediocre,[5] he can be considered a significant person in the further global history of soya. Due to his growing trials and belief in national and societal advancement through agricultural progress, Haberlandt played an important part in implementing and institutionalising agriculture as a leading and patriotic science in the Habsburg monarchy (Haberlandt 1874).

As another striking coincidence one generation later, his son Michael Haberlandt was one of the founders of yet another academic discipline that considered itself as essential for his *homeland:* the discipline of Volkskunde (folklore studies). A folklorist and Indologist, Michael Haberlandt was co-founder of the *Verein Für Volkskunde* (Folklore Society) in Vienna, the *Österreichische Zeitschrift für Volkskunde* (Austrian Journal of Folklore Studies) and of the Volkskundemuseum Vienna. The museum's initial name was the "Museum für österreichische Volkskunde" [Museum for Austrian Folk Art and Folk Life]. It was conceptualised with a strong patriotic

and nationalist emphasis as a "monument" of the Habsburg monarchy and "remained so until long after the First World War" (Tschofen 1998:18).

In that period, the establishment of this kind of museum and the development of the academic discipline *Volkskunde* (Folklore Studies) were very common for intellectual, cultural and social movements all over Europe. Perhaps also inspired by the ethnographic exhibition of diverse (farming) houses at the world exhibition in Vienna,[6] Michael Haberlandt started travelling throughout the whole monarchy (Haberlandt 1934:1f.) to collect, explore and compare pieces of tangible and intangible cultural heritage that he considered "typical" for the peoples of the monarchy. He was certain to find those "relics", particularly in the rural and remote areas of the monarchy, that were, as he and his colleagues feared, vanishing in the modern processes of urbanisation and industrialisation (Haberlandt 1896:183f). The objects and relics collected formed the basis of the Volkskundemuseum Vienna:

> Over a third of the stocks were collected before 1918. An early emphasis was on furniture, textiles and ceramics, together with frequent serial collections of, for example, distaffs, flails for washing or products of different European cottage industries of the nineteenth Century. (Tschofen 1998: 18)

In the urban, metropolitan, centralistic Viennese contexts, the museum offered rurality, agriculture, peasants, and popular and folk cultures as a master narrative of "healing" forces for grievances of modern civilisation and urban societies. It took, invented and fostered a very special perspective on peasants, and their life and work and, thereby, idealised and ideologised rural life more than depicting it realistically (Johler & Puchberger 2017).

Both Friedrich and Michael Haberlandt certainly supported the ideology of the monarchy and homeland and also the progress and development of the Austrian people with their work. Both were – although part of the urban academic elite – interested in rural and agricultural lifestyles and work routines. They can be understood as agents of the particular zeitgeist with idealistic goals.

Their approach to soya, agriculture or folk culture might help us to understand societal dynamics and discourses. The friction between the following dualities are of particular significance for our project: (1) the city and rural surroundings, (2) the centre and periphery, and (3) the bourgeois and peasant culture and everyday life. These forced dualities have been part of the museum, the building and their history from the beginnings. The analysis and the contexts of soya, the museum, and the academic and applied folklore help us to narrate and frame our (historical) approach and contrast or complement present manifestations. The different narratives concerning, promoting or rejecting soya, the idealistic goals and the conflicts or failures in the history of Austrian, European or global soya are inspiring sources to reflect present soya cultures.

Social programmes and curating climate

An important part of the ethnographic approach of the Volkskundemuseum Vienna is the disentanglement of complex phenomena to make them comprehensible for the local audience.

Consequently, for our museum, soya is an ideal starting point to talk about such complex

topics as climate change, times of crises, nutrition and our daily diets, and a sustainable future. From our ethnographic perspective, we emphasise the cultural and social elements of climate change. Following the concept of Donna Haraway's "naturecultures" (Haraway 2003) in the field of soya, ethnographic and cultural anthropological approaches and methods help us to "mediate between dualisms, and identify the connectivity and synthetic properties of entities that are seemingly opposed" (Malone & Ovenden 2017:1).

Kirsten Wehner argues accordingly for the case of museums that the dichotomy of Nature and Culture is indeed deep-seated in our institutions and, therefore, she advocates establishing new curatorial practices that reveal this historically constructed division (2017: 87). This deconstruction is of particular importance to fully fathom out the roots and causes of climate change and possible ways to mitigate its consequences. Hence, we need to understand climate change as a social and cultural phenomenon of capitalism and "progressivism" (Newell *et al.* 2017:6), before we can advocate for climate justice.

The Volkskundemuseum Vienna's goal is to take an active part in a diverse and informed narration of climate change. Or, as described on the Sustainable Development Goals Partnerships Platform of the United Nations:

> Cultural institutions have unique physical sites, living and non-living collections, and scientific and humanities research capacities that can support locally-driven solutions, and nationally and globally-significant changes [...]. (Sustainable Development Goals Partnerships Platform of the United Nations. Museum Partnerships for Future Earth)

Following these approaches and this understanding of the social role of museums, we can consider the unexpected connection of soya and the Volkskundemuseum Vienna via the building's history as "ethnographic serendipity" (Rivoal & Salazar 2013). This is due to the fact that it is possible with the vehicle of soya or via the "soya-perspective" to connect the local and the global and the urban and the rural. Even more so, it enables us to deconstruct these binary concepts and to focus on the in-betweens. This is where soya production, distribution and consumption takes place and where climate change moves to the centre of our attention.

In accordance with this, the Austrian agricultural historian Ernst Langthaler discusses in his study on agri-food globalisation how soya is not only part of global food regimes but can be considered as *the* decisive factor that has had a profound impact on nature, culture and mankind. He even goes a step further to underline the relevance of soya for the world's recent past, present and future and suggests recognising the last phase of the Anthropocene as the "soyacene" (Langthaler 2019: 116).

When Langthaler thereby makes it utterly clear that global soya production is crucial to each and everyone's everyday life, we can only emphasise that this has also been one of the findings in our project on a small and local scale. The project's COVID-19 collection (#SojaFromHome 2020) showed, for example, how soya can be part of foods and drinks, local food distribution, stock markets, cosmetics, pet food and animal fodder. Furthermore, scientific contributions on our online blog discuss how soya is highly disputed in the field of genetically engineered and modified foods, an existential factor in global animal food production and, thus, a major driver of climate change. However, at the same time, soya is ironically also a major factor of strategies to counter climate change with organic and vegan

diets and celebrated for its potential to achieve global food security due to its high levels of protein (Elmadfa & Meyer 2019; Vollmann 2019; Schlatzer 2020).

