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Table of Contents

Gehry Talks

Reading was assigned the first day of class and was due January 17th.

This reading discussed the evolution of digital technology in Frank Gehry's office. His unique architectural designs needed representation beyond the typical formats used by architecture firms. His use of computer software obviates the need for liaisons in the construction process and allows him to communicate directly with contractors about the desired outcomes for his building designs.

This reading presents a cogent and specific example of the use of digital representation in the field of architecture. One of those most interesting lines from the article to me is, "we are after people who know how to think and who know how to use the computer as a tool (pg. 19)." The line "the computer as a tool" causes me to consider that digital representation is a tool – and a powerful one at that – in my toolbox as an architect and it is to be used alongside other means of representation such as writing, drawing and model making. The Gehry office uses this powerful means of representation to go beyond producing enticing images of the work to producing renderings that communicate materiality and engineering details. This is a very technical use of digital representation but it opens up the possibilities in my mind for the broad application of digital media in the field of architecture.

Image source: http://amzn.to/zULquk

Architecture's New Media

Reading was assigned the first day of class and was due January 17th.

This reading from Yehuda E. Kalay's book is a good contrast and complement to the Frank Gehry reading. The Gehry Talks reading communicates a very specific use of digital representation of which their firm was a vanguard in the field of architecture. Their designs necessitated the development of more efficient means of digital representation. That specificity of application is somewhat dissolved in the concepts presented in the Kalay reading as we see the concept, "The medium is the message" presented in his discourse on the social act of design.

The medium we choose is determined by what it is we want to communicate and the nature of the medium itself has an inherent communicative quality. Seeing the process of design as a series of social interactions broadens the range of communication devices which will be used.

This reading helped codify the concepts of adjusting the format of digital representation to the intended audience. Consideration of who comprises your audience and what message you want to communicate determines the medium used. Kalay says, "The choice of representation thus depends on the characteristic of the message, on the purpose of the communication (pg 91)." I see that there are various means to communicate architectural ideas: plans, sections, elevations perspectives and documentation, and you choose those formats based on a persons role in the process. For example, an accountant would get numbers and cost information, a client would get a simplified plan and perspective rendering and a contractor would get a fully developed technical document.

Obtaining a larger view of the building process and how a design needs to be formatted to communicate to each disparate party involved was a great benefit of this reading. It is clear that communication is as diverse as the audience receiving the message.

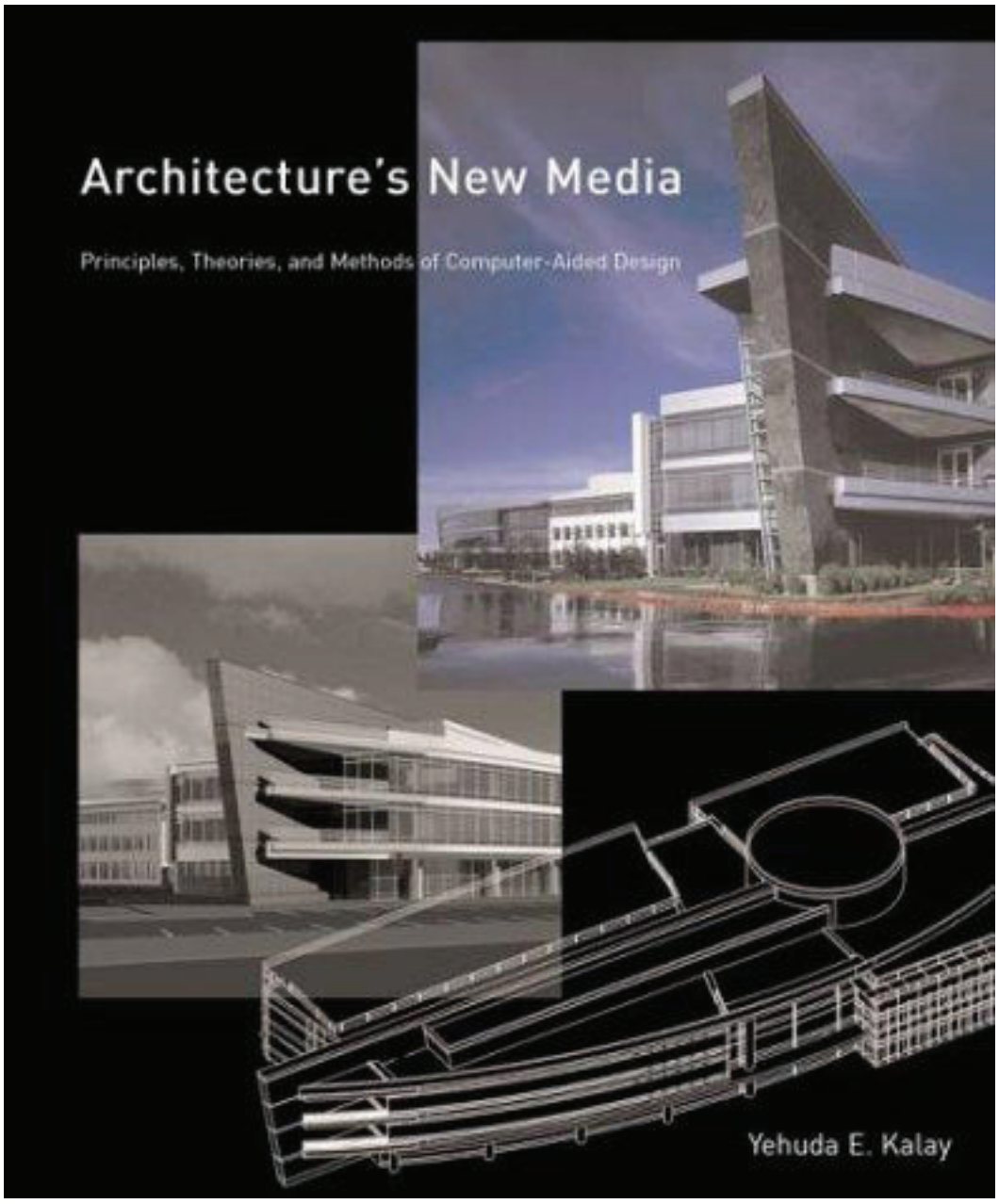


Image source: http://bit.ly/xYWZXM

Architecture As Space: How To Look At Architecture

Reading was assigned January 17th of class and was due January 24th.

In his writing, Zevi posits that "Architecture... remains isolated and alone. The problem of how to represent space, far from being solved, has not as yet been even stated (pg. 45)." His discussion of the inadequacies of our means of representation in contrast to the "moment of architecture (pg. 60)", which is experienced by a human moving through space, are enlightening. In our process, we use a variety of methods to represent the spaces we create: plans, facades and elevations, perspectives, models and photographs. Yet these forms of representation "omit some information (Kalay pg. 90)" and require other means to communicate the larger vision of a built form.

I found it interesting to consider the plan as the one form of representation we have that gives a cohesive overview. As Zevi states, "the whole... precedes its dissection (pg. 48)." We start with the overview, then represent further details of the space.

In considering the role of digital representation, it is imperative that we use the tools available to tell a complete story. One form alone will not suffice. A well drawn plan with varied line weights coupled with interior and exterior renderings will help materialize our vision and tap into the viewer's imagination of what it would be like to inhabit the space. I think this goes back to what the author was intending when he said, "in the absence of thoroughly satisfactory methods, it becomes our concern to study the techniques we have at hand and to make them more effective than ever (pg. 46)." Knowing what form of representation to use for an intended purpose allows them to coalesce together into a more comprehensive communication of a three-dimensional space. And in the end we will see that, "each has its own contribution; the shortcomings of one may be compensated for by the others (pg. 59)."

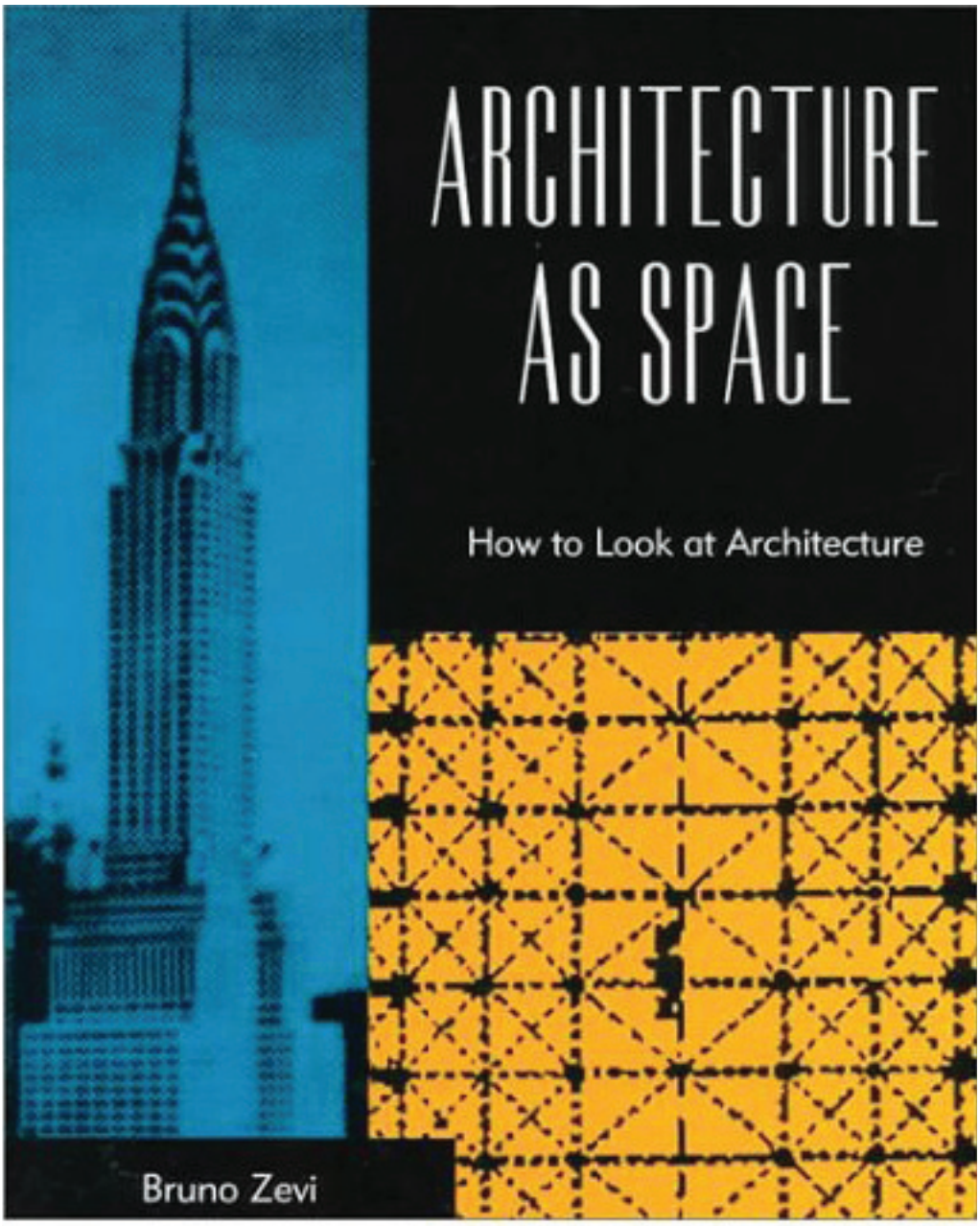


Image source: http://amzn.to/ygs8gZ

Variations on a floor plan

Exercise two. Assigned January 17, 2012; due, January 25, 2012. We were assigned to design three variations on an apartments floor plan.

