ADAPTABILITY
IN
ARCHITECTURE

LUCAS KIELION M. Arch Candidate
Design Thesis 2007-2008
Mentor: Chris Ford
University of Nebraska
College of Architecture

TABLE OF CONTENTS

8 PREMISE

9 INTRODUCTION

12 RESEARCH / ANALYSIS

13 DEFINITION OF TERMS

ADAPTABILITY
VERSATILITY
TRANSFORMABILITY
MOBILITY

16 THEORETICAL PRECEDENTS

17 Le Corbusier - Towards a New Architecture
20 Zuk & Clark - Kinetic Architecture
23 Richard Horden - Light Tech
25 Neil M. Denari
28 Robert Kronenburg - Flexible Architecture: Architecture that responds to change

32 TECHNOLOGICAL PRECEDENTS

36 DESIGN ARENA - SITE

39 Everglades National Park - Florida
42 Joshua Tree National Park - California
45 Denali National Park - Alaska

48 DESIGN ARENA - PROGRAM

49 DESCRIPTION

49 REQUIREMENTS

Program
Site
Client
Backpacking List

52 PERFORMATIVE REQUIREMENTS

Dynamic Gear
Active Gear
Passive Gear

TABLE OF CONTENTS

54 INITIAL DESIGN - CONCEPT
55 SPACE PLANNING
56 FRAME + COMPONENTRY
57 FRAME
58 PANELS
59 CULMINATION FIRST SEMESTER
60 FINAL DESIGN
LARGE SCALE COMPONENTS
ATTACHMENTS
FINAL PANELING + COLOR
64 DEPLOYMENT
66 EVERGLADES DEPLOYMENT DESIGN
69 JOSHUA TREE DEPLOYMENT DESIGN
72 DENALI DEPLOYMENT DESIGN
75 SCOPE OF MODELS
76 ORKAN EXPLODED AXON
78 EVALUATION OF DESIGN
80 CONCLUSION
81 RECOMMENDATIONS
82 REFERENCES
83 ACKNOWLEDGEMENTS

PREMISE

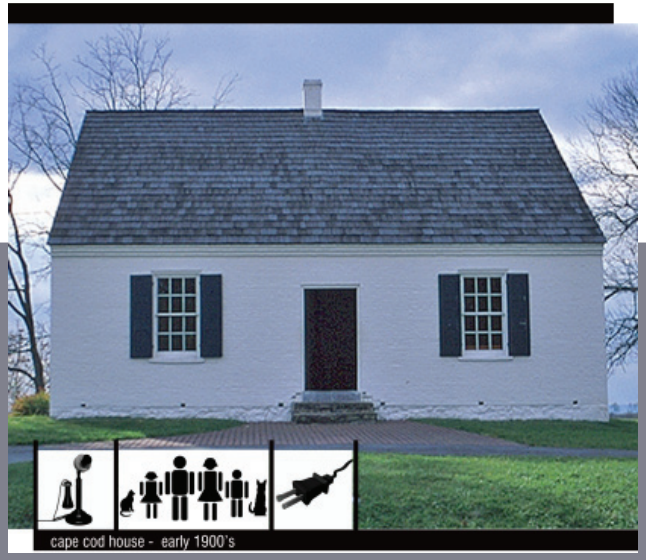
The thesis project came about as more of a fascination and curiosity, more than a desire to add to the overall realm of architecture. The realm in which I am referring is that of the machine as a means for living. I had started some of these notions the year before in a graduate level elective titled “Introduction to Craft” taught by the same professor who later became my mentor. If there was one thing that I took away from this class it was, the generative role certain craft objects can instill as a visual, expressive, and even physical role.

The semester was a success in terms of the broad ranges absorbed including: mass-production at the Kawasaki Plant, the physical act of making objects and producing, and arguing the present impact society, culture, etc. have on the idea producing.

In that same semester, I was involved in a studio with the purpose to better define the specificity of place through understanding Destination: Los Angeles. We took a field trip to LA to experience the ‘place’ first hand. Through seeing the architecture, and taking in the site and sounds, I personally began to develop an idea of what I thought architecture and design should entail.

I returned and came to the conclusion that the following year I would pursue a design thesis, and proposed the idea of adaptive architecture that was expressive, and had a means to be. I decided my project would be adaptable to both time and place and it would be something that would be expressive of its own adaptability when engaging different conditions.

INTRODUCTION



For too long, architecture has stood as an expression of permanence, recording a specific moment in history. This project begins with an idea that the adaptation of architecture is eminent, thus changing the process in which we design. The information age resulted in a highly mobile society, where modernization became more generic, the specificity of place changed, and time became more abstract. Mechanic invention supplied 'generic' standards to improve common application for tools. Strategies of a general building system could be familiarized with a local place, inherent with the idea of versatility. Through this design, it is important not to reiterate the vernacular, but to express the proactive role.