Soya formats

Utilising our different soya formats, our aim is to gather as much diverse information as possible in an open space for knowledge production and distribution. Thereby, we seek to enable an informed decision-making process, firstly, for the museum itself and, secondly, for (active) visitors and experts. We seek to answer and discuss questions, such as: Why and how is my *Schnitzel* or my salmon steak connected to the deforestation of the rainforest? How does the climate crisis relate to me and my nutritional needs in my local environment in Vienna? Why is soya not per se good or bad?

To answer these questions, we did not include the museum's permanent exhibition or collection at first. As elaborated above, the building and the specific history of the building were our starting points from which we explored other ties or coincidences relating soya to the museum, to historical and present phenomena and processes. Beyond exhibition rooms, we integrated other museum spaces such as the kitchen, the inner courtyard and the garden into the social programme. So far, we have, thus, followed museum approaches that understand museums as far more than the holder of collections and objects, as Karen Brown and François Mairesse summarise when discussing the social role of museums: "The last century has seen the purpose and values of the museum largely transformed to the point where, it could be argued, collections – once so central to museums – are considered of secondary importance today" (2018: 525).

The second year of the soya project was dedicated to practical and mediational work as a basis for further steps. Trying out new formats that had not yet included the permanent exhibition offered the opportunity to experiment with different kinds of knowledge, while staying flexible and adaptable simultaneously. We offered different kinds of formats for different audiences in terms of age, education and subculture and actively encouraged these different groups to mingle. We have also given speakers from different soya perspectives the floor: practitioners, producers, academics, food experts, activists and many more.

Regarding our social soya programmes, we have so far organised an academic symposium, an excursion to a manufacturing site for organic soya products and historical places of soya production in Hungary and Austria, as well as different kinds of soya fusion events, such as a speed dating event with local soya product producers and soya cooking classes.

Most of our programmes follow multisensory approaches that have shown themselves to also be helpful in ethnographic museums to offer the audience the possibility of learning about and contributing to a certain topic in multiple ways (Binter 2014). The possibility of learning more about a topic via a culinary experience has proven to be particularly helpful to address diverse audiences.

In our cooking classes, for example, a renowned tofu specialist and chef showed the audience how to include non-animal proteins, such as soya, in one's daily diet. Different people were invited to the open classes via the museum newsletter, social media channels and personally via informal networks. Many came to try, experiment and be culinarily surprised – and to ask questions. That was quite informative because the chef not only

knows how to cook and entertain with (via) tofu but had a lot of background stories she had experienced since the 1980s. This made soya products and cooking itself more personal and, therefore, relatable.

At our fusion events, we combined the culinary experience with networking opportunities and marketplaces for local soya manufacturers, while contributing an input of the cultural analysis of soya. The fusion events also followed the idea of connecting fields and groups that are, on the one hand, integral to the soya theme or to the museum but, on the other hand, not related at first sight. On the first fusion event (called "Soja'n'Most")[7] at the inner courtyard of the museum, we offered soya dishes and recipes in combination with Most (Austrian apple and pear wine) and discussed soya as an important Austrian crop.[8] The second fusion event combined the historical connections to Asia, particularly to Japan, with the current manufacturing of soya products in Vienna.[9]

Similarly, the soya excursion was conceptualised as a multisensory experience of soya history in the Habsburg monarchy and the current global entanglements of soya production in Vienna and the surrounding agricultural areas. With this event we particularly targeted members of the museum's association and students. Participants were able to observe and participate in the local process of soya production and visited historical venues in Hungary where the story of the Haberlandt family and that of the first soya growing trials in the Habsburg monarchy originated. Thereby, all participants were invited to discuss the role of soya in their everyday lives and actively contributed knowledge to the project.

One important basis for the whole project was the (academic) symposium at the very beginning of the project in 2018, where we were able to put an emphasis on the inter- and transdisciplinary nature of the topic. In co-operation with the Institute of Rural History (St. Pölten, Lower Austria), we were able to include perspectives from cultural anthropology, agricultural studies and other life sciences, while discussing the subject with representatives from NGOs, the chamber of agriculture and food trend experts. We were able to reflect the diverse roles that the soya bean plays in many areas of society and its impact on the climate. What was lacking, in a similar way to many other professional symposia, was the translation for a non-academic and lay audience.

This is where we decided to set up an online blog called "MuSOJAm"[10] that comprises many different voices from various fields of expertise. Thus far, it includes academic contributions, essays, reports, biographies, interviews and playful collections.[11] Contributors originate from diverse fields, such as journalism, private households, academia, practice, civil society and schools and write or talk about topics such as food security, climate justice, botany and the history of soya. The blog is also the project's documentation platform, where people that have participated in our social programmes find a summary of the events and can – as everybody – dive deeper into the field of soya. The blog and the hashtag #SojaFromHome were decisive steps into another arena: Our newest blog posts as well as observations on soya-related topics and issues were the basis for the presence of the project on the museum's social media channels. We tested Twitter, Facebook and Instagram for their potential as a low-threshold approach and opportunity to communicate. All this collected multifaceted knowledge will now serve as the basis for the development of our so-called *soya add-on exhibition* as part of the permanent

exhibition of the Volkskundemuseum Vienna. The project blog is thus one of our key sources for the development of the add-on exhibition. It allows us to stay in contact and exchange with interested groups and disseminate the knowledge gathered and related educational programmes independently from the museum location.

Our colleague Katrin Prankl has developed a cultural educational programme for children and school groups that entails a scavenger hunt in the permanent exhibition and includes experimenting with the growing trials of soya plants in the museum garden. While doing so, our guide tells the children playfully about global transport, production, agriculture, animal welfare and the nutritional contents of the soya bean (Prankl 2019). Although there have already been some guided tours for school classes in the museum, we were forced to adapt our programme several times in the process. At first, our museum was put into a financially very challenging situation (2019), then the museum was closed because of the COVID-19 lockdown and restrictions.