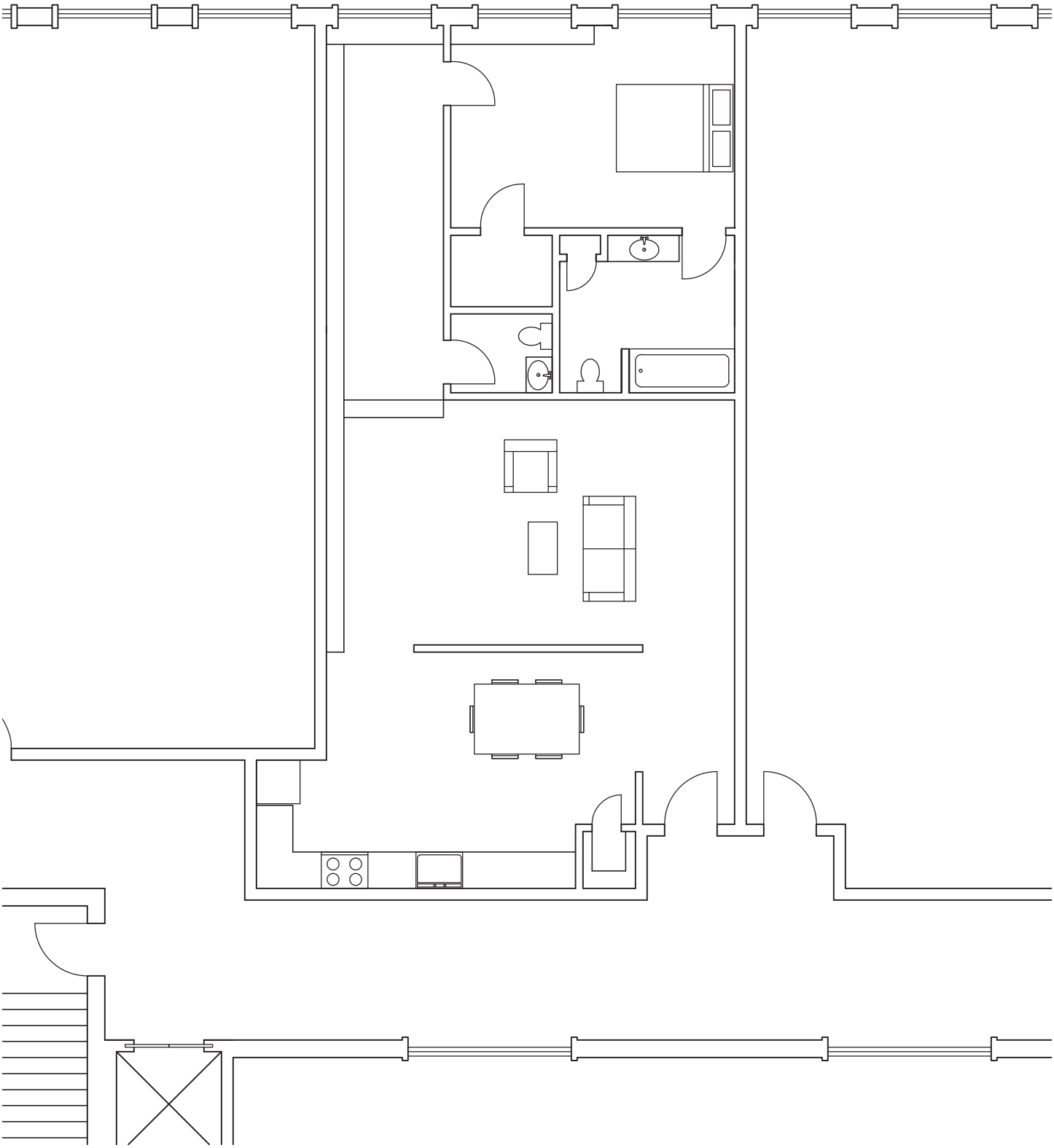
This assignment was my first foray into the world of AutoCAD and using the computer as a tool to produce floor plans. Having had no previous experience with the AutoCAD software, I spent a large portion of my initial time on this assignment frustrated by the difficulty of grasping how to create basic shapes in the program. I had to constantly refer back to the lecture notes and tool handout as well as asking many questions of my studio mates who are well versed in AutoCAD. I feel comfortable with other software programs I use daily, but AutoCAD seems to be quite complex and required me to sift through the colossal menu options and begin to be acquainted with the tools and commands that are regularly used. Working on the exercise itself helped me to learn what tools are common to constructing plans in AutoCAD and the process of making three alternate layouts for the apartment provided the necessary repetition to commit them to memory.

Besides the hurdle of becoming acquainted with a whole new software program, I found the project itself challenging in the requirement to make three different floor plans. In the process of completing the assignment, I struggled between designing the various layouts for the apartment and obtaining the technical facility to produce them. I haven't wrestled with a floor plan design problem like this before, but found it to be an effective way to exercise and develop both design and technical skills. This will no doubt be one of the most challenging assignments of the semester for me.

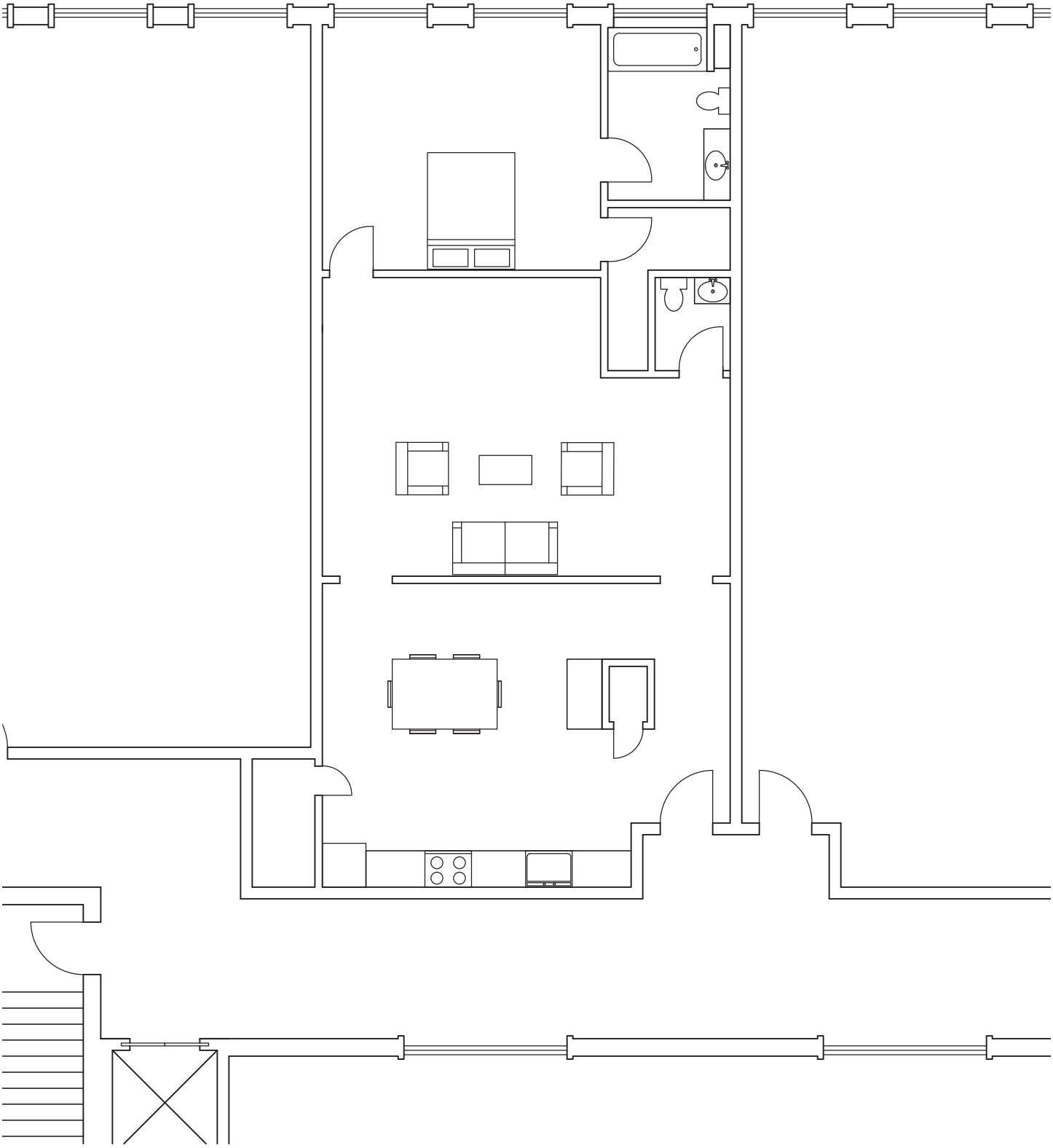
Another important aspect of the assignment for me was learning about plot styles and beginning to see how subtle line weight changes can richly communicate a design. The final three plans which were produced are a pleasant beginning to my use of AutoCAD. After much time spent on the assignment, I feel like I overcame the initial hurdle of using this complex software and am somewhat familiar with how to use the basic tools for when I approach my next design assignment.

Probably the most enjoyable part of seeing the final images of the floor plans was the realization that this tool will allow me to communicate my ideas to a broad range of people. I have learned that the tools and plot styles in AutoCAD allow for plans to be minimal for presentation of layout and design concepts to clients all the way up to very detailed construction documents to communicate the building desires to contractors and engineers.

