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Inside: Collaboration at its Best: The Casper Museum Consortium

Plus: Pop-up Exhibits, Designing for Creativity, and What we Can Learn from Closed Museums

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Cultural Community Cooperation and Collaboration

By Heather McClenahan

Figure 1 (left) and Figure 2 (right): The Bradbury Science Museum and the Los Alamos Historical Museum.

One small town. Two museums.

One is big, a glitzy science center run by the nation's premier national laboratory. The other is a small history museum housed in an old log cabin.
Both tell part of the story of the world-changing Manhattan Project.

Several years ago, the directors of the two museums decided to have coffee together once a month to discuss upcoming exhibits and programs to avoid overlap and to see where they might work together. At their very first meeting, they agreed to invite representatives from all of the other area cultural institutions to join them.

Thus was born the Cultural Coffee Klatch, an informal monthly gathering of the regional cultural service providers in and around Los Alamos, New Mexico. It includes, at various times, representatives of the local nature center, the public library, the visual arts center, the arts council, a performing arts company, a light opera company, a concert association, the community winds group, the local symphony orchestra, two dance companies, MainStreet, nearby national and state parks, the chamber of commerce and tourism-related businesses. It has also spawned like-minded groups: an informal educators gathering and a fledgling marketers' meet up.

As the Klatch developed, participants realized that competition between so many non-profit organizations in such a small town (pop. 18,000) was unsustainable. The community did not have enough financial resources, volunteers or audiences for everyone to compete. Rather, if resources such as marketing and even, in some cases, volunteers, were pooled and shared, it seemed everyone would benefit. Rather than rivals or competitors, participants call each other colleagues and collaborators.

In her book *Reality is Broken*, author Jane McGonigal writes that "collaboration is based on three elements: cooperating (acting purposefully toward a common goal), coordinating (synchronizing efforts and sharing resources), and co-creating (producing a novel outcome together)." She argues that this kind of coming together of people is far more powerful than competition. Where competition encourages selfish, closed-off values, collaboration encourages more open-minded behaviors. Also, through collaboration people can share ideas and techniques for solving certain problems, instead of keeping them for themselves. This leads to a faster learning curve for the group (Grant).

Based on this "coming together" model, the Klatch has developed some innovative programming such as "We Who Are Clay," a month-long series that included a pottery exhibit by local artists at the art center, a photograph exhibit about adobe on historic churches at the history museum, lectures and demonstrations as well as opportunities for children to make mud pies at the nature center. The Klatch

Figure 3: The Cultural Coffee Klatch meets monthly at the historic Hans Bethe House, which has been home to two Nobel Prize winners and will house exhibits about post-war Los Alamos by the end of this year.

has also been the starting point for Friday night arts crawls and cooperation on the community's signature summer celebration, Los Alamos ScienceFest. A volunteer fair held each spring allows each group to find those interested in helping and also allows them to share their needs throughout the community.

While the focus of the Klatch is finding opportunities for shared programming, it has also proved useful for advocating policies with local, state and federal governments. The group has provided input into the local government planning and goal setting processes. It has given support for the state-designated arts and culture district, and it successfully advocated for the newly-established Manhattan Project National Historical Park.

While the participants may not have realized it, the cooperation between all of these groups is based on what Jeremy Heimans and Henry Timms, in *Harvard Business Review,* have called the new power model of collaboration. While "old power" is based on exclusivity, competition, authority and resource consolidation, "new power" is about collaboration, "crowd wisdom" and sharing:

"New power norms place a special emphasis on collaboration, and not just as a way to get things done or as part of a mandated "consultation process." New power models, at their best, reinforce the human instinct to cooperate (rather than compete) by rewarding those who share their own ideas, spread those of others, or build on existing ideas to make them better" (Heimans & Timms, 2014).

The Cultural Coffee Klatch, which started in 2012, is a living example of what Heimans and Timms wrote about two years later.

About once a year, the group holds a discussion to determine if it should continue or if other organizations can fill its niche. So far, those involved still find it useful, and so the meetings go on. It could be a model for other communities who find that needs exceed available resources.

Ben Hecht, President & CEO of the collaborative association Living Cities, also writing in *Harvard Business Review*, offers the following advice for collaborative groups:

1. *Clearly define what you can do together.* For the Cultural Coffee Klatch, the focus is joint programming that benefits both the community and the participating organizations.
2. *Transcend parochialism.* This may be the most difficult piece of advice, especially when fundraising. However, both the nature center and history museum ran successful, multi-million dollar capital campaigns at the same time, proving that it can be done.
3. *Adapt to data.* Information such as regional or national economic trends, visitation trends and community population demographics needs to be considered as the group plans.
4. *"Feed the Field."* This applies to everything from marketing to internal communications.
5. *Support the backbone* (Hecht, 2013). Even as their staffs have grown and their roles have expanded, it is still critical for the two museum directors to meet and exchange ideas. The Manhattan Project National Historical Park will heavily involve both museums, and the visitors will benefit from shared story-telling and cooperation.

Effective collaboration can help generate new ideas, help organizations improve their own methods, and leverage limited resources for maximum impact. That's what has happened in the small town of Los Alamos through the efforts of Cultural Coffee Klatch.

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Collaboration at its Best

By Rachel Hedges

The Casper Museum Consortium is a group of museums and museum-like sites in Casper, Wyoming. Casper is a vibrant community of just under 60,000 people benefiting and growing from Wyoming's energy and agriculture industries.

People are often surprised to learn that there are nine museums in Casper. Even more surprising is how they differ, yet find a way to work together. The members of the Casper Museum Consortium include:

• Fort Caspar Museum
A City entity, this historic military fort shows what things were like in this area in 1865. The museum galleries exhibit regional historic information including the Fort, the agriculture industry, the oil industry, the Native American culture, and the importance of the location at the North Platte River crossing. Our city was named after Lt. Caspar Collins who was killed while attempting to rescue a supply train near the Fort.

• The Nicolaysen Art Museum
A private museum located in historic downtown Casper, the "Nic" is what we like to call "our diamond in the rough." The building is beautiful itself, and the art exhibited in the numerous galleries highlights the best regional artists. The Nic's Discovery Center lets children of all ages create a masterpiece of their own!

• The Science Zone
A private children's museum for children of all ages—everyone loves going to the Zone! Rotating and permanent exhibits make learning fun; the Bubble Zone, Zoo Zone, and Nano Zone are places where children enjoy interactive exhibits while learning science and math. Summer camps and after-school programs offer teachers excellent opportunities to enhance their scientific studies.

• Tate Geological Museum
A Casper College entity, people come from all over the world to see the Tate's ancient stones and bones! At the Tate you can meet "Dee," the world's largest mounted Columbian Mammoth, visit the Prep Lab as they work on "Lee" the T-Rex and "Henry" the Brontosaur, and learn about this area's beginnings with fossils, bones, rocks, and gems.

• Werner Wildlife Museum
Another Casper College Museum, the Werner is where you can get up close to a grizzly bear, bison, pronghorn, moose, and other exhibits of Wyoming's wildlife. You can also see the African animals Herman Werner hunted, an extensive collection of Wyoming birds and fish, and a trophy collection that is second to none.

• Casper Planetarium
A Natrona County School District entity, the Casper Planetarium is one of three in the state. With full-dome capacity, a new surround sound system, reclining seats and the latest technology, school students and the general public enjoy entertaining and educational shows in an IMAX-like presentation.

• National Historic Trails Interpretive Center
This interpretive center is managed by the Federal Government (Bureau of Land Management). The exhibits are owned by their private foundation, and the building is located on city land. This is a good example of useful partnerships among government agencies. This area was a very important place in history with four historic trails passing through here and crossing the North Platte River. The center interprets stories from the Oregon, California, and Mormon Trails, along with the Pony Express, and depicts Native American history.

• Wyoming Veterans Memorial Museum
A State entity, this museum tells stories of Wyoming's heroes, our Veterans. The museum was established in the original Enlisted Men's Club at the Casper Army Air Base, a World War II military training site. Each exhibit features artifacts and stories of veterans spanning from World War I up to present day conflicts in Iraq and Afghanistan.

• Historic Bishop Home
A private historic house located in what is now downtown Casper, the Bishop Home shows visitors what it was like to live here in the early 1900s. It is the first two-story brick home built in Wyoming, and nine children were raised here. Marvin Bishop, the original owner of the home, was a sheep rancher, Postmaster, and a highly respected member of the community.

The Consortium was first incorporated in 1999, a product of the local school district and the City of Casper. The discussion began about how the different entities could

collaborate to help each other. I credit the museum directors for their vision to help each other, and ultimately, themselves. Instead of looking at the other museums in town as competition, they recognized that working together only benefits themselves, the other museums, and the community at large.

This is a very important point that museum directors everywhere must understand. In any community, about 10% of the population is very involved in your museum; it's the artists that love the art museum, the astronomers who love the Planetarium, the historians who love the Fort and Trails Center. On the other end of the spectrum, there is the other 10% that will not support your museum, no matter what you do. The remaining 80% of the population is your focus; they are "museum supporters" on some level. It can be said that the person who is moderately interested in local history is also interested in astronomy, and the person who is interested in art exhibits also take their children to the Planetarium. They are museum supporters.

This theory was solidified in 2011 when the Consortium first began putting on "Date Night at the Museums." As the Marketing Coordinator for the group, I asked each museum for their VIP list of members so we could mail invitations to them. A few of the museums were protective of their established VIP list that had been cultivated over the years. In the end, they were surprised to learn that they shared many of the same VIPs. What's more, the museums share board members and donors. I would argue that this is true in any community. We're all after the same people, the same supporters, and the same donors. Why not make it easy for all of us and work together?

One of the most important things we do in every board meeting is a roundtable discussion about upcoming events and programs at each museum. We plan around each other and share each other's information. The museums help each other by sending families to the other entities on their way out the door of their own museum.

Frequently the museums develop exhibits and programs together. For example, a Planetarium show was about meteors, so the Tate Geological Museum contributed artifacts and information about meteors. Another time the Nicolaysen Art Museum held an art class at the Werner Wildlife Museum for wildlife art. The museums are always encouraging teachers and the community to utilize their resources. The museum directors sometimes need to utilize their fellow museum experts to enhance their own exhibit.

