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EMPOWERMENT PROJECT AND MORE!

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DISTRIBUTED LEADERSHIP: A MODEL FOR A NEW MUSEUM PRACTICE

By Christian Greer

We are situated at a location in the spacetime continuum where the nonprofit universe that we used to know and love has been unexpectedly disrupted and immeasurably warped. Now, a new nonprofit universe appears to be emerging and expanding—perhaps even accelerating! It follows that leaders, and the entire leadership as a practice within our organizations, will need to adapt quickly. But how exactly should we adapt and how might we keep pace with the changes in our business environments yet remain focused on the constancy and importance of our missions?

Critical questions. There is certainly no shortage of issues and challenges that we can reflect upon from our recent past. However, as our work starts to settle into the new normal, we will need to possess the courage to not only continue to think differently and creatively about our missions, business models, and equity coefficients, but to also integrate these ideas into a more cohesive understanding and appreciation of our practice from a leadership perspective. As a leader in the field of informal STEM learning trying to reinvent how I lead, I find myself asking three critical questions:

- Who stays and who goes?
- Who leads and who rows?
- What shrinks and what grows?

These questions may sound fun to read, but that's where the fun stops. Each question presents a particularly daunting challenge at the core of what we need to respond to as organizations trying to adapt to our new business environments, funding climates, and community engagement paradigms. To address them, we will need higher levels of strategic vision, operational efficiency, and equitable compassion.

Reframing and reopening. Last year, many of our organizations dialed back staffing as the pandemic evolved and were caught in a dilemma trying to figure out who and what was most essential to the organization in a time of crisis and who and what was not. For leaders faced with tough decisions about how to reduce their team complement based on core needs, identifying the most essential staff to keep in the organization was not a simple task. We lost a lot of very talented and passionate museum profes-

sionals. Unfortunately, without truly knowing what the future was going to hold, it was difficult to know at the time if we made the best choices.

Many tough decisions, along several different lines of thinking, had to be made to reduce, and/or optimize, force. From the consolidation of skills, roles, and departments, to identifying multi-talented staff, lots of approaches were taken that directly impacted and influenced the continuity and stability of our organizational structures. Now that organizations have reopened and they're looking to add back staff, the opposite situation exists. After considerable internal restructuring and rebuilding of the team, we are now asking the question of what types of skills and expertise are needed after reset to help our organizations innovate, engage, and grow?

Cultivating collaboration. Irrespective of your situation as a leader, whether you are still reducing your staff due to financial reasons, reorganizing your departments for efficiency, or ramping up your team for the summer season, you still have to figure out how your team members are going to work together. Collaboration is one of the most important elements of a successful organization (Rosen, 2007). However, collaboration doesn't always mean everyone is happy and working together with smiles on their faces. You don't have to live in a Utopia for collaboration to work, but for collaboration to be both efficient and effective, it helps if it is actually enjoyable.

Regardless of size, function, or purpose, cross-functional project teams need to coordinate, align, and optimize member activities to drive performance. This often requires an increased focus on leadership and individual agency (Daft, 2001). Agency is important to consider, especially when it comes to intrapreneurship, a function where entrepreneurial thinking and creative passion are applied within an organization instead of outside of it (Pinchot, 2000). Inciting intrapreneurship in your organization is more than just inspiring your leaders to pursue their creative ideas. It is also about tapping into the collective social capital of your team and igniting a chain reaction of change that can help shape the innovation potential of your organization. Leaders, who work outside the lines and beyond the silos, need inventive ways to get into the flow

as they tackle the toughest problems in their organization and learn to transition from independence to interdependence (Bundred, 2006).

Effectively sparking innovation and promoting intrapreneurship are very challenging propositions, but they may help to spur better collaboration. I've always held the view that high-performing leaders can easily overcome barriers, quickly tunnel through bureaucracies, and effectively break through internal silos. But exercising self-efficacy and working collaboratively with others within an organization is an incredible balancing act (Bandura, 2017). Your high performers need to be able to find new ways to identify and expose the invisible horizontal and vertical barriers within organizational networks that can attenuate success (Jones, 2013). Those who can overcome these barriers have the power to influence and motivate others to follow their lead. The effect can spread far beyond individual business units and increase innovation and collaboration throughout the entire organization.

Optimizing leadership capital. It's important to note that leadership success within an organizational network often has a strong correlation to the centrality of individuals (Burt, 2004). Properly supporting your leadership roles adequately can help drive innovation and open new avenues to hidden social capital. However, not all of your leaders occupy formal leadership positions within your organization's leadership structure. Determining the optimal roles of leaders within your organization can be challenging and time-consuming, but incredibly valuable. Both formal and informal leadership roles merit consideration, and it is important to optimize leadership for proper direction setting, alignment of resources, and commitment to generate results. Informal leadership networks are present in nearly every enterprise. They are expressed in arrays of leadership practices that influence relationships among actors. These practices can exist in parallel with formal structures and contribute to your organization's innovation potential (Borgatti & Cross, 2003).

Leadership lenses. There is a tendency for traditional thinking around leadership within both social and organizational networks to be viewed through two different lenses. The first lens views leadership as a direct consequence of individual agency, where the leader, as a hero in this scenario, overcomes monumental obstacles and confronts the most difficult challenges to achieve success. The second lens views leadership as a function of organizational roles and systems within structures, where the leader's identity is defined by his or her position. I have found that this apparent dichotomy creates an incredible dilemma. A potential solution to it is the acceptance of a new unit of analysis for leadership that offers a more holistic view,

as opposed to one that focuses on aggregate quantities of individual contributions within a given leadership practice (Gronn, 2002).

We now live in a world where post-heroic leadership models are proliferating, and it has become increasingly acceptable to see leadership as something beyond what is directed by a single person to other people. Abandoning individualistic leadership myths and moving beyond the classic hero or heroine complex is becoming increasingly important. Evolved paradigms and frameworks are needed that acknowledge the part played by two or more supporting players. Perhaps we are in a position to replace the heroic concept of leadership with models that better situate it as a group activity that manifests itself through relationships both between and among people. I believe that making this critical shift can effectively upend the status quo and redefine who gets to lead in the workplace.

Sharing the practice of leadership. Another way to understand this perspective on leadership in practice is to accept a more fundamental notion of shared leadership within our internal leadership networks. Shared leadership allows us to reframe the standard heroic leadership paradigm and move us toward a leadership practice that involves more than a single individual. Additionally, shared leadership can exist in both formal and informal organizational networks. There are many types of shared leadership models, such as collective leadership, collaborative leadership, co-leadership, and emergent leadership. Each of these models recognizes that leadership is not just the work of one person and involves multiple people, at all levels, within the organization (Pearce et al., 2007).

Shared leadership practice can be thought of as fluid and emergent, rather than a fixed phenomenon (Gronn, 2000). In this model, leadership is viewed as a collective social process that is variable and implies that multiple actors facilitate leadership and interact with each other during the work. In this context, leadership is situated within the practice and involves at least multiple aspects of agency. From this perspective, leadership should not just be thought of as just those individuals who occupy formal leadership roles within your organizational structure, but also people who exercise leadership across both vertical and horizontal boundaries within an organization, with leadership practice composed of the product of the interactions of leaders, followers, and specific aspects of their situation (Spillane, 2006).

Situating leaders. Expanding on the elements of leaders, followers, and situations, we must acknowledge that our leaders do not operate in the vacuum of space. There is a shared component of leadership that involves more than

one person and extends beyond responsibility and accountability within informal organizational networks and in daily practice. Terms like collaborative leadership, co-leadership, democratic leadership, shared leadership, situational leadership, and distributed leadership are often used interchangeably. However, they have different meanings depending on the context and how they are applied to various workplace situations and environments. Leadership routines largely depend on the role of the leader within formal and informal organizational leadership networks. Depending on who accepts responsibility for the work, or who prioritizes the responsibility, may determine who is accountable. Social and other forms of organizational capital can be distributed through these channels and situated in leadership practice itself (Spillane, Hallett, & Diamond, 2003).

Distributed minds - distributed leadership. The idea that people can appear to think in partnership with each other, through culturally supplied tools, shifts the locus of control around thinking in a way that is distributed. The concept of distributed cognition is not new, but the recent acceptance of a more constructivist view of human cognitions being situated and distributed have seen increased adoption (Hutchins, 2001). Harris (2013) makes clear that as long as leadership is considered to be confined to those individuals who are only in formal leadership positions within an organization, we are missing out on a real opportunity to recognize informal leadership, expertise, and talent that supports the leadership practice as a whole. The concept of distributed leadership advances leadership as a practice facilitated by the many rather than the few. It takes into account both formal and informal leadership roles, highlighting the interdependencies between leaders and followers. This approach creates opportunities for non-designated leaders within a community to lead, or be recognized for their leadership, rather than remain hidden. The relatively recent social acceptance of more democratic and collaborative social structures in the workplace, such as structural flatarchies and holacracy, have raised the profile and increased the utility of a distributed form of leadership (Morgan, 2014).

Spillane (2006) identifies three basic aspects of distributed leadership: collaborated distribution, collective distribution, and coordinated distribution. In all of them, leadership is viewed as the sum of the interactions between and among leaders, followers, and their specific situations within a leadership practice. The types are not mutually exclusive. They are differentiated simply by how the leadership is situated and practiced in the work environment. They each have their own set of leadership routines. Sports analogies are used to describe the identified types of distributed leadership practices among leaders, follow-

ers, and their respective situations:

Collaborated distribution characterizes a leadership practice where work is shared between two or more leaders working together in the same space and time to execute similar leadership routines. This type of distributed leadership practice is similar to playing basketball, where players interact and engage with one another by passing the ball to fellow teammates to set each other up to shoot and score. Project team meetings, with multiple project leads and agile design sprints, can be an example of collaborative leadership.