Adaptability in the terms of the architecture as we understand it is, is *more* than the satisfaction of need (shelter, etc.), *more* than the mere definition of space. Architecture is superlative: the thing that it brings to the table that elevates it above mere building is the expression of an idea or concept. Le Corbusier's "House-machine," wasn't about literally being a tool for dwelling, about needs, or performing tasks; it was a new way of living, about aesthetic beauty in the machine and translating that into architecture.

The two images (left), symbolize direction towards a new goal needing to be achieved. It was a goal of change in terms of mobility, family type, and interaction in regards to technology. The Micro-Compact House stood as adaptability to various ecological conditions, being off-the-grid in terms of power, and keeping in mind conditions of its inhabitants through specific needs. Where the Cape Cod style house eluded to being rooted in its environment.

INTRODUCTION

The Cape Cod house, in my opinion was built to address the array of needs of individuals that would inhabit it, as opposed to the specificity through conformed owernship. As time picks up and becomes more progressive, the house itself will remain the same. In other words, it has no capacity at adaptability or versatility.

Fall semester began with a question, “If architecture was adaptable, to what extent/extents should it be?” From the start, I produced the image of a multi-tool pocket knife, (page 9) as an expression of and symbol for adaptability and versatility. The components are most commonly seen as an array showing expressive potential, but naturally are seen in closed state with hidden potential. The images in the middle then shows each tool in action as it would be used. Zuk and Clark, constanly referred to this type of behavior as “Place-creation, or an extension of changing cultural needs.” These multi-tools could be seen as a universal form with a repetitive type gesture in terms of the internal features. These repetitive type tools as stated by Neil Denari is the process of adding to conditions of a specific form.

This multi-use idea, would be the design idea that would fuel my project for the rest of the year. This idea was that in needing something of a specific need, it could create an interactive adaptability that both a user and onlooker could understand.

/ / / IF ARCHITECTURE IS ADAPTABLE, TO WHAT EXTENT / SHOULD IT BE? / / /

RESEARCH /
ANALYSIS

DEFINITION OF TERMS

ADAPTABILITY

Design to adjust to different functions, users and climate change

VERSATILITY

The types of goals, methods, and behaviors the architecture supports for the specified environments and tasks. That is, to what extent does it accomplish its goals in its defined environments, and are those methods applicable across many different environments and tasks?

TRANSFORMABILITY

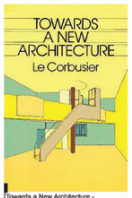
Design that change shape, space, form, or appearance by the physical alteration of their structure, skin, or internal surfaces

MOBILITY

Relocate from place to place in order to fulfill their functions better

INTERACT

Respond to users requirements in a automatic or intuitive ways (i.e. sensors to initiate changes in appearance, and environment or operation that are enabled by systems and intelligent materials)



Towards a New Architecture -
Le Corbusier
1923

DESCRIBE

Architect: By arrangement of forms, realizes an order which is pure creation of his spirit; by forms and shapes he affects our senses to an acute degree and provokes plastic emotion, by the relationships which he creates he wakes profound echoes in us. he gives us the measure of an order which we feel to be in accordance with that of our world, he determines the various movements of our heart and our understanding; it is then that we experience the sense of beauty.

3 Reminders to Architects:
-Mass
-Surface
-Plan

These three design elements have been utilized since the beginning of time. The Great Pyramids of Giza and the Pantheon have lasted to show us their importance. The lessons we learned were then transfigured and turned into modern tools. These tools came into a idea that a "House is a Mcahine," an entity towards all times.

We have taken tools that have been outlasted, and thrown them to waste. Men still live in houses, houses that are obsolete tools. Too long have we lived in houses that are not adapted to themselves. Civilization changes, religions change, houses will also change, falling to dust.

People of today are not of the home; they run to restaurants and nightclubs to spend their time. Architecture is a matter of "plastic emotion." This term "plastic," refers to the idea that we can see and measure by the eyes. The things that we develop should be of an rhythm equation (equilibrium). This plastic modulation is the development of an original plastic invention. This invention would be based on a series of tests. The tests would prove that the module to be manipulated is "basic." Unity of law is the law of good plans, as simple law capable of infinite modulation. This modulation should produce an ordered scheme and a fusion of utilitarian and plastic solutions.

The airplane, motor-car, and steamship are three single elements that have been design through industrial processes.

mass-production, and have turned into products of the most intense selection in the range of modern technology. Part of the reason for such fine sculptured product was through their statement of a problem. The plane for example:

To invent a flying machine having mind nothing alien to pure mechanics, that is to say, to search for a means of suspension in the air and a means of propulsion.

