The Idea that is the Exploratorium

I brought a group of ten college students here recently. You’d think we’d let them lose in a Vegas casino! They were running around "oh wow"-ing and "look at that"-ing all over the place! The interactive exhibits were so fun and educational! I’d definitely come back here again!!

- Kayla N, An Elite ’09 and ’08 yelp.com reviewer

The favorites were anything involving smoke, bubbles, and mirrors. There is a station where you can create smoky mushroom clouds and another that makes a tornado. There are multiple bubble stations. I really wanted to play, but they were all being hogged. I don’t blame the kids, if I got myself on the bubble station, I’d never get off either. And of course any opportunity to stare at ourselves in crazy mirrors or distorted TV screens is always much enjoyed...we are just as self-absorbed as everyone else.

- Patty P., an Elite ’09 yelp.com reviewer

It started with an attempt to understand playful learning and children’s response to abstract manifestations of science and technology in the context of the Exploratorium, San Francisco. However, I realized that I first needed to understand the Exploratorium with respect to people's experiences in general and then focus on a narrower topic.

The Exploratorium is a unique museum in San Francisco that is a collection of hundreds of (around four hundred to be precise) interactive hands-on exhibits on science, art and human perception. It is housed in an extraordinarily spacious high-ceiling warehouse-like building that is rough, old and very striking. In her book Something Incredibly Wonderful Happens (Houghton Mifflin Harcourt, Boston, New York, 2009) Science writer K.C Cole describes it as, "The concrete supports and steel girders looked like the bare ribs of a giant fish, and I felt as if I had entered the belly of a whale." The building is dimly lit and one is aware of an excited hum of noises.

1 Yelp is a popular U.S website focusing on social networking, user reviews and local search. What is the Yelp Elite Squad: [http://www.yelp.com/elite](http://www.yelp.com/elite)
Experiences

As I enter, I see numerous exhibits (on motion, heat, electricity, weather) running around me, and groups of people clustered around some of them, engaged. In no time, I am sucked into this place and I find fiddling with an exhibit that lets me change and observe different patterns created by water over sand. I play with it for a while and then look around to see my friend creating smoke rings at another exhibit nearby. It’s a circular machine and there are 3-4 adults and children at the exhibit. They are all pressing it together and looking up with marvel as the smoke rings shoot up in the air. I stay at this one for a while again fascinated by the smoke rings as well as by the people around me who looked joyful and engaged. I then decided, along with my friend to take a quick survey of the place before we examined the exhibits individually. However, soon enough, we found ourselves involved in another exhibit a few feet away!

There is a sense of chaos and dynamism in the place that reminded me of previous research carried out in a children’s park. There seem to be no particular constraints enforced, young children ran around uninhibitedly, moved from one exhibit to another depending on what caught their attention (as in a park from one play equipment to another). The older children and adults, though more restrained, wander through exhibits and stopping at those that caught their fancy. I felt a sense a freedom myself, to explore what I liked at the pace that suited me. As people often come with other people: family, friends, and fellow students, this individual explorative freedom sometimes creates a sense of tension between people as they
try to keep together or keep within their time constraints. A young kid getting lost is a common event at the Exploratorium; there is a guard manning the main gate specifically for preventing kids from leaving the premises.

The Exploratorium recruits high school children as Explainers who have the job of learning about the exhibits, explaining them to people, doing demonstrations for children and helping around in general. One of them puts it, “I am a tour guide, security guard and a scientist all rolled into one.” As another one quips about his experiences here, “There are thugs and businessmen who enter this place and they’re like, hmmm, no security here, no cameras. I mean there are a couple. But who would want to put a bomb here? This is a place to have fun.”

As I talk to an Explainer who is manning an information desk, he reflects about his experiences at the Exploratorium, “This place has everything. I learn a lot about science. Sometimes I am stuck up here (the Information desk), and then I look around. I learn a lot about people here. I just watch them like you were watching them there. There are kids, adults, old people, kids who’ve been to school, kids who’ve never been to school, kids all ages, everybody.” A young girl of age 9 mentions that she visited the Exploratorium with her school, a colleague aged 24 tells me that it was the meeting place for her first date with a guy recently, and K.C Cole’s book mentions about a story that teenage hitchhikers would come here to get high as it was a place of such intense perceptual stimulation.

