
T H E

Hierarchy of

Innovation

(socially driven architecture)

ideas for tomorrows education...

The Hierarchy of Innovation

*A design thesis submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University*

*by
Taylor Ross Dahl*

*In partial fulfillment of the requirements of the degree of
Master of Architecture*

Mark A. Bamkroner May 9th, 2014
Primary Thesis Advisor

Mark A. Bamkroner May 9th, 2014
Thesis Committee Chair

May 2014

Table of Contents

Tables and Figures	8-13
Thesis Abstract	15
Problem Statement	17
Statement of Intent	19-21
Proposal	23-39
Narrative	25-26
User/Client Description	31-32
Major Project Elements	33
Site Information	35-39
Project Emphasis/Plan for Proceeding	41-42
Research Direction	43-44
Design Methodology	45
Documentation	46
Design Schedule	47
Studio Experience	48-49
Program/Research	51-61
Research Results Summary	62-67
Case Study Research	69-103
Historical Context Research	104-111
Project Goals	112-115
Site Analysis	116-159

Table of Contents

Building Program	160-165
Concept to Form	166-175
The San Francisco Center for Innovation	177-209
Display Boards	210-217
Sources	218-223
Profile	224

List of Tables and Figures

Figure 1.1	Infants	28
Figure 1.2	Desks	28
Figure 1.3	Cubicles	28
Figure 1.4	Houses	29
Figure 1.5	Cemetary	29
Figure 2	People	30
Figure 3.1	Region Graphic	37
Figure 3.2	San Francisco Graphic	38
Figure 3.3	Russian Hill Graphic	39
Figure 4	Project Progression	45
Figure 5	Semester Schedule	47
Figure 6.1	Hierarchy of Needs Graphic	64
Figure 6.2	Self Actualization Graphic	65
Figure 6.3	Hierarchy of Innovation	66
Figure 7.1	Exterior Facade	73
Figure 7.2	Structural Void	75
Figure 7.3	North East Elevation	76
Figure 7.4	Site Plan	77
Figure 7.5	Geometry	78
Figure 7.6	Massing	78
Figure 7.7	Structure Plan	79
Figure 7.8	Structure Section	79
Figure 7.9	Hierarchy of Space	79

List of Tables and Figures

Figure 8.1	Circulation	80
Figure 8.2	Natural Light	80
Figure 8.3	Plan to Section	81
Figure 9.1	Exterior Facade	83
Figure 9.2	Structural Void	85
Figure 9.3	East Elevation	86
Figure 9.4	Site Plan	87
Figure 9.5	Geometry	88
Figure 9.6	Massing	88
Figure 9.7	Structure Plan	89
Figure 9.8	Structure Section	89
Figure 9.9	Hierarchy of Space	89
Figure 10.1	Circulation	90
Figure 10.2	Natural Light	90
Figure 10.3	Plan to Section	91
Figure 11.1	Exterior Facade	93
Figure 11.2	Structural Void	95
Figure 11.3	South Elevation	96
Figure 11.4	Site Plan	97
Figure 11.5	Geometry	98
Figure 11.6	Massing	98
Figure 11.7	Structure Plan	99

List of Tables and Figures

Figure 11.8	Structure Section	99
Figure 11.9	Hierarchy of Space	99
Figure 12.1	Circulation	100
Figure 12.2	Natural Light	100
Figure 12.3	Plan to Section	101
Figure 13.1	SF Earthquake and Fires	104-105
Figure 13.2	Russian Hill Views	107
Figure 13.3	Earthquake and Fires	108
Figure 13.4	Pedestrian Space	109
Figure 13.5.	Students with Laptops	110
Figure 14.1	Site Panorama	117
Figure 14.2	Golden Gate	119
Figure 14.3	Alcatraz	119
Figure 15.1	Photo Map 1	123
Figure 15.2	Photo Map 2	125
Figure 15.3	Photo Map 3	127
Figure 15.4	Photo Map 4	129
Figure 15.5	Photo Map 5	131
Figure 15.6	Photo Map 6	133
Figure 15.7	Photo Map 7	135
Figure 15.8	Photo Map 8	137
Figure 15.9	Photo Map 9	139

List of Tables and Figures

Figure 16.1	Photo Map 10	141
Figure 16.2	Photo Map 11	143
Figure 16.3	Photo Map 12	145
Figure 16.4	Photo Map 13	147
Figure 16.5	Photo Map 14	149
Figure 16.6	Site Map	122-148
Figure 17.1	Climate Analysis	150-151
Figure 17.2	Wind Rose Analysis	152-153
Figure 17.3	Cloudy/Clear Days	154
Figure 17.4	Sun Path Diagram	155
Figure 17.5	Shadow Study	156
Figure 17.6	Site Topography	157
Figure 17.7	Air Movement	158
Figure 17.8	Noise Analysis	159
Figure 18.1	Interaction Matrix	163
Figure 18.2	Interaction Net	164
Figure 19.1	Process Sketches	168
Figure 19.2	Process Models	169
Figure 20.1	Motivation Diagram	171
Figure 20.2	Collaboration Diagram	171
Figure 20.3	Sense Experience Diagram	171
Figure 20.4	Neuron Connections	171

List of Tables and Figures

Figure 20.5	Evolution of Form	171
Figure 21.1	Program	172
Figure 21.2	Topography	173
Figure 21.3	Topography and Program	173
Figure 21.4	Separate	174
Figure 21.5	Replace	174
Figure 21.6	Contextual Relationships	174
Figure 21.7	Program Divided	174
Figure 21.8	Integrate	175
Figure 21.9	Pedestrian Concentration	175
Figure 22	User Interface	175
Figure 23	Structure	179
Figure 24	Passive Systems	181
Figure 25	Active Systems	183
Figure 26	Wall Details	185
Figure 26.1	Materials	187
Figure 27	Full Integration	189
Figure 28	Floor Plans	191
Figure 29	North Entrance	193
Figure 30	East Entrance	195
Figure 31	Exhibition Space	197
Figure 32	Collaboration Space	199
Figure 33	Digital Library	201

List of Tables and Figures

Figure 34	Ampitheater	203
Figure 35	North West Entrance	205
Figure 36	Main Floor Plan Map	192-204
Figure 37	Aerial View	206
Figure 38	Roof Graphic	208-209
Figure 39	PDF Display Files	212-213
Figure 40	Images of Display	214-215
Figure 41	Display Table	216-217
Figure 42	Profile	224

Abstract

Currently we have the opportunity to use architecture as a vehicle for innovation. The thesis title “The Hierarchy of Innovation” is an analogy and in this case relates to “a hierarchy of needs” for the current society. This pertains to the perception of senses, self actualization, motivation, neuro science and education. The research will analyze the history of innovation, social interactive and collaborative learning, and past educational concepts that inspire spontaneity. This will eventually lead to a series of diagrams and ultimately the creation of a series of spaces that encourage self organized learning environments. The project typology is a hybrid of multiple building typologies. I will go into more detail with this later, but to touch on briefly. Conceptually this thesis derives its idea from an open source collaborative learning environment. Three building typologies will be analyzed , a library, a school, and a museum. With a program of approximately 80,000 sq ft. the building will be integrated into a site situated in northern San Francisco, within the Russian Hill neighborhood. With the combination of its diverse socio economic class and the idea that silicon valley is on the worlds stage, San Francisco revealed itself as the ideal city to implement such an innovative, public, educational and interactive architecture.

Keywords

social architecture	community involvement
didactic learning	autodidacticism
social progress	user interface design
self actualization	critical dialogue
collaboration	self organized learning environments
pedogogical	integrated landscape
phenomenology	interactive exhibition spaces
motivation	curated educational discussions

How can architecture facilitate human progress towards innovation and self actualization?

Statement of Intent

Project Typology

Educational, Mediatheque, Museum

Claim

Through the narrative of a building, interaction and collaboration are primary cause for a progressive social enlightenment.

Premises

Educators, public officials, marketers and architects among others can offer real and permanent good for the future of society, through the use of a dynamic educational building program.

The combination of architecture, autodidacticism, and the use of the “connected device” can be used as tools to increase the quality of communication and help to encourage individual initiative.

Given the right circumstances architecture may be able to use its historical fundamental values to guide our evolving social society to a path of self actualization, and collaboration through an architecture inspired by motivation and learning.

Unifying Idea

Differences in socioeconomic class, education, and location obscure for, the public intellectual, certain resources that can become tools for proficiency. Self actualization is stagnating in our society partly because of self absorption. Social justice movements and other online outreach organizations are trying to counteract this phenomenon.

In a physical world, a physical solution is needed and that solution could possibly be our built environment, architecture.

Project Justification

Evolution of the education system in our dynamic society has become the key to progress but the availability of information needs a medium for the public, other than traditional educational practices or the personal web device. This network of information should be integrated into a building in which people can collaborate and start to gain knowledge instead of the mass input and output of information. The architecture will embolden the collaboration and critical dialogue that manifests from the sense experience that is created. This will lead to self reflection which will eventually develop into the interest of self improvement. This enlightenment, will augment a more dynamic way of solving the problems we face now and will continue to face in the future.

“First then we must consider this fact: that it is in the nature of the moral qualities that they are destroyed by deficiency and excess.”

-Aristotle, Nicomachan Ethics, “Atlas of Novel Tectonics”

Proposal

With an educational model that was derived from a completely different culture than present, interactive learning has still not materialized as a prominent tool in our education system. Technology has changed the fabric of our cultural process. With the development of the internet, motility of transportation and communication has become exponentially more efficient. Technology has dramatically changed the premise of how our current society operates. Yet still, schools, libraries and alternative educational facilities are guided by increasingly obsolete programs.

This research will examine a social and architectural relationship that can promote discourse when pertaining to education and innovation. The design, program, and relational concepts that follow the research will help create a capillary action of educational innovation with its inception in the city of San Francisco, California.

The San Francisco Bay area has been a catalyst for technology and innovation in America and even the world. I carefully chose this region because of its high public profile, reputation for pioneering new ideas, and its dense and diverse culture.

Education, the age old divider of class is the substructure of knowledge. Education isn't a place, a school. Education has to mean something to the learner, or it is useless. To learn something, one has to be inspired, only then can that person begin to gain knowledge.

The Greek term *techne*, means "craft" and the word technology is derived from this term. Technology and education, directly correspond because education is based on the past and technology uses the past to improve the future.

The intention of using architecture as a tool for inspiration would be difficult to achieve without the understanding of techne, and its connection with learning, interface and its relationship with human diversity, spatial connections and their way of creating spontaneity.

The most fundamental way to explain how this building will be used would be to hybridize multiple building typologies.

A library for example is a building that holds books and computers connected to the internet. It is used as a quiet place, to gain access to information and educational tools. Libraries are generally used by the public but an interactive or even collaborative approach to communication with peers is not ideal in this environment.

A school in its basic sense of the word, holds students and teachers. Here students are taught by teachers via the use of a curriculum. Again this learning environment is structured, but understandably so with respect to safety and organization . Some schools have taken a more equivocal approach to learning but the majority of past program structure has started the impression of how children should be educated and has decided how learning will evolve and end before spontaneity can surface as a means for progress.

A museum, holds exhibits for people to experience, the amount of inspiration and creative stimulation gained by individuals by museums, I think is unparalleled, but because of the reputation of art and its value, museums cannot afford to sacrifice security for interactive learning.

This last example is called logos, It's not a building typology, but an idea, it is a plea, a word. It is a conversation. The only difference between logos and architecture is physical materiality. The logos stands for an idea of change, passion, perception and the unmatched sense experience we can have with the built environment.

Now imagine a building with open floor plans and exhibitions similar to museums, with nodes and spaces similar to libraries and curators much like teachers who guide these newly inspired knowledge seeking individuals with the use of interactive tools, helping to set up spontaneous learning environments. This type of learning is something people would pay for but in fact it's actually the other way around. These types of environments are becoming a reality in the modern workplace and are being payed to work in them.

Great companies structure their office environment similar to this, because to no surprise, this setting yields the most creative output, the happiest employees, and lowest turnover rates, consequently producing higher capital gains.

This is the logos, using our end result, of all of these years of education. Using our work force as a reverse model for knowledge. The goal for this architecture isn't to prove that the previously mentioned building typologies are obsolete. It is to help play a pivotal role in the social makeup of our evolving society that will ultimately cultivate better human beings.



figure 1.1
<http://www.gettyimages.com/creative/hospital-nursery-stock-photos>

figure 1.2
http://commons.wikimedia.org/wiki/File:Andrew_Classroom_De_La_Salle_University.jpeg

figure 1.3
<http://www.nomorecubes.com/>

figure 1.4
<http://marcalanschelske.com/you-are-a-hand-made-piece-of-art/>

figure 1.5
<http://washingtondc2011.blogspot.com/2011/04/arlington-national-cemetery.html>

As part of this summary, and in light of the above set of images. Look at these images. I'd like to ask you this question.

Is this what innovation is? Is this what we hand over to the next generation and say “we created this for you!” *Quantity over Quality.* Does the world function better when we set ourselves in boxes and rows. When we settle for what is easiest. We are creating our own destiny when we choose to live this way. When we take the easy route. We set the foundation for the future of social innovation. When that foundation cuts the lines to communication and collaboration from the start, what can be built from it? This is my motivation for a revolution in societal innovation.

It is important to realize the diversity in people. This diversity equates to the multilateral relationships between a building type and an individual, and because of this a dynamic, the user interface will be investigated.

The user and the interface generate an interaction, the architecture will attempt to facilitate this interaction. This interaction is meant to diverge and dissimilate the first effects of an impression. This impression is an important moment because it is this phenomenological relationship between the architecture and the user that will begin to determine the buildings worth, within its social context. Furthermore, this connection between the object and the user is significant, because it lays down the foundation for the network of autonomous expandable knowledge. Meaning, if an individual isn't aware of what type of building they are entering, their perception will not be clouded with judgment or comparison. Instead they will experience the architecture intrinsically furthering the opportunity for spontaneity and in that moment gain motivation because of inspiration.

User Client

The building is intended to be owned and ran by the city of San Francisco and funded by city and government entities. Building officials will apply for private, and international grants to help reduce operating costs.

Open to the public, the building will facilitate individuals and groups with access to holistic learning tools, innovative technology and knowledgeable staff members. In order to optimize the experience of education through guidance, twenty four hour access to some parts of the building may be possible, but normal business hours will be 8am to 11pm. Monday - Friday and Weekends 10am - 5pm.

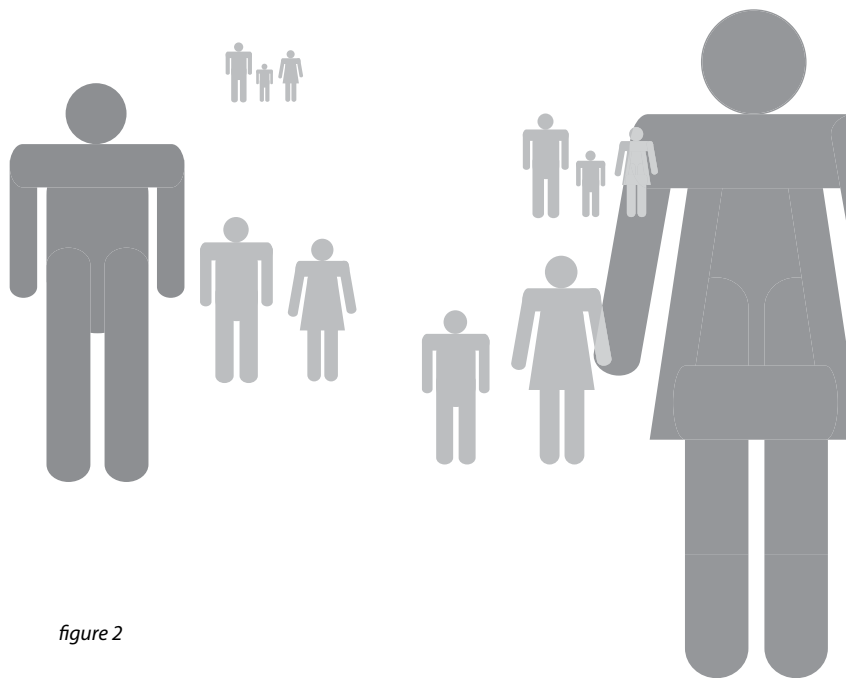


figure 2

User Client Description Cont.
(Staff and Spaces)

The staff members are an integral part of the building program and will include:

- a team of learning group specialists (specializing in sociology, philosophy, psychology, and biology and education.
- a team of technology specialists (specializing in computer software, 3d printing, laser cutting and cnc machining.
- leadership group (specializing in speaking, and organizing)
- team of volunteer students from surrounding schools (various skills)
- curators (keen knowledge of building, concept, learning styles)
- a marketing team
- mass communication support (experience in flow of information)
- volunteer professionals and speakers

The major spaces required for the building include:

- an open studio, digital library, and exhibition and research spaces
- code/required/basic building elements (vestibules, bathrooms, maintenance, storage, ADA access, etc
- multiple self organized learning environments, (these spaces are described in more detail in the Major Project Elements section.) circulation and main spaces are part of this concept.

Major Project Elements

Staff spaces

- an open studio program
- versatile research spaces

Public Spaces

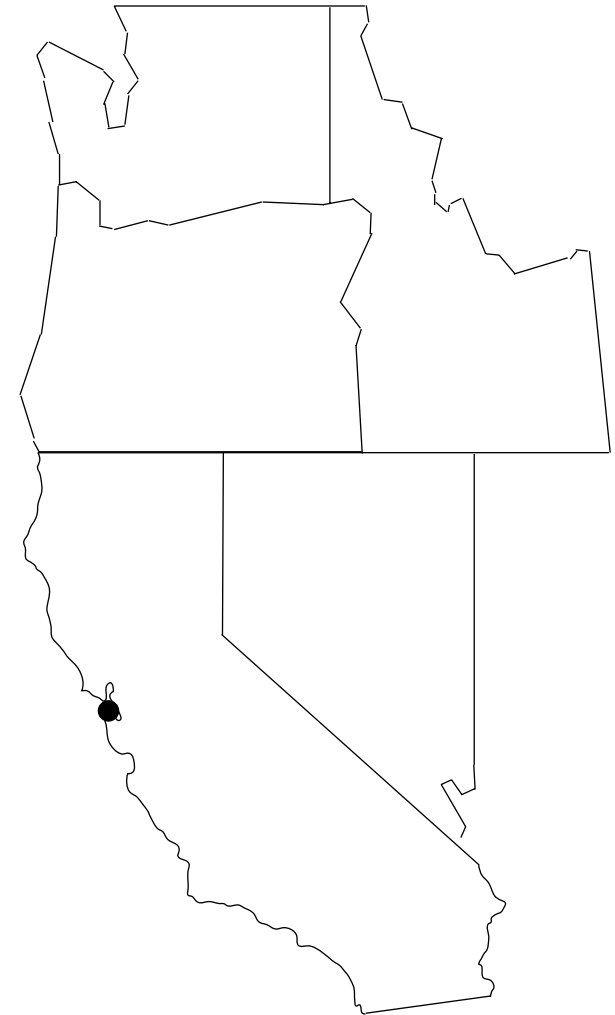
- multiple entry points
- major circulation with nodes
- exterior individual alcoves
- pods
- connected screens
- diagrammatic communication interface walls
- convergence spaces
- digital library
- attainable hierarchal program spaces
- indoor/outdoor amphitheatre
- classroom sized semi permanent boundaries
- work shop studio
(laser cutter, 3d printer, and cnc machine)

Site Information

As mentioned earlier, the San Francisco bay area, synonymous with "silicon valley" is an innovative and pioneering powerhouse in America. This region because of its climate, diversity, economy, and reputation is an ideal place for experimental architecture.

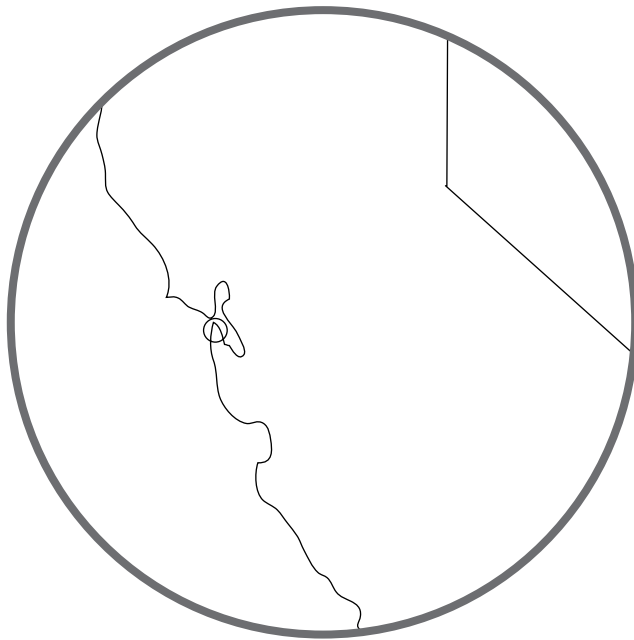
In the city of San Francisco, at the northerly end of the Russian Hill neighborhood, sits a 4.5 acre open site. Formerly the site held a water reservoir which has not been used for over 70 years. The unused almost 5 acre space overlooks the San Francisco Bay, the Golden Gate bridge and the Marin headlands. Furthermore the site is in close vicinity to the San Francisco Art Institute, Ghirardelli Square, and Lombard street.

The significance of the site as it pertains to economic class is that the Russian hill neighborhood is situated in between multiple other diverse neighborhoods, including North Beach, Telegraph Hill, Nob Hill, Pacific Heights, Coy hollow and the Marina District. The site sits on a proverbial socio economic class boundary. This amounts to an ideal location for a building that will thrive in an area with this much diversity.



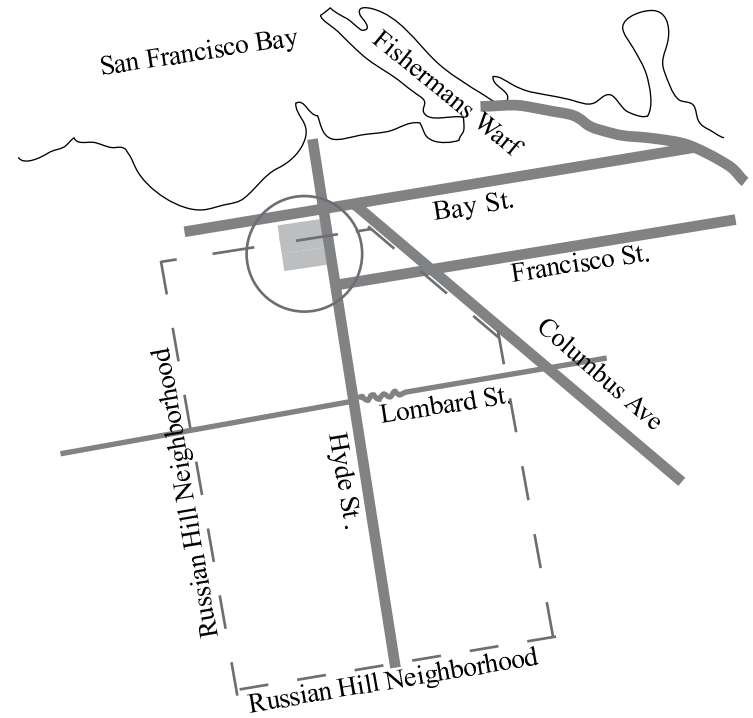
Northern California West Coastal Region
 Figure 3.1

Site Information



San Francisco, CA
Figure 3.2

Site Information



Northern San Francisco: Russian Hill Neighborhood
Figure 3.3

Project Emphasis

The primary goal of this project is to design a subset of spaces that optimize the realization of “the hierarchy for innovation”. Much like age, and environment shapes “the hierarchy of needs”. Society as a whole needs a model to to aspire to.

1. Establish an equivocal learning foundation at an origin interaction.
2. Guide user experience through a spontaneous and diverse program structure.
3. Encourage users to take a holistic approach on experience based knowledge expansion.

Fundamentally this research is about finding connections associated with learning. The outline in which these connections will be researched are as follows:

Based on a holistic approach, I will read into this thesis's theoretical premise and unifying idea. I will study prior research, writings and learning experiments, done by sociologist, psychologists, neurologists economists, educators and philosophers. After connections have been made with these fields of study. Information regarding behavioral learning patterns pertaining to a multiclass transversal will be explored. I will organize a series of sit in observations into classrooms, libraries and public spaces with the primary goal of finding specific interest or inspiration insets at their primacy. I will specifically look for how spontaneity, technology, and environment play a role in learning.

Exploration into analogous building types and ideas will be done by finding keywords, similar building programs, forms and building diagrams that simulate phenomenology in social architecture.

The information that is gathered through research, experimentation, conversations, and writing, will inevitably lead to a study in education and technology as it correlates to innovation in a historical context. I will also examine the history of San Francisco, schools, libraries, museums, concepts of learning and technology.

The site and location play a significant role in the development of this project. After having visited the site in 2012, it gave me a direct experience of its openness, viability and the holistic sense of the space. A second site visit was done by Olivia Baker, a San Francisco resident, professional and writer. I asked her to take photographs, and analyze the site subjectively.