Man understands modern mechanics through justified use in our daily lives. Look at the mechanism of the person; machinery given to man, specialization to a specific machine ties a man to it, soon there will be a fit of something assembling into a whole.

There is a horizon that a plane flies on, if there are to many standards, the line becomes cluttered. When the line becomes cluttered the main ideas become fixed on less important details, that affect the outcome of the whole in a negative way.

ANALYZE

Monumentality but mobile = Steamship

A steamship is a perfect example of a past experience meeting head on with the future. The steamship os monumental, though it is sleek and performance enhanced. The steamship has important details towards desgin. The design of the interior plays off the Corbu's bubble example. The soap bubble is perfect and harmonious regulated from the interior. The exterior then is a direct result of that interior. The steamship has well defined quarters. The quarters are small and concise. At first we do not like these quarters, but as humans we naturally adapt to the environment we are thrown into.

We must look deeply into the essential details of what carry us as a society. These essentials will then give us the tools we need for future reference, while still producing something that has thoughts of adapting to the future.

It is hard to believe that the industrial revolution took so many ideas from the past, and transformed them into new innovative members to be applied to future needs. We as humans work everyday with products that can be made to define our future surroundings. Currently we use phones, computers, and technology that puts us too far ahead of ourselves. We easily make things to be mass produced, but don't think much beyond that. If we were to distill a simple modulating idea, we could compound that idea into something that can be used on a whole. The idea wouldn't fit snug, but would give more of us a encompassed realm to move into.

CONCLUDE

"Industry has created its tools, business has modified its habits and customs, construction has found new means, architecture confronted with new laws."

Manual for Dwelling

"Airplane is a machine for flying...the chair is a machine for sitting...the house is a machine for living."

Kinetic Architecture -
William Zuk & Roger Clark
1970

DESCRIBE

History > Enduring permanent structure > symbols _ showing excellence:
Pyramids in Egypt
Churches in Europe

Indigenous Architecture can only be understood through determinants physical, economical, social, and historical = FORM

Christopher Alexander (p. 5) "Form a set of forces to a form"
-Concept as Generator
-Concept has to be active
-No need as concept that occasion's response,
-Concept of pressure implying energy

Animate and Inanimate Pressures
3 Forms of Society:
1-Technological
2-Sociological
3-Biological
-Breadth
-Magnitude
-Rate of Change

-Stability only reality
-Western society-sees all human action occurs against background of stability. Stable Laws, Stable Institutions, Stable Values
-Change-Only reality, stability illusion
-Technology Institutionalized
-Think Tanks
-Research/Development Corporations

Kinetic Architecture-Accommocate problems of change
Now-Architecture point in time-forecasts future
-Mies Van Der Rohe-Universal Space-space to meet any functional demands
-Not all forms, in all tasks, not solving all functions

The initial form doesn't have to be correct, since kinetically changed to meet pressures not satisfied. "Ours is the age of change...dynamicism, of unrest, of revolution."
Bionics – Da Vinci – 15th Century
-Study of organic mechanisms and how can be adapted into higher life forms capable of being more than just passive elements.

ANALYZE

There is much adaption to think about when taking a design to an alternate area. Those adaptions take on the idea of free body or total movement. The idea is to either create an form (organism) that has the same tools for different objectives, or a multi-use tools for many objectives.

Some of the basic components to think about relies on the amount of interaction the interpreter will take on. Will the end result be of some mechanism that people will have all direct actions on the outcome, or will the machine be one of spectacle. An example might be of a pump and screw, where the other end might be something of a robot with Heuristic Design (Learning Capacity).

Trends have shown the likes of mobile and disposable architecture through the ideas of the nomads and American Indians. The materials that were moved were of the earth, showing the idea of impermanence.

The next idea would to be to develop an idea of architecture that would give precedence to the idea of transportation. The old concept of massive, fixed walls around a city given way to quick-responding, active instruments, such as artillery and antiballistic missiles. "In movable architecture (Kinetic Architecture), structure is key, or pivotal aspect of the feasibility and workability of the whole concept." (p. 32)

Movable components can be replaced or accompanied by any form to be manipulated. These key elements help to stress the idea that anything can be re-evaluated towards a better goal. Some of the factors in the past that have been rearranged are:
*Moving Partitions (sliding doors and partitions)
*Movable Bleachers (IBM Pavilion)
*Movable Roofs (Colosseum, Hard vs. Soft)
**Translating Room (elevators, spatial movement without rotation)
*Turntables (railroads, restaurants, ramps)
*Multiple Moving Parts

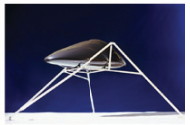
CONCLUDE

Initial form doesn't have to be correct, since kinetically changed to meet pressures not satisfied

"Ours is the age of change....dynamicism, of unrest, of revolution."

