Data Collaborations and the Collective Impact of Cultural Institutions

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ABSTRACT

The cultural institution sector does not conform to a commercial model of competition, product innovation, or industrial models. This sector is often defined as supporting individual enrichment and community advancement. Institutional associations in this sector have sought to support members through development of best practices guidelines and by lobbying on their behalf, but little has been done to look across types of institutions in the sector to understand how their collective impact is shifting public knowledge, attitudes, or behaviors. This paper presents a few models illustrating collaborative data sharing strategies that are helping cultural institutions to understand their collective impact and to explore questions that they cannot answer in isolation. We describe four models developed by our non-profit think tank working to activate distributed data collection in support of shared research agendas. We outline how collaborative data management and aggregation can shift the dialogue about the role of cultural institutions in society and illustrate how participation in these programs can enhance data literacy in the cultural institution sector.

1. INTRODUCTION

Cultural institutions are described as organizations that hold and preserve things to the boundaries of public understanding. Such instituions include public theaters, museums, libraries, and parks, often characterized as representing the values or aspirations of the community where they are based. New Yorkers consider the Guggenheim's Frank Lloyd Wright building an emblem of New York and compare how it performs with the Metropolitan Museum of Art and the Museum of Modern Art. The New York City Department of Cultural Affairs notes on its website that it is the largest municipal funder of culture in the country and is committed to providing access to art and culture for all New Yorkers. And, indeed, the City does fund libraries, museums, the zoos and aquarium, and children's museums.

A few years ago, New Knowledge Organization (NKO) worked on a study for the Heart of Brooklyn (Fraser et al, 2012), an organization that supported the joint efforts of the six institutions near Grand Army Plaza including the Brooklyn museum, library, botanic garden, children's museum and the non-profit that supports Prospect Park. We found that their collective impact was quite aligned across four domains where they all worked to advance public value. They supported caregiving across the life-course, environmental stewardship, fostered opportunities for creatives, and worked toward positive youth development. But one of the downsides revealed by our study was the broadly held perception among senior leaders that they were also competitors vying for a limited pool of resources, the attention of donors and visitors, and the media. While the official home of the Heart of Brooklyn is now shuttered, the group still supports collaborations in a much more constrained way.

What we witnessed in that study was partly a symptom of an American paradigm that cultural institutions are engaged in some kind of odd Darwinian survival battle based on deprivation of resources and the outsourcing of public goods like libraries and museums to non-profits. In the 1980s, during the heyday of Reaganomics, as Mimi Abramovitz (1986) documented at the time, the government outsourced its welfare commitments from the new deal. Not only did that effort shift the narrative around basic services and community needs to private entities, there was a concerted effort to convince large museums and libraries that they would do much better financially under private non-profit governance with small stipends to support their civic responsibilities from the government. Whether it was museums or libraries, that privatization led to a shift in financing that imperiled many institutions. In some cases, that meant profiteering from services, but it also meant that fundraising became a paradigm that reproduced the inequalities of the free market as a competition narrative that colonized the operations of cultural institutions.

At the same time, one result of this outsourcing also led to a strengthening of their national associations. What were once small service groups that allowed directors of large institutions to get together to compare notes and share information, are now fully-fledged conglomerates that blur the lines between standalone institutions and franchise leaders in the commercial marketplace, except these conglomerates are working toward a collective good. In 2012, the American Association of Museums, the largest museum association in the US, changed its name to the American Alliance of Museums. The work that went into that decision reflected more closely the role that national associations now play in civic dialogue.

In part, cultural institutions today do not work in isolation. Rather, their collective work is more about place-based activities that share a common national theme, common national goals, and quite frequently, common tactics and techniques. Today, zoos and aquariums manage national or international herds of animals. They have become workers in a knowledge sharing economy, who build on one another's experiments and, in many cases, can aggregate local information to achieve greater national impacts.

Our organization has been working with a number of these associations to rationalize their data gathering, management, and analytics in order to describe these national impacts. Rather than seeing these institutions as community-bound, we recognize that they are each points of light (to borrow from George H. W. Bush) with a place in the national dialogue. And at the aggregate level, the data often show that the strength of the non-profit sector is at a scale much larger than many of the nation's industries. While each institution might feel small and resource deprived, the data are starting to show an encouraging rate of impact that can have direct influence on the nation's values and thoughts.