Some information about the Consortium itself: the governing Board of Directors consists of the museum directors and four community members as advisors. There is one part-time employee, the Marketing Coordinator, who is hired to create group projects and promotions and find ways to fund them. The board meets monthly at each other's locations. This makes it easy for the museum directors to see the newly installed exhibits at all the museums.

The museums pay annual dues into the Consortium which pays for the Marketing Coordinator's salary. The grants and donations are project-specific which pay for projects and promotions, and sometimes make a little money to boot! Important relationships with other entities have been cultivated over the years. One of the founding entities, the Natrona County School District, is an important partner in our organization. They have a talented graphic designer who creates our newsletter, prepares our Passport booklet, designs promotional materials, and helps with any event posters. The NCSD Print Shop then prints our materials at cost, and the School Mail Program allows me to get information to each of the twenty five elementary schools quickly and easily. The local school district is a vital community partner to the Consortium.

Other partners of the Consortium include the Natrona County Travel and Tourism Council, the Casper Area Convention and Visitors Bureau, the Casper Chamber of Commerce, and the Natrona County Tourism and Hospitality Advisory Council. It is vitally important that the "front line" people in Casper (hotel desk employees, waitresses, waiters,) know about the excellent museums so that when asked by tourists, "What is there to do in Casper?" they can tell them about the huge mammoth at the Tate or the fun exhibits at The Science Zone. All of our "front line" workers enjoy free passes to the museums so that they can plan to visit on their own time. We also encourage these partners to hold their regular meetings at the museums, an easy way to get them in the door.

We are fortunate to have a quality community college, Casper College, with an excellent Museum Studies program. The class often develops exhibits at the museums, giving abundant opportunities for students with internships and Camp Leader positions.

The projects and promotions of the Casper Museum Consortium are as follows:

• The Passport to Adventure Hunt
This 32 page booklet is our biggest and best promotion all year. People are encouraged to take their Passport to six of the thirteen museums in the Passport (we invite some other entities to participate in addition to Consortium members), get it stamped and answer a question. When they turn in their answer sheet to the last museum visited by August 31st they are eligible for the drawing. They can win

Figure 1: The Passport to Adventure Hunt is the Consortium's most successful program that drives traffic into the museums.

one of eight Grand Prize Packages, which highlight all the best things to do in Casper, donated by local merchants. What's better than a summer "stay-cation" where just a fun visit to some museums can get you some awesome prizes? We recently completed our 13th Passport, and now people look for it in May and know about the Consortium because of it. It drives a lot of traffic into the museums and encourages people to come to a museum they might not otherwise visit.

• **Date Night at the Museums** is our event for adults. Held twice a year, once in February for Valentine's Day, and once in July for a fun summer night, Date Night is a great way to experience some museums in a different light. We visit four museums and feed them at each stop in a kind of progressive dinner fashion. A Casper College bus transports twenty five couples to the first museum where they enjoy appetizers and a cash bar, the second site features the main course, the third features more hors d'oeuvres and a cash bar. Finally, the fourth museum is where coffee and dessert are served. The food and drink at Date Night are masterpieces of their own with gourmet dishes and specialty drinks created for the event. The museums enjoy giving a VIP presentation, something more than the everyday tour; a sneak peek at a newly acquired artifact or a behind-the-scenes tour. All the ladies get a corsage, and each couples' picture is taken and mailed to them along with a thank you note with an invitation to donate further. The bus shuttles half of the group at a time and is constantly transporting people to and from the museums. After four years of Date Nights, this has become a popular event, and we usually sell out and make a profit.

• **Museum Adventure Quest Camp**
Held during the summer, this day camp is a chance for twenty children, ages 1st to 3rd grades, to go to nine museums in five days. Along with fun group activities and tie-dying t-shirts, the campers visit one museum in the morning and one in the afternoon. Campers bring their own lunch, and transportation is provided by the school district bus system. Oftentimes we hear from the campers that this was the "funnest week of the summer!"

• **Museum Magic** is our quarterly newsletter distributed to every kindergartner through 5th grader in Casper. The museum educators submit an activity (maze, crossword puzzle, etc.) about the current exhibit at their site. Children love it and become interested in what's going on at the museum. Teachers love it because they often create class activities with them. The museums love it because they're able to get their message directly to the children of Casper!

Figure 2: Children enjoy the fun activities at all the museums during Museum Adventure Quest Camp.

• **Museum Mosaics Class** is our class for teachers. The museum directors and educators get a chance to present to the teachers in Casper all they have to offer. The teachers gain Professional Teaching Standards Board credits and learn about how to partner with the museums to enhance their students' curriculum. The museum educators work diligently to align their exhibits to the school district's curriculum, and this is a great way to show teachers how to use their resources.

• **Shared Website**
The Consortium has a shared website, www.caspermuseums.org, where we market our group activities and promotions and link to all of the members' sites. This is where people can register for Date Night at the Museums and Museum Adventure Quest Camp, and find information about the Passport promotion and everything else we do.

• **Social Media sites** are good marketing tools for the Consortium. The Marketing Coordinator shares posts by individual museums on the Consortium's Facebook page, and markets the promotions with posts and tweets.

In the spring of 2015 we worked with Zak to publish a coloring book, "Explore with Color," that features a story about the characters from the painting visiting all the museums with their pet T-Rex. Sponsorships were sold on each page to pay for the printing and to pay the artist. The sponsors got their logo on the page (cleverly worked into the scene by Zak) and the original artwork, signed and framed, ready to be hung in their business. These coloring books are flying off the shelves and we're planning to do another one in a few years (see image on front cover).

Getting together on a regular basis and sharing ideas has led to other group activities; we have a shared volunteer pool, in which volunteers from the individual museums have the opportunity to volunteer at the other museums. We created this pool to help with major events at the individual museums, believing that, like museum supporters, museum volunteers probably share an interest in the other museums. A volunteer at the art museum would probably also like to volunteer at the geological museum, for example. This is an evolving list of people managed by one of the volunteer coordinators at one of the museums.

We also have the opportunity for shared training for museum employees. Docent training, collections management training, and a graphic design class have all been useful for the Consortium members. A few years ago we hired the CWAM (Colorado Wyoming Association of Museums) representative to train us on disaster preparedness and relief. One would assume that the museums run by parent organizations (the City, the School District, the State, etc.) have a Disaster Relief Plan in place, but that was not so for all of them. The CWAM representative helped each museum create their own emergency plan, and we talked about how the museums could share resources and help each other in an emergency situation. We were also able to be added to the emergency contact list for the school district, so that if there is an issue at one of the schools, the museums are alerted. Now the museums are aware of "Lock Down" and "Lock Out" situations and protocol if they have a school group at their site and a situation arises.

More opportunities are available for museums who work together. The local Convention and Visitor's Bureau enjoys the convenience of having one contact for all of the museums. There are grants available for museums who work together. The community appreciates the fact that the museums schedule activities around each other and work together to bring the best to our community. The future holds numerous opportunities for this group of museums. Even though the museums in Casper have different parent organizations and display unique exhibits, they have found a way to work together. Forming the Casper Museum Consortium has been beneficial to many people in many different ways. The museums, the community, sponsors, donors, volunteers, and tourism organizations all benefit from the museums' collaboration. How will your museum reach out to other entities in the community and encourage collaboration?

Rachel Hedges is the Marketing Coordinator for the Casper Museum Consortium. She can be reached at caspermuseums@yahoo.com.

Community Connection: Pop-Up Exhibits and the Distributed Museum

By Brad Larson, Lynn Baum, and Jan Crocker

The phrases "pop-up exhibit" and "pop-up museum" have been on the rise for several years now; they imply a temporary, easy to set up, participatory experience that can be strategically placed in locations throughout a community. Are they really a new thing for museums? Not entirely – visitor-centered museums such as science museums and children's museums have been doing similar things under the "outreach" banner for decades. But what makes "pop-up" emerge with a fresh face is a growing community orientation – with a participatory emphasis – and social media technologies that can bridge between physical locations. A related concept of "the distributed museum" likewise envisions the museum with a presence beyond its physical building, distributed through a variety of programs and collaborations throughout the community (Bautista and Balsamo, 2011). These collaborations might include longer term programs with libraries, community initiatives, and after-hours entertainment such as science pubs.

In this article, we trace the history of pop-ups with an eye to lessons for museums. We also look at some examples of pop-up and distributed museum programs and conclude with a few new directions that open up as museums draw on these increasingly community-oriented formats.

POP-UPS ON THE SCENE: EARLY LESSONS

EXPERIENTIAL ORIGINS

The "pop-up" concept emerged with pop-up retail events back around the year 2000, first with "The Ritual Expo," an event described as a "convergence of fashion, deejay culture, art and Web life." The event highlighted independent streetwear in club-like environments set up in temporary locations, first in Los Angeles then in cities across the U.S. (Baltin, 2000). The highly experiential event drew on the synergy between music and fashion participants. *Message for museums:* pop-ups aren't "information booths," and they focus especially on the experience of the participant, including what they are hearing, doing, and sometimes eating or drinking. Experience leads the event.

"GO WHERE THE CUSTOMER IS"

Retail pop-ups continued with retail store Target opening a temporary shop on a boat in the Hudson River and a concept store "Vacant" that would open limited-time shops selling goods such as Dr. Martens shoes only until limited run editions would sell out (Gray, 2012). One of the underlying principles is to "go where the customer is," strategically locating in places that maximize impact of the brand and build connection to consumers (Bloomberg, 2014). *Message for museums:* seek out visitors in places they already are – places they enjoy hanging out or value for the resources they provide.

SOCIAL LOCATION (SOLO) TECHNOLOGIES

Pop-up restaurants and food trucks became more prevalent after the economic downturn in 2008 and evolved more readily with social media, eventually using twitter, foursquare, and other social media location based (SoLo) platforms to build their audiences (Engber, 2014). Food trucks offer special insight for museum pop-ups – they rely on building an audience that follows them on social media and can use the flexibility of their location to partner with other businesses and organizations (Key, 2013). *Message for museums:* use social media to highlight and amplify the temporary locations for pop-up venues.