"Life itself is in motion, from a single cell to the most complex organism, man."

Light Tech -
Richard Horden
1995



THEORETICAL PRECEDENTS

TECHNOLOGICAL PRECEDENTS

1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842

INDUSTRIAL REVOLUTION

1510 - German Verge and Foliat Control Clock

1603 - Windmill - Turkey, Crete, Portugal

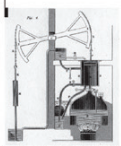
1490 - Flying Instructions - Leonardo DaVinci

1490 - Pulley System - Leonardo Da-Vinci

1430 - Gutenberg Press - Johann Gutenberg

1 A.D. - Hero's Windmill - Hero of Alexandria

1701 - Seed Drill - Jethro Tull

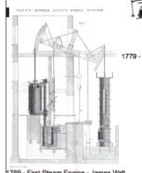


1712 - Steam Engine - Thomas Newcomen

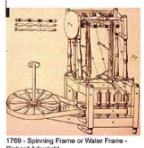
1709 - Coke - Abraham Darby I

1733 - Flying Shuttle - John Kay

1750 - Windmill - Horton, Suffolk, England



1769 - First Steam Engine - James Watt



1769 - Spinning Frame or Water Frame - Richard Arkwright

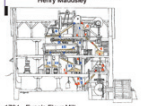
1764 - Spinning Jenny - James Hargreaves

1784 - Power Loom - Edmund Cartwright

1783 - Hot Air Balloon Aerostat Reveillon_Pilatre De Rozier

1779 - Spinning Mule - Samuel Crompton

1797 - Screw Cutting Lathe - Henry Maudsley



1794 - Evan's Flour Mill

1793 - Cotton Gin - Eli Whitney

1815 - Beam Steam Engine - Georg Christian Freund

1812 - Machine Breakers - The Luddites

1807 - Steam Propulsion - Robert Fulton Clermont

1804 - First Steam Locomotive - Richard Trevithick

1830 - Grenelle, Paris - Artisian Drill

1825 - Stockton to Darlington Railway Open

1839 - Paris - Dag

1839 - Rain_Stear

1838 - Telegraph - Samuel F.

1840 - RMS B
Samuel Cunar

ESCRIBE

is the first dimension in architecture. In english there are
nearings: one having to do with the idea of illumination, and
ther about lightweight, lightness, or non-heavy. When refer-
o lightness some of the prescriptive idea are'touch the earth
r,' physical lightness, light on form, aesthetics of light and
, lightness of touch, lightness in relation to energy and the
onment, and 'social lightness.'

-Tech' - Architecture centered on realities of our thoroughly
'technicalised' society
l-Tech' - Materials and lightweight construction are active
design factors. 'Dry' onsite assembly vs. Prefabrication.
Lightness overcomes mass and rigidity.

scients:
Aircraft
Sailboats
Space Flight - Cahracterized by mobility and lightness

'Architectonic' + 'Micro-Architecture'
-To move in air and water unlike stone and concrete

NALYZE

is in the details - Mies Van Der Rohe

eals how it is disposed, not hidden or concealed and how it
ions.

ystem, or design that cannot be made better, lighter. As
d by the Chinese, dynamic ideology and the heightened
e of history, certainly seem aware of the deeper association
een crisis and change. This lightness in architecture can
come the mass and rigidity that is often associated with it.

rimental tehcnology in architecture can be a source of cre-
y as a desire for clear thought...the art is not neglected and
tctonic is allowed great latitude.

ONCLUDE

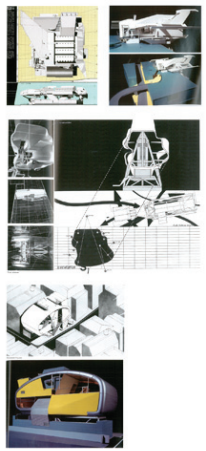
Saarinen once said, "Architecture consists largely of plac-
omething between the earth and sky."

Visible Harmony of Transformation:
-Openness causes uncertainty, vulnerability, and constant trans-
formation.

Design should be a balance of influences and objectives. It
should be about creating a particular solution and exploring the
sources. In his projects, Horden works between traditional ar-
chitecture and aerodynamics, which can bring him to design that
work in land, sea, and air. Architecture is about 'lightness,' find-
ing new ways to achieve more with less, optimising visual and
technical attitudes to minimize the overuse of materiality.