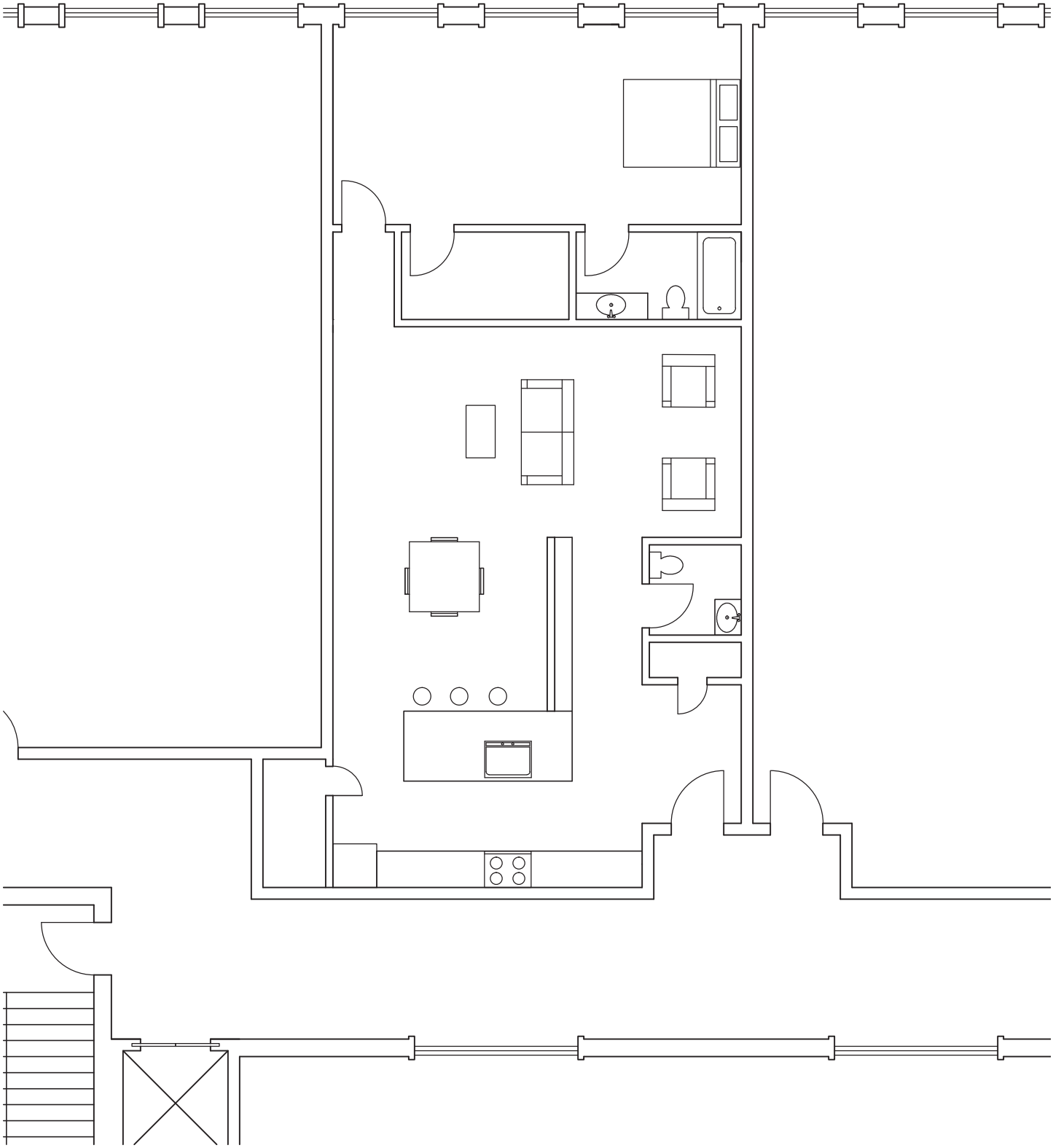
If more time was available to dedicate to this assignment, the initially I would spend it exploring the nuances of line weights and trying to add that rich layer to the plans. Along with that I would spend more time researching the styles of other architects to see how they represent building elements in their plans and let that be a launching point for some stylistic changes in my plans. Most of my efforts were spent learning the software and completing the assignment, but it would be desirable to develop more refined level within the details of the plans .



Floor plan one



Floor plan two



Floor plan three

The House Project (Part 1)

Assigned January 24, 2012; due, February 8, 2012. This exercise consisted of creating floor plans and sections in AutoCAD.

This assignment picked up on and further developed the skills acquired in the previous Variations on a Floor Plan assignment. A second project using the AutoCAD software was greatly beneficial to reinforcing the basic usage of the software. In this first part of the House Project, I especially enjoyed getting to become more familiar with plot styles and how they provide an extensive palette of line weights and types for use in communicating designs.

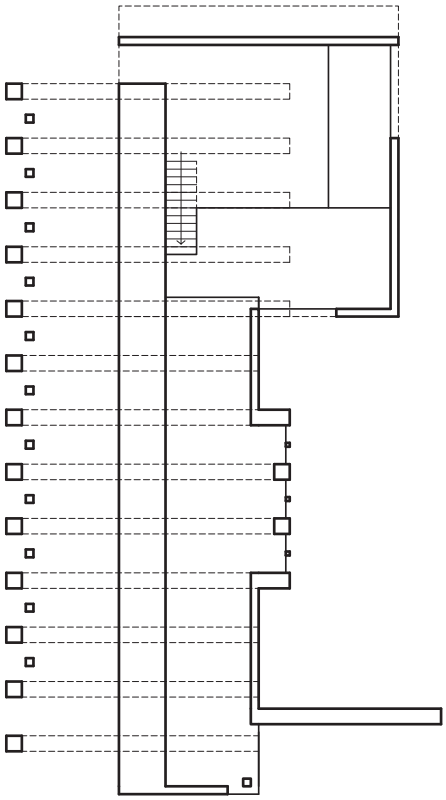
Although I was over the initial hurdle of getting acquainted with how to draw in AutoCAD, there were still frustrations in the process of completing this assignment with getting the tools to work. I focused on learning the keyboard short cuts and commands for the software more in this assignment which seemed to lead to faster production compared to the previous apartment floor plan assignment. I used online searches and referenced my epub version of "AutoCAD for Dummies" throughout this project to aid in understanding how the tools and plot styles worked.

Another challenge was the requirement to revisit my Museum of the City final project from last semester's Environmental Studio. I suppose it is a characteristic of creative people to not like their work and always see room for improvement and that applied to that design. It was not a project I was very happy with and was less than enthusiastic to have to begin to spend the rest of the semester working on the various forms of digital representation for it, but I set that aside and began working on the plans and sections.

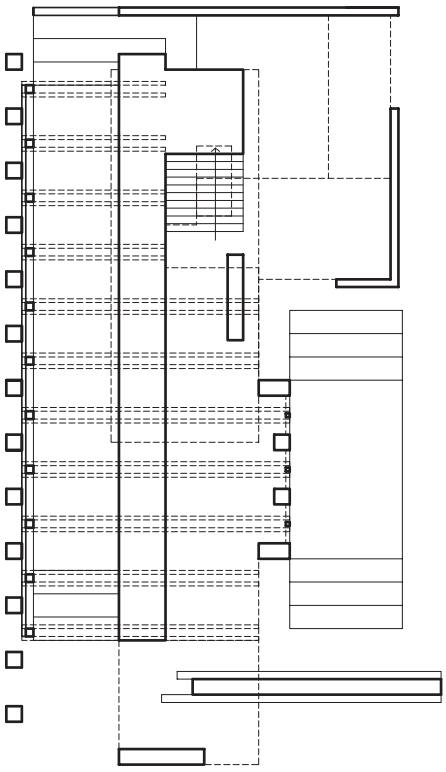
While I enjoy and greatly appreciate the aesthetic qualities of hand drawing, I appreciated seeing the precision that AutoCAD allows and the ease in which mistakes can be cleanly corrected. Through this exercise I began to see how digital representation fits into my design process. Loosely drawing and working out initial ideas on trace allows for freedom of exploration and once a general design direction has been chosen, moving into AutoCAD provides an opportunity for clarification and refinement of ideas.

Seeing the final versions of the plans and sections for my museum created a similar sense as when I saw the final floor plans from the previous exercise. The part of the process that I enjoyed the most on this assignment was the further development of plot styles to show layers of meaning within the drawings. I think that the added level of refinement of line weights on this projects compared to the Variations on a Floor Plan exercise provides a clearer level of communication in the drawings. I intend to build on this knowledge in future AutoCAD drawings to create more contrast and clarity to better communicate my ideas.

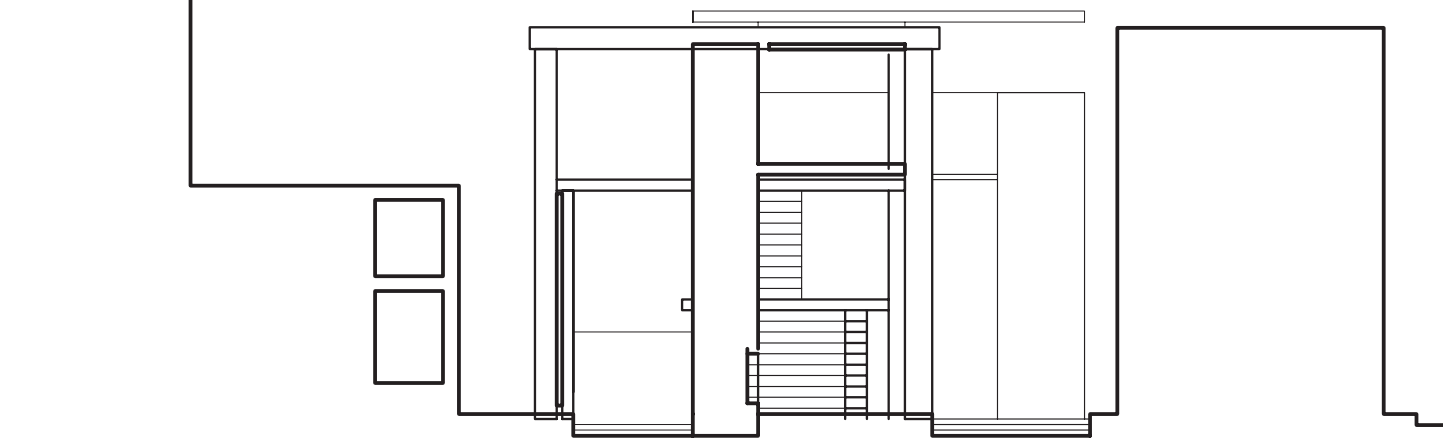
If I had more time on the assignment I would further explore the use of hatching in some of the areas of my plans and sections. There was some experimentation with this, but I tend to lean toward clean and minimal designs so I felt like it was detracting from the overall aesthetic of the drawings. Perhaps some subtle changes could be made and hatching could be used on the ground planes and courtyard areas of the museum site.