Exhibiting soya

Even though we have used the permanent exhibition only randomly for our project up to now, we see a strong connection between the analysis of soya and topics and objects exhibited in the Volkskundemuseum Vienna. The plan is to use the permanent exhibition from 1995 as an anchor and reference point that reveals the links that soya has to the history of the museum, the discipline and its narratives.

The permanent exhibition dates back to 1995 and was conceptualised and curated by the then director Klaus Beitl and curator Bernhard Tschofen. Tschofen wrote in his first programmatic chapter of the catalogue accompanying the new permanent exhibition about changing the approaches to artefacts in the collections of the Volkskundemuseum Vienna based on folk art:

> The significance of artefacts is constantly changing. The museum of cultural studies, as a place where they are interpreted, contributes to this and determines how things appear, what they represent and what information they convey. Therefore museum presentations cannot remain constant but from time to time must subject idea, content and appearance to fundamental revision. During such reorganization phases questions naturally emerge which both relate to the basic possibilities of museum work and are directed at the specific problems of how to treat the relics of popular culture. The answers are bound to be subjective, but must nevertheless be well-founded. (Tschofen 1998: 15f)

The idea of "democratizing museums" – which was discussed in 1995 – was pursued by emphasising "the history of everyday life instead of popular art, and function instead of beauty", which meant to leave former aestheticised design and exhibition principles at the Volkskundemuseum Vienna behind. To "contradict" the museum's collections, the artefacts exhibited were presented as "witnesses to the past as a result of changes in the way of life and in values" (Tschofen 1998:16) instead of former disciplinary beliefs of folk art artefacts being manifestations of a hardly changing, stable folk culture. The permanent exhibition tells the master narrative of the academic and applied discipline and the collections of Volkskunde in Austria and discusses national, regional and social strategies of identifying and othering.

We still see and appreciate the structure and the goals of this exhibition – but times and

approaches are changing. Today, "democratizing museums" means something different. It means, as discussed above, to activate and generally invite more people, groups and approaches to take part in the museum's processes and utilisations. Consequently, over the last few years, it has become increasingly visible that the exhibition and its narrative are fragmentary. Nowadays, we identify an increasing number of gaps – people, subjects and objects that are missing. There are actors that are not mentioned, contexts that are invisible, opportunities to present dynamics and societal challenges that are lacking.

Interventions and add-ons

There have already been various interventions in the permanent exhibition over recent years. In 2017, for example, as a result of a four-year research project (Strategies for Museums in Times of Political Upheaval, 2010–2014), the museum reflected on its own problematic (however societally and culturally very effective) nationalistic history in the periods of the two totalitarian regimes of Austrofascism and National Socialism. Part of the project was also to critically discuss the narrative of the permanent exhibition (Johler & Puchberger 2017). The aim of this exhibition or intervention was to spotlight the actors of the folk culture scene in Vienna at that time whose diversity has not yet been made visible in the permanent exhibition. In addition to academic and bourgeois actors, for example, there were also lower middle-class or working-class actors who were important for creating and disseminating the idea and ideologies of a *folk culture*.

In 2018, a permanent intervention was installed into the permanent exhibition that put a finger on a particular weak spot. The exhibition intervention "The Shores of Austria" (Daher et al. 2018) was created by a collective of curators[12] who have had their own experiences with migration or asylum procedures in previous years. The collective intervened in the permanent exhibition with the curators' quotes of their experiences and with objects that stem from a collection journey to the Greek islands and other refugee- and asylum-related contexts. The current director of the Volkskundemuseum Vienna, Matthias Beitl, summarised the achievements of the curating collective that had managed "to create a necessary historic controversy between objects in a museum and the blind spots of the societal doctrine and its institutions. That is something new – and something never-ending" (Beitl 2018: 13).

Adding on soya – a digital trial

Working on the soya project and dealing with soya contexts and discourses for more than two years (at the time of writing) showed that there are blind spots in the permanent exhibition in terms of climate change.[13] These blind spots can be compensated by including the perspectives in a soya add-on exhibition: (1) reflecting the historical impact of academic and applied folklore studies in the field; (2) integrating (agri)cultural labour and knowledge by giving practitioners a voice and their own perspective; (3) observing different lifestyles; (4) thinking and discussing gender- and class-specific aspects; (5) calling attention to the global conditions and their local consequences; and (6) pointing to social and global hierarchies and injustices.

Due to the fact that there has already been one analogue intervention added to the permanent exhibition, we refrained from putting yet another layer of information onto

the analogue narrative. Instead, we decided to experiment with an online exhibition which will work as an add-on, while walking through the exhibition in real life and also independently as an online exhibition. The COVID-19 lockdown, the importance of the digitalisation of museums and the fact that the soya project already takes place online to a great extent supported this idea.[14]

The permanent exhibition, its structure, narratives and objects, indeed offer many links to the soya field. The different exhibition rooms and themes as well as separate objects offer various possibilities to connect the idea of the permanent exhibition with our soya intentions.

Taking a look at the description (fig. 1 & 2) of the permanent exhibition, we find that nutrition, cooking, transport, farming, trade, milieus and specific lifestyles are among the main topics. All these are crucially related to global warming, the climate crisis and global injustice. However, global warming, even though it already existed in the 1990s, is today one of the biggest gaps in the permanent exhibition. The connection of the museum's building to the history of soya in Austria was, therefore, a decisive and urgent impact to include this critical field to the museum's narrative.

We will – with all the knowledge gathered from the different actors in the project – develop our own story by following the permanent exhibition's track and storyline and we plan to transform the existing narrative by linking themes and objects to soya. Some examples might clarify the idea of the online exhibition that will also be the basis for the future educational programme:

a) The exhibition room "Nature and Civilisation" deals with pre-industrial and agricultural materials and tools. In our soya add-on, we will talk about the soya plant itself, soya cultivating and soya breeding as genetic engineering.
b) The exhibition rooms "Fire, Hearth and Oven" and "Cultural Patterns and Characteristics of an Era: Upper Inn Valley Farmhouse Parlour" connect two important aspects: The exhibition room "Fire, Hearth and Oven" leads to nutrition, cooking and historical expertise and to the topic of food security. This room is related to the next room which is a historical Tyrolean parlour. The intervention "Shores of Austria" mentioned previously has installed a video in the windows of the parlour showing a rescue boat in the Mediterranean Sea. This installation is our link to migration provoked by the climate crisis.
c) The exhibition rooms "Pre-Modern Transport" and "Paths, Goods, Markets" are the basis of our considerations regarding the global and Austrian transport systems and the logistic infrastructure of soya, the main producers and distributors and the impact of this global interconnectedness.