Collective distribution involves two or more leaders facilitating a leadership routine where the work of the leaders is done separately but also interdependently. This type of distribution is similar to baseball where the players each take turns at-bat in an attempt to hit the ball and run from base to base. The collective interactions with the pitcher are what produce the practice. This can be analogous to how project team members handle workflow using Kanban, emphasizing leadership at all levels on a project.

Coordinated distribution describes leadership activities that need to be performed in a specific, well-defined sequence. This type relies on interdependence and is analogous to a relay race in the sport of track. The co-performance of the leadership practice in a relay race is dependent upon the game being played by the players in a particular sequence. This leadership distribution type is akin to the waterfall approach to project management, where the sequencing of tasks and dependencies are created to facilitate the production of deliverables.

Making it happen. Each type of distribution, be it collaborated, collective, or coordinated, can augment or challenge existing leadership paradigms in your organization's leadership culture and shift the focus from individual leaders acting on their own in silos, in what can be described as heroic situations, to a leadership practice that is shared across teams and departments. Depending on the type of distribution, your team members may serve as a leader in one project and a follower in another. Actively managing distributed leadership types and their associated routines may greatly influence how social capital moves through your organizational networks.

Consider conducting a social or organizational network analysis of your project teams to learn more about who is connected and who is disconnected from core activities or decision making. Generate a RASCI matrix (responsible, accountable, supportive, consulted, informed) to differentiate between roles of leadership responsibility versus roles of leadership accountability while tracking the delegation

of authority within your organizational networks. Try to identify your team members' intrapreneurship potential and align it to various forms of leadership distribution. By incorporating distributed leadership, you can demonstrate how leaders at all levels within your organization, in both formal and informal roles, can innovate together and adapt more efficiently and effectively to our new normal.

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Christian Greer is the President and CEO of the Michigan Science Center in Detroit. He may be reached at Christian.greer@mi-sci.org.

ALL IN THIS TOGETHER: INSPIRING SOLIDARITY THROUGH COMMUNITY STORYTELLING

By Krista Ulman, M.A. and Liz Roth-Johnson, Ph.D

TURNING A CRISIS INTO AN OPPORTUNITY

The California Science Center is a free-admission science center located near downtown Los Angeles. We serve a diverse community of learners 362 days a year through hands-on exhibits and educational programs. The California Science Center aspires to stimulate curiosity and inspire science learning in everyone by creating fun, memorable experiences, because we value science as an indispensable tool for understanding our world, accessibility and inclusiveness, and enriching people's lives.

Like many museums and science centers, the California Science Center closed its doors in March 2020 in response to the COVID-19 pandemic. Our closure made fulfilling our mission more difficult. We quickly pivoted to online offerings, including daily science videos and activities for children (<https://californiasciencecenter.org/funlab/stuck-home-science>) and a biweekly podcast geared toward teens and adults (<https://californiasciencecenter.org/funlab/ever-wonder>). Optimistic that we would eventually reopen our doors, we also continued investing in new exhibition projects. As a science center, we felt it was important and consistent with our mission to create a new exhibition about the COVID-19 pandemic (Figure 1).

In this paper, we describe key decisions and processes for developing our COVID-19 exhibition, *All in This Together*, with a special focus on engagement with local community members. By sharing our experience, we hope to provide useful ideas and tips for other

museums and science centers who may be looking to expand their outreach and incorporate more affective, community-based storytelling in their exhibitions.

WHAT'S THE BIG IDEA?

The COVID-19 exhibition development process was uniquely challenging. Our exhibition goals typically revolve around sparking curiosity about broad science and engineering topics such as ecology or aerospace. But in this case, we didn't need to spark curiosity about COVID-19—everyone was immersed in this topic on a daily basis. And the topic itself was constantly evolving, as new research emerged and public health guidance shifted.

Notably, we officially kicked off the exhibit project in late June 2020, just as the summer surge of COVID-19 cases was beginning in Los Angeles County. We were brainstorming exhibit themes and topics while facing a rapidly escalating, massive public health emergency that was affecting ourselves and everyone around us.

As we grappled with these challenges, we also identified unique opportunities. Because the pandemic affected all of us in one way or another, we were confident that every one of our visitors would have a personal connection to this science topic. We also recognized that this exhibition had the potential to not only enrich lives with science knowledge, but also potentially save lives from COVID-19.

With so much at stake, we realized that the exhibition needed to be actionable as well as inspirational. We assembled a small scientific advisory committee of local public health and infectious disease experts to guide our messaging. We began thinking about ways to encourage specific behaviors—like mask-wearing, physical distancing, and participating in contact tracing—that could slow the spread of the virus. Our initial inclination was to achieve this goal by simply explaining the science behind these guidelines, but we feared that would not be convincing enough.



Figure 1: *All in This Together* exhibition on display at the California Science Center in Los Angeles, CA.

We knew that we wanted our visitors to not just learn something, but to feel something when they experienced the exhibition.

USING EMOTION FOR IMPACT

Museums often intentionally evoke emotional experiences in their visitors—both positive and negative. For example, art exhibitions can provoke many different emotions, from wonderment and pleasure to discomfort or outrage (Mastandrea et al. 2007). Exhibitions in zoos and aquariums are often designed to elicit positive affective responses in the belief that those emotional experiences will inspire empathy toward animals and promote conservation-minded behaviors (Chin et al. 2017, 34). History museums and historical sites utilize artifacts, personal narratives, and reenactments to elicit emotions among visitors, with a goal of providing greater understanding of specific times, places, and events (Gregory and Whitcomb 2007). Memorial museums naturally bring up strong and sometimes painful emotions, so designers tread carefully to allow visitors to feel those emotions without traumatizing them (Weisser and Koch 2017, 72).

Less attention has been paid to the role of emotional experiences within science centers, but this is changing. Early work in this area suggests that tapping into visitors' emotions correlates with deeper levels of cognitive engagement and long-term retention of knowledge (Falk and Gillespie 2009; Rappolt-Schlichtmann et al. 2017). Emotions have long played a role in the visitor experience, and museums have many valid reasons for evoking emotional responses in visitors.

Germane to our COVID-19 exhibition, public health researchers have also studied how emotions affect personal behaviors and decision-making. This type of research is crucial for combatting public health emergencies, which are emotional events that often require significant behavioral changes across entire populations. Officials need to know how to persuade people to follow public health guidelines, whether that's by appealing to logic and reason, or by conjuring emotions such as fear, shame, or unity.

Relying on logic is tempting, but in general, human emotions have a stronger effect on our perceptions of risk than careful, analytical reasoning (Slovic 2004, 311). Negative emotions like fear are rampant during

a pandemic, and research suggests that appealing to fears can produce desired behavioral changes when those fears reflect a significant threat (Witte and Allen 2000, 604). But crucially, fear only promotes behavioral changes if paired with a positive feeling of efficacy (Witte and Allen 2000, 604). Without efficacy, fear can lead to feelings of helplessness and defensiveness (Van Bavel et al. 2020, 461).

Other positive emotions—such as a sense of solidarity and feeling part of a community—can also influence behavioral changes. Humans are social animals, and many individual behaviors are affected by social norms. For example, people engage in actions such as recycling if they perceive that those behaviors are expected within their community and that complying with them will lead to community approval (Cialdini and Goldstein 2004, 597). Public health messaging can promote healthy behaviors—such as handwashing—by reinforcing the idea that most people are behaving that way (Van Bavel et al. 2020, 463). People are especially persuaded to partake in healthy behaviors when encouraged by someone demographically similar to themselves (Centola 2011, 1270). The positive emotions of efficacy and solidarity play a key role in convincing people to comply with public health guidelines (Van Bavel et al. 2020, 462).

As we developed our exhibition, our advisors reiterated what we learned from the literature. They emphasized that our messaging should retain an underlying positive tone. They also suggested that the exhibit show people what they can do to fight the pandemic. Representatives from LA County Department of Public Health (DPH) further reinforced these ideas and added that we should try to help visitors appreciate the severity of the pandemic without scaring them. Inspiring solidarity was crucial.

SOLIDARITY THROUGH COMMUNITY STORYTELLING

We decided to try to inspire solidarity and efficacy in our visitors by incorporating community stories in the exhibition. We first landed on the idea of developing a display of photos and quotes representing “ordinary heroes”—people in Los Angeles taking actions to help fight the COVID-19 pandemic (Figure 2).

First-person accounts can help create a personal connection with a particular subject matter and build

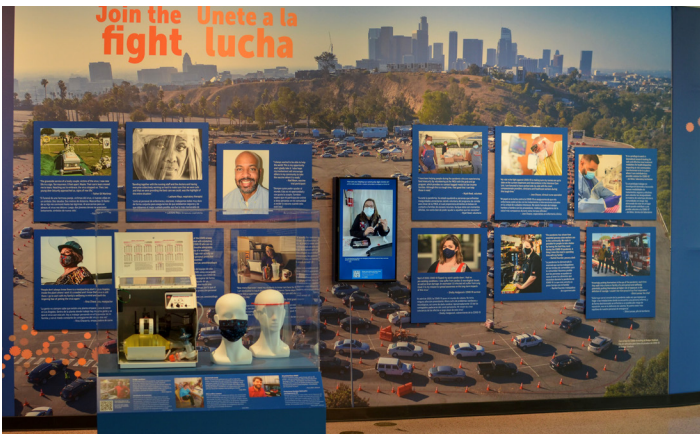


Figure 2: Crowdsourced photos, stories, and objects of local “ordinary heroes.”

empathy (Mann and Cohen 2017, 94). We hoped that crowdsourced images and stories would show how people in our community were working hard to fight COVID-19, eliciting a positive feeling of solidarity and inspiring similar behaviors in our visitors.