Given that part of the inspiration for this thesis was given to me by current innovators. I will be reading into discussions and talks featuring Sugata Mitra, Nicholas Negroponte, Ken Robinson, Dan Pink and Amy Cuddy.

In developing the building program, I will make connections between the objective, and subjective. These findings will be tested with comparable building programs, and the aforementioned research. In an effort to understand the epistemological and phenomenological connection with architecture. The design will reach for the instinct of layered research elements rather than fitting a building program into antiquated preconceived spaces.

The process of design will start with a subjective approach, based upon qualitative research, (allowing for philosophical distinctions to be made), followed by a more objective approach and quantitative research (allowing for statistical models and diagrams to be developed). This method of research combined with a site visit, accounts from a San Francisco citizen, classroom/ learning environment studies, interviews from teachers, curators, librarians and parents. As well as researching epistemology through multiple sciences. This will lead to a complex writing and exploration into innovation and its foundation.

Following the writing, a series of diagrams, drawings, and models will start to materialize, analyzing the connection of these sciences and their environmental relationships. After a considerable connection has been made, a didactic approach to site design, building program, form, user interface and materials will lead to architecturally significant elements within more developed drawings, diagrams and models.

Logos



Diagram



Object

Figure 4

Documentation

- 1. Voice memos
- 2. Sketches
- 3. Diagrams
- 4. Notes
- 5. Electronic Bookmarks
- 6. Computer Software
- 7. Film
- 8. Photography
- 9. Writing
- 10. Interviews
- 11. Observations

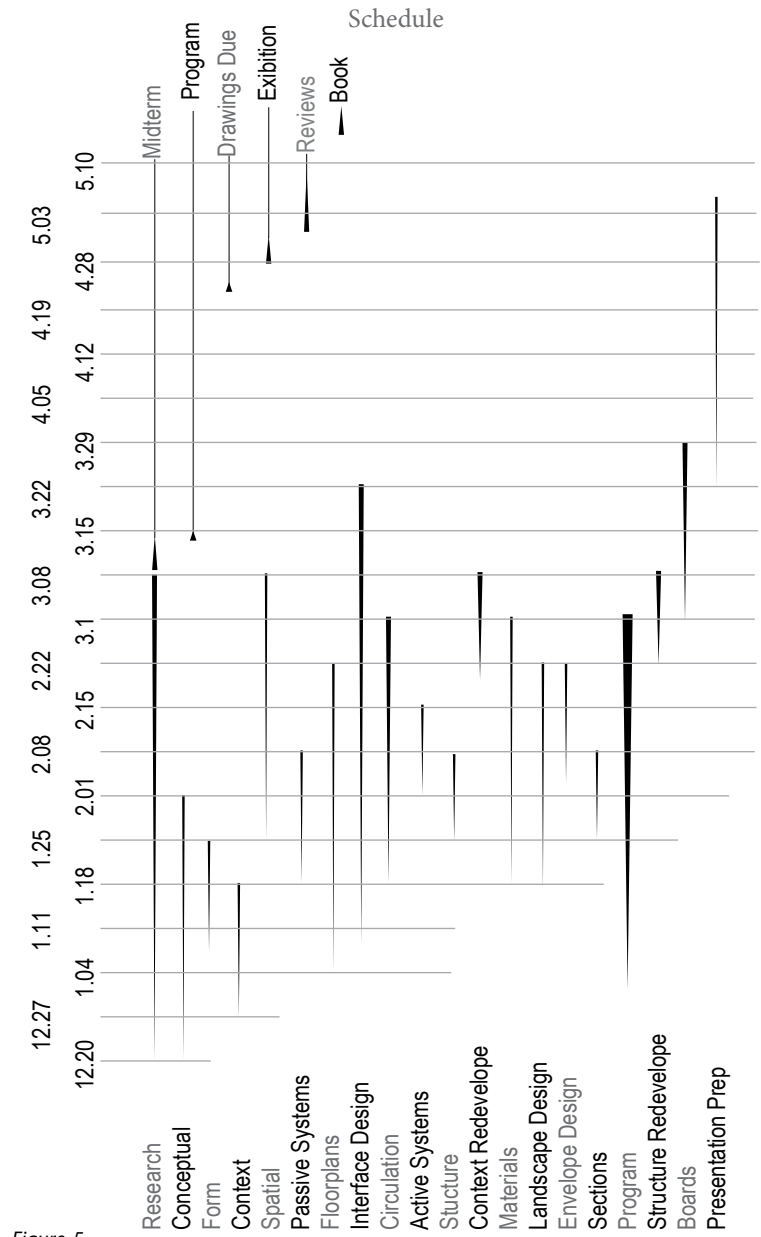


Figure 5

Previous Studio Experience

Previous Studio Experience

I have had the opportunity to work on many projects related to this particular hybrid building typology. The past academic projects have included schools, learning environments, libraries, and museums. As well as the experience of designing for San Francisco. This foundation will be further explored and used as a tool for this thesis.

2010 Fall	D. Booker	Tea House, Boat House
2011 Spring	J. Vorderbruggen	Montessori School, Dwelling
2011 Fall	M. Christianson	Study of Le Corbusier Museums, Fargo City Museum
2012 Spring	R. Fiskness	Presidential Library, Visual Arts School
2012 Fall	A. Bakr	San Francisco Highrise
2013 Spring	D. Faulkner	Ghana Educational Campus
2013 Fall	M. Barnhouse	Wetlands Research Laboratory

Language: One of Mankind's First Innovations

In order to understand the unifying idea of "The Hierarchy of Innovation" we first need to recognize learning and innovation in its infancy. Before civilization, language and rudimentary tools, were some of the basic innovations developed by mankind. Early vocal communication was vital for the collaboration of a group for survival much like it is today. The German philosopher Hans-Georg Gadamer believed that language was developed not by one person but by a group of people (Schmidt, 2000). Furthermore, Vitruvius makes an analogy with language and architecture, in which early man gathers around a fire, creating space, this space than facilitates interaction and communication (Holl, 2006). This collaborative approach to innovation suggests that creative sounds, inevitably became language, through cooperative invention.

When more of the basic needs of humans are met, for example sense of belonging, we can focus our energy on external problems, we can begin to act in a more selfless manner, and coincidentally begin to think more critically about our environment; how it might improve, or how to improve oneself through self-reflection. Maslow, 1954. These steps of collaboration and self reflection combined with the basic human needs, ultimately lead to a path of evolution, innovation, and civilization. Today the majority of collaboration takes place in the paid workplace, during work hours, at a designated time. Collaborative innovation now belongs to capitalism, to be made and then sold as a product instead of its roots, an open source social and collaborative based interaction. Although it is human nature to be competitive, we know that one of Maslow's Hierarchy of Needs is, self esteem. Self esteem is gained by receiving recognition, gaining social status, acquiring attention and/or accomplishment, it is also evident that self respect is also

needed in order to achieve self actualization. As a society we are stuck on this need to feel important, and coincidentally the level below self actualization, which in this sense would be understanding that self accomplishment is more important to the greater good than to the self. Today most self esteem is surface level and is satiated by materialistic means, social media, consumerism, keeping up with what the neighbors have. The connections that need to be made to each other to increase self reflection and accountability are being masked by this need, the need to belong or the fear of being ostracized. Individual thinking, authenticity and innovation which are the primary stepping stones to self actualization are evident in our society but should be spread across the broad spectrum of social class.

Because our society is so large and diverse, which is the result of thousands of years of civilization and an evolved world economy. We do not directly depend on each other or hold each other accountable. Instead we rely on teachers to educate our children and teens. The diversity in which children are raised because of the growing socioeconomic gap presents an even larger challenge to teachers as they try to adapt their teaching methods to students learning styles and personalities (Maslow, 1954).

Connections: Biological, Social and Phenomenological

We have biological evidence that the human brain learns by making connections within neurons. When making a movement such as walking up stairs, the same firing patterns of neurons in the brain are recreated when someone sees someone doing the same action (Sousa, 2012).

Although we know that “doing” something which involves all of the senses is an entirely different experience than watching someone perform the action, we can understand that the analogy “making a connection” or learning, is evident because our brain literally does make “connections.” If we take this analogy even further we can argue that making connections in a social context will increase the “intelligence” of the society, again here inevitably the sense experience needs to be part of the learning experience, increasing the understanding of the flow of not just information but how knowledge is gained through sense experience. Learning by doing, we can then in turn start to encode and organize innovation, much like the hierarchy of needs. Learning is not as easy as just seeing someone do something and then recreating the action, this is an example of a child learning by imitation, a crucial time in a person's life when the brain is at optimal plasticity.

When we factor in early learning environment, education, socioeconomic class, and the diversity of personality, learning and teaching becomes much more difficult, as does trying to inspire a population to want to learn in a more socially collaborative environment. It is evident that a more diverse vehicle for knowledge is needed for diverse learning styles and personalities. We no longer can rely on teachers or single methods of teaching. If knowledge is the product and we are the locations in which the product has to travel to, we do not use only one form of transportation on a linear path for delivery. Instead the delivery system is a complicated interconnected web of transportation lines much like the circulatory system in anatomy.

Jean Piaget states “the essential functions of intelligence consists of understanding and inventing, in other words building up structures by structuring reality...” (Piaget, 1970).

Essentially what Piaget is saying, is that when education takes a more inventive approach the learner will connect what he or she learns with the real world. Innovation is directly tied to culture (reality), it moves with it. Our culture, which is constantly evolving, demands an evolving educational system, an educational system based on our current culture.

Motivation and Technology

According to Maslow (1954), “Studies of psychologically healthy people indicate that they are, as a defining characteristic, attracted to the mysterious, to the unknown, to the chaotic, unorganized, and unexplained” (p. 49). In the modern era self motivation and technology together give infinite opportunities for the general public to become innovators through self organized education and architecture. In creating an environment that evokes curiosity we can begin to conceptualize a “hierarchy of innovation” through phenomenology, which is essentially a way of learning with the body from the built environment. Sugata Mitra a professor of education and technology, created an experiment in the slums of Delhi, India where he placed a computer in a wall and waited. His results were astounding. After a period of time the local children who had not used a computer before learned how to not only use the technology, but had come to the conclusion that they needed a faster processor to accomplish what they wanted to do with it. This type of self education is not to undermine the importance of teachers and schools but to acknowledge and embrace the power and importance of technology in our evolving educational environment. (Mitra, 2010). If an innovative learning environment is structured in a way that promotes spontaneity and motivation, the people within that environment can begin to create their own dialogue.

Learning Styles

Learning has traditionally been separated into four styles, highlighted by the VAK/VARK model. These are visual learners, reading/writing auditory learners, and tactile learners. Visual learners gain most from an environment in which the teacher provides material rich in graphics, images, video, charts, and other visual media. Auditory learners benefit most from lecture. Visual media may help but these types of individuals have a greater attention span thus giving them the opportunity to remember information delivered by the spoken word or other auditory mediums. Reading and writing learners are reference learners. This means they learn best through the reading of information or text and recording it. Tactile learners learn best through kinesthetic means. Tactile learners learn by doing, an increasing number of individuals are becoming kinesthetic learners because of the technology we now have. This technology helps individuals become more independent when finding a solution to a problem. Instead of purchasing from stores we now have the opportunity to research, find a tutorial and make the product ourselves. The DIY phenomenon is reaching back to before the industrial revolution, to a time where tactile learning was the prominent way of learning. Tactile learning can be applied to almost all fields of study, where it cannot, there are other methods of teaching. (Sims, Ronald R. 1995)

Teaching Methods

One of the oldest teaching methods that has been forgotten about until recently was a method developed by Socrates. It is called Socratic Circles. Socratic circles can be organized in several ways. One of which is described as creating two circles. One small and the other larger circle surrounding it. The small circle, we can call the discussion circle, the other outer circle takes notes and remains silent during the discussion. After the discussion the outer circle takes turns with their "outside perspective" criticism. The circles then switch and the cycle is started again. This teaching method increases peer to peer interaction and encourages participation (Copeland, M. 2005).

Another old teaching method of which is widely used today is lecturing. Lecturing consist of the teacher standing in front of a room of students presenting information. The lecturer usually shows slides of images and sometimes video. Feed back is gained by comments or questions from the students in desks or chairs.

Jigsaw learning is a newer method of teaching in which random students given a topic to present to their peers. The students are then divided into groups to discuss the topic. This method is to encourage participation and break up social boundaries. This teaching method is similar in structure to the method "think-pair-share" which puts more emphasis on the thought of the subject where as the Jigsaw method emphasizes the presentation (Slavin, R. 1985).

Reciprocal teaching is a critical reading based approach, that eventually evolves into a dialogue between the students and the teacher. Reciprocal teaching gets its name from the students acting as teaches and vice versa. (Padama, B.2008).

Perception and Sense Experience

In the reading of Emmanuelle Kants' "An Answer to the Question: "What is Enlightenment?" Enlightenment minimally explained, is a choice, albeit made difficult by societal demands, past experience, and regulation. Enlightenment as Kant would propose is maturity, but first immaturity has to be properly explained. Currently immaturity is understood and reflected by many to describe a "childlike" personality trait, this is wrong and has been misconstrued over years of people judging and applying labels to others. Immaturity is much different than this. Kant explains "Immaturity is the inability to use one's own understanding without the guidance of another."(Kant, E. 1784). For instance in 1956 at the height of the "United States Highway Act" San Francisco officials with the guidance of the United States Officials were pushing for the construction of a freeway through its city's neighborhoods this was halted by some "enlightened" San Franciscans who took it upon themselves to foresee the stigma that mass automobile transportation would have on their city. They understood what the city was, that quality of life had nothing to do with driving faster in an automobile, by-passing the city fabric(Rand,R. 2007).

This word, understanding, is the grasping of an idea. It comes from the Greek word episteme which eventually translates as the verb "to know". Plato would describe the verb as a "justified true belief". Can we now say that enlightenment is a "justified true belief"? Perhaps, but only if the belief is true to our selves because one's enlightenment is paradoxically an introspective phenomenon. Paradoxically because in order to become "enlightened" one must have "Weltanschauung" or "world view". This is to say that the individual unconcerned with the dynamics of the past and present mechanics of their community, the world, its philosophies, inventions, literature and sciences can live his or her life bereft of truth.

"Laziness and cowardice are the reasons why such a large proportion of men, even when nature has long emancipated them from alien guidance (naturaliter maiorennes), nevertheless gladly remain immature for life. For the same reasons, it is all too easy for others to set themselves up as their guardians. It is convenient to be immature. If I have a book to have understanding in place of me, a spiritual adviser to have a conscience for me, a doctor to judge my diet for me, and so on, I need not make any efforts at all. I need not think, so long as I can pay; others will soon enough take the tiresome job over for me."

- Emmanuel Kant

Language as identified by Vitruvius was created through the beginnings of architecture "gathering around a fire" Architecture, as Alberto Gomez argues, has from its inception been social, cultural and linguistic at its core. Without people architecture would merely be an object and without words only a mental image.

At its foundation architecture has always been something to learn from or a medium for sense experience, this is in contrary to today's buildings of what we would call "consumerism architecture" of which the community has had little to no influence or involvement. This follows the attitude quantity over quality. Sadly this has been brought on by what has been called "the age of enlightenment".

"We grasp external space through our bodily situation. A corporeal or postural schema" gives us at every moment a global, practical, and implicit notion of the relation between our body and things, of our hold on them. A system of possible movements, or "motor projects", radiates from us to our environment. Our body is not in space like things: it inhabits or haunts space. It applies itself to space like a hand to an instrument, and when we wish to move about we do not move the body as we move an object. We transport it without instruments as if by magic, since it is ours and because through it we have direct access to space. For us the body is much more than an instrument or a means: it is our expression in the world, the visible form of our intentions. Evens our most secret affective movements, those most deeply tied to the humerol infrastructure, help to shape our perception of things."

- Maurice Merleau Ponty

To truly sense is to experience our body as Ponty describes, being fully aware that our body is our expression in the world not a tool that somebody moves or is moved through space. The perception of our environment through our body is a medium for knowledge gain.

Insoluble thought goes into effect at the moment of perception, most of which is filtered through years of environmental and psychological based connections within us. The question here is at that moment, is our thought based perception created, just as we record an image or is it that the sensation itself induces thought and then becomes the perception? We fully perceive when we sense and make a judgment. One's existence in space cannot be perceived similar to how one senses one's own experience, but one can imagine this experience. (Ponty, M)

Our senses play an important role in our imagination because what we sense ultimately will lead to what we imagine. Ricoeur argues that imagination can lead to an "expanded vision of reality". he explains that imagination can be productive when solving problems at work. In thinking this way, the possibility to analyze and translate future problems and create solutions can be applied to reality. Even if the original thought is not "real", we know that at one time the future problem in which work is needed was not real in the sense of time, but real in the sense that a "mental image" is of reverence to the original problem "image". This correlation of fictional images and fictional problems should not be thought of as future problems but rather they have quasipresence, or iterations of images that are rooted from their original. If we think of enlightenment as brought on by sense experience and then imagination we can follow Ricoeur's argument and his three questions. Experience and perception are separated only by their means of givenness, these three questions are raised, one of which is based on the analogon of the mental image and its comparison to the physical portrait. The other is whether we intuitively see the mental image through our mind's eye or do we pretend to see. Lastly, how can we trust the quasipresence of our experience and how do we know if it is purley perception. Because they are one in the same this applies to epistemology and experience.

If one listens to a person describe and lecture about how to drive an automobile, will this person be equally as skilled as one who has actually had the real experience. Most likely not. Experiencing something in real time and then re-experiencing the action combined with the thoughtful memory of the first experience is what is collectively known as learning by experience.

In lectures, experiencing the act of someone speaking while taking notes takes on this double effect. Furthermore an image created by language combined with thought analysis and one's creation of a metaphor distinctive to one's past could also be explained as learning by experience because of memory. Memory in which the mind (body) experiences, creates and records can be iterated either by recitation afterward or critically thought out then discussed. As a result knowledge is gained. Knowledge could be explained as giving one's own analogy of the iterated information provided. The information that becomes knowledge is not gained because it has been directly transferred from one individual to another by a single medium, but because the information has taken on several facets, these are then analyzed, criticized, iterated and disseminated for others to experience, only to be reiterated and challenged again.

In short experience is part of learning and learning part of enlightenment but enlightenment only true knowledge, true knowledge cannot simply be displayed as information is, true knowledge is when one realizes what Socrates has so eloquently put."

"True knowledge exists in knowing that you know nothing."

This statement has to be taken figuratively of course, but it is the indication of having intra-personal intelligence. Enlightenment comes from listening, interaction, critical dialogue, experience, self reflection and our consciousness of our sense perception.

When combining the questions asked over the course of this research with the work done by professionals in their respected fields, a common thread begins to immerge. Our interest in the mind, body and the application of thought in the world. How collaboration has been a main cause for innovation since our beginnings as humans on this planet. Our creation of language and its influence on architecture. The brains complex neurological connections and how this biological evidence supports the importance of the awareness of our body through sense experience. Cognitive development and our experience through time as our minds grow and effect our personality. Which intern has an effect on our learning styles and how these learning styles and teaching methods can correspond to one another to help with the evolution of educational practices. How spontaneity and wonder encourage motivation and learning as Paiget found.

Abraham Maslow's lifelong study of how motivation correlates with our basic human needs, our societal needs and our relationships. The inspiring innovators of today and their motivational experiments and speeches. Sugata Mitras discovery of the child's instinct to find solutions through collaboration and auto didacticism when given the opportunity. Emmanuel Kants' philosophy of enlightenment and how given the right space, direction and opportunity can develop through sense experience and spatial conduciveness. Imagination and its ties to memory and experience, giving the idea that imagination creates memory and memory imagination. This theory is what Paul Ricoeur relates to finding solutions to future problems, because imagination is at its foundation from the past. The imagination which is a deep abstract or "a true thought" according to Socrates. We can say that imagination presents itself as knowledge to the person of memory. These findings are only some of the ways in which the architecture can manifest but gives a foundation to allow for a dynamic design process.

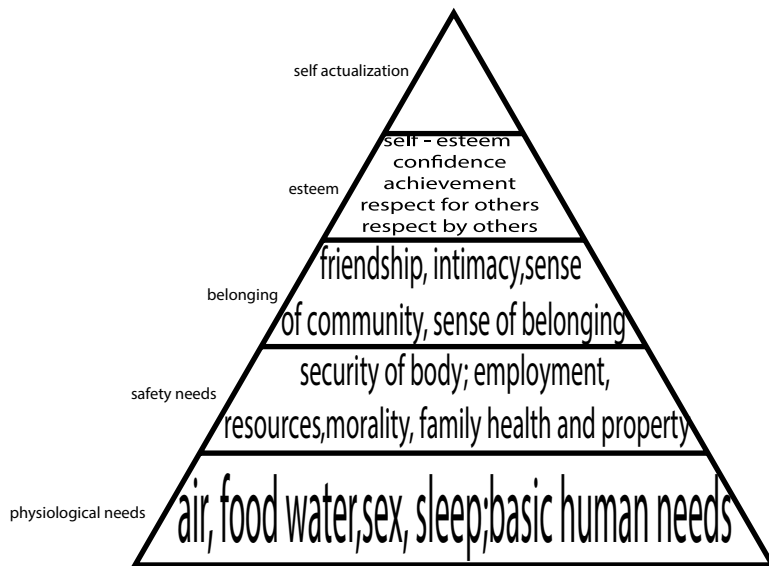


Figure 6.1
64

Thus far “The Hierarchy of Innovation” has been explained in terms of words through research and ideas. To further illustrate this idea, the diagram below, which is Abraham Maslow’s “hierarchy of needs” pertains to the individual and will start a series of more specific research based diagrams. These specific diagrams will attempt to create the “bridge” between the individual and the built environment. As an architectural, societal and theory related concept the diagram can be translated into “the hierarchy of innovation” only through the thought that “The Hierarchy of Innovation” is this model but translated through society as a whole.

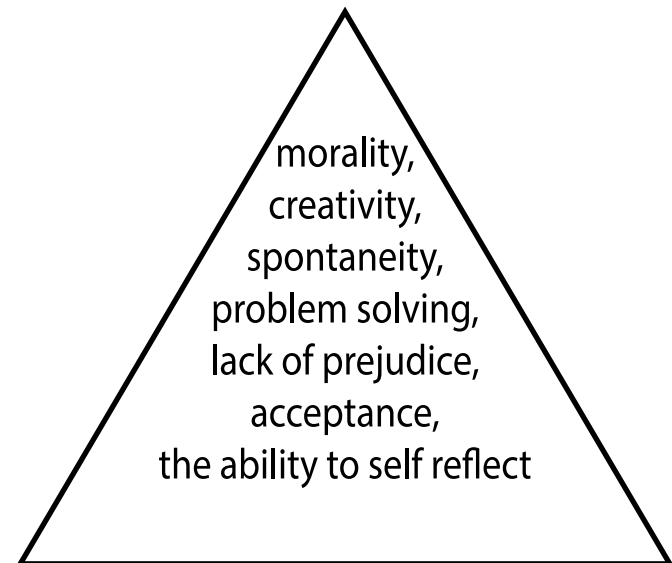
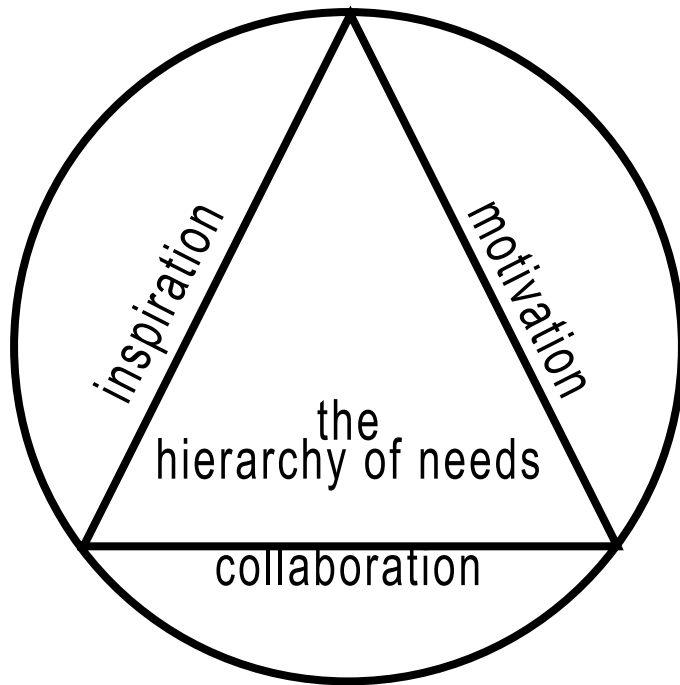


Figure 6.2

T H E

Hierarchy of Innovation



This diagram of “The Hierarchy of Innovation” derives its order from the ideas and research of this thesis. This model takes its form from all aspects of the research, in all the fields of study previously mentioned. I will reiterate this for the sake of understanding. In order to innovate we have to understand what learning is. We have to be motivated to learn. We have to be inspired in order to be motivated and with the intention of all of this, we need to have our human needs met. When we exceed this and we are at the pinnacle of our needs, when we start to “self actualize” as a society. Then true innovation can occur. How does this relate to architecture? This model directly involves us, “the user” and the built environment “the object”. The connection between the two is the bridge between “object and subject” creating a sense experience. The research will now turn towards architects that have attempted to do this and in my opinion have succeeded.