The work with the permanent exhibition within the soya project will continue but can only fill some of the gaps. Nevertheless, the permanent exhibition is also a document of societal change that we can use to highlight changing narratives, social transformation and institutional developments.

Conclusion and outlook

The soya project has been a very special project at the Volkskundemuseum Vienna. From the very beginning, it was a small project

Fig. 1. Description of the permanent exhibition (Austrian Museum of Folk Life and Folk Art. Österreichisches Museum für Volkskunde 1998: 5).

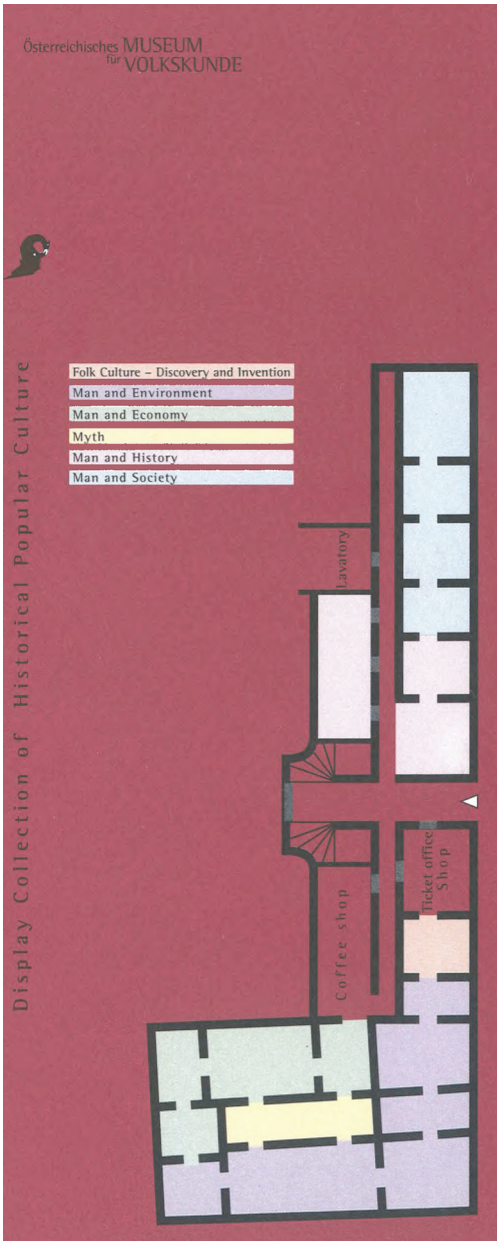

Fig. 2. Back cover of the booklet of the permanent exhibition (Austrian Museum of Folk Life and Folk Art. Österreichisches Museum für Volkskunde 1998).

that got the chance to function as a field of experimentation for further orientation and future museum formats. Our resources and coverage were small, but the project integrated so many different and inspiring aspects that the energy and the enthusiasm were high. The project enabled new and fruitful approaches, co-operations, formats and – last but not least – contacts with clever, dedicated and constructive people in Vienna, Austria and in global contexts.

Since a huge budget was not involved – and do not get us wrong, this would have been our preferred way to go – it allowed us, nevertheless, to be honest with ourselves where our formats did not work out the way we intended. One example was the inclusion of women's voices from academia to an equal amount of men's voices, which we did not achieve, partly because of the lack of women in the research field in, for example, agricultural sciences. Similarly, in our cooking classes, we tried to reach a diverse group of people. Whereas we were successful in terms of age, exclusively women with a very similar social background participated in the classes.

Around the same time as the soya project started, Greta Thunberg initiated the global Fridays For Future movement. What we would not have expected was the impact that the soya project and the movement have had directly and indirectly on the museum's sustainability agenda and on our private lives. In 2019, a museum group for sustainability was founded and has tried to figure out ways to improve sustainability at the Volkskundemuseum Vienna. Luckily, we have an expert on the big issue of preventive conservation. In addition to that, the museum started changing and adapting the recycling system, food delivering services, cleaning products and much more. Finally, the museum participated in the global climate strike in September 2019, which also initiated the *Museums For Future* movement in Austria and mobilised not only Viennese museums to participate. At the workshop "Curating Climate"[15] we connected with international scholars and activists who work for museums, on exhibitions and deal with the climate crisis. In Austria, we are part of the Austrian (Viennese) *Museums For Future* group and in regular contact with activists and colleagues in other institutions. We support local Fridays For Future groups by offering them space and infrastructure to meet and organise, as suggested in the *Museums For Future* declaration (Museums for Future 2020).

We recognised the power of the movement and the importance of analysing and informing about climate change, climate justice and sustainability via the soya project in our own lives. It was quite eye-opening and inspiring, particularly in the field of food and diets. In the process of the project, we learned how much (practical) knowledge and peer support is necessary to change something so defining to people as their diets and routines. It worked best when people made us curious to try something new. The food expert and chef Elisabeth Fischer (Fischer 2013) was one of the key people in this process. Her cooking classes worked without dogma but instead focused on the culinary pleasure of soya products and other plant-based products, while not excluding animal products in general for those who wanted to include them. Informing, learning by doing and showing passion turned out to be effective and expedient.

