

## FORUM

## Museums and the Future of a Healthy World: “Just, Verdant and Peaceful”<sup>1</sup>

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**Abstract** Museums hold the physical and intellectual resources, abilities, creativity, freedom, and authority to foster the changes the world needs most. The authors offer a mantra for the field's role in creating a world where people and cultures flourish as the environment thrives. The text includes a variety of international calls-to-action, and provides example institutional responses. The authors are all members of PIC Green, the American Alliance of Museums' professional network on environmental sustainability.

### INTRODUCTION

*The museum director steps out of her home into the fresh air. She makes her way easily through her community, being greeted and greeting others as she goes. When she pauses before crossing the thoroughfare, she smiles at the old structures lining the way, still holding the stories of this place and people. As she nears the waterfront, her mind slips back to when native plants and wildlife were scarce along her path and in this body of water, and how people struggled to grow and find healthy foods. She reaches her destination, finding others already busy.*

*Today, as every day, will be a mix of work and celebration. There are researchers in the collection, listeners in the community, educators in schools, health care workers at a weekly clinic, scientists in the treetops, and dancers in the plaza. A few of them make their living working for the art, science and history museums; all find resources here for discoveries, thoughtful discourse, encouragement.*

*They, and those they touch, work continuously to reaffirm the values of just, healthy, responsible communities.*

*She finds her way to her office. She is about to join a United Nations-sponsored weekly global conversation, an exchange with other directors of museums committed to the health and well-being of cultural and natural communities on this healthy planet. Their professional pledge:*

*Help Earth; Help the World*

*Using education, research, and creativity*

*To mobilize collaborative and collective action*

*For significant environmental impact*

*So health, justice, and cultures flourish.*

Museums hold in one body the diverse physical and intellectual resources, abilities, creativity, freedom, and authority to foster the changes the world needs most.

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**Help Earth; Help the World**

For humans, Earth is healthy when it supports habitat, wildlife, and natural systems. Under those circumstances humans have developed a world – cultures and communities – that, when healthy, fosters resource distribution, access to education and employment, and improved health and welfare for humanity. When Earth – the land and sea we live on and the air we breathe – and our world are both healthy, incidents of famine and drought, poverty and hunger, crime and injustice are less devastating; the natural and human communities become healthier and more resilient; over time they flourish.

Today, neither Earth nor our world is resilient or flourishing. Anthropogenic changes to the land, water, and atmosphere have created humanity’s greatest threats: a changing climate system, and damages to the resource systems that sustain us. Worldwide, agencies report that “Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.”<sup>2</sup> Current levels of greenhouse gases in the atmosphere and ocean promise exacerbated effects for the next century. The snow and ice packs are diminishing, sea level is rising, and weather events are more frequent and damaging. As the global temperature continues to increase, the climate will continue to veer into new extremes, affecting conditions that provide food and water for us, and dramatically threatening physical health and welfare for the majority of Earth’s inhabitants. Daily our headlines announce climate change losses from a growing list of threats: overwhelmingly-frequent dangerous storms, extreme heat events causing the deaths of people in their apartments, deadly fires covering hundreds of acres of populated spaces, historic multi-year droughts, historically-high

sea levels, and record-setting months and years of high temperatures.

Human choices also affect regional ecosystems. Unsustainable agricultural practices driven by unsustainable economies destroy native habitats, replacing them with monocultures. The pursuit of fossil fuels threatens the health and culture of communities, most of whom are less powerful than the energy companies. Vulnerable communities suffer from drinking water pollution and from geological damages due to hydraulic fracturing, a widespread process of extracting natural gas by injecting dangerous chemicals into ground.<sup>3</sup> The extraction and transport of fossil fuels has and will leave destruction in its wake. In the United States, members of the Standing Rock Sioux Tribe were joined by thousands in a protest to stop construction of the Dakota Access Pipeline that “threatens their public health and welfare, water supply and cultural resources.”<sup>4</sup>

To understand the causes and impacts of climate change and environmental degradation, and the staggering lack of coordinated and collective responses, requires an understanding of physics and biology, psychology, sociology, economics, and human evolution. The explanations read as a list of base and basic human characteristics: bias and self-interest, social preconceptions, and vestiges of evolutionary survival instincts.<sup>5</sup> The solutions require refocusing on higher-level human behavior: problem-solving based on broad and expanding knowledge, and the development of skills and understanding used with creativity and empathy.

This is the stuff of museum work.

Great museum work fosters empathy, curiosity and creativity that enables humans to understand challenges and to be moved to overcome them in ways that expand well-being for everything around us. Our museums already share our knowledge and resources, now we

must offer these in support of improved solutions and new approaches.

The director in the article's futuristic opening scenario is imagined. Today most museum professionals instead are merely observers of our crisis. Why aren't we challenging ourselves and our peers, the public and our leadership – wherever it can be found – to create a healthy, resilient world where life and cultures flourish?

### Be the Change Makers

Museums have all the characteristics of change makers, yet only sometimes do they go beyond information-sharing to actively pursue widespread positive impact. Museums flirt extensively with ideas of environment and climate rather than truly engaging with them. Earth Day, a Sustainable Museums Day, and so-called low-hanging fruit are first steps in sustainability changes; this is practice rather than commitment. The International Council of Museum's (ICOM) 2015 International Museums Day theme of Sustainable Museums was a requisite first step to potentially "foster awareness among the whole society about the current consequences of human action in our planet and the absolute necessity of changing its economic and social model."<sup>6</sup> These one-off events and proclamations flirt dangerously with the single-use, check-the-box approach of our society. Though the action is valuable in an instant and as practice, it is insufficient for the real task. Stopping there wastes the incredible potential of museums to cooperatively build capacity to influence behavior and policy at all scales.