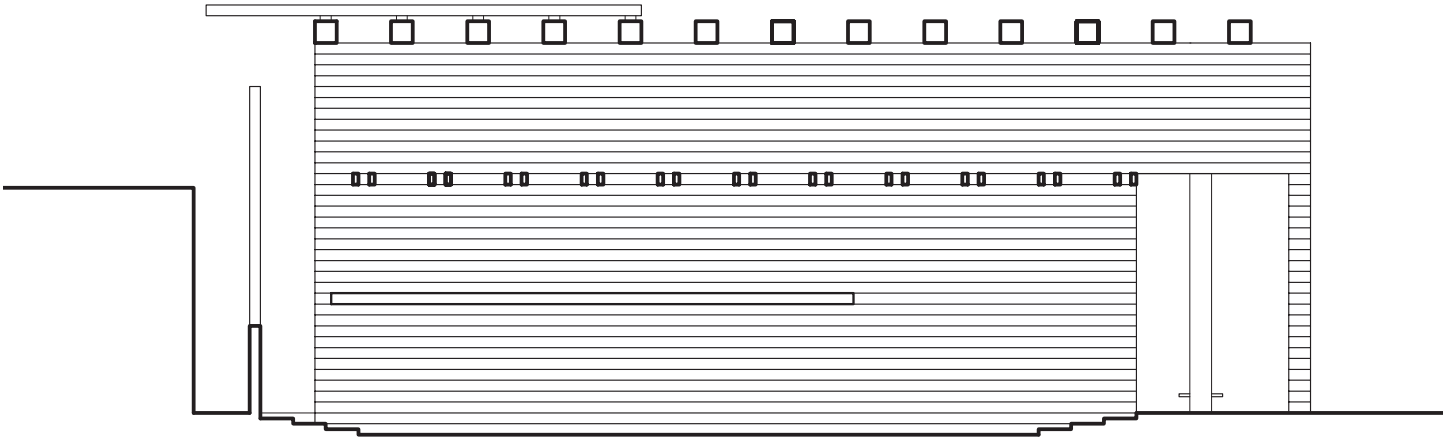
Upper level plan



Ground level plan



Cross section



Transverse section

The Steel Mill

Exercise three. Assigned February 7, 2012; due, February 15, 2012. For this excercise, we built standard construction elements in SketchUp.

It was nice to take a brief break from the House Project to work on this exercise and learn more about Google SketchUp. I began using SketchUp last semester, first on the partner precinct model and then to build my final project museum to aid with choosing perspectives for the final review. I came to this assignment with a cursory knowledge of SketchUp's tools and an overall concept of how the software worked. We had also used the program to create 3D diagrams for our first precedent study project in this semester's Form Studio.

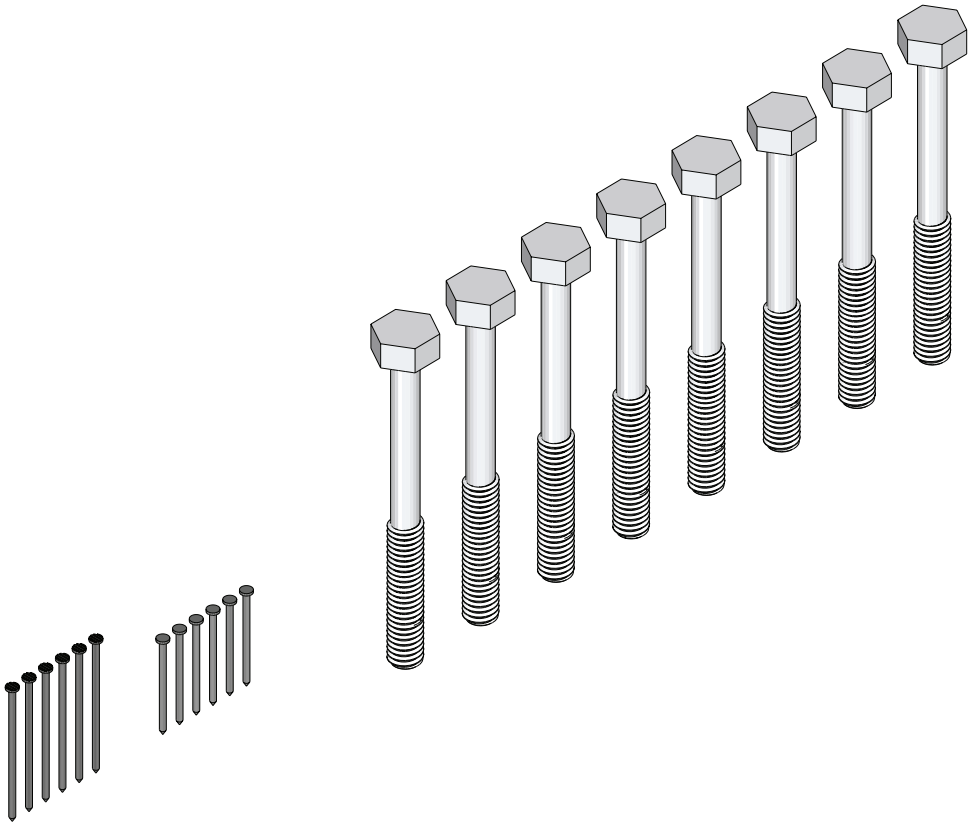
Through the lectures and working this assignment I learned to implement productive habits regarding digital model building and began to understand some of the quirks of SketchUp that I encountered in my usage of the software last semester. Having the concepts of groups, components and layer management clearly articulated was the key for me to understand how to approach this software as I integrate it into my design process. Learning how geometries integrate with one another allowed me to be able to troubleshoot my model issues as I went along. One of the strengths of using this software is the wide range of support and discussion forums available online both from Google and the broad user base. I had to research several times for how to perform a certain action in SketchUp and found a variety of blogs, videos and tutorials to aid in my model construction.

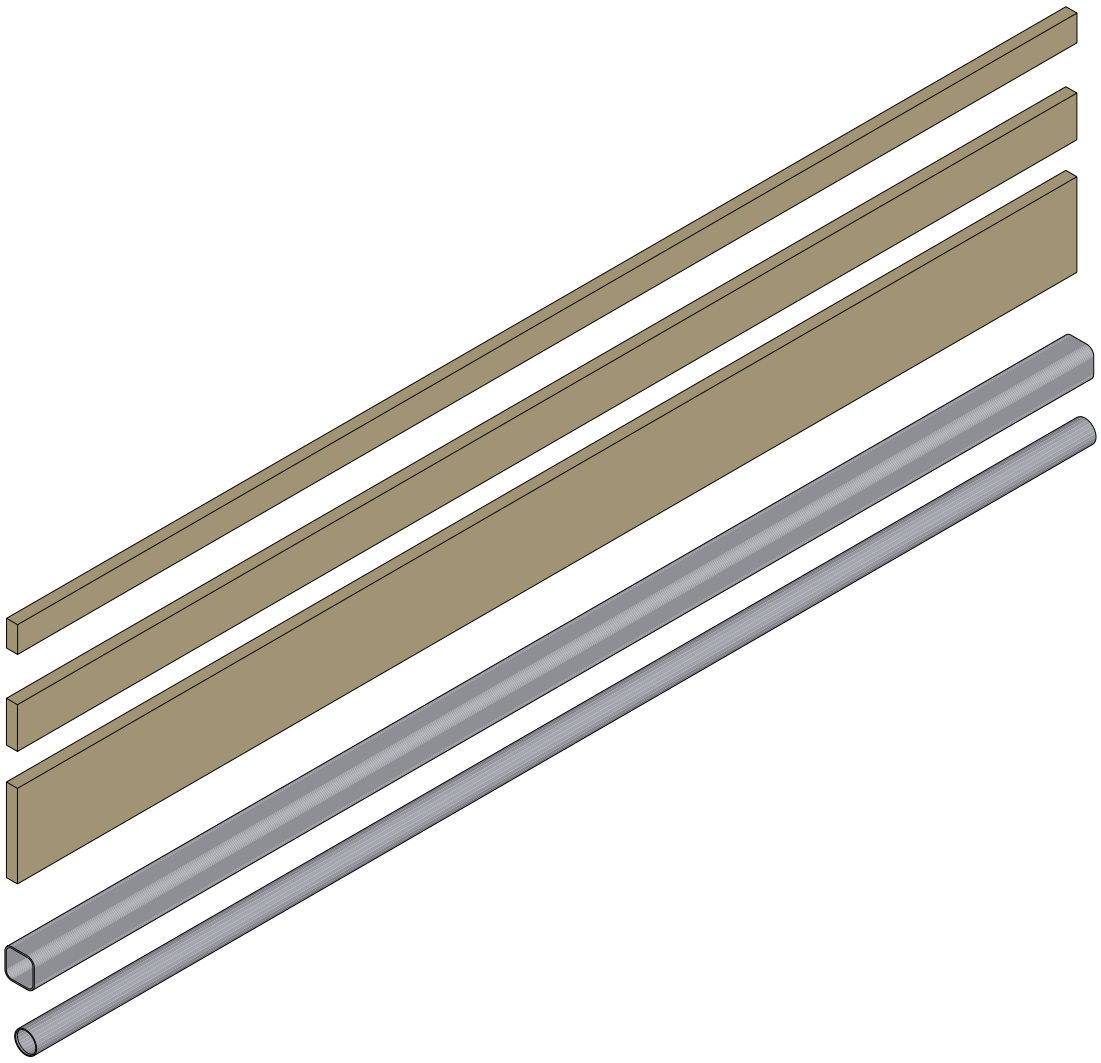
I have been a user of the Adobe Creative Suite for several years and noticed many similarities between SketchUp's solid tools and the pathfinder tools in Illustrator. This bridge helped me to know how to construct complex objects – such as the bowstring truss – using SketchUp and the shared concept made the leap to three dimensional representation easier since the geometries were familiar.