Case Studies

Introduction

With the exception of some, our built environment is full of schools that educate young minds but lack collaboration and discussion, libraries that provide information and a space to read but are deficient of spaces to organize dialogue. Museums that inspire wonder but lack an interactive sense experience. The following three case studies are examples of this ideology, these buildings are this exception.

41 Cooper Square

“a vertical campus”

Architect: Thom Mayne/Morphosis

Location: New York City, New York

Built: 2006-2009

Cost: approx. 150 million

Introduction

Cooper Union, a privately funded college of architecture, art, and engineering, needed a new building to house these schools. Public opposition led to a discussion that would eventually lead to a building less imposing to the site and its surroundings, and more integrated into the neighborhood that is surrounded by low rise buildings. The architecture firm Morphosis accepted the challenge and began the process of multiple iterations of the dynamics that included the site and the students who would be using the building. Mayne describes this eloquently, “Buildings come together through the multiplicity of systems, and it’s not any single system that makes the architecture work it’s the relationship of the dynamics between the systems which have the power to transform and invent, to produce an architecture that would otherwise not exist.” The way that the building touches the ground expresses the street as tension in the environment if given the opportunity Mayne would have left the street level empty underneath the building to increase public interaction but because of programmatic, height and site boundary restraints this could not be achieved.

“we’re interested in producing spaces that accommodate human activity and I am extremely interested in understanding the nature of constructed reality”

-Thom Mayne

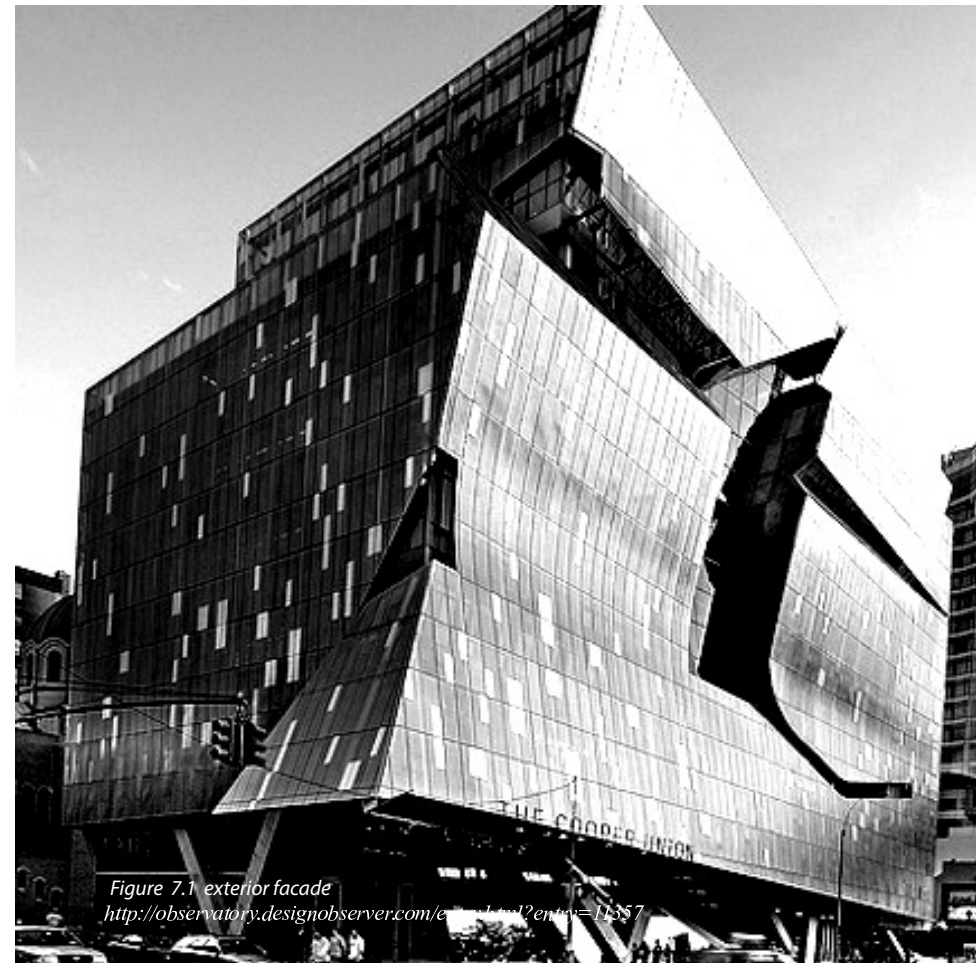


Figure 7.1 exterior facade
<http://observatory.designobserver.com/entry/1357>

The Architecture

Mayne wanted to create a vertical college campus, a public space tilted on its access, with the idea to create space for collaboration and the connection of people. The breaking down of barriers between departments to allow for information and dialogue exchange between them. The building is a receiving and accepting of the force of the city, the facades participate in efficiency showing that Mayne is no longer interested in the solid void. A glass cube wrapped in a curved while a broken up perforated steel skin undulates in plan and in section. The building lifts up as it seemingly neglects to touch the ground. Inside the atrium reaches nine stories, and is described as the heart of the school "the connective tissue" as Mayne calls it. The dia-grid that connects this space is a reference point in fluid language that forms the space. Within the atrium is a large staircase that rises throughout the first four floors and meets with the convergent walls of the atrium. At this point the stairs narrow, this concept was also guided by the boundary restraints and program of the building. Mayne's philosophy of walk able circulation is evident in the main elevators, of which only carry occupants to floors three and eight. The other stairwells located near the perimeter carry occupants to the remaining floors. This move was done to encourage physical activity which as a result increases brain function and learning ability. The program includes class rooms, faculty offices, laboratory spaces, art studios, a theatre, a gallery, a green terrace, exhibition gallery and circulation. The circulation spaces were designed with the concept of convergent spaces for collaboration.



Figure 7.2 structural void

www.dezeen.com/2009/10/11/41-cooper-square-by-morphosis/

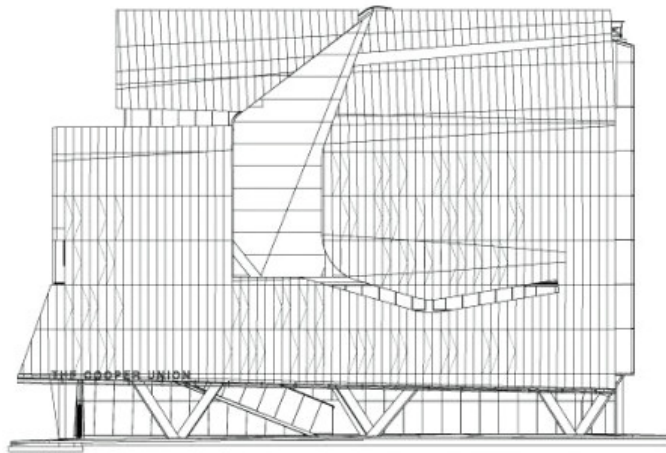


Figure 7.3 north east elevation

<http://housevariety.blogspot.com/2011/02/41-cooper-square-by-morphosis.html#UoKHOPms>

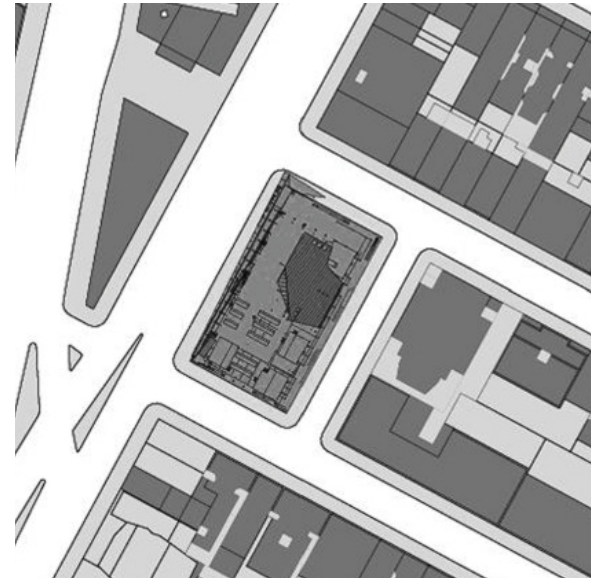


Figure 7.4 site plan

<http://morphopedia.com/files/41-cooper-square-site-plan>

41 Cooper Square

Geometry

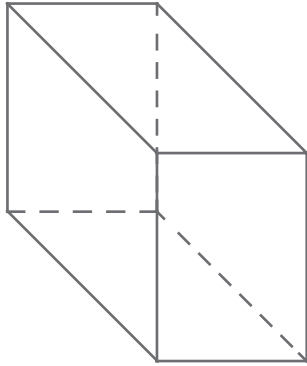


Figure 7.5

Massing

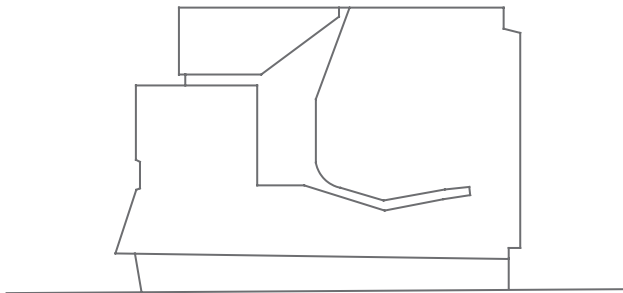


Figure 7.6

41 Cooper Square

Structure

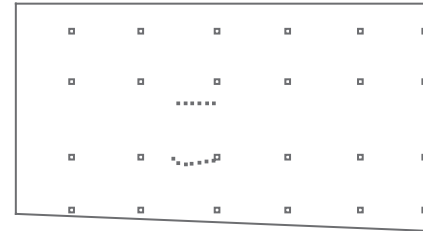


Figure 7.7

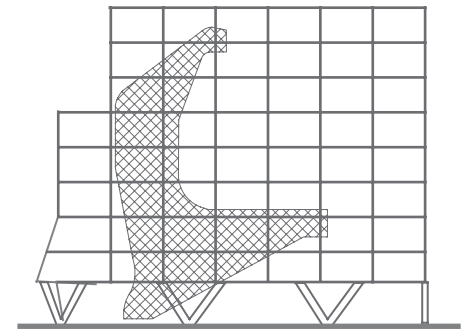


Figure 7.8

Hierarchy of Space



Figure 7.9

Circulation

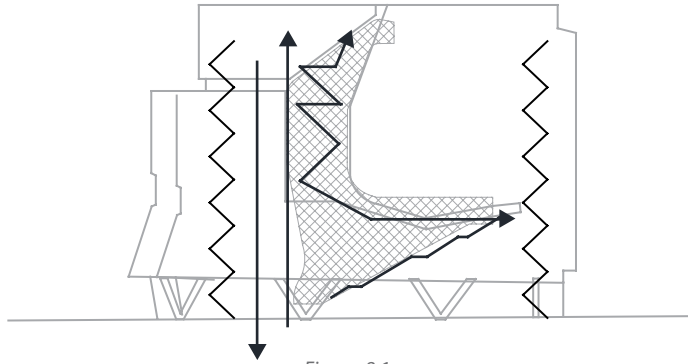


Figure 8.1

Direction of Natural Light

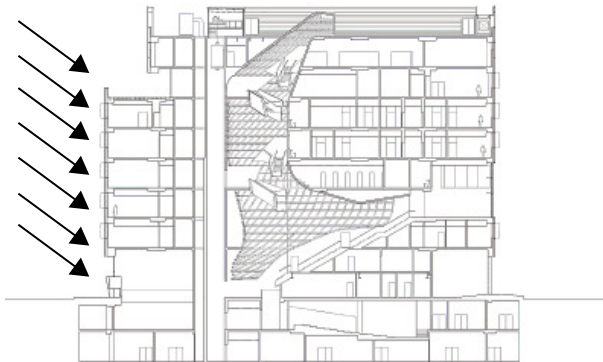


Figure 8.2

Plan to Section

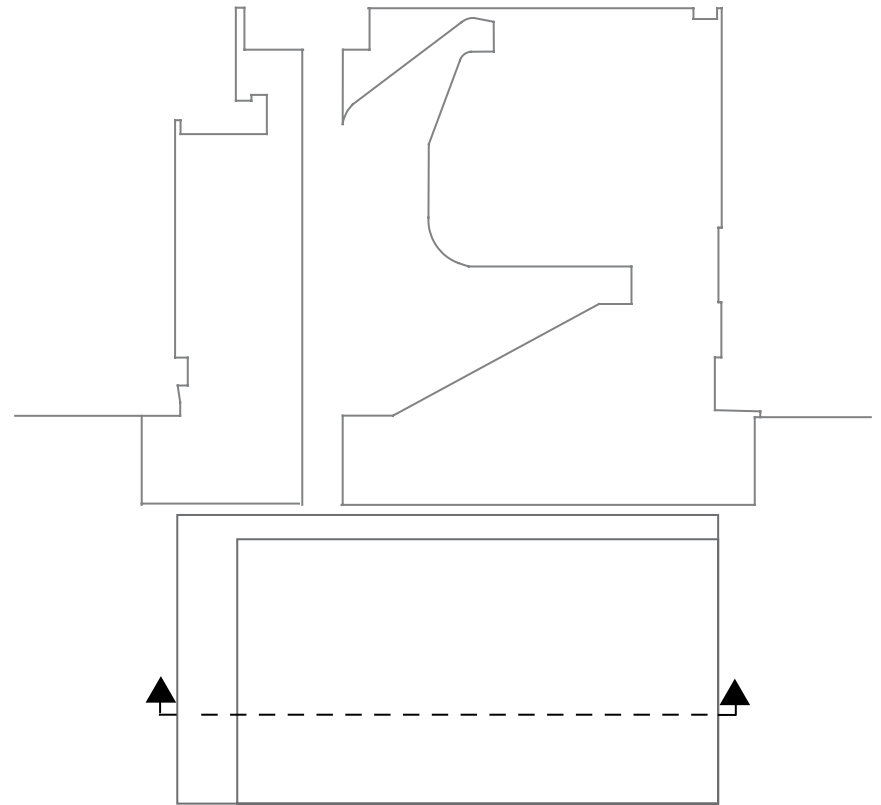


Figure 8.3

Sendai Mediatheque

“a media convenient store”

Architect: Toyo Ito

Location: Sendai, Japan

Built: 1997-2001

Cost: 146 million

Introduction

The mayor of Sendai launched a competition for a multi-program public facility. The winner of the competition was Japanese architect Toyo Ito. From its conception Ito's proposal showed the building as transparent, born from sketches he of which he first explored the form of the building. The Sendai Mediatheque was qualitatively conceptual throughout its design. Ito wanted to create a fluid space of air and light, using organic forms as structural tubes. Water, air, views and light would eventually flow through these structural voids. Although light in appearance the building was designed to withstand a four hundred year earthquake as shown in March 2011.

"Architecture expresses an extremely artificial order, so as to eliminate that order i wanted the seven levels to be simply piled on top of one another in any desired order. Going to the extreme or putting it in another way it is as if seven buildings were put together. I wanted to establish a relationship between them that was totally egalitarian...free. That is what I wanted right from the first sketch plans. I wanted to make a media convenient store."

- Toyo Ito



Figure 9.1 exterior facade sendai

<http://www.midnighteast.com/mag/?p=21111>

The Architecture

The four exterior facades of the building respond to the climate and orientation of the building on the site. The Southern facade is made of glass in order to let natural light flow through each level. The north and east facades are a dynamic combination of aluminum, sandblasted glass and polycarbonate. These walls let the eastern sun warm up the space during the winter and the north diffuse light give an opportunity to use less artificial light. The west wall which is uniformly clad in steel and aluminum is made up of a series of exits, this is done to keep the glare of the evening sun out of the spaces.

The seven floor plates measuring roughly 150' x 150' starting with the ground floor consist of the cafe reception and shop. The atrium draws in the public with its high ceiling and mostly glass walls. This street level has prolonged hours that go well into the evening providing an opportunity for the building to serve the night life. The first floor houses the children's libraries, periodicals, internet connectivity areas as well as administration. The 2nd and 3rd floors make up the main library part of the building and feature a reference library, lending library and reading rooms. The exhibition and educational gallery for citizens are on the fourth floor and above this is an exhibitions area and art gallery. Lastly the 6th floor holds a cinema, meeting rooms, administration area, as well as a viewing and lending digital media space. The interior is what is known as "multi-programmatic" has an absence of walls as to encourage spontaneous movement throughout. This gives the public the option travel many paths. Movable semi-translucent partitions such much like curtains are in place of walls create privacy but still give the feeling of openness. This openness within the architecture influences community action and collaboration. The interactive exhibitions floor plans are ephemeral in program because of the movable walls.

Within the circulation spaces a translucent and curved organic membrane material divides larger spaces. This creates a floating space where Ito wanted to emphasize blank spaces. Blank spaces which are generally emphasized in other buildings as circulation, entrances, or lobbies cause the user to walk through, consequently the space does not get used for any purpose other than a temporary exchange.

He attributed maximum function to these empty spaces to be used by the public to interact the spaces because they are empty can also be easily developed for future use. Ito explains this phenomenon "it is what exists between two columns, the void in which multiple relationships can be engendered. It is an empty space a vacuum, nothingness."



Figure 9.2 structural void sendai
<http://arshiel2.wordpress.ncsu.edu/2012/10/22/hello-world/>

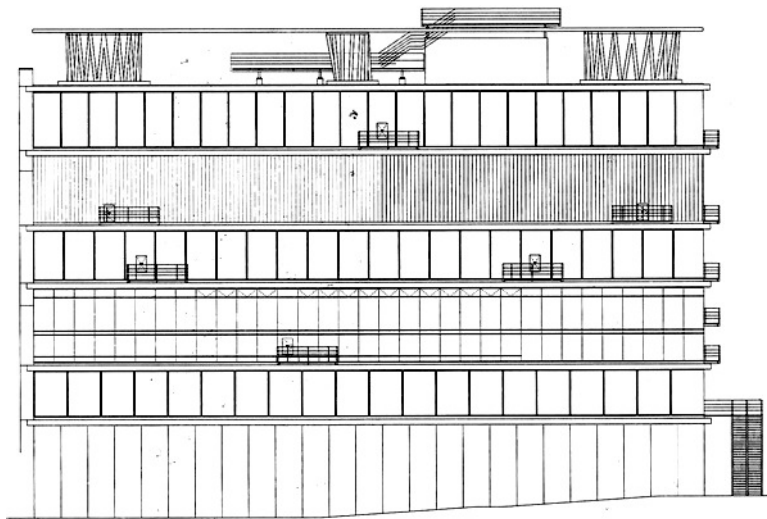


Figure 9.3 east elevation

<http://kmckitrick.wordpress.com/sendai-mediatheque-toyo-ito-kevin-mckitrick/>

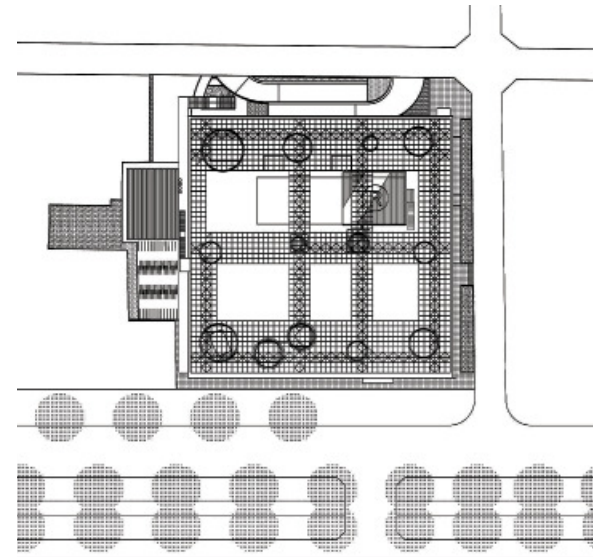


Figure 9.4 site plan

<http://openbuildings.com/buildings/sendai-mediatheque-profile-2580/media#!/buildings-media/26>

Geometry

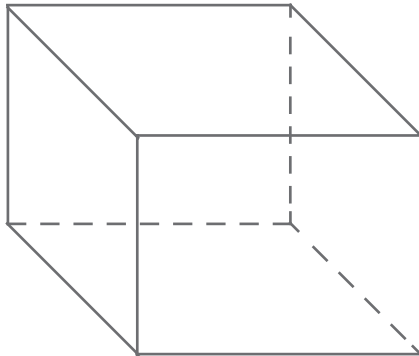


Figure 9.5

Massing

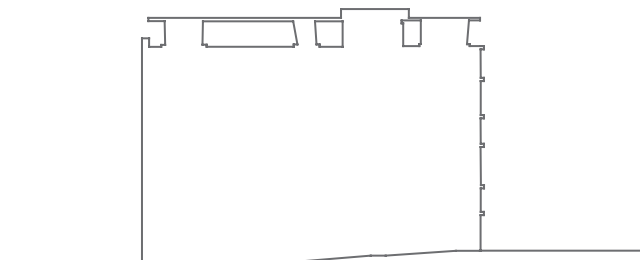


Figure 9.6

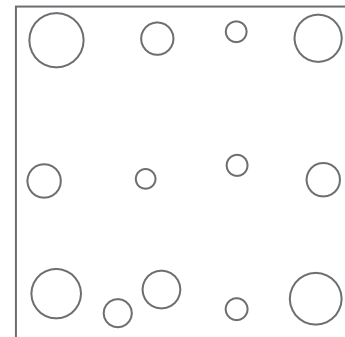


Figure 9.7

Structure

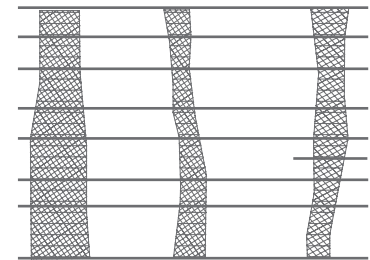


Figure 9.8

Hierarchy of Space

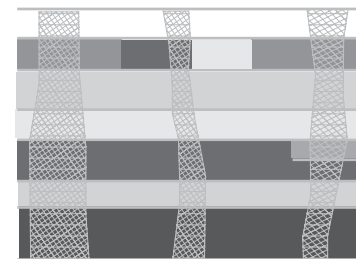


Figure 9.9

Sendai Mediatheque

Circulation

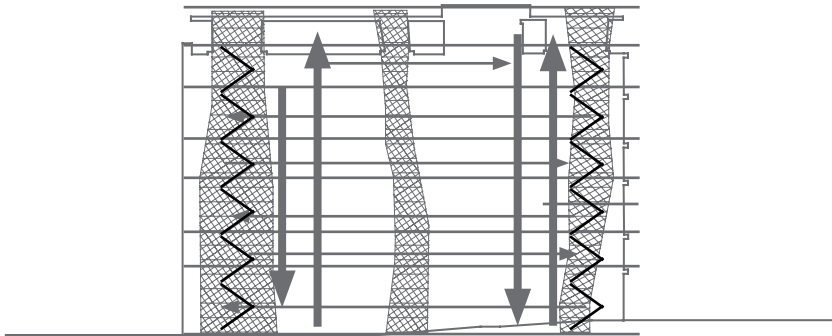
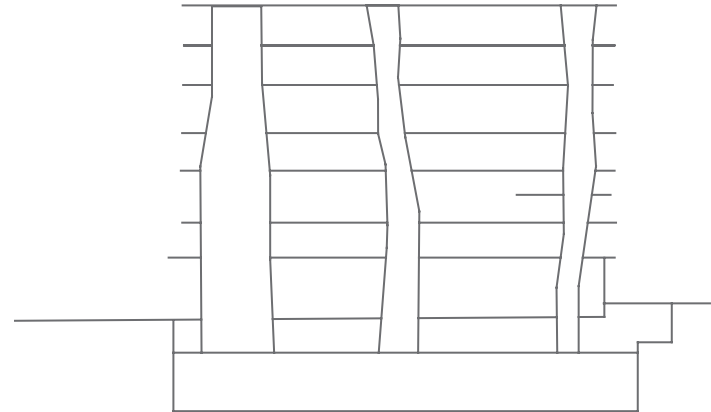


Figure 10.1

Sendai Mediatheque

Plan to Section



Direction of Natural Light

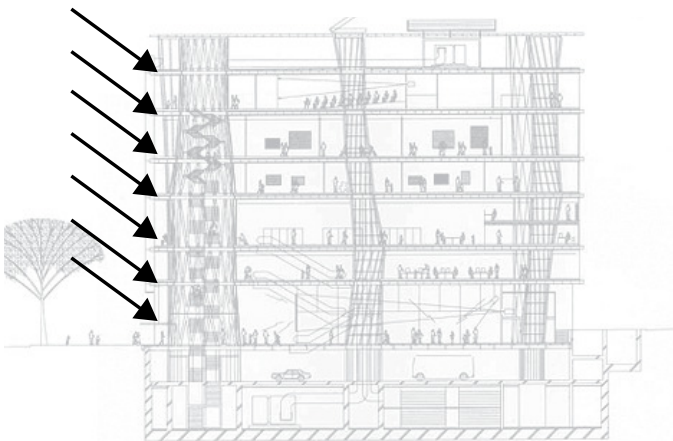


Figure 10.2

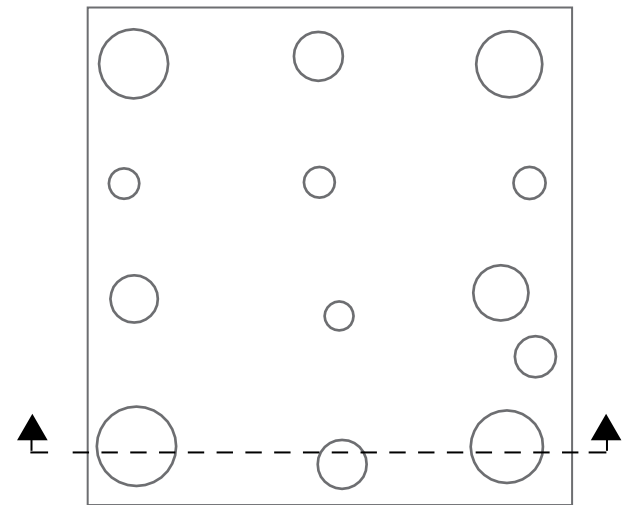


Figure 10.3

The Jewish Museum Berlin

“between the lines”

Architect: Daniel Libeskind

Location: Berlin Germany

Built: 1993-1998

Cost: 56.7 million (with inflation)

Introduction

The conception of a Jewish museum came from the need to replace the WWII era museum that had been closed by the Gestapo. The city held a competition in which 165 architects competed. The winner, young Jewish architect Daniel Libeskind. His idea for the museum originated from the blank tombstones of Jews, The VOID, of names that had been waiting to be filled. The memory that the Jewish population decimated by the Nazis still haunts the city with the overshadowing memory of the holocaust, was prominent in Libeskind's conceptual thinking. The force of the buildings form represents the scar that was left from the holocaust. After it had finished the building had remained empty for two years. During that time public opinion regarded this as the architecture that told the story instead of the contents within the building.