2. ACM TRENDS

For our first example, we report on a collaboration between NKO and the Association of Children's Museums (ACM), an organization with over 300 members, primarily located in the USA. Most are very small institutions distributed rather proportionately across the country when compared to the national population. Forty-five percent of these institutions have budgets under $435,000 (Roberts et al, 2017), but together, we estimated that children's museums contributed $5.5 billion to economic activity in the United States during 2016, based on direct expenses of only $1.5 billion in that same year (Voiklis, Fraser & Flinner, 2018).

Our work for ACM is now directly focused on data literacy among the members. We're using their own data to co-produce an annual series of publications entitled ACM Trends that captures what individual museums are each doing in their communities to make the lives of children better. To accomplish this goal, we've worked with ACM to create a stable historical data repository for their propriety information, pulled data from federal reporting and economic indicators, and are now mining data about public issues impacting children to foster a greater understanding among the ACM members about how their local population is indicative of national trends.

$710M
9K Jobs

$610M
9K Jobs

$330M
4K Jobs

$740M
9K Jobs

$750M
9K Jobs

$320M
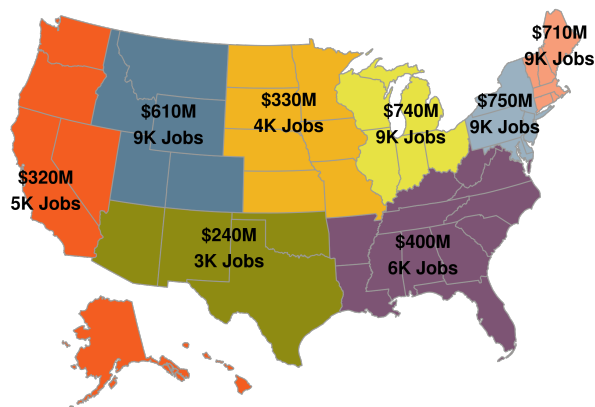5K Jobs

$240M
3K Jobs

$400M
6K Jobs

Figure 1. Amounts children's museums contribute to economic activity in each region, and the number of jobs supported by children's museums in each region..

We now know that children's museums support approximately 59,000 jobs in the United States, when we account for direct employment by children's museums, the induced activity that flows from spending by employees, and the indirect economic effects on suppliers (Voiklis, Fraser & Flinner, 2018). But that does not include the value of work by volunteer. With an estimated $24.14/hour of volunteering (Independent Sector, 2016), we know that the children's museum sector had a volunteer workforce valued at $105,368,000 in 2016. Adding roughly 10% to their bottom line and adding another $350 Million in combined economic impact to the bottom line contribution. (Flinner, Fraser & Voiklis, 2018).

While these results are rather simple math, not the complicated work most other presenters are covering, these reports on behalf of ACM's members are helping small, and seemingly isolated, institutions understand their contribution as part of a national industry. They are now using these data in their discussions with funders. For example, when we revealed the issue of legal recognition of kinship families—that is, situations where the primary caregiver is caring temporarily for children while their custodial parents are not able—ACM members have been empowered with information to pursue funding and redefine programs to support these non-traditional families.

3. ZOOS AND AQUARIUMS MATTER

In a similar effort, with support from the National Science Foundation and the Institute of Museum and Library Services, NKO is currently exploring the national dialogue around the role of zoos and aquariums in the science learning ecology in the United States. Educators have lately been discussing the notion of a "learning ecology" which tries to capture the reality that people learn about topics from a variety of sources: the media, family discussions, social network dialogues, faith communities, schools, and the cultural institutions that support their community.