Museums are trusted sources; their staff is passionate, knowledgeable, and creative; their spaces are seen as safe and welcoming. The public perceives museums as among the most trustworthy sources of information.<sup>7</sup> Museums are long-lived record-keepers, monitoring history

and science across centuries and millennia, across geographic and demographic boundaries. Their records and interpretation of change over time can help humans work our way out of the problems we have created. "There are no other social organizations [able to match museums'] singular combination of historical consciousness, sense of place, and public trust."<sup>8</sup> Museum professionals see ourselves as thoughtful, responsible; and creative. We are protectors and collectors; educated and educators; with a sense that we are morally responsible for sharing knowledge. We see our institutions the way: more than a purveyor of facts, museums are safe places for collective deliberation of current issues, and enablers for the full spectrum of demographic groups. Yet we don't act that way.

Public allow trusted institutions to make mistakes. Public expectations do allow if the institution acknowledges the error and learns from it, committing to improved and continuously improving performance, public trust is sustained. Any failures and missteps are valuable learning opportunities for the institution and the community. This learning is part of improved professional practices, and continuing strengthening of the role of museums in their communities.

For decades the museum field has discussed its changed role from one of collect/preserve/interpret, to fostering community and change. Steven Weil famously stated that we must move from being "about something to for someone." "If our museums are not being operated with the ultimate goal of improving the quality of people's lives, on what [other] basis might we possibly ask for public support?"<sup>9</sup> Kenneth Hudson wrote that "... the most fundamental change that has affected museums during the [past] half-century ... is the now almost universal conviction that they exist in order to serve the public."<sup>10</sup> Well, it appears that any

“universal” conviction has failed to respond to evolving public needs. Public voices calling for action on social and environmental issues are growing louder, so loud that they cannot be ignored. What support can museums ask for when we observe but do not respond to a universal crisis, we do not call out anti-science messaging and do not grasp the importance of divestment? What support do museums deserve when we do not respond – broadly and thoughtfully – to the greatest issues of the day?

Our future, museums’ and humans’, depends upon multiple, sustained, coordinated, and adaptive efforts in the face of climate change. Museums must leap beyond individual action to actively and collectively join global movements of sustainable development, divestment, and social justice. Together we must make the necessary changes to mitigate the

worst effects of climate change. Museums have been offered a path with the agenda of the September 2015 United Nation’s General Assembly, “Transforming our world: the 2030 Agenda for Sustainable Development.” It commits supporting countries to taking “the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path.” There are seventeen Sustainable Development Goals. Museums can contribute to all of them all, especially number 17, as partners in creating change (Figure 1).

**Museums can, but they do not**

In his recent forum article in *Curator* Douglas Worts eloquently wrote “At their core, museums are ‘places of the muses’. Humanity historically has turned to the muses for inspiration, creativity, insight, and inner

## THE GLOBAL GOALS

For Sustainable Development



**Figure 1.** Sustainable Development Goals as defined in Transforming Our World – 2030 Agenda for Sustainable Development © United Nations Sustainable Development Knowledge Platform. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

strength. Along the way, museums have become associated with great knowledge – and great benefit has been derived from that knowledge, which has often come from deep, narrow, and focused study. However, humanity’s need for holistic insight, creativity and wisdom – the muses – has never been greater. Institutionally, it is time to more fully develop this function of our namesake.”<sup>11</sup>

How is it acceptable that museums avoid high-volume discussions of climate change? How can we stand to contribute to those negative environmental impacts? What if museums helped humans change *the* human systems that allow destruction of the environment and perpetuation of threats to welfare in society? What if they used their collections, knowledge, and creativity, to foster collective and collaborative action to regenerate an environmental system supporting a healthy world, what MacArthur Foundation calls a “just, verdant, peaceful world”?

### Using education, research, and creativity

Where else can researchers find millions of natural history specimens, and living examples of animals and plants to study as they learn to protect and rebuild ecosystems, and mitigate climate change? Where else can people, regardless of geography, gender, political preference, age and ability, come to discover, understand and share new ideas and format new approaches? Where else are there millions of documents and images of human response to adversity, specifically the forces of nature, to guide us in sourcing new approaches to providing clean water and energy for all, designing resilient cities and communities? The world’s museums hold all these data, quietly waiting for creative humans to combine them in ways that chart a sustainable path forward.