"These are not free spaces, these are really very ideologically derived spaces, I happen to believe that space has its own authentic capacity and it has to be linked to experience."

-Daniel Libeskind



Figure 11.1 Exterior Facade Berlin

www.e-architect.co.uk/berlin/jewish_museum_photos.htm

The Architecture

A hidden entry forces visitors to explore the perimeter, because the entrance to the museum is actually within the older Baroque building (also part of the museum) adjacent to Libeskind's design. Within the foundation of this existing museum, is the dimly lit entry which represents the history of the Germans and the Jews. Signifying the intertwined dark past between them.

The heart of the project are the three intersecting corridors, the axis'. These axis represent, continuity, exile and death. The longest axis the axis of continuity, opens onto a long staircase, with a ceiling rising from the basement to the third floor, freeing the space in only one direction, vertical. The other axis are exhibition areas. The axis of the holocaust which ends in a back door, behind it a concrete tower with a slit of day light and blank walls.

The third axis is the "axis of exile", the scenario of leaving Germany to the concentration camps, exits to outside, this leads to the garden of exile a space which contains trees encased in concrete square pillars tilted on two axis. This garden has no exit just as the camps had in the holocaust. Concrete towers placed along the axis are actually voids with skylights these towers are empty of art, or people. Except for one void which is called "the void of memory" in it are thousands of steel plates with faces stamped out of them. In order to walk through the voids visitors are forced to walk on the faces which reverberate and sound similar to cries echoing throughout a building. The remaining towers symbolize the experience that the Jews in the holocaust had. Meaning that people visiting the museum can never fully experience the space in these voids and only peer into them through windows along the corridor. Much like the difference in "real experience" and information and accounts.

The exterior is clad in zinc panels which are intended to recite and change with the elements, the facades are slashed with minimal openings for natural light. The top story which is mainly used for administration has windows around the perimeter. It houses faculty offices. The levels and their respective spaces are made up of a series as exhibition spaces.



Figure 11.2 Structural Void Berlin

<http://george-graphics.co.uk/blog/2007/04/>

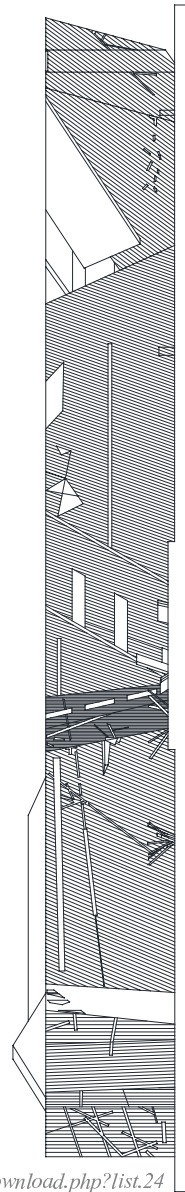


Figure 11.3 south elevation

<http://www.archsociety.com/download.php?list.24>
96

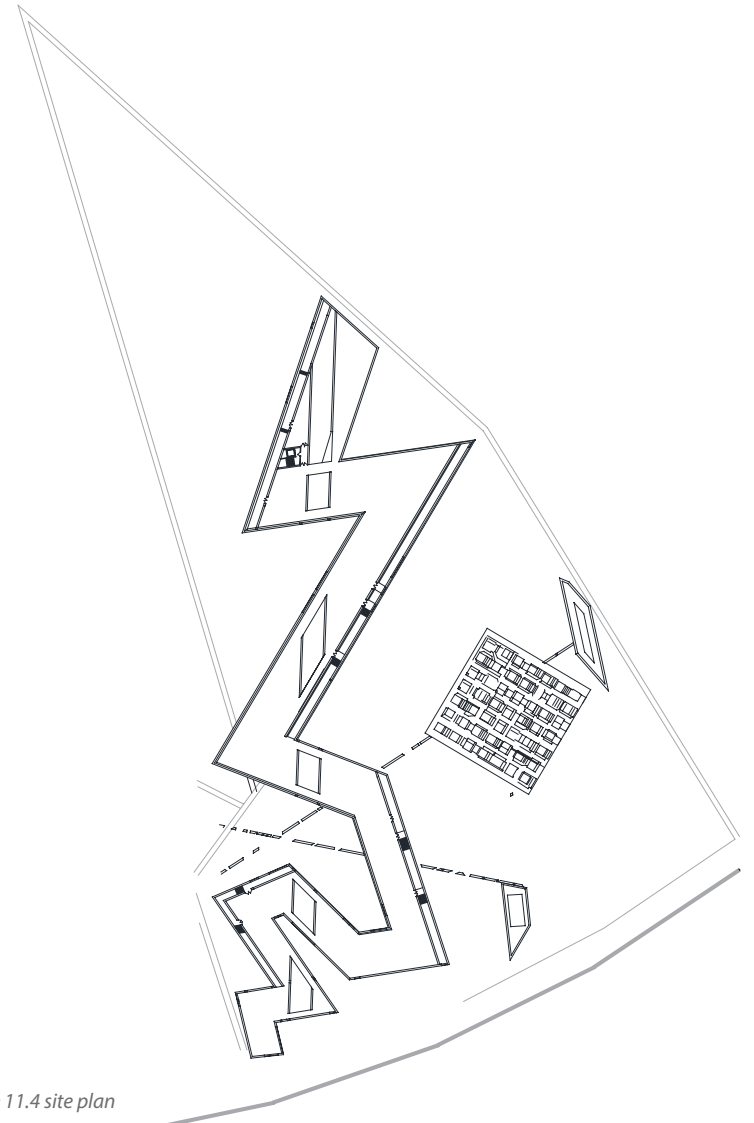


Figure 11.4 site plan

<http://www.archsociety.com/download.php?list.24>

Geometry

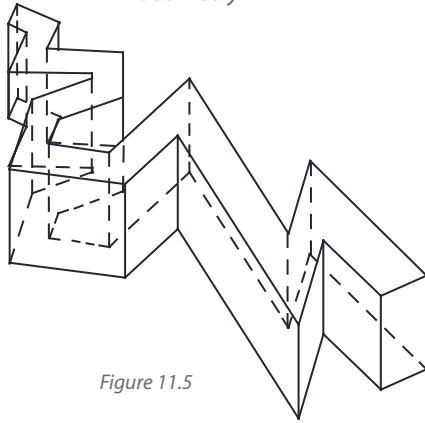
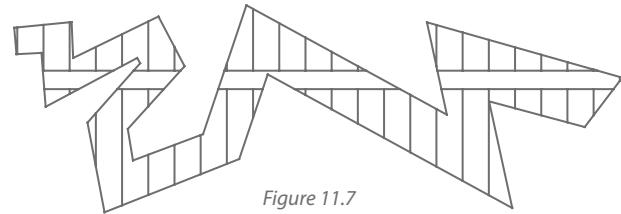


Figure 11.5

Figure 11.7



Structure



Figure 11.8

Massing

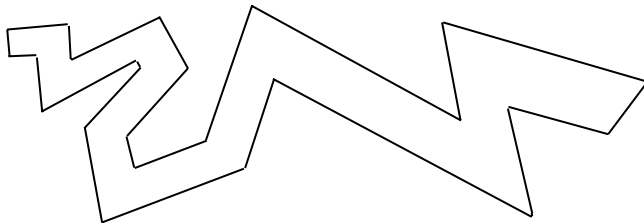


Figure 11.6

Hierarchy of Space

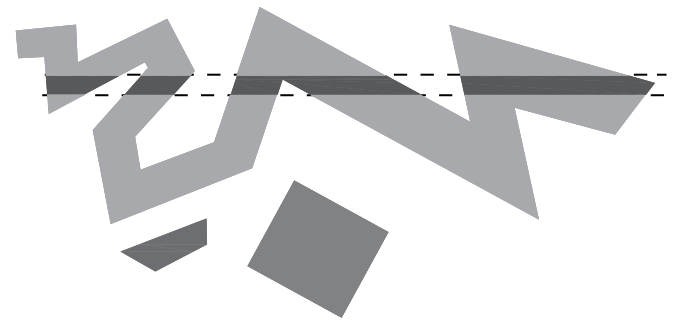


Figure 11.9

Circulation

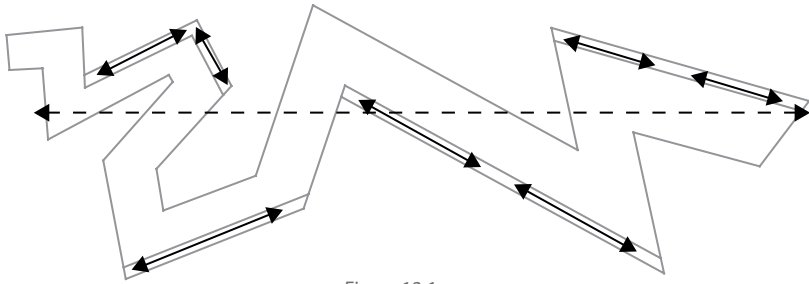


Figure 12.1

Direction of Natural Light

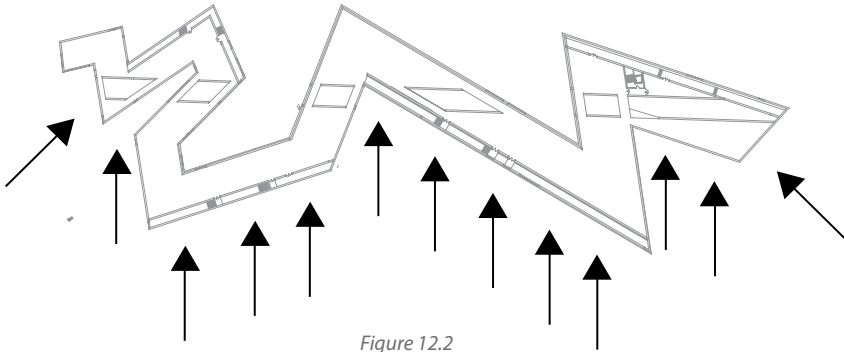


Figure 12.2

Plan to Section

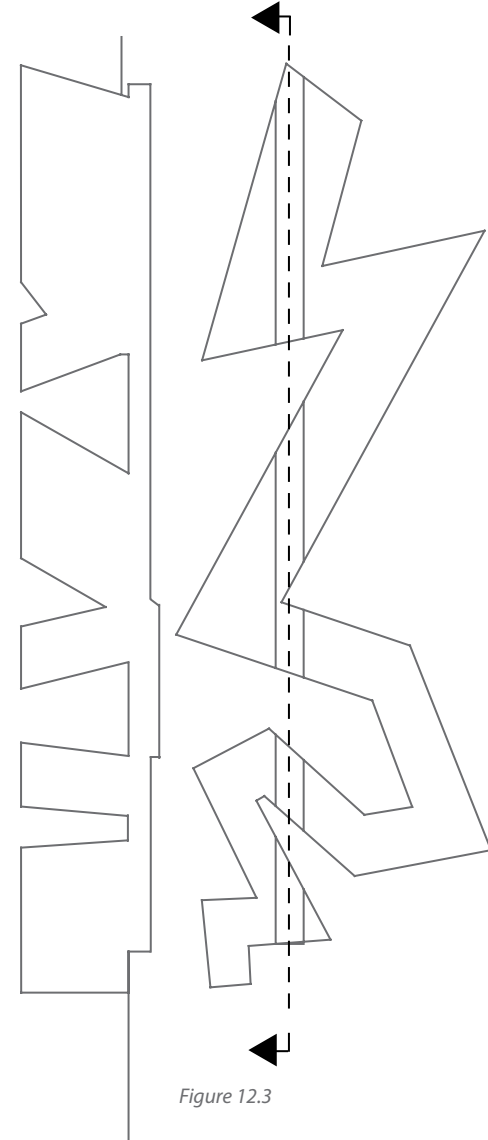


Figure 12.3

Summary

(typological case studies)

These buildings are critical in that they challenge the typology in which they are categorized, they are innovative in presence, program and concept. The buildings consequently are also designed by world renowned architects who generally are commissioned for high budget projects. Buildings of this caliber are designed to be timeless and built to last. When doing the research I was not searching for "typology" in the programmatic sense of the word but a "typology" of the idea. The idea of a socially innovative schema, the idea that buildings can facilitate interaction through sense experience.

Presence

Although the buildings are labeled differently as it pertains to "typology" they are the conceptually the same. 41 Cooper Square and its relationship to the street is centered around the idea that it receives the city instead of imposing on it. This idea is evident in The Jewish Museum's orientation on the site. The museum's long axis is oriented perpendicular to the road, giving the perception of a smaller less dominating building. This perception changes as the building presents itself reflecting on Libeskind's concept of the "haunting memory". The Sendai Mediatheque contributes to this concept of receiving the city in its facade materials facing the main city streets. The facades are transparent, giving the perception that vertical and horizontal circulation are taking place without a building. The presence of these buildings are derived from phenomenology.

Connections

The buildings differ in program because of their use, however the architects in all three buildings thought of the relationship of space and user as the foundation of the program. Mayne wanted 41 Cooper Square to facilitate interaction between the three schools as well as the buildings form and its connection to the city. The systems that were layered and combined together were derived from interaction and connection. Toyo Ito achieved this connection as well but in a slightly different way. The movable interior walls give the opportunity for its users to manipulate and customize space. This gives the notion that the user can interact with the building on a programmatic level. Blank walls and voids in the Jewish museum allow users to connect with the architecture as an artifact a "physical" memory. Libeskind wanted to create a building so different that connections to other architecture could not be made, but compassion of the holocaust could.

Concept

In the experience of moving through a space with little to no preconceived notions related to its use, one begins to realize that the space is freeing. In the buildings researched a common conceptual characteristic was found. The architects' emphasis on space as a void. In 41 Cooper Square this is the center circulation space. The structural net that defines the atrium and the main stairs. In the Sendai Mediatheque this void is present in within the structure but also the curving interior membrane walls creating spontaneous breakout spaces. The space as a void theory is also prominent in the Jewish Museum, as it conceptualizes the sense experience of memory and the feeling of emptiness. The spaces are spontaneous in access because there is not a tangible feeling of spatial confinement creating a new experience of space.

Historical Context

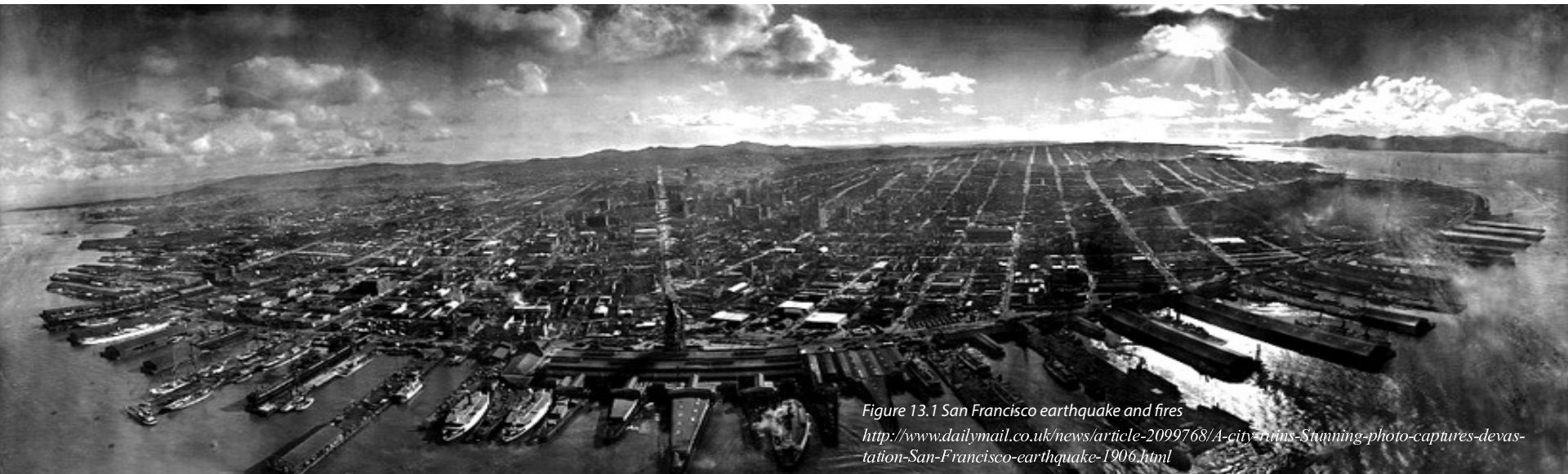


Figure 13.1 San Francisco earthquake and fires
<http://www.dailymail.co.uk/news/article-2099768/A-city-runs-Stunning-photo-captures-devastation-San-Francisco-earthquake-1906.html>

Historical Context

*The winds of the Future wait
At the iron walls of her Gate,
And the western ocean breaks in thunder;
And the western stars go slowly under,
And her gaze is ever West
In the dream of her young unrest.
Her sea is a voice that calls,
And her star a voice above,
And her wind a voice on her walls—
My cool, grey city of love.*

- George Sterling

The history of San Francisco has a profound impact on the research and building typology of this thesis. Namely because its inventive approach to solutions. San Francisco created a foundation so deep for prosperity and innovation that only mother nature can disturb. Which it has and is part of the reason for its success. Large amounts of people have called the bay home for thousands of years starting with its Native population of the Ohlone people. Later to be invaded and Christianized by Spanish explorers because of the military potential that the Spanish saw in the bay and its geographical attributes. It was because of this, San Francisco was born, (*although not incorporated by the United States until during the gold rush in 1850.*) (Rand,R. 2007).

The Gold Rush

The first event that solidified San Francisco as a destination for reverie and success. Pioneers, young Americans, families, and people from all over the world of different ethnicities came to the bay area in search of prosperity. The population went from 1000 people in 1848 to 25,000 in 1849 and 300,000 by 1890. San Francisco had become the eighth largest city in the United States and had already made a name for itself with its distinctive aesthetic character, Victorian style houses and artistic scene. (Rand,R. 2007).



Figure 13.2 Russian Hill Views
photo by Taylor Dahl

This exponential population growth combined with its island like geographical characteristics made it difficult for the city to plan accordingly and as a result created a diverse cultural population with walkable roads, dense housing, parks on top of hills, multiple neighborhoods and a strong sense of community. This forced city planners to become innovative and inventive with how the city was planned going forward. The cable car was born. (Rand,R. 2007).

San Francisco Cable Cars

In 1871 cable cars were invented by Andrew Smith Hallidie to transport the citizens of San Francisco up and down its 47 hills. The first American city to develop an efficient mass public transit system the "city by the bay" was still developing its reputation for being a pioneer for progress and mandatory innovation. The rest of America and parts of the world would soon follow. Less than 40 years later the city would have to rebuild its public transportation system. (Rand,R. 2007).

Earthquake and Fires

In April of 1906 a 7.8 magnitude earthquake devastated San Francisco toppling buildings and crushing gas and water lines. As a result the city went up in flames, 30 fires could not be contained and over a course of a few days 80% of the city was destroyed and San Francisco rebuilt in less than ten years. This natural disaster essentially catapulted San Francisco's infrastructure, and the ensuing construction, rebuilding of cable car lines, water reservoirs and aqueducts created the foundation for a city built for growth. Efficiency and innovation followed. A city that literally rose from the ashes would eventually define itself as a place holder in the world economy. It became a premiere financial capital and even during the "Great Depression" not one San Francisco bank had closed. (Rand,R. 2007).



Figure 13.3 earthquake and fires
http://en.wikipedia.org/wiki/File:San_franisco_1906_earthquake.jpg

Sense of Community

San Francisco's historic pedestrian responsive quality is partly owed to its citizens of the 1950s and 1960s. Their opposition to an imposing freeway plan that had been intended to snake through and over multiple neighborhoods. This opposition mostly contained circulation back to the city streets. Thus maintaining the city's walkability and keeping the vistas of San Francisco within view for its citizens while commuting. As some would maintain, opposing the idea of a freeway is counterintuitive to the progress of the modern city, these citizens foresaw that catapulting high traffic and high speed circulation for automobiles would have many unintended consequences in the future. As a result, San Francisco is now the second most walk-able city in the United States, trailing New York City by only four points.(walkscore.com)



Figure 13.4 pedestrian space
 photo by Taylor Dahl

Silicon Valley

California based companies, namely Apple and Google are largely responsible for what is now known as the digital age. This has had profound impact on the young tech start ups and entrepreneurs of San Francisco. Resulting in multiple innovative companies with their foundations in San Francisco. We could say that the digital age started in the early 1980s when the internet was developed, but at that time, computers were still similar to going to a library and finding information. The combination of the personal computer and now smart phones, combined with the ability to connect and communicate over the internet gave access to information in mass quantities. This has become known as "the age of information." Where the population has access to large amounts of information, articles, research and tutorials. This has brought on a new age "the age of autodidacticism" the age of DIY, of teaching ourselves. Consequently these devices along with social media has also expedited self importance and narcissism.

Social Media

Three phenomena occur within the social media culture. One being, the sharing of widespread world events, social injustice, and open source collaboration. Some take advantage of this. The second phenomenon, is the idea that commenting , sharing or liking on social media outlets makes the user feel as if they are important and taking part in a movement, but doing little else. They are in the comfort of their home or office and the real lived experience in taking part in bettering the community or even themselves is denied because of this easy outlet. Lastly social media, can lead people to live two lives, one life which is the real lived experience with real human interaction and the other which is solely an informative dynamic because it is filtered by only one facet, via the digital screen. (Inskeep.S 2011)

The constant barrage of social media as an entertainment source is actually evidence of a nation with a strong economy and also a comfortable well being but eventually the nation in which this phenomena occurs becomes stagnant when referring to social innovation and progress because of the lack of real lived experience and face to face connectons.



Figure 13.5 students with laptops
<http://www.thetextbookguru.com/2011/05/>

Project Goals

After having done the research, analysis and the answering of questions developed with reading and writing more questions arise. Some of which are broad in spectrum. What is the point at which, when our resources start to diminish, our citizens keep their ignorance, our economy keeps driving forward, our population continues to exponentially increase? Who will solve these problems in the future? The "future problems" discussed in the research. What will the schools, libraries, museums and other educational buildings look like? How will the architecture present itself when created from the primacy of perception, an unaltered notion of architectural elements that cause the user to release preconceived notions of the school, the library and the museum? How can the perception of the space be used to reveal the user's inner drive. How can the space impose a sense of reflection or memory? Memories not in the sense of images and thoughts, but intrinsic memories that have shaped our personality, and become part of our body. These ingrained experiences that have made an impression on us never leave, but I believe can change, by moments in space that are new. New, not in the sense of something new, solely in its existence but newly adaptable to sense experience. These questions and many others will inevitably present themselves during the process of the design and many only answered through the diagrams, drawings, and models.

From the conception of this thesis I wanted to start my understanding of innovation as it pertains to social progress not just new technology. I wanted to look into revolution as innovation, by changing and improving the ways in which we learn and interact in a public space. I want to challenge the outdated education system to evolve with the new age, to give up seemingly obsolete curriculums and teaching methods. To change its program to fit a more didactic approach. I want to redefine the library as a derived innovative public space for collaboration as well as a place to study and browse. I want these buildings to be similar to a museum, to inspire, to look at knowledge as a historical artifact that we can indeed grasp. I want the architecture to be a place where people want to go to. Where the public can reflect, learn and organize. An architecture that can manifest as "a factory for ideas" creating a relationship with the building, site, city, and public that redefines public space. I want to embrace the technology of the personal web device and social media to change our attitude on its setbacks and explore its ability to serve as a tool for learning. To combine social media and the personal web device with peer to peer interaction by blurring the boundary that they create. I want to use architecture to explore the separation between the virtual and the real. To see if sense experience, digital medium and spontaneous spaces create a dialogue. These are my goals.