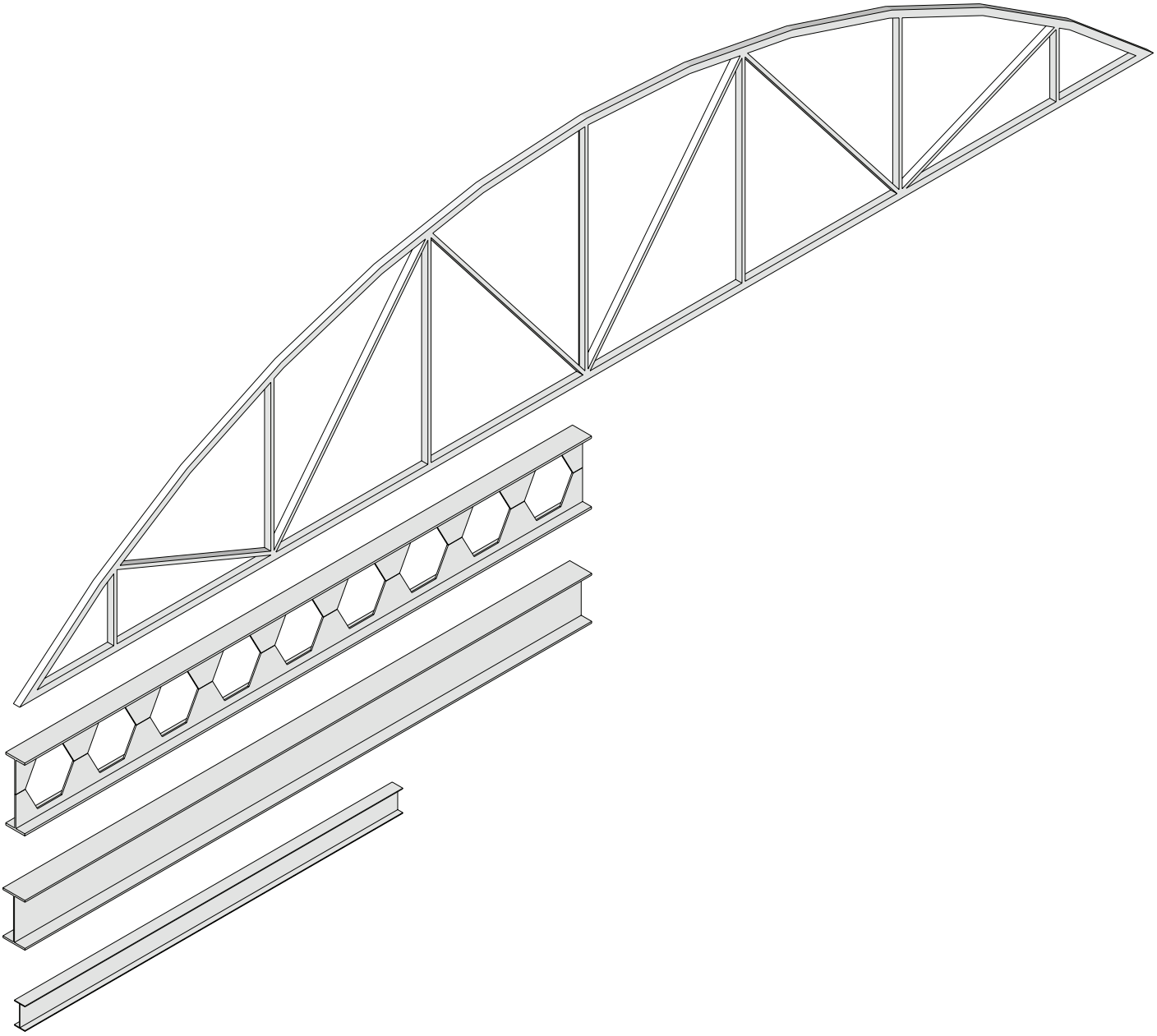
One of the greatest benefits of this assignment, in my opinion, is the exposure to the basic elements used in construction. Having to find the dimensions and construct each element in SketchUp aided in creating a familiarity with these common elements. It made me aware of the structural members used around me. I took notice with a more keen eye the way buildings were put together and how these elements are at the very core of the built environment.

For my final images, I exported them using the parallel projection and isometric views in SketchUp Pro to create axonometric vector files. I attempted to keep the construction elements simple and used subtle colors to denote the materiality of each. I liked the axonometric and understated presentation of the elements because I felt that it allowed for the renderings to communicate the variety and scale of the members which represents to me that construction – and design – demand attention form the macro to the micro scale.

Through research for this assignment, I was intrigued by the vast array of trusses available for diverse construction applications. Had more time been available to dedicate to this assignment, I would have constructed several more trusses as they were both the most challenging and interesting to build.







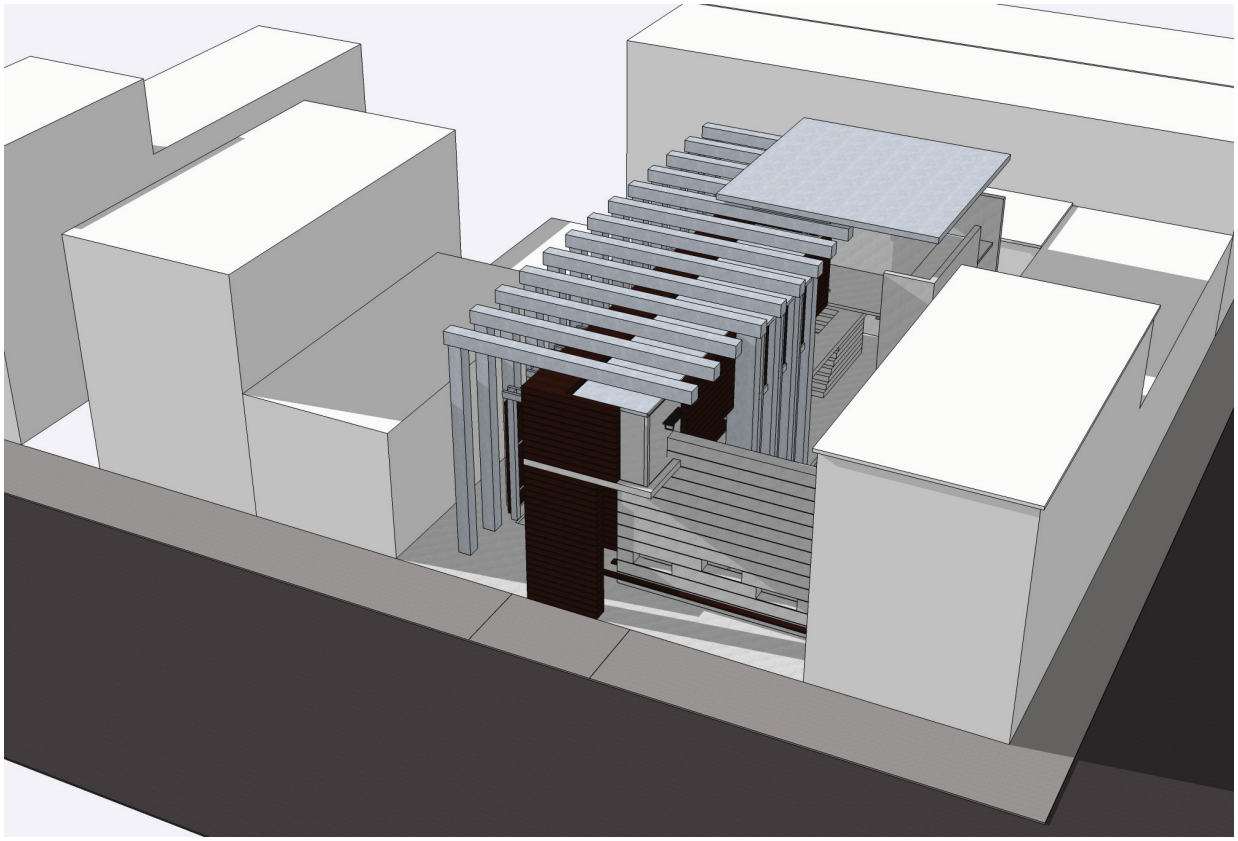
The House Project (Part 2)

Assigned February 8, 2012; due, February 29, 2012. This exercise consisted of four framed views from the SketchUp model of our project.

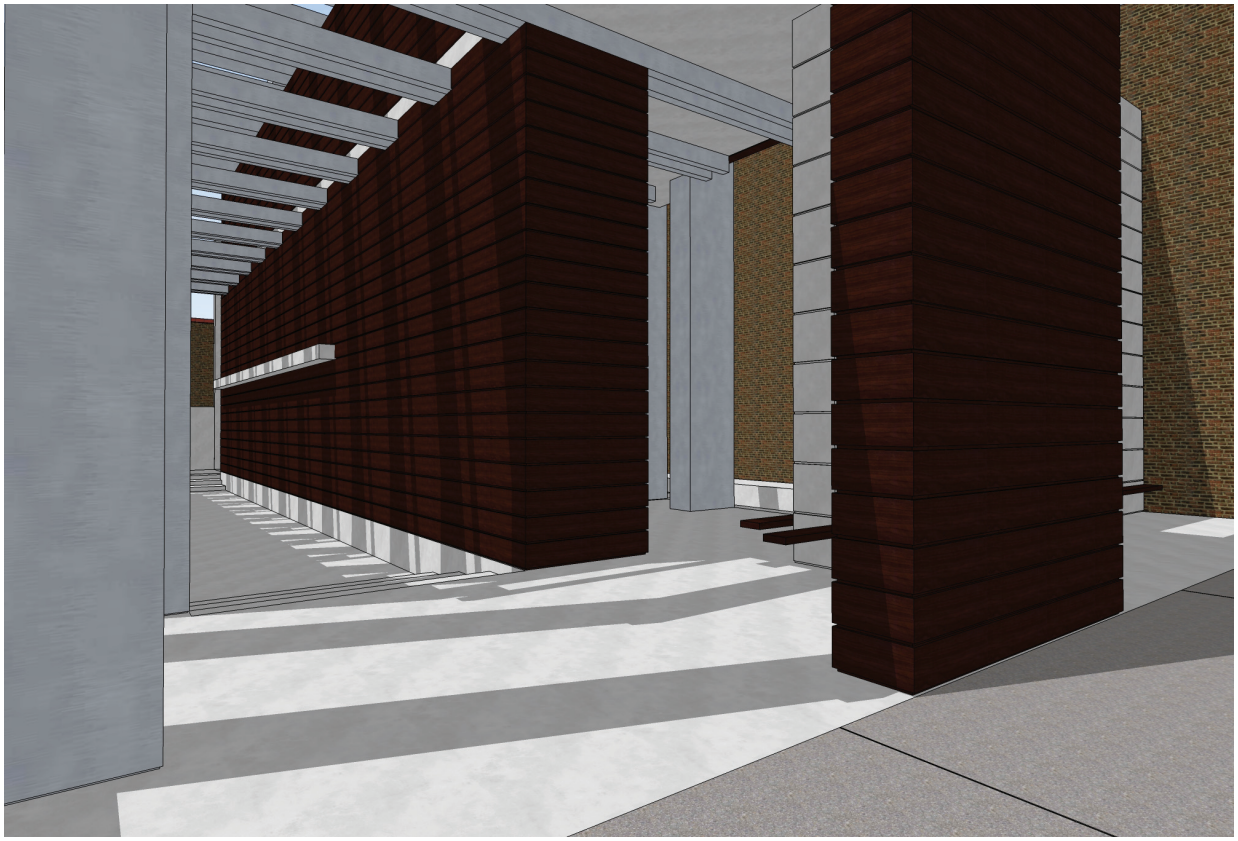
Moving into the second part of the House Project introduced a whole new aspect of SketchUp as I have never experimented with the application of materials to model geometry. Seeing the lack of realism in these swatches makes me appreciate the power of rendering engines to bring scenes to life and add the dynamism of light to the compositions.