Notes

1. The museum has changed its name in German and in English over the years. The name used to be the *Österreichisches Museum für Volkskunde*

and has now changed to V*olkskundemuseum Wien*; the English translation changed from the *Austrian Museum of Folk Life and Folk Art* to *Volkskundemuseum Vienna.*

2. This narrative is of particular interest because, on the one hand, Haberlandt was one of the first scientists to experiment with the soya plant in Central Europe. On the other hand, the narrative is also driven by soya production lobbying groups and additionally must be interpreted in the context of the Habsburg empire (MuSOJAm. Soja im Museum 2019).
3. Original: "a) Das Archiv herausfordern, b) Den Raum aneignen, c) Gegenöffentlichkeit organisieren, d) Alternatives Wissen produzieren, e) Vermittlung radikalisieren" (Sternfeld 2018:37).
4. The reply was negative because the Volkskundemuseum Vienna has a clear memory policy since it decided to have only one commemorative plaque on the facade. This plaque is dedicated to Jewish benefactors and collectors that contributed to the museum from the institution's beginnings until 1938. Some of them were murdered in the National Socialist extermination camps. The commemorative plaque for Friedrich Haberlandt is now installed near to the museum at the home of the Haberlandt family at Löwenburggasse.
5. One of the reasons Haberlandt could not continue his work was because he died in an accident in 1878.
6. Michael Haberlandt's brother Gottfried Haberlandt mentions the family trips to the world exhibition in his memoirs (Haberlandt 1933:53).
7. At this event we co-operated with the "Mostothek", that serves must and fruit juices every Tuesday at the Volkskundemuseum Vienna and the Austrian Soya NGO *Soja aus Österreich* (Soya from Austria).
8. Soya is fourth after corn, wheat and barley (*Soja aus Österreich*) in the official Austrian agricultural area statistics.
9. We co-operated with the curator of the East Asia collection at the Weltmuseum (ethnographic museum for non-European cultures; https://www.weltmuseumwien.at/en/curatorial-departments/#ostasien) in Vienna, where the boxes with the first soya beans in Austria are exhibited, and again with the Soya NGO *Soja aus Österreich.*
10. You will find the blog (in German) following this link: https://musojam.blog/.
11. We started a collection called #SojaFromHome in line with the successful Corona-Hashtag #MuseumFromHome during the Corona lockdown which has occurred in many European countries.
12. The curators of the exhibition "The Shores of Austria. The New Collection on View of the Austrian Museum of Folk Life and Folk" are Yarden Daher, Alexander Martos, Negin Rezaie, Ramin Siawash, Niko Wahl, Sama Yasseen and Reza Zobeidi.
13. For us, the year 2019 offered opportunities to discover and reflect new ways of narrating and curating climate (change). At the workshop "Curating Climate – Museums as 'contact zones' of climate research, education and activism" in Oslo, October 2019, we learned about diverse approaches to the field, such as "climate houses" (Bremerhaven and Oslo) or new museum projects that integrate sustainable principles in social and educational programmes to existing exhibitions. Also, in Vienna narrations of climate change are prominent parts of current museum and exhibition projects. This includes the art museums MAK (https://mak.at/en/creativeclimatecare) and Kunst Haus Wien (https://www.kunsthauswien.com/en/exhibitions/nach-uns-die-sintflut/) or the technical museum "Technisches Museum Wien" (https://www.technischesmuseum.at/press/corona-impact).
14. The NEMO "Working Group on Digitalisation

and Intellectual Property Rights" has published a report on "Digitisation and IPR in European Museums" underlining the importance of further progress in digitalising European museums (NEMO Working Group on Digitalisation and Intellectual Property Rights 2020).

15. Workshop: "Curating Climate – Museums as 'contact zones' of climate research, education and activism" in Oslo, October 2019. Many thanks to the organisers who initiated and enabled such an important exchange.

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Magdalena Puchberger, ethnographer and historian.
Volkskundemuseum Wien
Laudongasse 15–19, 1080 Wien, Austria
magdalena.puchberger@volkskundemuseum.at

Dr. Nina Szogs, researcher and ethnographer.
nina.szogs@posteo.org

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Weaving strands of knowledge

Learning about environmental change in the Bhutan Himalayas

Sameer Honwad, Andrew D. Coppens, Greg DeFrancis,
Marcos Stafne & Shivaraj Bhattarai

Abstract: *Climate change is a complex phenomenon, so much so that even those with expert knowledge on the scientific data struggle to understand the impacts of climate change on their everyday lives. Contradictions across systems of knowledge make clear that climate change is not just a problem of scientific understanding but is also simultaneously a problem of global coordination as well as a sociopolitical problem of connecting domains of knowledge that are seldom valued equitably. The project described in this paper is a prototype effort to put knowledge from community members in two culturally distinct rural areas of the world at equal footing with scientific knowledge. The overarching project aim was to design partnership-based inquiry into environmental and climate change that coordinated the aforementioned three facets of climate change (a) scientific understanding, (b) cross-cultural coordination among globally dispersed communities, and (c) sociopolitical equity in bringing nondominant perspectives to the table.*

Keywords: Community based science, science podcasts, cross cultural learning, learning technologies, Bhutan

Climate change is a complex phenomenon, so much so that even those with expert knowledge on the scientific data struggle to understand the impacts of climate change on their everyday lives and may continue everyday behaviors that contribute to it (Leiserowitz, Maibach, Roser-Renouf, Feinberg & Howe 2012; IPCC 2013). Contradictions across systems of knowledge make clear that climate change is not just a problem of scientific understanding but is also simultaneously a problem of global coordination as well as a sociopolitical problem of connecting domains of knowledge (e.g., policy-level expertise with "on the ground" cultural ecosystemic insights) that are seldom valued equitably. A climate change education program that is likely to change behavior, beyond merely disseminating scientific knowledge, likely requires a form of collaboration among experts and community members that brings together scientific knowledge, cultural understanding,

pedagogical expertise, and community engagement (Bang & Vossoughi 2016).

The project described in this paper is a prototype effort to put knowledge from community members in two culturally distinct rural areas of the world at equal footing with scientific knowledge. We aimed to bring together narratives and stories of environmental change that communities have observed in rural areas of Bhutan. The overarching project aim was to design partnership-based inquiry into environmental and climate change that coordinated the aforementioned three facets of climate change as a complex socioscientific issue – climate change as a problem of: (a) *scientific understanding,* (b) *cross-cultural coordination* among globally dispersed communities, and (c) *sociopolitical equity* in bringing nondominant perspectives to the table.

Briefly, the project involved a multi-layered partnership among two universities (one in Bhutan and one in the United States), two museums (one in Bhutan and one in the United States), and a non-governmental organization that conducts work in rural Bhutan on issues related to climate change and environmental change as observed by local people. Five undergraduate students from the United States and five undergraduate students from Bhutan travelled to parts of rural Bhutan and rural New England to elicit and record stories from local community members about the environmental change that they have observed within their community over the last several years or generations. The students collected the stories, developed them into podcast episodes, and then worked with museum personnel to curate the stories and turn them into museum exhibits. The exhibits were then publicly displayed at the US and Bhutan museums.

