



Atomic Heritage Foundation
Transforming the Relationship Between Science and Society:
The Manhattan Project and Its Legacy
February 14-15, 2013

Workshop Evaluation Report

Submitted by:
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April 2013

INTRODUCTION

In August 2012, the Atomic Heritage Foundation (AHF) received funding from the National Science Foundation (NSF) to conduct a Workshop, *Transforming the Relationship Between Science and Society: The Manhattan Project and Its Legacy*. The Workshop took place over two days in February 2013 in Washington, DC, and brought together historians, sociologists and other scholars, as well as museum directors and thought leaders from the informal science education field to explore ways to engage the public in the development of the atomic bomb in the context of history, society and culture. Ultimately, the goal of the Workshop was to identify how the Manhattan Project might best be interpreted in a traveling exhibition that would tour museums and science centers around the United States and abroad. Another goal of the Workshop was to understand how the informal science education field might undertake further scholarship on the relationship between science and society.

To determine the effectiveness of the Workshop in accomplishing its goals, AHF engaged Insight Evaluation Services (IES) to conduct an evaluation of the proceedings. Specifically, the evaluation assessed the extent to which the Workshop activities:

- were well organized and implemented;
- encouraged a lively interdisciplinary discussion among participants;
- offered participants new insights and ideas about ways to communicate science in its social context to the public; and
- supported plans for the development of a traveling exhibition on the Manhattan Project.

Methods

Data for this evaluation were collected via observation of the Workshop and a follow-up web-based survey of participants' opinions regarding the proceedings.

Workshop observations: Kirsten Büchner of IES attended the Workshop on February 14-15 as a participant-observer and recorded participants' experiences, as well as conducted brief, informal interviews with a convenient sample of participants ($n \cong 12$) who were willing to provide insight into the process that was unfolding.

Web-based surveys: IES collaborated with AHF to design a short web-based survey that was distributed to participants one week after the Workshop took place. The survey included questions of a quantitative nature and also asked open-ended questions to seek more in-depth perspectives about the proceedings. A letter with the link to the survey was electronically mailed to all 21 individuals in attendance, not including AHF staff, NSF program officers and special evening presenters (See Appendix A for a copy of the survey, including the message that attendees received). The initial request to complete the survey was sent out on February 22, 2013, and a reminder was sent out on March 4; the survey was closed on March 8, 2013. Fourteen participants completed the survey.

FINDINGS

Participant reactions to the Workshop were captured primarily via the web-based survey that was distributed one week after the Workshop took place; observation data are used to supplement and augment the web-based survey data.

1. Profile of attendees

The web-based survey began with a question about how participants describe their main responsibilities at work and asked them to select as many descriptions from the list provided as applied to them. Table 1 below shows that attendees were most likely to be history scholars/researchers and/or to be working in the informal education sector (either developing programs and exhibitions at a specific museum/historic site or advancing the mission of informal science organizations in general), a finding consistent with IES observations.

Table 1. Participants' main responsibilities at work.

Main responsibilities	Attendees (n=14)
I conduct research on historical figures/events (e.g., historian)	43% (n=6)
I develop programs and/or exhibitions for the public (e.g., museum director, museum educator/interpreter, exhibit developer, independent consultant, etc.)	43% (n=6)
I work in the field of informal science education (e.g., program manager, association director, independent consultant, etc.)	43% (n=6)
I conduct research in the natural sciences (e.g., physicist)	7% (n=1)
I teach in a college or university (e.g., professor, lecturer)	7% (n=1)
I conduct research in human culture and development (e.g., anthropologist)	0% (n=0)
Refusal to respond	7% (n=1)

In terms of general demographics, IES noted that participants appeared to be Caucasian (100%, n=21) and most participants were male (71%, n=15). One participant (male) commented during the first afternoon break that “there are only a handful of people who are experts on this topic and they are all here.” However, one of the female participants with whom IES held an informal conversation said: “There is not enough diversity at this table, just a bunch of men....other voices need to be brought into the conversation, for example women and Native Americans.” Later, this person made her point during one of the sessions, to which IES noted a general agreement among participants.

IES also noted that most participants appeared to be over 50 years of age (62%, n=13). This observation is made only because at one point during the discussion, participants indicated the need to consider that younger audiences of the proposed traveling exhibition likely hold different knowledge, interests and attitudes about the atomic bomb than do audiences of the generation of most Workshop participants.