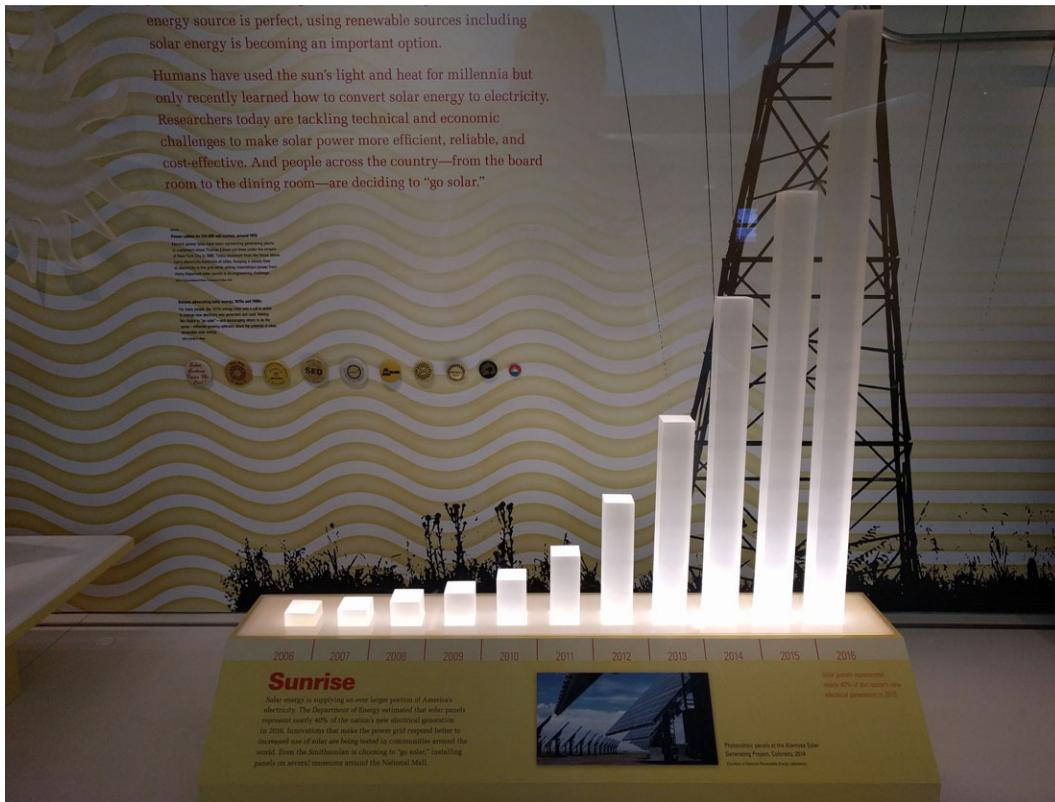
Waiting is no longer acceptable. For too long museums have felt that a voice of neutrality served learners best. The staff of The Natural History Museum, a mobile museum “that highlights the socio-political forces that affect nature,” disagree. They write that “If there is to be a future for museums, we need to do away with the false promise of authoritative neutrality. We need our museums to function as both educators and yes, as advocates for a sustainable and equitable future. Only then can we equip visitors with the stories and tools they need to truly understand the rapidly changing world, and to shape it for the common good for generations to come.”<sup>12</sup>

The Innovation Wing at the Smithsonian’s National Museum of American History features exhibits and programming emphasizing the history of invention and innovation. Its Lemelson Center for the Study of Invention and Innovation leads research and programming, embodying a “philosophy akin to that of the inventors [they] study, of valuing creativity and embracing the potential rewards of intellectual risk-taking.”<sup>13</sup> *Solar on the Line* examines solar energy use, and the value of taking risks to advance knowledge – as befits the Smithsonian. The exhibit and its online component feature the invention and evolution of solar panel types, and the history of solar use in America. It includes a 1979 panel for solar hot water from the President Carter White House, and a glowing 3D bar graph showing the intense growth of solar energy from 2006 when solar was a small portion of overall U.S. electricity production, to 2016 when it contributed 40% of the nation’s electricity. The exhibit’s introduction explains that while there are challenges with all energy sources, solar is becoming increasingly important as an option to fossil fuels. The exhibit notes generally the Smithsonian’s solar investments on several of its museums on the

National Mall; fortunately the “nearly 100,000 kilowatt” installation on the new National Museum of African-American History clearly demonstrates how museums can lead by example (Figure 2).<sup>14,15</sup>

The National Geographic Museum’s exhibit *Photo Ark* takes its message to the public more urgently. It celebrates, and advocates for, nature’s beauty and diversity through photographer and conservationist, Joel Sartore. His work to document 12,000 species of fish, invertebrates, birds, and mammals, is now a multi-year National Geographic project to create the “largest single archive of studio-quality photographs of biodiversity ever...”<sup>16,17</sup> In the

process Sartore is taking photographs in zoos and aquariums all over the world to highlight their roles in saving and caring for species. The National Geographic website invites viewers to support the Ark, to learn more, and to take action at home. This is Sartore’s goal: while *The Photo Ark* documents what we are losing, and celebrates what we have and can save, his work also calls others to action.<sup>18</sup> He connects his images to tangible conservation efforts building public awareness, making the issues immediate, relevant, and relatable for the viewer. After his photo of a Florida grasshopper sparrow was a 2013 cover image of Audubon magazine, the U.S. Fish and Wildlife Service increased its



**Figure 2.** Solar on the Line exhibit in the Innovation Wing of the Smithsonian Institution’s National Museum of American History. The exhibit features a short history of solar panels and the growth of the use of solar electricity in the U.S. Photo courtesy of Shengyin Xu. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

annual allocation to the captive breeding program of this endangered species from \$20,000 to \$1.29 million, a response Sartore attributes partially to increased awareness through his photographs.<sup>18</sup> “Truly, I guess I want these pictures to serve as a witness to all that’s at stake and get people to care and save the earth while there’s still time.”<sup>19</sup>

By extending and amplifying the impact of collections and mission through research, practices, *and* creativity, the public, researchers and artists, activists and policymakers can cooperatively develop creative solutions to our struggles. Museums can equip our communities with awareness, skills, and the ability to comprehend the responsibility of shared stewardship of the planet. To do this, museums must shift from valuing neutrality to valuing science, culture, and innovation.

*Museums can and must use education, research, and creativity to create positive change.*

### **To mobilize for collaborative and collective action**

Museums promote their gardens, historic sites, art museums, and natural settings as gathering spaces. There is no better launching pad for fostering collaborative and collective action than where knowledge, ideas, creativity and curiosity abound. What other spaces can hope to match that ability to work with the public, among our peers, and with governments to create cooperative, collaborative action?