To collect photos and stories, we first developed a list of categories including healthcare workers, teachers, frontline workers, faith leaders, scientists, vaccine trial participants, survivors, and more. We intentionally expanded our search to include people outside of science-adjacent roles, such as essential workers, community volunteers, and faith leaders. Because most of our visitors are not themselves scientists, engineers, or healthcare professionals, we felt it was critical to show a wider cross-section of our community to help all our visitors feel a personal sense of connection and efficacy in fighting the pandemic.

We began by reaching out to colleagues, family, and friends in these roles, asking for photos and quotes. For past crowdsourcing projects, we had experimented with large-scale pleas—both on social media and to our entire staff email list—but we have consistently found that reaching out directly to individuals tends to be more fruitful. This requires more staff time, but the numbers and quality of photos increase with more direct requests.

Through our initial outreach efforts, photos and quotes started trickling in. We then began reaching out to local organizations that we thought might have professional photos at their disposal. These local organizations were extremely receptive to the project and eager to help. Cedars-Sinai and UCLA Health provided

images of healthcare workers and researchers, a local union (UFCW 770) shared photos of essential workers, and the YMCA provided snapshots of community outreach workers and volunteers. LA County DPH helped us get in contact with survivors who were appearing in a DPH awareness campaign. These organizations provided a huge number of photos to select from, and they also graciously collected quotes from the people featured in their images.

Once we had received photos in every category, we carefully evaluated the images for aesthetic quality as well as a demographic diversity reflective of Los Angeles County. We took care to avoid reinforcing potentially damaging stereotypes by considering whom we were showing in each role. For example, we chose to highlight the story of a male nurse and made sure to portray people of a variety of racial and ethnic backgrounds in frontline essential worker roles. We also reviewed the photos’ accompanying quotes to assess their emotional impact.

During our search, we discovered a few three-dimensional objects that helped call attention to the resourcefulness of different groups in responding to critical needs arising from the pandemic. We acquired a homemade mask sewn by a community volunteer, a 3D-printed face shield made by our assistant curator, and a bridge ventilator device created by the aerospace company Virgin Orbit. In each instance, we were able to leverage our existing network of friends, colleagues, and institutional supporters to enrich the exhibit experience.

CENTERING OUR VISITORS IN THE NARRATIVE

By including the stories of our diverse local community, we hoped that our visitors would see themselves reflected in the exhibit. To go a step further, we developed an interactive to motivate visitors to upload their own photos and quotes, literally adding themselves to our wall of heroes. Through this interactive photo-sharing experience, we aimed to evoke a sense of efficacy that would inspire our visitors to take actions to fight COVID-19 themselves. If visitors were already following public health guidelines, we hoped the interactive would motivate them to keep up the behaviors that would ultimately end the pandemic.

We worked with Brad Larson Media (<https://story->

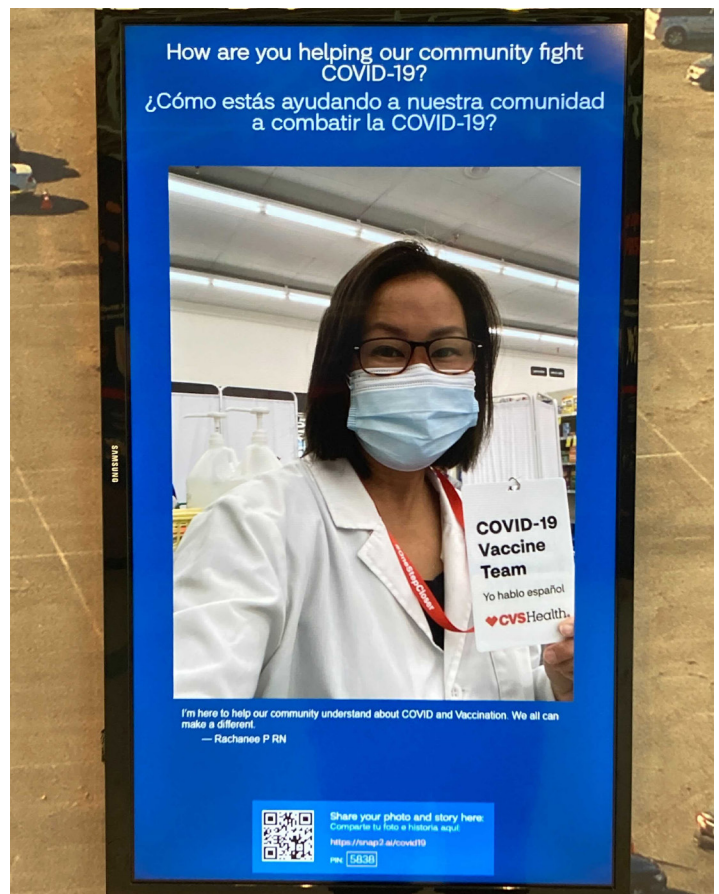
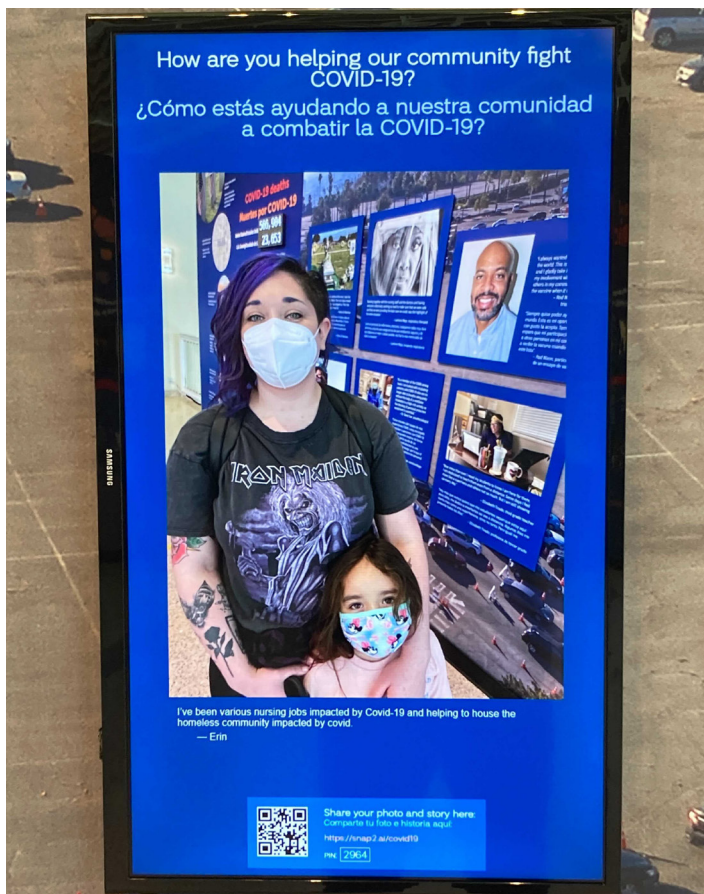


Figure 3: Visitor submissions to the exhibition.

[habitat.com/](https://www.habitat.com/)) to create our photo-sharing interactive and designed it to match the aesthetics of our crowd-sourced photo wall (Figure 3). We wrote a prompt for the interactive intended to inspire both a sense of solidarity and efficacy: “How are you helping our community fight COVID-19?” Once the exhibition opened, visitors would be able to submit a story and photo from their mobile devices that would appear on the gallery wall within minutes.

MAKING NUMBERS REAL: COVID-19 MEMORIAL QUILT

The final community-based piece of our exhibition was a COVID-19 memorial. This pandemic has cost us a staggering number of human lives—more Americans have now been killed by the disease than died in service during World War II. We felt it was imperative to acknowledge the death toll in our exhibit, but in such a way that would motivate visitors to reflect and take action to save more lives rather than shut down out of fear or sadness. We were inspired by many institutions—including the Museum of Tolerance, the 9/11 Memorial Museum, and the National Me-

morial for Peace and Justice/Legacy Museum—that make historical tragedies more visceral but also allow visitors to reflect on actions they can take to channel their grief and prevent future tragedies.

To this end, we wanted to help visitors feel a personal, empathetic connection to the many lives lost and see how others were positively channeling grief. During our search for photos and stories of ordinary heroes in our community, we learned about a COVID-19 memorial quilt project through a local news story (<https://covidquilt2020.com/>). Eighth grader Madeleine Fugate was creating a quilt by sewing together squares handcrafted by people who had lost loved ones to COVID-19. We reached out to Madeleine and discovered that her goals for the quilt perfectly aligned with our own goals for the exhibit, and she was hoping to eventually display the quilt panels she was creating in public spaces.

We ultimately displayed two quilt panels, each containing twenty-five individual commemorative squares (figure 4). We developed an accompanying interpre-



Figure 4: Memorial Quilt Panels on display with interpretive graphic.

tive graphic panel to share Madeleine’s photo and story, using the same format as our wall of ordinary heroes. We highlighted brief stories about the individuals being commemorated in the quilt to drive home the fact that every number in the death count represented an individual mourned and missed by their loved ones. Finally, we added a QR code that linked to a landing page on our website where people could learn more about the project and how to submit their own memorial square.