2. Participants’ satisfaction with general aspects of the Workshop

Participants were asked to rate their satisfaction with general aspects of the Workshop and to select one answer on a scale of 1 to 5, where 1=not satisfied at all and 5=extremely satisfied, or to select N/A if they did not have enough information to provide an opinion. As Table 2 below shows, participants were quite satisfied with the Workshop, in particular with the discussion format and general organization; there was slightly less agreement about Pre-Workshop communication and the extent to which the Workshop was effective in achieving its goals.

Table 2. Participants’ satisfaction with general aspects of the Workshop.

Workshop aspect	N/A*	Weighted Average	±
Pre-Workshop communication (i.e., about goals, expectations, agenda, sessions, etc.)	0	4.50	1.53
Workshop organization (including topics covered, range of disciplines represented, duration, etc.)	0	4.57	1.29
Discussion format of the Workshop sessions (i.e., introductory remarks by subject matter experts, followed by open discussion, concluding with reflector summaries)	0	4.64	1.01
Overall effectiveness of the Workshop in achieving its goals.	1	4.46	1.62

*Attendees who indicated they did not have enough information to provide an opinion about a given aspect; n=14.

Participants were then asked to comment on these or other aspects of the Workshop that they felt had an impact on its overall effectiveness, to which ten participants provided a variety of responses that can be grouped into two broad categories as described on the following page:¹

¹ Open-ended responses discussed in this and remaining sections of the report may sum to more than 100% because more than one answer was accepted for each question. In addition, counts may not total the sample size because those surveyed were not required to answer every question.

- *Aspects of the Workshop participants said they found effective*
Six participants commented on aspects of the Workshop they found effective, including “the mix of participants and expertise” that was present (six mentions), the ability the Workshop gave the Atomic Heritage Foundation to make decisions about “the content and limits of a Manhattan Project exhibit” (two mentions) and “a better understanding of Manhattan Project history” that was provided (one mention).
- *Aspects of the Workshop participants said they found less effective*
Four participants also commented on aspects of the Workshop they did not find as effective, including that the goal of the discussion was not clearly stated prior to the Workshop (two mentions, including one who added that “it would have been helpful to have the context of each presentation and the outcomes expected by each organization in advance”), the discussions got “off track” at times, “significant overlap” in a few of the topics discussed, “the reflectors did not seem to have enough time to wrap up,” “the keynote narrowed the discussion” and “working groups would have been useful” (one mention each).
- *Other comments about the Workshop’s effectiveness*
One other participant commented that the Workshop was “the best I’ve attended in many years” but did not provide a reason as to what made it “the best.”

Several of these survey comments support the observations and informal conversations conducted by IES during the Workshop. In particular, participants often commented over the two days of the Workshop that it was “great because there is such an eclectic mix of people here,” and that “it is very interesting to hear from both the history people and the science people” regarding the Manhattan Project.

At the same time, it was evident on the first day of the Workshop that there was a bit of uncertainty regarding the discussion logistics, such as who should speak, when others could join in and what the reflectors should say and when. This may be attributed in part to Pre-Workshop communication issues, as the survey responses seem to allude; in addition, the Workshop was being video recorded, so there were some last minute adjustments to make to ensure that the discussion would be captured. Also, during the first afternoon there was somewhat of a long debate among a few of the historians regarding the accuracy of various facts, after which one participant noted during the subsequent break: “I think we’re getting away from the intent of the meeting” and another who echoed: “The discussion needs to come back to why we’re here.” However, on the second/last day, IES observed that the discussion was more focused; indeed, Workshop organizers modified that afternoon’s schedule by moving up the session on strategies for developing an exhibition about the Manhattan Project and the major recommendations for communicating science in its social context that could be applied more broadly to the field of informal science education (This discussion formed the last session of the Workshop and was conducted with all participants together, rather than in smaller working groups, as originally planned).

3. Participants' ratings on general outcomes of the Workshop

Participants were also asked to rate the extent to which they agreed with statements about general outcomes and what they felt they took away from the proceedings. Again, a 5-point scale was used, where 1=do not agree at all and 5=very much agree; N/A was again provided if participants felt they did not have enough information to assign a rating. Table 3 below shows that participants clearly felt the Workshop consisted of a lively interdisciplinary exchange among participants who mostly were meeting each other for the first time; there was somewhat less agreement on the extent to which the Workshop provided new insights for the field of informal science education and future scholarship on the relationship of science and society.

Table 3. Attendees' agreement with statements about the Workshop.