Each individual project takes on some element of the natural
environment. He design aluminum frames, like sailboats and
planes. The use of these materials most often suggest the
'changing of the weather.' Certain lightness of material, like
aluminum and carbon fiber, helps in the prototyping process,
for keeping cost low, and maximizing skill and speed. It also
allows the design to be opened up to the exterior environment.
Sailboats to him are an example in the symbology of beauty of
modern engineering and the freedom of innovative and creative
thinking in architecture

Gyroscopic Horizons -
Neil Denari
1999



DESCRIBE

Space is Place:
-Bound physical space is now comprised by mobility, technology, the fluctuation of borders, and the heterogeneity of cultures. So much architecture must conspire with complex forces at work in resolution of placements. Adaptability is a constant flow and movement of technology, politics, and economics which must find orientation without the fixity of place. Denari states, "Today architecture not about clearing out, it is about a lack of fitting in."

Media is a gigantic machine of hyperbolized banality
-Experience therefore is oscillation, disorientation, and play
-Movements can't occur, therefore, if resistance is based on nostalgia
Architecture is artificial landscape responding to fluctuating conditions, deploying supple forms, and programs that have the potential to elude the restrictions of its own universe of doubt, that is too big, too heavy, and too mute to accurately describe or produce our world. Adaptability should involve a reifying of knowledge into a usable and/or readable state, one where sensations of material space provide ineffable feeling.

Repetition can be used as innovation, as mechanism of liberation, of life and death; Repetition as will, as the opposite of laws of nature; Repetition as new morality beyond habit and memory; Repetition that only attains tension and creativity with the fissures of difference; with equilibrium, innovation.

Example:
-Rollercoaster 3-dinensional artificial landscape supported by
a massive superstructure designed to simulate the effects
of a smooth space somewhere between land + flight.
-Why build up when nature already provides the forms
necessary?

Contours are the physical surfaces + systems that govern both the data + the intuition of the work. They are the manifold conditions of the physical, static, + cultural forms at play.

ANALYZE

-"Architecture were such not by virtue of their technical or geographical conditions, or by the materials from which they were constructed, products of will – a subjective desire to manifest a vision of the world not through symbols or images, but by means of new and changing special experiences." Aloia Rodi – Ignasi de Sola – Morales "Differences" Cambridge, MA; MIT Press 1997. p.95

In the realm of design Denari discusses the possibilities of creating a piece of architecture that has relevance to everything and nothing at all. When you look at the images to the right, you see his work progress in a state unlike the architecture around it. In his work he denotes a sense of impermanance through his choice of materials and abstract forms. The architecture has a sense of interaction with the components relying on visual stimuli and concrete physical manipulation.

In the book, "Gyroscopic Horizons," Denari likes to explain the built environment against the context of the Metroplex and military housing in the 1960's and 1970's. This formality helps to explain his anti-suburban confrontation on builds foundation for his reasoning. He explains this as a code for unlimited possibility with the right desire and ingenuity. By looking at site and form as a technological expression we can create a formula for the personal, authentic, adn machinic aspects of built production.

CONCLUDE

Denari states, "Today architecture not about clearing out, it is about a lack of fitting in."

-Geometry should not be independent of experience

-"Let us imagine toal space as a body of water, into which we may sink certain vessels, and thus be able to define individual volumes of water without however destroying the idea of a continuous mass of water enveloping all." Adolf von Hildebrand from book "The Problem of Form" New York, Stechert, 1907

Flexible: Architecture that Responds to Change - Robert Kronenburg
2007


1964 - Plug-In City - Peter Cook - Archigram


2005 - Halley VI - Hugh Broughton & FaberMaunsell


2005 - Mobile Dwelling Unit - LOT-EK

DESCRIBE

There was a time when our existence was based on our capacity of movement and adaptability. Most culture now lead sedentary lives, but it could be that fixsibility is once again becoming a priority in human development and that technological, social, and economic changes are forcing, or encouraging, a new form of nomadic existence. consider a house specifically designed to offer changing opportunities – it could be something designed for a single person during the week or six at the weekend, or a home you took with you on business trips. building now is a mass-production process struggling to achieve its real benefits when it should be able to use to accommodate variety, specificity, and change of products

All buildings have operational features such as windows, doors, even the furniture is movable, but architects only design to a certain level for items to be repositioned. An important part of succes that can be attributed to adaptable architecture. relates to how well it functions in regards to static architecture. One important control aspect in adaptable architecture, is its ability to open to the external environment.