It has been about thirty years since zoos and aquariums affirmed their shared commitment to conservation. When one of the authors on this paper, first started working with zoos and aquariums in the late 1980s, some institutions like New York's Wildlife Conservation Society, had already committed to the global conservation movement, with many of the larger national zoos supporting the fledging International Union for the Conservation of Nature. But that position was debated until the early 1990s, when the Association of Zoos and Aquariums (AZA) first adopted a shared conservation mission. As mentioned above, zoos and aquariums were already managing their animals as a cooperative venture that emerged out of the restrictions on animal trade known as the Convention on Trade in Endangered Species (or CITES), a UN agreement now managed in Geneva. Since the AZA's declaration, zoos and aquariums have been asserting a conservation agenda. Institutions are working in the field on animal recovery, onsite breeding programs, and using their facilities to educate the population about what it will take to conserve the biodiversity on which all life depends.

Nevertheless, while zoos and aquariums state that they are working as conservation agents, there was an open question about the degree of trust and legitimacy that the public confers on these claims when anti-zoo narratives are so well entrenched in the national dialogue.

Since 2001, a collaborative of education research organizations including our own, NKO, has been working with AZA to develop a better understanding of the authority, legitimacy, and capacity to shift the nation's commitment to wildlife conservation. We operate under a banner known as Why Zoos and Aquariums Matter (or WZAM). Our early studies confirmed that visitors arrive with more conservation knowledge than zoos and aquariums assumed (Falk et

al., 2009) and conservation is now considered integral to their brand (Fraser & Sickler, 2009).

Today NKO is part of the third wave of these studies (WZAM3), exploring how brand appeal and prior knowledge are integrated in the minds of visitors, how their visiting behaviors track to the various ways zoos and aquariums talk about conservation through signs, presentation, and the other materials they launch into the "mediasphere" alongside the anti-zoo narrative and calls to curtail public funding of these cultural institutions.

This is where the "data for good" is starting to reveal some interesting findings. In the first ever systematic survey of institutional trust in zoos and aquariums (an age stratified sample, N=342), we examined the "trust gap" between how people perceive the current performance of zoos and aquariums and the performance level required to earn public trust.

Table 1. A sample of survey items that represent the trust gap. Includes mean ratings and relationship to Ethical Integrity

(values ≥ 0.5 indicate a strong relationship)

	Percept.	Expect.	Ethical Integrity
The Facility has the space to meet the physical needs of the animals in their care.	4.46	6.71	0.77
The Facility has the facilities to meet the needs of the animals in their care.	5.19	6.73	0.83
The Facility has the expertise to meet the emotional needs of the animals in their care.	4.98	6.48	0.76
Sets standards for itself that far exceed government regulations for animals in their care.	5.00	6.28	0.72
Shares information about their animals' welfare.	5.13	6.2	0.58
Animals are provided with appropriate diets.	5.68	6.71	0.84
Animals are provided with proper medical care.	5.77	6.71	0.87
Has strategies to maximize safety for the animals living in the facility.	5.66	6.6	0.79
The facility cares about their animals' welfare.	5.76	6.65	0.82

We focused on the opinions of those we call the "movable middle," that is, people who might be persuaded by new and transparent information because they reported neither the highest nor the lowest levels of pre-existing favorability towards zoos and aquariums. Survey items assessed current perceptions and trust expectations relative to seven dimensions of organizational trust (Caldwell and Clapham, 2003), including items assessing "quality assurance": that is, opinions about how well zoos and aquariums care for animals, maintain clean and sustainable facilities, and educate the public.

The framing—current perceptions versus expectations for trust—of survey items was the most reliable predictor of survey ratings in a model comparison approach to Analysis of Covariance on the

survey data. All other factors, including demographics, pre-existing favorability, and a contrast between zoos and aquariums, yielded vanishingly small effects (on average, explaining less than 0.5% of the variance in the data).

The largest ($\beta \geq 1$) and most significant ($p < 0.005$) disparities between the perception of current performance and expectations for trust were for items that assessed the capacity to meet the physical and emotional needs of animals, transparency about the welfare of animals, and whether facilities set standards that exceed regulations. These items spread across three dimensions of organizational trust, so we used Principal Components Analysis (PCA) to reveal possible alternative dimensions of trust. PCA assesses patterns of correlation in the data and extracts latent components that one might interpret as "conceptual" dimensions that organize the data into clusters of similar items. The results of the PCA showed that the trust gap items clustered together with other items that assessed the ethical integrity of zoos and aquariums. In other words, to fully earn the trust of the movable middle, zoos and aquariums may need to adjust their practices and/or their messaging related to ethical integrity.

