

# Human Nature

## Revisiting the Natural History Museum

Oakland Museum of California  
June 20-21, 2014

**The Story of California.  
The Story of You.**  
Oakland Museum of California  
museumca.org  
1000 Oak Street  
Oakland, California 94607-4892  
510.318.8400 telephone

**OAK  
LAND  
MUSEUM  
OF CA**

This unpublished document is intended to be a faithful synthesis of the presentations and discussions at *Human Nature: Revisiting the Natural History Museum*, a workshop held at the Oakland Museum of California on June 20 - 21, 2014. It is meant to serve as a resource for those who attended, for the Oakland Museum staff, for the National Science Foundation, and for the field at large. It does not necessarily reflect the views of the Oakland Museum of California or individual meeting participants or those of their organizations.

Participant comments may be paraphrased and the sequence of remarks reorganized. These are not exact quotes, rather they are an attempt to capture the content and meaning of the ideas presented.

This meeting was made possible with a grant from the National Science Foundation.

Any opinions, findings, conclusions or recommendations expressed in this material are those of session participants and do not necessarily reflect the views of the National Science Foundation.



Cover: Breakout session, "Humans as Part of Nature"

Right: "Ignite the Conversation" discussion

# Participants

## Special Guest Provocateurs

**Paul Martin**

Senior Vice President of Science Learning,  
Science Museum of Minnesota

**Dan Spock**

Director, Minnesota History Center

## Invited Guests

**Simon Adlam**

Director of Exhibits, Creative Director,  
Los Angeles County Natural History Museum

**Roy Campbell**

Director of Exhibits and Digital Media,  
North Carolina Museum of Natural Science

**Pat Hamilton**

Director of Global Change Initiatives,  
Science Museum of Minnesota

**David Harvey**

Senior Vice President of Exhibitions,  
American Museum of Natural History

**Lila Higgins**

Manager, Citizen Science and Live Animals,  
Los Angeles County Natural History Museum

**Don Hughes**

Vice President of Exhibitions,  
Monterey Bay Aquarium

**Dave Ireland**

Managing Director, ROM Biodiversity,  
Royal Ontario Museum

**Douglas Long, Ph.D.**

Former Co-PI & Sr. Curator of Natural Sciences,  
OMCA; Adjunct Associate Professor, St. Mary's  
College

**Don Luce**

Curator of Exhibits, Bell Museum of Natural History

**Matt Matcuk, Ph.D.**

Exhibition Development Director,  
Field Museum of Natural History

**Jennifer Menken**

Exhibits Coordinator, Bell Museum of Natural History

**Becky Menlove**

Associate Director for Visitor Experience,  
Natural History Museum of Utah

**Ian Miller, Ph.D.**

Department Chair of Earth Sciences and Curator of  
Paleontology, Denver Museum of Nature and Science

**Timshel Purdum**

Director of Education and Lifelong Learning,  
Academy of Natural Sciences of Drexel University

**Beth Redmond-Jones**

Senior Director of Public Programs,  
San Diego Natural History Museum

**Jenny Sayre Ramberg**

Director of Planning and Design,  
National Aquarium in Baltimore

**Meg Rivers**

Exhibition Developer, National Museum of  
Natural History, Smithsonian Institution

**Susan Schwartzberg**

Senior Artist & Curator of the Bay Observatory,  
Exploratorium

**Tamara Schwarz**

Associate Director of Exhibit Content Development,  
California Academy of Sciences

**Lisa White, Ph.D.**

Director of Education and Outreach,  
University of California Museum of Paleontology

## Oakland Museum of California

**Amy Billstrom**

Assistant Director, Learning Initiatives

**Jenny Cole**

Exhibit Fabricator and Associate Preparator

**Lindsay Dixon**

Production Manager

**Lori Fogarty**

Principal Investigator, Director and CEO

**Auburn Leigh Lahoski**

Graphic Designer

**Nadja Lazansky**

Project Coordinator

**Kelly McKinley**

Director, OMCA Lab

**Scott Moulton**

Senior Creative

**Cherie Newell**

Director, Creative Production Center

**Don Pohlman**

Co-Principal Investigator,  
Senior Exhibit Developer

**Mary Jo Sutton**

Co-Principal Investigator,  
Exhibit Developer

**Cleo Vilett**

Associate Preparator

**Wesley Webb**

Exhibition Designer

**Ariel Weintraub**

Manager, Institutional Giving

## Documentation

**Catherine McEver**

The Bureau of Common Sense

# Contents

---

<b>Introduction</b> .....	1	Denver Museum of Nature and Science .....	43	Indoor/Outdoor: Outside Programming.....	91
Background .....	1	Oakland Museum of California .....	44	Other Topics Warranting Future Attention .....	92
About this Convening .....	2	Academy of Natural Sciences of Drexel University .....	47		
		Q & A Session .....	50		
<b>Igniting the Conversation</b> .....	3	Cluster Five .....	53	<b>Workshop Outcomes</b> .....	93
Introduction .....	3	San Diego Natural History Museum.....	53	Introduction .....	93
Cluster One .....	3	National Aquarium in Baltimore.....	57	Rationale for a Group Stance/Statement .....	94
Los Angeles County Natural History Museum .....	3	National Museum of Natural History, Smithsonian Institution.....	60	Exhibits and Programs.....	97
North Carolina Museum of Natural Science .....	7	Q & A Session .....	62	Branding.....	99
Science Museum of Minnesota.....	10	Cluster Six.....	67	Bringing the Dialog to the Public .....	100
Q & A Session .....	13	Exploratorium .....	67	About Human Nature .....	101
Cluster Two .....	17	California Academy of Sciences .....	69	Advocacy Revisited .....	102
American Museum of Natural History .....	17	UC Museum of Paleontology.....	71	Human Nature at OMCA.....	105
Monterey Bay Aquarium .....	20	Q & A Session .....	74	More Thoughts on What’s Needed .....	106
Royal Ontario Museum.....	22				
Q & A Session .....	26	<b>Thematic Conversations</b> .....	78		
Cluster Three .....	30	Humans as Part of Nature .....	78	<b>Two Position Papers</b> .....	108
Bell Museum of Natural History .....	30	What Is Our Value? How Is It Unique? .....	80	Shared Beliefs and Values .....	108
Field Museum of Natural History .....	33	The Diorama Dilemma.....	84	What Works .....	111
Natural History Museum of Utah .....	36	Point of View/Propaganda.....	85		
Q & A Session .....	39	Taking Risks, Experimentation & Sustaining Change.....	89	<b>Parting Thoughts</b> .....	116
Cluster Four.....	43				

---

## BACKGROUND

Lori Fogarty, Principal Investigator,  
Executive Director/CEO, OMCA

Welcome to the Oakland Museum of California. We are honored that so many institutions have chosen to come and join us to talk about some of the interesting topics related to natural history museums. I wanted to give a little background regarding our project and what inspired this convening.

As many of you know we are in the final stages of the completion of our revamped Gallery of California Natural Sciences. The original gallery was created in the 1960s, the museum opened in 1969, and essentially the gallery had not had any changes in that forty-plus year period. We began this process six or seven years ago to think about how we might transform the gallery, and we have some of the National Science Foundation advisors for that project here with us for this session. We received a National Science Foundation grant for a project called “Hotspot California: Bringing Dioramas to Life Through Community Voice.” There are a few parts to that which we have been exploring through this project, and we will be talking about those over the next couple of days.

When we began the project we brought scientists in from all over California and asked what

we should be thinking about in terms of the natural sciences in California. Douglas Long, our former Chief Curator of Natural Sciences who is here today, helped lead that process. They said, “You have got to deal with the urgent issues of environmental change in California, namely climate change.” So the whole issue of biodiversity and being one of the top ten environmental hotspots in the world in terms of change to our environment because of human habitation became a big part of our thinking.

Then there was this little thing that in our grant that we called “the diorama dilemma.” We have beautiful in-wall dioramas and incredibly detailed, intricately created habitat cases of real places in California. We were really grappling with what we do with them. Do we keep them? Do we change them? Do we intervene? How do we honor the craftsmanship and what we knew from front-end research were the very compelling characteristics of these habitat cases and dioramas? But we also knew there were some limitations, especially in terms of showing human habitation, change over time and that kind of thing.

The last part was community voice. If you have a chance to visit the rest of the museum you’ll see that this is really a key part of the way we work, bringing community voice, the perspec-

Lori Fogarty



tives of different people, directly into the gallery.

So we had a lot of balls in the air around this project and we were interested in exploring these issues and ideas more with others in the field, and part of our NSF grant was to hold a culminating convening. Originally, we thought this would be primarily around dioramas and we have invited institutions who probably share the diorama dilemma to this workshop, but what we are also interested in is these other areas of work. What we have heard from the field is a very compelling need to think about how to reflect human presence in the whole

natural history/natural sciences institution. As a result, we have broadened the theme.

We are also documenting this session because the last piece of our NSF project is to produce documentation. We have done a lot of documentation throughout this process. We have done research, conducted by Cecilia Garibay with our partners, the Field Museum and the Denver Museum of Nature and Science, on how dioramas create a sense of place. We did a literature synthesis around all published and unpublished science we could find about visitor reactions to dioramas. And we are doing a summative evaluation process with Beverly Serrell. You will be able to find all of that as well as the documentation from this convening on the CAISE website and on our own website.

That is our history. We hope that this convening over the next couple of days is in part very rigorous and in part completely open-ended.

#### About this Convening

This day-and-a-half workshop provides an opportunity to share our work and discuss how our institutions are incorporating scientist concerns and visitor passions about environmental issues in exhibitions and programs, and for a small group of natural history colleagues to explore innovative strategies in practice today for making natural science meaningful for contemporary audiences.

After participants have the opportunity to briefly share the work currently underway at their museums, together participants will work to create an agenda around specific themes and topics to consider together. Some of these topics might include:

- Connecting current events such as drought, sea level rise, or habitat loss to our galleries and with our visitors;

- Bringing diverse cultural perspectives and community voices into exhibitions and programs;
- Creating a “sense of place” for visitors and inspiring active caretaking for the environment;
- Creating community science programs or citizen science activities with novice learners;
- Integrating other disciplines into natural science learning;
- Linking our exhibitions and programs with STEM or STEAM programming and *Next Generation Science Standards*.

We believe that, as plants and animals run out of space and people worry about their own safe futures, natural history museums can and must be more relevant in their programmatic offerings. During this conference participants will explore how we can do that better, individually and as a field.

# Igniting the Conversation

## INTRODUCTION

Kelly McKinley, Director OMCA Lab, OMCA

This is a lightning round of quick presentations, with opportunities for questions and discussion at the end of each cluster of presentations. The purpose of the lightning round is to surface some key ideas that we are grappling with as professionals. During these presentations and throughout the day, what we would like all participants to do is use Post-it notes to record ideas you would like to dig into further and

post them on the wall. These will be clustered and used to determine the focus of breakout group conversations. This is what we're calling a quasi-"unconference" method for surfacing topics for our conversations.

We have also invited two "partner provocateurs" to join us, Dan Spock and Paul Martin. They will be helping us distill ideas.

## CLUSTER ONE

### Los Angeles County Natural History Museum

Simon Adlam, Director of Exhibits

Transforming the Natural History  
Museum of Los Angeles County

We found a few things when we started transforming the museum. Basically visitors want new stuff without loss of treasured memories, which were our diorama halls. The transformation happened over a period of time and our mission statement was the forerunner for it

#### A Crisis of Relevance for Natural History Museums

- Beloved but stereotyped
- Valued as a public good but not as a place to visit regularly
- Name recognition, but no perception of relevance

And a paradox: visitors want new stuff without loss of treasured memories.

all. We had \$168 million in capital projects and that had a timeline, so it forced change. And the biggest thing was our visitor studies and market research, which was a heavy,



Kelly McKinley organizing discussion topics

#### Keys to the NHMLA Transformation

- Mission Statement & Activation
    - Branding, holistic approach
  - Capital Project & Impacts
    - Leveraging our core
  - Visitor Studies & Market Research
- Relentless focus on visitor experience with our research collections

### Mission of the Natural History Museum of Los Angeles County

To inspire wonder, discovery and responsibility for our natural and cultural worlds.

Motto: Where our visitor experience meets our Research & Collections (emerged around 2008)

heavy emphasis. At that point we realized the focus was a visitor experience conversation with our research collections.

This is our mission. We are a bit of a weird gig. We have natural history, but we also have cultural collections as well, a bit like Oakland.

Branding was huge for us, and this was an internal and external experience. It was completely the core and motivator for change because the institution wouldn't have changed, but then that change got represented just through these marks. We have three museums in LA.

### Branding research and implementation:



Simon Adlam

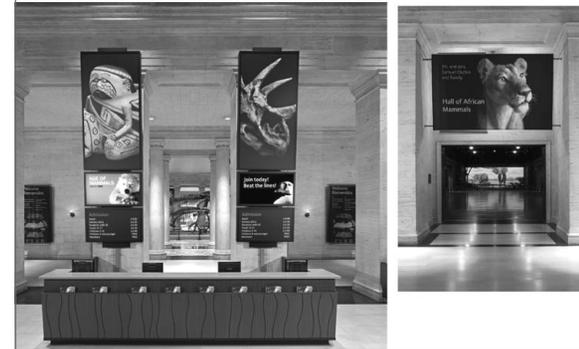
The visual transformation makes it look easy...



When we started doing some of the visitor front-line stuff, the following reaction was a big thing for us: "You've made it better without changing it." A lot of the research we did showed that people loved things like the

diorama halls, even if they've only been there once in their lives, and they are petrified of the future.

Success: "You've made it better without changing it."



### Museum makeover

After a 3-year restoration and renovation, the County Natural History Museum's historic Art Deco building looks beautifully unchanged on the outside. But structural updates have brought the building up to contemporary standards and a series of aesthetic improvements have been made.

- Abate the dome**  
Terra cotta tiles with an internal steel skeleton required the exterior dome to be replaced in a 2020 earthquake.
- Inside the dome**  
Visitors used a 50-foot tall scaffold while repairing and replacing some of the 16 stained glass panels centered in the Rotunda's ceiling.
- Within the walls**  
Six-inch diameter shafts were drilled through brick walls; steel rods inserted to strengthen the structure.
- Reinforcing the brick floor**  
Reinforcing the brick floor with rods centered in each shaft.
- Shells filled with high-strength polymer resin**
- Drilling through center of wall preserves original facade**
- Do the dome**  
All 200,000 terra cotta tiles were removed, cleaned and re-installed atop a water-proof membrane, three layers of carbon fiber and the original concrete roof base, which was thinned by two-inches to reduce weight.
- Looking up**  
Historic's broken windows were uncovered to allow more natural light to flow into the new Age of Mammals exhibition.
- New space for some very old bones**  
A complete new Age of Mammals exhibition is the first modernization of what will be a 180,000 square foot transformation of the museum's exhibits by its 2025 centennial. New interactive guides allow visitors to navigate through 62 million years of evolution from dinosaurs to the appearance of humans. Some of the remains on display.
- Palaeontological**  
Lived 100-100 million years ago
- American mammoth**  
Lived 35,000-10,000 years ago
- Coloared mammoth**  
Lived 25,000-10,000 years ago
- Saber-toothed cat**  
Lived 100,000-40,000 years ago
- Woolly mammoth**  
Lived 10,000-40,000 years ago

As we started moving through it, the first thing was the Age of Mammals. That involved a complete seismic retrofit, which was quite a construction accomplishment considering we



used all of these new technologies to avoid destroying the building. This was our old hall and if you've ever been there, it was disastrous.

Old Cenozoic Fossil Hall



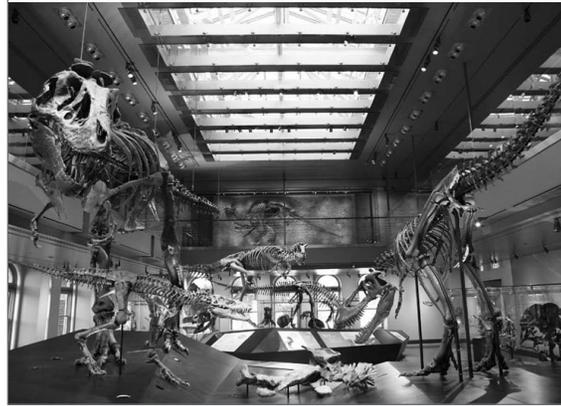
This is the new hall. What was interesting about this is that at this point we worked with a design firm. About eight months into completion we completely took it back and did a new design in eight months. That was the start of us taking control of our project.

New Age of Mammals: Continents Move, Climate Change, Mammals Evolve



This was our old Dinosaur Hall, which had multiple leaks and was a disaster. And this is our new Dinosaur Hall, which is our brand. This is our most highly visited exhibit.

New Dinosaur Hall

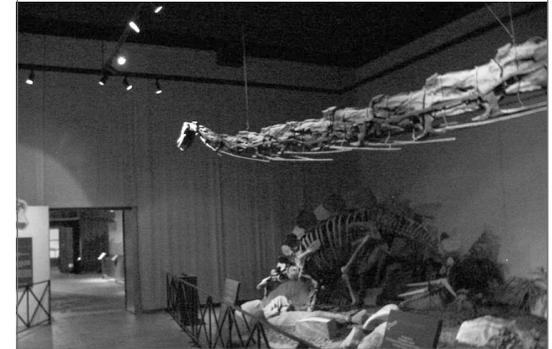


Last year we opened our new Becoming Los Angeles project. This was the first time that we undertook a large cultural project and we had to make sense of it for the museum, so it was very anthropological and we really made it about causality, cause and effect. We made decisions 500 years ago that we live with today. It is actually the one project in which the museum has committed to doing major remedial work now that we're doing a lot of evaluation on it. Like most of the other projects, we tell really complex stories, but we try to present them in the most successful way. I'm now going to hand it over to Lila Higgins.

Lila Higgins, Manager of Citizen Science

As we went through this massive capital cam-

Old Dinosaur (Mesozoic) Hall



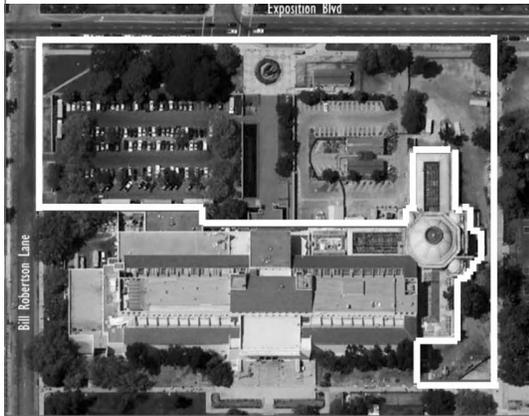
California History Hall: Before



Becoming Los Angeles: After



### Parking Lots and Lawn: Before



### Nature Gardens and Field Site: After



paign we realized that it wasn't really going to be visible to anyone from the outside, so they decided we were going to be able to make a change to the outside of the building. We were able to do that based on the car park and got funding from the county to make that happen. The footprint of the Nature Garden was mostly car parks and lawn and very biologically inert. We knew that we wanted to build a garden and wanted to make sure that it was a garden that was mission-appropriate for us. We weren't the Getty, and we didn't want a garden that was going to work for the Getty, we wanted a garden that was going to work for us.

We worked with landscape architects Mia Lehrer + Associates, we had our scientists in the room, and we had our educators in the room, and we were able to make a planting plan that was going to provide habitat for wildlife in Los Angeles and be a place for humans to enjoy nature, and also be a field site for citizen science and other scientific endeavors.

### An Indoor-Outdoor Institution



We also had a gallery on the inside, the Nature Lab, which helped make us an indoor-outdoor institution, so we were really connecting that outdoor space to the concepts and exhibitry on the inside. It's a very connected experience where we can talk about citizen science in the Nature Lab and then actually have people go and do it in the Nature Gardens.

*Lila Higgins*



Simon Adlam, Director of Exhibits

Below is what emerged.

### What Emerged...

Strategic Intent - "Be the Best at Communicating How Our Planet and Life On It Changes Over Time and Why This Matters."

Focus on Big, Relevant Stories we can tell best

Centers of Excellence from urban biodiversity to dinosaurs: how big processes impact us at home

What we arrived at is that our strategic intent is to be the best at communicating how our planet and life on it changes over time and why this matters. We focus on big, relevant stories that we can tell best through our collections and science. And we've now coined this new thing, Centers of Excellence, which is from urban diversity to dinosaurs.

We do a lot of visitor studies and market research, and we face the following challenges.

#### Visitor Studies & Marketing Research

- For us, the most specific and practical information has been the most useful in helping us transform our relationship with our visitor.
- Staff members from all professions respect relevant, well presented data and ways to act on it.

#### Challenges

- Pushing content & visitor experience.
- Programming for the widest audience possible & deepest depth of engagement.
- Collaboration with real partners.

## North Carolina Museum of Natural Science

Roy Campbell,  
Director of Exhibits and Digital Media

I have a video to show that in the spirit of this being an “unconference,” I hope will generate a lot of ideas and questions afterwards. What I'd like to impress upon you today is since our museum is host of ASTC this October you should try come. It will be very worthwhile. One of the reasons why is because two wings of our building are in stark contrast. Even though our “old” wing opened in 2000 and our new wing opened in 2012, the contrast between the two is enormous.

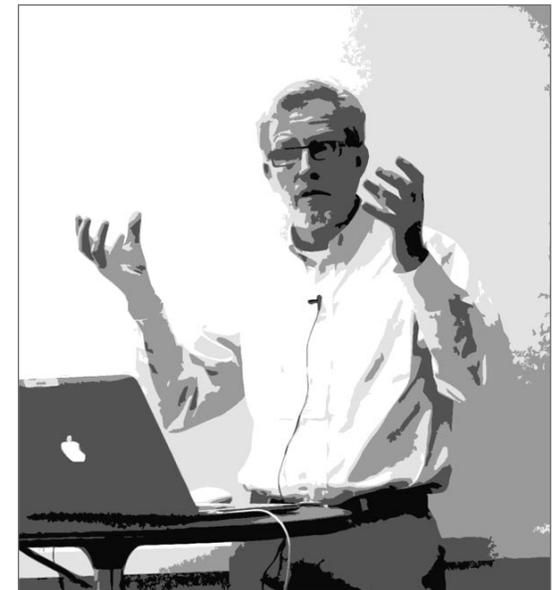
The old wing is dominated of classic dioramas, although they are sort of late 20th century,

open air. You can walk through them and its a beautiful experience.

The building is more about what we know. It is encyclopedic, *ad nauseam*, everything you ever wanted to know about North Carolina's biodiversity, which is quite unique. The new wing which was opened in 2012 is dedicated to how we know. It is all about questions, all about the process of science, and most of this video is dedicated to this wing, the Nature Research Center.

Our museum went through the doldrums like a lot of natural history museums. We really hit bottom about 25 years ago and then we got our act together and we've been on the rise ever since.

Roy Campbell



Human Nature  
Revisiting the Natural History Museum

Note: All images in this presentation are excerpts from the video Campbell screened.



You see this establishing shot and even though it looks like the classic Beaux-Arts museum it was actually opened in 2000. A pretty dowdy looking institution I'd say, but very nice. We've got about five-ton of whale bone hanging in one hall and we've got the classic things like Acrocanthosaurus, a big carnivorous dinosaurs and so forth.

This is the new wing, the Nature Research Center. It is all green. We have four working research labs and visitors can look clearly into them. There's nowhere for researchers to hide.



We do distance learning. We have TV studios and lots of high technology pouring out information. Here you see a researcher out in the field but here also in the lab as well. Why shouldn't the lab be a location for distance learning?



They are actually joint positions with the university, so we've got interns coming in and post docs that are working. We've had folks stare through the window for hours watching the process of preparing a study skin specimen for our collections.



We have a café rigged for video streaming a Science Café which we do once a week. In tandem with that we have four Investigate Labs, including a Visualization Lab where visitors use virtual reality to explore and engage

NASA data. There is an unbelievable amount of digital visual media in the new wing.

The Naturalist Center is an export from the earlier museum with hi-tech upgrades. You can put a specimen on a magic table, and then just delve down into data projected onto the surface. The way it was before, a kid would come in, they would see something that was kind of cool, they'd touch it, but they had no idea about the rafts of information that were behind a specimen and why we bother collecting. Why do we need 10 or 20 of the same species?



The cornerstone of the new wing is a huge, three-story high immersive space which is the Daily Planet Theater. We had E.O. Wilson holding court there. Kids in the audience as well as piped in from across the state asking questions. We have 50 beautiful short videos in the space, non didactic, custom made. For example, there's one on the virtues of research, one on size and scale, one on migration, one on urban habitats. You might see a live broadcast there of one of our researchers working in Kenya, tagging baboons. We even have a science comedian on staff presenting in the space.

I would encourage all of you to come see us at ASTC '14 because I promise you, especially after what goes on today and tomorrow at this convening, there will be a lot of provocation when you come see our museum and see the differences in style between the two wings. The differences between yesterday's museum and today's are as clear as night and day.





1. We dominate the planet.
2. We have tremendous assets.
3. We must innovate now.

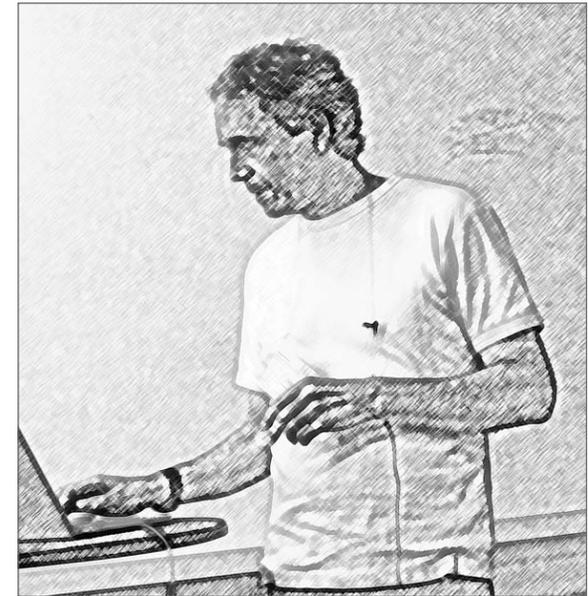
## Science Museum of Minnesota

Pat Hamilton,  
Director of Global Change Initiatives

The Science Museum's *Future Earth* initiative is exhibits, films and programs all predicated around three major themes. The first is that humans now dominate many of the processes that make this planet habitable. Second, this planet is now home to the healthiest, wealthiest, best educated, most innovative, creative, and connected populace ever. Which is good because we need to innovate, and now, because we have set in motion enormous planetary changes.

Unfortunately, based on a recent national survey of adults, only six percent of US citizens are confident that we can reduce global warming and that we will successfully do so. I think our institutions, our museums, have a very significant role in increasing the societal capacity to deal with big environmental issues.

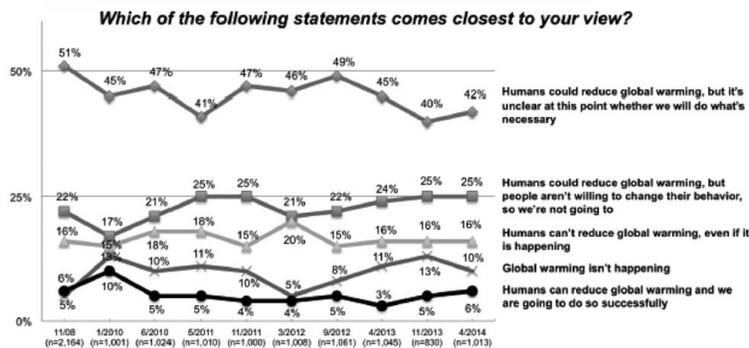
But we face headwinds. Support for doing big, informal science education at NSF,



Pat Hamilton

NASA, and NOAA is in decline. At the same time we are seeing increasing competition for people's time and attention, both in their

### Few Americans Are Optimistic Humans Can and Will Successfully Reduce Global Warming

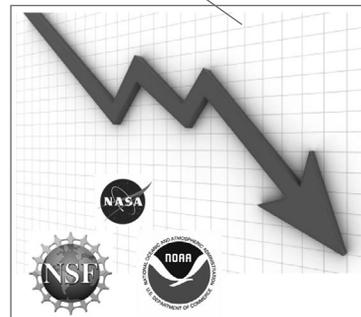


Which of the following statements comes closest to your view?

Base: Americans 18+. April, 2014.



George Mason University  
Center for Climate Change Communication



Ladies and Gentlemen...  
**THE BEATLES!**



Barbie  
THE DREAMHOUSE  
EXPERIENCE

STAR TREK  
THE EXHIBITION



MINNESOTA  
**SEA LIFE**  
AQUARIUM  
Mall of America





City of Saint Paul Climate Change Adaptation Public Forum, May 31, 2012

Climate Change Science for Minnesota Broadcast Meteorologists, October 5-6, 2012

Climate Change in Cities: Adaptation, Mitigation and Innovation, October 24, 2012

Connecting Local Government Decision-Makers with Climate Information Providers, May 22, 2013

Preparing for the Challenges and Opportunities of a Changing Climate, July 24, 2013

Urban Climate Institute, July 31-August 1, 2013

Preparing Buildings for a Changing Climate, October 1, 2013

individual institutions and collectively to increase our societal capacity to work on big environmental issues, I think we could open avenues of communication. Right now I don't think we are on their mental maps, but we could be.

For example, several years ago the Science Museum of Minnesota organized and hosted a two-and-a-half-day conference for the City of St. Paul to help the city think about how to grapple with climate change. We have become the go-to institution for seminars and workshops and conferences on climate change in Minnesota. As a result the Science Museum helped organize and run Minnesota's first climate adaptation conference last October.



For example, the Science Museum has just completed a retrofit of our facility that is going to cut our energy consumption by at least 40% with a payback of between four to four-and-a-half years. As a result, the Science Museum of Minnesota was invited to host a workshop of roundtable conversations with the

US Environmental Protection Agency Administrator, Gina McCarthy, just a few weeks ago.



And we've been invited to make a major presentation to the Minnesota Public Utilities Commission.

The future of earth is going to be decided by human decision making, either by default or by design, either by accident or by intention. Our biggest challenge is our lack of societal capacity to grapple with big environmental issues. As trusted institutions, I think we are uniquely qualified and positioned to encourage our policy makers, our stakeholders, and our audiences to think big and act big on big environmental issues. What I would like to see is that in the future we look back at this time and are able to say, "We did everything possible, and it worked."

## Cluster One Q & A Session

### From Knowledge to Action

- There was a lot of interesting stuff about this idea of transparency and public knowledge, and then there's an undercurrent about change: How do we get people involved in change? If you look at that depressing figure of the percentage of people who are in agreement that climate change is going on, how do you bridge the gap between knowledge and action? • Dan Spock, Director, Minnesota History Center
- I think people are looking for leadership, they are looking for institutions, individuals, organizations to step up. I think there is a lot of latent potential and excitement to work on this, but right now people look at the political landscape and feel thwarted. However, there is enormous innovation available. I think our institutions can play a very significant role in helping to exemplify and elevate the visibility of what is possible. And we need innovation of all kinds, not just technological but economic, social and political. In science museums the conversations we've been having about climate change have been catalytic in terms of what cities are now saying. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

### The Role of Civic Institutions

- This goes to the role of a civic institution.

When I arrived in Los Angeles, LA as a museum city was pretty abysmal. A number of institutions have pushed their roles and importance in Los Angeles: the Getty, LACMA, and now the NHM amongst others. With that being so, the city which enjoys Disneyland is now starting to appreciate the role of nonprofit institutions such as our museums in the NHM, which is great for us because more people come and see us and are able to engage us in a dialog. For example, consider citizen science. Five years ago we wouldn't have the interest that we have today. That is because of what the leadership of those museums have done to communicate the importance of the museums to the city and why they should be involved in leading the city forward. • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

### From Caring to Action

- Pushing Dan's question about moving from knowledge to action, maybe there's caring to action in the sense of how we encourage people to care. You all spoke to

*Organizational affiliations in this section appear only when the participant first speaks.*

### Green Guilt and Eco-Fatigue

- I think that a lot of our visitors, and maybe this is because we're in LA, have a lot of green guilt and eco-fatigue. That's why I feel we have to go in a direction that is focusing on innovation, some of the really positive aspects, as opposed to whacking them over the head with more things that are going to instill more eco-fatigue and more green guilt. • Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

*Cluster One Panel (from left): Roy Campbell, Pat Hamilton, Lila Higgins, Simon Adlam*



Cluster One Q &amp; A



that, all a little differently. I was struck by a natural history museum with mostly dead collections (speaking as someone involved with living collections) really embracing living collections as part of the goal of connecting with nature. Do you all want to go back to that question of moving people to action and a sense of efficacy? What can I do that makes a difference? What is it that we do in exhibits, or what is it that you are doing in exhibits to address that? • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore

#### A Forum for Moving from I to We

- My inclination is to try to shift the conversation away from what *I* can do to what *we* can do, or what we ought to do. After all, that's how we cleaned up the water and the air over the last several decades. *I* didn't reduce sulfur dioxide emissions from power plants, we all did that. I think we need to organize conversations about what do we want and how do we get there. It's not that science museums or others have the answers, but I think we can be a forum where we have the conversations about what we want and then how we get there. • Pat Hamilton

#### Play and Living Things

- I think at NHM our living garden space and outside exhibits and having a live animal collection is one easy way to engage not just

children but adults. You see another living creature and you automatically connect to it, and people are automatically drawn to our live animals in the museum. So the Nature Lab was really great because it wasn't just an exhibit about live animals, it was an exhibit about the urban biodiversity of Los Angeles and celebrating that biodiversity. Yes, there are some hard issues coming up in the exhibit about how nature has been pushed to the fringes in the city and how invasive species are coming in and all of those things, but there is an overall sense of play and playfulness to engage children and adults because we all need play in our lives.

• Lila Higgins

- This wasn't in our original master plan. In our master plan eight years ago, we knew we were doing two big fossil halls and we knew we had funding for two other halls and for the seismic retrofit. Most of the museum was closed down, we had a live animal collection, we had taxidermy halls, we had to activate humidors. Doing that we learned a lot about our visitors and we really utilized our assets to keep the doors open.