The conditions to take into affect are light, air, and features relating to both the interior and exterior protocols. All buildings have operational features such as windows, doors, even the furniture is movable, but architects only design to a certain level for items to be repositioned. An important part of succes that can be attributed to adaptable architecture, relates to how well it functions in regards to static architecture. One important control aspect in adaptable architecture, is its ability to open to the external environment. The conditions to take into affect are light, air, and features relating to both the interior and exterior protocols.

The concept of movable architecture understands the idea that a form is made to move from place to place. Building since the beginning of history have been made to be static, to show permance of the artifact, and mobility is the transitional element taking place on a more intimate level. The success of humanity is the ability to act and react - to recognize and analyse situations and respond to them in an appropriate manner. Automation - an action that is carried out to a predetermined, unchangable pattern; and an action that is carried towards a predetermined solution with a variable to change along the way.

ANALYZE

-Society is never static – usually towards progress and improvements in the condition of human existence
-Roads are extended and re-routed, building demolished and re-built, nevertheless, the method towards buildings and responding to change has gone virtually unchallenged
-Personal transportation, computing, mobile phones, and ac cess to affordable air travel are becoming subject to the phenomena of 'pluralization of lifestyle', where the conventional family is replaced by more fluid groupings that differ in size and make-up and are subject to make frequent change.
-Adaptable architecture supports the servant role due to 24-hour work patterns in the home; changing family size + group ings; ecological issues that are questioning the desirabil ity of commuting; lifestyle issues that envisage a more fulfilling personal life; and the possibility of remote working due to communications technology.

- Wright "Usonion House" was simple, affordable + modular in design
- Corbu 5 precedents in Architecture
- Rietveld Schroeder House (1924)
- Eileen Gray (E-1027) (1926-29)
- Maison de Verre (1927-31) Pierre Chareau
- Dymaxion House (1929) Buckminster Fuller, Wichita House (1945) Buckminster Fuller
- Eames, Charles Tray (1948) Beno Saarinen
- Plug-in city (1964) Peter Cook Arch.gram
- Dense housing prefabricated in fluctuating conditions
- (1975) future systems Cabin 300, NASA work
- Richard Horden + Haack + Hoeffler architects

CONCLUDE

-Heidegger – "Recognized a sense of place is not established by just building, but by any method human being can use to recognize what place is."
-Nietzche says "place is the product of lived space and lived time."
-Jones Partners homes can be changes at will during use
-With the working parts being shown you begin to under stand operability of the architecture
-Cheap house can be recycled after a few years

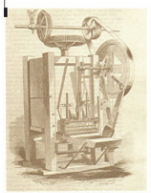
-Ideas should go against 'one size fits all', and fine-tuned to fit every user in a special way – skin can be replaceable and internal parts quickly relocated
-The house is a laboratory, test-tube, + Petri dish of new forms, technologies, + living patterns!
-Architecture is so focused on time, we forget to consider the temporal dimension of the event in architecture