This was honestly the most frustrating assignment so far this semester, even more so than the initial AutoCAD assignment. It wasn't anywhere near as technically difficult, but the challenge came in trying to move the conceptual nature of the Museum of the City into some form of realistic structure. I spent more than half of the time I had available to dedicate to the assignment attempting to understand how to add a level of detail and realism to this composition. More than anything it made visible the lack of structural knowledge I had last semester when I designed the museum. There are several unresolved design issues and overall it seems to lack rich spacial environments. The more I tried to add refinements the more I wanted to redesign certain areas of the composition. Time did not allow for me to do this, so I selected two interior and exterior views and focused my attention on adding details within the constraints of those views. I tried to integrate and visually represent some of my general thoughts about the materiality of the museum. I wanted to contrast the concrete ground plane with ipe wood siding on the wall of books. I added in small reveals around the bases of the concrete columns of the wall of the surveyor to denote where they touch the ground plane. The reveal between the ipe siding is more pronounced which was part of my concept to add subtle the shadows in the volume as line created by the dappled light created by the wall of light located on the southeast side of the museum. This side has the best access to natural light due to the reduced density of the urban fabric on that side created by the parking lot for the government building that occupies the corner of Broad and Meeting (which is parallel to King) Streets.

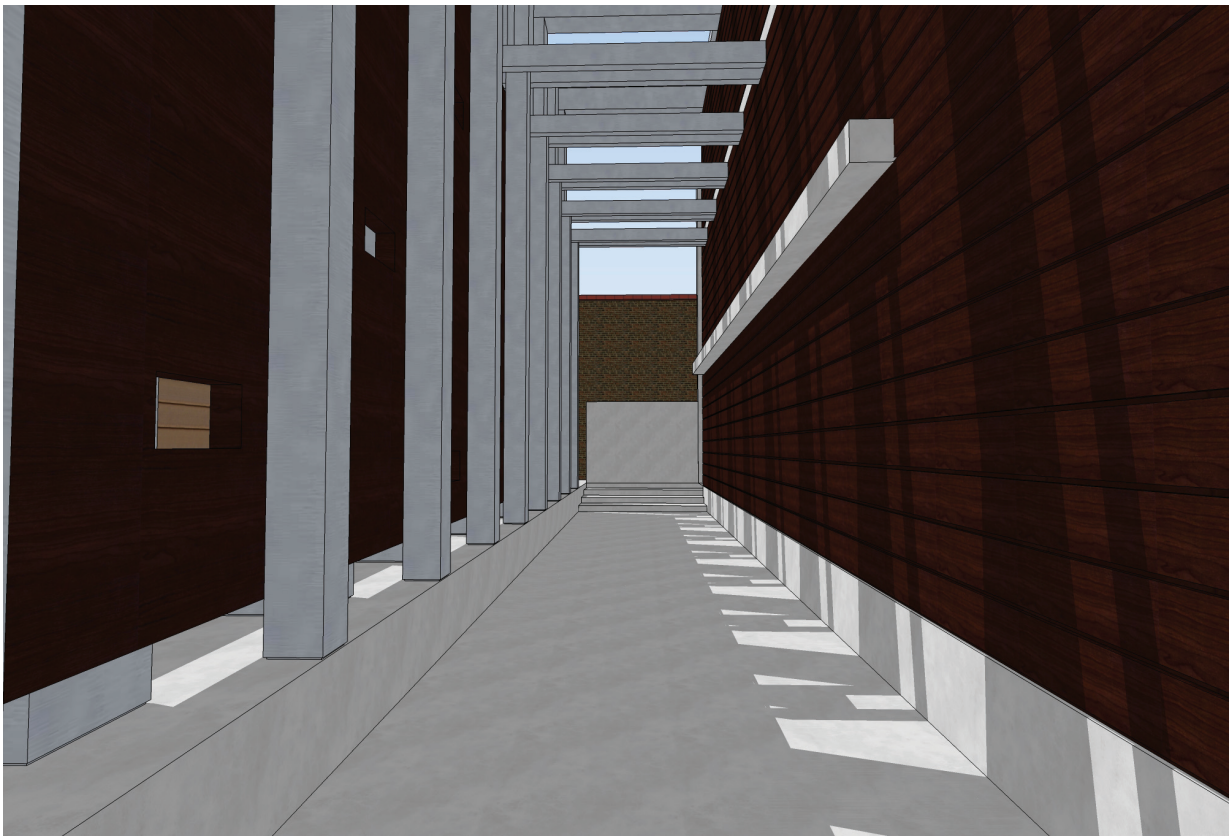
This assignment left me wanting to redesign my museum. Given more time I would have further developed the interior gallery space on the upper level and integrated areas of seating, bookshelves and areas for the display of works of art and historical ephemera. I would have also further expanded the context of the building in Charleston by representing the surrounding fabric of the city. It sits in a rich urban environment and part of the major concept was to create a public courtyard space within this site that is located at the threshold between the residential and commercial areas of King and Broad Streets in Charleston, South Carolina. I would also adjust the views to add more dynamic qualities to the renderings and move some them away from their current static compositions.



Exterior: Aerial view of museum fronting Broad Street..



Exterior: Options of entry from Broad Street looking west.



Interior: Entry through the volume as line.

Exterior: Public courtyard space.

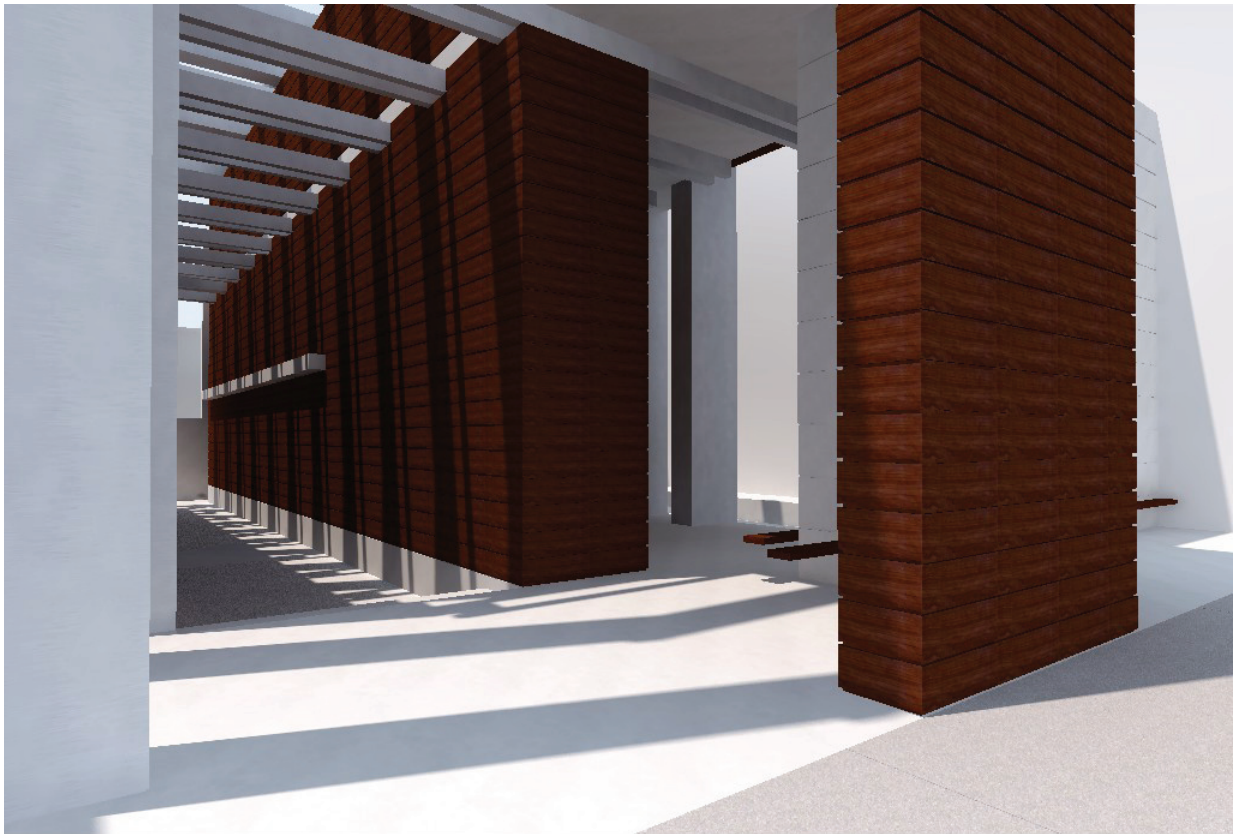
Interior: Upper level gallery space.

Aesthetic in the Atmosphere (Part 1)

Assigned February 28, 2012; due, March 14, 2012. This exercise consisted of two rendered views of our SketchUp model using the Podium plugin.

This next step to developing the museum project involving the use of rendering with Podium was a challenge and a great learning experience all in one. In this process I was introduced to a new side of SketchUp and became more aware of the potentials of using digital modeling in the design process. It was interesting to learn about the way rendering engines use algorithms in an attempt to replicate the reflection of light on the designed surfaces. It was also helpful to be introduced to the variety of settings which can be used to render. Knowing that the clay setting is a useful tool for general lighting composition on the massing of a form is a great time saver in the early steps of the process. Seeing the comparison between renders that took minutes to those that lasted for days brings a necessary awareness to the process and how to be efficient. As with any design, multiple iterations are needed to reach a desired effect, and having knowledge of effectively using the tools greatly aids that process. The concept of the Podium plugin wasn't that difficult to understand and with minimal effort basic renderings could be made. It was helpful to follow the steps laid out in the lecture to work on lighting first, then go into materials and their properties. Although the process was slow and frustrating as I was developing a working knowledge of the tools, the results of the renderings were much better than I had anticipated on my first attempts. Learning the lighting tools and experimenting with them became tedious on my first render of the upper gallery in my museum. Multiple renders were attempted as I adjusted and reevaluated the quality of the space created by the lighting. Eventually I achieved the desired atmosphere I wanted to convey in the space within the image and used the lessons learned from this render to work on the entry image.

If I had more time to investigate on this exercise, I would spend the time researching materials that perform well with Podium and look more into using the library of materials provided with the Podium plugin. I would also devote more time to experimenting with other rendering engines and their possibilities. I briefly used Maxwell for SketchUp and Kerkythea in my rendering process and find that the granular control offered by Kerkythea seems like it would be worth investing some time into, especially since it is open source and has a community of users. The lessons learned regarding lighting techniques for renderings is applicable to Kerkythea as well. I think that SketchUp plugins such as Podium, Maxwell, VRay or Render[In] aid the process by allowing for quicker adjustments to the model as a result of the rendered image. That workflow seems to be more efficient than exporting the model to Kerkythea, but the open source nature of that rendering engine may outweigh the extra effort required of reexporting an adjusted model from SketchUp.



Exterior: Options of entry from Broad Street looking west.

Interior: Upper level gallery space.