As we were moving through the projects we started to discover more and more things about ourselves. By the time we got to fixing all of the big seismic retrofit we realized we had close to four acres of urban park. At that point we said, "It looks the same, no one's going to come here," and decided to activate this acreage, which really focused the

conversation on these gardens and pushed forward the idea of the Nature Lab and Inside-Out and connecting to LA on a bigger scale. So it wasn't like this big master plan. We didn't start there, we sort of learned as we moved through and made decisions.

• Simon Adlam

### Good News: A New Generation of Curators

- There is a bright spot: Help is on the way. When we were designing the new wing we were creating spaces that were supposed to be areas where our researchers could come out and mix with the public, and one of them was the Daily Planet, that huge theater space. I thought, there is no curator or researcher who works here who is going to go in there and try and hold forth with an audience that they can't control. What happened was that when we opened the new wing we hired a new generation of researchers and curators for that wing, and it was explicit that they had to have presentation skills. They were hired on that basis.

In a natural history museum we are so used to being in the back of the house, trying like mad to bring reclusive curators out in front onto the exhibit floor. That's not the case any more. The new generation of curators are very, very sophisticated, entrepreneurial, and really good communicators. They totally get the need to connect their research to the public. They all know it's all part of a

mandate through NSF as well.

That would be one message: It's good news if you fill those spaces right. It's significant because in a natural history museum it's the curatorial staff that holds court over the culture of the museum. As exhibit designers and developers, it was quite a battle in AAM to actually get interesting, stimulating conversations going like these. So now it's not just us alone. I think there is much more institutional heft going towards that. The way Pat Hamilton said it was perfect and I'd love for him to perhaps present to some of the old guard in our museum and other museums I have known. • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

### Dealing with Malls, Ripley's, et al.

- We had a Ripley's Aquarium of Canada show up a couple of miles from our door about six months ago, and we are thinking about reaching out to them around climate change and around some of these issues. Specifically to Pat Hamilton, have you guys reached out to this aquarium to think about collaborative programs and maybe getting your bodies in their building? • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum
- No, I haven't reached out to the Mall of America. • Pat Hamilton

### Effective Use of Technology

- You might recall from the video I showed that there was something we call "magic tables" in shorthand that are in our Naturalist Center. In the Naturalist Center are things that came from our collection that were incomplete, therefore they went into the teaching collection. The scenario before was that you came in and you handled it and then maybe if you felt like it or you had a question you timidly asked someone about it.

The point I'm making is that because of technology the kids can come in now and they can watch somebody else if they're really timid and learn that way, or they can take part in this and access all of the information that's coming out of this table. A huge amount of curation went into that, but they can do it at their own speed. We are finding that a kid is learning that a squirrel has lots and lots of information and that's why it is valued for a natural history museum to study and collect. Then when they are asking questions, the questions are on a much higher level.

I think because we are natural history museums we sometimes wring our hands about technology, that we're being overcome by the technology that the mall is presenting. But if you're smart about it you can manage it, it's a tool. • Roy Campbell

**Fizzling at the Mall of America**

- I was at the Mall of America a couple of weeks ago and went into this big exhibition center which used to be the Bloomingdale's store. I saw eight staff all clustered around talking to each other because there was no one in there. So it's going to be a passing fad, but it's really interesting. The aquarium at the mall has gone through all sorts of changes, from a for-profit, to a nonprofit, to a barely-surviving entity within the mall. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

*Roy Campbell (left) and Pat Hamilton*

- We have a mall that maybe isn't as scary as the Mall of America. It's The Grove in the Fairfax area of Los Angeles. They invited us and our dinosaur puppets to go there. We had these amazing gallery interpreters and educators who go along and get some content across and hopefully get some provocative questions out there to the audience. Having those puppets there, an experience, they sell, they're sexy dinosaurs. We just had to do that. We're in Los Angeles, we're in Hollywood. • Lila Higgins
- Also, when we did the initial evaluation our data was scary. It wasn't like any other North American city. Parents wouldn't take their kids to a nonprofit educational thing unless they got something out of it themselves, period. They didn't do it. We realized that we had to deliver a certain kind of experience to the equivalent of The Grove because we are in Los Angeles. So the amenities were really important—parking, ease of getting there, all of that kind of stuff—and we were competing against that. What was interesting was what Lila brought up. These very natural relationships are starting to move between commerce and us now. So now we do put out programs into the malls and people want this real content. It's sort of interesting. It's a very symbiotic relationship, but it was necessary for us to get people in the doors and to deliver a message. • Simon Adlam
- It's my perception that a lot of commercial entities were looking at the attendance figures and the revenue figures of museums and were dazzled by that. They forgot that we're basically spending money hand over fist to provide that content, and we're just trying to break even. • Dan Spock
- There's a reason that Disney isn't in the museum business and they tried to be. There is no money in it for them. All of that "Hey, let's be a cultural attraction" is a really interesting trend. It has now trended down, and they are dragging us down with them. • Paul Martin
- Even in the opposite model, where Marina Bay Sands was required by Singapore to do an art and science museum, they're still trying to figure out what it is and how to get it to break even. Even in that situation where they're making money it's painful. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

**Competing Against Home Entertainment**

- I think our competition is not only exhibits but just people's time and interest, and I think we're competing with what people can do in their own homes, which did not exist ten years ago. It's phenomenal how we can entertain ourselves. • Pat Hamilton

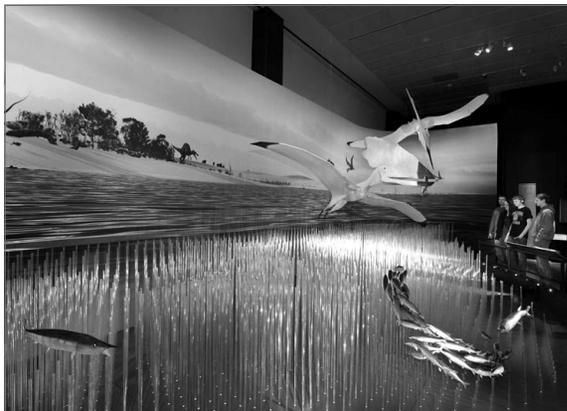
## CLUSTER TWO

### American Museum of Natural History

David Harvey, Senior VP of Exhibitions

How do we incorporate science and enhance the visitor experience through the use of *dioramas, tableaux and walk-through diorama-like experiences that can travel* and thus reach a wider audience?

I'm going to talk about exhibits and what I would like to do is synthesize how we incorporate science on cutting edge issues into temporary exhibitions using dioramas, tableaux and dioramic elements.



**Pterosaurs: Flight in the Age of Dinosaurs**  
2014- 2015

I'm also focusing on temporary exhibitions because they travel and are seen by a wide audience. We have about 2.5 million visitors to our exhibitions outside of New York each year as the exhibitions travel, so it is a powerful tool and we work very closely with education and our scientists. Traveling exhibitions are a melting pot for combining many ideas.

This diorama-like shadowbox that my daughter did was the inspiration for an exaggerated, two-dimensional sort of "spaghetified" diorama which is all about a mystery you can solve. It is supposed to be a little bit enigmatic.



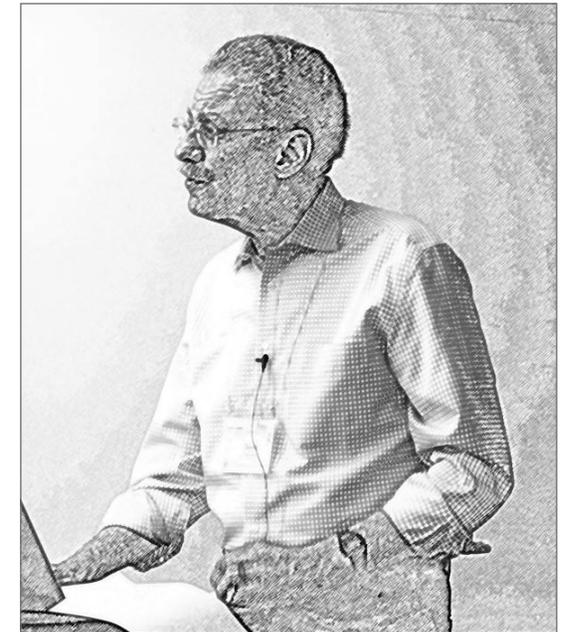
**The Power of Poison**  
2013- 2014

We are constantly thinking about the power of the diorama, how to harness it and get it out from behind the glass. That leads me to talk in three acts about three exhibits that relate to our history of doing temporary exhibitions that travel that are addressing some of these issues that Pat Hamilton so eloquently talked about. I want to run through them and how we tried to harness the power of the dioramas as we tried



**The Power of Poison**  
2013- 2014

David Harvey



*Diorama Redux*

## In 3 Acts

**Our Global Kitchen**  
2012-2013

**Climate Change:  
The Threat to Life and a New Energy Future**  
2008-2009

**Water: H<sub>2</sub>O=Life**  
2007-2008



to convey these messages. It was not advocacy but more about bringing facts to the public.

As we enter the subject of food in this exhibition in 2012 and 2013, we find that it involves all of us and we have so much in common.



**Our Global Kitchen: Food, Nature, Culture**  
2012- 2013

We trace food from farm to table, through history. We cover food security. We realized that bringing people back into pre-contact Mesoamerica would be really important. Let's create a diorama and try to bring you there, in a sense. This was done by Steve Quinn, our

diorama master who retired just a short while ago, and began with his drawings of a Meso-american market which was huge, many acres, involving tens of thousands of people on a daily basis. You can see how the perspective lines were brought into the gallery space so that hopefully you were drawn into the scene. This was a way of showing the tremendous vibrancy in trade and diversity in food goods that came together, which was a great set-up for a lot of the issues we dealt with later in the exhibition, not necessarily through dioramic elements.

Next, a key to this conversation is *Climate Change: The Threat to Life and a New Energy Future*, which was one of our longer but descriptive titles. I prefer shorter titles like *Poison!*



This is where we really addressed contemporary environmental issues big-time, and it was quite a challenge. We had two curators. One was very data-driven and in-house, one was incredibly imaginative and was on the IPCC council. We had to juggle these two and I think

each gallery reflected their influences. This traveled to 11 venues, it went all over the world. We had partners from the concept stage that meaningfully contributed to the development of the exhibition

I know this is by now a predictable, hackneyed image: a polar bear going through the garbage because it has been pushed out of its habitat.



But when you think about it, only five years before this is what we did in the Hall of Ocean Life.

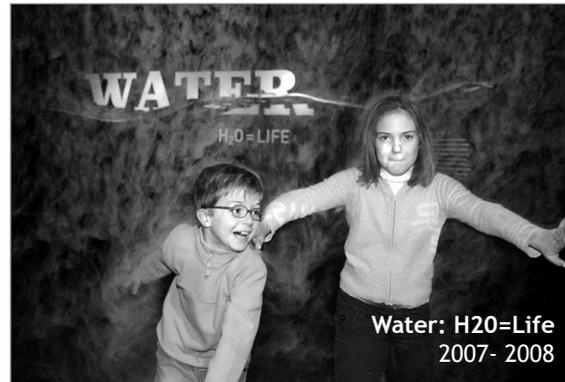


We created a walkthrough dying coral reef diorama to talk about global warming. We like



to also quote small dioramic elements [see fox at right] and kind of pull them into your space to make them front and center.

Lastly, with the Science Museum of Minnesota in 2007 and 2008 we collaborated on an exhibition titled *Water: H2O=Life*, a really important topic. This traveled to 16 venues in two versions, so again we reached a large audience.



What we love to do is bring the dioramic elements into the gallery and play with the idea. You're in it, interacting, and it is also about changing planes of focus. This giant catfish is a great example.



There is the inescapable polar bear.





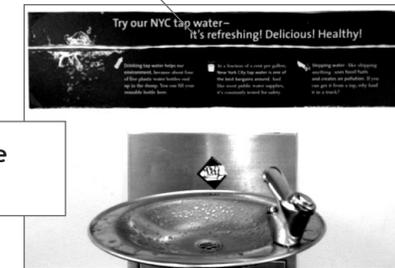
And finally, we finished with a very dramatic walkthrough diorama of the falling water level at Mono Lake, and it looks like a moonscape. This was a really powerful, emotional hit for people: What are the consequences of our



Water: H<sub>2</sub>O=Life  
2007- 2008

overuse of limited resources and how do we regulate our use of water? How do we provide enough water for future populations?

We also interpreted our water fountains in the public areas and ceased selling bottled water in order to be responsible and on message



### Five Minutes in Oakland

## Monterey Bay Aquarium

Don Hughes, Vice President of Exhibitions

Is anyone in the room around 50 years old? In 20 years, when you are around my age, the hot areas of the globe will be hotter, and the wet areas will be wetter. Extreme weather events will be common. Krill, the base of the oceanic food chain, will be well into a major die-off. And 15 million humans who depend on glacier-fed fresh water won't have it.

If you are about 30 years old, when you are around my age, malaria and other diseases will be widespread. All the coral reefs will be bleached. And more than 10 percent of today's

reptiles, birds and mammals will be extinct.

By the time 20-year-olds reach my age, they'll have seen the last polar bear die. Twenty percent of today's plants will be gone. Crops will be failing, and humans will be starving. And humans will be thirsty because 50 percent of today's fresh water will be gone.

And the children of today's 20-year-olds won't understand why their parents' or their grandparents' generation—that's you—let this happen.

I like the way Kurt Vonnegut summed it up: “Dear future generations: Please accept our apologies. We were rolling drunk on petroleum.”

In her invitation, Lori asked how museums might connect people to the vulnerable natural world without overwhelming them and leaving them hopeless.

The first hopelessness we must address is our own. Those of us at natural history and science museums are hopelessly in love with balanced and objective exhibitions. We believe if we present the science-based evidence we so love, visitors will understand the obvious and take action.

We need to shift our thinking and stop relying on science-based evidence to motivate change. Teaching with science-based examples has not worked well to create social change.

A 2009 study, *Measuring the Cultural Impacts in Zoos and Aquariums*, reports that there is no substantial evidence that these institutions make a contribution to conservation—because there are no measurable outcomes resulting from the experiences we present. And it’s probably even more difficult for natural history and science museums to make a contribution than it is for those of us with living collections.

Theatrical director Peter Sellers said, “Planning to illuminate a cause is art. Planning to cause an effect is propaganda.” We have an effect to cause—to cause our visitors to engage in conservation action. This is the issue of our lifetimes, and many believe our institutions are in a position to make a difference.

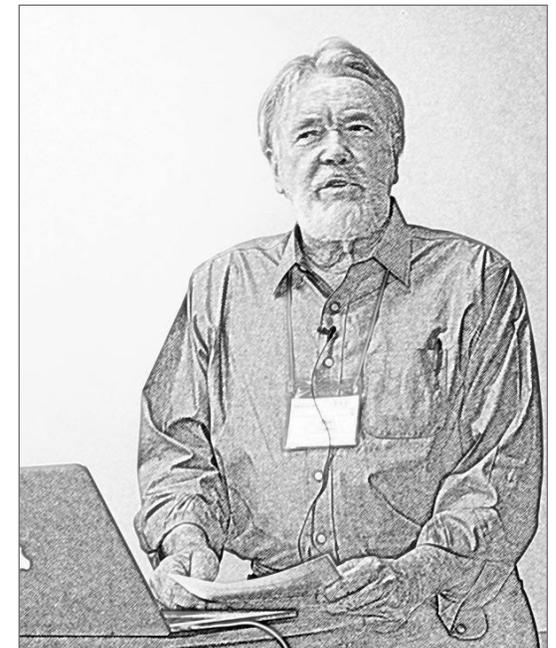
So when you hear your colleagues and co-workers refer to the sanctity of being objective, tell them being objective sucks!

We need to design space, and to present content, that moves people in a specific social/political direction. We need to speak as experts—and learn to manipulate the physical tools of an exhibition to invoke a philosophical change. Since we must convince our visitors to save the natural world, so we are in, or should be in, the propaganda business.

My last bit of evidence is from a 2010 study in the *Journal of Research in Science Teaching*. It suggests that true behavior change is associated with philosophy, morality and the humanities, rather than natural science knowledge. The path to engaging in conservation behavior begins with morality, rather than science information.

So . . . think moral propaganda.

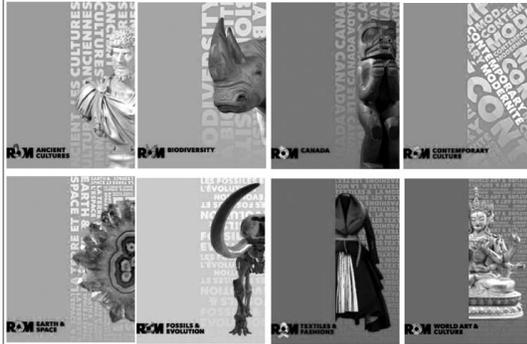
Don Hughes



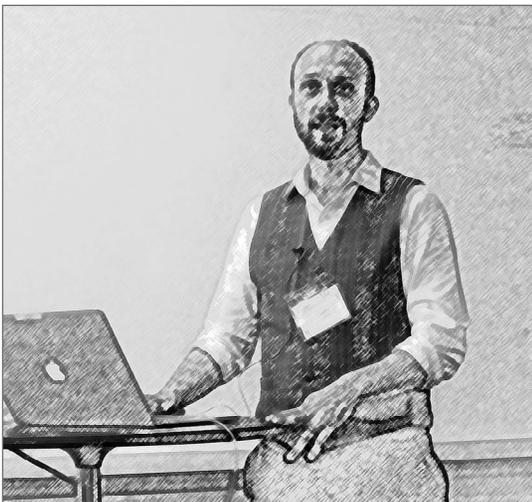


© Brennan Caverhill

### ROM CENTRES OF DISCOVERY



Dave Ireland



## Royal Ontario Museum

Dave Ireland,  
Managing Director, ROM Biodiversity

I had to make a decision about what I was going to talk about today. I'm on a major exhibit committee at the Royal Ontario Museum right now about early life fossils, of which we have a great collection in the Burgess Shale. I'm also the over-all director of the Schad Gallery of Biodiversity, which is only five years old, and there are lots of stories to tell there.

### Community Engagement & Effective Storytelling

Talk Outline:

- Ontario BioBlitz Program
- Environmental Visual Communication Program
- A National Agenda

Instead I'm building on a few of the comments I'm hearing around action, and I'm going to tell you two stories that are intertwined with one another, both of which I lead, but there is a huge team involved. I'm sure you are all aware that the Royal Ontario Museum is Canada's largest field research museum. We have a relatively new CEO, Janet Carding. Both she and I have been at the museum for about four years and we are going through some massive changes right now. In part, this change has to do with inspiring our audience to reconnect with us independent of exhibits, to just see

us as valuable and understand what we are. We are an encyclopedic museum, both cultural and natural, with six million objects and specimens, a huge array. The idea of Centres of Discovery is really just a label, giving our audience some sense of what is inside the building. I'm managing director of the natural history side of things and my goal is to bring those assets at the back of the house, both people and objects, to the front of the house in many engaging ways.

Two such ways are the Ontario BioBlitz Program and the Environmental Visual Communication (EVC) Program. I am going to whip through those right now and then connect the two at the end.

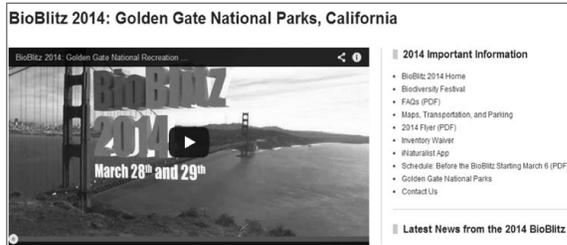
E.O. Wilson coined the term "BioBlitz" in 1999.

### BioBlitz

~ a special type of field study, where a group of volunteers conduct an intensive 24-hour biological inventory, attempting to identify and record all species of living organisms in an area, while also educating the public about biodiversity.

It is a very simple exercise, a 24-hour survey of life in a given area, but you've got to connect and involve the public somehow. There was one in the San Francisco Bay Area very recently with the Parks Commission and others, though I didn't see the Oakland Museum involved and I would wonder why. It overtook us for the

largest BioBlitz in the world. Until March of this year we held the record.



Back in 2011 we had seven million people in the greater Toronto area and the question was: How can we connect with them, and how can we make them see a museum and its expertise as a valuable resource?



We are known worldwide as “Ravine City,” we have a lot of biodiversity, so we piloted a BioBlitz in the Rouge National Park which, as announced in the legislature a week ago, has just become the world’s biggest urban national park. That pilot was very successful. In 2012 we had 225 scientists and the public, and some

of the best scientists in Canada showed up. We have doubled that number in the second year, and we cover all taxonomic groups in this exercise.

About a month ago we held our third BioBlitz at McMichael Canadian Art Gallery and had a big showing there too, and we’re just getting over the buzz of it now. It is the second watershed over, so you’ve go the Rouge Watershed on the east end of Toronto and the Humber Watershed is the main watershed in Toronto.



Really quickly, these are our numbers. That Rouge 2013 number is the one we were so proud of, but the Americans found 2,300 species in the San Francisco Bay Area on March 28, so congratulations. However, you can see these numbers are quite amazing. The idea I wanted to convey with this slide is that all of these data are presented to the public in simple,



### Scientific Expertise

Scientists divided into groups:

- ROM Lead - >225 participants (2012)
- >450 participants (2013)

- o birds
- o mammals
- o reptiles and amphibians
- o fish
- o Insects and arachnids
  - o Further split into 6 sub-groups
- o invertebrates (non-insect)
- o fungi
- o mosses
- o plants
- o lichens



### Ontario BioBlitz

Species counts 2012-2014...

TAXA	Rouge 2012	Rouge 2013	Humber 2014
Mammals	29	22	21
Birds	76	109	121
Herps	13	14	18
Fish	19	28	27
Insects	488	498	500 (tbc but growing)
Arachnids	96	146	109
Invertebrates	48	156	100 (tbc but growing)
Plants	520	593	450 (tbc but growing)
Fungi & Slime molds	90	89	45
Bryophytes	51	80	78
Algae	7	8	n/a
Protists	3	3	n/a
Lichens	n/a	54	94
<b>Totals</b>	<b>1440</b>	<b>1791</b>	<b>1563 (minimum)</b>

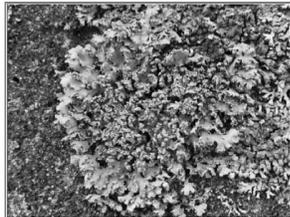
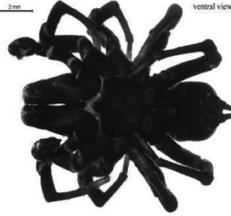
**Some cool finds, and a few (quick) stories...**

- o Green-margined Tiger Beetle
- o Bristletail
- o Scorpionfly – *Panorpa sp.*
- o rare calico crayfish - *Oroconectes immunis*
- o poke milkweed - *Asclepias exaltata*, and 13 other plant species never before documented in Rouge Park

**SPIDERS:**

- 2011 survey of spiders in the Park recorded 77 species; 56 were added in 2012, 13 more in 2013. Total for Rouge Park is now at 146 species
- A new species for the Toronto area, federally very rare:
  - Black purse-web spider

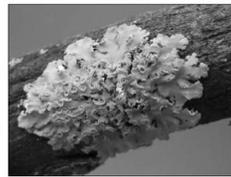
*Sphodros niger*  
Photo Gergin Blageov



Lichen diversity (Dr. Troy McMullin)  
Rouge 2013

- 54 species from 32 genera
- 6 federally listed, and 1 not observed since 1806

Humber 2014: 93 species, 8 federally listed



easy ways via our own website, but it's also converted to the Darwin Core and uploaded to various listserves all around the world.

Here are a few quick stories. This is what has inspired the people who attended our events, some of the stories that emerged, and this is what I hope will inspire you. This is also key to engaging our scientists. Many of our curators were reluctant to participate in this, questioning the scientific merit of this exercise. Now they are all on board. In fact, all of our curators are involved and they all lead the taxonomic teams.

So, very quickly: lots of lichen, lots of species at risk, and lots of very interesting, rare finds, such as the first Northern flying squirrel in some time. The big change is that instead of catering specifically to the scientists, we actually divide the blitz up in two ways. There is this very specific, guided blitz where you'll see the names of our curators and myself below (I have a background as a scientist) and we actually attend

**Northern flying squirrel (*Glaucomys sabrinus*)  
Not documented in Humber in last 10 years**



Photo: Tallie Garey, EVC- ROM Student



Milksnake, photo: Justine DiCesare, EVC-ROM Student



**Northern black widow spider (*Latrodectus variolus*)**  
Rare but native

Photo: Vicki Simkovic, Univ. Western Student



**Intensive Survey vs. Guided BioBlitz**

to these public in a very real way.

These sorts of activities are what keep the public involved, and there are scientists involved with them.

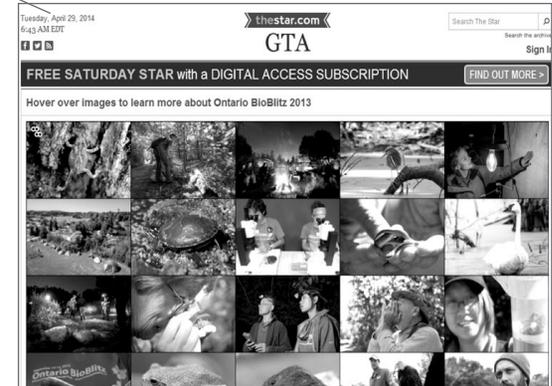
In 2012 I co-directed something called the Environmental Visual Communication program, which is hosted at the ROM. It is an eight-month, intensive program where we teach graduate students how to become better science storytellers. They work with us, with

National Geographic, with Canadian Geographic and others to learn how to be better storytellers.

There are a few very quick stories around that. Joshua See is one of our graduates who went into the field for a month and a half with our curators and brought those stories home in a variety of ways. Last year a top graduate, Jacqueline Waters, went into the field for nine days with our curator, who recovered a blue whale skeleton from Newfoundland, and told those stories in some amazing ways. All of the

EVC students, before they start their program, bootcamp at the BioBlitz. In the *Toronto Star*, the major print media in Canada, they got front page coverage over the course of a month where they told our curatorial stories.

And here is the way these two things are going to be connected. We are doing a Blitz now in the Toronto Watershed to inspire a bunch of other ones, but the idea is to go national in 2017 for our sesquicentennial, and we are going to partner with the Alliance of Natural History Museums of Canada, the Canadian Committee for the IUCN, and others to build a nationally choreographed Blitz, much like you would think of Earth Hour or something along those lines.



**Borneo Project**

**Joshua See**  
EVC 2012 Graduate

- 35 days in the field
- Prime time feature documentary
- *Museum Dairies*
- 4 media mentions
- .hundreds of twitter mentions
- 2 magazine article
- 5 videos

**Blue Whale Project**

**Jacqueline C. Waters**  
EVC 2013 Graduate

- 9 days in the field
- 100 media mentions
- .2 millions twitter mentions
- 1 magazine article
- 2 videos
- more to come

**Ontario BioBlitz**

**The Provincial Plan...**

- o 2015 in the Don Watershed, Base Camp at the **Ontario Science Centre** (timed for the Pan AM Games)
- o 2016 Credit Valley Watershed
- o 2017 back to the Rouge Urban National Park for Canada's 150<sup>th</sup> Birthday
- o Supporting other community blitz's (2014-2017)
  - o Ojibway Prairie (Windsor)
  - o Huron County (Goderich)
  - o Essex Naturalists (London)
  - o Ottawa Valley, NCC and Ontario Nature

**BIOBLITZ CANADA** **R·M BIODIVERSITY**

**The National Plan...**

- o By 2017, community bioblitz's across the country, and in all 44 National Parks
- o Nature Conservancy of Canada, Parks Canada and Canadian Wildlife Federation
- o Alliance of Natural History Museums of Canada
- o Canadian Committee for the IUCN
  - o Universal BioBlitz Protocol
  - o Global partners: Nat. Geo., Australia – World Parks Congress (Nov 2014)

Organizational affiliations in this Q & A section appear only when the participant first speaks.

### The Bricks, Mortar, Diorama Legacy

- We have got all of this bricks and mortar collateral that is really expensive to run and most of it is indoors. A lot of what I am seeing is about transparency and getting out. What do we do with this legacy that we're dragging around?
  - Dan Spock, Director, Minnesota History Center
- We are very conscious of our limitations. That is why some of those diorama things that we do are very tongue-in-cheek in a way or they're self-conscious. We know that you know that this is not really taking you somewhere, but having said that, and with that understanding, this is really interesting.
  - David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

Cluster Two panel:  
David Harvey, Don Hughes, Dave Ireland



## Cluster Two Q & A Session

### Complicated Abundance/Endangered Story

- On the one hand, all of you have been talking about what we are going to lose in the future, but you have also been talking about the BioBlitz, which makes people feel that nature is so abundant. I wonder how we tell the complicated story of life and extinction and things like that so that people understand how these things fit together.
  - Susan Schwartzberg, Senior Artist & Curator of the Bay Observatory, Exploratorium
- I would say that most people we're experiencing in these things don't respect and love nature. So that first step is to get them outside and understand that nature is all around them and that there are some really cool things in their backyard that sometimes are on their way out. That perspective then allows them to be more connected to it and then we can take the next steps.
  - Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

### Inside vs. Outside

- Engagement is the first step towards propaganda in a really interesting way. There are two different models here of the steps into that, an inside one and an outside one, of people being engaged and just getting them curious, and then where can they go from

there.
 

- Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

- There's an inside-out one too. The 19th century idea and the 20th century idea was that you would go to one place. You'd go to the Bell, you'd go to AMNH, to go out into the world, and the dioramas with their unbelievable resolution and incredible illusion really accomplish that. But of course there's a lot of competition, as others have said, with the media and all of that, that challenges us and sometimes challenges the credulity of what we are seeing.
  - David Harvey
- It's depressing also that when visitors come to the aquarium some of them think that is their outside experience, inside this concrete box with fish. "Oh yeah, I went and saw nature today."
  - Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

### About BioBlitzes, Museum Scientists & Collections

- One of the things that I find really interesting about the BioBlitz is that it is this event that is novel. We used to be novel. We're not so novel now, I would posit, as we once were. An interesting question is how to weave those together.
  - Paul Martin
- I was going to comment on the BioBlitz and how the museum can complement it. I've

done our BioBlitz for ten years now and this year is the first time we've skipped. We use our scientific collections as the base list for the BioBlitz and it shows us when new things start showing up, when we don't have something in our collection, when we don't have any record of it. And it shows us when things aren't there anymore. As you go through, that is going to show change over time in a very real, on-the-ground kind of way.

• Jennifer Menken, Exhibits Coordinator, Bell Museum of Natural History

- Absolutely. All of our checklists from all of those 16 different taxonomic groups are cross-referenced with our collection, and we hold the biggest collection for Ontario biodiversity. So they are created and then scientists themselves compare and contrast to what they are finding, from invasive species to species at risk. We have three peer-reviewed publications coming out of our 2014 lists, which is a huge win for us with some of the older curators who are still sort of begrudgingly participating. • Dave Ireland

### Storytelling and Propaganda

- I had an observation regarding this question of objectivity and then this idea of storytelling. It is like we are driving at maybe a different paradigm. We've been trying to reason with everybody and clearly the wheels are coming off. • Dan Spock

- We shouldn't give that up, we should try all of them. • Dave Ireland
- But what is the difference between that and storytelling? I hear "storytelling" a lot and I'm not sure what we know of it. Is it just another thesis or what? • Dan Spock
- When we were thinking about Environmental Visual Communication programs, "storytelling" was the active verb we wanted to use, but we've moved towards propaganda and we are encouraging these students to consider themselves part of a corporation like Coca Cola or Tampax. These folks are selling a product and we have a product to sell. These students, through social media, visual communication, photography, videography and other mechanisms are frankly way better storytellers than our scientists, even the young ones. And they have an amazing ability to grab hold of our esoteric stories, churn them up, and produce products that engage audiences that are less and less interested in what we do. • Dave Ireland
- But what are the distinctions? What are the characteristics of storytelling that are so different from what we have been trying to do for generations? • Dan Spock
- It's fast, it's surprising, it's relevant to their lives. I think those are the three key points. My wife tells me that a story has a beginning, a middle and an end, and often says

### Grassroots BioBlitzes in the Bay Area

- Cal Academy was heavily involved in the Golden Gate National Park BioBlitz, and that included both our scientists who were working with National Geographic and the Park Service as well as our educators at the museum on public engagement.

Then there is a different story about BioBlitzes. In the Bay Area there is a grassroots group called Nerds for Nature that has run about 10 BioBlitzes over the course of the past year, (many organized out of my dining room by my husband). This catalyzed partnerships among a number of conservation organizations, parks agencies and museums. Cal Academy has gotten involved in that project, but it really was a grassroots effort. One of the key things that enabled that was the realization on the part of a few people that there is a tremendous wealth of tech innovation happening in the Bay Area. And there are tools that allow ordinary people to go out and do the same kinds of data collection and observation with a much lower barrier to entry. That is a very interesting model. • Tamara Schwarz, Associate Director of Exhibit Content Development, California Academy of Sciences

what I'm telling her isn't a story for that reason. I think often we don't communicate an end that we want. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

- I tried to concentrate on the end today actually. • Don Hughes
- Yeah, "the end is near." • Dan Spock
- You conveyed the end under default conditions. We don't tell the story of how we want it to end. • Pat Hamilton

### Lessons about Storytelling from Videographers

- One of the things about storytelling is that people say we are actually programmed biologically, genetically, to receive stories, so it's intuitive to us. But a lot of science is really counter-intuitive. It's intuitive that the sun goes around us. You sort of have to apply science to reason the verso. Then there is this idea that a story has a beginning, a middle and an end, and that is locked in stone.

I was at a documentary film conference and all of the filmmakers were wringing their hands because their medium is going through all of the revolutions that museums are going through, and actually even more. The documentarian was invisible, was behind the camera, objective. You couldn't even replicate or bait an animal to do something. If you

did that you'd get called out for it. Now the videographer has to be in the frame and part of the story, part of the reality.