1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015+

GREAT EXPOSITION 1851


odlewheel -


WJ Turner

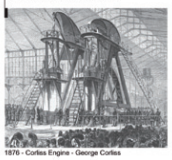

1852 - Brickmaking Machine - Richard VerValen


1851 - Crystal Palace - Joseph Paxton

1866 - Transatlantic Cable - Cyrus Field


1870 - Zeppelin Aircraft - German Count Ferdinand von Zeppelin


1876 - Telephone - Alexander Graham


1876 - Corliss Engine - George Corliss


1891 - Tesla's Coil - Nikola Tesla


1893 - Thrasher and seper-
ator - Winthrop Norton


1893 - Ferris Wheel - George Ferris


1893 - Diesel Engine - Rudolph Diesel


1896 - Gliding Flight -
Otto Lilienthal


1899 - Guglielmo Marconi - Radiotelegraph

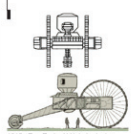
1903 - Plane - Wright Brothers


1912 - Marcel Duchamp - Naked


1913 - Assembly Line - Ford Motor Company

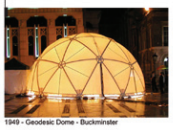

1914 - Paris Gun - Krupp & Essen


1914 - Panama Canal


1915 - Tsar Tank - N.N. Lebedenko


1952 - Hovercraft -
Christopher Cockerell

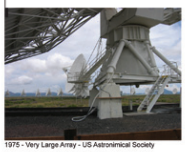

1950 - Herbertz's Coffee Machine -
Herbertz


1949 - Geodesic Dome - Buckminster


1964 - Walking City - Archigram


1969 - Lunar Moon Module - Apollo 11-
NASA


1973 - First Portable Phone - Martin Cooper


1975 - Very Large Array - US Astronimical Society


1979 - First Laptop - William Moggridge


2007 - Technopod - ZLG Architects

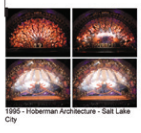

2007 - Corbu 2.0 - Andrew Maynard


2006 - o2 Village - Richard Horden

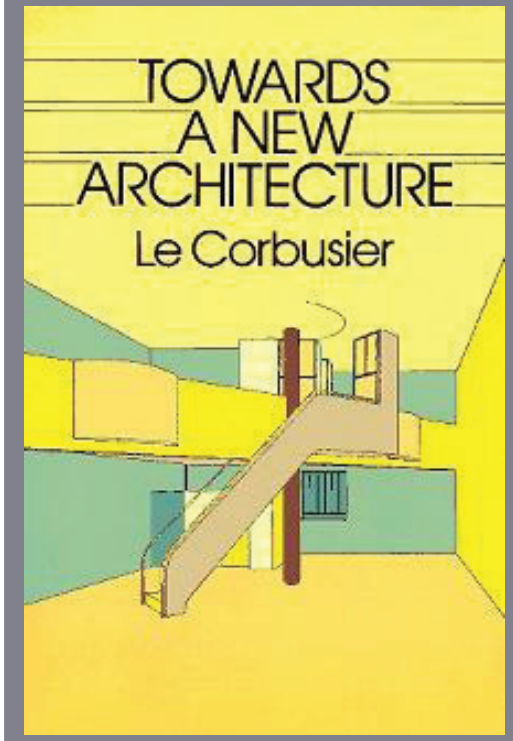

2006 - Earth Mover - Krupp's Machinery


2005 - V-22 Aricraft - U.S. Government


1998 - International Space Station
- NASA


1995 - Hoberman Architecture - Salt Lake
City

THEORETICAL
PRECEDENTS



Towards a New Architecture, 1926

DESCRIBE

Architect: By arrangement of forms, realizes an order which is pure creation of his spirit; by forms and shapes he affects our senses to an acute degree and provokes plastic emotion, by the relationships which he creates he wakes profound echoes in us, he gives us the measure of an order which we feel to be in accordance with that of our world, he determines the various movements of our heart and our understanding; it is then that we experience the sense of beauty.

3 Reminders to Architects: Mass, Surface, Plan

These three design elements have been utilized since lessons we learned were then transfigured and turned into modern tools. These tools came into an idea that a “House is a Machine,” an entity towards all times.

We have taken tools that have been outlasted, and thrown them to waste. Men live in houses that are considered obsolete tools. Too long have we lived in houses that are not adapted to themselves. Civilization changes, religions change, houses will also change, falling to dust.

People of today are not of the home; they run to restaurants and nightclubs to spend their time. Architecture is a matter of “plastic emotion.” This term “plastic,” refers to the idea that we can see and measure by the eyes. The things that we develop should be of an rhythm equation (equilibrium). This plastic modulation is the development of an original plastic invention. This invention would be based on a series of tests. The tests would prove that the module to be manipulated is “basic.” Unity of law is the law of good plans; as simple law capable of infinite modulation. This modulation should produce an ordered scheme and a fusion of utilitarian and plastic solutions.

DESCRIBE (Cont...)

The airplane, motor-car, and steamship are three single elements that have been designed through industrial processes, mass-production, and have turned into products of the most intense selection in the range of modern technology. Part of the reason for such fine sculptured product was through their statement of a problem. The plane for example:

To invent a flying machine having mind nothing alien to pure mechanics, that is to say, to search for a means of suspension in the air and a means of propulsion.

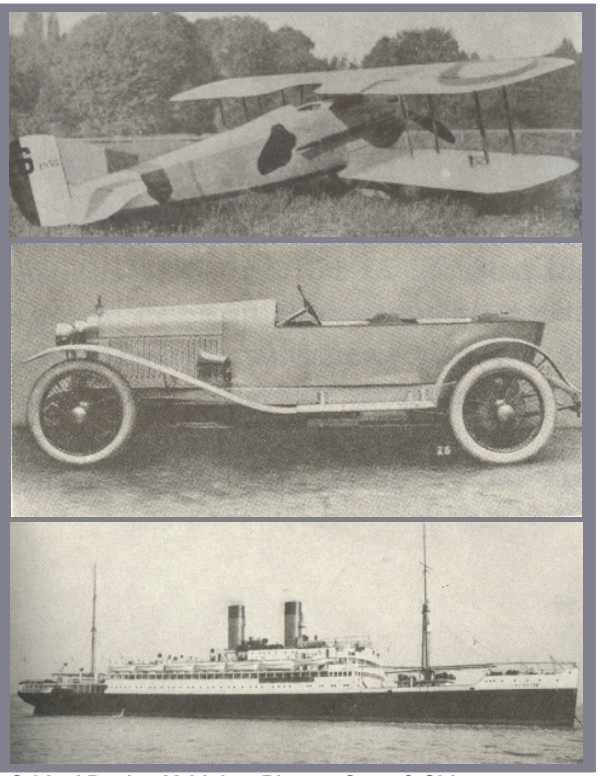
Man understands modern mechanics through justified use in our daily lives. Look at the mechanism of the person: machinery given to man, specialization to a specific machine ties a man to it, soon there will be a fit of something assembling into a whole.