Figure 1: A Seattle food truck travels to customers. Photo by MarmadukePercy, CC-BY-SA-3.0.

MUSEUM POP-UPS

The concept of the pop-up museum was created by Michelle DelCarlo in 2011 as the focus of her master's thesis (DelCarlo, 2011). While the term "pop-up museum" can have a variety of meanings, including short-term traveling programs and presentations led by museum staff, in this concept, it is based on the philosophy of a participatory experience. So, while it is still a short-term event that is commonly held beyond the museum walls, it is the visitors, not museum staff, who create the experience.

Figure 2: Exploratorium pop-up science cart. Photo copyrighted by and reprinted with permission from Exploratorium.

Typically, to create a pop-up museum, an invitation is sent out to the community to bring an object around a selected theme to a particular location. Participants assemble, write labels and then share the stories of their objects with other participants as well as visitors who come to view the temporary show. It is these conversations that are the core of the pop-up museum. The entire experience typically lasts no more than several hours. Themes often revolve around universal topics including "family," "personal collections," "memories," or "travel." In other cases they connect to an exhibit featured at the museum.

The Santa Cruz Museum of Art and History (MAH) has continued the focus on pop-up museums. Nora Grant, Community Program Manager, oversees the pop-ups hosted by MAH, which happen regularly throughout the year. Additionally, MAH has created a pop-up museum website that provides instructions for hosting a pop-up event and acts as a repository for sites to share their work.[1]

While there are a range of examples of pop-up museums hosted by history and art museums, the pop-up museum as described in this article seems to be a relatively rare activity within the science museum community. Based only on speculation at this point, a possible explanation might be that over the last 30 years or so the science museum community has developed a range of other options to engage with visitors, including interactive exhibits, mobile labs, kit rentals, all kinds of demonstrations and presentations that happen both within and outside of the museum and more; science museum experiences evolved in a different set of directions.

It may be, however, that there is something to be learned from the pop-up museum for the science museum community. This kind of participatory experience provides the opportunity to reach new audiences by recognizing the knowledge, skills and experiences of our visitors. Pop-up museums are, by their nature, relevant to the participants and the audiences they attract. They have the opportunity to strengthen the ties to the communities surrounding our institutions and to break down some of the barriers that may be keeping others from our doors.

Figure 3: Santa Cruz Museum of Art and History altered book collaboration with Santa Cruz Public Library.

THE DISTRIBUTED MUSEUM

One of the ideas to emerge from the Association of Children's Museums three year "Re-Imagining Children's Museums" project was the idea of the "pervasive museum." The project's goal was to rethink the basics of children's museums, from architecture on up through community engagement. The pervasive museum's presence occurs throughout a community – from school, to home, to activities and entertainment (Association of Children's Museums, 2015).

Similarly, the concept of "the distributed museum," introduced in a paper by Bautista and Balsamo at Museums and the Web in 2011, describes a museum that extends through "the transient spaces created through the diverse practices and technologies of mobility." The distributed museum becomes part of distributed learning environments.

Many museum outreach initiatives combine the portable and mobile aspect of pop-up museums as described above and with a distributive community framework, taking content and activities out to community locations.

Notable examples include the Exploratorium's explainer carts[2] wheeled out to locations around the city during the museum's transition to a new location and Pop-Up Heureka,[3] an initiative at the Finnish museum based on a Science Circus concept that wheeled a portable stage and physics demo station out to locations such as schools and shopping malls.

COLLABORATIONS WITH LIBRARIES

Many museums are reaching communities through an infrastructure already designed for distributed connection: local library systems. As museums seek to connect more widely, libraries look for engaging and relevant programs to offer their community – a win/win combination. For example, the Oregon Museum of Science and Industry (OMSI) collaborated with the Libraries of Eastern Oregon (LEO)[4] to create science activities distributed to 42 rural libraries and included stargazing events that drew out significant portions of the small towns' populations.

Figure 4: OMSI and rural libraries collaboration. Photo copyrighted by and reprinted with permission from the Libraries of Eastern Oregon.

COMMUNITY INITIATIVES

Larger initiatives that have a positive impact on the local community naturally lend themselves to a distributed museum approach. For example, The Charm Bracelet Project[5] was a collaboration of 20 Pittsburgh organizations dedicated to creating a "vibrant, attractive, and accessible" community in the Northside area. The Children's Museum, Pittsburgh, played a key role in organizing the initiative, and their after-school program connected out with activities throughout the community, including outdoor adventures with local outfitters, printmaking at art studios, and audio production at a broadcast studio.

The Studio for Public Spaces at the Exploratorium as well is built on the mission to take exploration out into the local community, with their NSF-funded Ciencia Pública project with Latino youth in the Mission District and the creation of "Living Innovation Zones" project on Market Street. The goal for the Studio is to work in public spaces outside the museum and encourage "play, exploration, creativity, and social connection."

Figure 5: Exploratorium temporary "parklet" for public space. Photo by Amy Snyder; copyrighted by and reprinted with permission from Exploratorium.

SCIENCE PUBS AND THIRSTDC

Science pubs in the Northwest and several large cities across the U.S. show another angle on "distributed" museums – after hours, informal, with an optional glass of beer or wine in a pub environment. OMSI schedules several science pubs, some with attendance greater than 300 (Loew, 2010). As well, the desire for informal social events incorporating science content in a playful way is apparent at events such as ThirstDC,[6] an event that grew on its own, outside of any museum affiliation, with a mission to create "an informal environment where world renowned experts socialize, interact with, and inspire attendees in a lounge atmosphere." The youngish audience pays $25 a ticket to attend and listen to presentations such as Newton's Laws of Motion accompanied by interpretive dancers.

Figure 6: OMSI Science Pub draws large after-hours audiences. Photo copyrighted by and reproduced with permission from D. Scott Frey (www.lightsmithy.com).

OPENING NEW DIRECTIONS

By investing time and energy in new, more community-distributed directions for the museum, museums can gain community momentum, often proportionally greater than the momentum they feed into it. Some of these new directions are listed below.

Pop-Ups that Feed the News

By the nature of their fluidity, pop-ups can be shaped to tie into local news on community issues. An example here is the pop-up setup on the National Mall by *Washington Post Magazine* and Brad Larson focusing on renovation of the National Mall. This renovation served as the magnet drawing together a number of community organizations, including the National Mall, National Parks Service, Trust for the National Mall, and *Washington Post Magazine*.

The project generated some of its core content through a series of wheelchair accessible storykiosk pop-ups recording visitors' experiences. Since the Mall is often referred to as "America's Front Yard," visitors' voices were a central component of the project. These recorded stories were transcribed and printed in the magazine – simultaneously published in the Sunday edition of the *Washington Post* on September 20th and online on *PostTV.*

Figure 7: Pop-up station on the National Mall generates news. Photo by Fabiana Chiu-Rinaldi.

Pop-Ups as Prototypes

Sometimes a pop-up experience can, through its participatory development, be an exhibit as well as a prototype. New themes that interest visitors may emerge just by inviting visitors to share their opinions and creativity with you.

One example is a project at Heritage Museums & Gardens developed by Jan Crocker addressing contemporary automobile development as part of a bigger institutional

Figure 8: Pop-up activity generates new exhibit themes.

project on historic dream cars. Young participants used design thinking to solve issues such as pollution, clogged roads, and megacity populations on a pop-up metropolis temporarily installed on the exhibit floor.

Using community groups as developers, an 11 feet by 22 feet "paper metropolis" was made for the center of the gallery. Working with artist Kiel Johnson and not a lot of prompting, groups were asked to make a paper megacity out of cardboard and scraps of all kinds of materials. The result was a thoughtful city, reflective of what people desire for their communities. The surprise theme that came out over the week's activity highlighted a concern for the environment and desire for green space interspersed throughout the paper metropolis. Adults, teens, and young kids made alternative power plants, wind generators, and high-rise buildings with gardens on the roofs. As the content shifted and changed over the run of the exhibit, visitors continued to show an environmental angle that would not have been nearly as interesting or varied except through this participatory experience.

Pop-Ups as Startups

Several museums have been able to use pop-up exhibits as a means of building community support prior to the establishment of an actual physical museum. This phenomenon is notable especially in the rapid growth in children's museums in the U.S., including the Ann Arbor Hands On and the Phoenix Children's Museum.[7] For example, the Museum without Walls in Phoenix operated with temporary exhibit installations from 1998 to 2008, building awareness in the community eventually leading to the opening of the Phoenix Children's Museum in 2008.

CONCLUDING THOUGHTS

Museums have been in a process of change from the original "cabinet of curiosities" to present day forms. We're still

Figure 9: Pop-up activities facilitated community support for the eventual Phoenix Children's Museum.

in the process of identifying and naming these new forms – "pop-up exhibits" and "the distributed museum" are two names that help us learn from the experience of other institutions. The underlying process indicates a growing focus beyond "visitor-centered" to increasingly "community-centered" approaches to audiences.