But another thing that came out of that conference that was really interesting is that a story is not something that has a beginning, a middle and an end. A story is the title, which is self-explanatory, the middle, and then the end is the conversation everyone has, continuing that story. It does not end at the videography, it does not end at the web, it is all about contributions afterwards. When they are thinking about a video now, they are thinking about it as open-ended, they are thinking about it on different platforms, changing it in different areas. • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

- We used to focus more on the beginning, the middle, and the end or conclusion. Now we are much more focused on how telling a story is going to engage the emotions of a visitor. With this idea of going out into nature to recharge your batteries or whatever, we really think that's got to happen at the museum or via the museum and make an emotional connection with species or species loss, or with a story that may not be a full scientific brief but is a motivator. I think that's the most important thing about storytelling. • David Harvey
- As we talk about propaganda there is this question that I think is hugely important to all of us: Does knowledge actually lead to action? Maybe propaganda is simply a different type of knowledge—different from the kind of knowledge that we all as scientists and science educators tend to focus on. I think the title of today's gathering, "Human Nature," has a lot of relevance to that too. It's a different type of knowledge. • Tamara Schwarz
- I was reading books about propaganda when I was 12 years old. Coming from England to America I had the same *Golden Book Encyclopedia* and I knew the tables of inventions and all sorts of things like that from reading the English version. I came to America and they were different, and I wondered how that could possibly be the case, so I got involved in reading about propaganda. Jaques Ellul

wrote about it and said basically all forms of conversation are forms of propaganda. Even a sermon is propaganda. What is really interesting, if you have not been to the Creation Museum in Louisville, Kentucky, is that it is awesome, absolutely awesome in terms of how to prosecute your case. I was just blown away at what a fantastic job they did. • Roy Campbell

- And they're not trying to convert anyone, they're for believers. That's the power of it.
  - Paul Martin
- I just want to know how Noah made it with two Allosauruses in his ark. • Dan Spock

### Manipulating the Tools We Have

- I want to put Don Hughes on the spot for a moment. You professed this thing and then ended with the idea of propaganda. What is it that we should be doing? Can we do anything differently in our organizations?
  - Paul Martin
- Can we? I don't know. What I'm talking about is more about learning how to manipulate the tools that we have to make a bigger and better effect, and I don't think we look at it that way. • Don Hughes

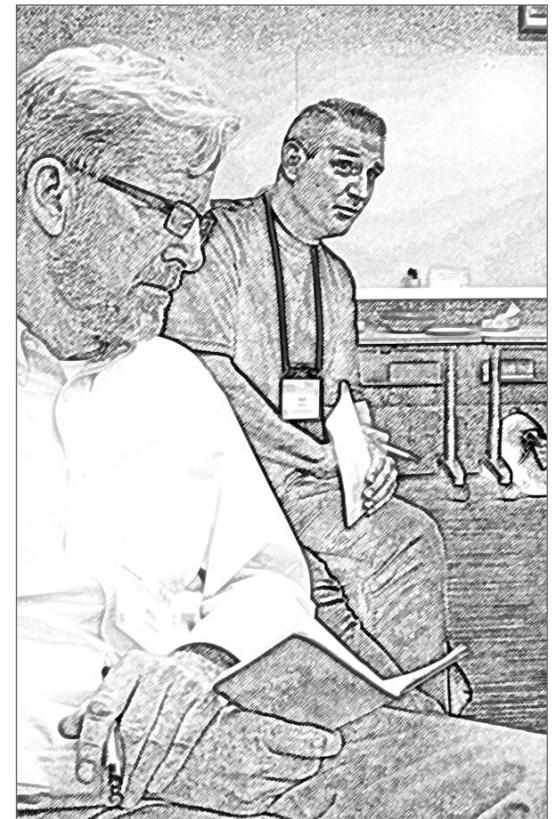
### Changing Attitudes:

#### Even if it Takes 99 Pink Plastic Elephants

- I couldn't agree with more with Don Hughes. About four years ago we were launching into a new permanent exhibition on conservation, both in the Chicago area and in areas in South America where our researchers were. I told some of the exhibit staff, "You know, if this is our goal, to get people motivated to do this, I don't care if it takes pink plastic elephants. I will put anything in an exhibit if the result that we really care about is changing people's attitudes."

Even in the exhibits department people were horrified, and their response was, "But we have to tell them the truth." The metaphor that I've come to is that too many people at museums still view science as a holy book, that if they just show it to people they will convert. • Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History

Roy Campbell (left) and Matt Matcuk





Don Luce



## CLUSTER THREE

### Bell Museum of Natural History

Don Luce, Exhibit Curator

The Bell Museum of Natural History is part of the University of Minnesota, housed in a venerable old building built in 1940 which has a lot of architectural charm but lacks some modern amenities like air conditioning and electrical outlets. It was especially designed to house dioramas.



The building is on two floors with 16 large dioramas and over 75 medium and small dioramas. The dioramas are considered to be among the finest ever created, done by leading artist-naturalists and dating from 1911 to the 1950s. Most were painted by Francis Lee Jaques, and diorama experts consider them as irreplaceable gems.



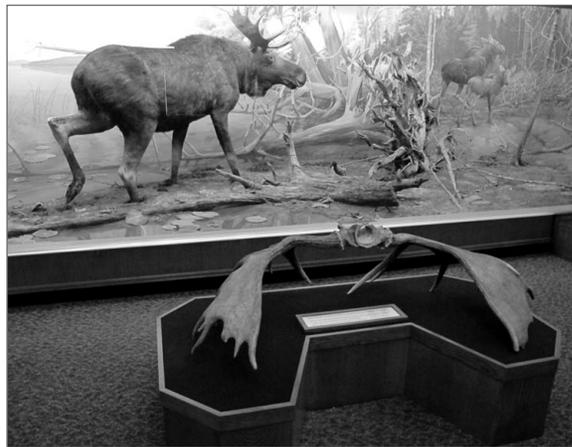
We use them actively as part of our interpreter-led school tour programs. We bring school children in as small groups and give them customized exhibit tours.



We have also made attempts to add interactive elements to the dioramas.



Some of these have had significant success, however it is still very difficult to present modern science and current university research within the limitations of the traditional halls.



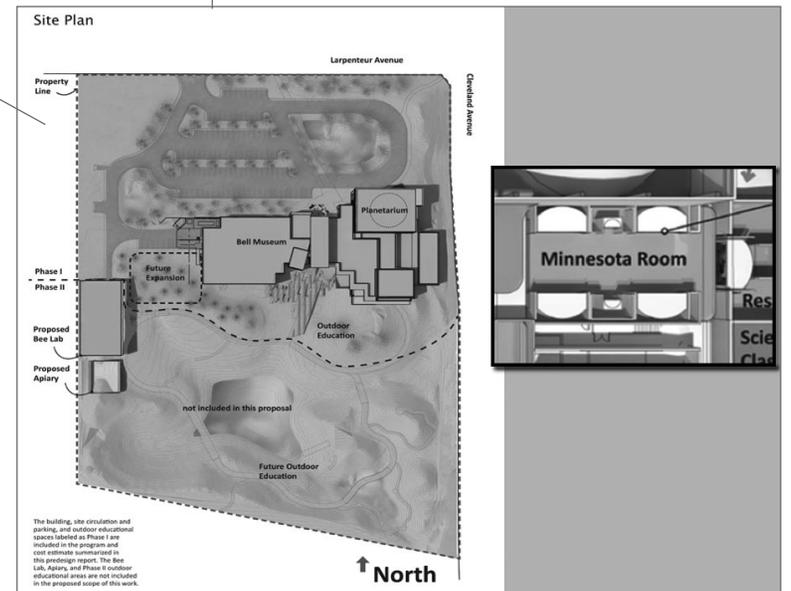
The university has enormous ecological and environmental research programs and it is hard to reflect that in the traditional museum. For a lot of the visitors who come to our museum,

the experience is wandering dimly lit halls looking at monotonous rows of windows.



Our museum did have an addition in the 1960s, which includes a discovery room and a modest-size changing exhibit gallery, but we have not been able to add or expand our current site, so we have been limited to what we can do with the existing building.

After many, many years of effort and planning, we have just now secured funding to construct a new building on a 12-acre site on the University of Minnesota's St. Paul campus. This is where most of the biological and environmental sciences are now located. One big plus of the 12-acre site is that we can have parking on-site and outdoor space for outdoor exhibitions. We plan to move most of the dioramas into this new building. Some will be installed in a traditional





style diorama hall much like they are now in the current museum, so we will try to preserve that experience.

Others will be integrated with modern exhibits. They will, however, be sealed. They will not be open, they will be protected, and there will be glass. Our guiding principle is still to respect the artistic and cultural value of these artifacts as well as making them come alive for current

and future generations. I'm going to share with you some of the sketches that we have developed and how these might be used in this new gallery space.

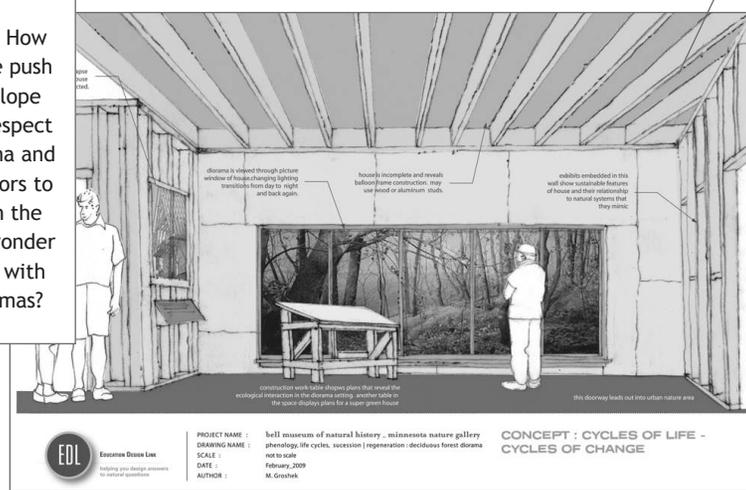
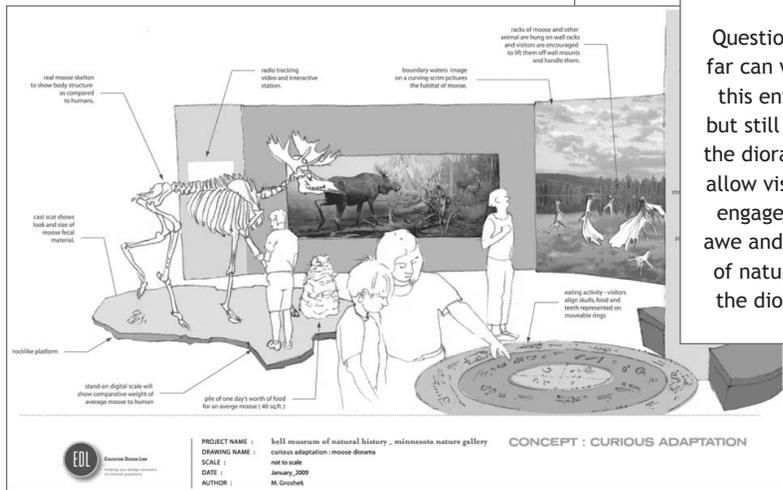
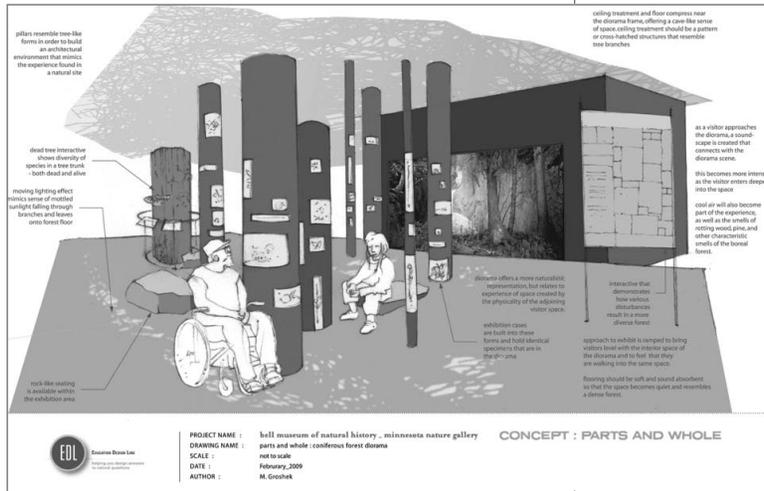
Each diorama will be a focal point, a centerpiece for this new Minnesota Nature Gallery. Each will have a biological theme, and each section will trace the environmental his-

tory of the region that is shown in the diorama. There will be hands-on exhibits immediately adjacent to the diorama that will engage visitors in a detailed exploration of the diorama itself.

We push the envelope a bit here, trying to create front-end experiences that dramatically contrast the experience of looking through the glass with the experience of looking at the same sort of material in a very different way.

We also feel these dioramas are great places for people to share stories and we really want to think about how we create exhibits that incorporate that function: How do you present your feelings about nature to the people around you?

In pushing the envelope, some of these might be a little extreme, like this case in which we take this great diorama that shows a pristine woodland, but through the windows of a new house under construction.



## Field Museum of Natural History

Matt Matcuk, Exhibition Development Director

What does the future look like for natural history museums? We don't know, but we've got some well-educated guesses.



*"What's the Landscape for the future of Natural History Museums?"*

If we're going to look down the road and try to see what's there, I think we have to think about three different categories of things. The first are what we call the "known knows" (this is Donald Rumsfeld and while you may not like the guy, this is a great piece of rhetoric).

### 1. Known knows

Type of experience	How readily available it is			
	Can you get it at home without accessing the internet?	Can you get it from the internet?	Can you get it from another place outside your home (besides a museum)?	Can you get it at a museum? (or other informal learning institution?)
seeing authentic objects				✓
talking with a natural history expert			✓	✓
experiencing unique immersive environments			✓	✓
watching film/video	✓	✓	✓	✓
using a digital interactive	✓	✓	✓	✓
playing a game	✓	✓	✓	✓
reading text	✓	✓	✓	✓

The known knows are the things that aren't likely to change anytime soon, they're going to be there for the foreseeable future. We know, for example, that it is authentic artifacts and specimens that set us apart, along with immersive experiences. Those are the only things that only we have.

We know that people will continue to seek social experiences that are engaging, rewarding and meaningful. We know that technology continues to advance. And we know that as we think of our visitors, we are always going to have to consider the basics of human biology like food and drink and bathrooms and gift-shops.

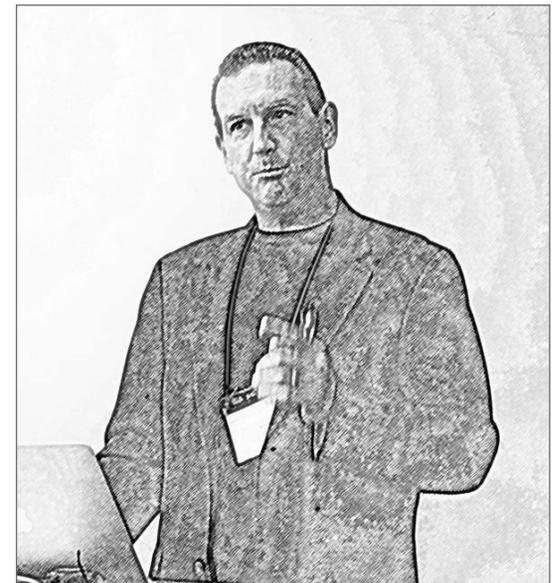
### 2. Unknown unknowns



The next category are the "unknown unknowns," as Rumsfeld calls them, or "black swan events." These include technological, political and economic events that can be foreseen but have a disproportionately strong effect on the course of human history.



Matt Matcuk



## 3. Known unknowns



## Asking questions



Finally we come to those things that we know but still have questions about. For example, we know that story is important and will remain important, but we see that the nature and the scope of stories is changing, particularly the idea of a beginning, middle and end which, having a literature background, I kind of thought was required. That seems to be changing these days.

We know that we have gotten past the attraction of technology for technology's sake, but we also know that new technologies can still sort of amaze us. And we know that as digital technologies continue to saturate our world, the distance between the geek and the everyday person is narrowing—sort of.

So we can see the democratization of knowledge that has been fueled by the digital revolution is changing people's perceptions of how a museum should serve its visitors. But we don't fully know how.

And we are fairly sure that the refinement of virtual and augmented realities is going to have an impact on people's perception and evaluation of authenticity. We just don't know what that impact is going to be.

So it's not the stuff we know, it's not the stuff that we don't know we don't know, it's this third category, the kinds of things that we know something about. Those are the things that we need to ask questions about and what we pursue through visitor studies.

Two years ago the Field Museum was very for-

tunate to have received a gift, a very generous contribution from the Grainger Foundation for a series of digital initiatives.

We  
received a  
gift...



This went to funding everything from building infrastructure and WiFi to scanners for the research division to exhibits. For exhibits they said, "We're giving you this money so you can put technology in your exhibits."

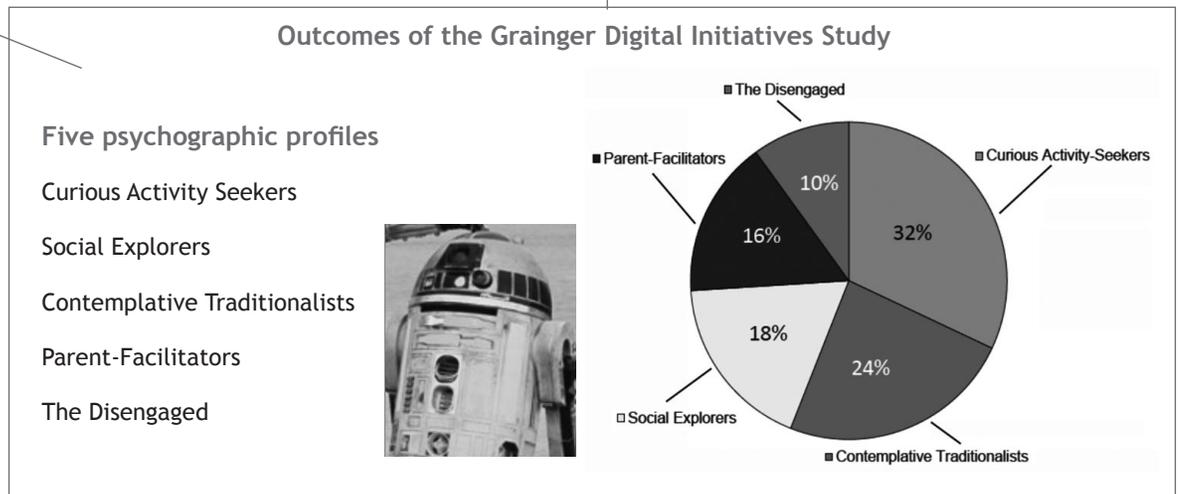
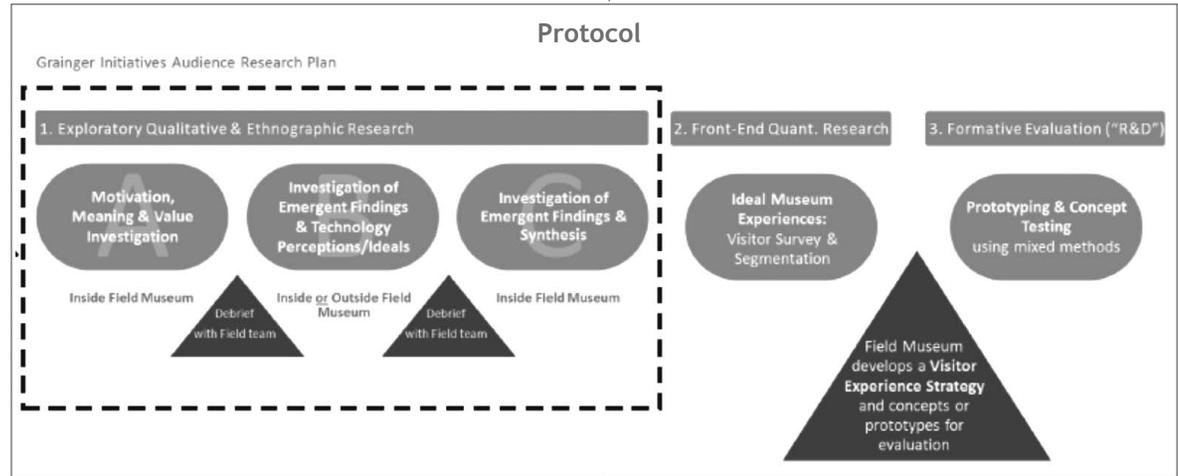


In order to know what technology you want to use, you need to know what you want to use it for. In order to know that, you need to know what kind of experience you want to provide, and in order to know that you need to know what your visitors want to have in terms of an experience. Then you can figure out which technologies do or don't enhance that.

So we used some of those funds to do a far-reaching, exhaustive study. We hired an outside firm, Slover Linett, to help us with that study, and we wanted to assess different kinds of visitors' fundamental motivations to see how those motivations correlated with their attitudes towards technology.

The study took one-and-a-half years and used an iterative process including qualitative research, narrow-but-deep interviews with an initial set of visitors, then slightly wider and slightly less deep; and finally a broad quantitative survey with 600 participants. There is a bucketload of outcomes that I would like to discuss today, but I have little time left in this presentation.

I will just focus on one, which involves five psychographic profiles. They used cluster analysis to create this set of psychographic profiles and each of these visitor types has distinct goals for their museum experience and distinct ways they want to use the museum in order to get that. Among many other things, one piece of big news is that there is no correlation between demographics and attitudes towards technology.



## Rooted in Place



Becky Menlove



## Natural History Museum of Utah

Becky Menlove,  
Associate Director for Visitor Experience

Our new museum opened in 2011 and we are all about place. Our curatorial staff was initially thinking about really big global issues and encyclopedic stories. However, we are not really an encyclopedic collection, and in my opinion Utah is a more awesome place to study natural history than anywhere else, so it became focused on helping people find their place right here and now and then be able to extrapolate what they have gleaned from our place to other experiences.

Geographically we are located on the edge of the natural world and the built environment. Here [upper left] is what the building looks like in the evening. Triangulated irregular network mapping (TIN) was used to emulate the surrounding landscape, which in turn informed the building design. It is rooted in the land. The look and the form of the building blends right into the landscape next to this beautiful red butte. It is clad in copper from the largest copper mine in the world right across the valley from the museum, so it will change and evolve just like the mountain behind it.

Inside [upper right] is our grand hall, called the Canyon. This is where visitors stop and gasp with awe. You can see the influence of the TIN in this space, too. We think of our museum as a threshold to the outside, so as I said, it is about being rooted in place and about finding



your place in the natural world right here and now. There is lots of interface between our outside landscape and our indoor exhibits.

This is the Land Terrace. There are six of these terraces outside and also wonderful hiking trails all around our site. We are on about 17 acres.



Below is the inside of the Land Gallery with a

view to the outside.



Inside the museum we have open space dioramas that are new, but we also incorporate and interpret the outdoor spaces. If you can see it just outside the museum there's no reason to replicate it through dioramas on the inside. Rather, we make connections and encourage people to go out there.

This is the Sky Terrace, another outdoor space that lets you view the long distance from on top of our building. It is an important spot at several periods during the year because we get these horrible inversions in Salt Lake City and you can see what our impact is on the valley.



It is thick with smog and heavy particulates, sometimes the worst in the world it turns out, so we interpret that and give people the opportunity to go out and look at beauty but also to see the reality of what their actions are creating.

We have one of the largest solar arrays on our roof in the state and are really trying to model behaviors that might make a difference in our world.

In terms of gallery interpretation there are 10 permanent galleries. They cover topics from astronomy to life systems to geology, and of course paleontology is a really big whopper for us at the natural history museum. What we did was to start out with a set of standard themes that run throughout all of the exhibitions. We include ecology, evolution, biodiversity, and energy flow straight from the sun so that as you move through the space in what is a very open plan, you are able to keep connecting to these primary themes. We just finished some research and are finding some of it works, some of it not so much.





We also worked very hard to create intergenerational, hands-on experiences that are a little different from the average natural history museum. We wanted people to be able to engage in that social experience that we know happens in museums and allow people to really learn together. We wanted to use natural history topics and provide those as the context for activities that engage visitors with phenomena, so there are some “science center” interactives that are grounded in the natural history context.

We have exhibits in the floor, on the ceiling, everywhere you go. This [below] is a hadrosaur embedded in the floor. It’s a specimen you would see in situ, in the field (the child in the photo is looking directly at skin impressions of a giant hadrosaur).



You’ve all seen dinosaurs and other ancient creatures, but an interesting note is that where our museum is located is right on the Bonneville Shoreline, which is the shoreline of ancient Lake Bonneville, a Pleistocene lake. So

here you are on the shore of that lake looking at these mega fauna skeletons. It’s another direct link with the natural history right outside.

Down below we focus on current science. Most of our current paleontological research is taking place within the Grand Staircase-Escalante National Monument and that is the focus here.



Our whole team felt that if you understood about the natural world and saw how change through time happened, how everything is connected, that you would come to this last space and see that you can impact the future of Utah.



This is a big video game. I'm not happy with the production values of the game but it turns out people are actually getting what we want them to get from it. Our next move is to do a lot of research and develop a strategic plan to see where we move forward with these kinds of activities.



## Cluster Three Q & A Session

### Experimentation, Risks and Remediation

- Back in LA a key part of our growth was experimentation and risk. Now that we've completed it, it's really hard to go back to experimentation and risk. I am just wondering, because you are all doing amazing work, where does experimentation play into moving forward? • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum
- We were really smart and lucky to have set aside a very large evaluation and remediation fund. It turns out that we didn't have large things that needed remediation, so we've been using it to do evaluation, but that remediation budget is in place for us to do more experimentation. Every so often we also develop large and small in-house exhibi-

tions that are temporary, so that's another place where we can continue to do that really exciting and risk-taking work. But as I said, for us the integral piece of it is where we need more work, more understanding about the interface between the digital and those really wonderful phenomenal experience that people are having. • Becky Menlove, Associate Director for Visitor Experience, Natural History Museum of Utah

- So that's a great lesson. Do it right the first time.
  - Dan Spock, Director, Minnesota History Center
- That's the problem, or my perceived problem. If you

*Organizational affiliations in this Q & A section appear only when the participant first speaks.*

*Cluster Three panel (from left): Dan Spock, Don Luce, Becky Menlove, Matt Matcuk, Paul Martin*



### Spinning Risk off into Small Galleries

- Many years ago GM spun off a small company called Saturn. To manage their risks, they made it a separate little entity so that if Saturn went belly-up it wasn't going to directly affect GM in the same way. I proposed something similar at our museum about six or eight years ago. It was to run a series of small gallery shows that would be highly experimental. It took six years to get it going and accepted, and finally we were fortunate to get an IMLS grant. Because the risk is so much lower—these are small galleries, they're not ticketed, no one is going to complain if it didn't meet their expectations—we can take risks there that we can't in great big ticketed shows. That being said, I still feel like we're more like GM than Toyota. We do great things there, but they're kind of predictable and we are a very risk-averse institution. Another way that changes is that people retire. • Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History

### Cycling Static and Dynamic

- What I am sensing out of this is this sort of static and dynamic thing, both in our physicality and how we actually do our work. You take risks when you're doing this and then when you're not you're thinking, gee, I should be taking risks now. It is both our behavior and how that actually manifests itself, and trying to get that to be more of a continuous ecosystem of interaction. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

experiment and hit it right the first time you end up in a “you're hitting it right” paradigm. • Simon Adlam

- I think we have to know that we're never getting it right, ultimately, that there's more work to do. • Becky Menlove
- We are a small museum that has been in this building for a long time. We've done a lot of very incremental experiments with the dioramas and they are going to be part of this new building. The big risk here is the moving of these dioramas. This is a really big risk for us and there are a lot of unknowns yet in terms of whether this is going to work. We are struggling with the issue that these things are a treasure that we are kind of messing with. • Don Luce, Curator of Exhibits, Bell Museum of Natural History

### Dealing with Dioramas

- I have a question for Don Luce. What makes you think that a diorama is more than a glorified artifact? It's so old fashioned, but beautiful. It seems like you are trying to do a lot of things on the outside to interpret those. Is this just like any other artifact that you're interpreting? • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium
- In part yes, we have to think of them as artifacts, but I think we also have to look at how they do work. There is this issue of sto-

rytelling. It's a way that groups of people can come around and look at them. You can look at old halls that have dioramas and other exhibits that were done at the same time and it is the other exhibits today that often look old, while the dioramas look timeless. Given that timelessness, when we are looking at these new galleries, the dioramas are going to stay there. They are going to be the permanent parts. The other parts will change and be adapted. There are people who question why we should even bother with them. Why not just change the whole museum. We spent two years planning along those lines—exhibits without dioramas— and came up with a plan that just looked like every other place. • Don Luce

- What kind of stories are told? What kind of stories do those dioramas evoke from visitors? How can they tell contemporary stories about those artifacts? • Don Hughes
- I don't have a lot of research *per se*, other than anecdotal. Often you will have a family group and the adults will be talking about their experiences in that type of environment with those types of organisms, and they will be conveying their values to their kids or their grandkids. • Don Luce
- We actually have data on that because when we started our renovation the dioramas had generational sentimental value for our visitor and it was a touchstone in their social

behavior with their families. They would bring their grandchildren down and tell them how they went down there when they were grandchildren and so forth. Their worst fear was the changing of the dioramas. So the big diorama halls remain. We don't go in there and include big dramatic changes because it will really put off balance the core of our constituents. • Simon Adlam

- So the stories aren't about the animals and the stuff inside, it's about their reaction to it. • Don Hughes
- There are a couple of points about that and these are great questions. Although dioramas are physical things I see them not as artifacts but as media, like film is a medium. They are also amazing in that if they are done well they are bigger than the sum of their physical parts, than the pieces or the backdrop. One thing we've been looking at is some of our Asia Hall dioramas, which are really Asian mammals, which are pretty dreadful. We realized that museums are about layering. They are stratified in and of themselves. There's the historical part. You want it to be as wonderful when you go as an adult or with your grandkids as it was when you were a child. So we build layers upon layers, and there are layers of greater periodicity, layers of lesser periodicity, more risk, less risk, but we shouldn't throw the baby out with the bath water.

Permanence is a big issue, and what we found when looking at our dioramas is that the great dioramas, like the ones at the Bell or the ones at our North American Mammals Hall, are really there forever. They become media and platforms for telling stories, and then you can build on those and do things that are even more current, but they are always a reference point for ourselves and for our environment. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

- When I worked at the Field Museum during a time of great change in the mid '80s people in Chicago would say, "You work at the Field Museum? I love the Field Museum! You're not going to change anything are you?" I would ask when was the last time they were there and they couldn't even remember the last time they were there. "But you're not going to change anything are you?" It's a weird sort of dichotomy. The other pattern I'm seeing in this discussion is that there is also data that Matt referred to. There is data that we could share across museums that would be really helpful. • Paul Martin
- The idea struck me as this conversation was happening that a diorama hall is kind of like the precursor to a Google image search for nature around the world. Also, there are people who get married in the diorama hall, whether they rent the museum and pay thousands of dollars or just pay admission for

### Dioramas: *Windows on Nature*

- I hope that we'll have a small breakout group on this subject. I do want to acknowledge Steve Quinn, one of our original NSF advisors who was a great leader in the diorama work at AMNH. He could not be here, but if you want to see an impassioned defense of dioramas you should read his book, *Windows on Nature*. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

### Dioramas at the OMCA

We have just completed a first round of summative evaluation for our gallery, which we can share a little bit about later. Regarding storytelling, people were moved to tears describing their connection. Some of it was the artifact, but some of it was the connection to these places. We are finding them powerful in terms of the nostalgia and what they represent, but also they are in those places when they talk about them. • Lori Fogarty

### Dioramas vs. Digital Immersion

- Dioramas are the original immersive experience, which we try to create today digitally. Visitors want to be transported, whether it's to that place in their childhoods or somewhere in Borneo. • Matt Matcuk

their families and synchronize their watches and meet in front of the bison diorama.

Again, it's not just the dioramas representing the sense of place or places around the world, but the halls in and of themselves have a sense of place. How does that manifest in your diorama experience?

• Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

- We've done a lot of audience research and it is similar. "You love the Bell Museum? When were you there?" People don't want us to change it. We don't have the luxury of being able to build other exhibit halls and keep the

dioramas completely separate, and to have a variety of exhibits. And we also have people who come to have their wedding in the exhibit. We somehow have to try to do both of these things and hopefully people will come and still be able to see these beautiful things from the natural environment and appreciate them in a different way. I keep trying to say, "Well, they do move frescoes." They moved Boticelli's *Birth of Venus* and it was completely and beautifully restored and moved into a modern gallery. The project was controversial, but when I saw it, I appreciated it as much as I think I would have and maybe more so than where it was.

- Don Luce
- Dioramas that are well done are really wonderful, but there are dioramas that are not so well done, and that is important. At AMNH they have such a great history but are still able to seek out the talent and bring those people in to preserve those arts or to create new arts, the digital arts, which are the modern manifestation of the diorama. So far, though it's not easy, museums are able to maintain that culture and that craftsmanship and that time necessary to create those things. I hope that survives.

• Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

### Sense of Place and Native Americans: Natural History Museum of Utah

- I think the sense of place and articulating that as an important way that we want to draw people into a museum has so much value because it's a way to really appeal to a variety of individuals who clearly would all have different perspectives on what their place is, whether it be urban, rural, or something in between. But given the tradition in a lot of Native American communities of really celebrating place, are there some particular connections that your museum makes or prioritizes that reaches out more to the Native American community?
- Lisa White, Ph.D., Director of Education and Outreach, University of California Museum of Paleontology
- Yes, I didn't include a slide of this but on the top floor we have a space that is somewhat

of a cultural pavilion. It's called Native Voices and combines first-person narratives with some curatorial voice. There's a beautiful circular gallery and we worked closely with Native advisors in our community. The tribes in Utah are pretty small and their ability to participate is limited, but we have been working with them through an advisory committee since 1989, long before it was required by NAGPRA. Working closely with them, we've created this beautiful circular gallery and when you enter you see a circle that represents the homelands of each of the five major tribes of Utah, and their stories are reflected as well. However, our Native advisors did not want to have that connection with the science side of things. They were clear about wanting their own place.