### **Museums and the Public**

“The big task of the museum sector is not only to inform publics [sic] on the science of climate change but also to equip citizens with tactical knowledges [sic] that enable participation in actions and debates on climate change that affect their futures.”<sup>20</sup> Museums can mobilize

the public by telling the story of climate change and sharing climate solutions in ways that connect to the lives of everyday people. Museums can educate visitors about the full range of causes, impacts and responses to pressing environmental concerns.

In 2006 The City of Chicago started The Chicago Conservation Corps (C3) to see how it could foster local interactions to create social and environmental benefits. The staff team recruits, trains, and supports adult volunteers who build the quality of life in the city’s neighborhoods through community-driven “sustainability service projects” on the health of water ecosystems, energy use, stewardship of green space, green health, waste management and a circular economy, all through community engagement. In 2012 when the program’s future was uncertain after the department of the environment was dismantled, the volunteers asked for a chance to meet with the mayor to lobby for their program. Soon the city rehoused the program at the Chicago Academy of Sciences/Peggy Notebaert Nature Museum, and the museum eventually adopted it permanently. The program’s thoughtful assessment, evaluation, and design has created amazing results: 85,654 participants in urban sustainability projects, 651 community leaders trained, and nearly 60,000 hours spent reaching residents of each of the city’s 50 wards.<sup>21</sup>

By prioritizing engagement that develops feelings of shared responsibility, museums can focus resources on inspiring communities to become collective, cooperative actors and learners. Citizen Science-like activities must not be ring-fenced within sites of science or living collections. True environmental change involves more than recycling soda cans. Engaging everyone first in examining the interaction between public policy, corporate interests, consumerism, and environmental justice, helps all contribute to activities that restore the climate system.

**Museums and Peers**

Unfortunately, museums are so concerned about their moral responsibility that they are paralyzed: they hesitate to preach behavior change until they change their own lest they risk being called out as hypocritical. They quietly focus internally, when instead they could publicize their journey toward sustainability – failures and all – to help their communities while leading by example.

Periodically the museum field explores raising the bar on its own environmental performance. The California Association of Museums created the Green Museum Accord as part of its Green Museum Initiative in 2006. Such voluntary pledges are common in other fields. The American Association for State and Local History already includes environmental sustainability in two areas of its Standards and Excellence Program for Historic Organization, StEPs. The American Alliance of Museums launched its Sustainability Excellence Awards in 2014, and is preparing to make environmental responsibility part of its Characteristics of Excellence. Museum associations in Alberta, Canada, the United Kingdom, and Australia, likely among others, have published discussion papers and made recommendations designed to spread sustainability within their national professional work. The same year that the UK Museums Association published its discussion paper, 2008, *The Green Museum: A Primer on Environmental Practice* was published in the US. Still, eight years later, too many museums are either not thinking about this work or are focusing on energy and water efficiency and waste management while missing the chance to educate the public. Incredibly, environmental sustainability remains an option, not a responsibility. Astounding. Why not accept responsibility, then build awareness, make changes, learn things, provide training and foster action so that

the field can adopt and share environmental responsibility universally?

Nature-based organizations have been doing a better job of this. Chicago Wilderness is a 20-year-old “regional alliance leading strategy to preserve, improve, and expand nature and quality of life.” The 200-member group includes museums, nonprofits, business, governments, and community groups. They align around the health of a four-state region, home to more than ten million people. Over those two decades the group has become the steward of more than 200 acres of Lake Michigan shoreline and is committed to the protection of over 545,000 acres of land.<sup>22</sup>

The National Network for Ocean and Climate Change Education (NNOCCI) is a National Science Foundation-funded project in the United States. It supports cooperative, peer learning on climate change issues. NNOCCI is building a community of professionals “skilled in communicating climate science to the American Public.” The New England Aquarium leads the cooperative, implementing it in partnership with the Association for Zoos and Aquariums, the FrameWorks Institute, the Woods Hole Oceanographic Institution, the National Aquarium in Baltimore, Monterey Bay Aquarium, and the New Knowledge Organization in partnership with Penn State University and Columbus’ Center for Science and Industry. After five years, 233 professionals (from 139 different institutions in 33 states) have completed training. Participants report significantly increased, and lasting, confidence in their ability to interpret climate change, and renewed hope for more positive climate outcomes.<sup>23</sup>

**Museums and Government**

Cooperative work is key. Museums’ collaborations with communities and governments are helping to build safer, healthier climate-

aware and resilient communities. Museums' physical spaces, planning processes, resources, and credibility situate them to help communities co-create infrastructure, policies, and communication networks to respond to and recover from products of climate change including blackouts, drought, fire, storms, extreme heat and cold, and sea level rise.

In the United States, the Federal Emergency Management Agency, the National Park Service, and state governments are supporting cooperative planning approaches. In New Hampshire, the state and national planners are asking, almost begging, stewards of historic properties to join in. Strawberry Banke Museum, in Portsmouth, is assessing vulnerabilities for its ten-acre historic site. Already, at high tide many of the museum's historic structures have water in their basements – that's twice a day. The staff is collaborating with the City of Portsmouth's planning office on a National Park Service funded project to understand and prepare for sea level rise in this waterfront community. Historic properties and museums can be iconic sites in their communities. This makes them valuable in disaster response planning for citizens and responders to use as sites for information exchange and planning, and during disasters as gathering spaces and temporary supply depots.