END NOTES

[1] http://popupmuseum.org/about/

[2] Exploratorium's Pop-Up Science Around the City: http://www.exploratorium.edu/visit/calendar/explainer-pop-up

[3] Heureka's Pop-up Heureka: http://www.heureka.fi/en/en-pop-up-heureka

[4] Libraries of Eastern Oregon, "LEO: Shining Bright on Communities": http://librariesofeasternoregon.org/history/

[5] The Charm Bracelet Project: https://pittsburghkids.org/about/in-the-community/charm-bracelet-project

[6] ThirstDC: http://thirstdc.com/about.php

[7] Phoenix Children's Museum, "Mission and History": http://childrensmuseumofphoenix.org/about-the-museum/mission-history/

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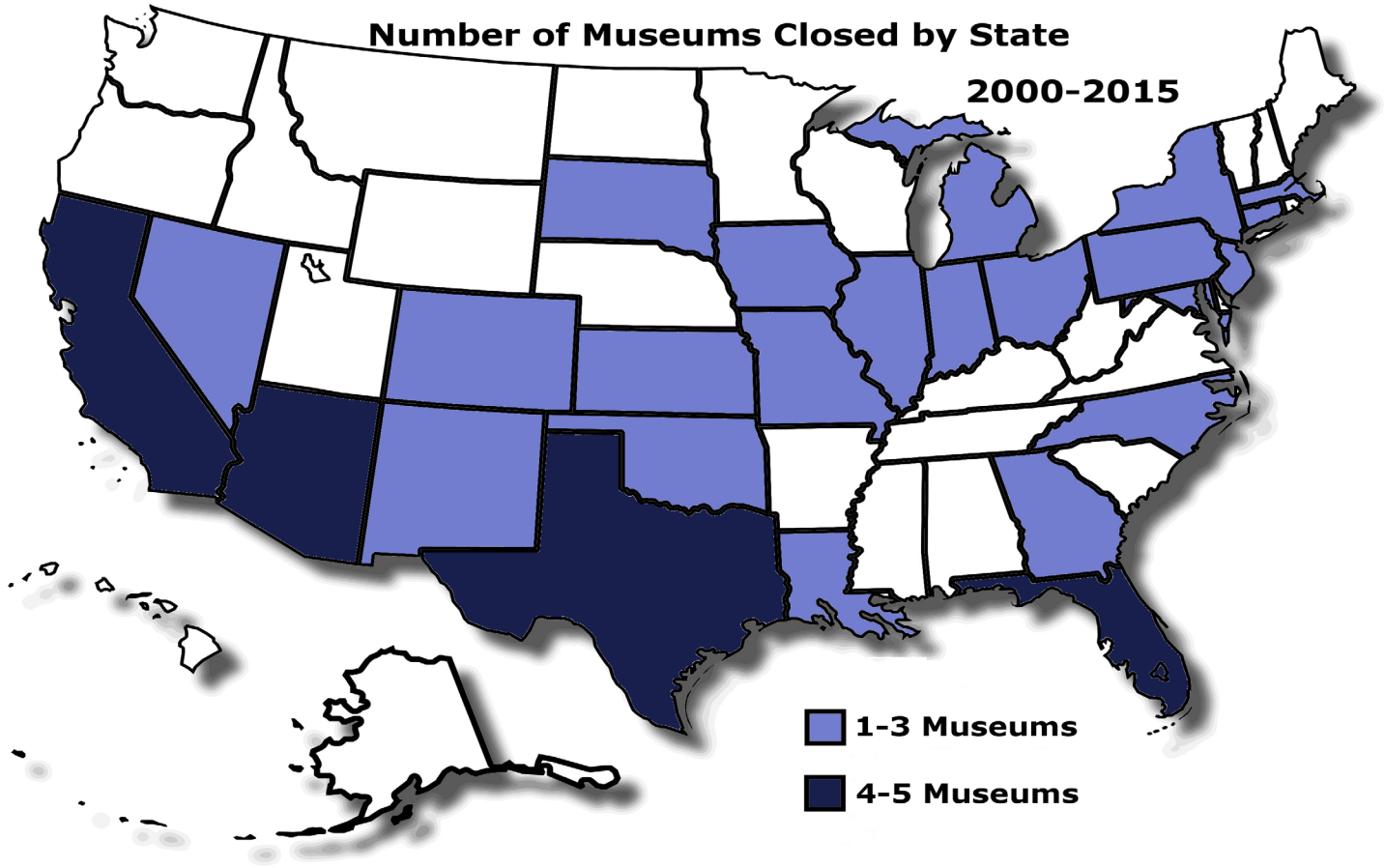
What We Can Learn from Closed Museums

By Rebecca E. Dickman



INTRODUCTION

More than 50 museums have closed in the United States since 2000. These have ranged from large history museums to medium-sized science centers to small niche museums. When I began my research into American museums that have closed since 2000, I had many questions. I wanted to know where the closed museums were located: were they concentrated in certain parts of the country? When did they close: was it related to an economic downturn or specific event? How many years were they open for: was there a common age at which the museums closed? The biggest question I had was "why did they close?"

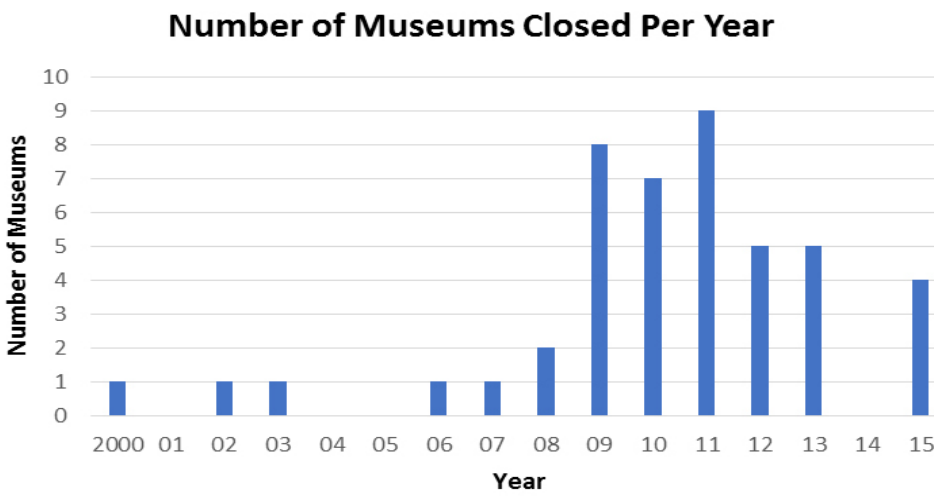
METHODOLOGY

To answer these questions, I searched the internet for newspaper articles about closed museums in the United States using Google and the Lexis Nexis Academic database. I found well over 50 museums, but selected 45 that had enough information available for the purpose of my research. The museums I selected varied in what they did with their collection after they closed. Some had collections in storage, some gave the collection to another museum, and others sold it. The museums were both nonprofit and for-profit institutions. Some were run by museum professionals and some were not. I researched where the museum was located, what type of museum it was, when it opened its doors, and when it closed to the public. I found reasons why they closed and organized similar reasons into categories.

FINDINGS

The 45 museums that closed were located in 25 states. The states with the most closed were California with five, and Arizona, Florida, and Texas with four each. These are all located in the South and Southwest. The housing bubble collapse of 2008 could have played a part, especially in California, Arizona, and Florida, which were hard hit. These four states have large populations and many museums. Some cities within these states may have had too many museums competing for visitors and funding, so some museums had to close. According to the Institute of Museum and Library Services in 2015, California had 2,670 museums, Arizona 449, Florida 1,149 and Texas 1,886 (IMLS, 2015).