• Becky Menlove

## CLUSTER FOUR

### Denver Museum of Nature and Science

Ian Miller, Department Chair of Earth Sciences and Curator of Paleontology

I run the Earth and Space Sciences group at the museum. At our institution part of our research collections division helps run the strategic direction of the museum, and I am part of that group from the research collections perspective.

I wanted to share with you our new strategic plan which we have just finished outlining. For those of you who don't know the Denver Museum, we get about one-and-a-half-million visitors a year, we have a little over 400 staff, and we have 1,800 volunteers who work on the museum floor, behind the scenes, and in the field.

We have essentially finished this strategic plan and are moving to the initiative phase. Your terminology may vary, but what we do is develop a strategic plan and then engage in initiatives to carry out the strategic plan. For me, thinking about initiatives in the context of our strategic plan during this meeting has been quite timely. We refresh our strategic plan about every seven to ten years. We just finished a major strategic plan that helped us build a new facility attached to our building at a cost of a little more than \$100 million. It has new gallery spaces, new research and collections spaces, collection storage, and that kind

of thing. And there was an initiative to figure out how to better engage our formal education partners.

Aside from finishing that up, the sort of things we are focused on are the things that are on the list for this meeting. This has all been board approved and our new mission is: "An empowered community that loves, understands and protects the natural world." So that is the head, heart and hands approach. The mission then is: "Be a catalyst! Ignite our community passion for nature and science."

For us this is really not business as usual. This is a pretty big paradigm shift, moving away from the "sage on a stage" approach and going out and meeting our audiences where they are. We are always trying to get them into the four walls, into the brick and mortar. We feel like we need to get out into that world.

This plan has four objectives from which those initiatives will grow. There are about 20 people at the museum who are now working on this all of the time. I want to share one idea with you, that the museum becomes an aggregator. We know this term from websites. It means collecting related items and displaying them, but it is pretty passive. It doesn't give it its own sort of twist. The aggregator in the sense of a museum would focus on community topics with content that has a museum twist or uniqueness.

#### Areas of Focus

- Globalization;
- Urbanization
- People changing connection to nature;
- The changing fundraising landscape
- Loss of habitats, species and biodiversity;
- Energy;
- Climate issues;
- Competition for free time.

#### Objectives

- Deepen our community's excitement and engagement with nearby nature.
- Demonstrate a deep operational commitment to our entire community (*e.g. rural audiences and diversifying our audience*).
- Provide exceptional experiences in all aspects of our community's museum interactions (*i.e., become a more attractive attraction in all of the ways that you might imagine*).
- Optimize our finances, our facilities, and our people in a really sustainable ways; reduce our impact on the environment and maximize our innovation, flexibility and organizational strengths. (Be a more nimble institution. Don't be the aircraft carrier that takes 10 years to turn just a few degrees.)



Ian Miller

In a traditional sense this would be a website, but you can think of it in terms of programming. For example, skiing is huge in Colorado, so maybe we sell ski passes instead of REI downtown. We also then talk about snow reports, climate change, the Ice Age (we had a big Ice Age discovery in Colorado over the last few years) and work all of those kinds of things in.

This would not require people to come to the four walls of the building or attend the museum. We always use this word “attendance.”

Who the hell attends anything anymore? “Attendance” is just our business word.

This could help with this time famine and offer a place where you could get a lot of different kinds of value, including social values. You could address major issues. Fracking and legalization of cannabis are obviously huge in our state and getting big here in California. I think the OMCA does some of this kind of stuff and I am excited to see your Friday Nights event this evening.

### Oakland Museum of California

Don Pohlman, Senior Exhibit Developer and Co-PI

I am going minimalist because we have 25,000 square feet of exhibits that you are going to see in a few minutes. I’m going to talk about what I view as the most distinctive aspect of our gallery, which is that we really went all in on adding humans to the mix.

This is probably an overstatement, but outside of archeology or human origins, our species remains rare within natural history exhibits. Our dioramas still depict timeless, pristine settings largely devoid of human presence, unless we

are talking about people who lived thousands of years ago or in some ethnographic present. We tend to reserve our more recent exploits for art museums or history museums or in the case of our museum, upstairs.

But we are really not separate from the natural world, we just like to think so. Whether or not you subscribe to the notion of the Anthropocene or perhaps the late Anthropocene, our impact on the planet and on all of its other species is harder and harder to ignore.

Add humans

Where are all the people?

We’re part of the story

...a growing part.

If our museums wish to have a role in helping the public navigate these enormous environmental issues and all of the anxiety and uncertainty around them, we need to move beyond depictions of idealized habitats to the hybrid environments that we actually have and live in. Obviously this may challenge expectations, but I think it is imperative if we want to keep claiming that we are important.

Humans interest

Fortunately we like talking about ourselves, even when the stories aren't flattering. Adding humans to the mix greatly expands the possibilities for visitor engagement and it provides all sorts of hooks and entry points that aren't available if we remain offstage.

Some strategies:

We have tried multiple strategies for adding human presence to our gallery, none of which we have come close to perfecting or exhausting. But I think we have a really interesting mix that seems to be working, and I think we've created a platform that will serve the OMCA and its community well for some time to come.

A primary strategy is a strong sense of place. Our old gallery was conceived as a kind of imaginary walk across California from the ocean to the desert, by way of the valley and the mountains. We have reframed the gallery around seven real California places. I think that strategy was crucial to some of the other things we were trying to do.

Those places have very specific and very human histories, and we have tried to incorporate a lot of those in the gallery so that visitors can understand how those places and how California as a whole came to be the way that it is today.

It's not enough to just mention humans in the labels. We need to include large-scale artifacts and environments that communicate the human presence and impact in each of the seven places, and you'll see that we have made a point of doing that.

Community voices

Real places also have real people with relationships to those places. As Lori mentioned earlier, we have made extensive use of community voices. We want to use those both to enrich the depiction but also to model an empathy for place that we hope proves contagious for our visitors.

We have built in opportunities for updating the gallery with science news and political devel-

Sense of place

Change over time

Visible presence

Don Pohlman



Current events

opments and other stories related to California's environment. Most of these are low-tech but flexible, with room for visitor dialogue.

Citizen science

We are trying to build an on-ramp for citizen science. We have a ways to go with that, but we want to be the place where people hear about citizen science, not necessarily the place that's running citizen science projects. We're interested less in the data than in the engagement of non-scientists with the places where they live.

Imagination

We have a lot of art in the gallery: historical, contemporary, and visitor art. We think it's really important to keep imagination in the mix. Symbols, stories and dioramas aren't passive representations of the world, they're lenses and filters that shape our understanding. Admitting historic and contemporary art into the natural history gallery opens us to other ways of seeing.

Making things

Then there is making things. Intentional or not, we have done a lot of our making in front of visitors, but we have also included multiple opportunities for their creativity.

Serious delight

What I think is working about the gallery is in some sense its eclecticism. We did a lot of hand wringing over the dire situation that the world is in and what will we do about it, and whether visitors will pay with their money and leisure time to experience that. We've done a

mix of things that are delightful and humorous and light with things that are way too heavy to tolerate. We are starting to see that you can bring those things together, and visitors will tolerate a lot more if it's not boiled down into a message that is shoved down their throat.

Exhibits for humans

I want to close with a few thoughts on the needs of the living humans in our museum. They are whole people, they are not deficient scientists. However dire we think the state of the world we need to remember why they come, and it's not for more information. Our exhibits need to work as social and emotional spaces if they are ever to work as cognitive spaces. There is so much more to it than content, more than big ideas, messages and interpretive plans. The hard problem in exhibit development is not delivering content, it is in engendering care. We need to work on that as hard as we work on delivering facts.

## Academy of Natural Sciences of Drexel University

Timshel Purdum, Director of Education and Lifelong Learning

### Dioramas at the Academy of Natural Sciences of Drexel University

I am not an exhibit designer I am an educator, but I talked to our very tiny six-person exhibits team before I came here. I am going to give you a tour of “We can only go up from here.” This is a 202-year-old institution and sometimes it feels 202 years old, but we love our dioramas. This is our brand new mission. We also just completed a strategic plan and are getting ready to do a master plan, so the sky is the limit for what we want to do with our dioramas.

### The Academy of Natural Sciences of Drexel University

We advance research, education, and public engagement in biodiversity and environmental science

Since 1812, the Academy has connected people to nature.

Our scientists study evolution, biodiversity and ecology, providing information critical to understanding the natural world.

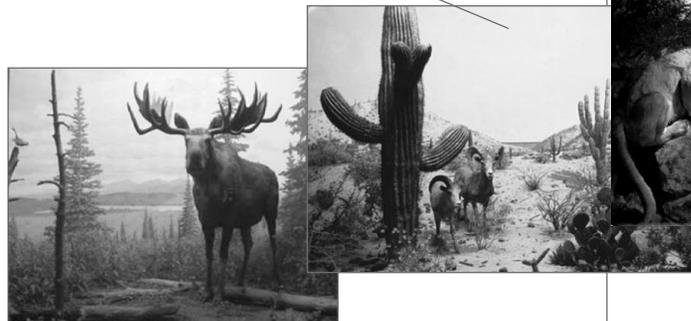
We enjoy teaching visitors about our dioramas. We have about 28 dioramas in the building, and they are the bulk of our building outside of our

dinosaur hall. All of our space is pretty much dioramas when you come to visit, and we have the same problems everybody else has mentioned. One of the things that we always teach kids is that this was the Discovery Channel from 100 years ago, and they get it.

### North American Hall

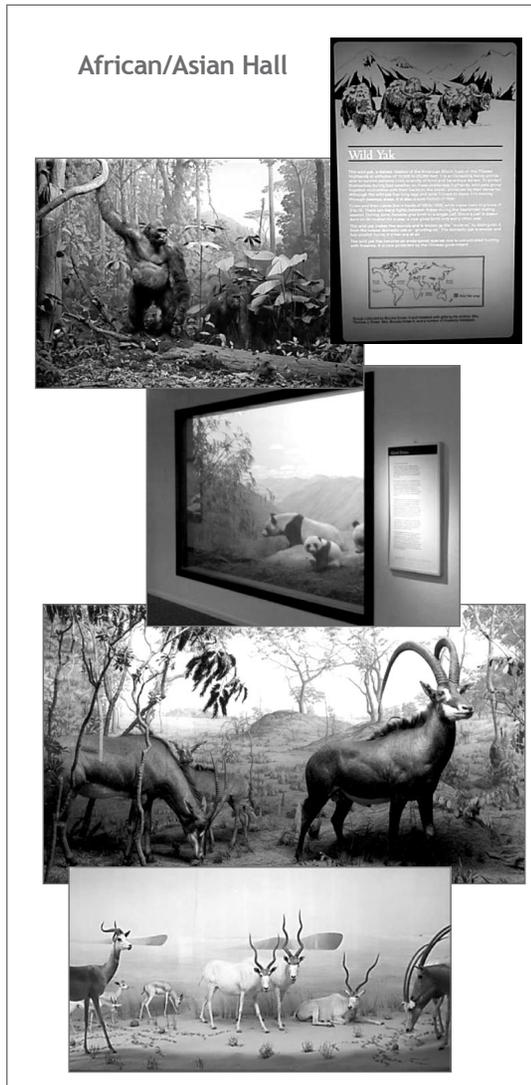


The grizzly bear is our oldest diorama and it needs love. We all have favorite dioramas; some of them are really engaging, some of them have fabulous stories, and some of them are like, “Really? Why did you do that?” My favorite one happens to be the desert diorama because every time I look at it I find something else in it that I hadn’t



Timshel Purdum





seen before. I've been at the Academy for 11 years and I am still finding things in that diorama, and I like to engage the public about that.

We have different signs at each diorama, they don't match.

Our dioramas are sometimes classrooms. We don't have enough space in the building to teach kids, so the halls are sometimes blocked and people are disappointed that they can't see them because we have kids in there being taught.

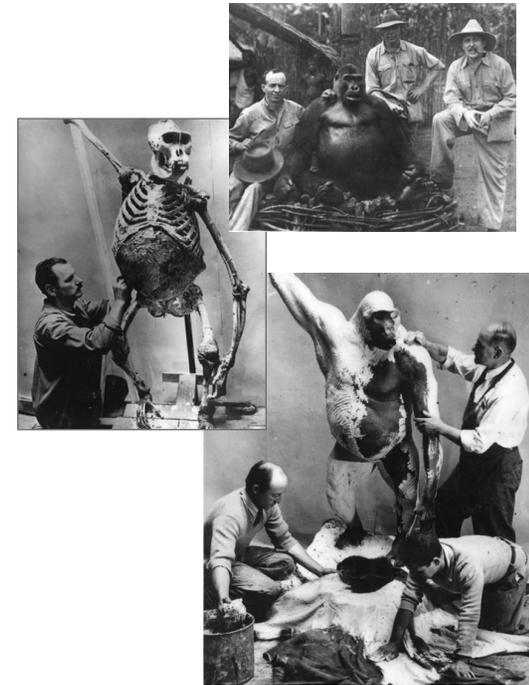
Below is an example of exhibit staff humor. That is an American cockroach that died in the exhibit and our staff put a little sign up.

#### Exhibit Staff Humor



We do teach a lot about how the dioramas were made. We have a lot of documentation in our archives about how they were made. One of the things that we would like to do educationally is go into the archives to see what the places looked like then, because they are all based on real places, and what they look like now. We have the ability to do that from an educational standpoint.

#### How It's Made



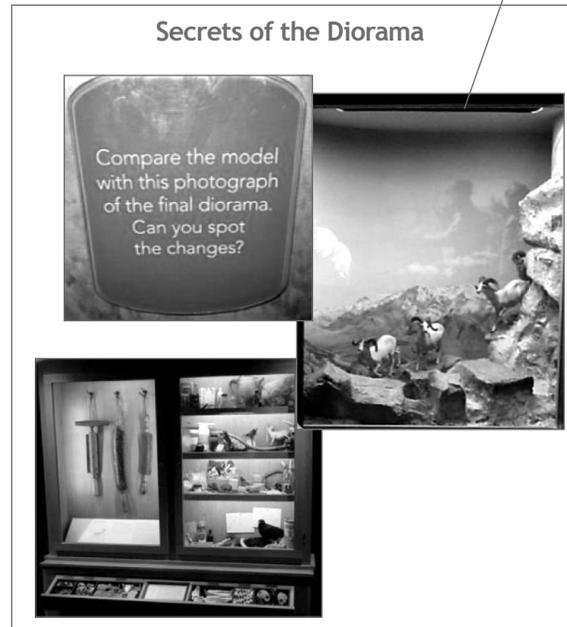
One new thing that has been done with the dioramas in the last 80 years is *Secrets of the Diorama*. This is something our exhibits team put together about how they were made and it is one of my favorite spaces.

#### Secrets of the Diorama



It helps you go back and look at different

things in different diorama exhibits. It shows you some of the things that change, like the sheep [below]. We have a few of the original maquettes, which are always really fun to see, and the sheep no longer look like that because they dropped one when they were installing it and he lost his leg, so now he's behind the rock.



There are two exhibits on the third floor of extinct things, including passenger pigeons, which have an extinction anniversary coming up in September.

We have Drexel students who are developing apps for children and families to encourage them to look more closely at the dioramas. The dioramas are not going to physically change anytime soon. But we are going to try new things this fall with drawing on the dioramas. One of the things we are trying is looking at different types of paints that could come off the glass easily. The idea is to do artist installations and have them draw on the glass of the diorama and interpret it in different ways and have it displayed over time and try different things. We're trying innovative ways to educate.



Third Floor Dioramas

Diorama tagging!  
 • Paul Martin

This is the only one that demonstrates our current environmental research, and it was recently redone by our exhibit staff. It is *What Eats What* and shows fish eating other things and algae.



What Eats What



The Academy App

Organizational affiliations in this Q & A section appear only when the participant first speaks.

David Ireland talks about passenger pigeons



## Cluster Four Q & A Session

### Where Are the Humans?

- I want to frame an idea that I think Don Pohlman was getting at more than anybody else, the idea that humans have been out of it. I was thinking about this the other day and was doing a Google search for an image that described the food chain. I couldn't find any image that had humans in it. I did finally find one that was in a pyramid, but there was something on top of them—zombies.

It seems like we've got all of these firewalls. We have humans as visitors, humans as scientists, nature as things to be viewed and studied, humans as observers. How do we get at this problem we have where we are always outside of the house looking in and no one's home? • Dan Spock, Director, Minnesota History Center

- I think we have to radically believe that we are animals, if Darwin means anything to natural history museums. We have habitats, we have foraging strategies. Neil Everenden talked about humans as the spruce budworm for the planet, and we don't know how the story will turn out. The idea that for religious reasons from hundreds of years ago we need to set humans outside of nature and maintain that fiction is clearly not true.
  - Don Pohlman, Co-Principal Investigator, Senior Exhibit Developer, OMCA

### Adding a Human Element to Dioramas

- When you said that, I envisioned adding a diorama to a large mammals hall showing humans in their natural environment, depicting the kitchen and the vinyl flooring and the television. And in those places where we talk about species spreading, we could talk about invasive species and impacts on the chain, etc. • Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History
- We didn't do it, but we talked about investigating human habitat needs and human foraging strategies—range maps for humans. We would address the fact that our water is coming from the Sierras, not from local sources. • Don Pohlman
- Kind of a real-time *Motel of the Mysteries*.
  - Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota
- I think this is a fascinating topic. As most of you probably know, we kind of the abandoned dioramas in the '80s. One of our last dioramas was our *Passenger Pigeons* exhibit. We have a very large collection of passenger pigeons and we are doing a very large celebratory intervention this year on the pigeon. But we asked the question, "How are humans a part of that story?" So instead we've taken two displays. In the one on the left we are digitally reproducing the diorama so that we get that nostalgia. A lot of our audience remembers the old diorama and is saddened by

its loss, so we have that. But then the other display will be about species at risk, birds in particular, and the human story via video will be a part of it. We are hoping that we can compare and contrast this concept of the diorama and the new school which includes the human equation. But I really related to Timshel's pigeons. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

- We are not currently interpreting our pigeons and people's reactions are, "Oh, pigeons." They don't stop and look unless we're there to tell them that this is an extinct animal that we had something to do with. • Timshel Purdum, Director of Education and Lifelong Learning, Academy of Natural Sciences of Drexel University

### Highlighting the Making of Dioramas

- What I also liked about Timshel's presentation was the exhibit on the making of dioramas. • Dan Spock
- We love that. I'm sure you've heard of natural history museums referred to as "the dead zoo." We get that all the time. They made the exhibit so that it has the same framework as all of our dioramas and you can now walk into the diorama, and they can touch and feel the displays that are inside the diorama. It has helped us a lot in our interpretation of them. We have less, "What are

they?" and more about what the stories are.

- Timshel Purdum

### Dioramas as Time Capsules

- Many of the 99 dioramas at the Denver Museum are based on real places, both the background and the foreground, from the 1920s and '30s, so we are going back and using them as a sort of time capsule. We are going out and photographing the same exact vantage point, and many of them on the Front Range are now subdivisions. That helps people connect with the intense change

### Spot the: Gnome, Snail, Rattlesnake Button, Human

- Timshel talking about the making of dioramas exhibit made me think about Denver. In just about every diorama the background has a gnome painted on it somewhere. It's "Find the gnome in the diorama background." • Paul Martin
- In Delaware's Museum of Natural History they have snails in all of their dioramas. It's one of their major areas of research. • Timshel Purdum
- The Milwaukee Public Museum, which is going through all sorts of crazy trauma, was a leader with this stuff. I'm sure most of you know about the buffalo stampede diorama that has a little button that's hidden, a little doorbell ringer, and it activates the tail of a rattlesnake. For every kid in Milwaukee for however long that thing has been there, eighty

years or something, it is this secret. That's the first thing they do when they go in is find the button. It is like this code thing in Milwaukee amongst kids and adults. "You're going to the Milwaukee Public Museum? Let me tell you kid, here's where the button is." There's also sort of this weird human trait involved in all of this.

- Paul Martin

- That is extremely popular at our museum. In 2005 we put signs on intro pylons in some of the galleries featuring whatever was happening at the time, and we added some humans to the environment. Now that people know they are there they wait for the humans to show up. We are our favorite thing to look at in these dioramas. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

that has happened over the last 70 years in Colorado. • Ian Miller, Ph.D., Department Chair of Earth Sciences and Curator of Paleontology, Denver Museum of Nature and Science

### Convincing Key Stakeholders about Including the Human Role

- We did an exhibit called the *Age of Mammals*. It was a good idea: plates move, climates change, evolution. The hardest part of that project was talking about present extinction and human determination of that. And the hardest part was with key stakeholders. When you start talking about humans in your exhibits, how do you manage that process of approval or even putting it forward? It was very tough.
  - Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum
- Was your question about funding and funders?
  - Don Hughes
- No, it's that it's hard to talk about extinction and humans' role in that. Putting humans into exhibits is hard, but there was one example where it was very difficult and took a lot of management of expectations about human impact. Since it was a first project we really had to soften it down because we didn't want to scare people about current extinction. We wanted it to be accessible. We also had to manage it in a way that stakeholders were comfortable with what we were saying. • Simon Adlam

### A Subtle, Complex Mix

- The very first thing you'll see when you go inside the gallery is the painting from our collection about our extirpated state animal, the grizzly bear, so I think we're pretty up front about it. What I was trying to say is that this complex mix is crucial. Everybody wants to boil it down to the big idea, the message, and then go into propaganda mode. Maybe what we do is propaganda, but it needs to be way subtler and more complex than that. I don't think we can ignore the way visitors really behave in this circumstance or the things they really want. If we don't address those we might as well forget the rest. • Don Pohlman

- That's one of the things we are going to do from an educational perspective because these are real places. We have that documentation, and it makes a connection to them. They see that. • Timshel Purdum
- How are you going to do that when you compare those locations to whatever they are now? • Susan Schwartzberg, Senior Artist & Curator of the Bay Observatory, Exploratorium
- We haven't gotten as far as Denver, we've just talked about it. We have all the original photos from the expeditions and we have

ways to display that, but we haven't had the chance to go back out and take current pictures. • Timshel Purdum

- We've done that same thing, and the interesting thing is that most of the locations of the dioramas are not seriously developed. They're parks, they're preserves, so we're not going to go there and find a strip mall, but in each place that we've gone to we have seen change that we wouldn't necessarily have predicted. So the environment itself has changed even though it's in a supposedly protected area. We're mounting photos of the place next to the diorama and you can see these ecological changes over time. • Don Luce, Curator of Exhibits, Bell Museum of Natural History
- This is a great idea. We have some ambition to do that as well. Steve Quinn had a grant from the Society of Naturalist Illustrators to go back to the lowland gorilla site. All of the dioramas in our African Hall and our North American Mammals Hall are specific places and are really labored recreations of those places. We would really like to understand that there are human habitations moving in, there is poaching of these gorillas; it's a war. The warden of that reserve was just shot and nearly killed recently. Those are great stories about now and about humans that we really should be bringing in. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

# CLUSTER FIVE

## San Diego Natural History Museum

Beth Redmond-Jones  
Senior Director of Public Programs

I oversee education, exhibits and volunteers and I've been at the museum for nine months. The Natural History Museum is one of 14 museums in the park and we are perceived as elitist, with a grand entrance and big building.



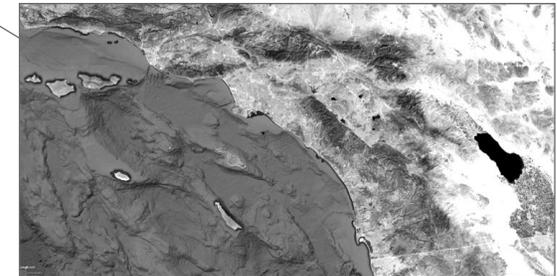
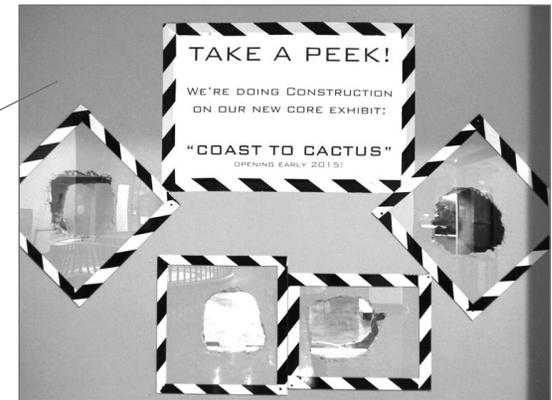
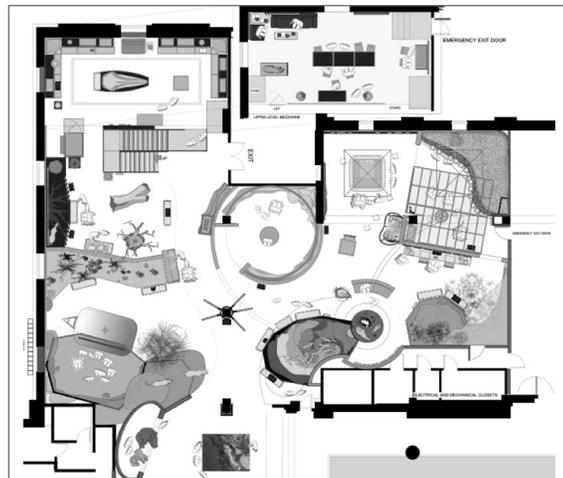
What I want to talk about today is *Coast to Cactus*, our new 8,000-square-foot exhibition on the habitats of San Diego which opens in January.



One of the things I've been working on with my staff is breaking down the walls between the front of house and back of house and engaging visitors in all aspects of what we do, so I put these holes in the wall during my very first week at work and did not get fired.

The area that *Coast to Cactus* interprets is from Point Conception, up at the top here and Santa Barbara down to the border, and from the coast out to the state line. The rest of our mission includes Baja California, and that's coming in an exhibition a few years down the road.

Everything we do in exhibitions at the San Diego Natural History Museum is bilingual. Every single label, every video, everything is English-Spanish. We are writing for the fifth-grade level, and we also have voices of the Native American Community.



**How do these thirsty plants survive summer drought?**

**¿Cómo sobreviven la sequía del verano estas plantas sedientas?**





The floor plan above reflects the way we start at the coast and Camp Pendleton on to the wetlands and Torrey Pines, into the riparian. The area around the canyons, the chaparral, is a curved theater, with the mountains straight across from that and the desert. We have an area on changes over time, and on the upper level, which our team calls “the attic,” we talk about personal memories.

This is in production. The Science Museum of Minnesota is building it with us and are our partners in crime on some of these elements. I have some artisans on my staff and we are integrating dioramas with blown-up spaces and play-based learning.



This is Torrey Pines, which has already been installed. At the upper left you can see a real photo of Torrey Pines versus the diorama that we created that will have taxidermy as well as live animals and arachnids in it.

We then move to the Patio. This is where humans come right up against the habitats in the canyon system there in San Diego. We have fun little quirky things like a rat that runs across the roof and playing with native and non-native species.

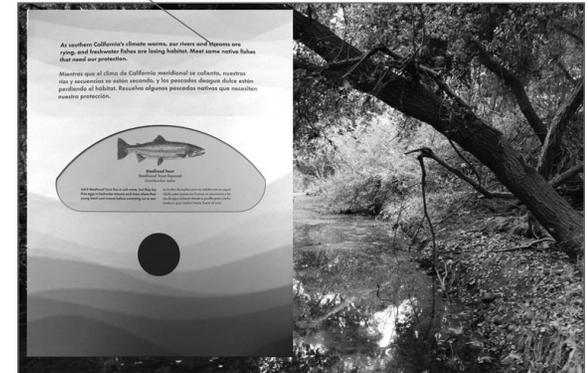


This is what San Diego looks like from an aerial

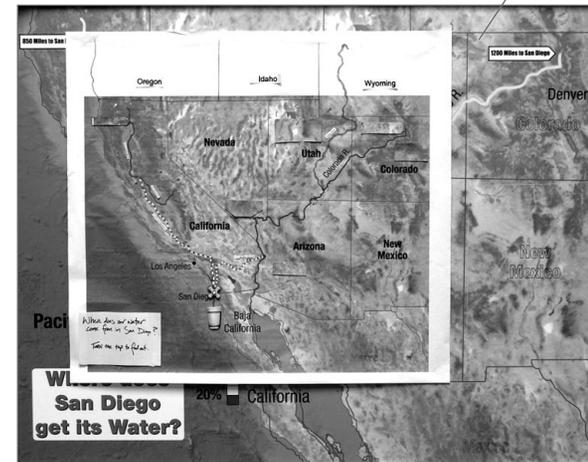


view. You can see all of these interconnected canyons, and this is the way that animals move from the coast to the desert in our community. It is also a place where visitors can be surfing in the morning and skiing by afternoon.

In the riparian environment at the bottom of the canyon we talk about native and non-native species.



Water is a huge issue as it is for everyone in California, but we have found that no one in San Diego knows where their water comes from. Their response is, “It comes from a tap.”



To talk about the chaparral we are creating a blown-out, pop-up story book which is life-size and looks at four chapters of the chaparral story, from late summer going into the fire season in the fall immediately after the burn, and then a year or so after the burn recovery. We talk about how that fire is a really critical part of the ecosystem and the revitalization of that ecosystem, but humans always see it as sad for them because they lost their house or that type of thing.



Going into the mountains, we are focusing on the oak tree and its importance to the habitat and the animals that live there, but also bringing in cultural voice of the Kumeyaay. They required 500 pounds of acorns a year to feed a family of four.

Going to the desert we are looking at the animals that are there and what it takes to survive in that habitat.



Here we have a real Airstream trailer that is so cute the company called it Bambi. We are working with the Science Museum of Minnesota to create an object theater that is in "Spanglish," where we are integrating the English and Spanish into one dialog. So it doesn't matter which language you speak, you will understand the dialog. Everyone shifts back and forth between languages everywhere you go and there is no separation, which is a critical part of the way we live here.

We are also looking at change over time,





changes in population densities and that type of thing. We worked with UC Berkeley to resurvey the Grinnell Mount San Jacinto survey of a hundred years ago.

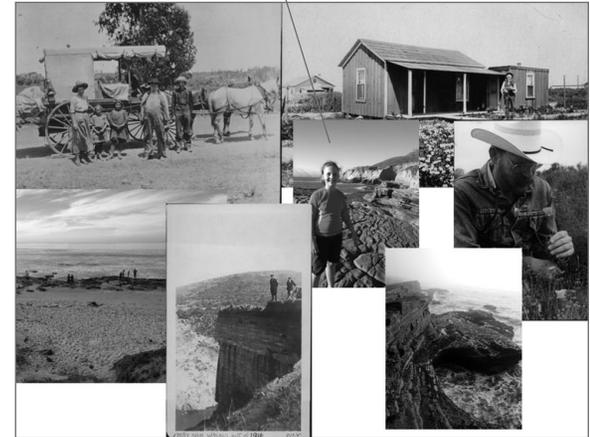
Then we have our “attic,” where people can reflect on their own personal memories of San Diego and how it has changed in terms of both the habitats and in their own lives. Elements of that include oral histories, we have staff picks for places to go out in the area, and so on.



Beth Redmond-Jones



Here are some pictures that I pulled. The cute one in the middle is my ten-year-old.



This involves a huge crowd-sourcing effort. Another aspect of this project is that we are trying to adopt more of a visitor center mentality so that if you come to San Diego and want to know about the habitats we are the place to come and learn about that. We also have these “Where are we” kiosks around the exhibition that tell you how to get out into these places and explore them on your own.

## National Aquarium in Baltimore

Jenny Sayre Ramberg  
Director of Planning and Design

This is the National Aquarium located in Baltimore.



The original National Aquarium was established in Washington DC in late 1800s. In 1981 Baltimore's National Aquarium opened and since 2003 both organizations have operated jointly. I'm going to focus on the whole organization and show you a little bit of the planning that we are in the middle of doing for the future of National Aquarium. The process has been messy but exciting, so I feel like I am showing you the belly of the organization.

The National Aquarium was established to be part of the economic engine of revitalizing Baltimore. All of the area around the water [see map in sidebar] was industrial and with the end of industry in that area, Baltimore wanted to bring business and tourism downtown. The aquarium and Harborplace were created to do that, so it was intended as an attraction. In the beginning, the story and the experience were all about the wonder of the underwater world and we are still about that. The story

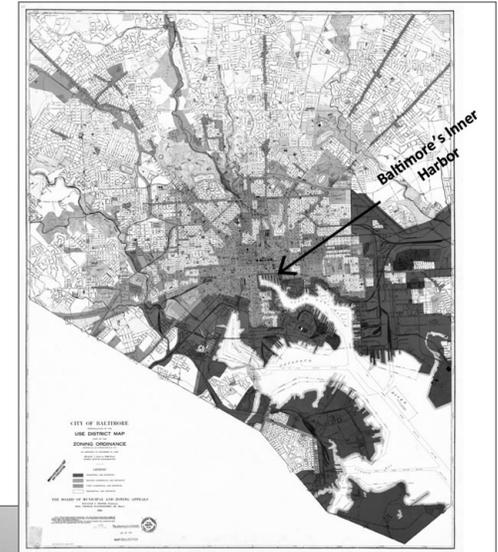
and experience that Chermeyoff and Cambridge 7 set up was that all life is connected through water from the oceans to rainforest.



But there have always been conservationists at the National Aquarium and there has always been conservation work.