Figure 14.1 site panorama
photo credited to Olivia Baker

Qualitative

Social Context

The importance of the site as it relates to places of interest, i.e schools, libraries, museums, has a symbiotic relationship with the surrounding community that will utilize the facility. The surrounding area which is a collection of neighborhoods notable for being diverse in socioeconomic class will benefit hugely because of the site location, context and views. Within the larger framework of thought, the decision for San Francisco as the seed for this concept is the realization that only an purposeful assembly of enlightened people can initiate social change. We have experienced the school that lectures from a curriculum, the museum that features expensive art that we cannot touch, and the library with most of its square footage covered with book shelves. The Russian Hill open space is one of the few open spaces owned by the city of San Francisco, this presents the opportunity for a revolutionary innovation to surface again with the people of San Francisco being its medium for discovery.

Vicinity

The infrastructure that surrounds the site is design to support the needs of eight San Francisco neighborhoods. As well as the traversing tourists that visit Fisherman's Warf, Lombard Street, Ghirardelli Square, and the Cable Car systems, which pass directly by the site on Hyde St. Buildings similar in typology were research in more depth in the "case studies" portion of this thesis, but some local typologies were picked out to give context. Some museums near the site include, The San Francisco Maritime Museum, and The Museum of Ophthalmology. Some libraries close to the site consist of, The Ann Bremer Memorial Library which is located two blocks to the east on the second floor of the SF Art Institute and the North Beach Public Library located four blocks north east of the site. Some notable schools in the immediate area are as follows: The Galileo Academy of Science and Technology, Yick Wo Elementary and Sherman Elementary.

Views

Russian Hills most prominent visual advantages are its views of the San Francisco Bay, these include the Golden Gate Bridge, the Marin County Headlands, Presidio Park, Alcatraz Island, and Berkley. A mix of modern and Victorian style architecture surround the site to the North, East and portions of the West. Giving this site a great composition of nature and historical architecture.



Figure 14.2 Golden Gate

photos credited to Olivia Baker



Figure 14.3 Alcatraz

Sounds

The combination of the site's geography, business, recreation, tourist single family and multfamily buildings present moderate street traffic noise comming mainly from the corners of the site. The historical street car line, traffic and the bay make the Russian Hill site a common San Francisco sound experience. Russian Hill, notorious for its steep slopes, integrates many stairs for pedestrians as well as a pedestrian designated street making pedestrian and biking activity, in and around the site moderate as well.

Quantitative

The site is situated on 4.2 acres at the mid slope of Russian hill, it holds the Russian hill Reservoir and is collectively known as the Russian Hill open space . In the past, the Reservoir which was built in the mid 1800s held water from nearby Mountain Lake. Over time it had deteriorated and became obsolete in the 1940s. The site is fenced in and unused except for the northern portion of the site which is now zoned as "public open space". Approximately 2 acres to the south of the Russian Hill Open Space will be considered for use in this project.

Light

As you can imagine the sunlight and shadows change with the time of day and with equinox and solstices. These diagrams are further illustrated at the end of this chapter. During the two site visits September 2012 and December 2013. The natural light towards the center of the site is clear of shadows for a large portion of the day. The south portion is shaded by the large apartment building that borders the site and the Northern portion of the site(park) is shaded by the topography and multiple trees and vegetation. Street lights are placed around the perimeter at approximately every 200 ft giving the area modest light pollution but may have to be investigated for security purposes.

Wind

The topography and many hills of San Francisco present the phenomenon of sub micro climates which vary in temperature, cloud cover, and wind speed. The site located on the northern slope of Russian Hill takes advantage of the diffused warmer southern breezes and the cooler northern breezes. This was part of the decision for site location because of the opportunity for passive cooling and ventilation.

Soils

The soil composition varies slightly underneath the site's surface, towards the north the soil is categorized as soft rock as the site slopes downward the soil begins to include stiff clays and sandy soils. All soil types are deemed stable as per the United States Geological Survey .
Borcherdt, R.D 1999

Vegetation

Vegetation on the site is categorized as Conifer, Woodland and shrub. The majority of the vegetation, is in the form of coniferous trees located to the north of the site, shading the existing park. Around the northern perimeter shrubs and woodland type species of trees, this vegetation is mainly present because of the lack of maintenance and the obsolete reservoir in the center of the site. None the less the vegetation on this part of the hill create an intimate environment when juxtaposed against the city background.

Utilites

The open space on Russian Hill has since its foundation been an open space that had held a reservoir. The unused water line leading to the reservoir still exists but other utilities do not run through the site. However utilities such as electricity, fibre optic, water and gas can be pulled from the existing lines running under the surrounding city streets.



Figure 15.1 Photo Map 1
photos credited to Olivia Baker



Figure 15.2 Photo Map 2
photos credited to Olivia Baker



Figure 15.3 Photo Map 3 photos credited to Olivia Baker

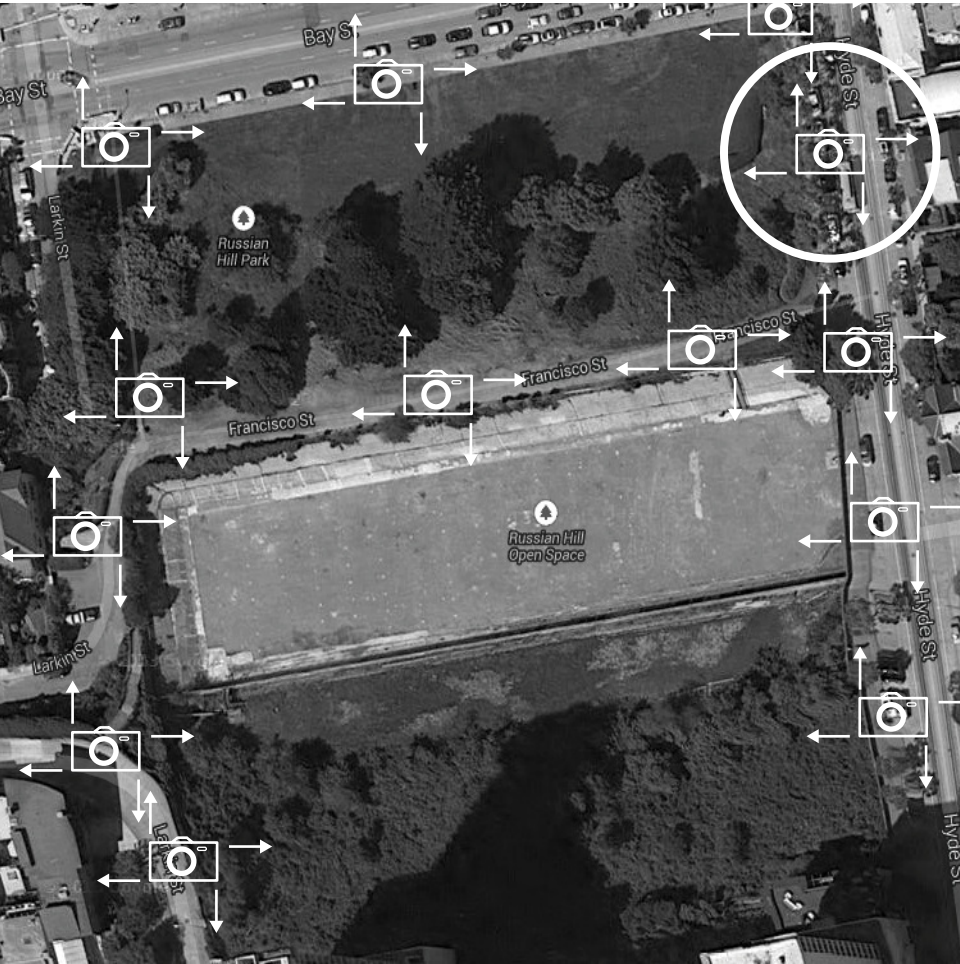


Figure 15.4 Photo Map 4
photos credited to Olivia Baker



Figure 15.5 Photo Map 5
photos credited to Olivia Baker



Figure 15.6 Photo Map 6
photos credited to Olivia Baker



Figure 15.7 Photo Map 7
photos credited to Olivia Baker



Figure 15.8 Photo Map 8 photos credited to Olivia Baker



Figure 15.9 Photo Map 9
photos credited to Olivia Baker.

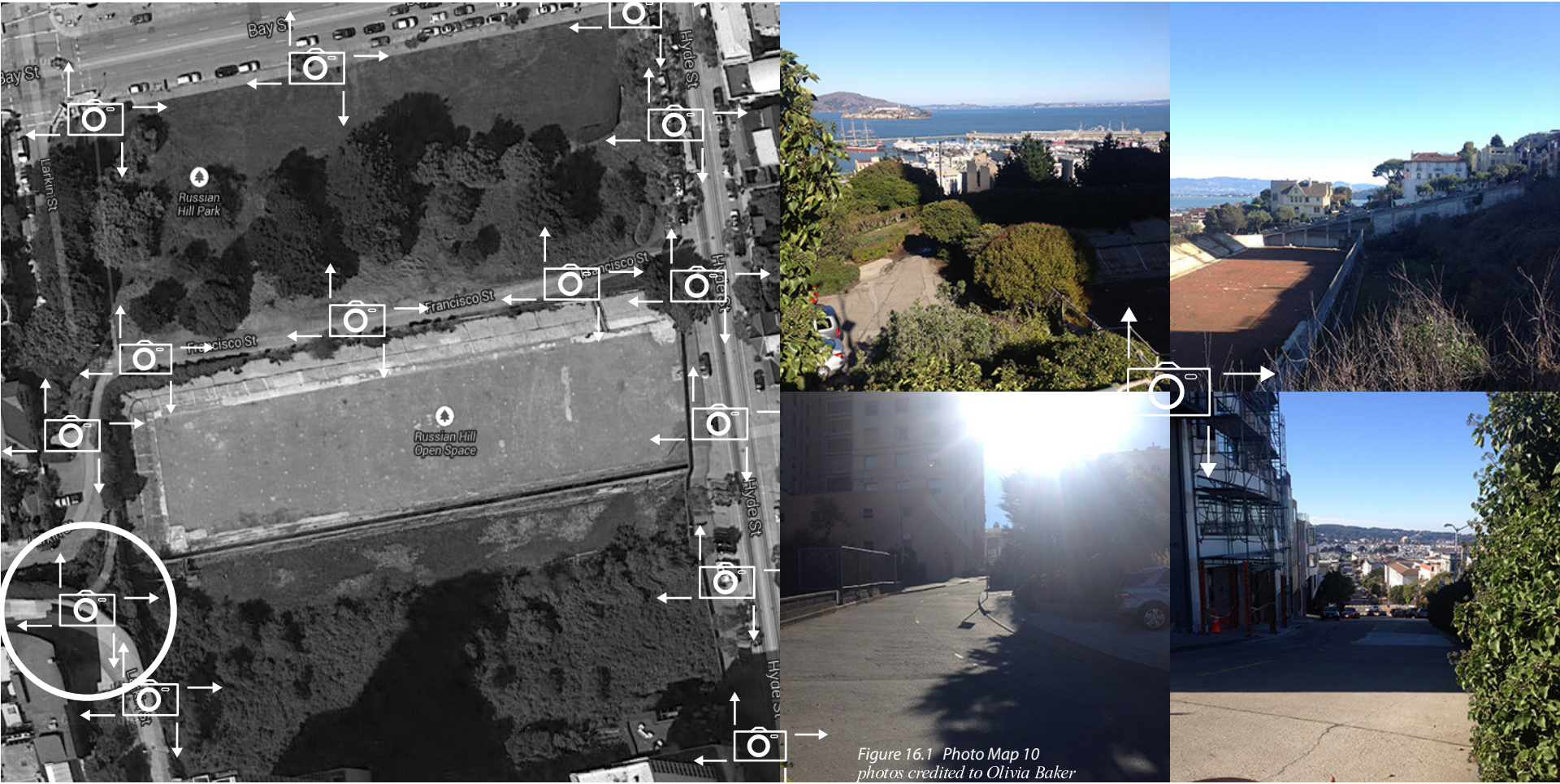


Figure 16.1 Photo Map 10
photos credited to Olivia Baker

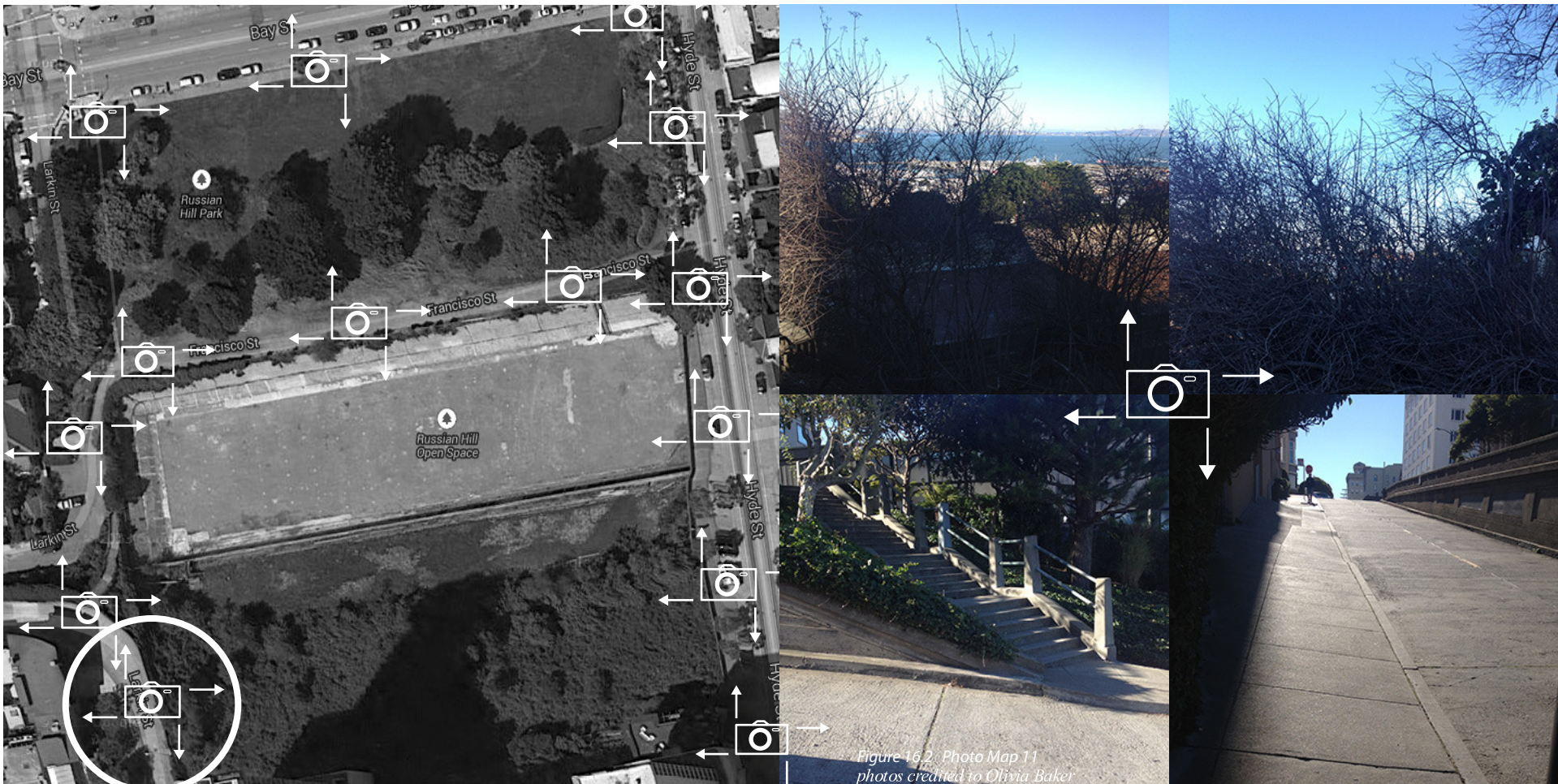


Figure 16.2: Photo Map 11
photos credited to Olivia Baker



Figure 16.3 Photo Map 12
photos credited to Olivia Baker

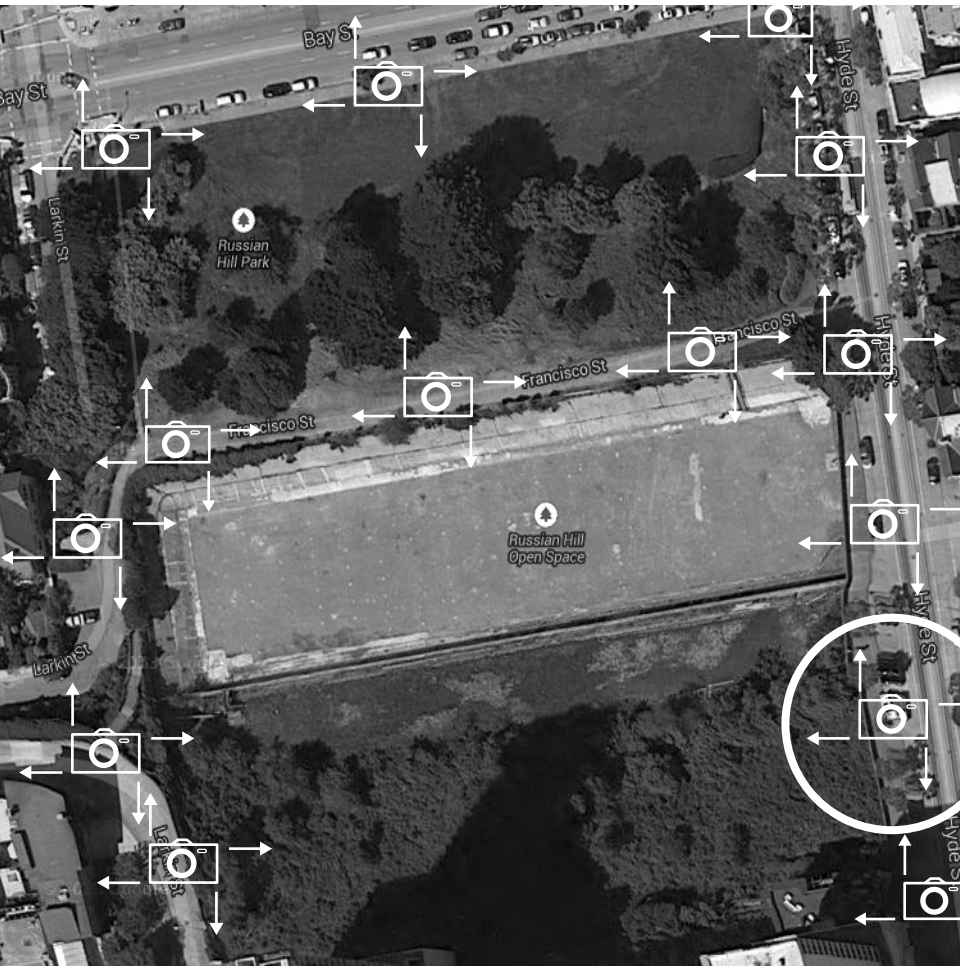


Figure 16.4 Photo Map 13
photos credited to Olivia Baker



Figure 16.6 Site Map
<https://www.google.com/maps/place/Russian+Hill/@37.8037211>



Figure 16.5 Photo Map 14
 photos credited to Olivia Baker

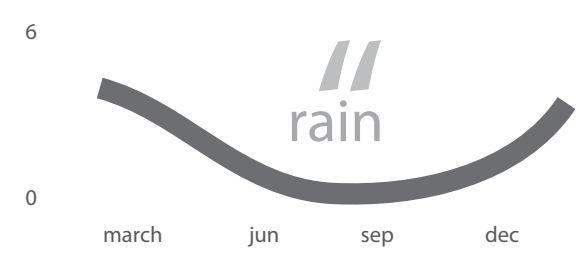
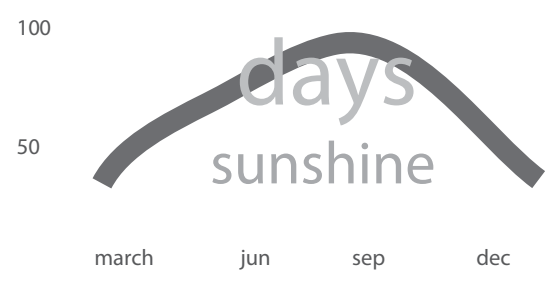
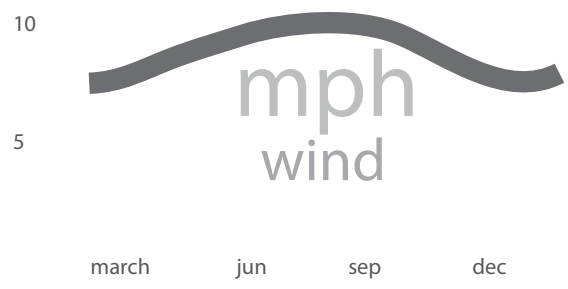
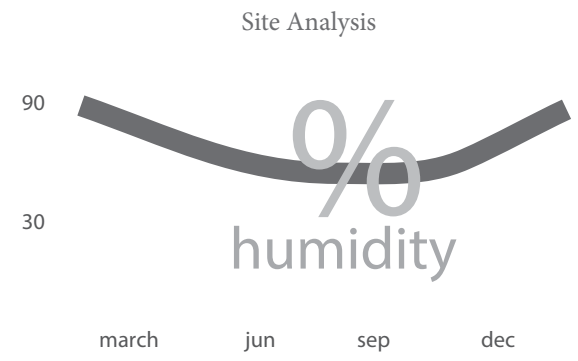
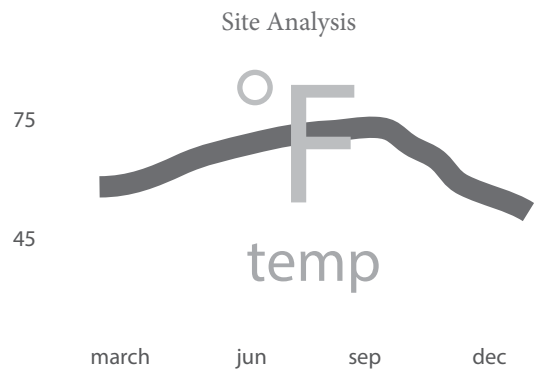