The four states with the most closed museums also have

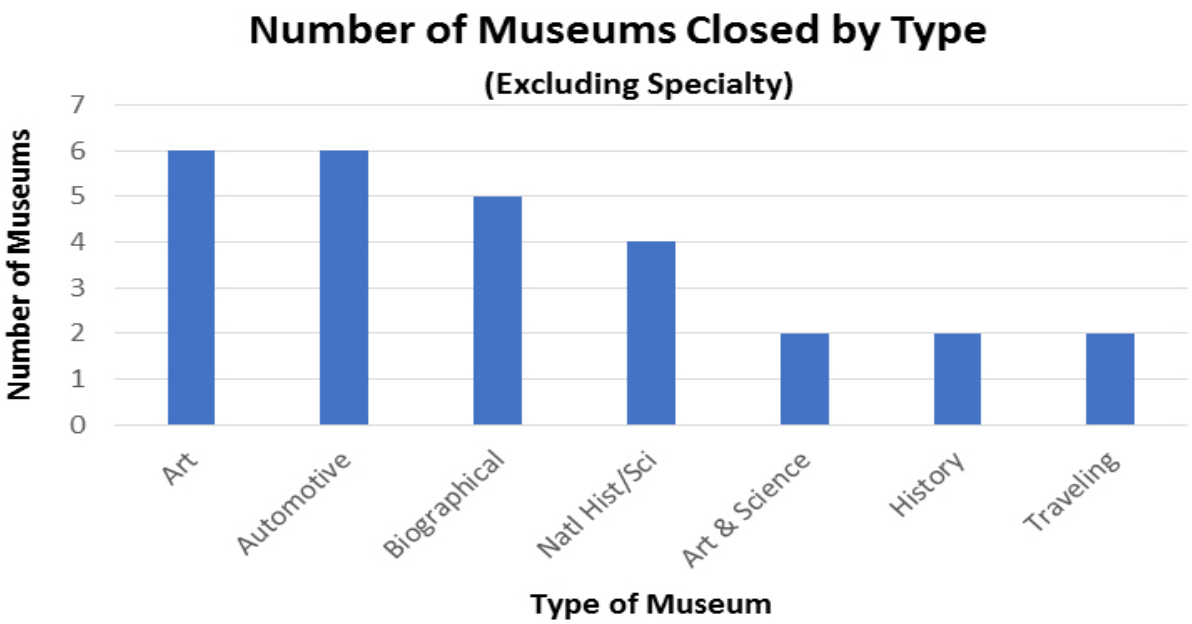


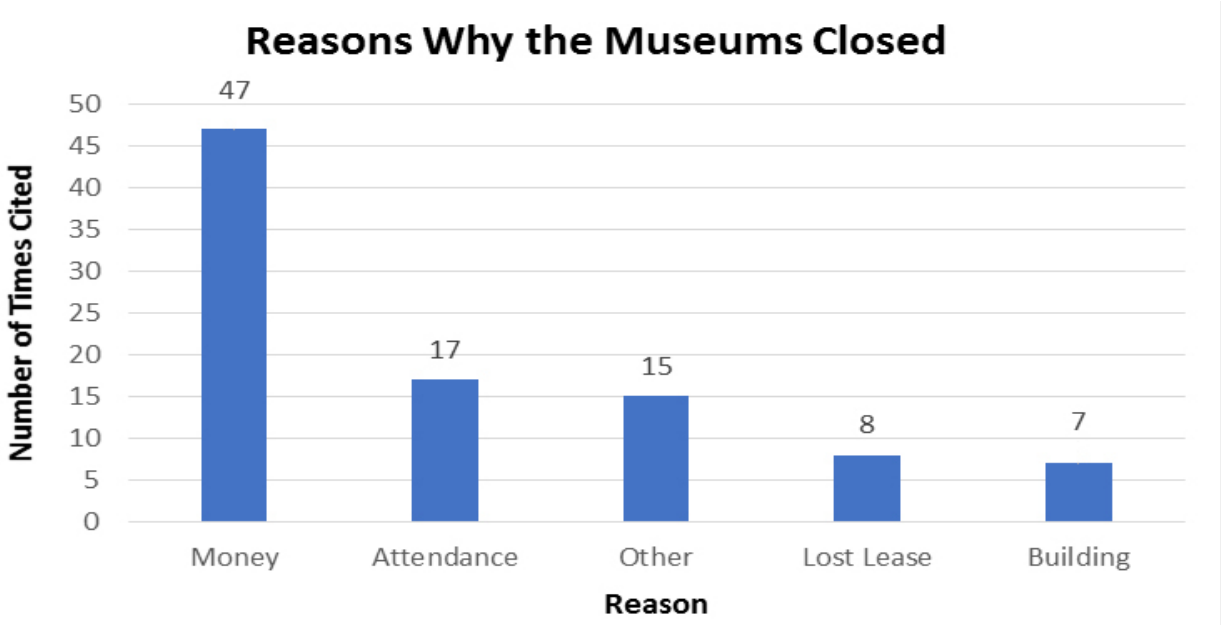
large minority populations. One problem facing museums is that if they are not seen as welcoming, they will lose out on visitors. Some museums have not adapted to the influx of immigrants in their community. Immigrants may not see the museum's programs and exhibitions as relevant to their lives. In 2010, 27.2% of California's population was foreign born, while in Florida it was 19.4%, Arizona it was 13.4%, and in Texas 16.4% (U.S. Census Bureau, 2010).

The majority of the museums (24) closed between 2009 and 2011. From 2000 to 2007 there were few that closed. In 2009 there was a sharp increase in the number of museums that closed, probably due to the recession. During 2012 and 2013 the number of museums closing each year decreased to five per year. In 2014 no museums closed. However, in 2015, the number increased to four museums closed that year.

More than a third of the museums (17 of 45) opened during the 1990s. The strong economy during the 1990s may have played a part in helping the museums get off the ground. I am interested as to why many of the museums only survived 10-25 years. One possibility as to why the museums did not last very long is that those individuals or group who founded the museum might have moved on. They could have left the museum in the hands of those who were not as enthusiastic or committed (Smith, 2015).

I organized the closed museums by type into art, art and science, automotive, biographical, history, natural history and science, specialty, and traveling (ones that only host traveling exhibitions). The most common type to close was the specialty museum (14). It could be because they have a harder time bringing in visitors. They may have had difficulty in finding grant funding or government support because their museum was so specialized and not of interest to many people. The other most common types of museums to close were art (six), automotive (six), and biographical (five). Many of them were run by families or enthusiasts instead of museum professionals.





Many reasons were cited in the newspaper articles as to why the museums closed. The most common reason by far was money problems (47 times). This included general financial problems, losing funding from local and state government, recession/economy, and declining contributions from donors and grants. One museum could have had money cited as a problem more than once, for example they could have had funding from local government cut, declining contributions, and declining grant money.

Other reasons the newspaper articles cited as to why the 45 museums closed included declining attendance (17 times), losing the lease to the museum building (eight times), and building upkeep (seven times). Building upkeep included maintenance, inability to afford utilities, and more. I also created an "other" category that included reasons only cited once, the small categories of management problems, kids not interested, hard to get and keep volunteers, and competition from other activities. However, these things cannot be thought of as separate reasons: they are all connected!

CASE STUDIES

Las Vegas Art Museum

The museum opened as a fine art museum in 1974 after forming as an art league in 1950. It closed on February 28, 2009. The main reason cited in newspaper articles was the economic downturn decreasing the number and amount of contributions made to the museum (Peterson, 2009). The Wall Street Journal reported, "Even before the recession took hold in the rest of the nation, Las Vegas's economy began to falter. Several casino companies filed for bankruptcy, massive construction projects were left unfinished and housing prices recorded some of the sharpest drops in the country. Much of the city's emerging arts scene had been built on philanthropy of the businesses that were suddenly struggling" (Berzon, 2010). The museum's contributions and grant revenue dramatically dropped from 2007 to 2009: $1 million in 2007, $644,000 in 2008, and $168,000 in 2009 (Las Vegas Art Museum, 2010). The museum's permanent collection is still in storage. The 990 form from 2011 states, "The museum has temporarily closed due to the economic conditions that exist and will remain closed until the economy improves. These expenses (rent and insurance) represent the costs of maintaining and storing the art collection" (Las Vegas Art Museum, 2010).

Mary Brogan Museum of Art and Science

The former Museum of Art Tallahassee and Odyssey Science Center, which were located in the same building, merged to create the Mary Brogan Museum of Art and Science in 1998 (Novak, 2013). It was a Smithsonian Affiliate. The museum faced financial troubles from the start, according to local news source WTXL, "People who know the museum best say financial problems plagued the downtown Tallahassee museum from the start. They say the building was supposed to have four floors. But it was built with just three. Now, struggles to generate money left board members no other choice" (Wilson, 2013). The museum was in debt, owing more than $100,000 while only having $70,000 in the bank (Wilson, 2013). The museum's income from gifts, grants, contributions, and membership fees dwindled from 2007 to 2011. The museum received $886,000 in 2007, which dropped to less than half that in 2011: $415,000. During tax year 2009 the museum spent most of the endowment funds, drastically cutting it from $380,000 to $2,600 (Mary Brogan Museum, 2011). The board of directors decided to close its doors to the public on January 13, 2012 to regroup. However, on February 11,

2013, the board of directors voted to permanently close the museum on September 1, 2013 (Palombo, 2013). The museum sold its art collection and gave fixtures to the Tallahassee Community College, who leased the building to the museum (Mary Brogan Museum, 2011). The first floor of the building is now occupied by a local NBC affiliate station (Urban Tallahassee, 2015).

Phoenix Museum of History

The Phoenix Museum of History opened during the 1920s. In 1996 it moved to Heritage & Science Park in Phoenix (Berry, 2009). The Arizona Republic reported that in 2009, the "Phoenix City Council faced a historic budget shortfall. The city's budget cuts included $50,000 in annual funding that went to the museum. The museum's annual operating budget is about $300,000" (Berry, 2009). The president of the museum's board of trustees said, "In addition to the city budget cut, the museum was getting less money from grants and other income" (Berry, 2009). Due to financial pressure, the board of trustees voted to close the museum on June 30, 2009. The museum building and artifacts were given to the Arizona Science Center, located adjacent to the museum (Luebke, 2009). The building now houses the 6,500 square foot CREATE maker space, opened in fall 2015, as part of the 24,000 square foot renovation of the old Phoenix Museum of History (Myer, 2015).

COLLABORATION AS A SOLUTION

As these case studies suggest, declining revenue is the main reason the museums closed. This resulted from decreasing donations from the recession, less funding from local government, fewer visitors, paying for building upkeep, and in some cases, losing the lease to the building. One option for museum professionals to consider to mitigate these problems is collaboration.

Collaboration can help museums to stop competing for funding and visitors. Museum studies professor Martha Morris argues, "With a proliferation of museums of all kinds throughout the country, communities should be taking a close look at what number of institutions is sustainable," and "the reality is that competition may force collaboration if organizations want to achieve long-term sustainability" (Morris, 2012). Each museum participating in a collaborative venture can contribute its strengths and get help with its weaknesses. Museum administrators Anderson, Crago, and Welsh suggest, "A coalition of regional museums that work together, utilizing the staff and other resources of each organization for the betterment of all the museums in the coalition. This type of collaboration goes much further than just marketing or ordering supplies in bulk. It entails staff from one organization working on another's projects" (Anderson, 2011). Through collaboration, museums can offer more services for less money and effort by sharing expenses, staff, and knowledge.

EXAMPLES OF MUSEUM COLLABORATION

The East Valley Museum Coalition came about after the Phoenix Museum of History closed in 2009. Administrators at local history museums worried about their own museums' future, so they turned to collaboration. Lisa Anderson (President and CEO of Mesa Historical Museum), Jody Crago (Administrator at Chandler Museum), and Peter Welsh (former Director of the Arizona Historical Society Museum) met to discuss what could be done (Anderson, 2011). The coalition's collaborative efforts have included sharing collections and exhibitions. The Mesa Historical Museum gave their agriculture-related artifacts to the Chandler museum because the story of agriculture in the region could be told better on its ranch museum. When the Mesa Historical Museum moved to a new location, the old building was turned into a joint collections facility. The museums collaborated on the exhibition Play Ball: The Cactus League Experience. The Mesa Historical Museum started the exhibit in their building using 100 objects in a 1,000-square-foot space. However, when other museums showed interest in the exhibit, the Mesa Historical Museum collaborated with them to extend the exhibit to other facilities (Perera, 2013).

The Chattanooga Museums Collaboration is a partnership between the Tennessee Aquarium, Creative Discovery Museum, and Hunter Museum of American Art. The aquarium started collaborating with the Creative Discovery Museum in 1996 after the museum set unrealistic visitor number targets and faced a deficit after its first year in 1995, forcing the interim director to look for help. The Hunter Museum joined the collaboration in 2000 when an individual who served on both the aquarium and Hunter Museum boards suggested the institutions work together. The three institutions quickly expanded their collaborative ventures, since they are located close to each other and all want to improve the quality of life in the area (DeGaetano). Because the aquarium is the largest and best funded of the three institutions, it offers support to the two other institutions in the areas of human resources, finance and accounting, information technology, and marketing. Human resources staff continually work to build trust between the three institutions by holding socials and joint training opportunities. Cooperative marketing includes purchasing radio and television ads, creating print ads, and joint ticketing. Purchasing goods for the gift shops is done together. Charlie Arant, Tennessee Aquarium CEO, said, "The best thing about this partnership is that each of the involved institutions gets more time and money to spend on their mission….I believe that many institutions could benefit from this type of partnership. It really is true that a rising tide lifts all boats" (DeGaetano).