**Philosophy and Vision**

The institutional brochure states, "Its mission is to nurture curiosity in the world around us. Its audience is as broad and eclectic as that found on a public beach.” The Exploratorium’s peculiarities can be put in perspective by understanding the original vision as laid out by Frank Oppenheimer, the founder and shared by the staff till today. “Sightseeing, he liked to say, is the basis for all discovery.”(K.C. Cole, 2009) The Exploratorium is designed so as to make sightseeing simple and pleasurable. Tom Tompkins, a senior exhibit developer explained how they strive to adjust the atmosphere such that people are relaxed about missing or not understanding something. He says, “We have not built exhibits that say, “Wasn’t somebody else clever” or “Hasn’t somebody done a great service to mankind?” We want people to learn that they can figure things out in life and make connections.” He mentioned that in such an environment, discovery becomes a surprise and gives a sense of personal satisfaction. Also, the museum’s approach to everything is very honest and transparent for the same reason.

When asked about his learning’s at the Exploratorium, one of the Explainers who had been around every week for more than six months almost echoed Tomkins’ ideas of discovery and satisfaction. He mentioned that as he looked and played with the exhibits, he learnt more about them. And often he would notice quirks or manifestations that only he could see and, that he said was very satisfying for him.
The deep-rootedness of the original philosophies in the fabric of an institution so contemporary and state-of-the-art is worth noting. And as I understand, it is the design philosophies and practices that give manifestation to Oppenheimer’s ideals and ideas in the form of tangible experience to the millions of users that visit the Exploratorium each year.

Exhibit and Museum Design

Keeping true to their idea of honesty and transparency, the museum’s workshop where all exhibits are designed and developed is visible right after one enters the place. The door is open for anyone who wishes to talk to the designers and explore the place generally.

In the same vein, all the exhibits are placed in the museum without any glossing over the appearance of the exhibit. Tom Tompkins mentioned that by his experience and observations, people would interact with something if it were not dirty, not unsafe and functional. Making it “shiny” did not help very much. At the same time, the unpolished look invited people to readily touch and play with exhibits without too many inhibitions.

We were curious about why most exhibit parts were not tied down and could be moved freely around. Tom mentioned that he often found exhibit pieces in different areas of the museum, areas where they were not supposed to be. But rarely, would anything be lost. Even if it did, they were easily replaceable as most materials used were fairly inexpensive. This was keeping in idea with the goal of making the environment comfortable to explore and sightsee and the lack of strict rules worked towards it.

There is a detailed process of conceptualizing, prototyping and developing that goes behind the scenes to create the experiential exhibits. An understanding of the design philosophies helped me appreciate the controlled chaos that the Exploratorium is, how their learning theory connects to their guidelines for exhibit design and helped me place in context how and why the Exploratorium is different from the other science museums.

The Exploratorium as a Learning Environment

I am presently divided on the idea of a science museum as an educational and content learning experience. Having done my background research, I assumed that the Exploratorium would be a great place for playful learning of science concepts.

However, talking to Tom put things in a new perspective. He mentioned that content learning happens in school and the Exploratorium is more about the experience that one has, than the learning. Moreover, the Exploratorium is one of the places that people visit, say with their families, in the city, once or twice a year. There is not much scope for learning that one had at a place that one visits a year. He was against
the idea of having questions or specific detailed answers on the labels near exhibits as that instructs people on what they need to look for. He said, “Questions are threatening” and “games are for losers”. In essence, meaning that the experience of the Exploratorium be simple and playful for the visitor with no expectations from him on what he needs to learn or not.

Talking to explainers and children made me realize that they do find the Exploratorium a learning experience, in different degrees for different people. One of the explainers mentioned referring to an exhibit that explains the working of the stop light, “When I see a stop light on the road now, I don’t see the colors changing, I see the switches turning inside and then the colors changing. I have learnt more here than in my entire science track of high school.”

**Methodology**

I was interested in studying children’s reactions and behaviors towards abstract science and technology artifacts and thought that a hands-on museum like the Exploratorium would be a great place to start. I was also keen to explore how technology is being integrated to provide physical learning experiences about science and art I museums today and about playful learning in general.

The work was clearly sited and given that the Exploratorium is a popular public museum, getting in wasn’t an issue. As opposed to a children’s park where my astrictive categories of being a single girl with no kids set me apart from the rest, I easily blended with the crowd at the Exploratorium, which was as described before, extremely diverse. In the environment of a somewhat controlled chaos in the museum, where most people were highly engaged in what they were trying to do, I was akin to a fly on the wall. As I perceived it, my presence in the field did not seem to bother or influence anyone around me.

I first visited the Exploratorium as a visitor to observe my own responses to the site and the environment. I was aware of how I was enjoying the experience and also was intrigued by observing how absorbed and riveted people were around me. Geertz defines detachment as fieldwork where “one must see society as an object and experience it as a subject” and that requires a continuous effort “to combine two fundamental orientations toward reality--the engaged and the analytic--into a single attitude.” (1968) I consciously tried to strike a balance between my analytical and engaged self; and my analytical self tried to observe my engaged self and also others around me. My experiences as a visitor helped me a great deal when I did further participant observations and interviews. I felt I could understand/relate to my subjects’ responses better at a basic level and could afford to ask them deeper questions.