Statements about the Conference	N/A*	Weighted Average	±
The Workshop consisted of a lively interdisciplinary exchange among participants of diverse disciplines.	0	4.79	0.79
The Workshop gave me the opportunity to meet, connect with, and/or initiate collaborative relationships with new people.	1	4.77	0.81
The Workshop was a valuable process for identifying ways that science in its social context could be communicated in an informal learning setting, such as a museum.	0	4.50	1.76
The Workshop provided new insights for the field of informal science education and future scholarship on the relationship of science and society.	1	4.23	2.41

*Attendees who indicated they did not have enough information to provide an opinion about a given aspect; n=14.

As planned, the Workshop sessions began with a panel of two experts who each provided a ten-minute presentation on a specific topic, after which all participants were invited to respond. As IES observed, each session was in fact followed by a lively discussion on the topic during which participants were observed to be listening attentively and/or speaking up. Furthermore, the breaks allowed these conversations continue on in an informal fashion among smaller groups of people, which had the benefit of allowing participants to get to know each other on a more personal level. On the second day, IES observed that a sense of camaraderie had developed among participants; they appeared motivated to accomplish the Workshop goals and there was a greater sense of focus to produce some concrete recommendations for next steps.

At the same time, it should be noted that Workshop facilitators seemed inclined to let the conversations flow rather than interject guiding questions/comments, especially on the first day; arguably it was necessary to do so in order to “set the stage” for each of the main

disciplines who were coming together for the first time. Discussions that followed presentations by historians tended to delve deeply into historical content (i.e., facts about the Manhattan Project that “would be important for people to know”), but eventually circled back to public presentation strategies.

4. Participants’ perspectives on the most important outcomes of the Workshop

When asked what the two most important outcomes of the Workshop were from their personal perspective, thirteen participants provided comments. These comments fell into four general categories, as follows:

- *Future exhibit (n=10)*
Ten participants identified outcomes regarding the future exhibit, including eight who mentioned the “consensus” and “agreement” that was reached on the “broad content for the exhibit” and two who mentioned the range of “ideas” that were discussed for how to make the history “come alive,” such as “static displays and live contributions, such as theater and debate.”
- *New connections (n=5)*
Five participants mentioned the “new connections” that were made among those present that helped them learn about “others’ priorities and concerns,” as well as formed the basis for “relationships to carry this group to the next step (of exhibit development).”
- *Manhattan Project history (n=4)*
Four participants noted the “consensus” that was reached on the history of the Manhattan Project, including the impact that the development of the atomic bomb had specifically (e.g., “on the development of the security state”) and overall (e.g., “on science”).
- *New knowledge (n=2)*
Two participants indicated that one of the most important outcomes of the Workshop for them was the new knowledge they gained (e.g., “I learned new things”).

5. Participants' opinions on issues that were not covered sufficiently or at all

Participants were also asked whether there were any issues that were not covered sufficiently or at all. While two responded that “everything was covered that needed to be covered at this early point in project development,” nine other participants mentioned a variety of issues, as follows:

- *Exhibition specifics (n=5)*

Of these participants, four indicated that the specifics of the exhibition were not discussed enough, including its “mission statement (Big Idea),” “its scope in terms of size and costs,” “marketability, branding and promotion” and “the actual design” (one mention each); two participants also indicated that it was still not clear whether the exhibition would be a science exhibition (“envisioned for science centers”) or a history exhibition.

Perhaps not surprisingly, all but one of these comments were made by participants who work in museums and/or the informal science education field. In terms of defining the proposed exhibition as having a science focus versus a history focus, certainly this was a question that was on participants' minds almost from the outset of the Workshop, as one of the “science people” mentioned to IES during lunch on the first day: “It will be interesting to see if this is more of a history exhibit or more science, what the emphasis will be. There are historians here talking about history and then we have the science people talking about science...” As IES noted—and participants mentioned in the survey—this question remained largely unanswered.

- *Exhibit content (n=3)*

Three participants said they would have liked to spend more time discussing how the exhibit will convey specific content, including “the science,” “the dark nature of the Manhattan Project (and) the fact that the atom bomb was designed to kill by blast, fire and radiation sickness” and “the lessons for today and the social responsibility of scientists” (one mention each).

- *Other elements (n=2)*

Two participants mentioned other elements that they felt were missing from the Workshop discussion, including “the long term outcomes desired by each of the organizations participating” and “new scholarship on the Manhattan Project and its legacy (rather than) canonical figures and subjects” (one mention each).

6. Participants' opinions on the greatest benefit of the Workshop

The last question on the web-based survey asked participants, "What was the greatest benefit of participating in the Workshop for you?" to which twelve offered at least one benefit; most of the responses to this question echoed responses to earlier questions in the survey.