Another example of museums working together is the Coalition of Pikes Peak Historic Museums in Colorado. The coalition has 17 museum members and started in 2002. As stated in the coalition's narrative entered for the Collaboration Prize, the "concept was to form an alliance of local non-profit museums in order to help one another, increase attendance at each museum and better use advertising dollars to the advantage of all members" (Coalition of Pikes Peak Historic Museums, 2015). In addition to advertising together, the coalition hosts professional development opportunities for staff and volunteers. They also have printed brochures together featuring all of the member institutions and create a monthly calendar of events. By advertising together, their potential audience can learn that there are multiple things to do in the region, so they will be more willing to visit. One or more staff members from each museum belong to the coalition, along with two at-large representatives. Each monthly meeting rotates between the member museums; this allows staff to tour other museums and meet other staff and volunteers that they might not have met before. The meetings allow people from the various museums to talk about their plans and upcoming events so events can be coordinated rather than competing (Coalition of Pikes Peak Historic Museums, 2015).

CONCLUSION

In conclusion, museum professionals can look at examples of closed museums to determine common problems museums face and can take steps to avoid them. The most common reasons for closing were fewer donations, lack of funding from local government, declining attendance, paying to maintain the museum building, and losing the lease to the building. I offered collaboration with other museums as one solution to combatting these problems, but other options are available, such as increasing fundraising efforts, locking in funding from local governments, and owning the museum building. When a museum closes, the public loses a place that provides educational, artistic, and heritage benefits to the public. According to the American Association of Museums, "Museums have the capacity to contribute to formal and informal learning at every stage of life," while being "forums for presenting and testing alternative ideas and addressing controversy" (Hirzy, 2008). The world we currently live in could benefit from everyone continuing to learn throughout life and having a safe place to discuss controversial and new ideas.

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ILE Traveling Exhibitions Forum at AAM 2016

The ILE Traveling Exhibitions Forum will be held on Thursday, May 26 from 7:30-9:00am at the Mount Vernon Fellowship Hall/Henley Park Hotel, located at 900 Massachusetts Ave NW, Washington, DC 20001. The Mount Vernon Fellowship Hall is adjacent to the Henley Park Hotel and conveniently located close to the convention center and across from the AAM headquarters hotel.

The invitation for speakers will be sent out via email on April 25, 2016. Please email us at ileinc@informallearning.com if you would like to be added to our email list. The event is free, and no registration is required to attend. A lite breakfast will be served. Please note that the Traveling Exhibitions Forum is no longer an official part of the AAM conference and will not appear in the official conference program.

ILE would like to thank the sponsors of the Traveling Exhibitions Forum at AAM 2016: Imagine Exhibitions, Science North, SC Exhibitions, Minotaur Mazes, and the Museum of Science and Industry Chicago. Without their generous support, this event would not be possible.

Designing for Creativity and Innovation in Informal Science Learning

By Rachel Kendal, Jeremy Kendal, Zarja Mursic, Claire Bailey-Ross, Hannah Rudman, Andy Lloyd, and Bethan Ross

Informal Science Learning practitioners develop their activities in order to improve people's confidence around science, their understanding of the scientific approach, and their appreciation of the results of scientific enquiry. Observing, collecting evidence, testing, applying logic and analyzing data are all core scientific skills encouraged in science centers. However, some people love the arts, sports, or humanities and are more likely to identify with another set of interesting activities: creativity, innovation, discussing and designing. Of course, this second list also describes core scientific skills. There are many initiatives that aim to excite people so that they come to love science as much as they love the arts, humanities and sports. Many practitioners, however, have an exclusive focus on the sciences, with the result that a great many people are turned off at a young age by a subject that they cannot personally identify with (DeWitt et al., 2013).

Science uptake in UK schools and universities is currently experiencing a dramatic downturn (Swan, 2013). Researchers at Durham University[1] and science educators at the UK's Centre for Life[2] are investigating whether developing creativity and innovation offers a different route into STEM subjects that can also incorporate other subjects and forms of inquiry. External researchers and internal science center practitioners formed a multi-disciplinary team to co-produce exhibits, which enhance creativity, innovation and scientific thinking.

BACKGROUND

University researchers in cultural evolution and child development are steadily gaining new insights into the intricacies of children's reasoning and scientific thinking. At the same time, there has been increased recognition of the important role that visits to informal learning institutions, like science centers, play in supporting science learning. Traditionally, academic research and science center practice typically unfold independently with different aims, objectives and methods. The disconnect between these activities can make it difficult to identify meaningful intersections between academic research and educational practice in informal settings.

Researchers at Durham University and science educators at the UK's Centre for Life are working together to blur the boundary between research and practice. In this project we document and discuss a multi-disciplinary partnership between university researchers and science center practitioners, which is resulting in the co-production of science exhibits which are intended to enhance creativity, innovation and scientific thinking in those that interact with them. Of particular interest for the project is consideration of how engaging with informal educators influences the research process, and how engaging with researchers influences the work of informal educators. A complementary focus is on the cutting edge process of designing exhibits for creativity and innovation in scientific thinking when they are co-produced by researchers and science center practitioners in informal learning settings.

The Durham University researchers have developed insight into how humans learn novel tasks and the importance of social transmission, including cumulative culture (Dean et al., 2012); the study of social transmission in naturalistic contexts (Kendal et al., 2010) and the tradeoffs made between learning from others and individual innovation (Wood et al., 2013; Carr et al. 2015); how social and environmental factors (Flynn et al., 2013) play a significant role in influencing the tendency to learn for oneself (and potentially innovate) or copy others; and quantitative methods to identify signatures of social learning and innovation in informal learning environments (Kendal et al., 2009). The balance between accepting information from another, versus testing hypotheses for oneself, through creative exploration, is at the heart of the scientific enterprise (Feynman, 1969).

From this base of knowledge, the researchers are keen to further examine how individuals learn in informal learning environments. The particular focus of the experiments in the exhibit will look for factors that influence the tendency of an individual to solve problems by copying others or by experimenting, innovating and testing their own novel and creative solutions. The researchers will also investigate the nature of research, participation, engagement, and creativity possibilities that can be provided by digital technology (Ross et al., 2013). In tandem, the practitioners from Centre for Life are keen to apply recent psychological, anthropological, education, and design theory to exhibit design, as well as experimenting with whether novel digital

information systems could become resilient research tools. Together, we are aligning research and practice objectives and through a process of co-producing exhibits, exploring what we can learn from each other.

The team collaborated through a process of participatory action research. Throughout 2015, the team held a number of design workshops and meetings. At them, they applied both academic theory and craft practice to iteratively prototype novel interactive exhibit designs specifically to encourage creativity and innovation (Rudman et al., 2015). A key focus was also ensuring creativity and innovation could be measured accurately. The new exhibit(s) resulting from this co-design and participatory action research process will form part of the Brain Zone exhibition opening at the Centre in spring 2016. In the Brain Zone, visitors will find out how scientists explore the brain's inner workings and take part in live experiments that reveal some of its capabilities.

In October 2015, during a busy visitor week at the Centre for Life, the team piloted the prototype of the new exhibit. They tested multiple visitor learning experiments, the digital research tools, and how best to gain ethical consent from visitors participating in the research. In this article we begin to explore the process for designing for creativity and innovation in informal science learning environments, by presenting a case study from the Centre for Life. We discuss the key design criteria and research processes that drove the development of the exhibit, and summarize the iterative development process used to build the prototype. We report lessons learned, as well as initial findings, from the Centre for Life pilot study, which will be used to further develop the final exhibit to enhance creativity, innovation and scientific thinking.

EXHIBIT DESIGN

The exhibit (Figure 1) is a creative activity, a construction task with building blocks. Constructed from sturdy MDF, metal poles, and wood, the exhibit has three user stations and allows three different experimental conditions. Each user station has a horizontal activity surface 400mm deep, onto which loose items can be placed, and space to fit a touchscreen tablet housed on a secure stand. There are 1500mm tall vertical partitions, surrounding the table, to shield the activity from outside observers. Overhead, a truss structure supports the lighting for the exhibit. Reconfigurable partitions 500mm tall between the user stations (here shown in their transparent state) allow for the following test conditions:

- a single user working on his or her own, unable to see other users (who will be performing a similar task at an adjacent user station but separated by opaque partitions);
- a single user working on his or her own, but able to see what other people are doing at other user stations (but not necessarily interact with them due to transparent partitions as seen in Fig. 1); and
- several users able to work together across the user stations (no partitions).

Figure 1: The prototype exhibit.

The quality of presentation of the exhibit was not important at this pilot stage, so "test area" signs and a cordoned off zone created with hazard tape presented a credible but basic experience (Figure 2). Users of the exhibit were simply asked to "build your best building" using the 100 wooden blocks in each station.

Figure 2: Test area signage.

DESIGNING THE DIGITAL RESEARCH TOOLS

In order to improve data capture and collection, the exhibit has built-in digital research tools and information systems that can be used to both gather ethical consent and capture data about user interaction and experience. Underneath the user stations, a small lockable cupboard houses power cables for touchscreen tablets and video cameras, routers and switches, a PC, and a 3TB hard drive. The metal poles within each user station provide mounting points for Internet Protocol (IP) cameras to capture individual user behavior, as well as the status of the tablets' screens which are used to gain ethical consent (Figure 4). Another IP camera is mounted above the center of the pod to capture an overview for cross-reference. Power cables for the user station cameras run down the insides of the metal poles. The IP cameras are connected to a Network Video Recorder (NVR) stored in the locked cupboard. Usually used for building security surveillance, the NVR and IP camera system is also suitable for research purposes. It creates a secure local area network to allow researchers to log-in to control the cameras, and view recordings or live footage (Fig. 3). It also has an intuitive, configurable, and feature packed user interface with advanced features such as motion detection, auto discovery, user-level security, storage management, reporting, and mobile device support.