The most important aspect of the project prototype was the "unit of coordination" that would facilitate scientific, cross-cultural, and sociopolitical perspectives on environmental and climate change to come together in a unified and publicly legible medium. Those involved in the project's early design decisions (co-authors, among others) strongly committed to the epistemological power of story and narrative, finding promise in podcasting for its ability to link long-standing ways of knowing embodied in stories and cultural narrative with more recent new media innovations such as audio editing and internet-based distribution. The project used high-quality podcasts for sharing and broadcasting the stories for public consumption for two additional reasons. The first is accessibility-radio and podcasts are inexpensive and an almost universal medium. Once podcasts are uploaded to the internet then they can be heard in virtually every household in the community (rural Bhutan has 3G accessibility; much of rural New England has this level or greater connectivity). The podcasts were made available on the project website and were shared over the internet. The second reason is that audio storytelling connects deeply with communities with oral traditions. Communities in rural Bhutan have oral storytelling traditions that have served as a way of knowledge creation for centuries. Of the modern media, podcasts come closest to an original form of human storytelling: stories told "in the dark" with the pictures formed in the listener's imagination.

The stories were a powerful medium of communication as they gave a voice to the emotional and personal impacts that climate change is having on the lives of the community members in rural Bhutan. Often, the issues related to climate change and environmental change are discussed from a perspective of science, which is impersonal and unattached to the emotional and personal disturbances that

are faced by individual community members. As more people today are feeling the impact of climate change at a personal, emotional, and community level it is important for them to tell their own stories and connect with people undergoing similar experiences. The project described in this paper allows people to share their stories and to engage with climate change in an emotional and personal way. The paper also discussed how the project design allowed the learners to learn from the community members about how environmental change was occurring in rural parts of Bhutan.

Theoretical framework for partnership-based climate education

The project was grounded in literature that connects community-based issues to student learning (community-based science) and informal science education (learning in informal spaces such as museums). We define informal science learning as learning about science, technology, engineering, and math (STEM) that takes place across a variety of designed learning environments outside of school (Rogoff *et al.* 2016).

Educating children and young people about climate change is not just a responsibility borne by formal and informal learning institutions, but families, neighbors, and other community members are also vital educational resources (Bouillion & Gomez 2001; Atran, Medin & Ross 2005). Effective climate change education programs need take into consideration community-based knowledge as well as knowledge generated by climate scientists and other formal institutional sources (Hoadley, Honwad & Tamminga 2010). However, in order to consider community-based knowledge designers of learning environments need to build partnerships with community members, so as to connect community-based knowledge to knowledge generated by formal scientific sources (Wilson 2008). Partnerships between designed learning environments (formal and informal) and communities, when built correctly, increase student motivation and attainment (Moll *et al.* 1992; Zeichner *et al.* 2016) as well as well-being within families (e.g., Bauch 2001; Crowson & Boyd 1993; Sanders 2001, 2003; Sanders & Harvey 2002).

The project design and development grounds itself in informal education scholarship and learning sciences theories that focus on different design processes that involve building community-educator partnerships since the last several decades. Funds of knowledge (González, Moll & Amanti 2006); design-based research (Bell 2004; Sandoval & Bell 2004), design-based implementation research (Penuel, Fishman, Cheng & Sabelli 2011; Penuel, Coburn & Gallagher 2013) and participatory design-based research (Bang & Vossoughi 2016) provide closely related theoretical frameworks for how the design process for education programing can involve community members and how to position community-based knowledge to optimize learning. Although evidence-based models for school (formal) – community partnerships exist (Moll *et al.* 1992; Zeichner *et al.* 2016), there is little guidance regarding partnership building with communities so as to design informal learning environments or learning environments for museums. Even though informal learning institutions are positioned to support community needs and have flexibility in terms of educational programing design, many informal learning institutions find it challenging to engage community members as a part of the design process or as knowledge

providers (Chittenden 2011). For example, the role of community members is often limited either to being a participant in the educational program or to being a consumer of knowledge provided by the designers of the informal learn-ing environment (Bell *et al.* 2009; Hawkins & Pea 1987; Hoadley, Honwad & Tamminga 2010).

The Weaving Strands of Knowledge prototype sought to develop a co-design process where community members were invited to become knowledge providers as a part of the learning environment. This museum–community partnership was positioned to support co-constructing knowledge about climate change in both the South Asian and Bhutanese region as well as in the New England area of the United States, whereas traditional models of science museums' relations with communities entail *providing* information to publics and seldom involve *gathering* and *integrating* local knowledge into museum exhibits and other presentations of valued knowledge and insight. There are relatively few examples in the learning sciences and informal education field where one can observe community members being involved as a part of the design process or where knowledge from the community is leveraged to optimize learning. As Chittendin (2011:1550) observes, "From my perspective as a museum educator and administrator for the past 32 years, to understand why more museums have not attempted to do more serious public engagement around current issues is to appreciate the chronic challenges and institutional realities that museums and informal learning centers face." For example, in the field of informal science education, most science museums and centers are focused on designing exhibits that deliver an understanding about well-established science phenomena and do not engage in thinking about local community needs or about the ethical implications of science (Rogoff, Callanan, Gutiérrez & Erickson 2016).

Building successful partnerships between community members and educators is often a challenging process (Kern, Honwad & McClain 2017). Although there are some examples of how community members are successfully involved in co-designing efforts with informal educators, we recognize that there are several difficulties that can arise when building a community partnership for co-designing any learning environment. For example, community members from minoritized and nondominant socio-economic backgrounds may find their points-of-view alienated during the design process, or they may not have the time, ability, or interest in engaging with the design process.

While there are various pathways through which community members can be engaged in the process of designing informal learning environments, we drew on epistemological and methodological insights from interpretative qualitative research to mitigate the common tendency to "search for truth" in the reports, stories, claims, and accounts of community members in both rural Northeastern US and rural Bhutan (Packer 2018). In assembling interview excerpts from community members on environmental change and climate change topics students were guided in asking, "What is this person's perspective on the problem or issue? What guides their thinking and action?" rather than a more positivistic orientation concerned with the veracity of their knowledge with formal (and Western) climate science as a single standard for valid knowledge or ways of knowing (Medin & Bang 2014). Again, when climate change is viewed as simultaneously

a scientific, cross-cultural, and sociopolitical equity issue all perspectives' truths are valid and can contribute insight.