Building becomes Fantasy

Assigned March 20, 2012; due, March 27, 2012. In this exercise we took a base image of the Oslo Opera House and placed it in a fantasy setting.

This was a fun exercise for me. I have been a Photoshop user for several years now and it was nice to have the opportunity to simply play with the tools in creating this fantasy environment. It was especially nice to work with the Oslo Opera house by Snohetta since I had the chance to meet and talk with Craig Dykers on a tour of the new Hunt Library on Centennial Campus. Most of my time in Photoshop has been for undergraduate studio assignments and commercial web and graphic design commissions. As a result of this, I have become quite familiar with some of the more regularly used tools and haven't explored the tool palettes in a while. It has been more of a "get in and get the job done" approach to the software rather than expanding my knowledge of its usage. Since this exercise was all about getting in and using the program to create a space that doesn't have to exist in reality, it gave me room to investigate what tools were available in the program. I decided that my fantasy environment would place to opera house on Mars. Another interesting discovery was that there is a Google Mars page which tracks the missions to Mars among other things related to the planet. There were a myriad of excellent images available online and I went to work finding the textures and landscape elements I could integrate into the composition. It was enjoyable to see the effects created by blending layers together and testing various filters on the images. This was also a good refresher in using the image selection tools. The lectures reminded me of some of the tools I had neglected to use when trying to get an accurate selection. I have grown accustomed to using the same few tools when others would be more effective in getting a clean, crisp selection.

If I had more time to spend on this assignment, I would focus on understanding a more of the lesser used tools in the software. I would look into video tutorials online and try to expand my knowledge of the program as well as see how others are using it. There are a litany of uses for the tools and it is often inspiring to see something someone else has produced and try to deconstruct it in an attempt to understand how they utilized the software to achieve the image produced.

In the course of playing in the creation of this image, I felt like I was reintroduced to Photoshop and reminded that it is such a multi-layered program which serves numerous amounts of functions across the creative design disciplines and offers a world of exploration for use in architectural renderings and digital representation.

Oslo Opera house on the planet Mars.

Aesthetic Emotion in the Atmosphere (pt2)

Assigned March 27, 2012; due, April 4, 2012. This exercise consisted of adding Photoshop into the process of rendering.

Moving from simply using a rendering image to produce final images from a SketchUp model to integrating Photoshop into the process was a good exercise for me. I have used Photoshop for many other applications and was eager to see how the software was incorporated into the practice of architecture to visually communicate design through digital representation. Seeing examples in class broadened my concept of how the software is implemented in the field of architecture. Links to firms shared in class led to a whole new level of exposure to how vast an array of styles are created through incorporating Photoshop into the creative process. It reminds me of the discussion we had earlier when we talked about creating our own style with our orthographic drawings. Photoshop allows for so much manipulation and provides tools for creating believable images and I see that over time, with experimentation, I can begin to develop my own style of digital representation. Looking at the work of others also presents opportunities to develop visual language as their work is observed. There are many examples of emotive and evocative images as well as peaceful and calming ones and all in between. Questioning how the images evoke an emotive response and what message they convey allows me to see how someone else communicated effectively to me and learn how I can adopt the methods they used in my own future work.

For this image, I contrasted photos I took of various elements while in Charleston last semester with an unrendered image of the SketchUp model of the museum. It was my goal to express the public nature of the courtyard area within the museum and its inviting nature. The circulation for the museum design allows for entry directly into the courtyard without forcing someone to go through the museum first before entering the space. The design of the building incorporated this outdoor gathering space to allow for a place of respite for visitors and residents. The site for the museum is located near the intersection of King and Broad streets and sits at the threshold between the more private residential ream to the south and the increasingly commercial zone to the north. The site for the museum is one of many parking lots throughout the peninsula of Charleston and this proposal places a public space at that hinge position. While there are many private gardens, there isn't another gathering space for several blocks away. The town draws visitors from around the world and I tried to represent a diverse ethnic and age group within my image. In the end, I was not satisfied with the result, but it was my first attempt at integrating the software within my architectural design process.

Given more time on this project, and seeing the final result, I would have looked into using another rendering engine to get a rendered image of my site and create final version that was more cohesive with my earlier attempts at rendering using the Podium plugin.

Courtyard space of Museum of the City

House Project Final Review

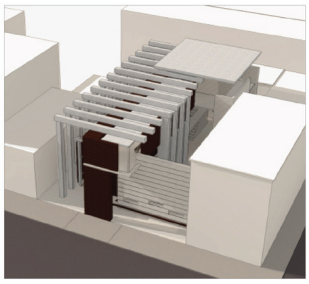
Assigned January 24, 2012; due, April 18th. This was a comprehensive representation of all of our work on our assigned building throughout the semester.

This assignment was about bringing it all together. Here I saw the coalescing of the semester long work on my museum of the city project. These final boards consisted of orthographic plans and sections, axons and renderings to digitally represent the museum. All of the software and tools used came into play to produce a final collection of elements to communicate the space and details of the museum of the city project. The museum project was my first major design project in school and I wasn't very satisfied with the result, so spending a whole semester working on bringing it to life wasn't always enjoyable. However, when it came to gathering the elements and putting this final presentation board together, I was able to look back on the process and see some of the potential qualities of the building. Working on the aesthetic renderings especially made me think about the way I had conceived the spaces and how I might communicate that to others. Establishing the museum in its urban context and location within the city fabric of historic Charleston leads to the primary understanding of how the building is designed. To achieve this, I presented an external aerial view of the museum with the massing of the surrounding buildings along Broad and King Streets. I chose to use a graphic style which would communicate the lightness and porosity of the museum. The space is intended for circulation and public use, and even the enclosed volumes of the main gallery and upper gallery allow light in an provide multiple moments for views to the exterior courtyard and greater city context. These upper level openings allow viewing of the many church steeples in this "Holy City" where, unlike other urban areas, they remain the highest structures within the skyline to link back to the history of the city as a bastion of religious diversity.

The major benefit of a comprehensive digital representation project such as this one is that it allows for consideration of the range of available means for communicating a design concept. There are also many details to think about, such as scales, north arrows, perspective view symbols, section cuts and line weights to name a few, that add a level of depth and clarity to a presentation. Knowing the software skills and how to create these elements has been a great benefit of this semester's study. I have always found that I learn best by doing and transitioning into graphic design for architecture from other types of layouts is a new challenge that has augmented my previous knowledge of layout design. The visual language used in digital representation for architecture has different aesthetic and graphic styles than some of the work I am used to producing. Beginning this familiarity with a new way to apply my design knowledge was what I was hoping to gain from this class, and if time and schedule had permitted I would have delved more into examining and dissecting the work of other architects to further expand my knowledge of effective digital communication.

MUSEUM OF THE CITY

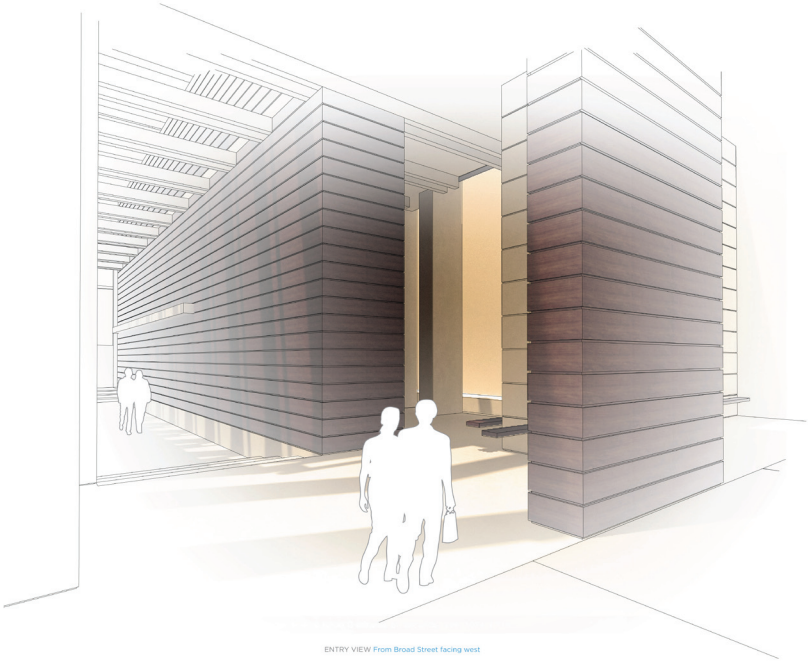
Charleston, SC



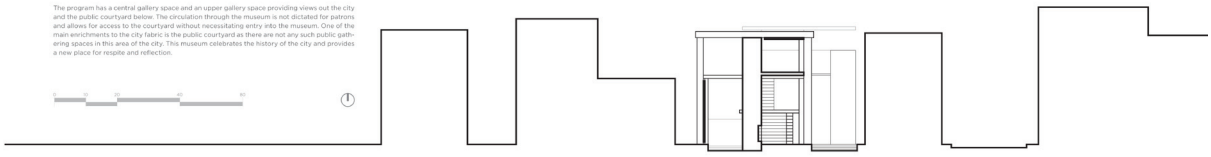
AERIAL & AXON VIEWS OF PROJECT
Showing urban condition along with indoor and courtyard elements of museum

The historic town of Charleston, South Carolina has seen layers of changes to both its land and built form over the past few centuries. As a result of years of development, several in fill sites remain. Many function as parking lots to accommodate the influx of tourism and this museum to celebrate the history of the city is located on such a site near the intersection of King and Broad streets. This intersection is at the threshold of residential and commercial and becomes a hinge to these two zones on the peninsula.

The program has a central gallery space and an upper gallery space providing views out the city and the public courtyard below. The circulation through the museum is not dictated for patrons and allows for access to the courtyard without necessitating entry into the museum. One of the main enrichments to the city fabric is the public courtyard as there are not any such public gathering spaces in this area of the city. This museum celebrates the history of the city and provides a new place for respite and reflection.