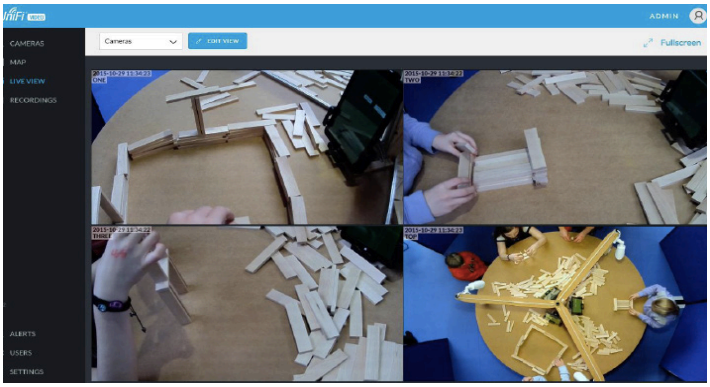

Figure 3: Digital research tools capture user activity.

The system is easy to set up each day. The NVR system turns on by itself with the exhibition power-up in the morning. The cameras record from that point on for the rest of the day. At the end of the day the system is turned off manually to ensure the captured data saves to the hard drive kept locked onsite in the cupboard under the exhibition pod. The tablets, which host the consent form and the activity instructions, need switching on manually, but automatically boot into the online consent system in a kiosk mode (i.e. it only allows access to the consent system). The tablets run on main power, so are also on all day.

Each tablet runs its own consent survey to enable linking with the corresponding camera, of that particular user station (Figure 4). The cameras and consent system have a shared timestamp, so this can be cross-referenced to ensure use of only footage for which Centre visitors have granted consent. In addition, and for ease at the data analysis stage, the cameras record the permission screen. Only footage showing the tablets with green or yellow screens is kept for research purposes (red tablet screens indicate that participants have completed the ethical consent survey on the tablet and declined permission for their data to be used in the study). A cloud-based open source software survey system (Limesurvey[3]) was used to seek ethical consent. A series of questions required user responses through check boxes and buttons, which could be easily and quickly navigated using the tablets' touchscreens. The wording of the consent form was agreed in advance by Durham University's ethical consent board and followed the British Psychological Society's guidelines for internet mediated research.

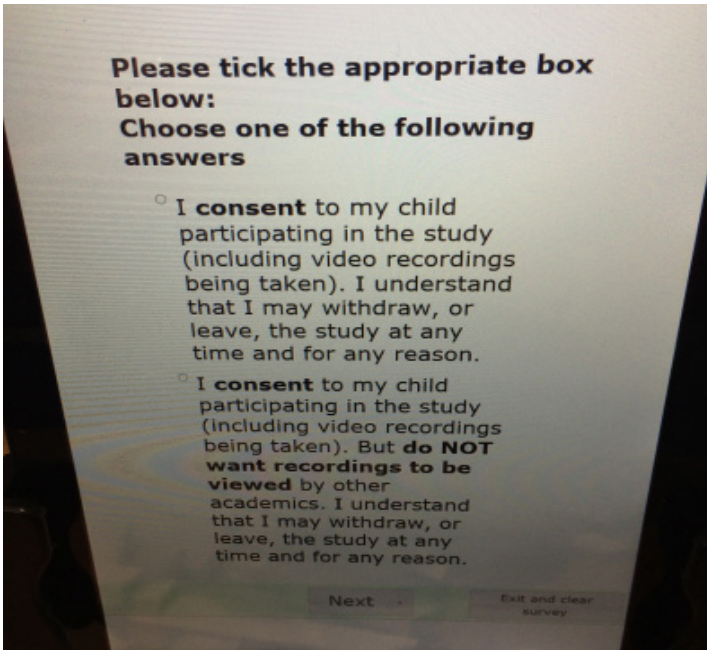

Figure 4: Tablet running the online ethical consent form.

FINDINGS FROM PILOTING THE PROTOTYPE EXHIBIT

Through observing the prototype exhibit heavily in use (231 participants with consent, and many more whom interacted with the exhibit), the team learned a number of practical lessons that will now be fed into the final exhibit design as a further iteration. The simple instruction to "build your best building" worked adequately to prompt a broad range of creative and innovative constructions, and we noted high dwell times at the exhibit. The video footage collected by the IP cameras and NVR system was of excellent quality, ensuring coding of the data will be accurate. However, sometimes the process and results of the activity were hard to see in the footage, as visitors obstructed the cameras as they crowded around the activity.

Removable cut-outs in the table surface would encourage a single child to focus in on the activity, and a marked build space on the table would ensure the cameras could see the construction activity and final building.

Footage from the pilot activity will be used to establish coding criteria for the analysis of levels of creativity and innovation in user activity and results within the final exhibit. Informal discussion with participants also indicated that the prototype made for an attractive exhibit in the Science Centre. Parents and guardians were intrigued by the research and team's aims, while participating children were excited and, it seemed, enthused by the thought of taking part in "real science." Formal qualitative research into these findings, and their potential impact on children, will take place once the final exhibit is in place.

CONCLUSION

The ultimate aim of the exhibit is to maximize the impact of informal science learning opportunities available to the general public and provide evidence of what design features in exhibits facilitate successful informal science learning. The prototype exhibit has gone some way to understanding how the design of an activity influences the levels of creativity and innovation the activity inspires. The digital research tools designed into the exhibit have provided a novel and user-friendly way of using information systems to capture user data, ethical permission, experiment results, and user activity for analysis.

Participatory action research has provided a method for the team to blend academic knowledge and practical know-how, and design thinking approaches have enabled the rapid design, development and prototyping of the exhibit and its experiments. Building upon this foundation, several promising directions remain for future work when looking at co-producing exhibits for enhancing creativity and innovation in informal science learning environments. First, we plan to further extend and refine the exhibit development to promote active prolonged engagement (Humphrey et al, 2005), as revealed by learners' dwell times, interaction patterns, and behavior. Further, we intend to expand the exhibit to reflect the myriad complexities of scientific thinking and decision making in this informal learning environment. In addition, we plan to conduct further studies examining cultural evolution and child development theory through activities in informal science learning environments involving naturalistic deployment with the public. The outputs of this work will result in policy documents and guidelines regarding exhibit design, specifically tailored for informal science learning practitioners, as well as new academic theory and novel contributions to the practice of research.

END NOTES

[1] Durham University website: http://www.dur.ac.uk; Project website: https://www.dur.ac.uk/esrciaa/test/researchingtogether/sciencelearning/.

[2] Centre for Life website: http://www.life.org.uk.

[3] Lime Survey open source software: http://www.limesurvey.org.

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Impacts vs. Benefits: How Well Do Yours Align?

By John W. Jacobsen

[This article is derived from the new book by John W. Jacobsen with a foreword by Ford W. Bell, *Measuring Museum Impact and Performance: Theory and Practice*, published in March 2016 by Rowman and Littlefield.]

Are your supporters and audiences getting benefits that are different from the impacts your mission desires? I believe that museums are valued for a wealth of beneficial results beyond their focused missions, and that studying the alignment between a museum's intentions and its results can improve a museum's impact and performance.

IMPACTS AND BENEFITS

A museum aspires to have *impacts* on its community, audiences and supporters. The community, audiences and supporters receive *benefits* from the museum. Impacts are the desires of the museum; benefits are in the eyes of the beneficiary.

The benefits can be different from the impacts: A family visiting an aquarium receives the benefit of a quality family experience, while the aquarium's impact on the family is to heighten their awareness of conserving biodiversity. Alternatively, the benefits and impacts can be aligned: New parents bring their toddler to a children's museum to see her develop and learn with new kinds of challenges; the children's museum's mission is also child development. Studying the alignment between a museum's benefits and impacts may illuminate potentials and inefficiencies.

A museum's value lies in its impacts, says museum sage Stephen E. Weil (Weil, 2005). However, the museum's value is expressed in terms of the value of the benefits. Since value is in the eye of the receiver, any valuation must first track the value the community and its audiences and supporters place on their perceived benefits. When the desired impact is the same as the perceived benefit, such as the children's museum example, then they are aligned. When they are different, such as the aquarium example, they are unaligned. Some degree of unalignment may be desirable for strategic or advocacy reasons, but too much may be inefficient and unsustainable.

EXCHANGES AS INDICATORS OF VALUE

Museums are free-choice marketplace organizations. No one must go to, pay admissions or fund a museum. People and organizations choose to spend time, effort and money on their museum engagements in exchange for perceived benefits. Your museum earns these value exchanges in a competitive economy: There are plenty of alternative missions, programs and leisure activities competing for your audiences and supporters.

A museum's *perceived value* is a qualitative judgment of the value of the benefits and impacts from engaging with the museum's activities by its community, audiences and supporters. Exchanged value is a quantification of the amount of time, effort and/or money actually exchanged for the benefits they received. *Exchanged* value can be an indicator of perceived value.

How can we measure these exchanges? We need to start with definitions (Jacobsen 2016), then we can measure consistently using terms that strengthen your measurements and analysis.

A *museum engagement* is defined as one physical person-trip to a museum or a museum sponsored program off-site by a person not employed or contracted by the museum to be there. The person-trip is a measure of *effort*

spent by the person. The number of person-trips (aka site visits) is equal to the number of physical museum engagements. Visitor attendance is a subset of total museum engagements.

Money paid to the museum for its operational activities is measured as external operating revenues. The amounts are the monetary value of the museum's engagements to its direct beneficiaries, according to the subjective theory of economics (Menger 1871). *External operating revenues* are indicators of the money the museum's community, audiences and supporters are willing to pay in return for the personal, private and public benefits they receive.

A museum's *business model* is the mixture of activities and benefits provided to its community, audiences and supporters in return for their money.

Changes in the total amounts of time, effort and money a museum's community and its audiences and supporters exchange for their museum engagements may indicate changes in the annual value of a museum's cumulative benefits.

DETERMINE YOUR KEY SERVICE MARKETS

The museum's *key service markets* are its main sources of engagements and external operating revenues, such as visitors, grant-making foundations, government funders, corporate members, etc. There are three umbrella external service markets: 1) the community as a whole; 2) audiences (visitors and program participants); and 3) supporters (public and private). In addition to those three who engage directly with the museum, there is also a market of non-users who still perceive benefits from museums; such non-users value their museums as options to visit, as contributors to a community's quality of life, and as stewards of the legacy of their times (Scott 2007). Table 1 diagrams a full menu.

Your museum is likely to have different emphases – perhaps school groups are more important to you than their share of attendance or revenues might indicate. Your priorities do not have to align with your key service markets, but they could, and significant unalignments may be difficult to sustain.