Drawing from these frameworks, the principles guiding our design of effective partnerships between community members and informal learning environments such as museums and science centers were: Designers, researchers, and practitioners of formal/informal learning must work collaboratively with communities to co-design and co-implement educational programs in different sociocultural contexts across the world. Formal/informal learning environments must be designed to leverage local cultural knowledge within the community that they serve so that community members take on the role of knowledge providers.

Partnership building and project activities

Drawing on the three guiding facets of climate change as a complex socioscientific issue – (a) scientific understanding, (b) cross-cultural coordination, and (c) sociopolitical equity – we designed the Weaving Strands of Knowledge project to accomplish the following action-oriented objectives:

1. Engage rural communities in Bhutan to understand how community members resolve issues related to environmental change in their everyday lives.
2. Collect stories/narratives from local people about how they observe and react to environmental sustainability situations in the their communities.
3. Convert the stories into digital format and prepare podcasts to highlight aspects of environmental decision-making and environmental change
4. Using the two museums as community gathering spaces, to listen and share stories about environmental change as observed by the local communities.

The setting up of a project of this nature requires planning and partnership building. Even though the Weaving Strands of Knowledge project lasted for about one year; however, partnership building had begun several years before this project materialized. Two of project leads (from Bhutan and US) had known each other for a decade at a personal and professional level. The other lead members who came on board later drew on this long-term partnership in establishing trust and a sense of shared commitment. For example, two of the project leads travelled to Bhutan early in the project to meet with the project partners in Bhutan. The project team from the US also made a second trip to Bhutan to visit and get to know the communities where student exchange was going to take place. These face-to-face visits and efforts were appreciated by the partners in Bhutan, and served as a solid foundation for the student work which took place a few months later. Along with the project leaders from Bhutan and the US we also recruited 5 students from the US and 5 from Bhutan to work with us on the project. These students were undergraduates who were interested in global environmental issues. Once all 10 students, in total from Bhutan and USA, were chosen to participate in the project, they were introduced to one another in early April via Zoom videoconference and shared their work on an Edmodo virtual classroom site. Over the course of four video exchanges, the students exchanged bios and conversation on their culture and countries. Hopes and wishes for what each wanted to experience in the visiting country, and how environmental conservation

Fig. 1. Vegetable vendor in Bhutan. Photograph by Greg DeFrancis.

is a focus of their university studies, were discussed through the Edmodo site. The videos were scheduled late at night/ early morning due to the 10-hour time change, so flexibility was required of all students.

Students from the US traveled to Bhutan early summer in May and the students from Bhutan traveled to the US in same summer in July. During these summer exchanges students recorded stories from community members in Bhutan and the US. These stories were then converted into podcasts. The community-based story telling activities were broad in their scope. Both project staff in Bhutan and US collaborated to have a consistent focus in each country, to engage in the acquisition of information pertaining to climate change. The design of each activity allowed students to engage with local voices, interact with the land, reflect on information gathered and connect new knowledge systems. Using audio equipment and editing software, 10 audio stories were complete by the final day of the project.

The students collected stories in the US and Bhutan from several different community members. Community members in the US and Bhutan included but were not limited to farmers, vegetable vendors in farmers markets, school teachers, and government officials.

A common theme among these conversations and interviews was the importance of and reliance on the surrounding community. The sharing and passing of knowledge about sustainable cycles of water conservation, land use, farming techniques, hunting, and logging not only brought an environmentally efficient perspective to climate change mitigation, but also the importance of environmental stewardship for future generations.

The design of the project, with students meeting with and talking directly with people whose livelihoods depending on the land, encouraged conversation about stewardship that transcended environmental science as it was communicated through a sociocultural lens. The US and Bhutanese students were open to experiencing the culture of this region and cross-layered this global awareness into their projects.

After the students and project personnel reviewed and edited the podcasts they were

Fig. 2. Teacher in Bhutan. Photograph by Greg DeFrancis.

curated for the general public consumption. The general public heard and learned about this project through these edited audio stories, photographs, as well as climate science and history of the project during a Climate Day Festival organized in the US museum grounds and later at the Folk Heritage Museum in Bhutan. All podcasts produced (listed below) fit under three themes:

Theme 1: Conversations about the future

- A visit with students in rural Bhutan
- Listening to children
- Rural-to-urban migration

Theme 2: Living and farming in rural New England and Bhutan in the face of climate change

- Impacts of climate change on farming
- The changing landscape of pests and disease
- Climate change resiliency and mitigation practices on the farm
- Protecting our soils: a shared goal across the world

Theme 3: Our relationship to the land

- Land stewardship and our relationship to the environment
- The role of art in conserving nature
- Sharing knowledge across generations
- Developing a relationship with nature

Along with the two museums the Royal Thimphu College celebrated a two–day *Sustainability* event with 130 students and faculty from all departments. The audio stories and presentations focused on RTC students' acquisition of knowledge through the project on a different culture and how acquiring information on environmental sustainability has impacted their lives. Environmental consciousness was shared across the campus, which enabled conversations to begin about how social, biological and climate science are intertwined.

Impact of the project

As mentioned above the goals of the project were to highlight community-based knowledge as an important aspect of resolving bigger environmental problems such as climate change. The discussions captured by the students with those working closely with the land represented the varying perspectives that are imperative to be heard if we are to address climate change and environmental conservation at the global level. The conversations the project team had were truly two-way exchanges, and we found those in the community were equally engaged in the perspective and commitment of the younger generation who were conducting the interviews. It was clear from the conversations in both countries, along with the products created through this project, that the program met the goals of the project and the needs of our communities. This work helped global community members merge scientific data with local narratives on climate change. And, with over 84 interviews collected, plus the success of the culminating festival days in each country, the project vastly succeeded in engaging members of our respective communities in these important environmental sustainability conversations. It also met the needs of the students to be better able to connect their environmentalism to a sociocultural framework, both within their own communities and globally. This experience has provided the preparation these students –

our future environmental scientists, managers, and policy makers – need to better listen to their communities and to work collaboratively to strengthen environmental awareness and solve our global sustainability problems.