The physical aspects of museums, and campus-based organizations such as gardens and zoos, can be significant resources for their communities. Many provide urban habitats for plants and wildlife, including pollinators. Landscapes and green roofs can reduce heat island issues. And water features can provide cooling and water management solutions. The Brooklyn Botanic Garden's recent water garden project began as an important master plan component. The city asked how the project could advance its climate/disaster response initiatives post-Hurricane Sandy. In the final

design, management of the water level in the new pond system can respond to satellite information and weather monitoring agencies. When expecting a major wet-weather event, the system is cued to drain in advance. During the storm the pond system captures and holds much of the surface water, waiting to release it only after the storm has passed and sewers can handle the flow. This reduces the risk of sewage overflow in Brooklyn's combined sewage and stormwater system, protecting the health of nearby water systems. All of Brooklyn benefits as does the garden.<sup>24</sup>

### Do All You Can

Peter Comiskey, Director of Balboa Park Cultural Partnership (BPCP) in San Diego, CA, engages all three audiences: public, peers, and government. Since 2008, eight of the park's buildings have been certified for Leadership in Energy and Environmental Design (LEED), and three more are nearly through the process. At the Park, the City of San Diego has installed the first adaptive-control LED streetlights of substantial scale (3,600), added vehicle charging stations, and set Zero Waste and Net Zero energy goals for the coming decades. The park's seventeen museums and San Diego Zoo Global "amplify and accelerate operational changes" by ensuring that their environmental methods and procedures "become showcases for other institutions, and for people to use in their homes", says Comiskey (Figure 3).

BPCP identifies solutions for specific problems in the park and in the San Diego area. It then shares the results among organizations and individuals as "a cross-pollinator" for incremental change in behavior among the city's other institutions and the park's 10–14 million annual visitors. This is critical coverage. "It is impossible to create global change without the positive impacts of a lot



**Figure 3.** Balboa Park has set goals of zero waste and net energy. Courtesy Balboa Park Cultural Partnership. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

of people”. “Awareness won’t solve our problems, this is where museums make a difference. It’s important for museums to remember – the role of informal learning institutions – far outweighs the value of advertising and promotion, because it employs direct experience,” Comiskey says.

The city understands “how the Park can be a model for many aspects” of improved environmental sustainability. The Park is “knit with the city”, Comiskey says. Successes are the result of a long-standing collaborative process to address significant deferred maintenance on so many heritage structures. Comiskey recognizes BPCP’s Director, Sustainability and Community Relations, Jessica Travis, for her “exceptional abilities” in working with so many and such diverse partners, and with the city to enable their shared successes. While there are “still

incredible opportunities to make change, to communicate to staff in ways that change their behavior and solidify the museum’s footprint in the community”, Comiskey says, the power of collaboration will continue to build and reinforce sustainability across the area.

Earth and our world require more such collaborations, and on a much broader scale.

*As public servants, as stewards of cultural and natural resources, museums must lead or join collaborative, cooperative action to take it to scale.*

### **The world’s museums can and must collaborate and cooperate for significant environmental impact**

The phrase “Committed to building a more just, verdant, and peaceful world” is not a throwaway line for the MacArthur Foundation.

Climate is one of its “Big Bet” focus areas: “The Foundation’s Climate Solutions grantmaking aims to limit global warming as close as possible to the scientifically endorsed goal of 2° C above pre-industrial levels by significantly reducing greenhouse gas emissions. . . . Any scenario for meeting the 2° C goal means reducing global emissions sharply in the next decade. . . . No climate change solution can reasonably be achieved without the U.S. taking significant steps.”<sup>25</sup>

Without drastic change our world will be vastly different from, and much more dangerous than, the one we grew up in.<sup>26</sup> Robert Janes, author of *Museums in a Troubled World: Renewal, Irrelevance or Collapse?* writes in his essay “A Modest Manifesto” that “What the world really needs are museums that provide cultural frameworks to identify and challenge the myths and misperceptions that threaten all of us – such as the false belief that climate change is not real and can be ignored.”<sup>27</sup> Yet too many museums still sidestep the opportunity to educate, engage, and create behavior and policy change. The default seems to be vague questions about evidence for climate change, evidence of public interest, and concern that the message is too depressing for visitors, or will turn off funders. Those more practiced in this work know that these, too, are false beliefs.

The funder landscape now emphasizes cooperative efforts, and bold efforts – the kinds that change climate. National and international funders including Barr Foundation, MacArthur Foundation, The David and Lucile Packard Foundation, and other great names are creating funder partnerships, such as Climate Works Foundation and the High Ambition Climate Fund, committed to significant and scalable results. They recognize that one of the greatest challenges is to change behavior and policies in the United States, China, and the European

Union – the largest contributors to global greenhouse gas emissions. Museums do not yet factor in their thinking and funding, but they could.

Funders are increasingly supportive of outward-looking, cooperative projects involving continuous improvement and scalable results. Museums can join in by educating about energy and water use; contributing to the development of healthy ecosystems; sharing research of historic practices in watersheds; or mining their collections for clues to more sustainable practices in water management, land use, or building practices, to share with communities. Museums can create and share art that spreads wider messages of global concern and local responses, and they can collect and share stories of resilience and disaster response that prepare and restore communities experiencing crises.