I consciously added this bias to my research in the beginning, but I made sure that I accounted for it during the remainder time. I conducted another participant observation with a colleague, such that we both did fieldwork in different or
sometimes overlapping areas of the Exploratorium during the same time interval. I interviewed an exhibit developer, four explainers and two children who had visited the Exploratorium. Becker mentions that a better goal than “thickness” for fieldworkers is "breadth" i.e. "trying to find out something about every topic that the research touches on, even tangentially.” Researching online reviews of people’s experiences at the museum and reading historical documents about the philosophies of the Exploratorium helped me add more breadth to my research.

I had a chance to have a detailed interview with a senior exhibit developer, Tom Tompkins, who has been associated with the Exploratorium from its inception. His first-hand narration of the history and philosophies of the museum, weaved into answers for different questions was very valuable. He also showed around specific parts of the museum and the developer’s workshop as he explained what he said. The form and level of knowledge gained through this interview would have been not possible to get by reading a related book or through a survey approach. Tom Tompkins dispelled several assumptions that I had about learning in museums and usage of technology towards creating physical experiences in the Exploratorium. I now needed to reframe my questions around learning and technology, in the context of the Exploratorium. I was also more intrigued by the philosophies of the Exploratorium and approaches taken thereby towards learning science, art and human perception. I studied a couple of historical memos pertaining to the Exploratorium and books and papers related to the same.

In the meanwhile, I studied several (around fifty in detail and a cursory read of around a hundred and fifty) online reviews posted by people of their visit to the Exploratorium. This methodology provided me with data that was qualitative in nature as people freely wrote about their experiences at the Exploratorium. At the same time, it helped me do basic quantitative analysis by the sheer number of reviews available.

There were initial questions about the genuineness of the reviews and if genuine, the motivations of the people who wrote the reviews. Most of the reviews that I came across were associated with one of the three following websites: traveladvisor.com, yelp.com or helium.com. All the three websites are fairly popular and latter two also have a strong social networking component built into them. Given the large number of reviews available, the variety of inputs, both positive and negative, broadly saturated after a certain point. It was reassuring to read about similar issues and experiences, and I realized that I did not need to fret excessively about the validity of the reviews. Also, I had data that I collected using other methods i.e. participant observation and interviewing that I was able to validate the reviews against. Several people write reviews regularly on the website yelp.com and hence one can identify to a certain extent whether the people are genuine are not. Also, several of the reviews were written by elite members of the website, the requirement to be in the group being posting one’s photo and using one’s real name on the site, among others.
When I came across descriptions of somewhat unique and interesting experiences, ideas or issues through online reviews, I consciously became sensitive towards them during fieldwork and included them in my interview guide. As an example, a very common issue I read in the online reviews was that some people could not get any or enough time at specific exhibits, as children would always occupy them and not vacate them. Several writers were also of the opinion that children and adults at the Exploratorium were often very rude and this diminished their experience of the place. I had not observed such behavior and realized that it would be happening on days when the entry to the museum is free and hence the place is extremely crowded. It can give useful insights about which exhibits are more popular with a certain section of people, or which exhibits are universally popular. One of the reviews says, “I really wanted to play with the bubble maker, but alas, there was a line of kids having SO MUCH FUN. I’m just bitter I didn’t get to play with the bubble maker.” This can then be followed up with participant observation and interviews around specific exhibits. To be put this in perspective, there are currently around four hundred exhibits displayed at the Exploratorium and it’s also essential to focus on small sections to be able to generate meaningful knowledge.

A limitation of the online reviews was that presumably most users were from a specific section of the society i.e. adults who were sufficiently internet-savvy. I acknowledged this limitation during my analysis.

The Exploratorium is a huge place, and a very dynamic one. Once that one is familiar with the general idea of the place, the place has an immense scope for creative ways of qualitative research. The museum is divided into different sections i.e. Mind, Seeing, Hearing, Life, Matter etc. Fieldwork in small areas and then a comparative analysis could provide interesting insights about how people respond in the sections differently; it’s possible that different sections of the audience might have different responses. Learning in the Exploratorium is multisensory and exhibits support different learning styles and abilities. A deeper understanding of the same could be gained through focused qualitative research. Alternately, one could follow people in the museum to observe different learning styles.

The Exploratorium’s visitor research and analysis team is famous for their work; interesting insights can be gained by talking to them, working with them and also observing them.

References:
2. Memo from the Exploratorium records, From: Sally, To: Staff, January 6, 1987


4. Frank Oppenheimer, Rationale for a Science Museum, Nov. 1968
   http://www.exploratorium.edu/frank/rationale/Rationale_1.html


6. Howard Becker, The Epistemology of Qualitative Research