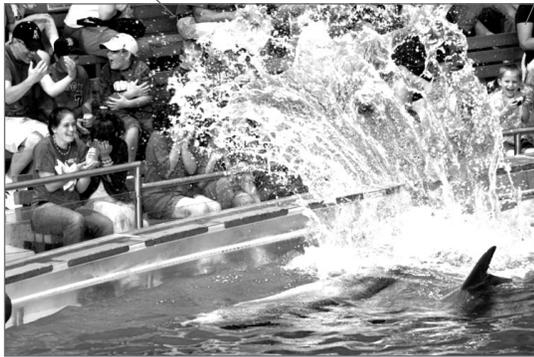


In the beginning the novelty and quality of the whole general experience attracted lots of money and lots of partners. It was really a question of "and" and not "instead of." So it was an attraction *and* it was doing conservation work, including habitat restoration and cleanups.



Jenny Sayre Ramberg





### BLUEprint focuses on four areas

- The future of aquariums worldwide
- Reimagining the National Aquarium experience
- Designing a new role in the nation's capital
- The future of dolphins at the National Aquarium

That early success also led to starting work shortly after the opening on a Marine Mammal Pavilion on the pier that was right next to the aquarium. In the top picture, taken close to the opening, you can see that it's packed.

There were shows seven times a day at some point, completely sold out months in advance. It was extremely popular and everyone loved to be splashed.

NATIONAL  
AQUARIUM  
BLUEprint

But where are we now? About two years ago our new CEO, John Racanelli, came onboard. He has also created a whole new leadership team and has engaged Studio Gang Architects. For those who don't know what Studio Gang is, Jeanne Gang is a MacArthur Award-winning architect out of Chicago. She is working with IMPACTS Research to do some long term planning for the National Aquarium looking at the agenda that John Racanelli set out for them, which includes the future of aquariums worldwide. It also focuses on reimagining the National Aquarium experience. What are we going to do in DC now that we have closed the small aquarium that was there because the building was being renovated? What is our goal

there? And finally, it focuses on the future of dolphins at the National Aquarium.

I gathered from some informal conversations that not many of you had the opportunity to read the *New Yorker* article on Jeanne Gang ["The Urban Wild: An Architect's Vision for a New Kind of Aquarium," May 19, 2014; <http://studiogang.net/news/press/2014/05/newyorker>]. This article was published about four months earlier than originally expected. In the article, she talks about some of the exploratory conversations the aquarium is having about the future—before we talked to our board. So there was suddenly a great communication effort to catch up the board, the staff, volunteers, our zoo and aquarium colleagues about these potentially large changes. We have stated publicly that we are not going to have dolphins any longer, but we don't know what we are going to do and we don't know where we're going to make the change. We are still figuring that out.

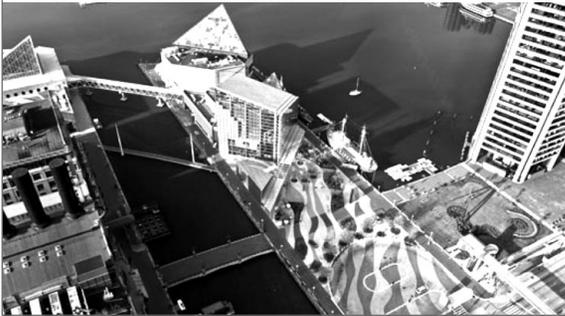
In terms of reimagining the aquarium experience, here are some of the things we are

### Reimagining the Aquarium Experience



planning. We are looking at the Chesapeake Watershed in a different way and opening up, doing more of it outside.

Telling the story of the Chesapeake Watershed—in an even bigger way



This you might recognize from the Exploratorium. We are very inspired by their work and are looking at taking people outside and engaging them in the water around the museum. We are all about the water, and we are on the water, but we didn't have people looking at the water.

Invite engagement with the bay in our backyard



One of the big, wonderful, crazy ideas that the architects have put out is creating a park-like wetlands area in between the piers.

'make a measurable, visible impact on water quality and biodiversity'



But this is what the water looks like after a storm, so we have a lot of things to figure out. All of this trash and debris washes down into the bay.

What about the dolphins? I'd be happy to talk about that more and there are lots of questions there obviously.

Regarding my personal interests during this workshop, we talk about these really big and complex ideas, but I think one of our most important roles as museums of the natural world is to make this kind of connection and experience with nature—excitement, discovery, connection, curiosity, caring—possible because more and more people are getting it mostly from our places as representatives of the natural world.



What about the dolphins?

- Changing public attitudes about marine mammals in captivity
- Aging facility
- Need for a plan for collection
- And now, a very public consideration of the options



A DECADE OF CLIMATE CHANGE  
COMMUNICATION

## Smithsonian Institution

- Consortium across Institution - Anthropocene
- Smithsonian Education Division
- Global research



Meg Rivers

National Museum of Natural History,  
Smithsonian Institution

Meg Rivers  
Exhibition Developer

Natural History is part of the larger Smithsonian Institution, which can be unwieldy at times, but we are trying to work together as a collective. I want to talk about how we are looking at climate change as a whole through the Smithsonian Institution, which is 19 museums and a zoo and a number of research areas across the globe.

What we have done in the last ten years is to create a consortium that goes across institutions, specifically on the Anthropocene: how humans are impacting the environment and vice versa, and us being these unique animals that are doing a lot to the environment around us. The Smithsonian at large really wanted to address this and get communication out there to the public, and also learn how we do this and how to work with one another and the scientists and our educators and our exhibit developers.

Regarding what Natural History specifically has been doing over the last ten years, we have been doing a number of exhibitions. There was a series of exhibitions called *Forces of Change*, which looked at things like soil ecology and conservation and the impacts on the American prairie, in addition to other temporary exhibitions, whether we get them from outside or create them ourselves. This is certainly a topic we are invested in and working on.

## NMNH Temporary Exhibitions

Many temporary exhibitions:

- Climate Change
- Atmospheric chemistry
- Soil ecology & conservation
- The Arctic
- Sustainable agriculture
- American prairie



The Sant Ocean Hall, a permanent exhibition, opened in September of 2008. The *Living on an Ocean Planet* portion in the back of the hall was recently upgraded. Visitor evaluations had shown that no one was using that space. It was a very bad thoroughfare to get to another major exhibition and down to where the restrooms are, which are beside the gift shop. We wanted to make that an interactive space and so we have done a complete upgrade with a focus on what it is to live on an ocean planet. Our visitors are engaged in all of the attractions there, looking at the videos and the photographs and having a great time with that.

It is right next to a Focus Gallery where we bring in artists and sometimes feature one of our artists-in-residence at the Smithsonian who work with our collections. They reflect upon things like climate change and what we are doing to our environment.

The Hall of Human Origins, which opened in 2010, also has a perspective on not only human evolution at large but how humans have

### NMNH Permanent Exhibitions

- Sant Ocean Hall
  - Upgraded Living On an Ocean Planet
  - Focus Gallery
- David E Koch Hall of Human Origins
  - Early human impact on climate



evolved with their environment, whether positive or negative. Again, these are topics we are not straying away from.

Our new learning center just opened, which is called Q?rius (you don't pronounce the question mark). It is a fantastic new space that has a wet lab, a theater and hands-on areas. You can surf through collections and they usually have collections out that people can touch and do barcoding with and then send that information back to their school or their home. It is geared for kids to get really engaged.

Along with this, building on previous success, is our *Scientist Is In* program. That first started in our Ocean Hall with a scientist on the floor for two hours with a cart and their special vest on. They are out there and will talk about what they are studying or anything else they want to talk about and will engage with other curators and with researchers who are coming in to help us out with something. We've had such great

success that we've built that into Ocean Hall and our Hall of Human Origins.

### Education Outreach

- Distance Learning
  - Q?rius learning center
- "Science Is In"



In the traveling exhibition, *Genome: Unlocking Life's Code*, we've tried to incorporate that into a larger component in an educational area in that gallery and will continue to do so. Having that person right there to answer your questions gives you an expert to talk to.

This leads to our next big permanent exhibition as part of our Deep Time Initiative. We are renovating our Fossil Hall. It is closed for five years while we make something bigger and better, which has dismayed some visitors because there are not as many dinosaurs on display, but there are still a couple out.

This new project will bring the visitor's point of view into the exhibition. By using smaller, ancillary projects like *Last American Dinosaurs*, which should open in six months or so, we are bringing back the dinosaurs but also

### Deep Time Initiative

- On-site, Off-site, Online education and outreach
- Increased scientific research
  - 3 fellowships established 2014
- Series of temporary exhibitions
- National Fossil Hall



**Visitor Perspective pre- & post Exhibit**

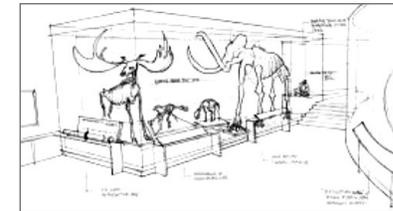
- Visitor evaluation and input during development
  - Exhibition design
  - Language
  - Complex concepts
- Incorporating visitor input in exhibition
  - Immersive media invites visitors to affect change

exploring how we are communicating fairly complex topics like deep time to the visitors. There are plans to do a number of evaluations and have visitor focus groups, while we continue to work with a number of stakeholders and advisory boards.

We are looking specifically at the Anthropocene in this new exhibition and want to have an immersive experience, but we are having a hard time. There are questions I and other participants have posted during these presentations for later discussion and I am dying to bring ideas from those discussions back to my colleagues.

**Anthropocene Challenges**

- Finding new points of entry for visitors
- Not making it a total bummer
- Create surprising and personal connections
  - Experiential learning
  - First person stories



*Organizational affiliations in this Q & A section appear only when the participant first speaks.*

*Jenny Sayre Ramberg (left) and Beth Redmond-Jones*

**Cluster Five Q & A Session****Live Animal Performances**

- So are you going to train the sharks to jump through hoops? • Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History
- No jumping. We've already transitioned to a program that is open all the time and is not show-like, but visitors ask for shows every day. • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore
- Is the decision not to do shows because of

the demand level for shows? Could you still pack shows like you did, seven times a day?

- Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota
- Very possibly, yes. But our marketing research shows that there is a growing trend in public opinion against cetaceans in captivity. But we're in that place where you hear both. Our dolphins are trained to demonstrate behaviors like leaping and dolphins, like dogs or any other animals, need structured activity to be healthy in captivity. So you can see that it's a complicated issue. • Jenny Sayre Ramberg

- So are you considering an exhibit about that dilemma or videos about that? • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science
- That would be so much about being out ahead of it, wouldn't it? We're in reaction mode, but I think that's a great idea. • Jenny Sayre Ramberg
- But the trend is that this whole thing that was this viable business model of watching aquatic animals perform is not a credible business model anymore because there are fewer people who will pay to watch that? • Paul Martin
- But they're still opening. The St. Louis Zoo just opened a whole new exhibit with a sea lion performance area at the center of it. • Jenny Sayre Ramberg
- But it's kind of following the circus mode. Circuses were really popular when we were little and then it was, "Oh, this is cruel to the animals. Is this appropriate?" I think the same thing is happening here. • Anon.
- I've been very closely linked to the Vancouver Aquarium Story and I was a curator at the Toronto Zoo for five years. I think part of the answer is making sure there is a research program there that you have embedded in your work. I think the Vancouver Aquarium is doing a good job of communicating to the

audience that they're Canada's cetacean research team. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

- I think Sea World is a good example of having a research program to allow you to have animals on display, but kind of ass-backwards. They were doing that just to allay visitors' concerns. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

### Unmediated/Mediated Visitor Input

- I am wondering about the bits and pieces, the unmediated content in your galleries. Does that come up as you're developing these big exhibits? We kind of crossed a threshold saying, "Sure, through media or whatever, you can contribute whatever you want." It was a big threshold when we made that move. When you are developing these exhibits do you have those conversations, or where do you sit with it? • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum
- In our place we have done a lot of prototyping with visitors, putting Post-its up and doing that kind of thing. With the crowd sourcing we work one-on-one with people when they send us their stories, so we make sure we are getting the full story and where it was taken so that we can geolocate it on a bigger map. But part of this is that we let people express their opinions. We have a

Dan Spock and Meg Rivers



**IMAX Performance vs. Exhibition**

- We find when we look at capture rates for our exhibitions or for our *Space Show* (and now we've replaced our 2D IMAX with 3D), that exhibitions can't really compete in terms of numbers and ticket sales with the planetarium *Space Show* or even the 3D IMAX now. It's a trend. People seem to want to come in and sit down and have it all happen for them. How do we see that affecting exhibitions as we go forward? • David Ireland
- For me it is that I have all of these expectations from stakeholders, whether upper management within my own institution or what have you, to make things bigger and better. With this Anthropocene Fossil Hall we were told to have an immersive experience and my reaction was, what does that really mean? What is the quality of education that visitors are getting? You have to push back sometimes. • Meg Rivers, Exhibition Developer, National Museum of Natural History, Smithsonian Institute
- I know of at least one history museum where the entire museum is supported by an IMAX, and when I was there last they were showing *Pirates of the Caribbean*. • Dan Spock
- We opened our 3D theater in October 2009. Our museum actually made the decision to not charge for 3D movies, so your general admission ticket covers all of the galleries and the two 3D movies we have. We find that works better. • Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

chalkboard in our *Skulls* exhibition where we have the structure of a dinosaur and then people can draw skulls onto it. One day I was walking by and saw something like, "Tony loves Jesus." I thought, okay. We don't go and erase those things because that is part of an expression and in our opinion that's fine. What is interesting though is when a dialog then starts running, which gets even more interesting. Our visitor services will start calling me and saying, "You'd better take a look at the blackboard. There are some really interesting conversations going on up there." • Beth Redmond-Jones

- We do have to mediate. There are some people coming through posting a ridiculous amount of nonsensical, non-helpful things. We know when we talk to the designers that we need filters on things. But we know that science is changing all the time, and how do you get visitor buy-in if they can't contribute to it? Through workshops and prototyping, we are seeing what can work. • Meg Rivers

**Data Visualization and Wifarer**

- We're in conversations right now (mainly between me and myself) about content and data visualization and how visitors absorb content. Are you having conversations about that? Do you talk about data visualization as delivering content? • Simon Adlam

- We are just starting to do a project called Wifarer (<http://www.wifarer.com/>). I don't know if any of you have seen this. They have it in airports and that type of thing. There are geolocated hotspots within the museum that enable you to access information. We are just starting to talk about this in our museum. What we are hearing from our visitors is that they really want to know what goes on behind the walls for staff only, and they can get a peek into one of our paleontology areas to see what we are working on. So we are looking at how we are going to use that data when you are walking around with that app open and all of a sudden get an alert, "Hey, behind this wall they're dissecting an animal!" We do taxidermy and clean all of our pelts right there. It would be watcher beware because it can be really gross for some staff and visitors. • Beth Redmond-Jones
- So there is no shelter from the coming age of surveillance. • Dan Spock
- I'm trying to push it because I want to open it all up. Our director thinks it has some benefits, and it starts really good conversations. • Beth Redmond-Jones
- We've heard here about purposely adding a wing to open things up. It's interesting how there are different ways to open things up and where the effect is and to what extremes we all go or don't go to do that. • Paul Martin

## Visitor Reactions to the Human Experience

- I wanted to ask Meg a question. You’ve had experience with the Human Origins Hall and now you’re going into the Anthropocene project. It seems to me that humans have a really hard time examining themselves. They do a lot of it. They probably do more of that than any other thing, but getting insight can be really hard because we can’t really be objective. What have you learned? I know you’ve done research on your Human Origins Hall on stuff like that. What are we learning about how we perceive ourselves in exhibits that are really about the human experience?  
 • Dan Spock
- We’re still doing that, even with the Fossil Hall. We just did a couple of different evaluations to find out how people feel about something like climate change and their role in it. For a lot of visitors it’s something they hear out there in the media and they’re not so scared. But I don’t think we’ve accomplished this quite yet. If it’s smaller evaluations I’m not sure where those have come from, and with Human Origins it’s almost a subtheme, but it’s there. I really think this new Fossil Hall is going to make a big mark as soon as you come into the central area in the design. But we are noticing a lot more. We know that there should be a personal connection in exhibitions where people can see themselves. There is actually a small section where we have mirrors up to look at genetic traits. That is the most

popular part in tracking studies, the mirror.

- Meg Rivers
- There are mirrors everywhere, but we can contextualize them so that they become the best thing. • Paul Martin
- It is definitely to look inside yourself, and we are anxious to see what is going to come out of this. But we know that there has to be dialog there. You can’t just put it out there and expect someone to understand everything and come up with a rational explanation of it. So we know it’s ongoing discourse that we hope to facilitate through the thirty-some-odd years the hall will be open. • Meg Rivers

## Provoking Social Change

- One wonders what it would take. I remember in the ‘60s going to the Bronx Zoo and at the end of the Primate Hall there was a mirror behind bars and it said, “The most dangerous primate in the world.” I’ll never forget looking at myself in that mirror.  
 In 1998 we opened the Hall of Biodiversity. Basically we are in the Sixth Extinction, it’s caused by man. There is a book that just came out on the Sixth Extinction (*The Sixth Extinction: An Unnatural History*, Susan Kolbert, Henry Holt & Company, 2014) and we are all doing these halls and stuff. But for me it seems like it has been a heavy lift and a long time. You wonder when the critical mass

## You Can’t Have too Many...

- When you do a session like this with history museums it’s like, “You can’t have too many kitchens in a history museum.” Here, it’s “You can’t have too many mirrors in a natural history museum.” • Paul Martin

## Examining/Evaluating Assumptions

- Regarding the San Diego museum, we want to be places where visitors are oriented to nature and then it helps you when you go out into the real thing. With this *Coast to Cactus* exhibit, will it do that for everybody? That’s a big assumption. We make all of these assumptions about how we will be used. It would be interesting for us to keep track of the assumptions we make and then what we actually find out about them through all of the evaluation and research that we do. • Paul Martin
- That’s called evaluation. • Jenny Sayre Ramberg
- Yes, but it would be cool, rather than this very episodic thing, to do something that actually looks at assumptions and reality. • Paul Martin
- I think more of that is going on in zoos and aquariums possibly than natural history.  
 • Jenny Sayre Ramberg

### Scripted versus Spontaneous Dialog

- You said earlier that you had interpreters or scientists who go out there and talk about whatever they want. They can just have an open conversation with visitors rather than stay on script? • Don Hughes
- Yes. If I'm just walking up and I see Dr. Smith there with a jar of krill or something like that, I can ask whatever questions I want and he can answer those, and if I want to spend two minutes that's great and if I want spend a half-hour that's great. • Meg Rivers
- Would it be greater if Dr. Smith had a script in mind so that he was delivering a specific kind of message that the institution was in favor of rather than just going wherever he wanted? • Don Hughes
- I don't know so much about how the program talks to the scientists, but I know that we try to be careful in general about what we convey to people. They are not just picking a scientist at random. I know the scientist will say, "I'm going to talk about this topic today, and that's what people can ask me about." • Meg Rivers
- So the real question was, are they trained in propaganda, right? • Lori Fogarty, Principal Investigator, Director and CEO, OMCA
- And no introverts allowed. • Dan Spock

of everything we are all doing is going to add up to the social changes that Pat Hamilton was talking about. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

- Maybe never. Maybe we're not as effective as we think we are. • Paul Martin
- Are we honestly going after social change? If we are, I'm not sure we're using the right techniques. • Meg Rivers
- That is one of the questions I have: Do museums actually take a political stance on something or we all too much wusses to take a political stance? • Beth Redmond-Jones
- It's about motivation. I've been sitting here reflecting on what we did and why and hearing from other institutions and it is a complex mixture. There is institutional rebranding: How are we going to get people here, how are we going to be relevant? Then there is the altruistic. In our case we are in Oakland and feel we have a distinctive mission in this local community. And there is the propaganda, the social change. You are balancing all of those motivations, plus the stakeholders, plus the funding, plus the long-time entrenchment. There are some mixed objectives that we are contending with. And sometimes the propaganda and institutional rebranding may not be in alignment. • Lori Fogarty

### Avoiding Heavy-Handed Messages

- We built the Life in Crisis: Schad Gallery of Biodiversity and there were messages about the sixth extinction. Our audience research said that our audience didn't like it, they were being hit over the head. We think our next opportunity is with the Gallery of Early Life. I'm very curious to know how the Smithsonian is going to deal with deep time because I think if we get across to people that two-and-a-half billion years ago brought us extinctions previously and this is another one, they might get it more and they won't feel as responsible (but will still feel responsible). • Dave Ireland
- Responsibility without guilt? • Paul Martin

## CLUSTER SIX

### Exploratorium

Susan Schwartzberg,  
Senior Artist & Curator of the Bay Observatory



As most of you probably know the Exploratorium is not a natural history museum. So I have been wondering as I listen to the presentations—Why am I here? Our history is based in the fundamental principles of the natural world—in physics and perception. But since our move to Piers 15 and 17 we are beginning to look at things we haven't looked at before. We sit on the edge of San Francisco Bay with both the built and natural environment very tangibly present. So we are beginning to look at the environmental context of our new location.

As you can see in the aerial site photo, the new Exploratorium is a campus. Pier 15 is on the left, which houses the museum, the ship at the end of the pier is docked in front of the Bay Observatory. On the right is pier 17, which is currently storage, rental, and some back of



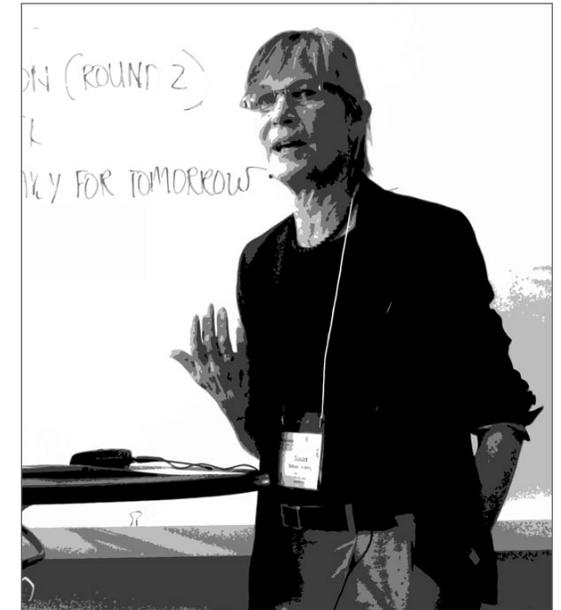
toward a Pedagogy of Place

house operations. Between the piers is outdoor plaza space and surrounding the whole campus is the Bay Trail, which is free public access. Exhibits and programs spill out of the museum into these outdoor spaces.

Listening to the talks today I share many of the same concerns. In the Bay Observatory, a transparent room, we sit on the edge of this extraordinary location with the City on one side and the bay on the other and our task is to make these local landscape conditions more understandable.

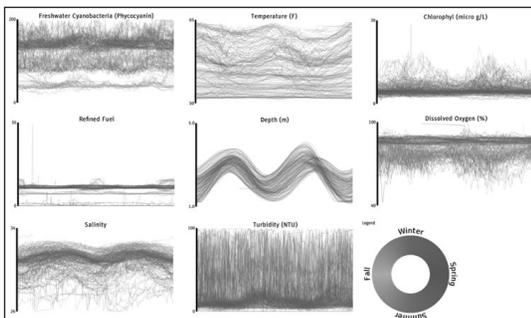


Susan Schwartzberg





Visualizing the Bay  
Exploratorium Piers 15 & 17

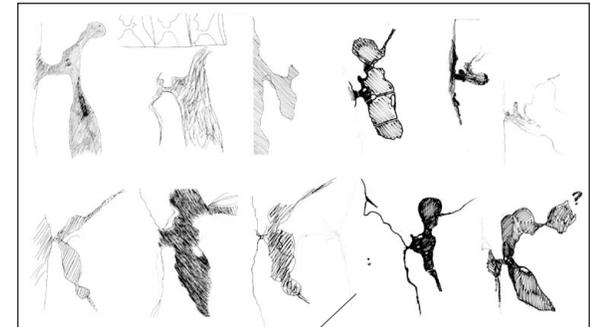


While we do not have any dioramas, this room is a kind of diorama and we are the subjects. In this glass box we design exhibits and programs to connected views in the outside world. You can see that many of the instruments or exhibits point outward. Visitors can engage with an exhibit that might look at the history of the shoreline facing the city, or tidal fluctuations looking toward the Bay. But when a container ship passes by, they are so huge the entire room is arrested, and we are reminded that we are watching the real working bay that we live on. The exhibit collection is designed to encourage ways to see both the built and natural conditions on both sides of the room.

It is interesting that people will use an exhibit but then just look out over the landscape, going back and forth and talking about what they see. This relationship between the exhibit and the landscape is really intriguing and I really love and want to learn more about what people are thinking.

We designed our exhibits as platforms. This is a relief topography upon which we project data. We have a salinity visualization, a population study based on census data; we have a fog prediction model and are working on a sea level rise projection sequence. We hope to combine social, historical and physical data. People have asked for a map that might show property values in the Bay Area. The exhibit is approximately dining-room-table-size, so people talk to each other and discuss what they see and it seems to provoke conversation.

We are also a “wired pier” and are collecting environmental data. We have sensors on the roof and in the water. Working with local scientists we are becoming a host site for them to place instruments. We have a buoy with sensors collecting data on CO<sub>2</sub> in the air and in the water, so we are trying to find ways to talk about ocean acidification. We have another study, soon to be launched, where carbon sensors will be installed on the roof of Pier 15, so we will be part of a Bay Area Carbon Network. We have a set of sensors in the water collecting long-term data on tides, salinity, turbidity, water temperature as well as water quality. By working with scientists we are now participating in research and want to bring this aspect of environmental science to our visitors by learning how to visualize data and tell stories about what it tells us.



Another simple experiment we tried was to ask people to draw the shape of San Francisco Bay. There is a famous cognitive science experiment that asked people to draw a map of the United States and while everyone knew it, the distortions and approximations of size and shape were interesting and revealing about

people’s knowledge. This seems true for the bay as well. One thing you can notice is that no one seems to understand the delta, but everyone knows there is the opening of the Golden Gate. They often know where the bridges are and how the many parts of the bay take on a similar shape of a heron-like bird.

The Observatory is a flexible space. Everything is on wheels, so we can easily have a lecture or a workshop or informal gathering. Our talks are often on difficult environmental issues, but they are also on adaptation strategies, wetland restoration—a recent talk was on a local project that is trying to build more resilient shorelines. So we are trying to bring these environmental concerns into the museum and engage people in conversation.

We are hosting classes in the Observatory and have a set of tables where we have most of our team meetings, hoping to make our process of developing this work more transparent for the public. We want the room to feel active and showcase the work of the classes and colleagues who come to work with us.

We think of the Observatory and its evolving programs and ideas as a kind of field station, an open laboratory, a way to think from the inside and out. We also hope in the future to find new ways to engage people with climate change and the many other environmental issues we face. Thank you so much for inviting me, I am pleased to join you.



Tamara Schwarz



### California Academy of Sciences

Tamara Schwarz, Associate Director of Exhibit Content Development

A Natural Future Institution

I’m going to start by showing you a short video that comes from the Academy’s most recent

annual report. The Academy went through a major evolution when it reopened about six years ago with an entirely new building, and this video is a quick snapshot of the vibrant public institution and respected research institution that the Academy is. Then I am going to talk about four questions that we grapple with and offer a behind-the-scenes perspective of what is happening as we continue to evolve.

**90**  
new species were added to the Tree of Life by Academy scientists

Excerpts from Academy annual report video.



**245**  
citizen scientists made more than 7,000 observations of Bay Area species

**150,000**  
children were wowed during school fieldtrips

**836**  
aquarium residents were born through captive breeding programs



**1,200**  
visiting scientists studied specimens in the Academy's research collections

**100,000**  
visitors learned about ocean health during daily dive shows at the Philippine Coral Reef

And countless WOW moments shaped as many perspectives on life.

“Sustain” is in our mission: “Explore, explain, sustain.” But one of the things that we talk about, probably on a daily basis, is that from an internal perspective it doesn’t necessarily feel like we have effectively defined what we mean by sustainability.

**We’re working toward**

- Articulating what we mean when we talk about sustainability

We are welcoming a new executive director later this summer and when he visited a few weeks ago to introduce himself to the staff he talked about his philosophy of doing good science and science that does good. So I think we are moving into a new phase of hopefully

doing a better job of articulating for ourselves what we mean by sustainability and what we are prepared to ask visitors to do beyond trying to get them to buy memberships.

We are also looking at how we effectively integrate the Academy of Sciences research and the public engagement side of what we do.

**We’re working toward**

- Effectively integrating the Academy’s scientific research with public engagement

We have lots of Ph.D.s, scientists who didn’t necessarily choose their research focus based

on what would be most engaging to public audiences. Working in exhibits, we talk about how to bring their work alive in ways that are relevant and effectively engage our visitors. How do we convey the work that these people do, which is an incredibly important part of the Academy and the impact that it has broadly? It isn't always a straight path from A to Z. Again, with new leadership we are expecting that there may be some shifts, probably with greater focus on applied science.

And we are thinking about how we move visitors to action. One of the programs that we do now is a daily, live presentation on ocean acidification. We are working to educate our

staff about social science that might help us be more effective in motivating action and actually changing people's behavior. So we are thinking about how to frame these topics with values-based presentation techniques and using social norming in how we are presenting some of these really critical issues.

The point about no pointless finger wagging is a sort of pet mantra of mine. I think that inspiring wonder and excitement and deeper connections—something you have heard as a refrain here today—and presenting examples of positive change is a key part of what we are trying to do.

**We're working toward**

- Moving visitors to action
  - as stewards
  - as citizen scientists
- No pointless finger-wagging



**U.C. Museum of Paleontology**

Lisa White,  
 Director of Education and Outreach

At the Museum of Paleontology we do not have a lot of floor and exhibit space. We are primarily a research museum associated with a major university, and I think the education commu-

nity has mostly connected with us through our web resources, so I'm going to use my time today to describe a new web resource that we are working on called *Understanding Global Change*, which will launch at the beginning of 2015 and will build on some of our most successful web resources, *Understanding Science*

Lisa White



Communicating the Science of Global Change: A New Web Resource from the University of California Museum of Paleontology



### Understanding Global Change

- “One-stop,” web-based resource for vetted, non-partisan, scientific information about the nature and impact of global change (the varied ways the Earth’s natural systems change over time)
- Provide explicit evidence: How do we know what we know?
- Highlight biological and ecological responses to, and interactions with, changing environments, including climate change
- Examine drivers and consequences of past change, compare to the present
- Target audience: K-16 teachers and the general public

and *Understanding Evolution*, that together get close to 20 million page views every year. I think communities have really looked to us to be that one-stop-shop for valuable education resources that are somewhat easy to utilize given the complex nature of the material.

I’m going to give highlights from this project we are about a year-and-a-half into, funded by Gordon and Betty Moore Foundation. These [bottom of page 71] are the logos of some of our partners. I don’t have time to go through the needs assessment data that we collected as we formulated what exactly to focus on in this web resource, but as a number of you have presented already that are working with climate and global change themes, you can certainly figure out what will be the main big ideas.

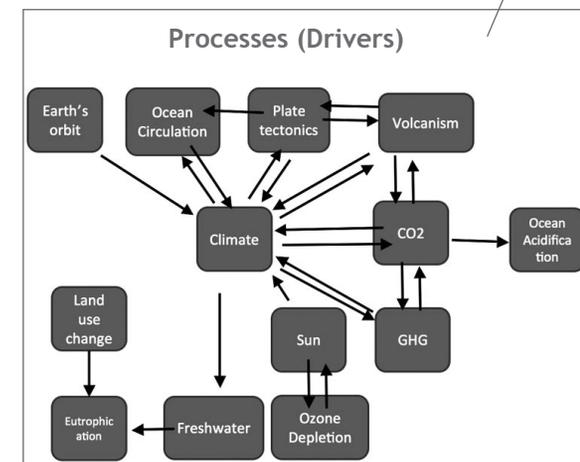
We did an electronic survey of teachers about a year ago before we brought our advisors in and asked them to help us target the big ideas. There were about 1,500 responses to a survey asking what they would want to prioritize if they were to teach about global change and what they would be looking for in a web resource. Our primary community that we want to target is K-12 instructors, but there will be plenty here for the undergraduate audiences as we’ve experienced with some of our existing sites.

Even coming up with a definition [underlined at left] is a process and is being revised. We are not doing this website for everybody to come away with that definition. We just want to show the range of change that is occurring

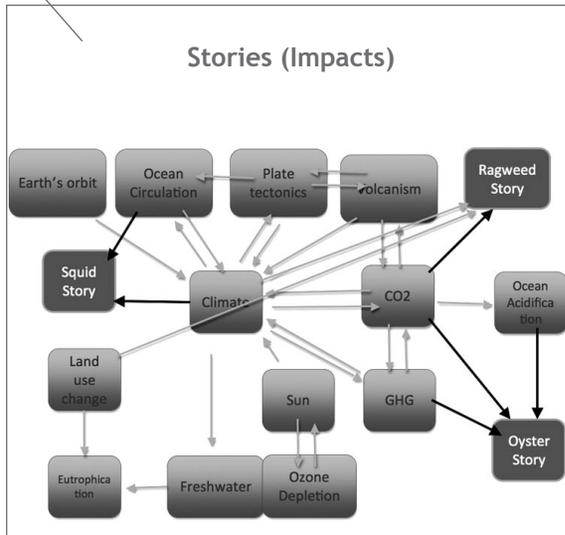
on our planet and how you can teach and learn from that, and what scientists are continuing to understand and explore given how much the earth’s vibrant physical nature is changing.

It has been a great experience coming up with what these big ideas are going to be and how we want to design this web resource. Some of these products might be too back-of-the-house in terms of what we are going to do with this web resource, but I thought it would be worth showing because again, many of these topics have already been raised by many of us and I’m sure your museums are grappling with these in exhibit space. How do you bring to life what is happening on planet earth and make it relevant in ways that make people want to learn more about it? We want them to incorporate this information into what they might be learning in a structured environment.

We are taking an approach that will equally make explicit some of the drivers of global change and some of the impacts as well. We



want to highlight the impacts with what are going to be stories or narratives about places around the world where we see these impacts really happening. We certainly want to appeal to a variety of audiences, and the squid and the ragweed and the oyster stories are just some of the early coastal stories that we are outlining.