At the 2016 World Conservation Congress (WCC), members of the International Union for the Conservation of Nature (IUCN) announced two partnership initiatives with museums, zoos, gardens and sites. One calls for the global cooperation of natural resource agencies and researchers with informal educational institutions that educate and inspire the public. The other encourages alignment of natural and cultural heritage resources for the protection of nature and culture together. The Congress created The World Heritage Leadership programme [sic], a partnership between IUCN and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). It will connect cultural heritage with natural resource protection by integrating nature and culture protection, centering on areas where world heritage sites have the most compelling potential to address pressing challenges such as climate change, biodiversity, and impacts from development.<sup>28</sup>

During the Congress, members recognized that over half of the global population lives in urban areas – just where we find so many of our museums, cultural sites, zoos, aquariums and gardens. These institutions have valuable special access to those human hearts and minds than can collectively affect positive behavior and policy changes. We have the ability to coordinate work to broadly influence on behalf of resource protection. In the United States, we know this interaction is significant. A 2011 study by the Institute for Museums and Library Sciences found that approximately 850 million people visited museums, 370 million more than attendance at all the major league sporting events and theme parks combined.<sup>29</sup>

The US-based Association of Zoos and Aquariums is participating in a global campaign to highlight the work of The US Wildlife Trafficking Alliance, a partnership to protect biodiversity by helping to stop trafficking in endangered species. According to Secretary of the Interior Sally Jewell, “The U.S. is one of the largest markets for illegal trade of wildlife products, and preserving these important species means ending supply and demand for trafficked goods.” The Alliance explains that this market “means that demand from American businesses and consumers has a tremendous influence on whether lions, elephants, pangolins, and other at-risk species will become extinct within our lifetime.”<sup>30</sup> There is a similar project in Singapore that educates residents and visitors to zoo and wildlife parks about the tragedy of global trafficking in exotic birds and the resulting devastation of these species. These efforts are not about rallying the public to defend against sad losses of charismatic megafauna, but about educating visitors, buyers, business people and policymakers on the real and devastating losses to ecosystems dependent upon significant biodiversity.

During the Congress, these natural resource partners took care to acknowledge that very often scientists lack museum professionals’ critical skills in social engagement and education. They also acknowledged the great importance of the relationships between natural settings and constructed spaces, and the value of leveraging collaboration to protect sites that involve land and seascapes and cultural resources.<sup>31</sup> These examples underscore the need for partnerships with museums, zoos, gardens and those charged with preserving and understanding cultural resources. They are *asking* us to work with them on behalf of Earth and our world (Figure 4).

*The world’s museums can and must collaborate and cooperate for significant environmental impact.*

**So health, justice, and cultures continuously flourish**

What dangers, what injustices lurk near your museum? Is there poverty, social unrest, environmental risk and damage, or significant health issues? Surely the museum can and should explain these to the community audience, provide research to vanquish and provide knowledge to overcome them. Museums can take on challenges based on local or global needs. For the last twenty years the Brooklyn Children’s Museum has been supporting awareness of childhood asthma and its impact on its own neighborhood. The Oregon Museum of Science and Industry took on healthy eating programming and included predominantly Spanish-speaking families outside of the mainstream healthy food movement. The Bishop Museum in Honolulu, Hawai‘i, co-hosts a Grow Hawaiian festival for native foods and plants as a move to re-establish healthier, culturally-appropriate eating and agricultural



**Figure 4.** Abbott Hall of Conservation: Restoring Earth long-term installation. “Discover how The Field Museum is leading the way in conservation when you explore Abbott Hall of Conservation.” [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

habits within an island population that has suffered from entrenched plantation and industrial monocultures, as well as the introduction of nutritionally empty prepared and packaged discount-priced foods. Since 1999 the International Coalition of Sites of Conscience has fostered individual and collective projects, through museums around the world, on civil and humanitarian rights, migration, war, government control, using the past to envision better futures. Museums can expand their platforms of activities to build knowledge, create awareness, strengthen abilities, and develop skills enabling anyone to pursue greater health and well-being.

#### **Spotlight fossil fuels**

Museums can work on behalf of those with fewer resources, less power, or no choices.

The physical effects of energy resource extraction have created serious social justice concerns, particularly “fenceline” issues, forcing attention on the health risks to vulnerable communities with proximity to company property lines. Earlier we mentioned the Dakota Access Pipeline conflict as an example. Another is in Houston, Texas. The Natural History Museum, also mentioned earlier, collaborated with t.e.j.a.s. (Texas Environmental Justice Advocacy Services), a community-based activist organization, to create an exhibit with a local arts organization that also challenges politics and uses art to further social justice.<sup>32</sup> The exhibit tackles “the symbiotic relationship between the Houston Museum of Natural Sciences and its corporate sponsors, excavates the narratives and displays in the Houston museum’s Energy Hall, and

## OUR CLIMATE. WHOSE POLITICS?



**Figure 5.** The Natural History Museum recreation of a 2009 climate change exhibit at New York’s American Museum of Natural History (AMNH), this time with an oil pipeline attributed to Koch Industries, a company co-owned by (now former) AMNH board member and exhibit sponsor David Koch. Photograph: NHM, 2015. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

highlights the voices and stories that are excluded: those of the predominantly low-income Latino and African-American communities living in the shadow of refineries and petrochemical plants.” The Natural History Museum staff and t.e.j.a.s led monthly “toxic tours” of the neighborhoods in this nexus of fossil fuel production and refining. A Houston Chronicle editorial. “Air for Sale? A Project Row Houses exhibit prompts tough questions about oil industry pollution” supported the

exhibition and the need for air quality monitoring and regulation in East Houston (Figure 5).<sup>33</sup>

The Natural History Museum is “urging museums of science and natural history to [present] exhibitions on climate change that address the role of the fossil fuel industry and its climate-denial machine in shaping nature—exhibitions that take on anthropogenic climate change without excluding the vast asymmetries in the burden of responsibility and the

burden of impact.” The value of science museums and natural history museums as public spaces for sharing knowledge and creating understanding demands that they acknowledge and share the science, not the spin. “. . . when these institutions have significant ties to the world’s biggest polluters, or ignore the massive impact of the fossil fuel industry on the continuity of the earth’s many species, we are forced to question whose interests they serve. . . they risk undermining the faith and trust they’ve earned through years of dedicated service.”<sup>34</sup>