By featuring the inspirational artwork of Madeleine and all the quilt’s contributors, we hoped to show our visitors that ordinary people were actively channeling immense grief into a beautiful work of art. This project was yet one more way to inspire solidarity and efficacy.

RESPONSE TO THE EXHIBITION

The Science Center reopened to the public on March 27, 2021, with reduced visitor capacity and numerous COVID-19 safety protocols in place. *All in This Together* opened two weeks later. The first user submissions to our photo interactive captured exactly the spirit we had hoped. To the question, “How are you helping our community fight COVID-19?” our visitors responded:

- “Being socially distant and wearing a mask at all times!” – Nicholas and Amelia
- “Getting fully vaccinated!” – Blanca
- “Volunteering at a vaccination clinic at Wat Thai

in North Hollywood.” – Esteban

- “I’m here to help our community understand about COVID and Vaccination. We all can make a difference.” – Rachanee P, RN

- “I’ve been [in] various nursing jobs impacted by Covid-19 and helping to house the homeless community impacted by covid.” – Erin

- “My husband and I got vaccines as soon as we could. I also volunteered to make lasagnas for families who requested them. Our life is travel, but we social distance, clean our hands, and avoid crowds.” – Kristi

The community groups and individuals who partnered with us stayed engaged throughout the entire process and were thrilled to see the exhibition finally open (Figure 5). The partnerships we forged generated mutual goodwill and inspired a sense of solidarity and community between our institutions (Figure 6).

Their reactions to the exhibition’s opening illustrated their feelings toward the exhibition and the role they played in creating it:



Figure 5: Community member Shelby Hedgecock visits the exhibit she helped create.



Figure 6: Virgin Orbit team members pose with their bridge ventilator on display.

- “When the initial idea was presented to me about contributing to the COVID-19 exhibit at the science center I was completely honored. The COVID-19 pandemic had a major impact on my life, allowing me the opportunity of reflection, and placing more value on things that I previously took for granted like being an activist. Despite our own struggles and grief, it took all of us to combat this virus.” – Chris Blades, UCLA Vine St. Clinic

- “Thank you so much for this. Today is my 1 year anniversary of getting sick so this is very special. It means a lot and you have a lot of Long-Covid patients who feel the same way.” – Shelby Hedgecock, COVID-19 survivor

- “We are truly honored to be part of the exhibit. I am incredibly excited about the vision of our employees and their families coming to the Science Center and the lump that will be in their throats as they look back on those brutally challenging days and what was a frantic drive to be of some help.” – Dan Hart, CEO, Virgin Orbit

- “The Covid Memorial Quilt is a living memorial

to honor and remember the human beings who died of COVID-19. The goal has always been to publicly display the panels of the Covid Memorial Quilt so we, as a community, can come together and grieve all those lost by saying their names and holding their faces in our hearts. When the California Science Center reached out to us to publicly display two of the panels of the Covid Memorial Quilt in a COVID-19 themed exhibit, it was a dream come true.... Perhaps in one small way, this exhibit can help heal the collective grief our country is experiencing.” – Katherine Fugate, COVID Memorial Quilt .

We are extremely grateful to all of our exhibition partners for donating their time, stories, objects, and expertise. Building these relationships and gathering these stories had the unexpected effect of inspiring our own team throughout this challenging period. Seeing how others were stepping up to fight COVID-19 strengthened our resolve and boosted our own commitment to following public health guidelines. We learned so much from this process and were lucky enough to experience the feelings of solidarity and efficacy that we had sought to inspire in others.

Krista Ulman, M.A., is a Senior Exhibit Developer at the California Science Center and can be reached at kulman@californiasciencecenter.org.

Liz Roth-Johnson, Ph.D., is Curator of Life Sciences at the California Science Center and can be reached at lrothjohnson@californiasciencecenter.ca.gov

EXHIBIT REVIEW — DARING TO DIG: WOMEN IN AMERICAN PALEONTOLOGY

By Robert Mac West

Daring to Dig is one of an increasing number of physical and online exhibits that deal with the generally unacknowledged (or even tolerated) participation in and accomplishments of women in the sciences. Here we look at a specific temporary exhibition focused on women in paleontology; the accompanying information, discussion and list examines current and recent presentations that cover broader areas of science and are usually at least somewhat less personal in their descriptions of individual women scientists.

Daring to Dig is currently in place in the Museum of the Earth, the public face of the Paleontological Research Institution in Ithaca, New York. PRI is affiliated with Cornell University, providing it with an extensive fossil collection (@ seven million specimens), significant research and formal education opportunities, and public access to paleontology of New York and the world. The Museum of the Earth is a modest 10,000 square foot facility that attracts approximately 30,000 guests annually.

While the exhibition has been in development for over five years, it opened on March 28, 2021 and will be in place until sometime in the autumn of 2021. It was initially intended to be a traveling exhibition but appropriate funding was not available, even after several federal grant proposals. Thus it now is uncertain what will become of the public experience discussed here. Fortunately there is an excellent online version (<https://www.museumoftheearth.org/daring-to-dig/>) which contains significantly more information than is able to be presented in the physical exhibition.

The basic premise is that, going back at least hundreds of years, women have been active and creative in the broad field of paleontology. However, it is only in the past few decades that their work, initiatives, and discoveries have been given even approximately appropriate coverage, attention, and acknowledgement.

The physical exhibit focuses on the work of numerous women, going back to the now-notable Mary Anning in coastal England at the beginning of the 17th century. Even though the full title of the exhibition is “Daring to Dig: Women in American Paleontology”, Anning’s remarkable discoveries and prominence really started the game in the US and around the world.

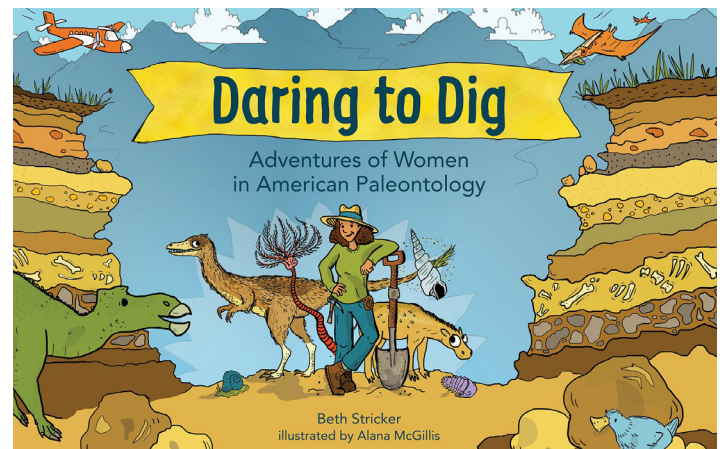


Figure 2: Beth Stricker’s book *Daring to Dig*, a primary stimulus for this exhibition.



Figure 1. Area devoted to Mary Anning with a reproduction of one of the stunning fossils she recovered from the Lyme Regis coast of England.

An interesting stimulus was a book written by the Museum of the Earth’s former exhibition director Beth Stricker and illustrated by Alana McGillis. Its title “Daring to Dig, Adventures of Women in American Paleontology” became the theme and title of the exhibition and McGillis’s art permeates the presentation. McGillis’s art is on the cartoonish side which is an interesting way to make the exhibition even more accessible to a broad audience.

Physically, the modern paleontologists are on one side of the exhibition and those of the recent to distant past are on the other. The physical exhibition features brief descriptions of the work done by each of the women featured

and organizes them by broad categories. This includes topics such as What is Paleontology? Early Trailblazers, Fossil Finders, Early Paleontology in the United States and Women Illustrators in Paleontology on one side and Topics in Modern Paleontology, Applied Paleontology, Fieldwork in Paleontology, and Women at the Forefront of Modern Paleontology on the other. In addition there are video conversations/interviews with several of the contemporary scientists.



Figure 3: Typical exhibition area with illustrations of each woman's career accomplishments and examples of fossil specimens and writings.

And all of these are magnified in the online version of the exhibition. There are longer descriptions of the careers, personalities and influences. It is very impressive how the Museum of the Earth was able to gather material from the Cornell and Paleontological Research Institution resources as well as from a large array of libraries, collections, and people with connections within and outside the paleontology world.

One of the women featured is long-time Carnegie Museum of Natural History paleontologist Mary Dawson, who passed away in 2020. During my visit to the exhibition I was asked about my association with her for our joint opening of an area of the Canadian Arctic as a resource in understanding the evolution of world climate as well as the tectonic opening of the Atlantic Ocean separating Europe from North America. I was able to provide pictures and information of our Arctic work some 40 years ago which are now incorporated into her online presentation. I look at this as typical of how this sort of exhibit and its unique data resources are developed and made accessible.

All in all, Daring to Dig is a prominent part of the rapidly-increasing museum and other public presentations of the reality of scientific research and the essential roles of women over time. It also is truly consistent with much of what is going on in society now in 2021. We are seeing increasing museum presentations on historic aspects of science, soci-



Figure 4 (above). Reconstructed office-laboratory. The equipment illustrates the time when the research was carried out.

Figure 5 (below). The modern side of the exhibition with data indicating the roles women have played and are playing in the ongoing science of paleontology.



ety, demographics, ethnicity, gender, etc.