In addition to ethical integrity, the PCA revealed an additional three dimensions of trust for zoos and aquariums: conservation agency (e.g., leads and collaborates in conservation efforts), thought leadership (about conservation science), and quality assurance (as an attraction and as an experience). The conceptual dimensions formed the basis of a confirmatory study (N=1,276), which demonstrated the stability of the dimensions as constructs and as metrics of trust. Today, the four constructs—ethical integrity, conservation agency, thought leadership, and quality assurance—are in use by the AZA and its members to redefine transparency and communication so their audiences can assess the degree to which they are meeting their conservation mission.

Zoos and Aquariums collective impact represents just one way of understanding cultural institutions, entities that are generally funded locally and operated by local staff, but working collaboratively with a common goal that can be measured and benchmarked nationally. There has been a push by philanthropy to demonstrate impact, but these tend to be small program funds focused on a single question with a local population. We suggest that by assessing impacts by cultural institution sector, we can more effectively understand how the nation is moving around any specific value set or common concern.

4. NATIONAL IMPACT OF LIBRARY PUBLIC PROGRAMS ASSESSMENT

Libraries represent another vector for advancing public understanding. A study led by University of Washington's (UW) Information School's 2009 Impact Survey Project (Leach, 2011) confirmed that near half the U.S. population use libraries in some way or another every year. The labor statistics suggest that the majority of growth in the new economy will come from small entrepreneurial ventures being developed by about 4% of Americans (Brown, 2014). As the Impact Survey revealed, 7% of the people going to libraries are interested learning something that can help them support small entrepreneurial ventures. Indeed, economic growth and libraries are joined at the hip.

As U.S. libraries transform to meet the needs of a changing nation, public programming is rising to the forefront of daily operations. Despite the change in mission for libraries, little national data is available to quantify its impact in libraries or in their communities. NKO's review of the literature determined that there is a plethora of anecdotal information about library programs, but no evaluative

data on impact or research to describe effective practices across the field (Fraser, Sheppard & Norlander, 2014). More surprisingly, libraries represent the major purchasers of databases for their users, yet our interviews with database suppliers revealed that none of them have datasets about libraries.
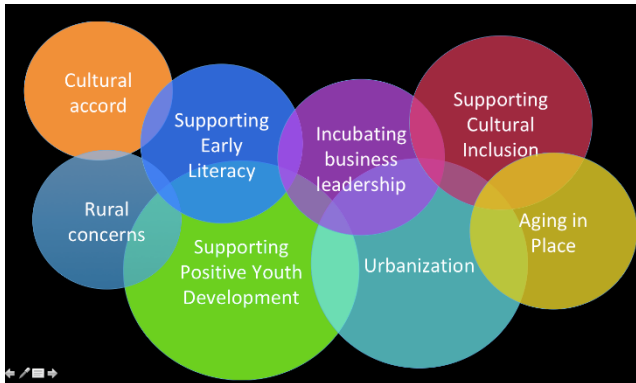

Figure 2. Conceptual model of National Impact of Library Public Programs Assessment.

To redress this deficit, NKO and its partners are in the first phase of a national data gathering strategy to define who are the test laboratories within a distributed network of libraries. The project, entitled the National Impact of Library Public Programs Assessment recognizes that there are public, academic, and specialized libraries that serve the public good. With an estimated 119,487 libraries in the country, we expect that we can start to match like to like at the program level in order to develop a predictive understanding of how user behavior and program feedback the changing nature of libraries and their communities. To accomplish this goal, NKO has been part of a three-phase process, first working through support from the Bill and Melinda Gates Foundation, the Public Library Association (a division of the American Library Association) launched Project Outcome, a training technique to help build capacity for outcome measurement at the library level. Meanwhile, our team has been collaborating with ALA to develop a comprehensive set of program typologies that define the full range of techniques and ways programming is delivered in libraries, and documenting the skills and training needs required to deliver these programs. Effectively, NKO is now in the final stages of creating the data matrix that will be used to define a data corpus that we can analyze against national demographic trends, jobs reports, community health and equity information that's already in the public domain.