It was once acceptable for tobacco companies to sponsor cultural institutions; no longer. Now the same change is overtaking fossil fuels partnership. During the 2015 United Nation’s Climate Summit in Paris, The Natural History Museum brought together creative groups from seven countries to challenge the fossil fuel industry’s “social license to operate”. They are pushing the fossil fuel divestment movement into the cultural sphere, ushering in a new era of “#FossilFreeCulture”, and creating change. During 2015 - 2016, eight science and natural history museums cut ties to fossil fuel interests. The greatest examples are the ‘break-ups’ between British Petroleum and London’s Tate art museums, after 26 years of sponsorship, and between British Petroleum and the Edinburgh International Festival, after 34 years.<sup>35</sup> Another example, this time in the US, is the decision by David Koch, billionaire fossil fuel investor, to not to stand for reelection after 23 years on the board of New York’s American Museum of Natural History after divestment activists pressured the institution.<sup>36</sup> #FossilFreeCulture collective action has raised awareness, highlighted moral inconsistencies, and brought new norms to our field.

### Co-create a healthy, regenerative ecosystem

Many institutions work locally to restore ecosystems while working globally to understand and reverse biodiversity loss. They set an example and share data and strategies. The Pittsburgh Arboretum has reclaimed major portions of its 465 acres sitting over top of abandoned coal mines. What is now known as Lotus Pond was once so polluted by acid mine discharge that no plants or animals could survive there. The acid water still drains, but is cleaned as it passes through a deep lime bed on its way to the pond. Now the pond is a gorgeous, healthy place.<sup>37</sup> Chicago’s Field Museum is using a landscaping makeover to regenerate the Lake Michigan infill it occupies. The process is studying the science of how to improve the health and ecosystem services of “land” created from a coal ash dump on the lake shore.<sup>38</sup> The discoveries from the project can help brownfield soil regeneration on a national scale.

Bryant Sharenbroch, PhD, a research fellow at Morton Arboretum in Illinois and Professor at the University of Wisconsin, researches urban soil and its effect on trees and ecosystem services. He and a colleague are measuring “carbon storage and turnover in soil, litter, and vegetation” in Chicago “to build models that predict carbon storage in urban ecosystems.” The goals are improved health and growth of individual trees within cities, and improved longevity and function of urban forests in general. Healthier, more substantial urban forests capture more carbon, are visually pleasing and socially beneficial. There has been a much more above-ground research than in the soil layer where conditions for longer living is created. His Morton colleagues also research root systems and tree strength; all are working toward health and betterment of the urban forest and forest systems.



**Figure 6.** Hidden Figures, Liberate Tate, 2014. Photo: Martin LeSanto-Smith. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

With 5.4 billion people expected to be living in cities by 2045, urban forests figure significantly in the health and well-being of those individuals and our planet.<sup>39</sup> Work by Sharenbroch and his colleagues informs his almost-daily support and training for non-museum professionals involved in urban tree care.<sup>40</sup> To share this information with the general public, the arboretum has organized an on-site and travelling exhibition: *Vanishing Acts: Trees Under Threat*. It highlights how trees worldwide are at immediate risk due to climate change and why the loss of urban shade and carbon sequestration matters to people and the environment. The exhibit outlines actions visitors can take – and share – to support tree conservation in their neighborhoods and communities (Figure 6).<sup>41</sup>

#### Safeguarding Culture in a Vanishing World

ICOM President Hans-Zimmer Hinz reminds us of our responsibilities: “Museums must be able to guarantee their role in safeguarding cultural heritage, given the increasing precariousness of ecosystems, situations of political instability, and the associated natural and manmade challenges that may arise.”<sup>42</sup> If no other argument moves a museum, safeguarding cultural heritage should. Rising sea levels add to the damage from high tides, storm surges, and coastal erosion, and it consumes sites and landscapes in vulnerable locations. This includes entire historic communities: both those with the fewest resources as well as those with the most resources. Water does not evaluate, estimate, or discriminate.

In April 2016, the Newport (RI) Preservation Foundation, along with science, higher

education, and preservation partners, hosted Keeping History Above Water, an international gathering of planners, preservationists, and community activists exploring solutions to threats of sea level rise and flooding to historic properties. As the participants discussed individual, local solutions, Andrew Potts, recent executive director of US/ICOMOS, the International Council on Monuments and Sites, reminded them that rising sea levels and threats to cultural resources is “a global situation requiring translation of our local skills to an international arena . . . International skills will become increasingly important in preservation due to climate change.” He called for climate change and heritage communities to support “heritage as a [United Nations] pillar of sustainable development.”<sup>43</sup>

During the conference, participants heard about projects in Wales where community-generated archives, primarily digital, are the future of preservation for some aspects of intangible heritage. The stories, the original voices in video, audio, art, and text, must be collected and protected as a salvage operation ahead of heritage losses because of climate. Tom Dawson of Scotland’s Coastal Heritage at Risk (SCHARP), provided compelling examples of collective citizen action to document and protect, where possible, thousands of coastal settings threatened or succumbing to erosion due to sea level rise and storm surges. He described the approach as a triage where someone must decide “do we defend the line, retreat the line, or take no active intervention”.<sup>44</sup>

Those individual losses are just the beginning. Entire Pacific nations, Kiribati soonest, may vanish within decades. The first Alaskan Native community has been relocated and similar efforts are underway for communities in disappearing swaths of the U.S. Gulf coast. Climate refugees escaping rising sea levels, and

extreme heat and drought, will abandon cultural resources critical to their identity and to world understanding. These refugees will bring with them their cultures, but the landscapes and historic structures will be lost. The numbers will continue to be culturally catastrophic if we do nothing about climate change. ICOM President Hinz is correct; our denial and avoidance will leave us with little to protect and no resources with which to do so when humanity must focus on survival rather than caring for what it has or creating what it could be.