- *New connections (n=6)*
Six participants said that the greatest benefit of participating in the Workshop was the opportunity to meet new people face-to-face, both in their field and in fields different from theirs, for the first time (e.g., "Informal learning experts connecting with, and gaining a strong appreciation of, the historians and social scientists who have reflected so deeply on the Manhattan Project").
- *Manhattan Project history (n=4)*
Four participants said they greatly appreciated "listening to debates between some leading nuclear historians" and "learning so much more depth about the Manhattan Project than I had known before."
- *Exhibit development (n=4)*
Four participants said that they "learned a great deal about the process of developing a touring museum exhibition," including as one noted "how informal education and exhibit people think and what the major concerns are in their field."
- *New knowledge (n=2)*
Two participants said they greatly enjoyed "the knowledge and insights of such a diverse and articulate group," as well as the opportunity to contribute their own expertise.

CONCLUSIONS & RECOMMENDATIONS

The findings of this evaluation reveal that the Workshop, *Transforming the Relationship Between Science and Society: The Manhattan Project and Its Legacy*, hosted by the Atomic Heritage Foundation, successfully brought together historians, scientists, museum professionals and thought leaders in the informal science education field to discuss their perspectives on the presentation of the development of the atomic bomb to the public via a traveling exhibition. Participants mentioned repeatedly, both during the Workshop and in the survey afterwards, that they very much appreciated the opportunity to meet and learn from experts in their respective fields, further noting that these personal connections formed the basis for “relationships to carry this group to the next step (of exhibit development).”

Recommendation: Clearly, the Atomic Heritage Foundation was effective in convening an interdisciplinary group of participants who brought deep knowledge to the Workshop discussions; participants reported great appreciation for the mix of perspectives that are needed to develop the exhibition being proposed. Moreover, participants conveyed a strong interest in seeing the exhibition through. This would suggest that the AHF can continue to look to this group for guidance as it moves forward, such as by creating an advisory board with the participants of the Workshop as members.

Recommendation: Though only one participant emphasized that “other voices need to be brought into the conversation,” there was acknowledgement by other participants of the role that women and minorities also played in the Manhattan Project (Indeed, the AHF has been at work collecting the testimonies of a range of people from that time via oral history projects). Thus, it may be that scholars of these diverse perspectives also are specifically sought out during exhibition development. At the same time, front-end evaluation should be conducted to help the project team understand and prioritize visitors’ attitudes and conceptions vis-à-vis the different ideas that the exhibition might include in order to ensure that it is both cohesive and broadly appealing.²

Over the two-day Workshop, participants engaged in a lively exchange that delved deeply into many aspects, in particular historical aspects, of the Manhattan Project. The Workshop was well organized, allowing everyone present to contribute their thoughts to the process. What is more, Workshop organizers seemed inclined to let the conversations flow rather than interject guiding questions/comments, especially on the first day. Certainly, this strategy allowed for a fascinating and informative review of the development of the atomic bomb and the significant ramifications thereof, which a number of participants said was an important outcome for them. And in the end, participants felt they arrived at some general agreement on the “broad content of the exhibit,” including ideas for ways to make the history “come alive.”

² Korn, R. (2003). Making the Most of Front-End Evaluation. *Visitor Studies Today*, 6 (3), 1, 22-24.

Recommendation: Participants indicated that they were very satisfied with the format of the Workshop and enjoyed the discussions very much. However, IES observations and several survey comments suggest a bit more structure might have allowed the conversation to cover more ground, such as to determine more of the specifics of the proposed exhibition and to what extent “the science” of the atomic bomb will be conveyed. As such, in future discussions it will be important to begin by articulating specific goals, including concrete objectives, for the exhibition team to accomplish. In addition, the role of the rapporteurs might be to identify how each presentation has supported the main goals of the overall discussion (in addition to summarizing the results of a given presentation). Finally, it may be helpful to engage a project manager whose main responsibility is to keep conversations on track and on time (i.e., rather than look to participants to do so), especially when there are limited opportunities to convene the group.

Overall, the Workshop appears to have been an effective way to “kick off” planning for the development of an exhibition about a challenging topic. By the second day of the meeting, many of the public presentation strategies that had been discussed coalesced and, in the final session, the group provided the AHF with many ideas on ways to proceed. Also enumerated were new insights for the field of informal science education and future scholarship on the relationship of science and society, though survey responses indicated that participants were slightly less in agreement about the extent to which that goal was accomplished.

