

The American Way of Design

アメリカのデザイン流儀

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A quiet, hidden town surrounded by breathtaking natural scenarios in the middle of the American West; an exciting, mesmerizing chaos of knowledge and fun rising in one of the many crowded bays that lay facing the unabashed calmness of the Pacific; a sunny, colorful paradise squeezed between the desert and the cliffs over the sea, cheerfully dotted with palm trees and tequila-ready agave plants. These were the stages in which we were welcomed to watch three different schools of design perform their beautiful act.

The Design Tour in the US is intended to help design students and prospective designers from Kyoto University Design School (KDnS) to gain perspective and learn by exchanging ideas and experiences with other students, researchers and industry professionals. However, as I ended up finding out when I joined fellow designers in the tour last September, it was much more than that.

As we visited the ATLAS Institute in University of Colorado campus in Boulder, the Exploratorium interactive museum in San Francisco and the Design Lab at University of California in San Diego, we were able not only to learn about several new ways of thinking design, but could also connect with highly intelligent, passionate people and foster relationships that will hopefully lead to intense collaboration in the future, all while experiencing exciting new cultural contexts on the other side of the world.

1. Communicate and design!

In the first step of our journey, we took a break from the green peaks surrounding the ancient cultural capital of Japan, only to find ourselves, 12 hours later, once again humbled by majestic scenarios, now in the figure of

the stern silhouettes of the Rocky Mountains.

As the impeccable, fancy kimonos of Gion gave place to the loose, easygoing sweatshirts worn by students and hippies alike at Boulder, Colorado, we could slowly witness a pint of the American college lifestyle. This apparent slow-paced nature, however, is a deception to the ignorant observer, who would make highly exciting discoveries nearby, if only they knew where to look.

The ATLAS Institute, located in the University of Colorado campus, is, much like KDnS, a meta-school of some sort, as they receive students from several other departments. As explained by their director, Prof. Mark Gross, the main focus of the institute is interdisciplinarity: students from the most varied fields are welcomed to take classes of several topics in design and can join graduate programs in many different lines of research. The faculty is composed of designers from highly diversified fields such as industrial designers, game developers, psychologists, business managers, and many others. There are frequent research meetings, where people can get feedback and find possible collaboration partners. The most remarkable feature of the program however, are the labs.

ATLAS has labs and centers focused on several different kinds of research, but there's one common sight that is found in literally all of them: an endless parade of eye-catching gadgets and machinery. There is not a single lab that doesn't host a 3D printer or laser cutter, most of them having more than one of both. This is not due to lack of a common design fabrication center, which does exist, but because even the huge, extremely well-equipped space offered by it sometimes is just too crowded and not fast enough to catch up with the needs of the creative minds working around. It became clear during our visit that their design process strongly followed these two principles: talk to a lot of people about your ideas, and test them fast, test them a lot.



pic.1 One of the many labs at ATLAS

During our stay, we also had the chance to visit the nearby factory of an old friend to many designers, SparkFun, a prototype development board manufacturer, one of the many companies born at the campus. Throughout a

detailed tour, they explained a little about their design process and showed their production line. It was an interesting experience to learn a little more and witness the creation of devices that help give life to the projects of so many hobbyists and professional designers around the world.



pic.2 A workstation at SparkFun

2. Design is design of experience

Leaving the snow-covered peaks in Colorado behind, we headed up to the crowded, fashionable streets of San Francisco, California. There, on Pier 15, lies a most peculiar museum, unpretentiously resting at Embarcadero Street, surrounded by sail boats and sea lions. The Exploratorium was envisioned by Frank Oppenheimer as a highly innovative museum where art and science team up to create amazing experiences, using curiosity as a driver to help people learn about the world and build up confidence on their ability to explore it on their own.

The space hosts a large number of interactive experiments that people of any age can try. There are some explanations nearby about the phenomena explored in each exposition, but visitors are highly encouraged to just touch, twitch, pull, turn, shake, tinker or do whatever they feel like and discover things on their own. Dr. Oppenheimer believed – and modern psychology corroborates his ideas – that when you



pic.3 An experiment with magnetism at the Exploratorium

understand things on your own, working through your own experiences and using your own reasoning, your knowledge becomes permanent and is much deeper, giving you a genuine curiosity and eagerness to learn. The objects in the museum are designed to make people witness the beautiful, the funny, the weird, or anything that makes them wonder, and generate that sparkle inside that will make them look for more information after they leave.