### Security

The Scripps Center for Environment and National Security (CENS) at University of California, San Diego, uses the “formidable science and research capacity of the Scripps Institution of Oceanography to clarify significant environmental impacts on our national security and international human security, thus bringing information to policy makers for the resolution of society’s most pressing problems (Figure 7).” When environmental changes wreak havoc on housing and infrastructure, and communities cannot recover between disasters, threats to health, safety and security will not be limited to specific locales, but will ripple through security and economic systems across the world. So CENS explores and illustrates how human environmental choices and climate change affect the health of the oceans and the land; threaten human food security through drought or declining fish populations; affect energy choices and economies, and create human conflicts. Armed with this research CENS informs policy makers, and other researchers, at the front lines of driving changes in national and international policies.<sup>45</sup>

It is a perfect partner to museums’ work. Reno Harnish, CENS founding director,



**Figure 7.** A visitor to The Morton Arboretum in Lisle, Illinois, interacts with a panel in the outdoor exhibit Vanishing Acts: Trees Under Threat. Courtesy of the Morton Arboretum. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

explains the Center “focuses on what climate change will do to the possibility of conflict in the world, and what institutions can be used to mitigate conflict and adapt to climate change. Informal learning institutions make clear the downsides of climate change through their conversations with the public.” He explains that education is an important part in bridging misunderstanding, that museums can illustrate the fundamental concepts to help the public understand climate change, and be ready to encourage and support policy change. Harnish says “The work goes hand-in-hand. We’ll flounder if the public does not accept climate change as a problem.”

*Museums can make fighting climate change a priority. It will be safer that way – for us and our children* (Figure 8).

## CONCLUSION

In 1999, before we understood our current global crisis, Stephen Weil expressed his concern about lofty goals. In “From Being about Something to Being for Somebody: The Ongoing Transformation of the American Museum,” he wrote “With the ongoing spread of outcome-based evaluation, however, two cautions seem in order. First, museums need to observe a certain modesty as they identify their bottom lines, lest they overstate what they can actually accomplish. Grand proclamations such as those made at the first summit of the Museums of America may be important in highlighting the museum field’s overall capability to contribute importantly toward social development. Nevertheless, the individual museum that declares “denting



**Figure 8.** Montage of research affected by the Scripps Institution of Oceanography. Includes Adobe Stock image; photograph by Maria Stenzel, Courtesy of Scripps Institution of Oceanography; image of the Hoover Dam, courtesy of the Bureau of Reclamation; ©Sebastian Liste/NOOR image for Food And Agriculture Organization of the UN. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

the universe” to be its bottom line may only be setting itself up for failure... museums can wonderfully enhance and enrich individual lives, even change them, and make communities better places in which to live. Only rarely, however, and, even then, more often than not in synergy with other institutions, do they truly dent the universe.”

Nearly twenty years later must we limit ourselves to attempting nothing? Is there an alternative to denting the universe that can galvanize the field to control climate change and the human suffering in its wake? Can we, in synergy with other institutions, at least help Earth?

Today there are new opportunities and urgent, more crushing needs. There is greater awareness and more information; more skill, ability, and potential within our museum sphere than ever before. How, as individual institutions, can we identify and share causes and solutions yet not call for action based on that

knowledge? Why did the Smithsonian’s National Museum of Natural History stop selling Bird-Friendly Coffee, even though the Smithsonian’s Migratory Bird Center created and monitors the certification program fighting for it? As a field, how can we accept being *for* somebody while standing by as other *somebodies* suffer threats and damage to their health and culture? Nearly every zoo alerts the public to the importance of recycling coltan and avoiding foods with unsustainably-sourced palm oil. How can we scale that to be as effective as Seafood Watch, Monterey Bay Aquarium’s extraordinarily successful research and public engagement campaign efforts for sustainable seafood choices?

Museums can establish a powerful collective voice successfully driving these special-focus campaigns, and reinforcing them with our visitors and constituents. Economics and politics, environments and climate are complex,

dynamic systems. They are subject to all sorts of influences, *including those from museums.*

We can choose to influence these systems or merely narrate them. If we only point and talk, then our influence will be limited. If we inspire people and activate individual and collective agency, then our influence grows. If we contribute our abilities to co-creating new approaches across and beyond traditional geographic boundaries, then our influence becomes global.

Stephen Weil was right that an individual museum may be unable to change the universe, but together they have what they need to create significant change. While individually museums struggle to accomplish significant change, together museums have the resources, skill, and scale to influence planet systems. So, the authors provide a pledge calling museums, historic sites, zoos, gardens, parks, and aquariums to join or create cooperative efforts for significant, scaling impact that curtails – and wherever possible, eliminates – human contributions to global climate change.

*The director clicks the button to end the web conference connection and pushes back from the table. Today's call was an encouraging review of how collaboration has supported the UN's sustainable development goals so far. How they helped women and girls gain access to education, and develop skills for leading community engagement in resource distribution and protection. How museums partnered locally to protect clean water and improve fair distribution of clean energy. How they have contributed to sustainable economic growth through responsible ecotourism. And how they have supported resilience work in urban and coastal communities, especially by safeguarding and nourishing the cultural heritage that identifies and strengthens communities.*

*Today's review, as every day, was work and celebration – and renewed commitment to their pledge:*

*Help Earth; help our World*

*Using education, research, and creativity*

*To mobilize collaborative and collective action*

*For significant environmental impact*

*So health, justice, and cultures flourish.*

END

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