Recommendation: Although session speakers showed slides that highlighted their main messages, it might have been useful to “record key points on a computer that will be projected on a screen large enough for participants to read” as originally planned.³ In this manner, the group could track how it was progressing towards the goals of the Workshop. Another way to do this in future would be to engage a graphic facilitator who is skilled in visually representing the conversation so that the group can see how exhibition development strategies are evolving; another more interactive (and less expensive) option is to invite participants to take turns jotting down key points on a large flip chart that the group can refer to. While IES observed Workshop participants to be listening attentively and contributing to the discussion, it is our experience that tasking people with putting their ideas on paper is a productive way of increasing everyone’s involvement in a process where specific outcomes are desired.

³ Atomic Heritage Foundation Memo dated October 16, 2012.

Appendix A-Web-based survey

Dear Workshop Participant,

On February 14-15, 2013, you attended the Workshop, *Transforming the Relationship Between Science and Society: The Manhattan Project and Its Legacy*, hosted by the Atomic Heritage Foundation in Washington, DC. As you may recall, my role at the Workshop was that of participant-observer, as well as to seek feedback from you after the Workshop about the proceedings.

Below you will find a link to an online survey. By completing the survey, you will help Cindy Kelly and her staff at the Atomic Heritage Foundation understand your opinion regarding specific aspects of the Workshop proceedings and the extent to which you felt the Workshop accomplished its goals. This survey will take between 5 and 10 minutes to complete, and all responses will be kept anonymous and confidential. The survey will be online through March 8, 2013.

Click on the link below to begin the survey.

<https://www.surveymonkey.com/s/AHFScienceAndSocietyWorkshop>

Thank you for taking the time to share your thoughts about the Workshop! If you have any comments or questions about the survey, please contact Kirsten Büchner at kirsten@insighte.net (any time) or call 703-606-7976 between 9:00 a.m. and 3:00 p.m. EST (Tues-Fri).

Sincerely,

Kirsten Büchner
Insight Evaluation Services

[Begin First Page]

Thank you for taking the time to provide feedback about the workshop you attended on February 14-15, 2013, "Transforming the Relationship Between Science and Society: The Manhattan Project and Its Legacy," which was hosted by the Atomic Heritage Foundation in Washington, DC. This survey will take between 5 and 10 minutes to complete, and all responses will be kept anonymous and confidential.

1. How would you generally describe your main responsibilities at work? Please select as many descriptions as apply from the list below. Please select "other" if none of these descriptions apply and provide a brief explanation of what you do.

- I conduct research on historical figures/events (e.g., historian)
- I conduct research in human culture and development (e.g., anthropologist)
- I conduct research in the natural sciences (e.g., physicist)
- I teach in a college or university (e.g., professor, lecturer)
- I develop programs and/or exhibitions for the public (e.g., museum director, museum educator/interpreter, exhibit developer, independent consultant, etc.)
- I work in the field of informal science education (e.g., program manager, association director, independent consultant, etc.)
- Other (please specify): _____

2. Please rate your satisfaction with the following general aspects of the Workshop, where 1=Not satisfied at all and 5=Extremely satisfied, or select N/A if you feel you do not have enough information about a given aspect of the Workshop to provide a response.

Pre-Workshop communication (i.e., about goals, expectations, agenda, sessions, etc.)	1	2	3	4	5	N/A
Workshop organization (including topics covered, range of disciplines represented, duration, etc.)	1	2	3	4	5	N/A
Discussion format of the Workshop sessions (i.e., introductory remarks by subject matter experts, followed by open discussion, concluding with reflector summaries)	1	2	3	4	5	N/A
Overall effectiveness of the Workshop in achieving its goals.	1	2	3	4	5	N/A

3. Please provide any comments you may have about these or other aspects of the Workshop that you feel had an impact on its overall effectiveness.

[Begin Second Page]

4. Please rate your agreement with the following statements, where 1=Do not agree at all and 5=Very much agree, or select N/A if you feel you do not have enough information about the Workshop to provide a response.

The Workshop consisted of a lively interdisciplinary exchange among participants of diverse disciplines.	1	2	3	4	5	N/A
The Workshop gave me the opportunity to meet, connect with, and/or initiate collaborative relationships with new people.	1	2	3	4	5	N/A
The Workshop was a valuable process for identifying ways that science in its social context could be communicated in an informal learning setting, such as a museum.	1	2	3	4	5	N/A
The Workshop provided new insights for the field of informal science education and future scholarship on the relationship of science and society.	1	2	3	4	5	N/A

[Begin Third Page]

5. From your perspective, what were the two most important outcomes or results of the Workshop?

6. What issues, if any, did you feel were not covered sufficiently/at all? Please explain why you believe these issues should have been covered in more depth in this workshop.

7. Finally, what was the greatest benefit of participating in the Workshop for you? Please be specific.

Thank you very much for completing this survey!