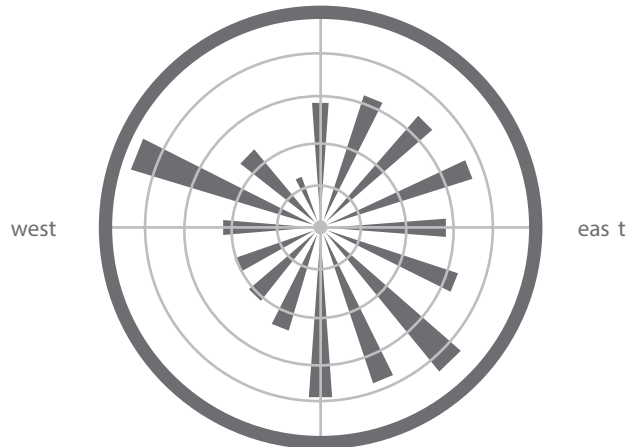
Figure 17.1
150

Wind Rose

Site Analysis

December

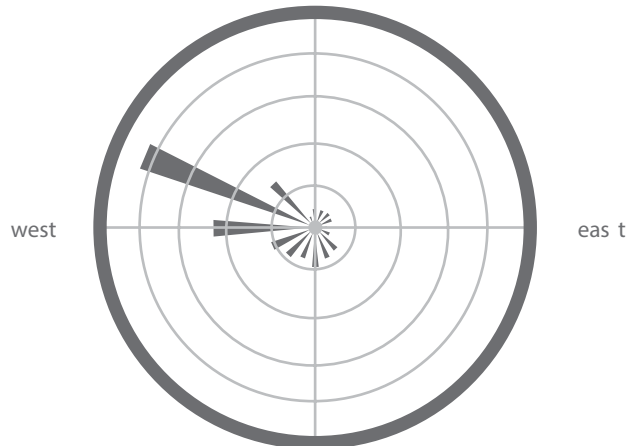
north



south

March

north



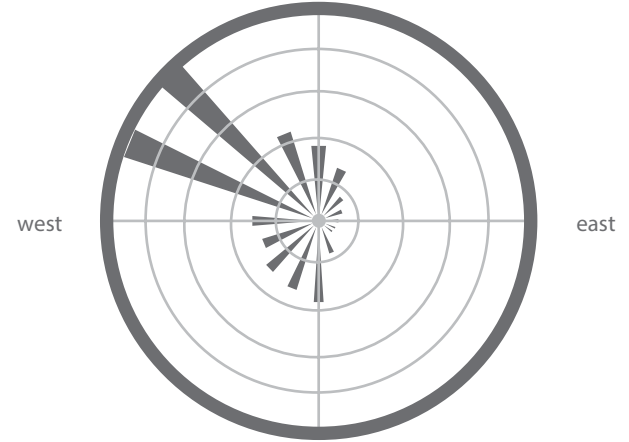
south

Wind Rose

Site Analysis

September

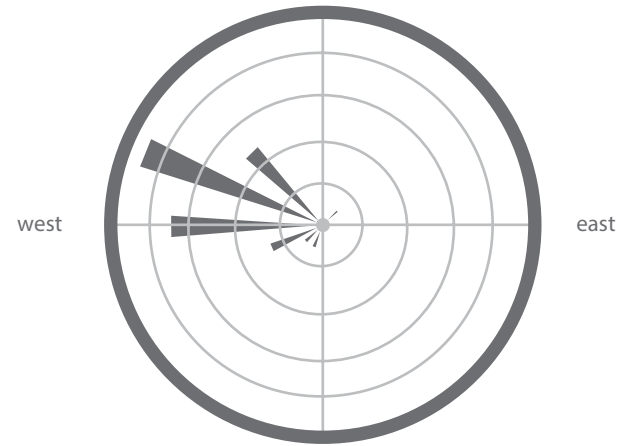
north



south

June

north



south

Figure 17.2
152

Site Analysis

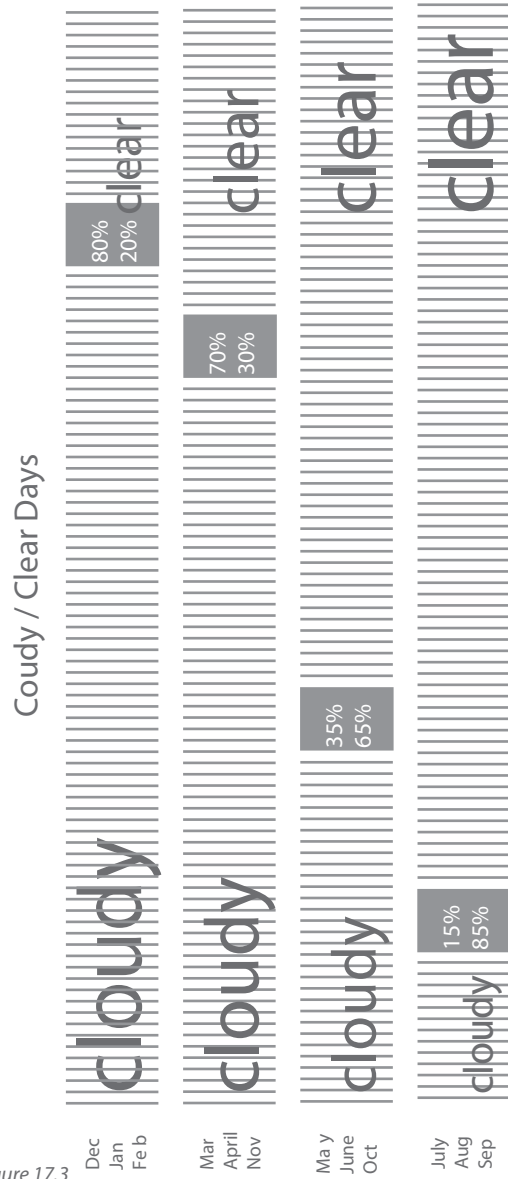


Figure 17.3
154

Site Analysis

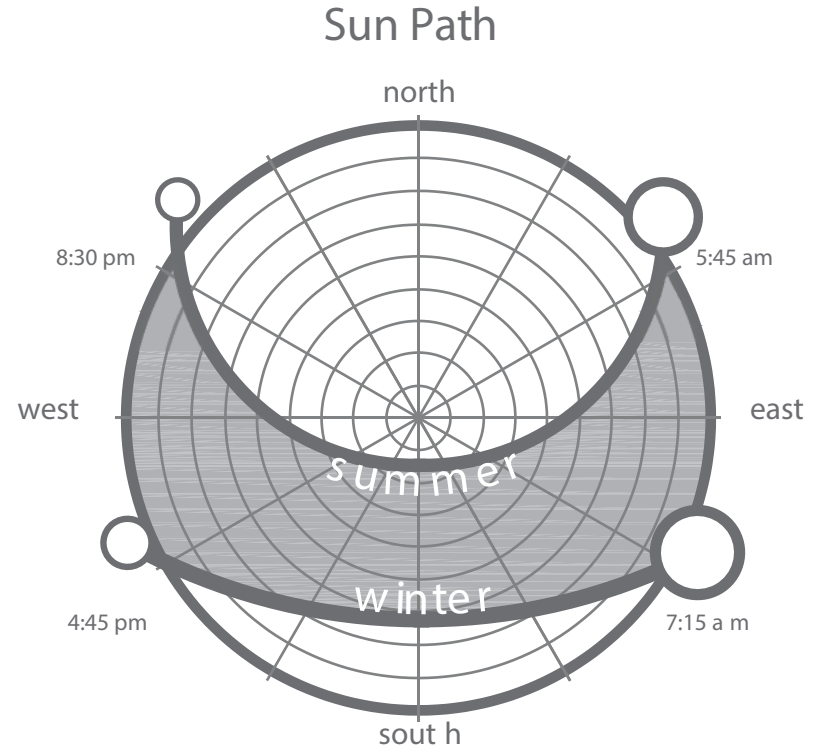


Figure 17.4

Site Analysis

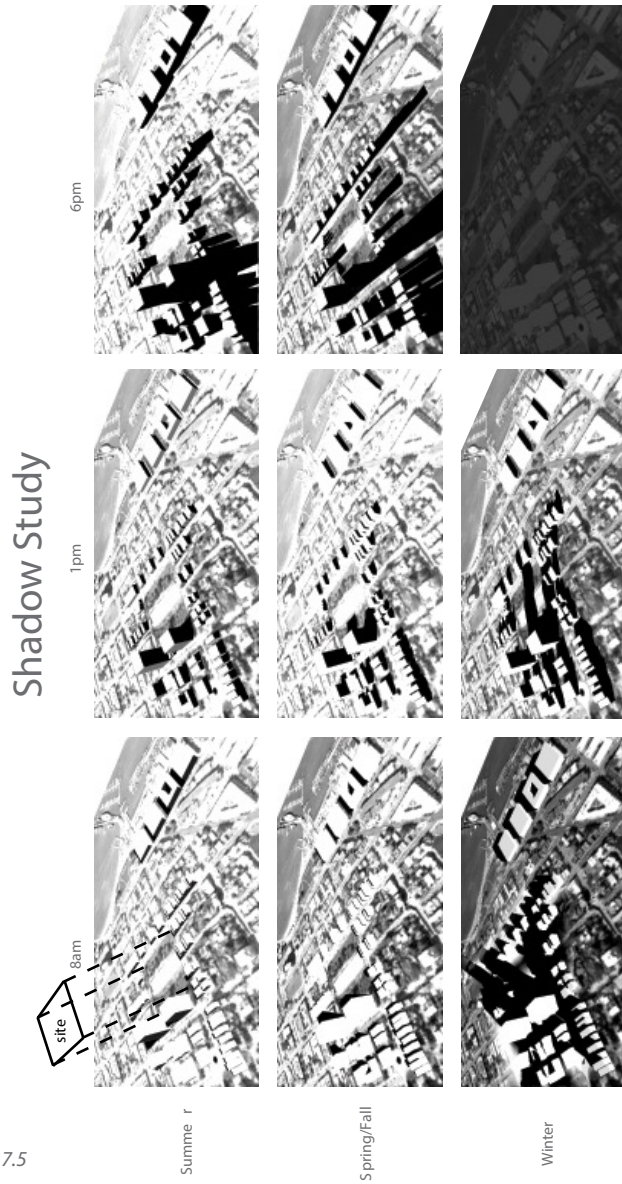


Figure 17.5
156

Site Analysis

Site Topography



Figure 17.6

Site Analysis

Air Movement

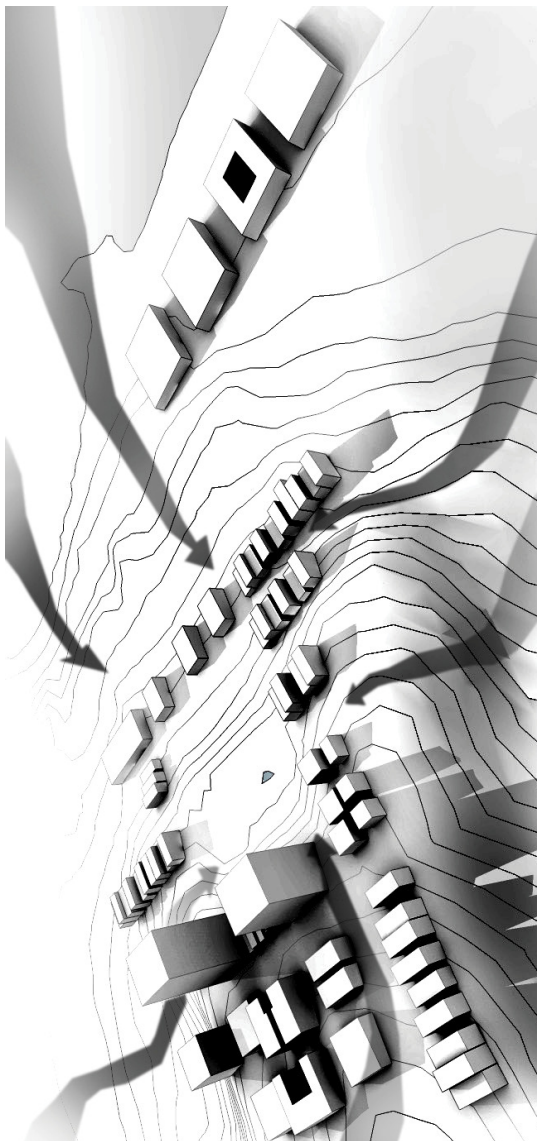


Figure 17.7
158

Site Analysis

Noise



Figure 17.8

Building Program

Space Allocation

circulation	10,000 sq f t
entrance/lobby	1,000 sq f t
research spaces	5,000 sq f t
food court	2,000 sq f t
staff offices	2,000 sq f t
lockable storage	5,000 sq f t
rest area	2,000 sq f t
interior alcoves	10,000 sq f t
exterior alcoves	10,000 sq f t
staff work room	1,000 sq f t
workshop s	5,000 sq f t
studio spaces	10,000 sq f t
amplitheatre	4,000 sq f t
digital interaction area	10,000 sq f t
nodes	3,000 sq f t
restroom s	3000 sq f t
mechanical	8,000 sq f t
building	88,000 sq f t
parking	15,000 sq f t
total	103,000 sq f t
site	196,020 s q ft

Interaction Matrix

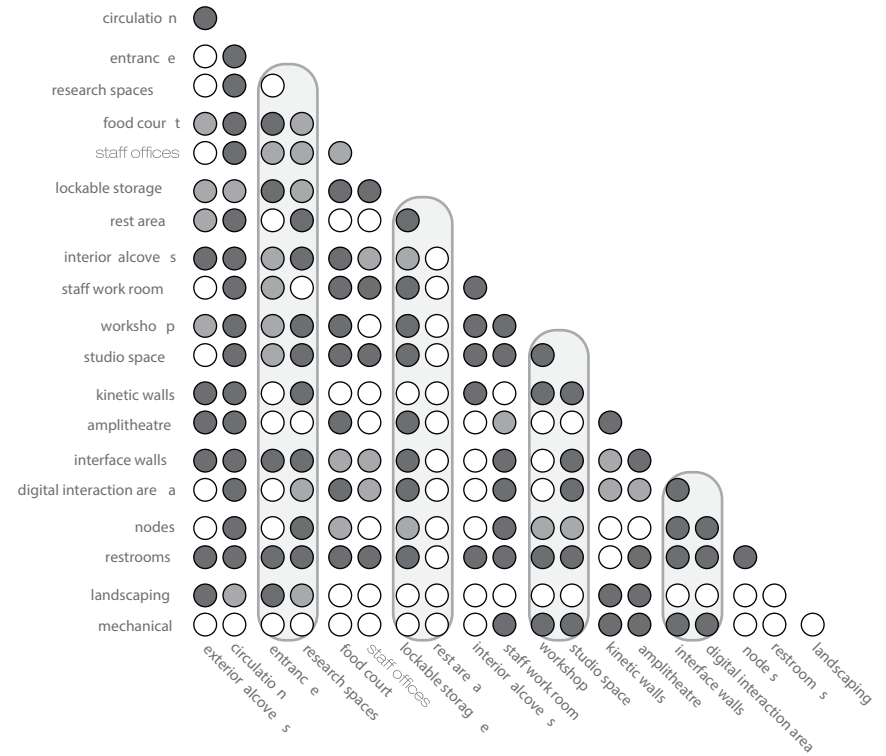
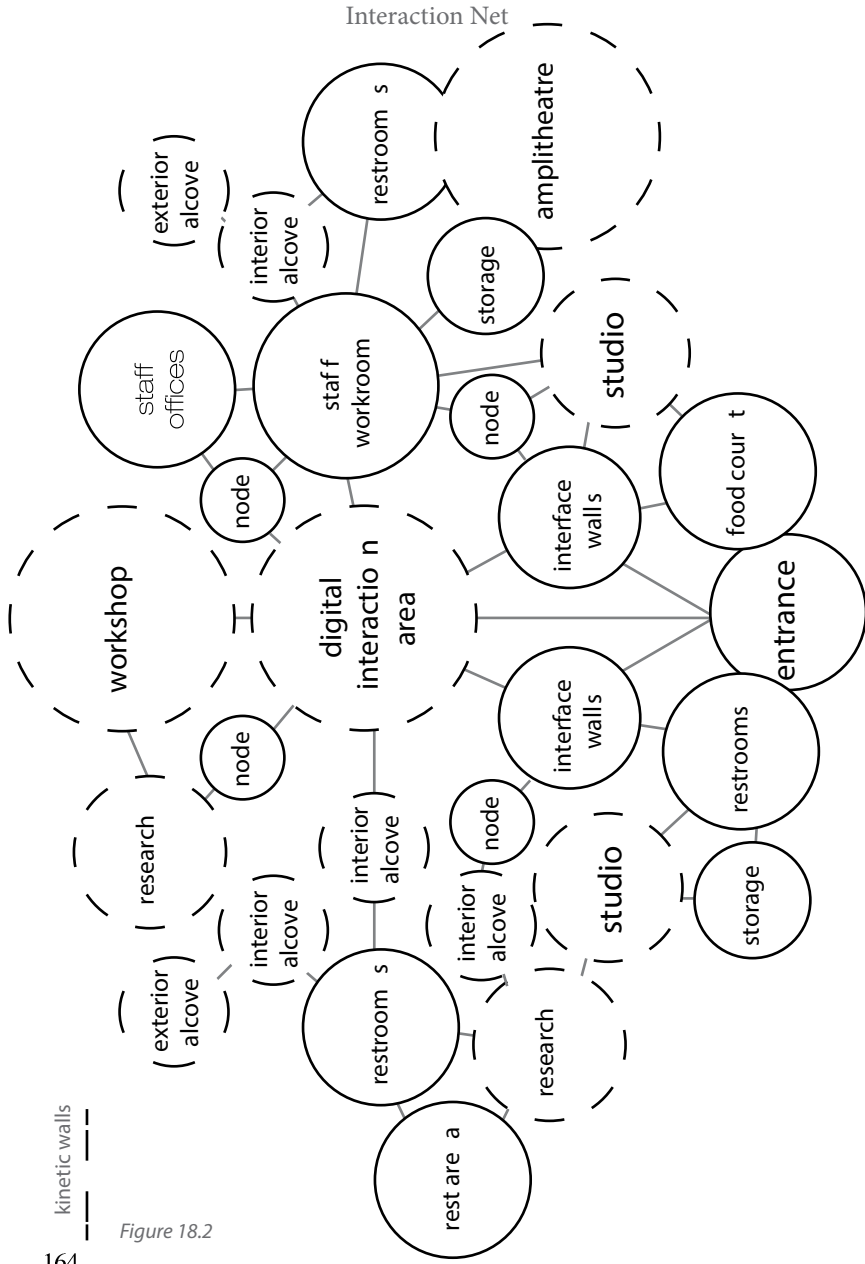


Figure 18.1

Figure 18.2



Concept to Form

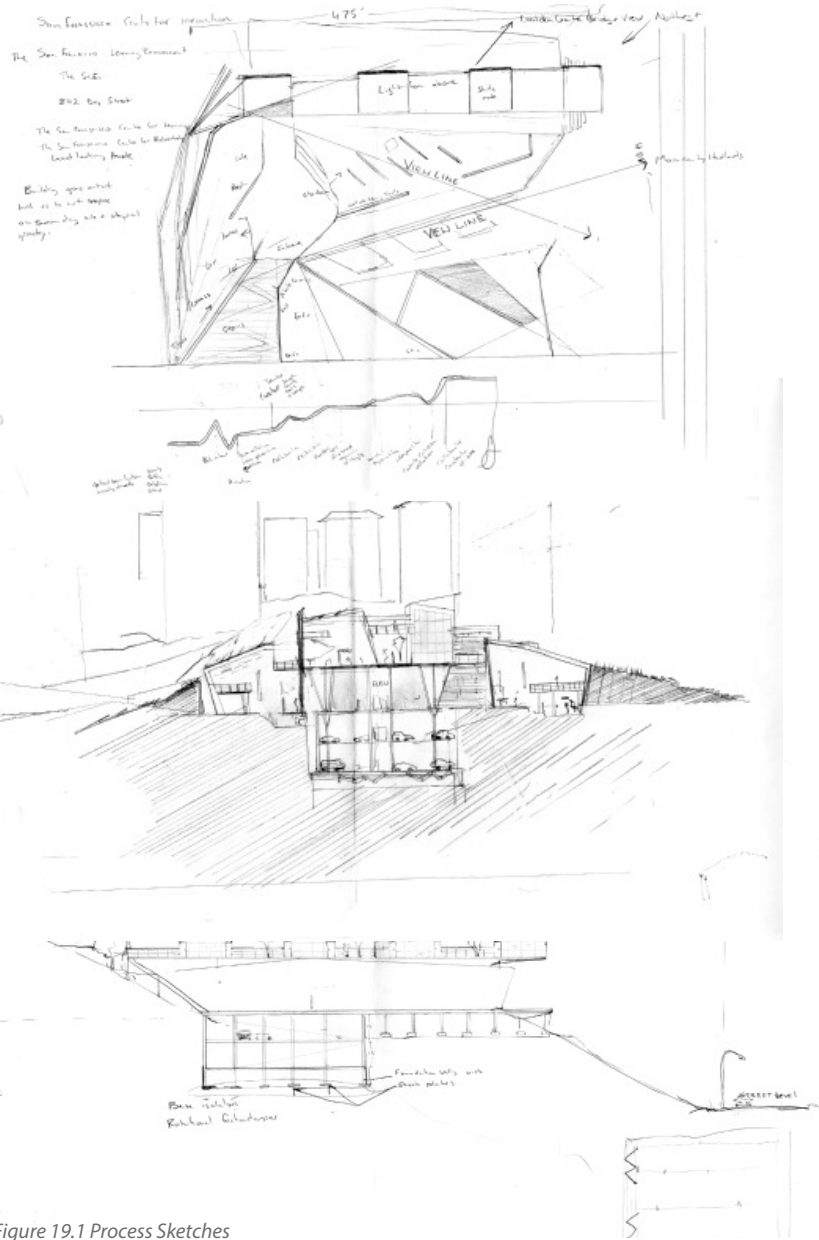
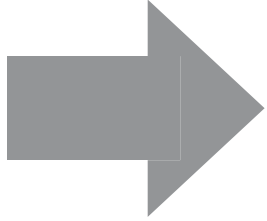


Figure 19.1 Process Sketches
168



Figure 19.2 Process Models

THE HIERARCHY OF INNOVATION



THE SAN FRANCISCO CENTER FOR INNOVATION

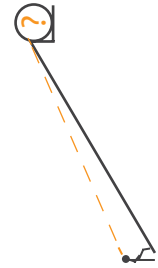


Figure 20.1



Figure 20.2

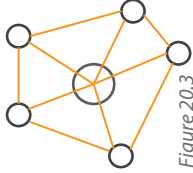


Figure 20.3

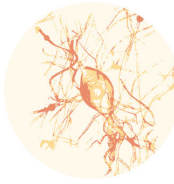


Figure 20.4

Illustrated above are research derived diagrams. The diagrams emerge as four main indices that lay the foundation of the process of design. The site which is the other integral part of the design will be explained as well.

They are from left to right: The materialization and psychology of motivation and how its diagram can develop into architecture. The index of a collaborative educational model, illustrating the convergence of two ideas translates into multiple iterations. The third diagram shows how sense experience as described by multiple philosophers is a holistic experience, involving all of our senses. Lastly is a diagrammatical mapping of our neurons, visualizing the connections that we make when we learn. This translates into our society as “the brain”. This abstract thought is to challenge the individual approach to learning by showing that as a society we are a complex net of individuals that need to collaborate “connect” in order to reach the full potential of a collaborative self actualizing society.