This is a first of its kind effort to develop a shared data-mining model that has enough distribution and fidelity across the country to really tell a story of how America is grappling with emerging issues and threats. While we don't have results to share for this initiative, our purpose in presenting this model is to demonstrate that there are sensing networks across the USA that are open to being part of a shared data aggregation system that can more closely represent how people are choosing to learn about issues in society. NKO is working today to help that listening network collaborate effectively, and to ensure that their data can be of service to the public good. We offer this example as something that illustrates the hope that data for good need not be small, but can be made up from a broad range of small teams working to create access to knowledge in their communities, and able to aggregate their data in a shared information network to help us understand better the trajectory of issues and concerns to which society needs to attend.

5. NATIONAL NETWORK FOR OCEAN AND CLIMATE CHANGE INTERPRETATION

Lastly, since this paper focuses on the thinking about cultural institutions by sector, we want to present a brief introduction to the proof of concept on which we base our work. It is self-evident that climate denial has led America into disrepute in the rest of the world. The 2018 announcement that the U.S. would withdraw from the Paris Agreement was only the latest embarrassing incident. Members of the Intergovernmental Panel on Climate Change have told our colleagues that American models are no longer useful since the rest of the world has already moved on to consider how to activate resilience planning instead of succumbing to industrialists' efforts to cast doubt on the scientific consensus.

The National Network for Ocean and Climate Change Interpretation (NNOCCI) is a community that represents over 400 skilled environmental educators and climate scientists working collaboratively across more than 170 informal science education institutions (ISEIs) and academia throughout the United States. Since 2011 teams have been joining this community by participating in a training and mentoring program to deploy effective tools for science communication in their institution. The NNOCCI training guides participants through Strategic Framing®, the process of developing communication techniques and messaging structures to engage the public in solutions to an issue. In the NNOCCI model, these communication techniques engage public audiences in ways that encourage more discussion about how all people can prepare for and remediate challenges that will arise from our changing climate.
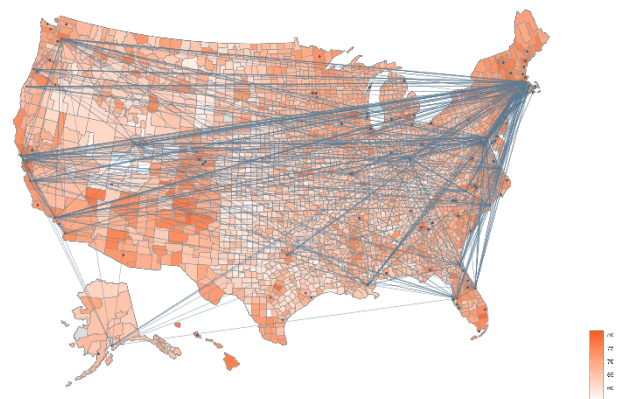

Figure 3. Connections between NNOCCI regional leaders, projected onto U.S. map with county-level percentage of residents who trust in climate scientists.

Our NNOCCI research has revealed that visitors to ISEIs are more likely to be concerned about climate change than the general public, to engage in environmentally protective behaviors, to vote, to be more educated, and to speak with others on these issues. At the start of the NNOCCI initiative, these visitors were not well versed in the causes and implications of climate change, but they were willing to learn.

In contrast to these public data, project researchers also discovered that engaging public audiences around the issue of climate change is very emotional work and tends to be deeply connected to communicators' self-efficacy (or sense that they can achieve their objectives), personal perceptions of public sentiment, and

expectations about collective action. Project researchers discovered that prior to joining the NNOCCI community, educators, exhibit designers, and facilitators at ISEIs struggled with a diminished sense of self-efficacy with respect to their ability to share climate change information in ways that could empower their public audiences. These ISEI career professionals worried their discussions of climate change left audiences confused, alienated, guilty, and resigned.