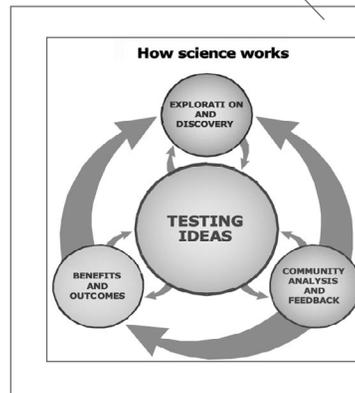


Examples of biotic impact stories	
Story	Driver
<b>Amphibian decline</b>	Ozone Climate Land-use change
<b>Humboldt squid range expansion</b>	Climate Ocean circulation
<b>Increase of allergies to ragweed</b>	Climate CO2 GHG Land use change
<b>Permian extinction</b>	Volcanism Plate tectonics Ocean acidification Ocean circulation Climate CO2 GHG
<b>Oyster shell breakdown</b>	CO2 Climate Ocean acidification

as a professor at San Francisco State University, where I taught geology, oceanography and paleontology, and worked with a lot of diverse communities who may not respond in the same way to the characteristic megafauna that we all do. A polar bear or a dolphin being under siege may not be what motivates this group. So I'm really looking at ways of bringing those areas of emphasis to this new web resource and using some of our most popular resources, our *How Science Works* flowcharts.

Because we are a paleontology museum we feel it is important to tell the deep time story as well as the Anthropocene, so there will be equal treatment of human impacts and what we see occurring naturally on earth. We are not trying to undermine or weaken the story that humans are definitely a big overprint, but it is important to provide perspective upon which to build knowledge.

I should mention that some of what I bring to this project comes from 20 years of experience



Understanding Science and Global Change Drivers in Diverse Communities

*Organizational affiliations in this Q & A section appear only when the participant first speaks.*

*Tamara Schwarz (left) and Lisa White*



I would ask us, too, to not forget about a big reason why we are all together here: supporting teachers and *Next Generation Science*

*Standards*. There are ways we are going to be mapping to the standards and aligning with the standards.

## Cluster Five Q & A Session

### Formal and Informal Education

- One of the things I'm interested in is the spectrum of formal-informal education and what that's about. To what degree are they separate, to what degree are they a continuum? The fuzzy side of me wants to say they're a continuum and there aren't any hard boundaries. The more realistic exhibits person in me says that's not correct because an environment like a museum works in a completely different pedagogical fashion than a classroom does. We offer programs, and teachers bring students in to experience those. I wonder if you could think about that, how that education containment works.

- Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History

- That's both the beauty and the challenge of web resources, where we set out with a pretty structured kind of way that we hope people will utilize the resources. At least there's a plan, there's a conceptual framework, there are some guidelines for educators. If they are working on a particular topic or activity, then we want to be there.

It has been interesting over the course of the 25 years since the UCMP put that first dinosaur up on the web (which is something we credit ourselves with) when the web was in its infancy. There was a lot of need to really add information about all of the pretty pictures of dinosaurs. You put the stuff out there and they come, but you don't know what they're going to do with it or how they're going to utilize the information. So at some point, from our perspective creat-

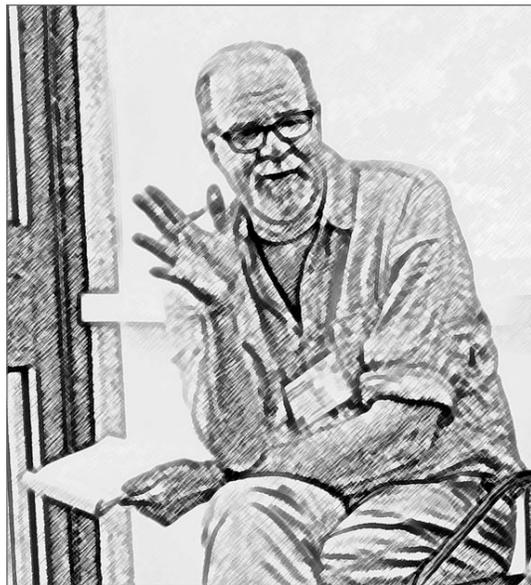
ing all of these web resources, you just step back and let the public have at it also and utilize our web resources as much as educators do. Then you hear back from users about what resonated and try and use that in the next generation of whatever it is you are doing. • Lisa White, Ph.D., Director of Education and Outreach, University of California Museum of Paleontology

- We have a very robust teacher education program. A lot of teachers come back every summer and throughout the year and take refresher courses. There's a really great dialog between our Teacher Institute and teachers in the classroom. They really try to cater to the fact that a lot of teachers don't have very much money and need to create things quickly. They also give them tips on how to better use our environment for the things they are doing. In that way we are really closely connected to formal education.
  - Susan Schwartzenberg, Senior Artist & Curator of the Bay Observatory, Exploratorium
- I think in our case there is certainly overlap, but informal exhibit visitors have very different sets of motivations and agendas from formal audiences. They all make use of exhibits. At the Academy we work together. We have educators who are part of our exhibit teams, but not the other way around.
  - Tamara Schwarz, Associate Director of Exhibit Content Development, California Academy of Sciences

- The trend and the thinking about this seems to be in-school and out-of-school time. If you have a field trip to a museum it's out-of-school time. So it's interesting, it's like classroom and not-classroom. Folks are really thinking that way in terms of there being a different thing that happens in the classroom and exploring what the connections can be between the two and all of that. In a lot of museums there are two modes: when there are school groups there and when there are not, though I think there's a lot more nuance to it now.
  - Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota
- I just got a recommendation from Lori to read a new document on education and museums from the Center for the Future of Museums that addresses this question exactly and it's very exciting. It is about the role of museums and other institutions in pushing what formal education can look like. Also, there is a project that we are doing with sixth graders that involves them using our galleries to research questions that they came up with. We received the greatest compliment, which was, "It's so much better than the Internet and it's so much better than a textbook."
  - Amy Billstrom, Assistant Director, Learning Initiatives, OMCA
- We are experimenting with *Coast to Cactus* in developing our K-8 curriculum for that exhibition. We have a curriculum developer and

### Formal Education Tapping Informal Resources and Inspiration

- We have a community college right across the street, Laney College, and teachers send their students not as a class group but as individual visitors to the museum. English classes are going to the Natural Sciences Gallery! Talking to a writing teacher here, turns out she is bringing her class to write about human experience using our Natural Sciences Gallery. To go back to what Matt had asked, it's a stimulus, and it's informal as a continuation, and then once back in the classroom, it becomes formal again.
  - Mary Jo Sutton, Co-Principal Investigator, Exhibit Developer, OMCA



Dan Spock

we have a team of science teachers working with our exhibit team and our educators. We are cross-interdisciplinarily developing this curriculum based on the standards but also using a more interdisciplinary project-based approach instead of just having worksheets in the gallery. It's something we're really excited about and a little terrified about as well because this may be a total flop. • Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

### Changing People's Minds and Actions

- We're talking about that divide between formal and informal and I think part of what we've contended with as professionals is knowing that in an informal learning context people are really in charge of the tap in terms of information, absorption, retention. How does that challenge our thinking today when we've been talking about propaganda? How do we move the needle, not just in people's thinking or their knowledge level but in making something happen in their lives or making a difference? Do we know any more about that now than we ever did, or are we just barking up the wrong tree? • Dan Spock, Director, Minnesota History Center
- My background is in rhetoric and teaching college English and before that I was an advertising copywriter. After getting my doctoral degree in rhetoric, the conclusion I came to is that no one is ever persuaded to do anything that they don't already want

to do on some level. Advertising sells products by giving people ways to achieve the goals they already have. A question I want to pursue in discussion groups is: Should we consider moving from the role of communicators to the position of facilitators? • Matt Matcuk

- Pat Hamilton was at a conference two years ago where they were talking about climate change and whether we had to push climate change in museums because everybody who comes to a museum is already concerned about climate change. And Pat said, "I don't think that's true." How many of you are familiar with the *Six Americas* study [*Global Warming's Six Americas*, <http://environment.yale.edu/climate-communication/article/Six-Americas-March-2012>]?

Pat got the protocol from the folks at Yale and George Mason and we did it in our museum a couple of times, and we mapped almost identically to the national population. In response to global climate change it runs from "concerned" to "dismissive," which also maps "conservative" to "very liberal." We had just about the same level of "dismissive." The segment we didn't have at the museum was the "unengaged." That segment as a profile is so busy with the rest of their lives and making ends meet and things like that, that they are not in museums. It has been three years since we did this study, but three years ago there were as many deniers coming into the museum. So if we think that

everybody coming into the museum is down with climate change we are mistaken. And, again thanks to Pat, we have this global climate change statement that we put up front, and a statement about evolution. So we have taken positions as a museum that give our staff a place that we all can defend each other from as we express this. But visitors come with the values that they come with, and they are not our values all the time. • Paul Martin

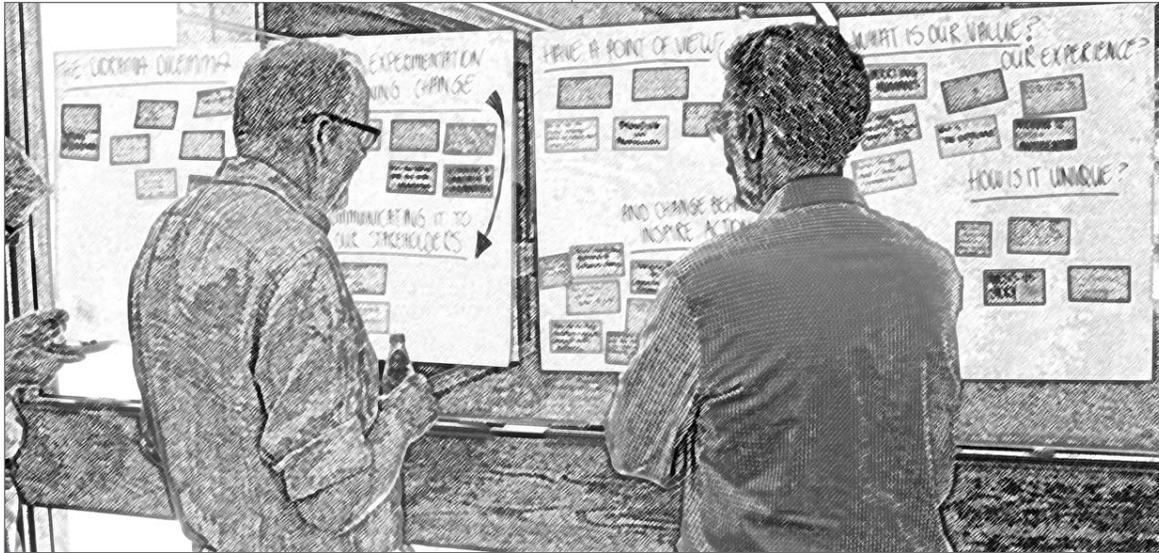
- I have a comment that relates to propaganda and what we can and can't do. After doing this for a really long time my feeling is that we are always wanting to jump to, "I have something to tell you." What I think we really can do and what we have to do anyway if we want to deliver some propaganda is to break you out of whatever is taken for granted or preventing you from even listening in the first place. I think it's that disruptive part of what we do that is the part we can actually do well, and we ought to worry about that first. • Don Pohlman, Co-Principal Investigator, Senior Exhibit Developer, OMCA

### Opening Up the Black Box; Out on the Floor with Visitors

- One thing I noticed today in people's descriptions of their museums is that museum staff seem to be on the floor more than they used to be. The museum isn't such a black box where you build an exhibit and it's done and everybody goes to their desk and designs the next one. I just feel, especially with the new Exploratorium, that we know our visitors better. We are out there, we all have to wear badges, which we never had to do before, and visitors come up to us and tell us things, ask us questions, and give us opinions. They tell us, "We don't need graphics for this because we know what we want to do here," things like that. It's amazing to me. There's more of a relationship, and I sense that in people's descriptions. • Susan Schwartzberg

Audience Q & A



*Perusing thematic topic clusters*

Based on the museum presentations, participants identified six major themes with a cluster of questions and ideas regarding each of those themes. They then self-organized into two rounds of breakout conversations and the results are summarized below.

*Human Nature discussion*

## HUMANS AS PART OF NATURE

### Report Out

Don Luce, Curator of Exhibits  
Bell Museum of Natural History

How do we communicate that humans are part of nature? We went round and round about why there is this difference, about anthropomorphism, about how we get at these issues regarding humans' enormous impact on the environment. We talked about the fact that we are such an obvious part of this environment

that we are changing. And we talked about how we overcome this human-nature separation.

I played a bit of a devil's advocate, in that one of the roles that natural history museums play is for people like me who want a break from the rest of the world that is dominated by humans, a place for misanthropes like myself who do not want to deal with our kind.

We also drifted back to this discussion about the climate changing and the interaction of humans with the environment. Are we an unnatural part of things or are we part of this natural process? Are we capable as a species

of changing our behavior looking farther out? What are the drivers for that change? Would that have to do with self-interest or economics or cost-benefit? At which point do we reach a tipping point? Because it is clear that tipping points can be reached.

### Excerpts from Human Nature Discussion Notes

- Is this a place for misanthropes? Is that possible?
- Extinct collections & are changes beneficial?
- Social creation of nature
- On the upswing of a crash cycle
- Awareness of deep time
- Humans changing fast—this is the most interconnected, educated generation ever
- Can we respond without an existential crisis?
- Can we learn from history, from parents?
- Connect with “animalness” - empathy
- Commonalities—predator to predator
- Anthropomorphism: good or bad?
- Competition vs. cooperation—“survival of the fittest”
- NMNH: religious leaders embrace exhibit after outreach effort
- Self editing—get ahead of the issue, be more forward thinking. People will be living it whatever we call it.
- Survival of museums vs. survival of the environment—not a persuasive choice?
- Resilience—climate change. Real focus on adaptation, not blame. Example: district energy retrofit
- Oysters as a wave buffer instead of concrete
- Climate change not far off—cost of adaptation vs. inertia
- Choices ROI: When it becomes cost effective
- Race between fear and hope
- Sacrifices made for an unknown future value not economically logical

*Human Nature discussion*



**Initial Questions/Ideas:****What is Our Value? Our Experience?**

- The completion of an exhibit should be the start of a project, not the end.
- Sense of place: Does this approach help with storytelling & environmental connection?
- What is “the experience”?
- Experience & technology ahead of science museum & communication
- What happens when core collection changes? What is core to what we are?

**WHAT IS OUR VALUE? HOW IS IT UNIQUE?****Initial Questions/Ideas: How Is it Unique?**

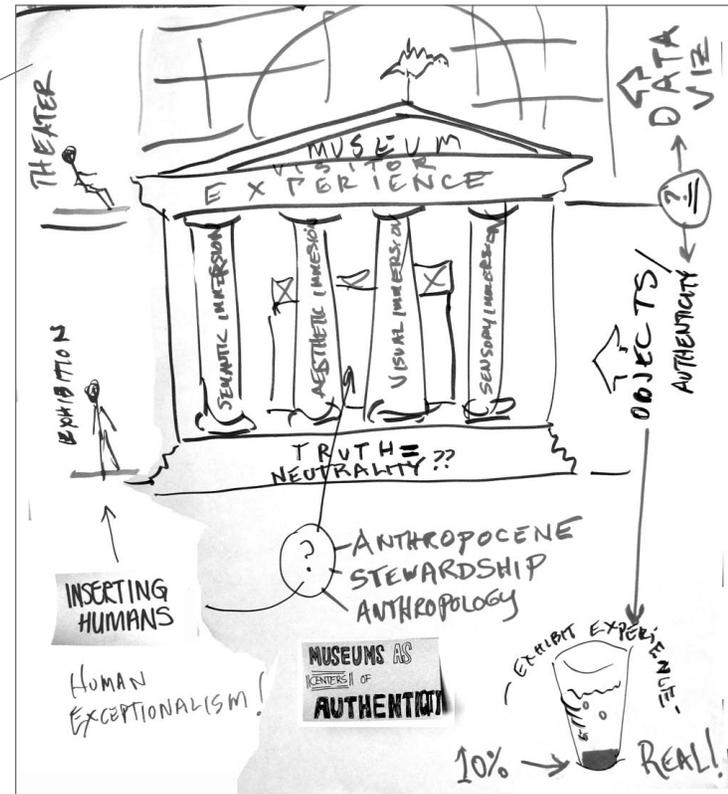
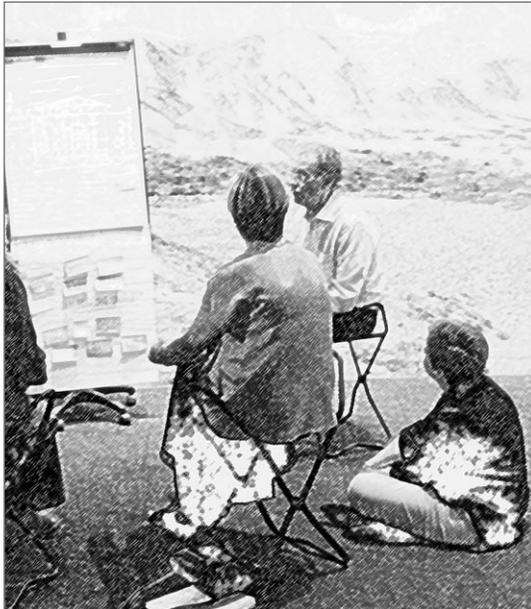
- How do we change our thinking about how exhibits are made? What challenges exist in bringing a team together under a shared vision? (Especially as we try to be more experimental and innovative.)
- Remediation that is transparent and expected
- Thesis vs. story
- How can science become stories and stories become morals?
- Data visualization
- Finding hidden/secret content
- Authenticity
- Inserting humans

**Round One Report Out: Truth and Authenticity**

David Harvey,  
Senior Vice President of Exhibitions,  
American Museum of Natural History

Here we have a Neoclassical façade—the connotation for which, humorously, is that the best museums must be the ones with the most columns! We talked about the real object and about data and authenticity. We present an object and people assume that there is authenticity, even if it's a model, and if it's taxidermy they think it's real. Of course the facts are in the label copy. So why does the data that we visualize have authenticity for people? Is it that it is being presented within the context of the museum? Is it because we have science and scientists behind it?

Value discussion round one



So is authenticity an attribute of objects? Does the visitor trust or assume the authenticity of data in the same way? To what else? Does it mean that anything that happens under that roof is somehow authentic?

Which led us to talk about truth. Others have said that people come to the museum for some kind of truth based on science. It's not faith-based, it's science-based. But then we had a whole discussion about neutrality. If you're going to be an advocate, that might serve an immediate purpose, but does it erode the public sense of your brand, that sense of neutrality because you've taken a position rather than simply putting information out there to allow visitors to reach their own conclusions?

Lori Fogarty,  
Principal Investigator, Director and CEO, OMCA

We talked about the aesthetic part as well, the design aspect, and how the immersive environment of the experience of authenticity also has a lot to do with the beauty and the design and the authenticity of the detail. There are science institutions that don't do that well, and we talked about it on a spectrum, starting with Disneyland (although there are things Disney does really well).

### Round Two: About Authenticity

Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

Someone brought up the report on the future of 21st century education in America [*Report*

*on Learning for the 21st Century*, <http://www.medialit.org/reading-room/learning-21st-century>]. We are all wringing our hands saying we are struggling for relevance and the effectiveness of museums in a society that is changing all around us. That report is about the education system and how it is crashing because it is a very old, Industrial Revolution model and it doesn't fit today's paradigm. The beauty of that report is that it's saying this is a golden opportunity for museums and informal education to really become bigger players in education.

The discussion then becomes what we bring to the table. Obviously authenticity is one of the things we bring. It's fascinating what the previous group said, and we took issue with it as well. Some people are saying, "Well, we've got the real stuff, so they're going to come back to us. You want to know about climate change? They're going to come to us because we've got all of these dead things that go back hundreds of years." It's infuriating.

To cross over and talk about collections, why should there be squirrels going on *ad infinitum* in cases? The specimens that we're taking now are just these slivers of DNA. They go through all of this crunching and they come out as visual-

### Losing Value?

- I want to push on this one a little bit. Is there something in this about whether we are losing our value if we keep doing what we are doing, that if we keep thinking the way that we're thinking in this room we'll have less value?
- Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

Value discussion round two



### Larger Group Discussion: Authority and Neutrality

- In the 21st century mode of education that Roy referred to, there is a major movement towards decentralization of authority. It used to be trusted at a level and now authority is being placed more in the hands of a wider group. There is that shift and it requires transparency. Saying they don't trust us because we're not neutral is a losing battle. It makes more sense to say we'll show them that we're not neutral, then they'll trust us because they know that we're showing our cards. No one is neutral.
  - Matt Matcuk, Ph.D., Exhibition Development Director, Field Museum of Natural History
- We talked about that, the myth of neutrality.
  - Lori Fogarty
- There's got to be some difference if there's a distinction between neutrality and objectivity.
  - Dan Spock, Director, Minnesota History Center

ization. There's no other manifestation of it. There's nothing to stroke or to relate to in that way. So that is an interesting thing to start asking about. How do we deal with that?

We also talked about dioramas and authenticity. Are they real? We decided that the framework of authenticity is centered on the viewer. For example, if you're a kid from Philadelphia seeing those dioramas at the Academy at Drexel, you're seeing this beautiful creature and it's as dead as a doornail, but every bit of it is real, just as real as if that kid did get a chance to go out and see that creature in nature.

Timshel Purdum,  
Director of Education and Lifelong Learning,  
Academy of Natural Sciences of Drexel University

We talked about how sometimes authenticity is created by the viewer as well as the object being real or not. Sometimes the experience is authentic, so it's not just putting the real thing in front of you, sometimes it's the importance of the experience that you've created, and that's real to you.

### Larger Group Discussion: Reality & Artifice; Fun vs. Education

- I had the realization a number of years ago that part of what people like about museums is that we are really good at fuzzing up the line between reality and artifice. There is something magical about that, the potential for disbelief.
  - Dan Spock

- This refers to what I was saying earlier—we know that you know we have created an exhibition element, but if we do it well, you will suspend your disbelief for an “aha” moment.
  - David Harvey,
- And it takes the aesthetics. When you realize that somebody put a hell of a lot of work into that and you've never seen anything like it before you know that it must be important because these people put all of this effort into it. It's like a Fabergé egg.
  - Roy Campbell
- Did I talk about the “cheese factor” survey during one of my visits here? The exhibition *Pirates* was done by a commercial firm, so of course our scientists were beside themselves with rage. The comment you heard most frequently from them was, “It's so cheesy!” There are all of these wonderful dioramas of things like a guy sawing a leg off and guys getting drunk in a tavern.

I decided I wanted to do a study on this exhibition about the cheese factor and how that affects people's view. What the study basically told us was that every single visitor loved the objects. It had great objects. You could touch a piece of gold that was the only pirate treasure ever found off the coast of the Americas. So it had incredible objects, it had sound scholarship behind it. We asked what people learned the most from and the response was, “The labels.”

Then, “What is the thing you liked most besides the objects?”

“The dioramas.”

“Did you learn anything from them?”

‘No.’ They knew that this was not being presented to them with the intent to convey detailed historical information. • Matt Matcuk

- The part of that exhibit that I really liked was the performers who were in costume. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium
- We did that differently than in other places. We decided we would augment it with performers. • Paul Martin
- They were terrific. They were some of the best I’ve ever seen and they stayed in character. When you asked them about the plague or whatever they just stuck right with it. • Don Hughes

- We had scales for entertainment and education and told them, “Zero is all entertainment and no education, and five is all education and no entertainment.” When we asked them where they would rate it they said 3.7. They thought it was highly educational. Which provoked further wrath from our scientists. • Matt Matcuk
- We did a study because we were having an argument internally about those who come for fun and those who come for learning. We did this back in ‘97 and Don Pohlman was part of this. When we did the study we found they come for fun and learning except for those who come for learning and fun. And it changed us. We didn’t argue about that anymore, we had all sorts of new things to argue about. • Paul Martin
- The public is telling us, “That’s your distinction, not ours.” They expect both and they value both. • Dan Spock

**Excerpts from Value/Uniqueness Notes**

- We have the real stuff (Is this true?), but how good really are we at communicating with real stuff?
- The stuff is expensive to keep, so is it really the research, that story that is really the most valuable? It’s not just about “stuff.”
- Dioramas—are they real?
- Authenticity: Where do we place the value? It’s a matter of your place; the framework of authenticity is centered on the viewer.
- Data visualization - blending art - displaying real-time data in compelling ways
- Accessible collections online to “self curate” - Q?rius
- Museum make a lot of things accessible to a lot of people.
- Is it okay to get the scientific concept forward more than the scientific fact or “truth”?

**Excerpts from Value/Uniqueness Notes**

- Twenty-first century educational environment provides opportunities for museums
- Museums are great because of lack of linearity—open experiential learning
- Science as an inquiry-based endeavor—that’s what museums bring
- The education system is a 19th-20th century model that is collapsing.
- Universities are now seeing the museum as a resource—inquiry-based techniques (Drexel)
- Passion, positive emotional experience
- Many scientists track back to an emotional or critical experience in a museum or nature
- Self-driven exploration, motivation

## THE DIORAMA DILEMMA

## Initial Questions/Ideas

- “Playing” with dioramas
- Digital dioramas?
- What would interpretation and programs look like if we treated dioramas like art?
- Re-mixing the diorama genre: can we imagine more?
- Should we build new, contemporary dioramas?
- Dioramas as timeless objects
- With unchanging dioramas, looking for ways to provoke deep conversations with public on changing environment
- Diorama: Artifact? Media? Experience?

*Diorama discussion*

The  
Cheese  
Factor!

Authenticity of  
experience vs.  
authenticity of  
objects

*Diorama discussion*

## POINT OF VIEW/PROPAGANDA; CHANGING BEHAVIOR & INSPIRING ACTION

### Initial Questions/Ideas: Have a Point of View (aka Propaganda)

- Should museums take a political stance on an environmental issue or should we remain neutral?
- Will taking a stance on a political environmental issues hurt visitorship? Membership?
- How does “necessary” compete with “nice”?
- Sanctity of being objective—being objective sucks. Best way to change this with institutional inertia?
- Branding not propaganda
- Do we risk our “trusted messenger” status by talking about propaganda?
- When visitors don’t like the truth, what do we do?
- Should we move from a model of communication to one of facilitation (sparking & enabling dialogue rather than directing it)?
- Instilling hope and enthusiasm is a form of propaganda

### Combined Report Out/Discussion

Lori Fogarty,  
 Principal Investigator, Director and CEO, OMCA

The use of the word “propaganda” in the presentation this morning distilled it and provoked people. There were a lot of questions about how best to do that, leading to conversations about rhetoric and advertising. If we really want to express a point of view, do we need to use different techniques than we have before? Do we need to do more than just putting it out there in a label or a brochure or using traditional exhibit techniques?

We got into this idea of branding and entertainment similar to what an earlier group

talked about, and whether you have to create a different kind of experience. Matt introduced us to the “spectrum of whoredom” [judgmental attitudes among museum people regarding their roles and the degree to which they’re selling out on an ascending pejorative scale, from scientists, to exhibit developers, to PR staff, to the director]. The question was, how far do you go to seduce people into actually understanding?

Then we talked about morality and a civic role of the kind Pat Hamilton talked about. There are different ways to think about propaganda and about museums having assets other than exhibits and programs. There are different kinds of roles museums can play, and we were

### An “Aha” Regarding Propaganda

- It works! • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

### Initial Questions/Ideas: Change Behavior & Inspire Action

- How can museums be transformational places for environmental action?
- Social marketing approach to behavior change
- Does caring precede action or vice-versa?
- How you know you have action with guest?
- Changing attitudes vs. connecting with values, empowering
- From knowledge to caring?
- What happens when we scare visitors?
- Engage visitors in climate change in 2 minutes
- How do we help children and adults connect with nature?
- How do we engage children in issues about biodiversity loss, climate change, and other environmental issues?
- How do we help visitors when “green guilt” and “eco-fatigue” are where many are coming from?

### The Fate of Exhibits

- So are we saying the Seventh Extinction is exhibits? • Dan Spock, Director, Minnesota History Center

### Broadening Reach

- It means focused engagement and broadening the reach of engagement. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

intrigued by the idea of moving into the policy level and being more at the table.

Don Hughes, Vice President of Exhibitions,  
Monterey Bay Aquarium

At the Aquarium, big piles of money are being invested by the administration and the director in political action in Sacramento and D.C., and in social media because those can reach more people than the exhibits can reach. When you say we should diversify, it depends on the mission and how you want to accomplish that mission. That is one way I think an institution can broaden their reach if they have a specific goal. Some of our missions are very centered

on experience and some are on saving the world.

Lori Fogarty

We talked about tools, with the Monterey Aquarium's "Seafood Watch" probably being one of the most effective tools around that extends beyond the museum walls, and what a simple but powerful thing that is. Part of what we talked about then is different types of structures and approaches within organizations because it's probably not just at the administrative level or at the exhibit development level, there are different structures, approaches across that whole span.

Don Hughes

I rarely get an opportunity to thank Jenny Sayre Ramberg for coming up with the "Seafood Watch" cards.



*Propaganda/Behavior discussion  
round one*

### Excerpts from Propaganda/Behavior: Round One

- Feelings about propaganda & rhetoric
  - We raise the questions, advocates for climate change
  - Fear: what happens if we scare our visitors?
  - How do we empower visitors? Tools? Knowledge?
  - Outcomes? What do data/results show?
- No more research – need end products, intent, action
- Points of view - multiple angles - see the spectrum, where do you land?
- How safe are we?
- What isn't propaganda?
- Where are visitors and how do we allow them to do what they want to do?
- Facilitate conversations (e.g., about race with a talking circle)
- Foster conversations in the museum (as a safe place). Here's how I feel, think, etc.
- Design elements that foster conversations, asking questions, multiple perspectives, from human to human
- Moving from communicators to facilitators
- Bring non-scientists, non-experts into the climate change conversation
- Amount of information/effective rhetoric doesn't matter, but get them to make an opinion with our biased info
- How do we present problems without solutions –spark the conversation
- Begin from place of call to action, not questioning climate change's truth
- People connect to museums emotionally first, cognitively second
- Give audience safe space, a voice, scaffold info
- Propaganda
  - White - more resilient
  - Black - hidden
- Telling stories about science: subjectivity vs. objectivity, meaning making, multifaceted, iterative storytelling
- Our job = presentation of these stories, tweaking these stories
- Presenting viable options
- If visitor leaves feeling guilty, exhibits have failed

*Propaganda/Behavior discussion round one*



## Excerpts from Propaganda/Behavior Notes: Round Two

- Frank honesty - radical failure of what isn't working
- Pushing point of view? Couched in objectivity & "learning"
- Need to think about it totally differently - "branding" - draw people in (à la Nike). What if our brand is environmental action? Techniques of advertising
- Applying social science principles to programs/exhibitions
- Taking needs & desires that people already have. Don't talk about features, talk about benefits
- Examples of this?
  - Museum of Terror
  - Wall Museum, Berlin (the story: creating the sense of urgency)
- Civic role - other assets museums can offer
- Changing philosophy requires internal institutional philosophies
- Shamboozle & hoodwinked - entertainment & education
- Experience of meaning-making - meaning is the star
- Spectrum of whoredom from scientist to director
- Policy & civic sphere - shift in the research area with scientists
- More focus on human impact
- Even including human perspective & impact is a point of view
- Blurring of objective/subjective
- Proactive ways beyond our walls - new tools
- Different levels of organization
- Different approaches (labels to fundamental change)
- Different measures of success & evaluation
- Brand - Can it get too homogenous?
- Need to create social change is the brand & institutions are the retail outlets - collective action

*Propaganda/Behavior discussion round two*

# TAKING RISKS, EXPERIMENTATION & SUSTAINING CHANGE (AND COMMUNICATING IT TO OUR STAKEHOLDERS)

## Initial Questions/Ideas: Taking Risks

- Risk - how define? Different for individuals and organizations. What is risk for one may not be for another.
- Experimentation & risk: what kind of organizational change is required for propaganda?
- Iterative process - how to budget?
- Are we an example of sustainability?
- Sustaining a commitment to experimentation
- Are big capital campaigns the only way to make big change happen?

## Initial Questions/Ideas: Stakeholders

- Funding, boards, and missions
- Stakeholders vs. scientists vs. donors vs. visitors
- Change key stakeholders (board)
- Impediments to change - key stakeholders

## Combined Report Out

Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

We found that it's more accepted sometimes to take risks when you have artists in residence or people from outside the museum world. There are things like hackathons, with other people coming in, and they are allowed to take risks, maybe more so than the museum staff themselves.

Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

Risks come out of desperation. For example, with a big project you are desperate to finish it and you think outside of the box. Another thing

that came up is that some of the best work is done in those periods of risk and experimentation, which doesn't mean we should all be looking at chaos all the time.

*Risks discussion round one*



## Excerpts from Risks/Stakeholders Notes

- Oakland - changed its history gallery after it was opened
- How to create changing exhibits?
- Digital art community - pop-up installations-not sustainable yet
- Artists in residence—a different voice, super responsive, permission to be out of the box, no consequences, a platform for others, less confrontational—play
- Risky programming:
  - to interpret or not?
  - “15 minutes can change a visit”
  - easy to axe
  - low risk
  - hacking our own museums
  - butcher paper - try it out
- Hand written signs
- Money for experimentation - grants, donors want to be part of it
- Sanctioned experimentation
- Changes authority
- Creating iterations - archiving visitor responses/ drawings (how saved?)
- Using other experts to solve our problems
- Culture of organization to allow experimentation and innovation
- Gauging if solving the problem
- Develop a process - Kickstarter
- Scaling risky exhibit/programs
- Intellectual property - copyright or left?
- Hackathons - sketchathon - gamejam. A hackathon to provoke programming & exhibits.
- A test tube gallery
- InnoCentive website - problems solvers outside your field
- Solving climate change propaganda problem: involve visitors & visitor voice; non-museum experts; “makers,” “gamers”
- About visitor voices: are we using their opinions? Honoring their effort?
- Problem solving programs

*Risks discussion round two*

**Excerpts from Risks/Stakeholders Notes**

- Open to new partnerships/resources (media)
- Confront our own myths
- Advocate with a strategy

**RISKS**

- Embracing failure
- Science - asking questions
- Changing too much for audience
- Alienating funders
- Change of an existing structure

**SUSTAINABILITY**

- Life after capital campaign
- Risk must be embraced by leadership to continue

Don't be afraid to get rid of what's not working

**EXPERIMENTATION**

- Technology - moving quickly; how to sustain it?
- Branding & consistency—bringing together in-house teams to support experimentation (media designers, content developers)
- Breaking boundaries
- Embrace change

## INDOOR/OUTDOOR; OUTSIDE PROGRAMMING

**Report Out**

Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

We liked the idea that outdoor spaces in museums were a place to have a respite from directed attention so that museum fatigue could be alleviated. Instead of focused attention, when you go outside you have fascinated attention and get over your museum fatigue.