To identify your key service markets, review recent internal financial and operating statements to understand the sources of your museum's yearly operating revenues and attendance. If you have government or university support, include them as another key service market. Record the annual operating revenues for at least one recent year without major anomalies ("Base Year"), and categorize them by sources. Exclude capital asset additions and revenue from those assets such as endowment income. In this exercise, the museum is trying to identify and study the external operating revenues it receives in return for its annual activities. Note any anomalies in each year that might have affected operations, like a blockbuster exhibition or the opening of a new wing.

Do the same for your engagement counts. Most museums keep track of the visitor attendance part of a museum's annual engagements; some keep track of their program participations, but few document and total all of their engagements, which include board meeting attendance, progress meetings with grant funders, volunteer shifts and more. Use what engagement counts you have, ideally using data definitions shared by your peers, to calculate your Base Year's annual on- and off-site attendance and other

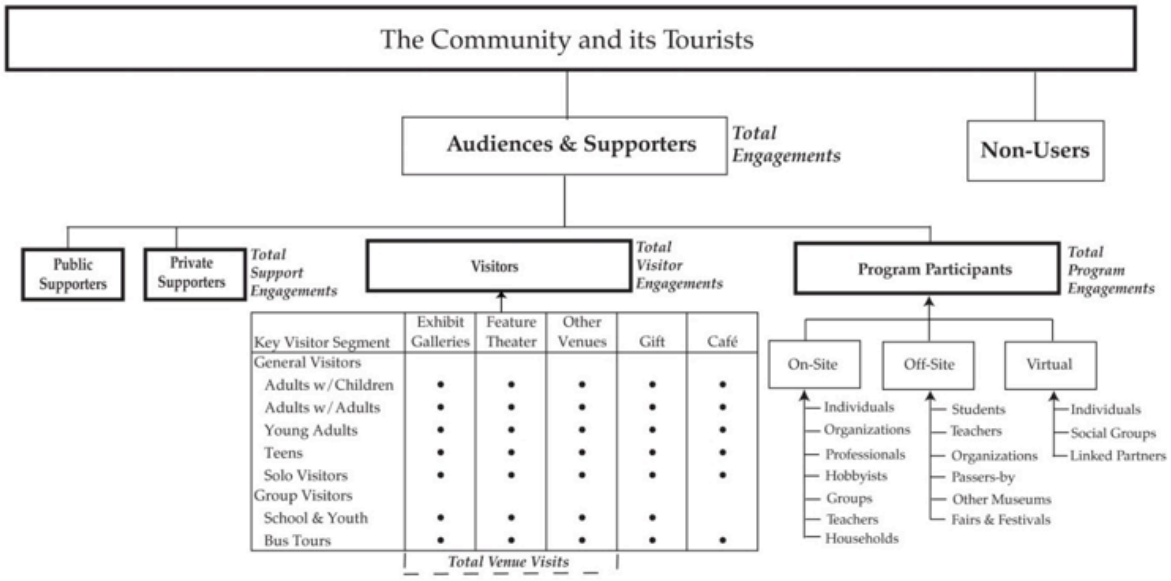

Table 1: The Community and its Audiences and Supporters

documented museum engagements. Focus first on physical engagements; add virtual engagements later.

DETERMINE WHAT BENEFITS YOU ARE PROVIDING

The process to determine what benefits your key service markets think they are getting and what else they might want you to provide includes:

• Both qualitative and quantitative surveys that ask what perceived benefits each key service sector thinks it gets from its museum experiences. Put more emphasis on qualitative methods, principally focus groups with public audiences, and personal interviews with representative supporters, stakeholders and government spokespeople. For a first pass, the museum's development office can report what benefits attract supporters, and the marketing office can report what attracts audiences.

• Research your community's needs and aspirations. This process can be as simple as reviewing regional visioning documents and your city's master plan, or as thorough as a multi-modal process involving those documents plus interviews with community leaders and spokespeople, demographic and psychographic market analyses, off-site intercept surveys and other means of finding out: "What are the region's needs and aspirations? What are [the interviewee's] needs and aspirations? What might our museum do to help? Who might pay for it?"

Group the categories that account for most of the museum's operating revenue and annual engagements by similar benefits. Use a version of Table 2 to list your key service markets by their percentage share of external revenues and museum engagements, totaling 100%.

THE COMMUNITY MUSEUM AND ITS MULTIPLE PURPOSES

Look strategically at each revenue and attendance stream as an expression of some audience or supporter's interests, but do it with caution and deliberation: Is it growing or declining? Do we wish to serve these beneficiaries? Is it branded and consistent with the museum's guiding principles? Can we layer on content or learning outcomes? Does it have a neutral or net positive impact on other revenues and stakeholders?

If the answer is "yes" to such questions, but "no" to "Is it central to our mission and core business?," then consider expanding your mission to multiple missions, reined in by your guiding principles (aka core values), before relegating the revenue stream and its audiences to second class ancillary status. For example, the U.S. Coast Guard proudly declares that it is a multiple mission organization, but it unifies its diverse team and varied efforts under the guiding principle of *Semper Paratus* (Always Ready).

PRIORITIZE YOUR INTENTIONAL IMPACTS

Now, you come back inside the museum: What do we want to accomplish? This is the familiar territory of museum mission and vision statements, case statements, objectives and strategic plans. This second half of the analysis process results in a prioritized list of your museum's intentional purposes and their desired impacts.

Highlight all phrases from your recent planning that read like purposes and aspirations for the museum. Include the mission and vision statements and the summary objectives (usually three to eight at the summary level, with detail underneath). Also, include quotes from the community that evoke the museum's impact, such as "The museum has transformed the waterfront." Err on the side of inclusion, but do not bother repeating ideas, or get into the details. Avoid concrete plans about means, like expanding a gallery. Your collected highlights should be a list of 5 - 10 of the museum's top-level intentional purposes and desired impacts. Desired impacts are the measurable changes you theorize that will indicate that you are achieving your purpose; for instance: "the waterfront tax base increases, and evaluation finds the museum among the factors."

Table 2: Valuation of Benefits

Key Service Markets	Their Perceived Benefits	% Share of:	
		Attd.	$
Audience			
Visitors			
•			
•			
•			
Program Participants			
•			
•			
•			
Supporters			
Public			
•			
•			
•			
Private			
•			
•			
•			
		100%	100%

Through discussion among museum leadership and key stakeholders, categorize and prioritize your museum's intentional purposes and desired impacts—giving each selected purpose a ranking that totals 100%, using a version of Table 3.

For instance, the second of a Sample Museum's (a fictional composite) three intentional purposes is to "Contribute value to the community." The Sample Museum decided that one of the ways the museum would contribute value to the community is to help "strengthen civic connections." Museum leadership

then theorized that they might see evidence of that desired impact by observing four key performance indicators (KPIs): a) the degree that staff and leadership reflect the diversity of the community; b) changes in their number of partnerships; c) whether the museum's managers spend 5 – 10% of their time in community projects; and d) the ratio of their regional corporate support to that of their peers—each with a rationale connecting these indicators to the desired impact and back to the intentional purpose.

These KPIs may indicate the desired impacts, but this theory needs to be tested periodically using other evaluation methods, as the numbers may be responding to other forces: Does team diversity actually result in programing and audience diversity? Does the number of partnerships indicate civic connections? Do community leaders see our managers strengthening civic connections? Do our corporate supporters see us as strengthening civic connections?

MEASURE THE ALIGNMENT BETWEEN BENEFITS AND IMPACTS

Analyze the alignment between your audiences' and supporters' perceived benefits (Table 2), and your desired impacts (Table 3). Start to group purposes, desired impacts and benefits that are alike into several umbrella categories, using your best judgement. For instance, if you have a purpose to "further the understanding of your region's history," and your K-12 service market values your museum's benefit of "engaging their students in history," then categorize both under "history learning and education."

When the perceived benefit aligns with the museum's desired impact, then the value of the benefit is proportional to the value of the impact, and year-to-year measures of changes to the value of the benefit may also indicate changes to the annual value of the impact. To return to the examples at the beginning of this article, if the children's museum knows its family audience visits the museum in part to develop their children and that they leave satisfied that the visit helped their children develop, then the museum can track changes in audience behavior – more or less visits, repeats, time on-site, spending, etc. – as indicators of changes to the museum's cumulative impact on child development.

Table 3: Priority of Impacts

Purposes	Desired Impacts	Priority
Intentional Purpose #1 (Mission)	Desired Impact 1.1	
	Desired Impact 1.2	
	Desired Impact 1.3	
Intentional Purpose #2	Desired Impact 2.1	
	Desired Impact 2.2	
	Desired Impact 2.3	
Intentional Purpose #3	Desired Impact 3.1	
	Desired Impact 3.2	
	Desired Impact 3.3	
		100%

Audience behavior data alone does not indicate that the aquarium is having any impact on conserving biodiversity. However, if formal evaluation studies determine that some portion of the sample audiences experience biodiversity attitude and awareness impacts, then changes in attendance and dwell time may indicate changes in biodiversity impact.

Draft an internal report for leadership's consideration called something like a "Study of the Alignment between our Desired Impacts and our Audiences and Supporters' Perceived Benefits."

CONCLUSION

Measuring Museum Impact and Performance details several such processes using worksheets with the larger goal of helping any museum increase its impact and performance as an institution and community resource. The steps suggested in this article help you identify who is currently funding and attending the museum's activities, and why. Then you organize the museum's purposes and impacts, and compare the two lists. If impacts and benefits are perfectly aligned, great! – your audiences and supporters want exactly what you want. If not, it is up to you whether you use this information to: a) expand your intentional purposes and desired impacts, b) narrow your activities and benefits, or c) accept and defend that for your museum some degree of unalignment is inherently unavoidable but that you can manage it.

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Casper is a vibrant community of just under 60,000 people benefiting and growing from Wyoming's energy and agriculture industries. The Casper Museum Consortium is a group of nine museums and museum-like sites in Casper, Wyoming. By working together on frequent collaborations, the consortium finds innovative ways to most effectively serve their community.

Full story on page 5.