ACKNOWLEDGEMENTS

My visit to the Museum of the Earth and the Daring to Dig exhibit were facilitated by Dr. Warren Allmon, Director, Ms. Helaina Blume, Director of Exhibits, and Dr. Elizabeth Hermesen, Research Scientist. Bearded Lady information was provided by Lexi Jamieson Marsh.

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Robert Mac West is the Editor and publisher of The Informal Learning Review. He may be reached at ileinc@informallearning.com.

NUMEROUS FORMAL PRESENTATIONS OF WOMEN IN SCIENCE VIA EXHIBITIONS, BOTH PHYSICAL AND ONLINE

By Robert Mac West

Another significant exhibition and discussion of women in paleontology is the Bearded Lady Project. It includes a fascinating book and traveling photographic exhibition that includes 69 female paleontologists and several groups, most photographed with mustaches and beards fixed to their faces, thus being “bearded ladies”. It is a truly unique presentation but also clearly makes the point about historic (and still sometimes current) issues of appropriateness of women as active and creative participants in modern science. Since its openings at the 2016 annual meetings of the Geological Society of America and the Society of Vertebrate Paleontology it has been presented at the University of Wyoming, the Cleveland Museum of Natural History, Miami University, The American Frame in Maumee, OH, Pennsylvania State University EMS Museum, the University of California Berkeley, and, currently at the reopened Smithsonian National Museum of Natural History. The next location is uncertain.

For the past decade or so there has been increasing awareness of the conscious or unintentional overlooking/ignoring the many women who, going deep into the past, have had significant roles, applications, and discoveries in numerous aspects of science. Here are a series of summaries with the full understanding that there are many more and that we will see many new ones in the not-so-distant future. This is by no means a comprehensive listing. Online searching quickly shows that there are and have been

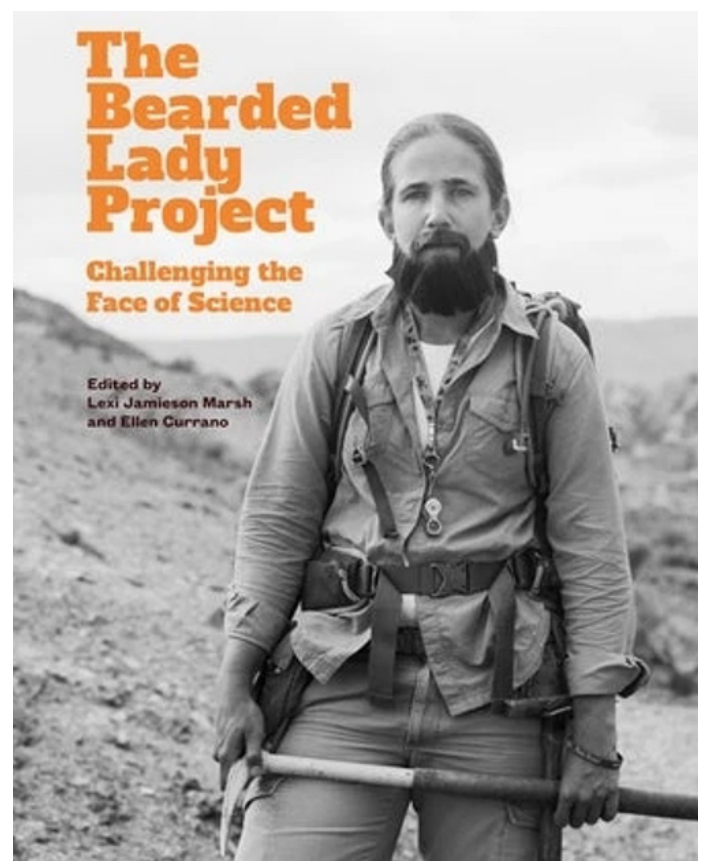


Figure 1. The Bearded Lady Project book is a delightful array of posed photos and individual commentaries by women who devote themselves to research in paleontology. Their commentaries are accompanied by numerous pictures of paleontology in action.

dozens if not hundreds of broadly similar presentations. This makes it very clear that contemporary society is addressing this matter of acknowledgement of the female contributions to science, going back hundreds if not thousands of years is underway.



Figure 2. The travelling *Bearded Lady Project* exhibition includes many of the photos from the book that give a strong sense of the intense engagement women have in paleontology and its discoveries and advances.

Ingenium Canada – Canada's Museums of Science and Innovation. *Iron Willed: Women in STEM*. This is an 850-1,100 square foot traveling exhibit that started its tour in 2019 and thus far has been in seven Canadian sites in three provinces. <https://ingeniumcanada.org/exhibitions/iron-willed-women-in-stem>

Smithsonian Libraries. *Early Women in Science*. This is an online exhibit that is featured by the Biodiversity Heritage Library organization and focuses on 16 women who began their work before 1922. It appeared in April 2015 and is available at <https://www.smithsonianmag.com/science-nature/ten-historic-female-scientists-you-should-know-84028788/>

Asheville Museum of Science, North Carolina. Exhibit and Girls in Science Program. The permanent and digital exhibit *Women in STEM* exhibit opened in spring 2021. It includes photos, video interviews, and displays of innovation by local female scientists as well as Girls in STEM curriculum materials aimed at encouraging girls to pursue STEM as they mature. <https://ashevillescience.org/women-stem/>

Thousand Islands History Museum, Gananoque, Ontario, Canada. *Presentation of Iron Willed: Women in STEM* July 1, 2020 – January 3, 2021. <https://www.gananoquereporter.com/news/local-news/ti-history-museum-opens-exhibit-honouring-women-in-stem>

Museum of the History of Science, Oxford, England. From May 18 to December 30, 2018 this museum celebrated women connected with Oxford University and the Museum through photographs of and by them as well as collection materials. In particular they celebrated a late 1700s chemist and geologist and one known as the world's first computer programmer. <https://whichmuseum.com/england/oxford/museum-of-the-history-of-science/exhibitions/women-in-science>

University of Michigan Museum of Natural History, Ann Arbor. *Women in Science*. In 2015 University of Michigan graduate student Ann Marie Macara designed an exhibit for the natural history museum that features four women scientists. Its art was produced to be rather comic book style to appeal to a target audience of young children. The four scientists featured include a paleontologist, a software developer, a mathematician and an engineer. <https://www.michigandaily.com/news/women-in-science-exhibit-to-launch-at-museum-of-natural-history/>

Rochester Museum and Science Center, New York. *The Changemakers: Rochester Women Who Changed the World*. The exhibition, which opened in November 2020, includes ten women connected to the University of Rochester among the 200 women visionaries, trailblazers, inventors and entrepreneurs featured. It was a community initiative, including 50 community curators, 11 partner organizations and consultants brought in by the Rochester Area Community Foundation. It concluded in Spring 2021. <https://rmsc.org/changemakers>

Royal Society of Edinburgh, Scotland. *Women in Science*. This was a brief physical presentation at the RSE and Glasgow's Mitchell Library as well as a traveling version and a full digital edition. It opened April 16, 2019. A full video of the event is at *Being a Woman in Science: Changed Times?* <https://www.rse.org.uk/women-science-exhibition/>

Grolier Club, New York City. *Extraordinary Women in Science & Medicine: Four Centuries of Achievement*. This on-site exhibition, available from September 18 – November 23, 2013, featured the accomplishments of 32 women in a variety of scientific fields going back to 1759. It included over 170 artifacts, books, manuscripts, laboratory apparatus and doctoral theses. Those items were borrowed from the American Philosophical Society, Columbia University, the National Library of Medicine, Yale University as well as private collections. <https://www.grolierclub.org/default.aspx?p=v35ListDocument&NoModResize=1&NoNav=1&ShowFooter=False&nw=1&listname=Past%20Exhibitions&ID=756804703>

ArtScienceGallery, Austin Texas. *Go Ahead and Do It: Portraits of Women in Science*. From September 13 to October 14, 2014, this gallery presented portraits of more than 30 women in STEM. All were prepared by local artists. <http://maiaaw.com/women-in-science-art.html>

Canadian Museum of Nature, Ottawa, Ontario. *Courage and Passion: Canadian Women in Natural Sciences*. From July 28, 2018 until March 31, 2019, this exhibition featured innovators in an array of the natural sciences, both historical and contemporary. It used artifacts, archival materials, specimens and video commentaries. Female exhibition guides were a grade-schooler, a teen, and a university student. The exhibition dates marked 100 years since Canadian women were allowed to vote in federal elections. <https://nature.ca/en/about-us/museum-news/news/press-releases/courage-passion-new-museum-exhibition-reveals-canadian-women>

Science Museum, London, UK *Science City 1550-1800: The Linbury Gallery*. Recently opened, this permanent gallery focuses on the roles of women several hundred years ago. It calls attention to the unacknowledged accomplishments of women who did their science in the shadows when culture didn't permit their prominence or acknowledgement. It is indeed interesting to see how many basic ideas were given credit and functionality by women. <https://www.sciencemuseum.org.uk/see-and-do/science-city-1550-1800-linbury-gallery>

College of Natural Sciences, University of Massachusetts – Amherst. *Women in Science: The Stories Are All Around Us*. This on-campus exhibit was up for a year (until August 31, 2017). It featured materials about 12 important women

with many more discussed in the companion website <http://blogs.umass.edu/womeninscience/>. The exhibition was part of the full-campus *Women in Science* initiative. <https://umasshistory.wordpress.com/2016/09/06/women-in-science-the-stories-are-all-around-us/>

Several locations, Dallas, Texas. *If/Then She Can* the Exhibit. This remarkable exhibit includes up to 120 life-size, 3-d, bright orange statues of women working in STEM fields. It opened on December 10, 2020 at two locations at the Dallas airport Love Field, with 15 statues, mostly of women in aspects of aviation. It subsequently was presented at the Central Park Zoo in New York City as well as several Dallas area shopping centers. <https://www.tmcnet.com/usubmit/2021/04/26/9354304.htm>

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Robert Mac West is the Editor and publisher of *The Informal Learning Review*. He may be reached at ileinc@informallearning.com.