We also talked about the nature experience continuum. You are inside and people are

coming and having a nature experience with a diorama. Because it's inside some people would say that's not nature, but you are still having some sort of nature experience. It's inside the building, it's safe for people who aren't going to go off into the middle of the mountains and see a moose. Then, having an outdoor space at the museum is nature in context and takes you along that continuum to more wild nature, and hopefully tries to bridge that gap from safe indoor to wild nature outdoors.

**Initial Questions/Ideas**

**Indoor/Outdoor**

- Are we gateways/threshold to nature?
- Inside vs. outside; what vs. how—how does the one affect the other?
- Importance of indoor and outdoor

**Outside Programming**

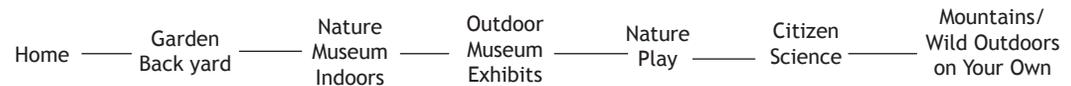
- BioBlitz, community programming vs. on-site experience
- How to convince scientists that visitors are more than “deficient scientists”?
- How can we leverage cultural (art, anthro, history) assets towards science education, climate education?

*Indoor/Outdoor discussion*

### Excerpts from Indoor/Outdoor Notes

- Nature on-site brings people in the doors – to go outside – and to understand the nature in their yards
- Ways that outdoor experiences can be transformational; change one’s awareness, etc.
- Guided (longer, deeper time getting “nature eyes”) vs. self-exploring
- Nature Lab - window connection/doors
- Bringing equipment outside
- Staff have meetings outside
- Fences? vs. spaces that have general access
- Can an outdoor space help with museum fatigue?
- Connect with places where people already have outdoor experiences (parks, picnic)
- Incorporate play - children’s museums
- Safe outdoors to teach people how to be out in nature
- Artist interaction with nature, model behavior
- Nature play is a human story
- “Gateway” science, rocks, lizards, feathers

### Nature Experience Continuum



## OTHER TOPICS WARRANTING FUTURE ATTENTION

*The following questions and ideas posted by participants during the initial “Ignite the Conversation” session did not become the focus of a breakout session but are documented here to inspire post-conference thought and conversation.*

- In-school vs. out-of-school
- Formal learning vs. informal learning
- Reaching diverse audiences, urban audiences, Native people
- Where’s the equity conversation? Who do we need to reach & why?
- How do we share more & compete less? Do we all need “one”?
- What result are we looking for? If action, do we understand how?
- Still hearing disconnect between scientists and “real” science, and lay or rest of humans.
- Show vs. exhibit - making visitors “work”

## INTRODUCTION

### Honing in on What's Next

- It is becoming clear that participants have specific ideas about what they might want or need coming out of this workshop, and want to know what the OMCA wants or needs from this session. This workshop marks the culmination of a very long process to renew our natural science galleries. We have an idea that perhaps this gathering might be the beginning of other gatherings like it in our field. There's the possibility through this gathering that we surface an idea—big or small—that we could work on ourselves as an institution or that we could work on as a group. In short, we are interested in what's next for us and for the field. • Kelly McKinley, Director, OMCA Lab, OMCA

### Context and Conference Goals

#### OMCA Natural Sciences Gallery Context

- These types of convenings have become a standard practice at the Oakland Museum over the last few years. We have done half-a-dozen specifically around the Natural Sciences Gallery project, including a few as preliminary groundwork prior to submission of the NSF grant, a series of sessions for our NSF advisors, and then this gathering. It has

become part of our learning culture here, and it is a valuable way for us to reflect on the field and learn from the great leaders in the field. We also feel, beyond the NSF requirement, a commitment to share what we are doing and what we have learned with the field, and as a result we have done a lot of documentation of our process.

This workshop is a kind of beginning and end of that process. One of the Post-it notes one of you submitted yesterday said, "The process begins with the completion of the exhibition." This is a culmination of the project and one of the deliverables, but the completion of the Natural Sciences Gallery is also a pivotal moment for us to say, "Now what?" How do we think about using this gallery? As part of our education programs we are now thinking about how we engage the school community in the gallery and how we approach public programming. Now the institution as a whole, including staff who did not have much prior involvement during the development stage, has to embrace this 30,000-square-foot gallery.

#### Conference Goals

We are really looking to you all, who are doing this kind of work, to ask whether everybody is dealing with this question of human presence. I think this is a fairly new

### Introducing the Human Presence

Our theory of change with this exhibition was to retain the incredible dioramas and habitat cases and authentic collections, and to introduce this concept of human nature; that perhaps people would care more about the natural world and be inspired to take action if they connected to real places and if they understood the stories of the places and the people who were from these places and had the opportunity to engage in a very interactive way within the space. We are getting some indications from the evaluation that that is true, but we feel we have a lot to learn about whether this whole notion of inserting human presence into natural history exhibits and programming works. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

**Existing Declaration of Interdependence**

- Just as an FYI, one of the things that came out of that convening in Washington that Lori mentioned was a report that one group is working on, a research agenda around all of these kinds of issues, and they have created what they call a “Declaration of Interdependence.” That is out there and states many of the things we have talked about, so that is worth considering. • Becky Menlove, Associate Director for Visitor Experience, Natural History Museum of Utah

*Lori Fogarty*

shift. There was a gathering of natural history museums at the Smithsonian that CAISE organized a few years ago. What came up was this new notion about how to talk about urgent environmental issues and human-caused issues in a natural history museum. What we heard was that there was some reticence about that, some caution. We’ve come a long way from that, but it was obvious that a lot of institutions are grappling with this and haven’t figured it out, so we thought that would be the best topic for this gathering. We did start more specifically in the grant with this convening being about the “diorama dilemma” and decided to open that up to thinking about what is the future of natural history. Is there a shift happening within the field as institutions try to bring these more urgent moral and ethical issues into play?

We did not have a specific agenda regarding a critique of the gallery, though we would love to hear your thoughts. We had a culminating NSF advisors meeting towards the end of the project before the gallery was done so that we could incorporate some of that feedback. We did talk about whether we should have a specific call to action from this session but didn’t know what to expect. We thought if there was traction, if there was interest, if there was a galvanizing sense, that would be great. If there was just a loose network that keeps in touch, that’s great. If it is just identification of resources in the field that we can reach out to if we have

some questions, that’s fine too.

It did seem, based on conversations at the end of the first day’s session, that there is a desire to take hold of something from this session. Not necessarily a project or national travelling exhibition, but something you would like to see come out of this. I loved Pat Hamilton’s idea about collective action, that it’s the “we,” not just the “me.” And the call that Don Hughes put forth about morality, and then there were ideas about rhetoric and branding. Those are some of the things that really resonated with me. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

**RATIONALE FOR A GROUP STANCE/STATEMENT****For Internal Leverage**

- Whenever one of our senior team go away to one of these things we have a report-back session to the executive committee. My job is made very easy when we as a group create that one- or two-pager, which is a sort of description of what we did. I can certainly do that myself. What I was thinking would be very helpful would be if we generated a one- or two-pager that says this is what we feel and this is what we agree the future of natural history museums might look like, and we are all on the same page with all of our signatures on it. That would go a long way to helping me implement programs and the

types of exhibits that we all think would resonate. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

**Process Note: Including the Unknowns**

- I go back to my project management days and something Matt touched on which is, there are knowns, there are unknowns, and there are unknown unknowns, and then there are recommendations. In this group I could see that we could state quite easily what the knowns are in terms of activism or whatever. But in a non-threatening way I would like to say to my director that the unknowns are just as powerful as the knowns, so we could include the unknowns as well, and that could be pretty powerful. And then if there is a recommendation, we could summarize that. This is an old project management tool I used to use that helps soften the delivery.
  - Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

advocacy statement that is compromising or politicizing research. That would be an argument that you would hear from the research group, that it has chinks in it, that it's not good enough. But even within the education department and other staff there is still this kind of solace in the old way of the neutrality of the museum. It's sort of like plankton drifting with the current. Or do you go into the nekton stage and develop fins? • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

- So part of the known-unknown exercise, to make it less daunting: What is the future of natural history museums? Should we start with where are we going? • Kelly McKinley, Director, OMCA Lab
- I think the key is the "we." I've already expressed the reasons why our institution is reticent about advocacy, but eager to put

**Identifying the Drift; Defining the Trend**

- I didn't mean to say we are the chosen, but everyone in this room is sort of at the intersection. We can look down at our organizations and see the value of our collections, see the value of our exhibits in the form of dioramas and these huge investments that were made and they are our jewels, but we are also focused very much on the general public and we are looking at media and communication. We are all communicators here. That's the "Where are we going?" We are all reacting. There are things that are pushing us in this direction. We're being drifted in this direction while trying to define what's going on. It's not an elective enterprise that we're involved in, it's survival. • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

**Communicating to Unconvinced Staff**

- One of the other things we should address is looking back down in our organizations. We are up here and we are sort of the chosen having this discussion. We are reading trends and seeing the trends going in a certain direction and future-casting. We want to resist handing out an ecumenical statement, but we can at least say this is where things are going. That would be useful back down in staff. I know that within my staff we've done research that is justification for not taking an

**Practical Outcome: A Staff Development Tool**

- A practical thing that would be great for me would be to be able to go back to Los Angeles and have a document that I could talk to my staff about. These conversations are at a really high level and I get multiple e-mails that are like, "Read these new developments in environmental feminism," and I don't get to them. But if you're talking about humans and the future of museums, my staff are twenty-two-year-olds who don't get into these forums. Their viewpoints may be way more valid than mine at this point. So it would be great to have something, a tool that would actually disseminate this kind of conversation to them. And maybe there's a way forward and you do go back and convene the joint staff or have conversations between junior-level staff. That sounds a little small, but it just doesn't happen where I'm from. • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

### A Situational Analysis White Paper

- In Washington white papers are all the rage. Everybody wants everything summed up and exactly what should happen in two pages. It's not so much a manifesto as it is: Here's the situation, here's what could happen out of the situation, here are some actions that could be taken. Maybe that's the sort of thing we should consider, if we did a kind of situational analysis and shared where we all are and what we make of that. That seems to be less arduous to do. Having spent about eight hours doing a two-page white paper, I can say that it is not without work. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

forth a really convincing kind of case. I think that the development of the consciousness of the “we” as per a white paper or whatever would be the beginning of a possible shift in our thinking. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

### Influencing Funders

- I've been doing a lot of research about funding for the gallery and for the programs in the gallery. Somebody earlier talked about the situation that we're all in with federal funding, which is decreasing, and the fact that the federal government has a certain level of control that is completely unpredictable for all of us. What I'm seeing is that there are national funders who are private and they are trying to work together, and what they are funding for the most part, as they should, is conservation efforts in the field. They are not really aware of what is going on in the museum arena. From what I

can tell the conservation funders seem to be slightly confused about what museums are doing, so they are sort of ignoring us.

I think some of these funders might look at this type of consortium paper and see that there is a list of 20 natural history museums and people who have been in the field for many, many years, and that would mean a lot to them. And it could convey the idea that what we are coming to is that the facts aren't reaching people, but the stories and the experiences really are making people think about things differently, and conservation in particular. So I think there is something here that could be influential.

- Ariel Weintraub, Manager, Institutional Giving, OMCA

### The Need for Advocacy

- A level of friction exists between our Provincial and Federal governments and some environmental advocacy groups, including some programs which we have produced. There is a niche that seems to be developing for advocacy, for people like us to move away from neutrality and to pressure our governments. There is a niche for the natural history museums, with our rigor and our professionalism and our authority, to pressure them, but I don't think our board would do that alone, while it might with an agreed list. It doesn't need to be profound and I don't think it needs to be a real call to action, it

### A History of Museum Advocacy: Collective Action

- I was thinking about Alan Friedman [former Director, New York Hall of Science], a person who didn't necessarily have a direct stake in the *Sensation* show at the Brooklyn Museum, but when the Giuliani administration tried to tie that museum up and threatened their city funding and pushed them into this existential crisis, they were able to organize a block of kindred museums to say, “You can't do that.” And it was successful. So I think there is something to be said for the idea. If museums can get onto some sort of collective action ticket it is harder to resist it if all of the natural history museums in the United States are willing to get on board with a statement. • Dan Spock, Director, Minnesota History Center

is just, “We believe that the world is experiencing the sixth greatest extinction of life on earth and these are some ways we suggest you might respond.” • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

## EXHIBITS AND PROGRAMS

### Identifying Radical Exhibit/Propaganda Moves

- What if we addressed the question of what is the most radical, crazy thing you could do that would be effective and see what that list looks like? I think everybody has things they’ve always wanted to do in the gallery or with a certain group of artists. Following up on an earlier question, how much of a difference do we make as a museum? How effective are we? How much of an impact do we have on people’s lives or behaviors, and who is having an impact? And back to the rhetoric of propaganda, how do you get visibility and attention in a way that is more effective? I think it has to be a more radical mode of some sort. Is it a flash mob someplace that is doing something about natural history content? Is it a different thing altogether than what we do typically? • Mary Jo Sutton, Co-Principal Investigator, Exhibit Developer, OMCA

### What Worked: Usable Ideas

- Mary Jo’s idea is interesting, but rather than the wild idea I would prefer to know what

worked. This is kind of a smaller idea, but you may have some ideas about what worked for you and why you made certain decisions. I know it comes through your filter and it may go through my filters in a different way, but that would be one thing that would be interesting. Except it’s not something we can do now, and I’m worried about what we could do now other than a white paper that I won’t open, I would just delete it from my e-mail.

I’m thinking about practical applications. It would have been nice to have a five-minute presentation from everybody saying, “This is what I did that really was successful about that particular topic.” And then I could identify ideas I wanted to steal. It has tended, as it does when you talk about this topic, to get kind of overwhelming, but you can see that Dan’s done something and it worked. He may say, “I’ve always painted the doors bright red and they love it.” Let me write that down, I can use that. So rather than the most radical idea, what are the practical things that we could use? • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

- Like a glossary of success. • Mary Jo Sutton, Co-Principal Investigator, Exhibit Developer, OMCA
- I didn’t mean to disparage the idea of a vision statement. I don’t open a lot of stuff on my desk. The practical thing is a smaller piece of it. It’s not that we don’t need a vision or a target or something to move

### Action Step: Convening Forums

- Even though we’ve been talking for years about being a forum, being facilitators, we don’t actually do very much of that. We still might have more leverage by really taking that seriously and really becoming the forum for this sort of conversation. We talk among ourselves, we do the odd event here or there, but I don’t think people are looking to us in the way that they could. We might be more powerful as the convener than we would through advocacy. • Don Pohlman, Co-Principal Investigator, Senior Exhibit Developer, OMCA

### An Inventory of Thinking, Challenges, and Practical Ideas

- We sort of did an inventory during the five-minute presentations of what we are all thinking about, and I think that came out of the other gathering at the Smithsonian as well. So there could be an inventory and at the end you can break down: “Here is stuff we did that worked.” I think that’s incredibly practical and valuable immediately, and we should be sharing more of that with each other. There’s also an inventory that you could pull out of the conversations here about the challenges that we have and just break it down and say, “Here is the kind of stuff we are dealing with,” and we could do some collective problem solving on that in groups of two or more. There may even be another couple of categories in this process of inventorying things that could be really practical for us and useful almost immediately. I’m not quite sure what is the next step to assemble that inventory that helps us have something useful. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

towards and I don’t mean to diminish that aspect, but the practical thing is something I could use and something we all could probably use in the bigger picture. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

#### Process Note: Including the Unknowns

- What I am hearing is that there are several categories:
  - What did we talk about, what did we cover?
  - What are the future directions, what are we seeing, what are the trends, what is the future propulsion?
  - The practical: What is working?
  - What are the challenges? And we could even name some of these: reticence around taking a stand, reticence around advocacy, the question of neutrality.

I think we could put together a couple of papers on all of those topics fairly easily as a start for us to take back to our institutions, but also for continuing dialog, whether that’s another convening of this group or smaller groups getting together at ASTC or AAM.

• Lori Fogarty, Principal Investigator, Director and CEO, OMCA

#### Collective “What Worked” List

- I don’t know if any of you saw what Lori pulled together for the American Art Museum Directors, which was “100 Next Practices

in Education.” Is this something we could ask of you, even the homework adverse? In the spirit of those 5-minute presentations about what you’re dealing with at your museum, could we ask each of you to write a paragraph about one thing that worked really well? Not right now, but people want to borrow and steal good ideas and we could give a deadline for people to contribute what is working on their site. • Kelly McKinley, Director, OMCA Lab, OMCA

#### Cataloging/Categorizing Practices

- This “Next Practices” document, which was in the art museum world, involved a simple form you essentially filled out. It was the first time that art museums came together and contributed: “Here are programs that we are doing that we consider are working or ground breaking.” They put it in a database and sorted according to whether it was K-12 education or higher education. These could be different categories because the public advocacy, the facilitator/convenor practice is one thing; the public education is another; the research is another; the exhibits are another. We could sort them into categories in these different ways, but even among the 17 or 18 organizations represented here it would be pretty interesting if we made it easy enough so that we could collect the information. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

- Next practices, I guess, are how we are working to disrupt and innovate. We do those things with a view of a future, and we've all got a view of the future, right? • Kelly McKinley, Director, OMCA Lab, OMCA

### Using a “What Works” Document for Internal Dialog and Leverage

- I really like this idea of what works for you, and maybe what doesn't work. I think there may be a lot of untried approaches for each of us because of scale or size or process that we ourselves are not empowered to actually do. In our case because we are such a big institution it really means being an ambassador to another department and trying to introduce, say, the idea of a specific program where you invite speakers and offer them a platform. Those speakers can certainly say things that we aren't saying, but we are being a platform for them and we can try to balance those speakers. That might not be something that comes out of my somewhat siloed domain, but a document like that would be a great way to reduce opposition not only on my team but with other teams in the institution and open up the dialog that wasn't necessarily active on that level.
  - David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History
- It's like that artists-in-residence point, that if someone else is doing it, it allows you to bring it to the table in your own institution,

whereas if you had brought it up at your own staff meeting it might not be considered.

- Kelly McKinley, Director, OMCA Lab, OMCA

## BRANDING

### Reexamining the Neutral Stance

- We talked earlier about branding and I started out in this profession brand-allergic to some degree. I didn't like the idea of branding, it sounded like hogwash to me. I finally saw this great presentation where a guy said the brand is what your public thinks of you. The brand is how the public sees you as an institution. Whether you have chosen to manage it, whether you understand your brand or not is not the question. The fact is, you have a brand. You may not know it, you may be in denial about it, but you have one.

I think one of the things I am wondering about right now is are we in museums seen as players in this conversation, or are we seen as sitting this one out? It kind of goes to this question of neutrality. At the time of Galileo neutrality would be to say, “Well, you know, the sun could be revolving around us or we could be revolving around the sun. There's still a lot of legitimate debate about that.” It's not authentic neutrality if we know that conversation is bullshit. • Dan Spock, Director, Minnesota History Center

- I think that's another good question: What is

### Articulating the Distinct Approaches We Are Using

- When I think of advocacy and really successful advocacy groups like the Sierra Club, Save the Bay, or 360.org, their message is really clear about what it is they're targeting and what you can do. I feel that in all of our conversations everyone has a slightly different approach. Some of us are working on adaptation to climate change, some are working on the science, some are reaching out to different communities, some are just trying to get us to think about the future and what we're facing. If each museum did write what their approach was it would be very informative to all of us to think about whether we could use those approaches. Or could I tell my director that there are these six different approaches that people are using to address these issues and we fit here, or something like that. I think it's very, very broad how people are approaching the climate dilemma. • Susan Schwartzberg, Senior Artist & Curator of the Bay Observatory, Exploratorium



From left:  
Becky Menlove, Timshel Purdum, David Ireland

the brand of natural history museums? • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

## BRINGING THE DIALOG TO THE PUBLIC

### Stories from the Front Lines

- There's another piece of this. These conversations among ourselves are really important, but I think there are also the conversations among our public, which are different depending on the different places that we come from. It goes to this question of brand. What does our community think about us and what is this larger community about? We do a little project called "Stories from the Front Lines" at our museum, a little panel thing. What if we did that as a consortium, and over a year or so we shared with each other stories from our individual front lines about these very specific topics?

It could be a very simple, single-topic panel that we could arrange down a hallway, but actually show our publics that we here at our museum and all of the natural history museums in North America are thinking about these topics and this is how we are thinking about it, we are looking at this topic or we are looking at that topic. It could be drawn from what we are already doing but just sort of a visual and physical sharing not only with each other but with our communities. I think

there's some potential for learning something from that larger conversation. • Becky Menlove, Associate Director for Visitor Experience, Natural History Museum of Utah

- So we would make the conversation visible to the public. • Lori Fogarty, Principal Investigator, Director and CEO. OMCA

### Museums of the 21st Century Public Meeting

- We have some funding for a Museums of the 21st Century meeting in March of 2015. I've been to a few of them and so have my two bosses, but then the decision was made last week to not do this. Instead we are going to have a Museums of the 21st Century meeting for our public. We've identified four audiences: families, active experience seekers, and so on. We will present over seven days activities or events or panels for them, so we are not talking amongst ourselves, we are delivering to them. It would be great to be able to deliver in March of 2015 what others are saying to their publics. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum
- I wanted to double down on what Dave said. That sounds like a really great approach that you are taking, actually going to your community. • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

## ABOUT HUMAN NATURE

### Public Engagement; Humans & Nature

- It's interesting how much diversity there is amongst us in how we're funded and how we operate and all of those kinds of things and to what end are we doing this. Do we have a common goal in this in the first place? A common goal, like "a more engaged public," is probably something we actually can do and in fact already do around these things, and we do that quite differently from each other. So it sort of pulls it in: Here's what we do at our place to engage the public around this stuff. That may be a decent response to the question of "To what end?"—to engage the public in science and the processes of science, and that science exists in our society and in nature. I'm circling back to this human nature thing and there is tension and harmony in that. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

### Bolstering the Conversation via Anthropology

- I would say that this conversation is made possible by the fact that museums have generally dropped the ball on depicting humans and whether humans are part of nature. Look at Europe and the trend over time of the demise of ethnography museums. For example, in Leiden three or four museums are being pulled together. This is a shrinkage to a great

degree. Or museums have spun off and become art museums, natural history museums.

In our institution anthropology is an ongoing science, but in terms of galleries in the public space it is much neglected. There are some very old galleries. I have been working on a project for two years with a Mellon grant to think about how to solve this problem and reinvigorate anthropology as really current. We have always had the ability and the faculty and the facility to do this.

So if we as museums in the very longest term can increase our credibility in terms of the human world, that's going to bolster the conversation about the Anthropocene, about climate change. We really need to get some really good science about anthropology and humans. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

- I completely agree. We have science and culture and we can speak about science really well. We've only started to speak about culture, and we do that with anthropology. We had a huge history exhibit which is actually not a history exhibit, it's an anthropology exhibit. It's refreshing to work with anthropologists in explaining both humans and culture through time. I agree with you, it's really undervalued. • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

### Hopping Down the Humans and/in/are/with Nature Bunny Trail

- I don't hear you say connected to nature, I hear you say connected to science through nature. • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore
- No, I think we are nature. • Paul Martin
- But we know that people don't necessarily feel that. • Jenny Sayre Ramberg
- Right, people don't necessarily think that way, so the science would lead you to, "We are part of nature." • Paul Martin
- Not necessarily. Sometimes walking out in the garden can make you feel that. • Jenny Sayre Ramberg
- But in the academic world if you look at it through just a scientific lens, and then yes, because we are organisms we have relationships as humans with our own being, our own spirituality. All of that factors in—but we shouldn't go down this road. • Paul Martin

### Institutional Inventory

- It would be interesting if each of us identified what we have in our institutions that can really speak to climate change in our research, in our collections. For us it's La Brea Tar Pits as a way to talk about climate change. What would each of us have to contribute and what would that look like? • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

Simon Adlam



## ADVOCACY REVISITED

### Potential Controversy

- There is something that has been at the back of my mind this whole time. Let's say we did come out with a statement or something like that. Museums have been involved in controversy before. Think about *Enola Gay*, and there are ample other examples where opposition has just made hay with the media. It would be pretty easy for them to pick up on what we're saying, that we're advocating a particular view, and here we are taking the tax payers' money and we've got a political agenda. They can just take us to court on that if we're not prepared with some back story to manage that. • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science
- They talk a lot about this at the Smithsonian because of where they're located and issues of funding sources, and in their case the primary funding source. • Lori Fogarty, Principal Investigator, Director and CEO

### Policy Makers' Access to Science

- The strategic plan we adopted several years ago identifies three audiences: adults with kids and the general public, educators, and policy makers. So we are in a sense advocates, but what we are advocating is that policy makers should have access to the best available science. We're not advocating that

they take certain measures, it's just that they should have access to the best available science and can then decide what they want to do with that information. They are making decisions every day that have very long-term consequences, so if we really want to change the direction the ship is going then I think we should be open to having conversations with policy makers because we don't have another 20 or 40 years to make some of these choices. And we're not telling them what to do, we're just offering them the best available science so that they can make the best possible choices. And their choices are still going to be informed by lots of other forces—economic, cultural, political, and social—but we certainly, as science institutions, should put the science up in the forefront of that conversation, and right now it's not part of that conversation. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

### Citizen Science and Advocacy

- I think that is one of the things that citizen science can play a role in. We are making conservation planning decisions on a regular basis in cities in America and in cities all over the world, and the data that is being used is not as complete as it could be. They need these huge data sets, and who better to put the data in there than citizen scientists, people who live in the communities where those policies are then going to be enacted? For instance, in the California Roadkill Ob-

servation System (CROS) you are going out and collecting data on roadkill. That data is then being used to help design roads that are better for humans and better for wildlife. A lot of museums are taking on these citizen science programs. At my museum it is like, “Yeah, we want this big program and there is this advocacy part of it. Should we get involved in advocacy?” We’re not an advocacy organization, but we can provide this data that other organizations then funnel to policy makers and use for advocacy. • Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

### Museums Are Advocates

- I’m going to say that we *are* advocacy organizations. Museums are advocates for science as a way of understanding the world. It is not the only way of understanding the world, but we feel strongly that science has a certain power in helping us understand the world. So we are advocates in that regard. If we sit on our hands and are apprehensive about how people will respond to scientific insights of the world, then we are not very relevant to the policy makers, the decision makers, the funders. If we’re not willing to put science up there and say, “This is what we value,” then we’re nice but we’re not necessary. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

### Example: Darwin’s Birthday

- I really like where the conversation is going and I agree with Pat. Another good example is last February 12 when we celebrated Darwin’s birthday by inviting “Genie” Scott and a guy by the name of Baba Brinkman, who is a real entertainer. It was hilarious and it was fantastic. We partnered with Humanist Canada, which sponsored the event. It was a great event, there were 500 people, but there was some fallout in terms of why didn’t we have creationists on stage, why we were advocating (and that term was used) for evolution. This was incredible for me to believe, but what would have really helped me in the weeks following that event would have been a single piece of paper with your 18 institutional names on there saying, “Give it up.” • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

### Museum Policy Statements (Feel Free to Borrow)

- There was an article published in the *Dallas Daily News* that was trying to expose science museums (particularly the Perot) as shying away from climate change. What the story unearthed is that there is a lot of mixed thinking about this. We at the Science Museum of Minnesota have two policy statements on our website. One is about evolution and one is about global climate change. Pat pushed the global climate change and it took a lot for us to get that through the board and

### The Power in a Collective Voice

- My perception is that this is all great until a stakeholder with a lot of clout says, “I’m not liking that science, show me some other science.” I think maybe that’s where, when you get into a more collective view on this, a kind of mutually supportive body of like-minded institutions that can support each other and say, “We’re not going to back down from this just because this particular institution has been put under the laser beam. This is something that all of us are about right now and we’re not going to crumble. We’re not politicizing this, this is just information. You are the guys who are politicizing this. Our job is to tell you what’s really happening.” • Dan Spock, Director, Minnesota History Center

Dan Spock



### Advocacy Example: Climate Change in Minnesota

- Let me give one specific example involving climate change in Minnesota. We've done workshops and seminars on how the climate is changing in Minnesota to help inform policy makers and local government officials about how that should inform their decision making. The Science Museum does not have good depth in climatology, but the University of Minnesota does. Where do they get their data from? Well, from the fact that citizens of Minnesota have been collecting meteorological data for 130 years. So our understanding of the climate of Minnesota is based on the millions of observations that hundreds of Minnesota citizens have collected over the last 130 years. So it is possible, looking at that data, to see how the average climate in Minnesota is shifting over the long term. And if you disagree with that politically, then you are dismissing the efforts of hundreds of people over the last 130 years because you don't like what the data says. It's not that the science is false, you don't like the implications of that message. So it's not just us as an institution, there is a lot of collective work that has gone into our understanding of our world. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

all of the politics, but we did, and now we can stand on those. That was something that was cited in this *Dallas Daily News* piece.

I would invite anybody to go to our website, take that, modify it, and use it as a basis for something to run from or to or whatever. But that is something that we won't compromise on. So the reason we can say that we wouldn't have a creationist on stage is because it's not science. This is our belief, and we are not going to debate whether this is science or not. We are going to represent science and we can be very unequivocal about that. That is something that goes through the entire board of the organization, the leadership, and all of that and I think we can be brave about certain things, but we're also reasonable about it. It's not that you can use it as a club to hold out and beat people over the head with, but it's our position. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

- There are a number of other museums that have those kinds of statements that are publicly available. I would imagine that ASTC might have an inventory of these things. If it is something that doesn't exist it probably should because that would provide that sort of defense if needed. You'd be able to say, "These are the 25 leading institutions that have this kind of position. It's out there already." • Tamara Schwarz, Associate Director of Exhibit Content Development, California Academy of Sciences

- I would suggest going to the AZA website. Zoos and Aquariums have been out there on a number of these issues. They don't all have policy statements, but I think, like the Science Museum of Minnesota, it is being clear about why you're there. All zoos and aquariums have a conservation mission, it's a requirement. They exist to inspire the conservation of nature. So they've already stated this, they've already embraced it. They are for the advocacy of the conservation of nature. There are examples in other fields, and I would encourage natural history museums to look outside your circle. • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore

### Dealing with Faith-based Beliefs

- We don't have a policy statement like that, but when the *Darwin* exhibition opened, it was when all of the legal processes were going on in Pennsylvania about teaching creationism. We decided to go out and videotape people like Francis Collins and others with views on science and faith and that sort of thing, and that was in the *Darwin* show. Then when we did the Hall of Human Origins in 2007, we moved all of those video conversations into the Hall so that you could be face-to-face with Francis Collins talking about how his faith helps him in certain ways, but the science is really important, and that sort of thing. We've embedded that video platform into our permanent hall for

future visitors to consider different points of view, specifically, how individual scientists reconcile faith and science. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

## Stepping Up, Being Bolder

- I was using Darwin and evolution as an example. With that one I think we're all on the same page and we had no real problems dealing with it. We did leverage a few other institutions via the website. I'm using it more as an example to talk about biodiversity and conservation, which is the issue. Climate change, biodiversity, conservation is where natural history museums should step up. It's like Dan Spock's Galileo example. We are falling back into the day-to-day. Other groups have stepped up while the natural history museum, where all of this authority sits, is saying, "Okay, here are some views." I think we should be bolder. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum

## HUMAN NATURE AT OMCA

- What we were really trying to focus on with this human nature concept and with the gallery is that there is actually something more than presenting the science or having the science available or taking a stand on certain scientific evidence. It goes to the fact that it is human behavior, that there are people involved, that we are part of nature, that

there are ethical, behavioral changes that need to be made. Even beyond what the science field has done through natural history museums to deal with the human being as part of that, I think there's a way to do something more.