Despite the fact that the center is not a design school, it hosts dozens of dedicated designers, and is visited by many other professional ones every day.

Not only that, but it actually turns thousands of people into amateur designers, even if only for a brief period. As we walked around with our host, Ryoko Matsumoto, and heard about the workings of the center, we could learn a little about different design processes that are happening simultaneously in the Exploratorium.

The directors of the museum are what we could call the *planners*, the designers of the holistic experience of the space. They are responsible for preserving the essence of Dr. Oppenheimer's philosophy for the center, thus deciding what kind of exhibition is appropriate and how they align and work together.

The *makers*, i.e., people who create and maintain the exposed objects, are designers of momentary interactions, small pieces that must fit perfectly in the bigger puzzle of the center's proposal. These are the designers who work under the strongest constraints. It must be *interesting*; it must be *interactive*; it must be *safe*, especially for kids; it must *teach* something; it must leave people *wanting more*. They have a special workplace, a fabrication center on the back of the exposition floor, restricted to the general public yet completely visible by anyone. Builders from varied backgrounds are watched by every passerby as they nurture their creations, eager to test them on the main floor. Using their creativity, they try new concepts or propose modifications of existing exhibitions, based on staff observations, suggestions and requests, and also on direct or perceived feedbacks from visitors. Each proposal is evaluated for its conformity to those strong restrictions, especially for safety, before entering the main exposition.

At the battlefield, the staff that help people around, the ones known as *explainers*, design their own methods to guide learning and exploration. Bravery sailing across the ocean of excited children exasperatedly pursued by tired parents, they use their scientific experience in many diverse fields to help people around and continue their quest to make the world a smarter place. It's a particularly interesting design problem to create methodologies of conveying knowledge without simply stating it, but giving just enough information so the person can find out on their own. The fact that they succeed in doing it for people of any age, level of knowledge and cultural background is truly impressive.

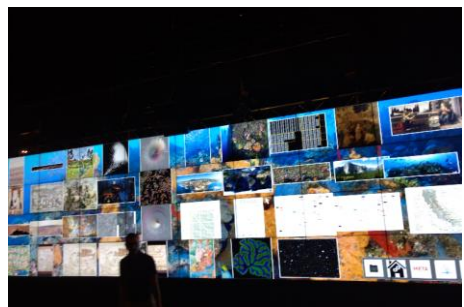
Finally, the *visitors* themselves also become designers, by devising their own experience. The museum is a completely open space, there is not a defined path to be followed, each person must decide their own course of actions both for the museum and for each individual exhibition. ‘But, wait...’ you say, ‘...is it really a design process of its own that is happening, or is it just the user creating plans of actions when interacting with the result of a previous design process?’. Well, I believe it’s both. The Exploratorium’s design problem was, from the very beginning, a meta-problem; its goal, in each exposed object, is to design another design process, the process by which a user can plan their own investigation, their own understanding of a wicked problem. The museum turns each visitor into a temporary designer while interacting with its objects, in the hope that they will later become a permanent one after they leave.

Matsumoto-san explained that many makers – herself included – first started as explainers – either hired or voluntary – with expertise on a specific scientific field, and then later had a chance to propose and work on their own ideas. For these permanent designers, the Exploratorium also has thematic sections where groups can work on related projects and develop special expositions. These usually result in workshops that the public can join to learn and create something interesting, like small toys or experiments they can take with them and/or repeat at home.

3. Design and visualize!

In the end of our endeavor, we reached our final checkpoint to gaze upon the radiant yellow tones of San Diego. There, in the campus of University of California, Don Norman, the legend, founded and is now director at the Design Lab. As a natural consequence, they have an intense focus on user-centered design, and, similarly to KDnS, they highly value design theory.

However, the center’s studies are certainly not restricted to theoretical research, as it also hosts several labs where Design is practiced constantly,



pic.4 A visualization system at the Design Lab

often with the aid of high-end technology. With real time visualization systems featuring terapixels resolution and a three-dimensional navigation environment composed of dozens of individual displays precisely aligned and synchronized, they toured us into a remarkably impressive show off.