By investing in small community of practice (literally, focusing on welcoming 10 pairs of educators at a time from zoos, aquariums and nature centers into a training program designed to work not only on interpretation techniques that depoliticized the issue and encouraged dialogue, while also monitoring the emotional load and creating a sense of shared purpose) we've been able to grow this network into a vibrant community of practice. We did so with something we're calling data transparency throughout the process. Everyone who joined this group did so knowing that they would be participating in at least 13 surveys or interviews, that they'd be collecting feedback from their visitors, and even nominating friends and family to participate in our monitoring of their development of skills and techniques. They were also trained to provide supportive feedback to one another and coach each other throughout the process. And our team shared the results of each study as the data emerged. We have also benchmarked our data with surveys on attitudes and values within participating institutions and national surveys of visitors and non-visitors to these institutions to understand their relationship to the national dialogue.
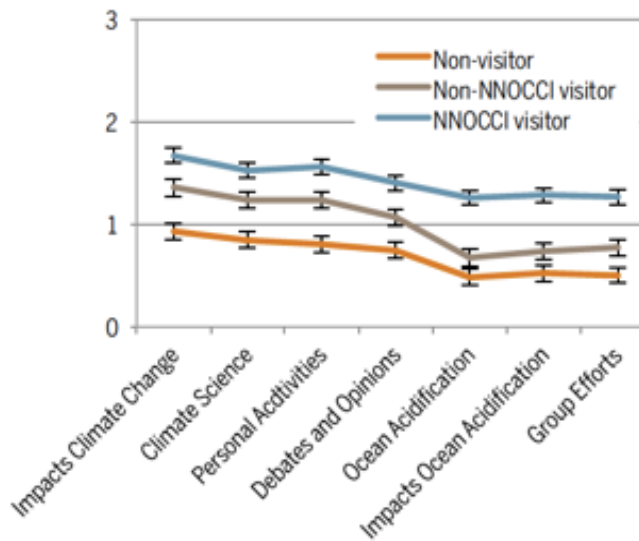

Figure 4. Frequency (with 95% CI) of discuss different climate-related topics by visitor status. Key: 0=Never, 1=Rarely, 2=Occasionally, 3=Often.

The results today are very simple. Our correlational data suggest that this national network has activated a wedge population that parallels changes in how Americans talk about climate change. While NKO cannot take credit for that change officially, we have a few interesting datapoints. For example, our stratified national sample (N=1646) designed to recruit about one-third of respondents who had not visited an Informal Science Education Institute (ISEI) and two-thirds who had, asking which institution they visited to split the sample roughly between those in our program and the rest as a control population. As Figure 4 illustrates, those who visit NNOCCI affiliated institutions arrived with more

willing to discuss environmental topics, were more engaged politically, and actively sought out the type of dialogues we were encouraging (Swim et al, 2014).

Further, NKO demonstrated that the NNOCCI training techniques increased both the likelihood of starting climate-related discussions and the self-efficacy of those starting the discussion (Geiger, Swim & Fraser, 2017). NKO's structural equation model based on results from 7,285 surveys—collected from 1,101 presentations at 117 institutions over 4 years—confirmed that there was a direct contribution to increased willingness to engage in resilience and mitigation dialogues following a presentation. As part of our surveys, we also asked voting values questions. The techniques were slightly more effective at reaching liberal visitors than the conservatives, but the techniques were equally likely to foster behavioral intentions cross the political spectrum (Geiger, Swim, Fraser & Flinner, 2017).

NKO's recent social network analysis monitoring the health of NNOCCI community of practice has demonstrated that the network is decentralized, has healthy interchange, and is a vibrant learning community sharing techniques, tactics, and results from minor adjustments to accommodate regional concerns. Today, through internal capacity building and training, the NNOCCI interpreters are working in cultural institutions that together account for over 130 million people passing their entry gates. While NNOCCI techniques might not be reaching all of them, we have demonstrated that collaborative data collection, communication, and alignment of social change strategies can be effectively be deployed through the cultural institution sector in a manner that can promote continuous improvement, and that data is helping shape more effective engagement in the public good.

6. CONCLUSION

These four studies demonstrate that the cultural institutions, that we consider to be locally based service providers, are actually effective on a larger stage: collaborating effectively, sharing data, and advancing positive social change. By working within their networks to create system wide approaches and support with mixed-methods research, we are demonstrating that these institutions can indeed create public goods. They are not grassroots, they are communities of practice working at the broad civic level to promote democratic engagement in solving some of the grand challenges of our age. We think that's data for good.

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