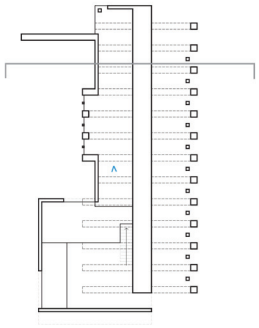


ENTRY VIEW From Broad Street facing west

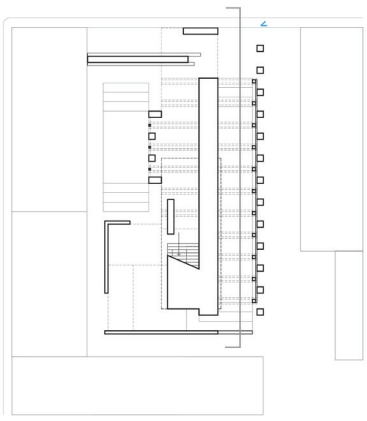


CROSS SECTION Displaying three part section of building

Presentation board one

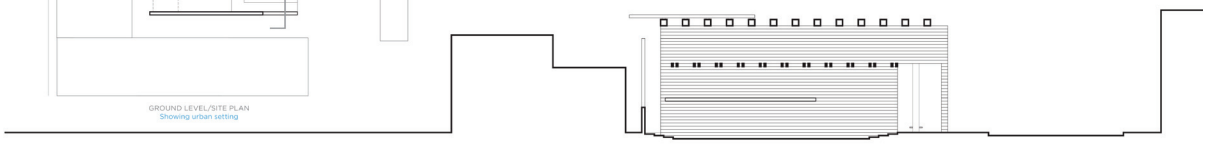


SECOND LEVEL
Containing upper gallery space



GROUND LEVEL/SITE PLAN
Showing urban setting

UPPER GALLERY View facing north with views out to courtyard and city



TRANSVERSE SECTION Displaying wall along entry promenade

Presentation board two

Digitalia

Reading was assigned the first day of class and was due April 24th.

Susannah Hagan's introduction to her work, *Digitalia*, lays the groundwork for her discussion on the place of digital representation in the field of architecture. She begins her discussion with Constant Nieuwenhuys' quote, *"Space as a psychic dimension (abstract space) cannot be separated from the space of action (concrete space)."* She presents the contrasts of human DNA with the digital DNA of binary code. Regardless of the creations made with a computer they are reducible to a series of binary zeros and ones, lacking the reality of the human state of materiality. They exist in the pristine state of the digital realm and can defy the laws of construction. Architecture takes on many forms, some theoretical, others traditionally tangible, and she posits a both/and approach to digital representation; the two realms – the theoretical and tangible – can exist together and benefit from the use of technology.

Her discussion creates a moment to pause and reflect on the role of digital representation. This semester of readings, assignments and learning new tools – both technical and theoretical – has taught me that digital representation is a powerful tool for communicating design ideas, but it should not be the sole generative creative source. Although digital representation has a valuable role in the design process, I do not believe it will ever replace the expression of human DNA on the field of architecture with its concomitant complexities, only contribute to its evolution.

Image source: http://bit.ly/I3Aowl

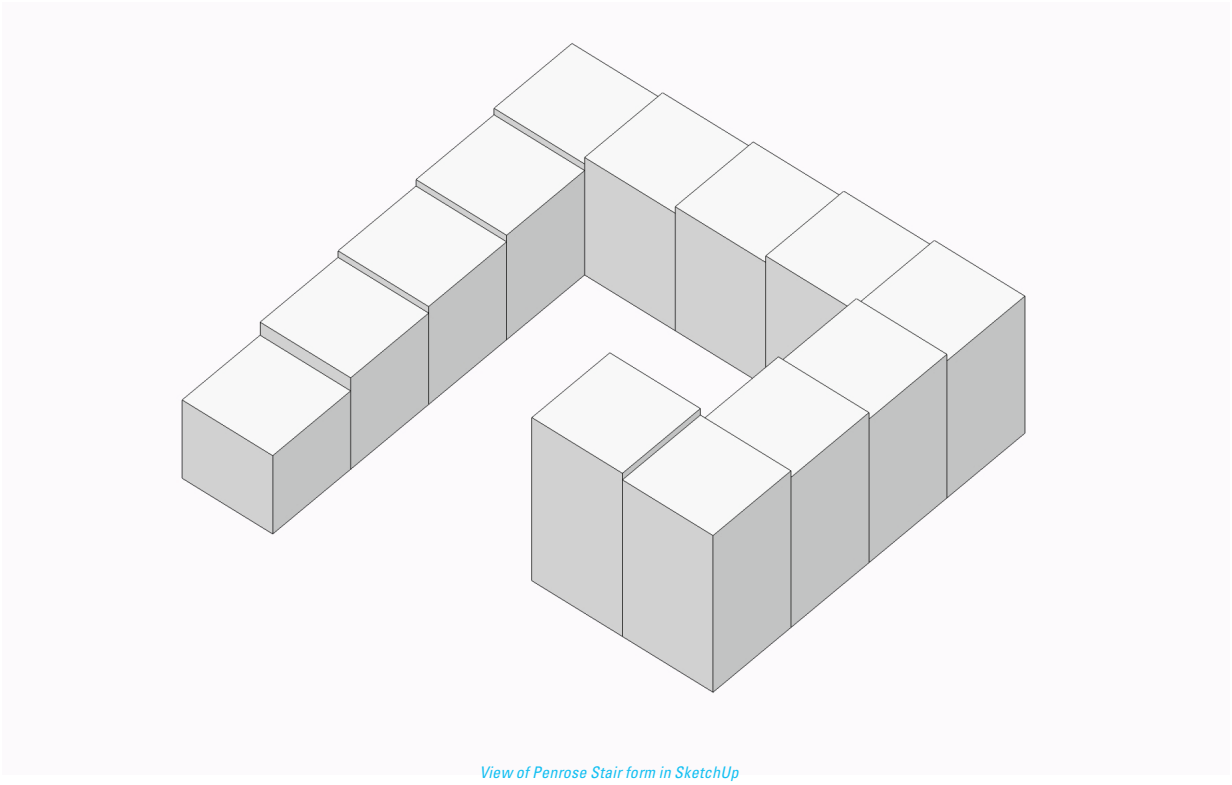
Special Topics: Rhino and 3-D Printing

Assigned April 17, 2012; due, Due April 25, 2012. This exercise consisted of designing and printing a 3-D object.

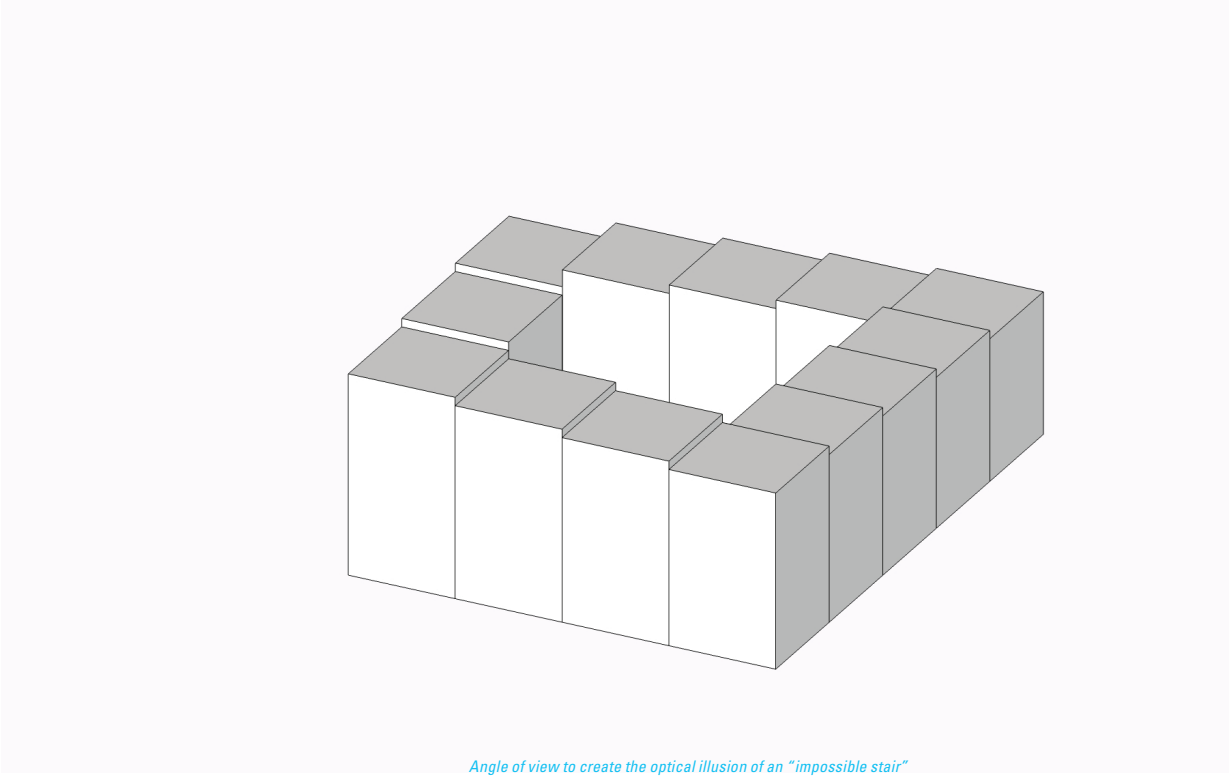
This special topic section of the class was a nice end to the semester. It was good to get to choose a topic of interest and be introduced to a new way of creating and realizing my design ideas. This was my first foray into using a three-dimensional modeling software like Rhino. I have heard of modeling programs like Rhino and Maya in the past, but have never had the opportunity to get to use them. SketchUp is the only program I have used to create objects in three dimensions. Rhino is quite different than SketchUp, in some ways it seems like Adobe Illustrator with the way you can select and manipulate points. Not being able to have control over the points of the objects has been a constant frustration in my use of SketchUp. That limitation is removed in Rhino and I may find myself using it to generate more complex design concepts in the future.

Exercise X was to design an object and either have it printed or use the CNC router. I used this assignment to learn how to move between Rhino and SketchUp and create a file for three dimensional printing. From the start, I wanted my object to be a stair or some sort. I remember Juhani Pallasmaa's lecture last fall where he passed around some small cast bronze stairs he had designed and referred to them as "architectural objects." My thoughts also went to the work of M.C. Escher and his illusionary stairs. He used it in his famous drawing "Ascending and Descending". I chose to create the "penrose stairs" for my 3-D printing assignment, which are an example of an "impossible object". It is an object that is a 2D representation of a shape that could never exist in three dimensions, but play an illusionary trick on the eye when viewed from a certain angle. This form was most recently seen in the motion picture *Inception*. I wanted to create this object because it represents the power of representation to create a communication with an audience. In a way, we are making an illusion with the forms and spaces we are presenting through renderings and drawings. Since we only have the sense of sight to work with in this form of graphic communication, we are asking viewers to imagine what it would feel like to inhabit that space and rely on the illusion of three dimensions in a two dimensional form to pursue that goal.

Since this project falls at a rather busy time in the semester and I am engaged in several projects at once, I didn't have the time available to further investigate the Rhino software and its potentials. With more time, I would have created another – possibly more complex – object solely in Rhino to compare the workflow against creating a form with SketchUp and moving it into Rhino in preparation for 3-D printing. That said, this assignment was a good way to end the semester because it allowed for the chance to look into something beyond just two dimensions and connect the tools we use for digital representation with the process of actually realizing those designs in three dimensions.



View of Penrose Stair form in SketchUp



Angle of view to create the optical illusion of an "impossible stair"

ARC 251 PROCESS PORTFOLIO
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