Figure 3. The London Science Museum has opened a new permanent gallery, *Science City 1550-1800*. This exhibit features a number of impressive while underacknowledged and even suppressed women who in many ways created the scientific tradition of the UK.

THE DIGITAL EMPOWERMENT PROJECT: BUILDING THE PLANE WHILE FLYING IT

By Averie Shaughnessy-Comfort with contributions from Digital Empowerment Project Team

The common expression, “building the plane while flying it” has made a resurgence in the midst of the pandemic. Many organizations had to think creatively and work together to find solutions in an uncharted future. Museum associations were no different than any other organization, looking for ways to serve their members and their museums. When a unique opportunity arose for the six regional museum associations to work collaboratively on a project, we jumped at the chance knowing that the effort would be a work in progress or, a proverbial “building the plane while flying it” situation.

Guided by the vision of the Institute of Museum and Library Services (IMLS), the six U.S. regional museum association directors drafted a federal grant proposal for a major collaborative pilot project to address technology training gaps for small museums in just 18 months. Between us six directors, our technology partner, numerous consultants, and IMLS, we proposed the Digital Empowerment Project. The regional association staff and the technology partner would become the Project’s Leadership Team and this Project would ultimately lead to the creation of the Museum Learning Hub: a nationwide initiative dedicated to providing free, self-paced training resources for small museums. The Hub hosts the Digital Empowerment Project’s inaugural series of online trainings and resource toolkits that focus on digital media and museum technology topics. So far, the website has over 50,000 views with 5,874 views of the Hub’s “Watch Live” page where weekly webinars are streamed.

The six regional museum associations in the United States include the:

- Association of Midwest Museums (AMM)
- Mid-Atlantic Association of Museums (MAAM)
- Western Museums Association (WMA)
- Southeastern Museums Conference (SEMC)
- New England Museum Association (NEMA)
- Mountain-Plains Museums Association (MPMA)

After six months, the Leadership team of the Digital Empowerment Project took a moment to reflect on the project and the collaborative effort as a whole. Below, we offer background on the project and distill our mid-project reflections. We share, what we feel, are the greater benefits of this project to the group, to the field as a whole, and to the future of collaborative projects among the Council of Regional Associations (CRA). In many ways, we are benefiting from “building the plane while flying it.”

BACKGROUND

Last year, the Institute of Museum and Library Services (IMLS) approached the Council of Regional Associations (CRA), our name for the consortium of all six regional museum associations, about the increasing need for digital and technology resources for small museums. The global pandemic exacerbated this problem and IMLS saw the CRA as the group best-suited to deliver capacity-building programs to small museums through a nationwide effort. The group quickly came together to develop the grant proposal which included the creation of a resource hub to present hands-on, step-by-step training sessions by museum technologists, accompanied by introductory sessions featuring strategies used by peer museum practitioners. The 18-month project is expected to reach over 5,000 museum staff and volunteers of small museums (IMLS, 2020). The project includes the directors of the six regional museums, Nancy Proctor- the project’s technology consultant and Director of The Peale in Baltimore -program advisors in accessibility and curriculum development, and a dozen individuals serving in an advisory capacity from small museums around the country. In late September of 2020, IMLS announced that the pilot program would be funded by a FY 2020 IMLS National Leadership Grant for Museums.

The project commenced in late September with the expectation that the website and modules would launch by April. Because of this tight timeline, the Leadership Team divided responsibilities and took charge of a particular area of work: audience development and research, program planning, and live event and website production. These areas of work were to be completed in five phases: 1) Planning and Design, 2) Production and Implementation, 3) Marketing and Outreach, 4) Evaluation, and 5) Project Reporting. Work began with audience development and research, seeking ideas and input from a Museum Adviso-

ry Committee to inform program planning. We only had a few months to gather feedback and suggestions for topics, so that we could develop, and launch the first module by April of 2021. We worked closely with over 25 people to develop the framework for the 10 modules, resource hub website (now known as the Museum Learning Hub), an on-line community forum, and templates for resource toolkits. Our plane was finally starting to take shape.

VALUE OF COLLABORATION

As small nonprofit professionals ourselves, we all have experience in areas such as program development and delivery. With the entire team managing their own organization's programs and "pivots" during a pandemic, we determined that sharing the project management workload was key to ensuring timely delivery of this pilot project's content. This way, small teams would carry out different aspects of the project simultaneously, such as the Museum Advisory Committee and Production Team.

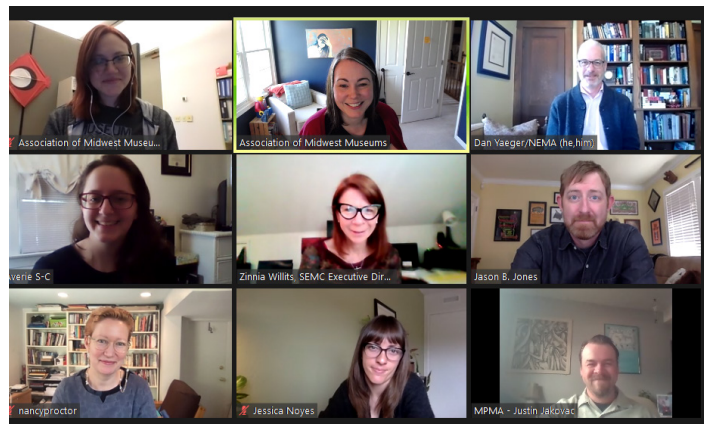


Figure 1: The Digital Empowerment Project's Leadership Team consists of the six regional association directors, Nancy Proctor, Jessica Fischer, and Jessica Noyes.

Visual Description: This image features the smiling faces of the 9 members of the Leadership Team as they meet for their bi-monthly meetings over Zoom.

Photo courtesy of Charity Counts

Interestingly, the division of responsibilities happened seamlessly despite the fact that most of us serve as executives in our own organizations. Perhaps we welcomed the respite of managing entire programs on our own, or perhaps we recognize the importance of delegating tasks. However, we all agree that this project has potential to grow in years to come. Below, we reflect on the ways in which this collaboration adds value to our own work, the field's work, and future work for the CRA.

"While the [project] is outside of our regular work flow, it is also connected and I love learning how each member of the team integrates this type of program into their organization." Zinnia Willits, Executive Director of the Southeastern Museums Conference.

This project has been in exercise, not only in the collaborative project, but in learning more about how our individual associations serve our members. The project naturally fell into many of our organizations programming, and our ability to tap into each other's networks has expanded what each of our associations can offer.

"Without a doubt, this is the type of project that none of our organizations could have created individually. It features presenters from around the country, an advisory group representing multiple constituencies, and an ambitious to-do list that involves every single one of us doing our part. The result is a strong project that is impacting our entire field in important ways." Dan Yaeger, Executive Director, New England Museum Association.

We, the CRA, often agree that our work can be very isolating at times, and this project provides us with the opportunity to have a greater impact in our field. Each of our organizations are independent 501(c)3 nonprofit organizations and have small staffs (or sometimes only one staff person). While we all work on events and programs within our region, we don't often have the chance to integrate such knowledge across the nation. This project allows us to build greater awareness of our roles as regional museum

The Leadership Team divided responsibilities within the scope of the project and took charge of the following areas of work:

Museum Advisory Committee: Dan Yaeger (NEMA) and Averie Shaughnessy-Comfort (MAAM)

Production: Jason Jones (WMA) and Nancy Proctor (Peale)

Program: Zinnia Willits (SEMC), Justin Jakovac (MPMA)

Marketing, Media and Administrative Support: Jessica Noyes (WMA) and Jessica Fisher (AMM)

Project Director: Charity Counts (AMM)

associations. Plus, having the chance to face challenges with a team of individuals who occupy the same day-to-day role allows us to encourage one another to set and meet higher expectations set by the field.

“I think that, on the surface, many people see our organizations as the same type of product/service but in different geographic areas. It has become very apparent to me that, while we do have similarities that make us a strong collaborative...we are really quite different in our approach to engagement and programs. Our organizational “voices” are more unique than people may give us credit for, reflective of the diversity of needs/interests in our respective museum communities.” Charity Counts, Executive Director, Association of Midwest Museums

Lastly, as a group, we have been able to benefit from each other’s collective knowledge. Not only do we benefit from our collaborative project, but our own association’s content sees benefit as well. The group’s different approaches to problem solving offers new perspectives on each other’s work at the association level. We have learned that there is no “wrong” way to make this project a success and by integrating all of our styles, that we are building a stronger product.