Program

Separate

Replace

Integrate

Separate

Structure

Redevelop

Figure 20.5 evolution of form

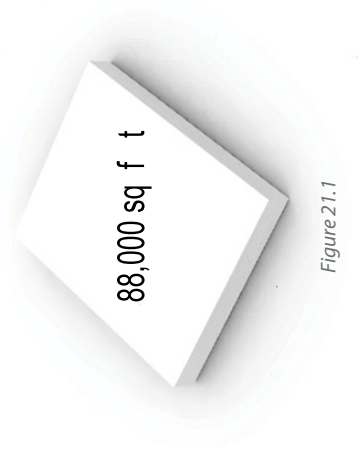


Figure 21.1

PROGRAM



Figure 21.2



Figure 21.3

PROGRAM INTEGRATED INTO TOPOGRAPHY

The San Francisco Center for Innovation

STRUCTURE



Figure 23

PASSIVE SYSTEMS

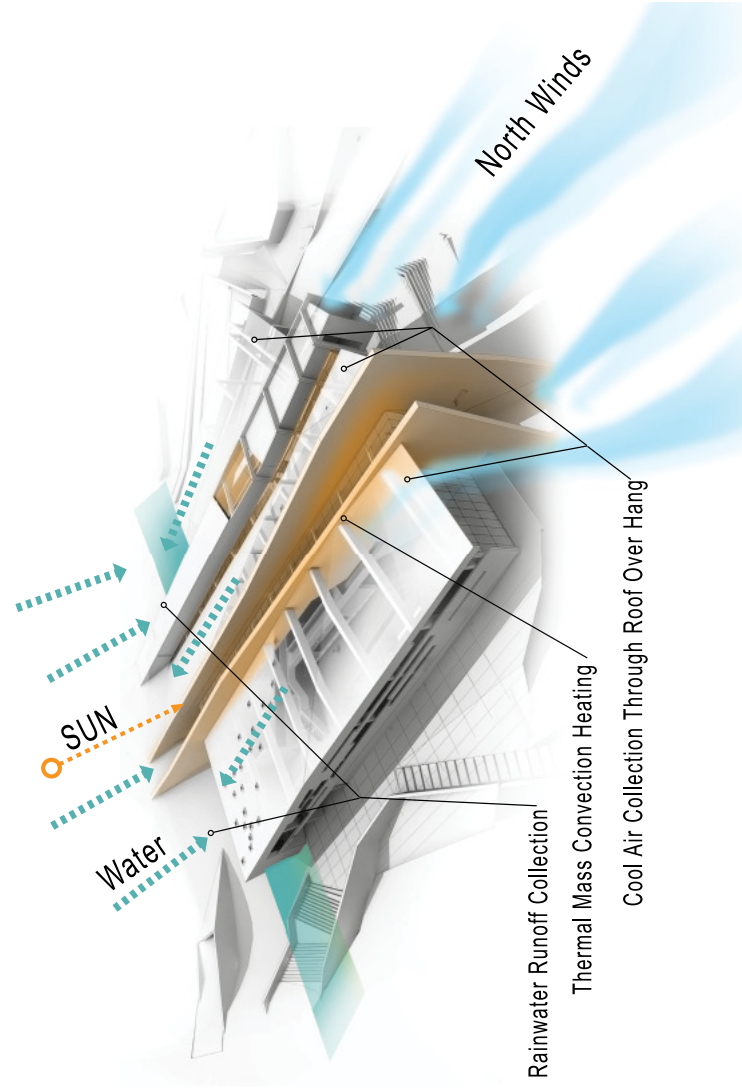


Figure 24

ACTIVE SYSTEMS

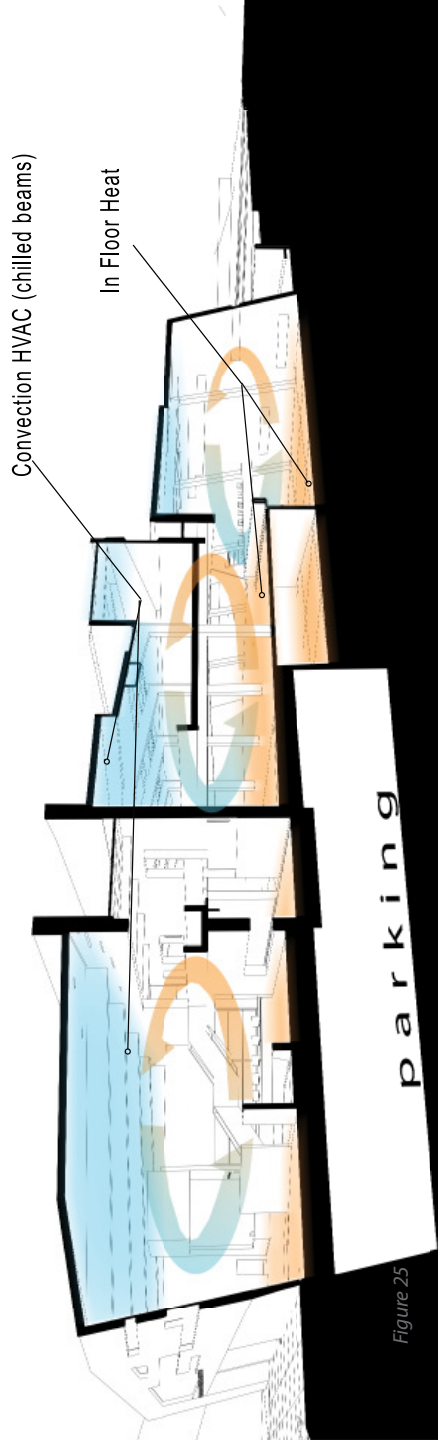
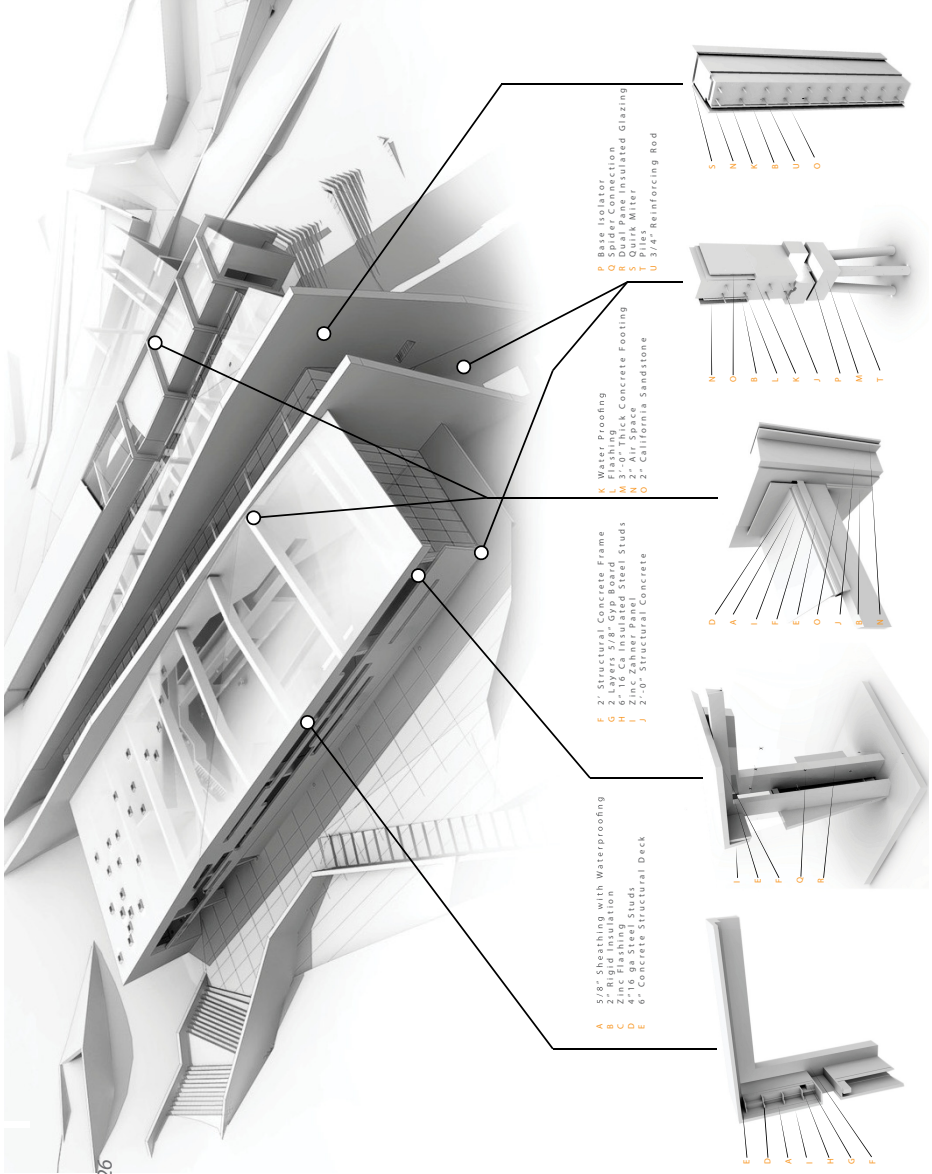


Figure 25

WALL DETAILS

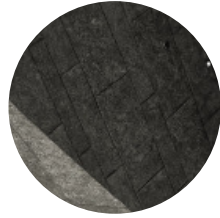
Figure 26



MATERIALS



California Sandstone
Exterior Structural Wall Cladding



Zinc Metal Panel
Exterior Skin



Striated Concrete
Interior Structural Walls



California Redwood
Interior Entry Walls

Other Materials: white painted gypsum, metal suspended ceiling, polished concrete floors, insulated glass

FULL INTEGRATION INTO SITE



Figure 27

FLOOR PLANS

- Open To Above
 - Device Checkout
 - Movable Wall
 - Perspective
- 1 East Entrance
 - 2 Reception and Administration
 - 3 Lockable Storage
 - 4 Cafe/Study/Greens
 - 5 Open Studio
 - 6 Interactive Learning Area
 - 7 Interactive Exhibition Area
 - 8 Collaborative Open Space
 - 9 Digital Library
 - 10 North Entrance and Reception
 - 11 Open to Exhibition Space
- 12 Open Studio
 - 13 3d Printing Lab
 - 14 Group Storage
 - 15 Tech Lab
 - 16 Event Lab
 - 17 Wood Shop
 - 18 Amphitheater
 - 19 Parking Entrance
 - 20 Administration
 - 21 S.O.L.E.'s (soft oriented learning environment)
- 22 Observation Deck
 - 23 Studio Entrance
 - 24 Large Build Exhibition Space
 - 25 Teacher Work Space
 - 26 Group Storage
 - 27 Socratic Circle Learning
 - 28 Display Area
 - 29 I.T.
 - 30 Staff Work Space
 - 31 Mechanical
 - 32 Studio Storage

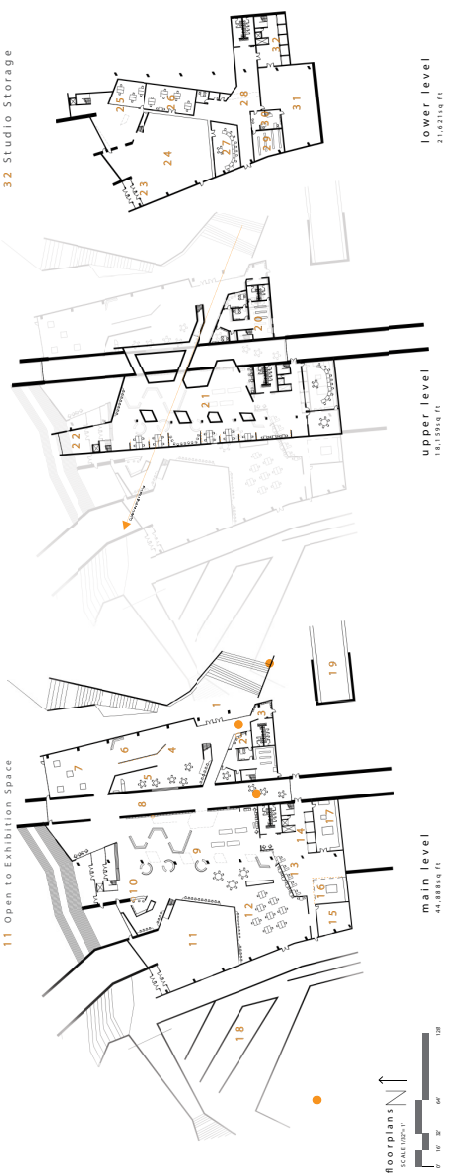
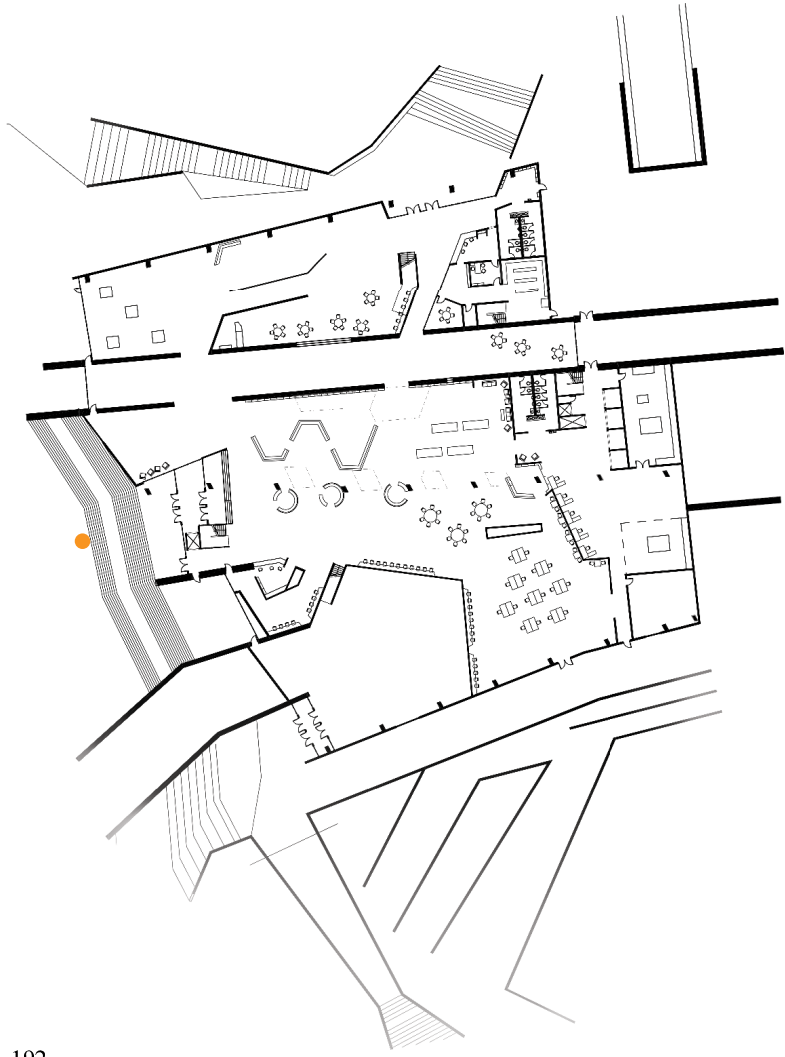


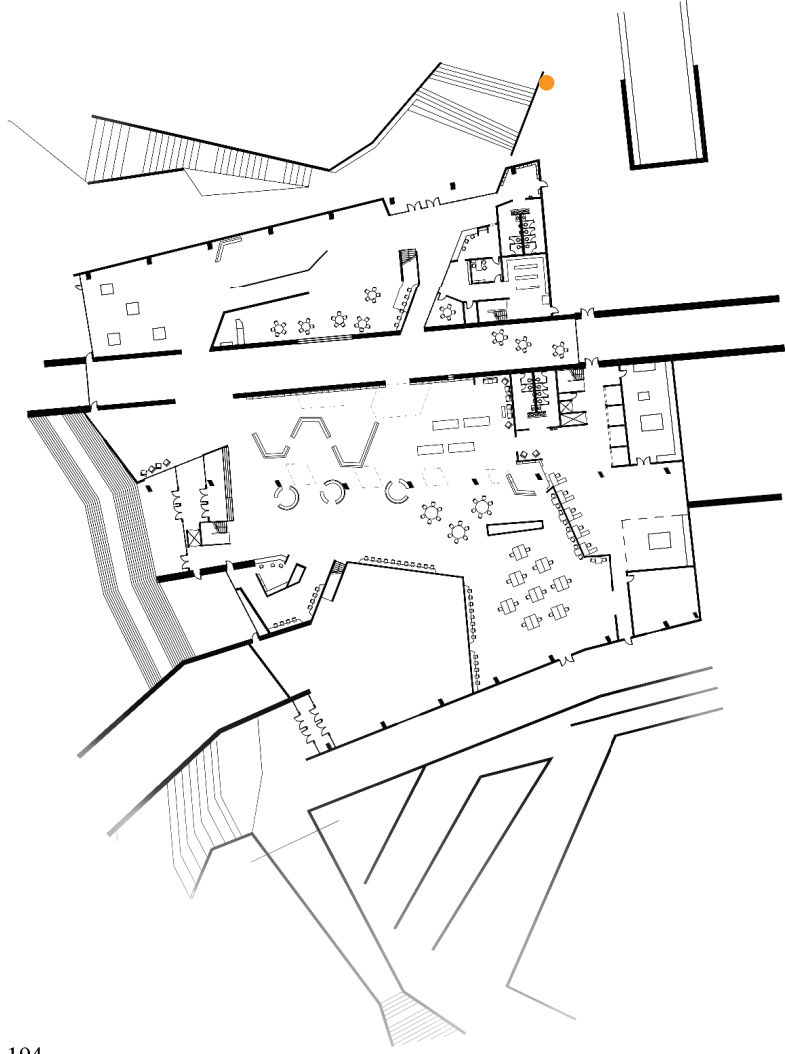
Figure 28



NORTH ENTRANCE



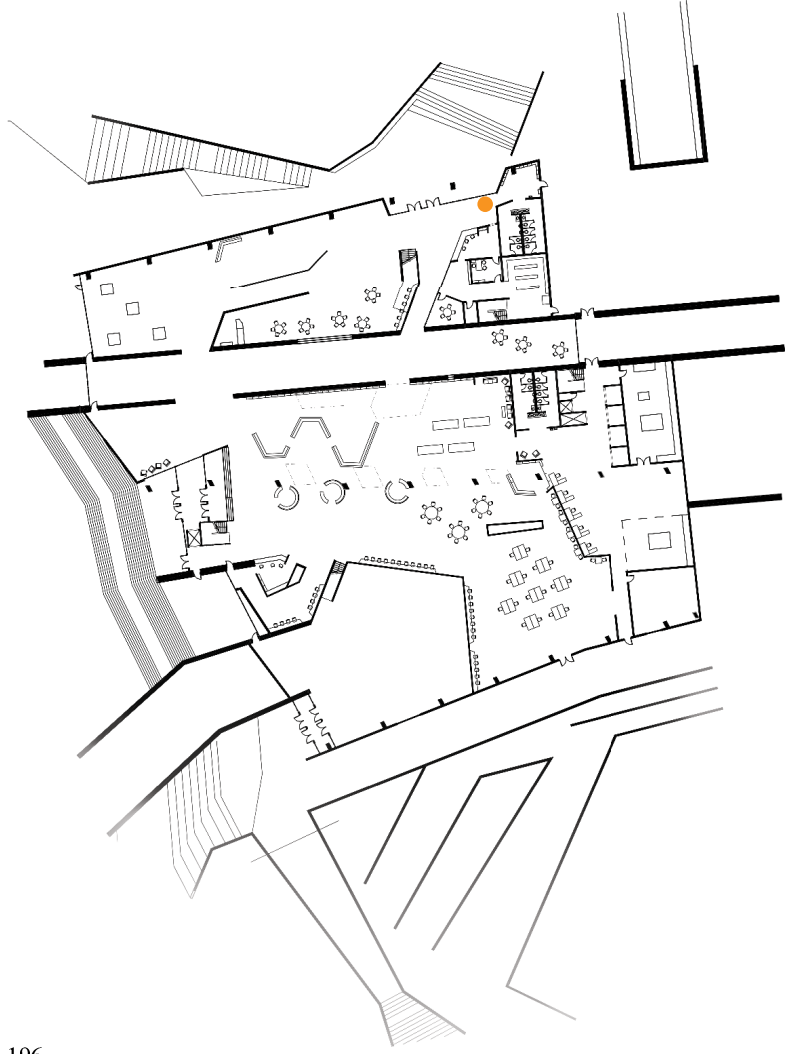
Figure 29



EAST ENTRANCE



Figure 30



EXHIBITION SPACE

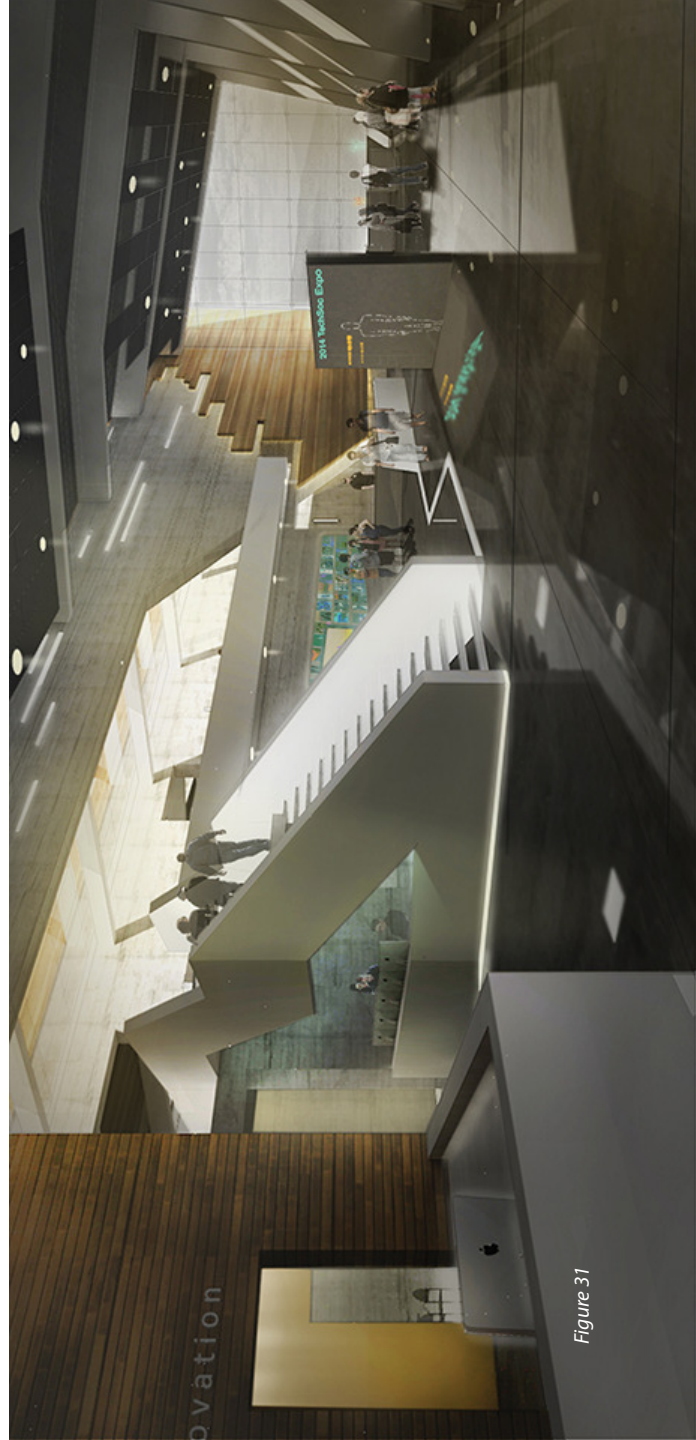
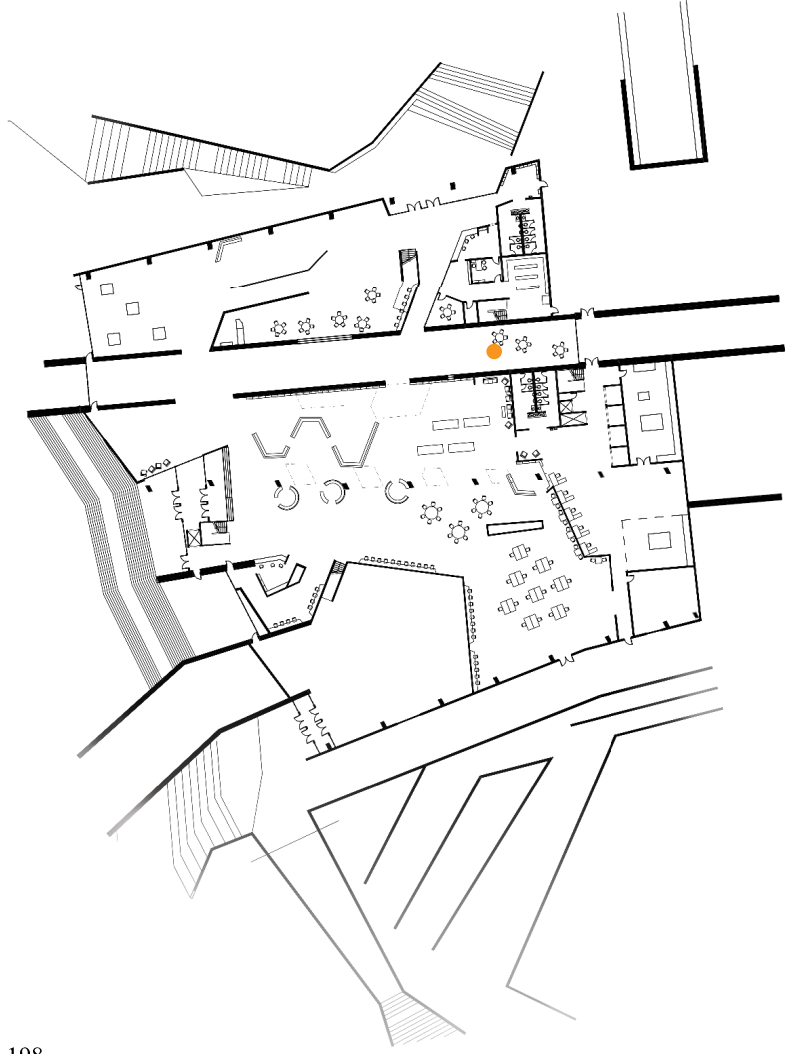