I think this is where the branding and the rhetoric comes in. It is that idea of how you instill that sense that it's not politicized, it's actually about caring. It brings some of these, dare we say it, sort of faith-based emotions to the table when you add human beings to the science. And maybe there's a way to even take it a step beyond just natural science museums to where other science organizations begin to say, "Humans are a part of this and humans care, and we need to be part of that ethical behavior that is going to make a change." • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

## MORE THOUGHTS ON WHAT'S NEEDED

### Dealing with a Manifesto vs. Usable Next Practices

- I'm sitting here thinking how would I deal with a manifesto from this group. Do I go back to the manifesto department at the aquarium and say, "Here it is" ? And they say, "Oh, nice, now go do exhibits." That's what I was trying to say earlier. What can I in my sphere of influence do with this information,

## Working with Faith and Spirituality

- There are Pollinator Partnerships that are faith-based. There are people who are doing native bee counts and native bee habitat conservation because it is an amazing world and we should protect it, and they are faith-based. • Mary Jo Sutton, Co-Principal Investigator, Exhibit Developer, OMCA
- That's the stewardship piece. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota
- All of the Native Americans that we have talked to in our project say, "We don't have a word for 'wild,' it's our home." So it's not about nature out there. They have a relationship, a respect, a sense of responsibility that is part of their culture. When we had our last NSF advisors meeting they said there was a little bit of that in the gallery, but it could be stronger. There is a soul piece that could be stronger in both the gallery and the practice. • Mary Jo Sutton

whatever that is? So I would have to pick and choose from whatever this body of information is and say these I can get into the goals of an exhibit that can manifest themselves in some way. The piece of information I'm looking for is something within my reach and control. When it gets so big it turns into what we said before, what do I do with it when I get back home? We are already there with the human nature concept. That's why

I'm advocating next steps. I hear Pat say, "Just do what we do, only do it better," and it's hard to argue with that. Maybe that's what I'm saying, do it better. But you probably need to twist some arms because we've been doing what you suggest for the last 50 years and look where we are, so doing it better would be better. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

### The Oakland Museum Process

- So you're already done it, it's there in your gallery. What drove you? Did you do focus groups and got to it that way, or was that just a way to get to where you originally needed to go? • Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science
- People touched on visitor evaluation and visitor feedback, but we haven't talked a lot about that. Another part of the human connection is actually having humans being part of the development of an exhibition. The Natural Sciences Gallery was the third of three galleries that were reinstalled, and each gallery built on this process of cocreation and collaboration. There were ideas that the staff brought to it that came from our advisors, from a lot of community discussion, and then a lot of it came from talking to visitors, talking to community organizations and talking to partners. We have well over two dozen organizations with whom we are engaged in different levels of partnership.

The concept with human nature is that it's not just us as the real scientists delivering to you as the amateurs. There was this idea of shared expertise, shared authority; that you are also taking into account the interests and needs and perspectives of people. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

- Another part of it was that change over time was such a big theme for us, and you can't get anywhere if you don't include human history. If we were back at the beginning of this I'd be arguing to mix the History Gallery and the Natural Sciences Gallery because we have these two great collections, these two stories of change, and they are largely separate. We're down here trying to spin some human history and mix it in and really, if you combined them, you could make two great galleries that were humans and nature together. • Don Pohlman, Co-Principal Investigator, Senior Exhibit Developer

### The Need for a Support Network

- Part of what we're hearing is that you can do it because you've got a board and funders and are in a very conservation-oriented organization. Roy has got to go back to North Carolina where it's politicized. Part of the deal might be that we don't have a common support network for this kind of thing. That's what I like about that *Sensation* show example and Alan Friedman's activism. To say, "The rest of the institutions in this city are not going to allow the mayor to beat up on this one museum. We're coming to the support of that museum and saying, 'God damn it, you can't do that.'"

In a funny kind of way we all get into our little internecine things and then we might come together for a conference once in a while, but are we available to help each other? How far are we willing to go out on a limb? What is our appetite for risk, even if we don't have a dog in that particular fight? Is it baked-in enough to our values that we

would go to the mat for another museum that got into a jam? • Dan Spock, Director, Minnesota History Center

### Utility for Staff and Board Development

- I'm thinking about the manifesto idea and about my institution. My director is leaving in two years and we are working on putting together the search committee and are going into a quick-and-dirty strategic plan that will get us through the next three years. On my staff the educators all came up through the ranks of being visitor services people. None of them are actually museum-trained, they haven't worked in other museums, they've

all just come up through the ranks. I think something like this would be really helpful in getting them on board, and for me in taking it to my board.

Last November we did a retreat and I talked to them about trends in programming and learning and it was so novel to them. To be able to educate them to what a consensus of very well-respected institutions are thinking about the future, that would be very beneficial to me in just trying to move things forward at the board level as well as at the staff level, and moving it across the institution. • Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

#### Process Note:

##### Developing Position Papers

- Why don't we give it a try and take a few minutes to brainstorm:
  - Belief and values statements.
  - What are some ideas that work, whether that is citizen science and getting people involved or convening policy makers and being at the table for policy? Or it could be something very specific on the exhibition front, or partnering with community organizations to have their voice.

Let's just try it and see if we can put it together and what it looks like. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

# Two Position Papers

*Below is a summary of a brainstorming session that generated initial ideas for two separate position papers focusing on the following: 1) Shared beliefs and values; 2) What works. Documentation here serves as a record of the process and captures divergent ideas. Not all of the ideas voiced below garnered general agreement; not all will be included in any final post-conference outcomes. The intent was to generate pithy statements that may be shared with institutional executives and decision makers, with boards, with staff members, with colleagues, with funding sources, and with policy makers. Documentation of these brainstorming rounds does not include attribution, with some exceptions.*

## About Indigenous Cultures and Inclusive Processes

- We honor and give space to indigenous cultures who in turn honor nature in those cultures.
- That's part of culture.
- Do we want to focus on indigenous cultures because they are an alternate voice? Is it important to acknowledge alternate voices or is it very specific to that one voice?
- In New Zealand 20 years ago, the land-use law was rewritten and a governing principle was indigenous people's belief system of stewardship of the land. So outside of the States there are already indigenous voices in policy.
- Maybe the solution is to use the term "cultures" instead of "culture."
- But indigenous cultures have a special knowledge of and relationship to nature.
- Our place [Spock: Minnesota History Center] has a diversity inclusion initiative. What we are arriving at is understanding that the diversity is the world that we are living in. That's not up for debate, that's the reality. Where we are trying to go is "inclusion." So how do you design inclusive processes that are authentic and have the power to change dominant paradigms? I think there might be something in that ethic that you could include because it ties to the idea of shared authority and public or citizen science involvement. If you think about inclusion in the broadest possible sense, it can wrap up all of the cultures in a way.

## SHARED BELIEFS AND VALUES

### Initial Rapid-Fire Brainstorming

- Science is an essential literacy.
- Science is a human pursuit.
- Science needs to be at the forefront of policy making.
- People are part of nature. Humans emerge from nature, they are natural beings, they rely on nature for survival. We are of nature; we are interdependent. Humans need nature.
- Culture is part of the relationship of humans in nature. The point being raised here is: What is the role of culture? This is a science, a discipline and a practice that can be studied. So - culture/human/nature.
- Biodiversity sustains life. Humans are part of this great diversity of life.
- Humanity is now the dominant agent of global change. The impact of human activity is irrefutable. There might be a statement about what that impact will be in the future. [Participants voice agreement.]
- How we manage the challenge of that change is a choice. Should there be a statement that we can change the trajectory? This might be the place to insert something about technol-

ogy or innovation. Not that we can engineer our way out of this, but human innovation and technology present an opportunity to better understand the challenges. There is the ability to work together and make a difference, and the tools for that are available.

- Part of the equation is human morality and caring.
- Natural history museums are now into their

third millennium. Circumstances are now changing, so what form will natural history museums take in this third millennium? Natural history museums need to change with changing circumstances.

- The role of natural history museums is to make that connection meaningful between nature and humans.
- Natural history museums are advocates for

- Does this statement imply that there is a separation between humans and the natural world? It's a good statement and very simple and direct, but there needs to be some tag or preamble.
- We also just have stuff that people like to look at.

### About Basing Knowledge on Collections, Data, Evidence

- Collections are our scientific evidence; they are the background of what we use to talk about humans and nature and culture. Collections are a stepping stone to those discussions.
- In other museums (including OMCA) a lot of what is being done is idea-based rather than collection-based. More and more, in addressing the "So what?" we are moving beyond our collections.
- Look at the Grinnell Resurvey. A hundred years ago there was this survey and we have this massive amount of information. Now different organizations have redone that survey and we are seeing that some things in Southern California are basically gone, but we also found 14 new bats that weren't documented by Grinnell. By having that scientific collection data we are able to see how that change has happened.
- What about basing knowledge on evidence versus the word "collections."
- But this is a valid point because it is about

leveraging our collections to talk about climate change and biodiversity.

- So it is about leveraging our collections, being more inclusive, making all of the stuff we have more meaningful. Outside of the LA County Museum and the George C. Page, we [UC Museum of Paleontology] have the largest collection of La Brea Tar Pit fossils because for years, in the twenties and thirties, UC Berkeley had exclusive collecting rights.

For years I'd heard the Campanile had fossils in it and thought it was an urban myth, but there are five floors of La Brea Tar Pit fossils. They are not well catalogued, but they are totally cool. Next year the Campanile is 100 years old, so the university is doing a big, public relations, very high profile campaign that celebrates Sather Tower. They asked the UCMP to participate, to explain to UC Berkeley students, to undergraduates who are from LA, and to school kids in the area that this is what Los Angeles looked like all of those millions of years ago; that this is your history, this is

California's treasure trove of fossils. And it does mean something to them when you can connect it to some place they're familiar with now and build that intrigue and point out that our state fossil is part of this connection. I think you can look for those hooks that bring other kinds of people into being jazzed about it.

- At the Monterey Bay Aquarium, when we try to talk in some place beyond our expertise the audience says, "Why are you going there? You're not experts on this." So there is some validity to coming from the collections, or whatever it is that each one of us has that is our body of expertise. That is where we move from.
- Could we say something like, "Using exhibits or collections to show environmental change through time," and be more specific about what we hope the collections will be used for in this context?

the natural and cultural world. [Participants voice agreement.]

### Edits/Changes/Additions

- These are great, but there is nothing here that says we believe that there is some kind of urgency. That's missing: "The house is on fire, call 911!"

### A Recap of Key Beliefs Captured on Butcher Paper

- The role of natural history museums is to make the connection between nature, humans, and cultures meaningful.
- We are advocates for the natural world and the human role within it.
- We incorporate perspectives that are not part of the dominant authority.
- We draw or leverage from our collections as our scientific evidence and engagement.
- We use exhibitions and collections to reflect change over time.
- Science is an essential literacy.
- Science is a human pursuit.
- Humans are a part of, emerge from, and rely on nature (the whole idea of interdependence).
- Biodiversity sustains life and humans are part of this biodiversity.
- Humanity is the dominant agent of global change and we can do something about changing this trajectory; change is a choice.
- The circumstances for natural history museums are changing and these institutions must change.
- Human innovation and human morality present an opportunity.

### Additions

- There is a sense of urgency and the importance of acting now.
- Empowering people to act.
- Natural history museums are well positioned to be part of the dialog on collective action in partnership with other communities.

- Another thing that is missing is that we don't identify that natural history museums and related organizations are well positioned to both inspire individual awareness and create dialog about critical issues that are facing us. We are in the position to create that dialog that will lead to collective change—maybe.
- Pushing this a little harder, do we believe that we want to empower people to act on their values to make change?
- Another thing we have not included on this list is that we in the science community are not in a position to solve these problems on our own, that we need to engage with people from other sectors of society to collectively figure out what to do with the data that we can offer.
- Are we setting the agenda or are we responding to the agenda of our guests and our visitors? Are we responding to what they're concerned about?
- I think you could also say a bit more specifically that museums are mutually supportive of each other.

# WHAT WORKS

## Initial Rapid-Fire Brainstorming

- If you don't use Judy Rand's "Visitors' Bill of Rights" (<http://tinyurl.com/kk2yvtb>) or "Mickey's Ten Commandments" (<http://www.auxano.com/templates/insights12-10/mickeys-ten-commandments.html>), then nothing else is going to make any difference because you haven't dealt with people in the three-dimensional space of the gallery.
- The collections piece from the belief statements could fit in here potentially. We are successful at archiving life, or we are the archives of life. So when people (and policy makers specifically) need to know about life, we are the ones to come to.  
  
Using "natural world" instead of "life" is an alternative, but the latter part of the statement, "biodiversity sustains life," would be, "humans sustain life." It relates to that innovation piece: We caused the problem, but we will solve the problem.
- A successful approach is partnering with organizations and people that care about the natural world.
- Something else that was in the belief statement is that we are better at representing science in the context of culture in our society. We are more successful at doing that than we have been in the past.
- There have been a whole series of stories

during this workshop about the idea that disrupting the norm or breaking the rules seems to work. In each institution that means something different.

- If you're talking about a practical approach, the way we would say it in the Minnesota History Center is that it can treat the whole person. By that we mean both a cognitive and an affective approach that can treat the whole person and provide a much more compelling experience so that people really respond. So it is treating the visitor as a whole person.
- We are also very good at presenting complex thinking.
- We are good at asking great questions better than other people can.
- We are good at connecting people emotionally to phenomena or fact-based information that is not personal but is made personal.
- We are great places for people to make their own sense out of the opportunities we provide. It is the notion that we don't create visitor experiences, visitors create visitor experiences, but we create opportunities for what they get to make sense out of on their own terms.
- We [Monterey Bay Aquarium] use humor effectively, and I don't think we are so good at the other things that have been talked about. We are really good at offering a place for people to come in and visit and have a

## Room for Improvement

- We could get better and we should get better. It's not enough that we have the collections. There is a movie, *Flock of Dodos* ([http://www.randyolsonproductions.com/movies/flock\\_of\\_dodos/index.html](http://www.randyolsonproductions.com/movies/flock_of_dodos/index.html)), that really shows up some of the inherent weaknesses in natural science and natural history culture.

## Safe Conversations and Public Forums

- We have some success at being safe places within society to come up against things that are uncomfortable for us in other contexts. The *Race* exhibit is an example of that, but it's not the only example of that. We provide safe places for difficult conversations.
- A success that we've had [Science Museum of Minnesota] is in engaging policy makers in conversation and being a forum for that kind of thing.

### Diverse Audiences, Community Engagement

- We are really good at attracting and embracing diverse audiences. That is something that natural history museums do really well.
  - We are really good at attracting family audiences in particular, multi-generational audiences that want to have conversations about how the world is.
- We're good at bringing people together (e.g., Friday Nights at the OMCA).
- Is a quick term "community engagement"? Are we good at community engagement?

good time, play with their kids. I'm not sure we are good at presenting ideas and questions, so that's the wrong direction.

- Part of this is aspirational. Citing the Monterey Bay Aquarium "Seafood Watch," we are really good at creating tools that people can bring into their daily lives. Actually we are not very good at that—we would like to get very good at that.
- We have learned through evaluation that when people engage in the nature gardens at the LA County Natural History Museum and the citizen science programs, they understand the importance of biodiversity. They may not be able to write a sentence about it, but they are getting a good shot at what it is and what it means and that it is important, not just in the broad sense of the word and in the world but also in the very specific sense that it is important to study biodiversity in Los Angeles and that biodiversity

in Los Angeles is important. We were really excited about that.

- Stepping back even farther is the idea of experiencing wonder and connecting back up to values and having a chance to talk about that with your family. So it's wonder in the face of nature and connection to nature.
- We're good at research.
- At the Exploratorium one thing we've been trying to do more is give people access to science and tools about science, but also scientists, putting them on the floor and having people talk to them so that they realize it is real people who are coming up with these new realizations about what's happening.
- We are getting better at building spaces that are playful and understanding that adults and children can learn through play.
- There is one thing I would push, and I think it is true of the gallery here. We are good at learning by doing, providing opportunities to learn by doing. We provide things that you can't see anywhere else. A third part of that is, sometimes people can make more relevance out of their lives through the things they can see or do in our places.
- A way of rephrasing the above: we are a good amplifier or intensifier. We put things in a spotlight.
- Most of us allow visitors to go as deep as they want, so for the unique visitor who wants to go deeper we are able to provide that.

### About Changing Attitudes

- An obvious thing we should include is that the museum visitor experience can affect and sometimes change perceptions, opinions, and presumably lead to action. We should acknowledge that there is an affect there that is important.
- Museums are really good at getting people to wonder and question and imagine, which is essential if you are going to change people's attitudes.
- Regarding changing attitudes, we have very little evidence that we change attitudes. People come with their values. There is evidence that we can change knowledge and we can empower people and activate behaviors.

## Edits/Changes/Additions

- The question I would have is where is the evidence for any of this? [Example: See “About Changing Attitudes” on previous page.]
- For me it wasn’t about getting people to wonder, it is that they have the experience of wonder.
- One thing that might be interesting to do is use this as a fun list with our staffs and say, “What are the specific examples of where we have actually done any of these things?” Very specific examples are the kind of thing we can share with each other. For example, here’s a place where we made dialog safe; here’s where we had people engaged in doing.
- One way we could frame this section is, “We know we’re successful when: we use evidence, we pay attention to the ‘Bill of Rights,’ we think about the whole person,” and so on.

### A Recap of What Works Captured on Butcher Paper

- We are a safe place for difficult conversations.
- When we use the “Visitors’ Bill of Rights” and “Mickey’s Ten Commandments” we are successful.
- We are the archives of life; collections are our source of evidence and authority.
- Partnering with organizations and communities that care about the world can be a successful approach.
- We are sometimes good at putting science in the context of culture but need to get better.
- We are good places to have fun.
- We’re good at disrupting the norm.
- We can be good at engaging policy makers and being a forum.
- We can be good at changing perceptions and attitudes, including treating the whole person as well as the cognitive and affective.
- We’re good at attracting diverse audiences, especially multi-generational families.
- We’re good at presenting complex topics and asking great questions.
- We are good at presenting opportunities for sense-making and enabling visitors to create their own experiences.
- We are good at citizen science projects that make biodiversity real, personal, local, and important, such as the Nature Lab in LA.
- We are good at getting people to wonder, to connect to values, to what it means to be human, and also to do that within a social context.
- We are good at research and access to science, scientific processes and scientists.
- We are getting better at making spaces playful and allowing people to play together.
- We are good at providing good places to learn by doing and seeing things that you can’t see anywhere else and having people able to make relevance through these experiences.
- We are emphasizeers and intensifiers and framers.

#### Volunteers for Refining the Two Statements Post-Conference:

- Paul Martin
- Dave Ireland
- Matt Matcuk
- Dan Spock
- Tamara Schwarz

#### Opportunities for Post-Conference Gatherings and Follow-up:

- ASTC, October 2014
- Newly formed Citizen Science Association is holding their first conference in February 2015 in San Jose as a pre-conference to AAAS

These are when we are at our best, not necessarily every single day.

**Border-spanning Alliances**

- It has become difficult to get across the border between Canada and the US and you now need a passport, but I don't think that's symptomatic of how permeable natural history museums should be between the US and Canada. I would encourage you all to recognize that the Alliance of Natural History Museums of Canada has 25 members. The ROM is the biggest, but there are a lot of folks up there who would benefit from sitting around in this conversation. When we have our conversations up north we think of the North American sphere and I would encourage you all to think of that too. • Dave Ireland, Managing Director, ROM Biodiversity, Royal Ontario Museum
- I can build on that, being at the other border. We have programs in Mexico and they are important because they do not have nearly the wealth of knowledge or access to things. Part of what we do is when we are collecting for research we give half of what we collect to museums there in Mexico so that they can start building their collections and have something to document of their own. • Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

# Parting Thoughts

**Interdisciplinary Connections**

- I'm very grateful to be able to participate in this, particularly since I work for a history museum. Part of my hobby horse has been whether the disciplines by which we divide up our business and our missions are blinkering us in ways that are no longer relevant to the challenges that we're facing as a society. So it was really nice to get insights into this eclectic, kindred discipline, one which we have mainly, so far, been picking reasons to be different from rather than connected to.

The thing I find really exciting about this conversation is that it gave me an opportunity to find some common cause that we can be supportive of, and maybe there is a bigger thing than natural history museums (and maybe that is ASTC or AAM) that says, "We've got everybody's back." • Dan Spock, Director, Minnesota History Center

- Again, I am pleased to be here because I don't come from a natural history museum and I am proud we are doing environmental science at the Exploratorium building off our strong base of physics and perception. I also loved the conversation about the interdisciplinary nature and that we need to adapt in all of our institutions and include history and anthropology and all of the sciences. That seems really important to me in the work I'm

trying to do at the Exploratorium. And this notion that humans are a part of nature and that science is a part of culture seems really relevant. • Susan Schwartzberg, Senior Artist & Curator of the Bay Observatory, Exploratorium

- I'm very grateful that as an aquarium person I've been invited to be part of this conversation, and I feel very aware because I sort of straddle these groups that there are a lot of conversations and resources available with living collections museums that I think would be really beneficial to this community. I am trying to figure out how I can facilitate some of that going back and forth—what has been done in conservation psychology and what has been learned in zoos and aquarium efforts over the past number of decades wrestling with some of these same questions—because we are all trying to get to the same place. • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore

**Unifying the Natural History World**

- I like the idea of the synergy of these interesting, smart individuals and the idea of bringing the natural history world together to become more unified. I was at Carnegie for five years and I've always felt like wherever I've been I have been in my own little

isolated natural history museum world. I'm excited to see how we can take this further.

- Beth Redmond-Jones, Senior Director of Public Programs, San Diego Natural History Museum

## Informal Science Momentum

- This gathering and all of the ideas shared have been, for me, about how much momentum there is coming from informal science communities that can really feed well into formal science settings. When you look at some of the lines that are blurring now at universities and in the K through 12 community about what constitutes good learning and how you approach difficult topics, from flipping the classroom, to making more problem-centered learning, to inquiry and so on, we are at the forefront of that, that is what we do. We provide spaces and interdisciplinary ideas and ways of approaching learning about topics that can really support a lot of movements that are happening in formal learning communities. I would love to see us continue to do that. • Lisa White, Ph.D., Director of Education and Outreach, University of California Museum of Paleontology

## The Formal-Informal Connection

- Lisa White commented on some of the things that I've been thinking about as somebody who has had a split personality over the last two-and-a-half decades working in both formal science education and informal

science education. When I was hired here seven years ago to work on the reinstallation project, I was able to contribute knowledge as a formal science educator and as somebody who had worked in a research museum, but during those seven years I went through a transformation that was incredibly beneficial. That was due to working with people like you, working with other museums and coming up with new ideas and ways of communication that I am then able to take back as a formal science educator. So it is being able to explain why science is relevant, not just that you need to get an "A," and coming up with different ways to connect and to communicate importance.

I think I've come back a much broader person with the knowledge that I've acquired from other museums, both working with our advisory groups from NSF and working with our cultural advisory groups. It has been tremendously influential on me and my own personal development. • Douglas Long, Ph.D., Former Co-PI & Sr. Curator of Natural Sciences, OMCA; Adjunct Associate Professor, St. Mary's College

## Sharing (and Implementing) Ideas

- I'm thinking about how grateful I am to have everyone here and to share in the diversity of ideas that everyone has brought to the table. I'm also thinking about how we can get isolated in what we're doing in the day-to-day, and about coming together to

## Risk Taking: The Importance of Post-it Notes

- This is going to sound tongue-in-cheek, but I want to highlight the importance of Post-it notes. We've talked a lot about risk in our own institutions and at the gallery here. A simple risk is just to put Post-it notes out on your floor, or a chalkboard or whatever it is, and acknowledge that there is this dialog with the community. It is partly figuring out what they want to know, but also how we can patch information on as well as pass on what we don't know. • Jennifer Menken, Exhibits Coordinator, Bell Museum of Natural History

## Institutional Change To-Do List

- I'm thinking about all of the amazing ideas we've talked about and how far my museum needs to come. We have a lot of work to do at my institution to catch up to some of you. It will be interesting to see which parts I try to bring back and tackle first to change the institution. • Timshel Purdum, Director of Education and Lifelong Learning, Academy of Natural Sciences of Drexel University

### The Start of Something (and Need for a Name and Including Young Professionals)

- I'm excited about being here at the start of something and want to recognize that there is a power in naming something. The thing that keeps coming to my mind is, "Union for Concerned Natural History Museums." That is just one thought, but there is power in a name and I think we're going to have to do that. And then I think a lot about opening the conversation about where the next steps are going and getting younger professionals from each of our institutions involved in the dialog. I'm also grappling with ideas of what I can do in my professional life and the work I'm doing to help change how Los Angeles works and how, hopefully, those two things can be combined. There are a lot of challenges there. This conference has made me see how that might go in other directions. • Lila Higgins, Manager, Citizen Science and Live Animals, Los Angeles County Natural History Museum

experience this sort of expansion of ideas and then going away and thinking about a contraction and implementation. • Wesley Webb, Exhibition Designer, OMCA

### Complexity and Convening

- I'm thinking about the duality in our work of embracing complexity and at the same time simplifying that complexity to communicate it effectively. I'm also trying to think a little more deeply about what we mean by "convening" and what it demonstrates about our willingness to engage with other parts of our community in trying to come up with solutions and decisions that help shape our future, and that it's not just about dropping our data on other people's desks and saying, "Here you go, you figure out what to do with it." • Tamara Schwarz, Associate Director of Exhibit Content Development, California Academy of Sciences

### Ideas for Moving the Museum Forward

- I've spent a long time, as have many of us at the museum, trying to move the museum forward, and I'm just thinking how really beneficial this meeting is to us and how we're going to try to share this with the rest of the staff. We have this opportunity, and it is great to have all of the ideas in this room to help us move forward. • Don Luce, Curator of Exhibits, Bell Museum of Natural History

### A Watershed Moment

- In the long age of human history we live at a watershed moment. The future is going to be determined by human decision making either by default or by design, by accident or by intention, and the decisions made in the next 20 years are either going to greatly constrain or greatly expand human opportunity and potential. I really appreciate all of us in the roles that we play in helping us to design and ensure the future that we all want. • Pat Hamilton, Director of Global Change Initiatives, Science Museum of Minnesota

### The Role of Design

- As a designer I'm thinking about what the role of design is in all of this. I think within the institution it is definitely a supportive role, to support the values that we have all talked about. Personally I'm just marinating on cultures and how design can help to build the trust of the public in an institution, help build the trust within a culture, and how they can start seeing themselves reflected in a gallery. • Auburn Leigh Lahoski, Graphic Designer, OMCA

### "You Are Not Alone"

- We had an idea that we abandoned or didn't quite bring to fruit that I'm still attached to. It was an experience called "You Are Not Alone," and was the idea that you are not alone in caring and wanting to make a dif-

ference, you're not alone in feeling hopeless about it, you're not alone in changing how you feel about it. We want to do something on the floor, but it hasn't come into form yet. I have the fantasy that there would be some version of that somewhere in every institution, some form of emotional dipstick about how people care.

In the History Gallery we have a big map to which people can affix little dots showing where their families came from, where their grandparents came from. You begin to see that people come from all of these places and this collective witness of where people are, and there is something really powerful about that.

If you come into a gallery about conservation or the like, you see people who are hopeless and you see people who are changing from hopeless to hopeful and it sort of helps. It's not like an AA meeting exactly. It is: I'm not the only one who felt bad about changing how I feel about my level of commitment to conservation or making it take a form in my daily life. • Mary Jo Sutton, Co-Principal Investigator, Exhibit Developer, OMCA

### Carrying the Conversation to Art Museums

• I have worked in large art museums for 20 years and I have been here for five months. I am feeling inspired and perplexed by the fact that these kinds of conversations around

advocacy for human creativity and human imagination are not necessarily the core conversations in major art museums. I am inspired by how much art museums could learn from this group and from natural history museums. • Kelly McKinley, Director, OMCA Lab, OMCA

### Bringing Museum Scientists to the Table

• I've learned a tremendous amount over the last couple of days and have a ton of notes to bring back to the museum. One of the things that is sort of surprising to me as a museum scientist is that there are not a lot of museum scientists at the table. I think that's the job of museum scientists, to start honoring the audience and thinking strategically with groups like this. We get too used to closing the doors and pinning beetles down. • Ian Miller, Ph.D., Department Chair of Earth Sciences and Curator of Paleontology, Denver Museum of Nature and Science

### Risks, Action, Pushing the Envelope

• I'd like to thank you for including a live animal person. I've been think-

### Collective Action

• What stands out for me is the idea of collective action. I didn't think going into this that there was that real possibility, and I think that is amazing. It is hard to think about how you make change within your individual organizations or your own communities, but I think there's real potential in coming together and seizing this watershed moment in a way that we maybe haven't done before. I'm hopeful that we can take it to the next level. • Lori Fogarty, Principal Investigator, Director and CEO, OMCA

OMCA staff



### Involving Younger Professionals

I feel really lucky to do what I do and I also believe in mentorship of younger professionals. We are very privileged to have this conversation, whereas a lot of people I worked with aren't directly exposed to this. I do know that they'd love to be asked to be part of this and be asked to think and contribute. This is really helpful to me because I can go back to the museum and create these forums or whatever, which at the executive level would not happen. I think that's very powerful as an internal thing. • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

From left: Roy Campbell, Simon Adlam, Don Pohlman



ing about what I was thinking about before, when planning my talk: What am I doing at the aquarium to push the envelope? What risks am I taking? What can I do? If it's really about what may be called propaganda, how am I doing that and where can I succeed? I feel like I'm talking more than I'm doing, so how do I change that? • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

### Making a Difference (and Measuring It)

- One of the reasons I left the art museum world and went to the natural history museum world was because I really wanted to make some kind of difference or get involved with some meaningful contribution of some sort. Having coproduced, in collaboration with others, the Hall of Biodiversity, on the sixth extinction, I am especially appreciative of this convening because I don't know what effects all of that is having. It's hard to measure. It's hard to tell when you're in the middle of it. We are here as a symptom of wondering how effective we are, and the hope is that we can try to test it and try to figure it out. Perhaps this collective group is a new organ for advancing some of these really important causes, so I'm grateful and

excited to be a part of that. • David Harvey, Senior Vice President of Exhibitions, American Museum of Natural History

### Reinforcing the Nature-Culture Connection

- I feel really good because we've completed a three-year project on nature and culture which was really, really out there and really bold, so it's great to hear everybody talking about it. I'm now in the middle of remedial work because at one point in the past, when there were too many people involved, the environmental story in our museum got lost and the connection with nature got lost. This has reinvigorated me to go back into this project, when normally doing remedial work feels like going to the guillotine. I'm going to go back and make sure that nature-culture is getting slammed through there. • Simon Adlam, Director of Exhibits, Creative Director, Los Angeles County Natural History Museum

### Power of the Forum, Upping Our Game

- I'm thinking about leverage and scale. I still believe that the forum idea is really powerful when it's done right. I worked at a place in Ireland where we had a staff of seven, and within the space of six months we ended up hosting the forum for three major scientific events in Ireland. Ireland is smaller than here, but think about the role that we could play in the community, taking community

voice, taking policy and scaling up that discussion and getting it out of rooms like this and out from behind the pay wall. There are things we are doing on iPads that we need to scale up to the community level. We need to use PR as creatively as we can—not only so that it reflects well on the museum but so that it becomes this potent force in the community. I think we’re way below the level that we need to be in that game. • Don Pohlman, Co-Principal Investigator, Senior Exhibit Developer

### Bringing Humans into the Story

- I feel there’s a mirror aspect with projects that are happening now at the aquarium. We’re looking at renovating our Chesapeake Bay Watershed interpretation and the story we’re telling there, and bringing humans more into the story because our historic exhibits have primarily been more about the pristine environments. We are looking at how we integrate this conversation because the whole conversation is happening so that people will understand the watershed and understand their part in that. So I’ve been thinking about that and bringing it back to the team. • Jenny Sayre Ramberg, Director of Planning and Design, National Aquarium in Baltimore

### Inspirational

- This was really inspirational for me, being

a new museum professional, hearing everybody’s really deep thinking about all of the issues. And I’m inspired by the idea of collective action that Lori mentioned and hope we can follow through with that. • Nadja Lazansky, Project Coordinator, OMCA

### The Anthropology of Natural History Museums

- I am struck with the cult of natural history museums that we are a part of and the anthropology of that. What has been going on in my mind is the idea of a partnership between anthropology museums and natural science to look at what science is thinking and expose that to the public. What are we doing with data? Some people know that already and some people really don’t. • Jenny Cole, Exhibit Fabricator and Associate Preparator, OMCA

### Integrating Old Diorama Elements

- I am an associate preparator and that is my passion. I love making the things, I love making fake nature. I am hearing from all of you that you have a love for that as well and a desire to preserve older things that are still really viable and really relevant to the new exhibit. There seems to be a desire to

### Collective Conversation and Collaboration

- I think we are all way better off for this sort of collective conversation and continuing in some way to share with each other the things that we’re trying to do because we’ll get there faster if we actually bounce off of each other and collaborate on stuff. It’s very different from all of us trying to do this independently in our own corners. This is an incredible opportunity for us to get to know each other, build our relationships with each other and see the potential of continuing to do that. I think this is a great start. Regardless of any white papers or anything that gets done, there will be more conversations among us than there were before we were here. That’s a baseline. • Paul Martin, Senior Vice President of Science Learning, Science Museum of Minnesota

Lori Fogarty (center) in group discussion



**Kudos for the Monterey Bay Aquarium's  
Political Voice**

- I also want to say to Don Hughes that to me the Monterey Bay Aquarium is such a strong political voice. You have an entire department on ocean policy that is out there getting legislation passed. I don't know how many other institutions have that, and that must influence the exhibits. I know it influenced the *Ocean Plastics* exhibit, which is amazing. You were being kind of humble a little earlier. Didn't you make shark finning illegal? The Monterey Bay Aquarium is an active voice in policy, which is hugely inspiring. • Cleo Vilett, Associate Preparator, OMCA
- Yes, we spent money in Sacramento to make that happen. • Don Hughes, Vice President of Exhibitions, Monterey Bay Aquarium

Documentation from this conference as well as additional information about the OMCA NSF-funded *Hotspot California* project and the reinstated Gallery of California Natural Sciences, including documentation, evaluations and summary findings, will be available in Fall 2014 on the OMCA website (<http://museumca.org/>) and the CAISE website (<http://informal.science.org/>).

incorporate new and old and that's music to my ears. • Cleo Vilett, Associate Preparator, OMCA

**Value of NSF Support**

- Our museum started in 1879 and when I joined the museum its collections were in bad shape, deplorable conditions. Programs were hobbled and the exhibits were pretty damn awful. We got a lifeline and that lifeline was a half-million-dollar grant from NSF. With that we were able to prove our worth, we were able to prove the value of

our collections, we were able to prove that we were worthy of going forward in reaching out to our community, raising money, getting it, and it has been two decades of enormous progress. NSF set the table here. That exhibit in the OMCA Natural Sciences Gallery set the table for this conversation, and this convening has been really fantastic. NSF should recognize the investment that they made and hopefully keep investing in natural history museums and carry this forward.

- Roy Campbell, Director of Exhibits and Digital Media, North Carolina Museum of Natural Science

*Participant discussion*