BENEFITS TO THE FIELD

“This Digital Empowerment Project seeks to fill gaps in museum learning either because of lack of resources, lack of education opportunities available. It also allows us to draw from our collective knowledge as a field and for smaller museums to access trainings that might not otherwise be available to them due to a paywall, or just general lack of access.” Averie Shaughnessy-Comfort, Executive Director of the Mid-Atlantic Association of Museums

“I hope we bring two things to the museum field. First and foremost, is the intended goal of helping small museums...Secondly, that through our partnership we are able to demonstrate the value of working together with other similarly minded organizations. Together, we can provide better resources with a greater reach that has the potential to affect the greater good.” Jason B. Jones, Executive Director of the Western Museums Association

The Leadership Team often expresses that the main goal of the project is to offer free digital media and technology training to small museum professionals across the nation. We worked with input from a Museum Advisory Committee we developed each session topic and created a framework for our modules that would resonate with small museum professionals. This collaborative effort has resulted in two major benefits to the field, the first being the products of the Digital Empowerment Project: the

Museum Learning Hub resource website and 40 capacity-building webinars. The second major benefit is more of an intangible: a network of museum colleagues well-versed in museum technology and strategy as well as colleagues to assist in promotion, recruitment, and evaluation. As our collaborative effort grows, we know that our physical product as well as our network will continue to add value to the professional development and trainings already in the field. What other planes will we build?

LOOKING TOWARDS THE FUTURE

While this might be the first nationwide project taken on by the CRA, it certainly won’t be the last. While the CRA has learned much about collective impact and content production, we’re curious how the work that we do together can enhance or fill gaps in museum professional development.

“I am incredibly excited by the Museum Learning Hub project because of its transformative potential for the field. Small museums are engines for innovation, and also experts in efficient and effective use of limited resources. By increasing the digital capacity of small museums, this project harnesses the power of both small museums and their regional networks to move the entire field to the next level in serving both audiences and mission. The Digital Empowerment Project is truly a model for collaboration in our sector.” - Nancy Proctor

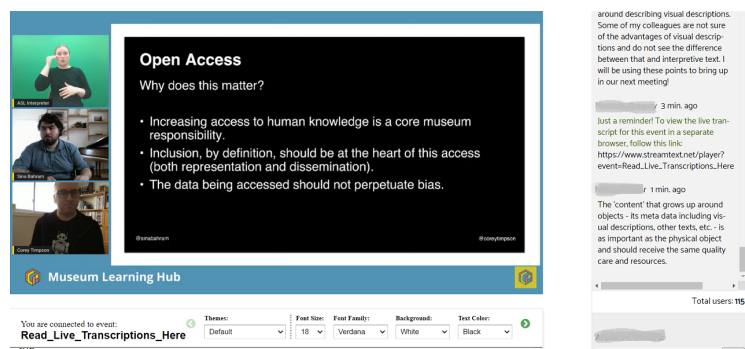


Figure 2: A screenshot of a Museum Learning Hub technical session in progress from Module 1, featuring Sina Barham and Corey Timpson.

Visual Description: This is a screen capture from the Museum Learning Hub “Watch Live” page. On the left side of the image, an ASL interpreter and speakers Sina Bahram and Corey Timpson present on the slideshow, which is situated to the right of the presenters. At the time, the presenters were discussing Open Access. Below the video is the panel for live transcriptions. To the far right, is the chat panel, where attendees can ask questions to the presenters.

Photo courtesy of Averie Shaughnessy-Comfort

In many ways, we are still building that plane while flying it. In other ways, we are thinking about other planes to build. We have already made adjustments that improve workflow between the Leadership group and our various partners. Perhaps the most important thing that the CRA is learning, other than the great content shared in our webinars and toolkits, is how to divide tasks and work together to create a product on a nationwide scale. In asking my colleagues what surprised them about this project, the answers glazed over the programmatic element of the project and instead addressed our collaborative nature. The general sentiment is that we all work really well together. A collaboration of this scale was unknown territory, but the creativity and support we have found in working so closely together has produced, we believe, an ongoing resource to the field. We distributed workloads, divided ourselves into leading different phases, and stepped back from our roles as executives. While we have hit roadblocks and delays, we never get stuck for very long. We feel that this collaboration to bring the Museum Learning Hub to fruition has strengthened our commitment to the museum field, enhanced our programmatic offerings, and empowered our network. We look forward to building more “planes” and to an ongoing partnership that will allow for an expansion of the Museum Learning Hub’s service in the future.

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Averie Shaughnessy-Comfort is the Executive Director of the Mid-Atlantic Association of Museums (MAAM) and can be reached at director@midatlanticmuseums.org.

THE NEW WORLD: AND HOW SCIENCE MUSEUMS NEED TO EVOLVE TO MEET SOCIETIES’ NEEDS

By David Chesebrough and Robert Mac West

The pandemic disruption of the last year has made clear that the world is changing rapidly. However, there are many more forces at play than just those generated by the pandemic. What will the “new normal” look like as our society and science museums not only move out of the most disruptive consequences of the Covid-19 pandemic, but factor in other significant changes going on in our society and world?

It is inarguable that our societies are evolving -- and science museums must adapt to maintain relevance and sustainability. Museum leaders, directors, and boards, must be knowledgeable and attentive to the forces and issues driving the changes within their environments in order to guide the change strategies necessary to serve their audiences and remain financially viable. Issues of

environmental change along with societal inequities, injustices and changing demographics have come together rapidly requiring institutions to align with evolving values and societal needs to be relevant within their community into the future.

A FAST-CHANGING ENVIRONMENT & THE NEED TO EVOLVE

Our society and world have gone through periods of rapid change before. But we have to be especially attentive at this point in time.

In the natural world, sudden dramatic shifts doom organisms that can’t adapt fast enough. Most notably the Chicxulub impactor hitting the earth about 66 million years ago likely drove the extinction of 75% of animals and plants

on earth. Most people know that the sudden climatic changes ended the long reign of nonavian dinosaurs. This made room for the rapid expansion of the surviving and adaptable mammalian creatures, leading eventually to our species.

While the current human-caused changes in our natural world may not be as sudden and dramatic as the events that drove the dinosaur extinction, it is taking place as Climate Change impacts our natural world (and hence societies) more rapidly than anything the world has seen since the emergence of hominids.

Societies have also changed rapidly in the past with huge disruptions in the status quo of the time – think Industrial Revolution or the 60's and Civil Rights/Vietnam war eras. The extensive changes in our current society now rival those of the past and are not just pandemic related.

These two trendlines—**societal change** and **climate change** -- interwoven as they are, are creating a situation to which science museums (among most other types of entities) must be attentive and responsive in order to survive and thrive. The changes threaten some existing organizations and, in some cases, whole societies. Yet the future offers opportunities for organizations that can adapt rapidly to the changes and deliver on their mission in new ways. Indeed, the last year and a half of forced operational experimentation and changes provide a starting point for this necessary rapid evolution.

Pausing and teasing out the forces at play now and into the near future will help guide science museum leaders going forward – enhancing their abilities to transition to even a more impactful, relevant and sustainable future.

SOCIETAL CHANGES

Three major forces of change and disruption came together over the last year to drive societal innovation while also painfully and disastrously showing areas lacking in capacity to meet the needs of citizens.

1. Pandemic induced and accelerated

There are clearly trends that began before the pandemic – shifts to more online commerce and health support, expanded digital/mobile front ends to businesses, services, learning and entertainment, and the ability to work remotely. But the pandemic dramatically accelerated many of these (Sneader & Singhal, January 4, 2021). The pandemic also added existential threats to many businesses, museums included, as they were temporarily forced to close doors and cease normal operations.

The economic impact of the pandemic also showed how

inequitable our society was in supporting individuals' financial, food, educational and health security (mental health included). The pandemic also brought out how fragile many of our social support and health systems had become in the pursuit of efficiencies, cost control and in some cases from neglect.

Within this context museums were forced into becoming less building/attendance centric and participate, or at least observe, creative ways to connect with audiences and create digital content of interest. A June 4, 2021 Science News article relates how many centers also reacted quickly to assist with urgent community needs – from serving as inner-city remote learning or day care satellites to helping with food distribution to serving as a vaccination site. In many cases these were new behaviors for science centers and museums to engage with and support their communities.

The global devastation of the pandemic and the response to it also made evident the importance of science and the need for the capacity for breakthroughs. An extraordinary example was the rapid development and deployment of new vaccines through the focused coordinated efforts of government, science and business.

Citizens witnessed both the power of science and technology and learned about the amazing abilities of the human body. People who didn't even know what a virus was were inundated with information on the virus, vaccines and immune system. It was a dramatic science lesson in real time – one that some understood and embraced while others treated skeptically and dismissively as untrue, making up or embracing conspiracy theories to match their distrust of scientific, government and political leaders.

A role for science museums in this arena was made clear with the scientific storyline and need for broad public understanding of the science behind the pandemic phenomena. Many science museums flexed this muscle well in response and kept themselves relevant as trusted sources of knowledge (Anthes, June 4, 2021).

In addition to direct pandemic induced changes there were many other areas of societal disruption and change that have rapidly come to the forefront.

2. Renewed and increased awareness of social injustice and need for activism

In just the last few years issues related to social, gender, racial, economic, and health inequality and injustice have become much more evident and prominent. The resultant energy, anger and activism have been driven by events

like tragic police actions, the damaging rhetoric of divisive leaders and societal changes that seemed to accelerate amidst, and in some cases because, of all the other changes.

Museums are already seeing more serious concerns about board diversity, exhibit content and their roles in their communities. Elizabeth Merritt, founder and head of AAM's Center for the Future of Museums (CFM), stated at a 2021 AAM conference session that, "I believe that 100 years from now we may well look back and realize that the Black Lives Matter movement of the past year, the protests following the deaths of George Floyd, Breonna Taylor, Joel Acevedo, Tina Marie Davis and so many more, and the current wave of anti-Asian violence will have a more lasting effect on society, on law enforcement, on government and on social norms than the pandemic itself."