A further focal point of this project was to help students understand the importance of weaving different knowledge systems to facilitate community-based science learning and conversations. An international team of 10 students embarked on this project with little experience abroad and little experience in acquiring narrative research. Throughout the project the students expanded their perspectives both culturally and scientifically through travel, inquiry, hands-on experience, and trial and error and conversation. A common theme among the exit interviews with students was their recognition that their interviewing skills and comfort with conversation grew exponentially – the awareness of leading a discussion through scientific questions gave deeper meaning to the narratives on climate change. The effect of the students co-curating the final stories together was a magnificent but hidden treasure of the project. Their collaborative process was strengthened when working side by side with their different cultural and linguistic perspectives.

Each student in the program grew in different ways. A student from the US who grew up on a family farm where eight generations have lived on the same piece of land said:

I learned some things about myself… I remember getting home and feeling different. It helped me find my roots, and reconnect with the environment. This has helped me recognize the importance of my family's land. It has made me want to protect it and take care of it so I can continue to pass it to future generations.

The student's "reconnection" and natural sense of ownership to her family's land oc-curred during her conversations with the faculty, students and interviewees. The generational commitment to preserving and conserving the land and its ecosystems was reinforced by the deep commitment she felt from the narrative interviews.

A student from Bhutan who is an environmental management major from Thimphu, Bhutan came from a family with a history of caring for the environment. Both her father and grandfather are foresters, and their commitment to the protecting the environment has been passed down to her through family conversations and trips to the forests. However, she always felt like she did not have the communication skills to pass on the need for environmental stewardship to others:

Through this project I learned how to communicate with people. Interviewing the people was very challenging at first, but through this project I learned I could approach people and have conversations with them.

Through interacting with community members and other adults on the project the student from Bhutan gained some confidence to approach people and present an argument.

Another student from the US who was majoring in marine sciences considered herself a young scientist who looks at the world through a very objective lens of hard data and experimental observations said at the end of the project:

I think one of the most influential things that I learned - especially being a scientist, and a person who is always thinking scientifically - was from being

surrounded by so many people that think in different ways. That was really valuable to me.

She was surprised how much this project allowed her to learn new ways of thinking about environmental and development topics. She now recognizes that acquiring and synthesizing knowledge to create solutions to our environmental sustainability problems, including climate change, requires listening to others with different perspectives and experiences, and connecting issues to social and cultural contexts, in addition understanding the science underlying biological and climate processes.

Students expressed themselves several times over about how this experience gave them perspective that was valuable not only for the duration of the project but also for life. Another student from Bhutan expressed how he feels accountable to the land, that the land must be protected. His acquisition of a communication skills, and introduction to the fields of transportation planning and environmental engineering while in US, coupled to commitment to environmental stewardship has led him to pursue a career in the field of urban planning.

For both the US and Bhutanese students, this was an opportunity for them to meet and talk with people that make a living off the land.

The cultural exchange trip to the US proved to be a valuable experience for the Bhutanese students and gaining a greater understanding of the diversity of people, and diversity of viewpoints among Americans. A common notion among the Bhutanese participants was that people in the US have huge carbon footprints and care less about climate related issues than the rest of the world. However, after interacting with people in rural United States, the students from Bhutan were pleasantly surprised to discover that many people in US share similar feelings towards the nature and the environment that are shared by most Bhutanese.

The US students were struck by the generosity and kindness of the people they visited in Bhutan. The examples of shared humanity, whether it was rural villagers opening their doors to the project team, providing warm tea and even a warm bed to strangers from faraway land, to market farmers in Thimphu insisting on giving our students samples of exotic fruit, the lessons on goodwill, crossing international borders and language barriers, will be hard to forget.

Although the project's primary participants were the university students from UNH and RTC, the program design allowed for members of each partner's community to be integrally involved in our project activities. The excitement among members of the public on both sides of the globe to be involved in project activities as interviewees or hosts was palpable. Farmers at the height of the growing season in rural US were willing to share their knowledge and participate in the project, and gave extended interviews to members of the project team – often lasting an hour or two – and shared freshly picked strawberries, peas, and other produce with the visiting students. They were willing to share their own personal stories and reflections on important and, at times, controversial, issues of environmental sustainability, climate change, and economic sustainability.

Likewise, the village leaders, farmers, teachers, and students in rural Bhutan who we met with participated in the project without hesitation. Often, due to unexpected travel delays, the team would show up an hour late for a pre-arranged interview, and the hosts would spend an hour or more with us.

The final stories created were equally well-received by members of the public. In Thimphu, people enjoyed listening to an audio recording of schoolchildren talking about their hopes and dreams for the future and attracted the most of the visitors at the Royal Thimphu College Sustainability day.

Conclusions

The Weaving Strands of Knowledge project opened up a cultural pathway between the discussion on global environmental sustainability and data science. The need for conversation from a vast array of perspectives, but with a shared vision, led to a collaborative process that could be replicated with institutions that promote inquiry. The role of combined planning and promotion from the two museums and Universities drove the project to completion. Each cohort believed in and supported the decision-making process, the open environment/collaborative process, the community participation and student engagement with all constituencies.

The role of students working together, in one another's countries, on this unique project and on a shared product made the cultural exchange more impactful. The ability to sit side by side with your peer, have in-depth discussions on social, political, environmental issues affecting your country, is the tangible effect of acquiring new knowledge.

On top of learning how to interview and record, processing this knowledge into output for audio stories required an enormous amount of editing – a task that was new to everyone involved. The students rose to this challenge and did an outstanding job for student-led work. For museum quality, daily interaction exhibits, professional expertise for editing is still required. That said, the students, faculty, and museum staff were very proud of the output for such a short course and newly acquired skills. The project was successful because each of the five institutional partners involved not only believed in the goals of the project and the shared vision of the work, but also was able to articulate and succeed in meeting one or more important strategic objectives for their own organization.

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Dr. Sameer Honwad
Assistant Professor,
sameervhonwad@gmail.com

Dr. Andrew D. Coppens
Assistant Professor, University of New Hampshire, USA
Andrew.coppens@unh.edu

Greg DeFrancis
Director of Engagement, MIT Museum, USA
greg.defrancis@gmail.com

Marcos Stafne
Montshire Museum of Science, VT, USA
marcos.stafne@montshire.org

Dr. Shivaraj Bhattarai
Dean, Royal Thimphu College, Bhutan
bhattaraisr@gmail.com