While this amazing technology is being used to help designers and other professionals, among other things, better visualize data, understand problems and develop new kinds of immersive interfaces, there are other researchers at Design Lab working on the opposite of the technological spectrum, using the cheapest and simplest of tools, like pen and paper, as the most reliable way of dealing with heavy constraints.

For instance, one interesting project used a simple yet cleverly designed data table, made only with cardboard, that allows doctors in remote areas to correctly report data about varied endemic diseases. By turning the circular table around to align a series of parameters, the doctor can find a numeric code and then use the cheap, widespread short message service (SMS) technology to report the information to control centers.

This contrast gives a good example of how user-centered design must not restrict itself to user's emotions and thoughts, it must also consider the environment in which the user is inserted, and how it affects their experience.

4. Many Designs?

As we headed back to be once again cornered between forests both of trees and of sacred buildings in Kyoto, the reflections of what we just learned in these so distinct, yet so similar places reverberated uneasily in my mind, disturbing my spirit in the most unsettling way. Is it even possible to define design? Is it necessary?

Design, as a discipline or field of study, suffers of a terrible set of shortcomings when it comes to definitions. Like Biology, it doesn't really have a clear understanding of what exactly its object of study is. Like all human sciences, it doesn't apply a definite method or processes, many methodologies being equally valid. Like Math or Philosophy, it investigates deep, abstract concepts, but, at the same time, in par with Engineering, it must generate very practical, real world results, and often uses knowledge acquired by

empirical and experimental observations.

Nonetheless, we have been successfully designing ever since we exist as human beings, even if at the cost of an exponentially larger amount of failures. Maybe the goal of Design is to devise *successful* approaches to solve problems? But, then, why did we see so many different ways of thinking design in these places we visited? Simon has, naturally, already proposed a solution this problem, as others before and after him – although they used different phrasings: “everyone designs who devises courses of actions [...]”ⁱ. Devising courses of actions is the very essence of human cognition. All the places we visited were somehow devising courses of actions, by applying different perspectives to the human experience.

In the labs at ATLAS the focus was on testing and prototyping, and communicating with people from different fields, i.e., with different partial understandings of the problem to guide the iterative process. In the Exploratorium, the result of their design process was a design process on its own, the wickedness of the challenge is transferred to and shared with the users, and the designer must see themselves reflected in the visitor’s mind. In San Diego, the user-centered, user-guided interaction design process defines the goals. Where is my user? How do they feel? Can they understand what to do next? Do they have enough information to plan and make decisions on each step? What’s the best way for them to visualize this information?

These differences on focus, though, do not mean that the Exploratorium and the Design Lab in San Diego do not make prototypes or use communication between different specialists; or that ATLAS is not worried about the user’s point of view. At the end of the day, all these places are applying many design principles we have been able to uncover so far, albeit with varied weights for different steps.

The approaches to Design in each of these locations may have reflected different fields, philosophies, strategies and schools of thought; they may have been consequences of different contexts and constraints; and they may have simply revealed different goals and audiences; but they never really implicated different *Designs*. The problems of Design, as in “problem of *what is Design*” and “problem of *designing*” are design problems of their own, i.e.,

ⁱ Simon, Herbert A. The sciences of the artificial. MIT press, 1996.

wicked problems. Even if it were the case that some of the design principles we proposed over time were not used at all, that would not be a consequence of the existence of varied Designs, but of the limitations of our understanding of it, which is, and will always be, incomplete.

A corollary to this observation is that it's impossible, both in theoretical and in practical terms, to have a school that would teach Design to the "full extent". This conclusion makes exchange programs like this be of utmost importance.

Our home school will give us solid basis upon which we can build our future steps as professional designers, but it's only using our own experiences and after being exposed, even if superficially, to several other approaches, that we can make choices and develop our own path as designers. And, maybe, also open up new branches for designers to come.

Inquiry towards studies of design

- + Is it necessary to have a clear definition of *Design* as a discipline?
- + What if by understanding design *processes* we are defining it?
How can we approach this wicked problem?
- + Is there an ideal design process or ideal design school?