Less sudden but just as dramatic a change to adapt to is that of the rapidly changing demographics in our society. In addition to a significant adult age shift (Boomers (ages 57-75) down, Millennials (ages 25-40) and Gen Z (ages 6-24) growing proportionately (Fry, 2020), the Case Foundation (2019) identified an increase in diversity that is moving steadily forward (whether shifting from a plurality of Caucasian to a majority minority society or in more open diversity in sexual identity).

Yet, while our society continues its march to greater overall diversity many science museum audiences (and donors) still reflect more of past patterns skewed toward the non-Hispanic white, higher socio-economic and older customers, donors and board members.

Both of these shifts – age and diversity are having a growing and significant impact on science museums' audiences and supporters. Science museums must evolve with them to stay relevant, sustainable and impactful.

Millennials and Gen Z right behind them now represent the largest segment of workers in the workforce with attitudes, values and expectations significantly different from previous generations. Extensive surveys reported by Deloitte (2020) and the Chase Foundation (2019) identified that collectively the two emerging dominant generations will play a changing and ever-increasing role driving values, attention to issues, and ways of doing business and interacting with each other and the world around them.

National and international surveys, in part summarized by Jean Case of the Case Foundation (July 26, 2019) indicate some powerful trends with millennials, including:

- A desire to see their employers and the organizations

they support and engage with sharing and acting on the same values related to issues such as climate change, social injustices, diversity and living wages for their employees.

- A preference for experiences over the purchase of "stuff." (Morgan, January 2, 2019)
- Expectation that organizations will provide robust and easy mobile use as millennials are digital natives and mobile-first for communication, entertainment, commerce and information.
- Millennials are connected, networked and influenced by their peers.
- Their philanthropy (money, time, talents) are stimulated by peers and causes – not institutions – and they want to be actively engaged.

Smart science museums will respond and adapt to these changes to stay relevant and engaging to the community and the growing audience of Millennials and Gen Z. Centers and museums can also respond to, and assist with, the societal need for more and diverse youth going into the workforce with STEM based skills. Science museums are positioned with the brand and strength as learning centers. They already strive to connect with and address the needs of the diverse communities in more relevant and meaningful ways. A more diverse STEM pipeline is a win-win response through which science museums can contribute to providing equal opportunities for all youth while diversifying the talent pool for our nation.

Taken all together, these societal shifts driven by the pandemic, social activism, increasing diversity and the growing numbers and influence of Millennials and Gen Z, will create a powerful shift for our society and any organization or business operating within it.

Yet that is not all that is driving changes requiring science museums' responses. Additionally the earth's rapid warming is creating its own growing influence on societies and even life itself.

CLIMATE CHANGE IMPACTS

Interwoven with many of the societal changes are those that will be driven by the relentless and ever-increasing global disruption caused by Climate Change.

The ability to deny and ignore climate change will decrease as the forces of nature impact more citizens in more frequent and in some cases catastrophic fashion. Citizens need to understand, process and personally react to the changes being wrought worldwide in many different, regionalized fashions. They also need to insist upon and support the appropriate governmental policies and their rapid implementation if the global response is to success-

fully and significantly moderate the current climatic trends.

SOCIETAL & CLIMATE CHANGES AND PRESSURES WILL CONTINUE

Pressures on the status quo from the two overarching forces of *societal* and *climate* changes will continue even as the pandemic recedes. So will the need to address our stressed societal systems (health, safety nets, education, political, manufacturing pipelines, etc.)

Recent challenges have brought out the potential impact and even greater benefit from science and technology going forward - but nestled in community needs and responsiveness. Ways must be found to improve on the widely varied acceptance or denial of science-based findings and recommendations dividing people and leaders in our collective responses.

This all creates identifiable areas where science museums can generate positive results by leveraging their special assets and positioning. The need for STEM based focus, learning and services are clear. However, the efforts need to be contextualized within the broader society in a way that improves accessibility and understanding. Integration with art and history will also help provide accessibility to a broader range of learners through approaches often known as STEAM.

HOW TO ADAPT STRATEGIC THINKING AND ACTIONS

There are even more changes that require the attention of science museums. Some changes are clearly going to continue, while some need to be watched for potential long-term influences.

The pandemic has wrought many quick, disruptive changes. The challenge is to sort out the temporary behaviors from those that truly initiated a new reality. Ones to ponder include:

- Will online education stay a part of the K-12 learning ecosystem, and will personalized learning continue to grow for all ages?
- Will there be new efforts to bridge inequities in technology access across communities that seriously limited internet access for some?
- Will people feel uncomfortable in being in large crowds and still look for home based and/or small group experiences?
- Will work at home become more pervasive – changing families' needs and behaviors as well as places of residence, possibly dispersing some large city populations to smaller cities, more distant from many museums?
- How much will the pandemic push for automation forever change the work prospects and lives of frontline

workers?

How can answers to these, in conjunction with all the other previously noted societal changes, inform what we do in the future?

Clearly there is a need for science museums, and all others, to pause the frenetic pace of random, opportunistic responses and changes to look strategically to the future. AAM's VP of Strategic Foresight, Elizabeth Merritt, has researched and provided information and tools for doing this.

In the recent 2021 AAM conference session entitled *TrendsWatch: Navigating a Disrupted Future* and based on the AAM publication of the same name, Merritt reviewed the differences between typical strategic planning and what is called Strategic Foresight. She noted that even AAM is reconsidering the accreditation requirement of an institutional 3 to 5-year strategic plan. According to Merritt, the traditional strategic planning works in a stable environment with predictable dynamics and reliable projections. In today's very tumultuous and unstable environment, the risk of error projecting a plan out multiple years is greatly increased, and that approach is inadequate if not even dangerous to future survival.

She shared in the session that "Strategic foresight is a structure practice that facilitates the creation of functional and operational views of alternative futures and possibilities enabling organizations to create plans that can help them prepare for potential threats and capitalize on opportunities." This approach keeps leaders scanning the horizon in a future focused fashion, enabling anticipation and scenario preparation versus last minute reactions. AAM offers a free pdf download through its Center for the Future of Museums entitled *TrendsWatch: The Scenario Edition* (2018) which provides worksheets and discussion guides to explore the principles of strategic foresight and applying it to potential futures and implications for the museum sector.

It should be clear that whatever the science museum's strategic plan was prior to the pandemic and societal upheaval, it needs *reviewed, refined or redone* in a fashion more responsive to the unstable and less predictable future now playing out. Science museums must assess what might already be clear about the changes wrought over the last few years and are predictable going forward. Clearly, science museums and the museum sector as a whole have experimented in many ways never considered or prioritized in the past. Those rapidly developed and deployed services have provided invaluable knowledge and data to factor into future plans.

WHAT HAS TIPPED FOREVER OUT OF ALL THE EVOLVING TRENDS?

What have been the tipping points in society today that have to be factored into science museum's future planning, strategies and financial projections?

Three important overall trends have emerged that are likely to persist:

1. The ubiquitous mobile and technology lifestyles. Mobile pervasiveness is here to stay, be expanded upon and factored into every business. It is not just millennials either; the majority of all ages have now learned to routinely order online or on their mobile device as forced by the pandemic.
2. The issues of racial and social inequality, injustices and rights of all despite sexual orientation are at the forefront of awareness and efforts to respond societally.
3. Climate change is a global issue that is both more broadly accepted than ever and seen more as an existential threat which has to be universally addressed immediately and aggressively (Tyson, Kennedy & Funck, May 26, 2021).

All three will be particularly driven by Millennials and Gen Z who now comprise almost 50% of the US population. Hence museum and cultural leaders have to ask: How will my institution respond to each one of the changes?

BUT WAIT THERE IS MORE - WORKFORCE CHANGES!

Yet, it is not just audiences and supporters that science museums need to pay attention to in new ways – your workers as well have been changing in their expectations. A recent Harvard Business review article (Kropp, Jan. 14, 2021) identified nine trends that are believed to continue to shape business in 2021 and potentially beyond. The article draws on research by Gartner HR Practice and provided a number of trends any organization or business needs to be internally attentive to with a changing, and increasingly younger, workforce.

What museums must consider with their employees include the following:

- Responding to social awareness and justice movements.
- Dealing with remote staff in either full time or hybrid ways.
- Being attentive and responsive to the needs of employees to support their overall well-being (everything from financial to flexibility to mental health).

HOW SHOULD SCIENCE MUSEUMS RESPOND? THE CASE FOR RELEVANCE.

In summary, we are at a societal and global inflection point that requires the attention and responsiveness of most entities within society. Successful and impactful transitions will take into account the most pertinent among the myriad of changes wrought by societal and climatic pressures. The specifics of how that is to be done has to still emerge but can be informed by the many unplanned experiments that have been run this last year and the body of research on the variety of trends underway.

What is clear as an overall theme is the *absolute necessity to be more relevant to your community* by meeting priority needs in ways your organization can do uniquely and effectively. Your science museum's individual approach needs to be informed not solely from your internal perspective, but actively and inclusively engaging a broadening group of stakeholders representing the diversity of your community. That approach of respect and involvement of your community needs to be more woven into the fabric of your science center or museum going forward.

The next commentary will be an overview of how to assess and manage the necessary changes for any science museum in their particular community. Going back to the pre-pandemic status quo is *not an option* if your museum strives to be relevant with effective, sustainable impact.

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David Chesbrough is the principal of Chesbrough Solutions. He may be reached at David@ChesbroughSolutions.com. Robert Mac West is the principal of Informal Learning Experiences. He may be reached at ileimc@informallearning.com.

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