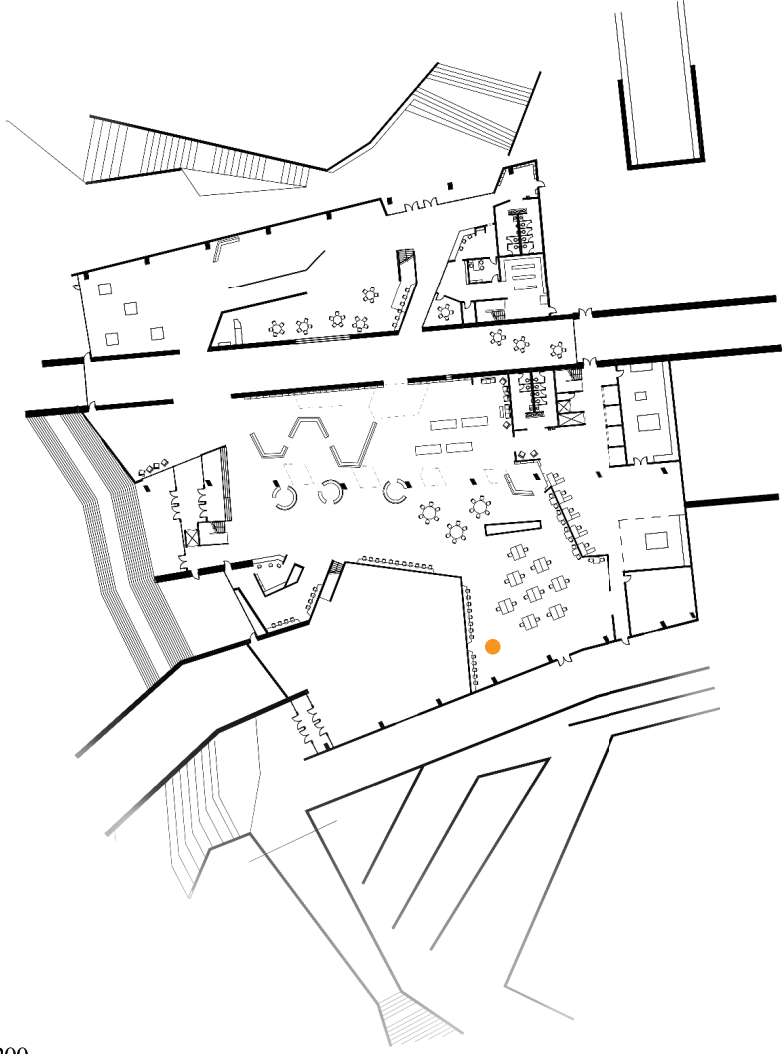
Figure 31



COLLABORATION SPACE VOID



Figure 32



DIGITAL LIBRARY

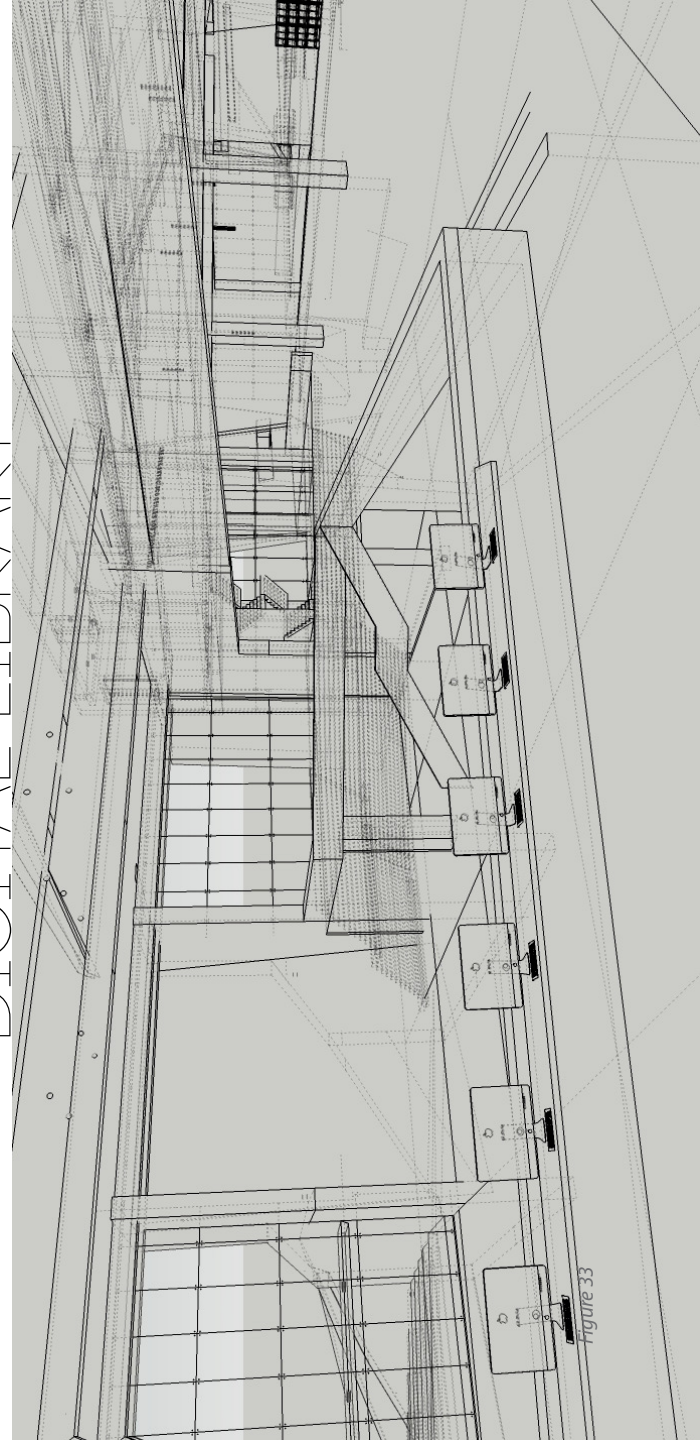
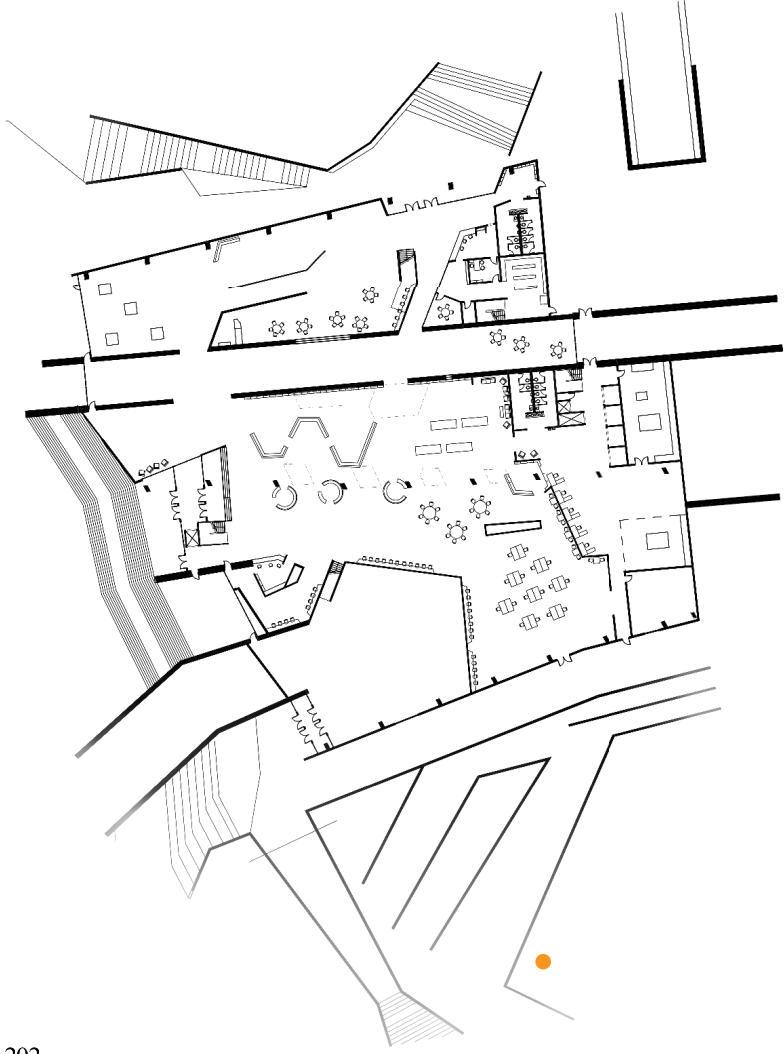


Figure 33



AMPHITHEATER



Figure 34

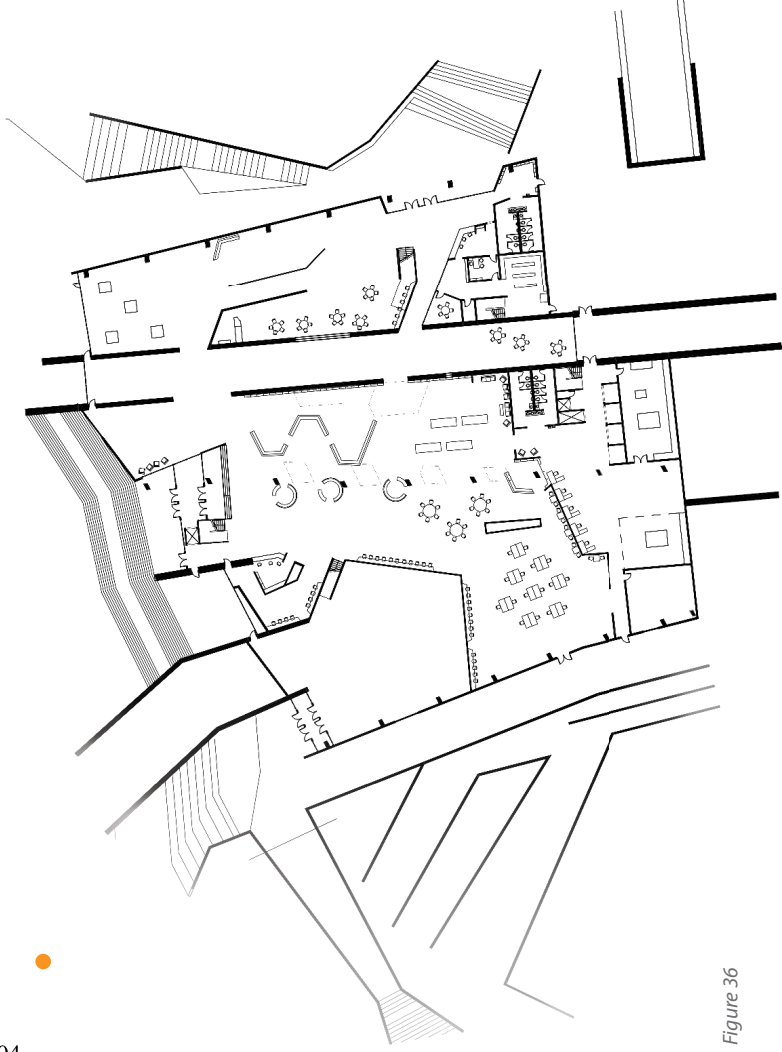
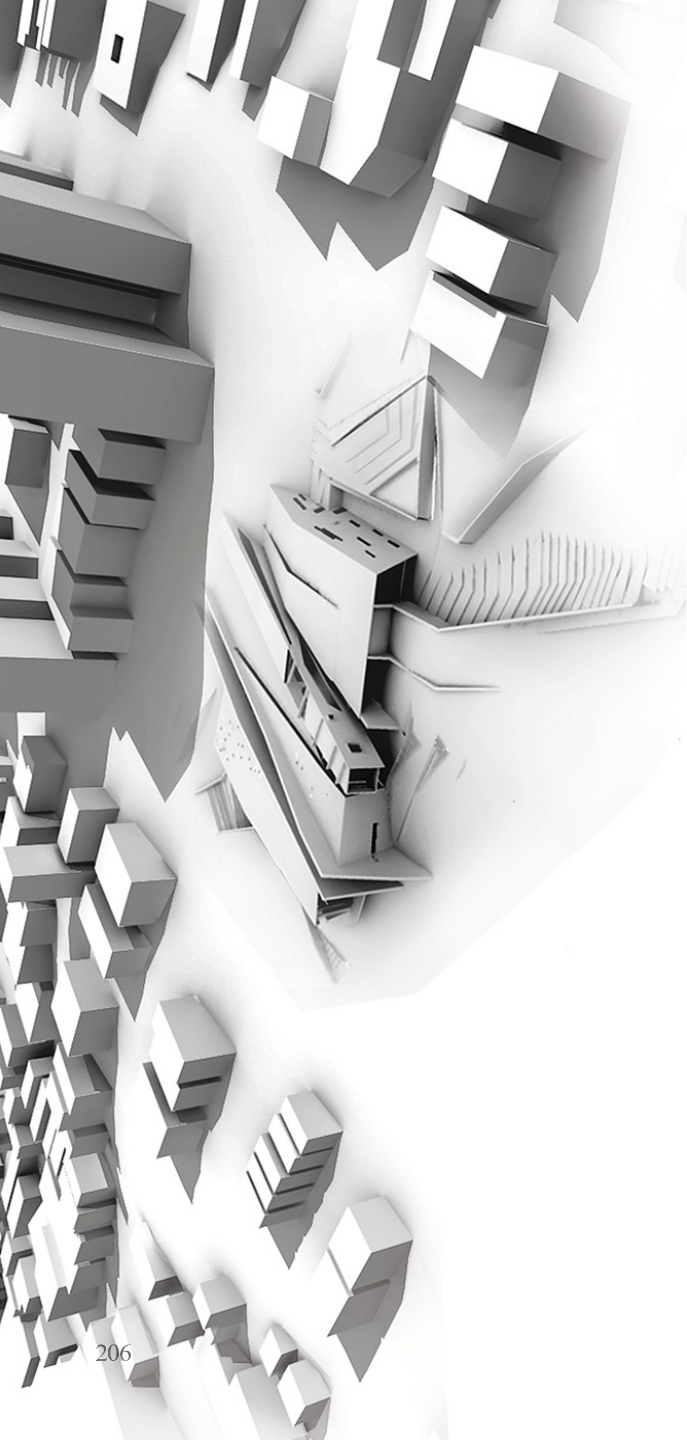


Figure 36

NORTH WEST ENTRANCE



Figure 35



THE SAN FRANCISCO CENTER FOR INNOVATION

Figure 37

This thesis project explores how architecture and perception of space can encourage spontaneous collaboration while facilitating motivation within an educational environment.

From the conception of this project I wanted to start my understanding of innovation as it pertains to social progress not just new technology. I wanted to look into revolution as innovation, by changing and improving the ways in which we learn and interact in a public space. Through integration of site, program, materiality, user interface and anticipation of space. The user experience is constantly changing as if the perceived typology of the building does the same.

The intention is to create an architecture where the public can reflect, learn and organize. An architecture that can manifest as “a factory for ideas” creating a relationship with the building, site, city, and public that redefines public space.

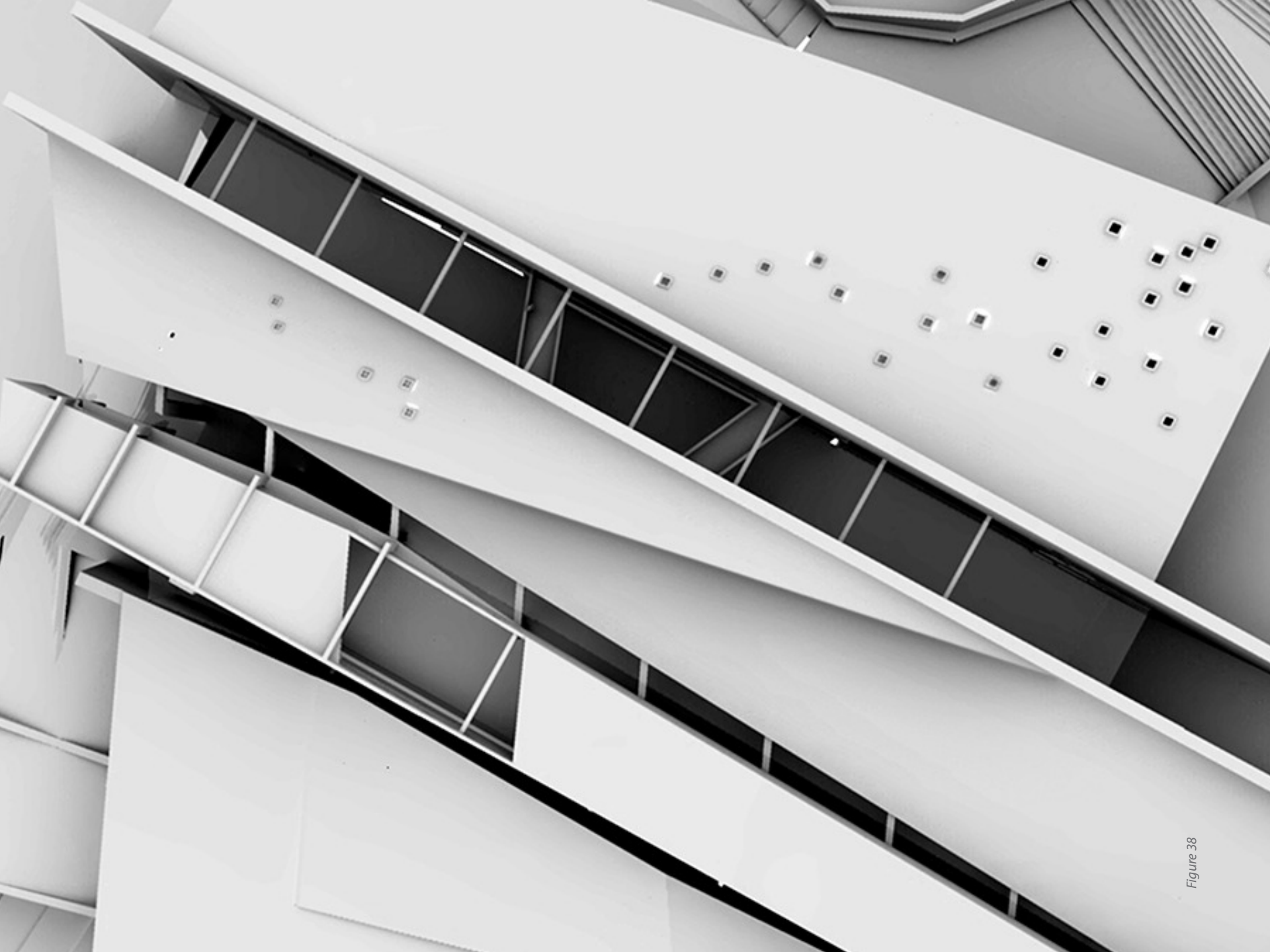


Figure 38

Display

THE SAN FRANCISCO CENTER FOR INNOVATION

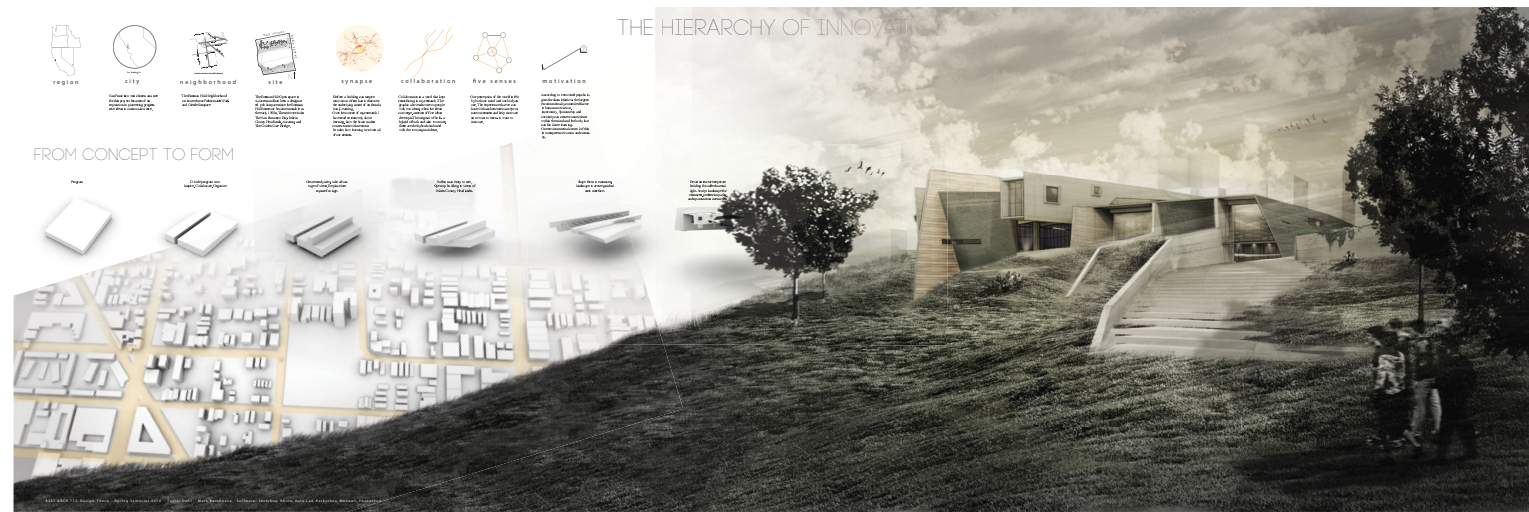
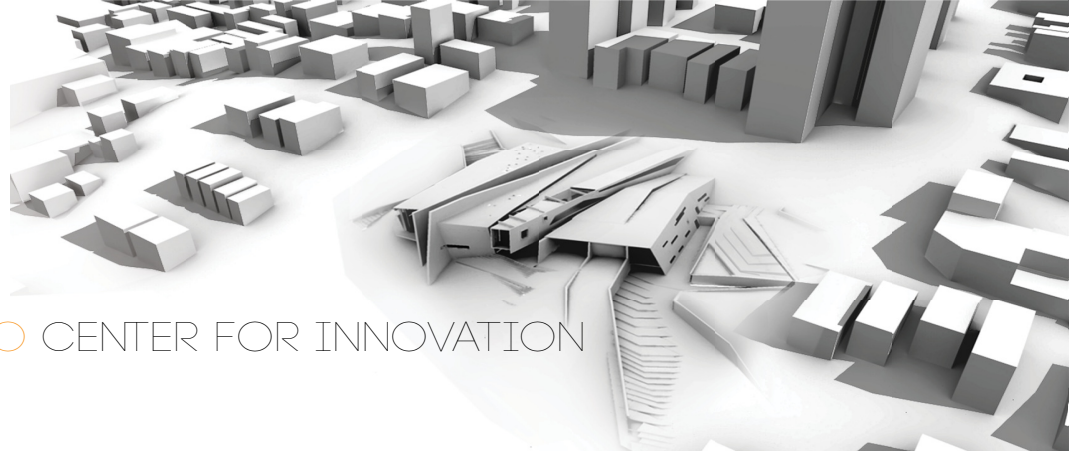


Figure 39
212



Figure 40



Figure 41

Sources

Copeland, M. (2005). *Socratic circles: fostering critical and creative thinking in middle and high school*. Portland, Me.: Stenhouse Publishers.

Dezeen. (n.d.). *Dezeen 41 Cooper Square by Morphosis Comments*. Retrieved October 26, 2013, from <http://www.dezeen.com/2009/10/11/41-cooper-square-by-morphosis/>

Drawings. (n.d.). *Morphopedia*. Retrieved November 2, 2013, from <http://morphopedia.com/projects/cooper-union/gallery/drawings/1/>

Gadamer, H., & Schmidt, L. K. (2000). *Language and linguisticity in Gadamer's hermeneutics*. Lanham: Lexington Books.

george-graphics.co.uk. (n.d.). *georgegraphicscouk RSS*. Retrieved November 5, 2013, from <http://george-graphics.co.uk/blog/2007/04/>

Holl, S., Pallasmaa, J., & Gómez, A. (2006). *Questions of perception: phenomenology of architecture* ([New ed.]). San Francisco, CA: William Stout.

Inskip, Steve. "Twitter Helped to Distort Egyptian Protests." *Morning Edition*. NPR. 12 Aug. 2011. Radio.

Jacobs, H. H. (2010). *Curriculum 21 essential education for a changing world*. Alexandria, Va.: Association for Supervision and Curriculum Development.

Jewish Museum Berlin : Architecture Information. (n.d.). *Jewish Museum Berlin Photos, Daniel Libeskind Building, Jewish Museum Building*. Retrieved November 1, 2013, from http://www.e-architect.co.uk/berlin/jewish_museum_pho

Kant, Emmanuel. "An answer to the question: What is enlightenment?." *Enlightenment*. N.p., n.d. Web. 27 Nov. 2013. <http://xavierhs.imodules.com/s/717/images/editor_documents/petrielloj/kant_-_what_is_enlightenment.pdf>.

Kerrey, R. (2000). *The power of the internet for learning: moving from promise to practice*. Washington, DC: Web-Based Education Commission.

Lightweight heavyweight. (n.d.). *Building*. Retrieved October 28, 2013, from <http://www.building.co.uk/lightweight-heavyweight/1007169.article>

Maslow, A. H. (1970). *Motivation and personality* (2d ed.). New York: Harper & Row.

Ponty, Maurice. *Primacy of perception*. S.l.: Northwestern, 1964. Print.

Mitra, Sugata. "Sugata Mitra: The child-driven education." TED Global. TED. TED Global, Oxford, England. 1 July 2010. Speech.

MidnightEast » Blog Archive » Holon Design Season 2012/2013 Opens September 1st. (n.d.). *MidnightEast » Blog Archive » Holon Design Season 2012/2013 Opens September 1st*. Retrieved November 4, 2013, from <http://www.midnighteast.com/mag/?p=21111>

Padama, B. *Reciprocal Teaching Techniques*. New Dehli: APH Publishing, 2008. Print.

Piaget, J. (1970). *Science of education and the psychology of the child*. New York: Orion Press.

Richards, Rand. *Historic San Francisco: a concise history and guide*. 2nd ed. San Francisco: Heritage House Publishers, 2007. Print.

"San Francisco Apartments." Walk Score. N.p., n.d. Web. 5 Dec. 2013.
<http://www.walkscore.com/CA/San_Francisco

Sendai Mediatheque. (n.d.). sendai mediatheque. Retrieved November 2, 2013, from <http://arshiel2.wordpress.ncsu.edu/2012/10/22/hello-world/>

Sendai Mediatheque – Toyo Ito – Kevin McKittrick. (n.d.). Kmckitricks Blog. Retrieved November 2, 2013, from <http://kmckitrick.wordpress.com/sendai-mediatheque-toyo-ito-kevin-mckitrick/>

Sendai Mediatheque. (n.d.). OpenBuildings. Retrieved November 6, 2013, from <http://openbuildings.com/buildings/sendai-mediatheque-profile-2580/media#!buildings-media/26>

Sims, Ronald R.. The importance of learning styles understanding the implications for learning, course design, and education. Westport, Conn.: Greenwood Press, 1995. Print.

Slavin, Robert E.. Learning to cooperate, cooperating to learn. New York: Plenum Press, 1985. Print.

Small Wonder: 41 Cooper Square. (n.d.): Observatory: Design Observer. Retrieved October 26, 2013, from <http://observatory.designobserver.com/entry.html?entry=11357>

Sousa, D. A. (2012). How the brain learns(4th ed.). Thousand Oaks, Calif.: Corwin Press.

The Paradox of Lightness and Fluidity. (n.d.). Nalata Nalata The Paradox of Lightness and Fluidity Comments. Retrieved October 28, 2013, from <http://nalatanalata.com/journal/sendai-mediatheque-and-sendai-bookshelf/>

Theory of Human Motivation. (n.d.). Abraham Maslow . Retrieved November 2, 2013, from http://www.abraham-maslow.com/m_motivation/Theory_of_Human_Motivation.asp



Figure 42

Taylor R. Dahl

2740 36th Street South
#102
Moorhead, MN 56560
taylor.cmyk@gmail.com
701.541.2029

“we are only as wise as our last excuse”

-Taylor R. Dahl