There is a horizon that a plane flies on, if there are to many standards, the line becomes cluttered. When the line becomes cluttered the main ideas become fixed on less important details, that affect the outcome of the whole in a negative way.

ANALYZE

Monumentality but mobile = Steamship

A steamship is a perfect example of a past experience meeting head on with the future. The steamship os monumental, though it is sleek and performance enhanced. The steamship has important details towards desgin. The design of the interior plays off the Corbu's bubble example. The soap bubble is perfect and harmonious regulated from the interior. The exterior then is a direct result of that interior. The steamship has well defined quarters. The quarters are small and concise. At first we do not like these quarters, but as humans we naturally adapt to the environment we are thrown into.



Critical Design Vehicles, Planes, Cars, & Ships

ANALYZE (cont...)

We must look deeply into the essential details of what carry us as a society. These essentials will then give us the tools we need for future reference, while still producing something that has thoughts of adapting to the future. It is hard to believe that the industrial revolution took so many ideas from the past, and transformed them into new innovative members to be applied to future needs. We as humans work everyday with products that can be made to define our future surroundings. Currently we use phones, computers, and technology that puts us too far ahead of ourselves. We easily make things to be mass produced, but don't think much beyond that. If we were to distill a simple modulating idea, we could compound that idea into something that can be used on a whole. The idea wouldn't fit snug, but would give more of us a encompassed realm to move into.

CONCLUDE

"Industry has created its tools, business has modified its habits and customs, construction has found new means, architecture confronted with new laws."

Manual for Dwelling

"Airplane is a machine for flying...the chair is a machine for sitting...the house is a machine for living."

DESCRIBE

History > Enduring permanent structure > symbols showing excellence:

Pyramids in Egypt
Churches in Europe

Indigenous architecture can only be understood through determinants physical, economical, social, and historical = FORM

Christopher Alexander (p. 5) “Form a set of forces to a form”

-Concept as Generator
-Concept has to be active
-No need as concept that occasions re sponse,
-Concept of pressures implying energy

Animate and Inanimate Pressures

3 Forms of Society:

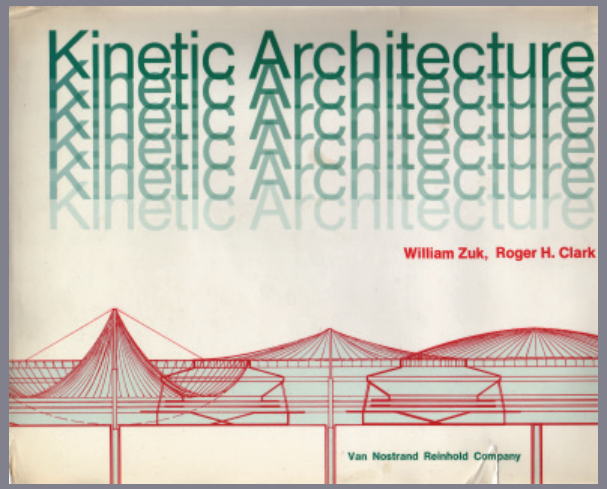
1-Technological
2-Sociological
3-Biological

-Breadth
-Magnitude
-Rate of Change

Stability is only a reality. While western societies see all human action occuring against a background of stability. (i.e. Stable Laws, Stable Institutions, Stable Values). Change-Only reality is a stability illusion

-Technology Institutionalized
-Think Tanks
-Research/Development Corporations

Kinetic Architecture accommodate problems of change. These can be applied how design moves, where it moves, factors of deployment, and the like. Now architecture in point can time-forecast the future. Not all examples can be seen as successes, but the ideas were a spring board to the concepts we are now facing as challenges.



Kinetic Architecture, 1970

DESCRIBE (Cont...)

-Mies Van Der Rohe-Universal Space-
space to meet any functional demands
-Not all forms, in all tasks, not solving all functions

The initial form doesn't have to be correct, since the form can kinetically changed to meet the pressures not satisfied.

"Ours is the age of change…dynamicism, of unrest, of revolution."

Other forms of Kineticism:

-Bionics – Da Vinci – 15th Century
-Study of organic mechanisms and how can be adapted into higher life forms capable of being more than just passive elements.

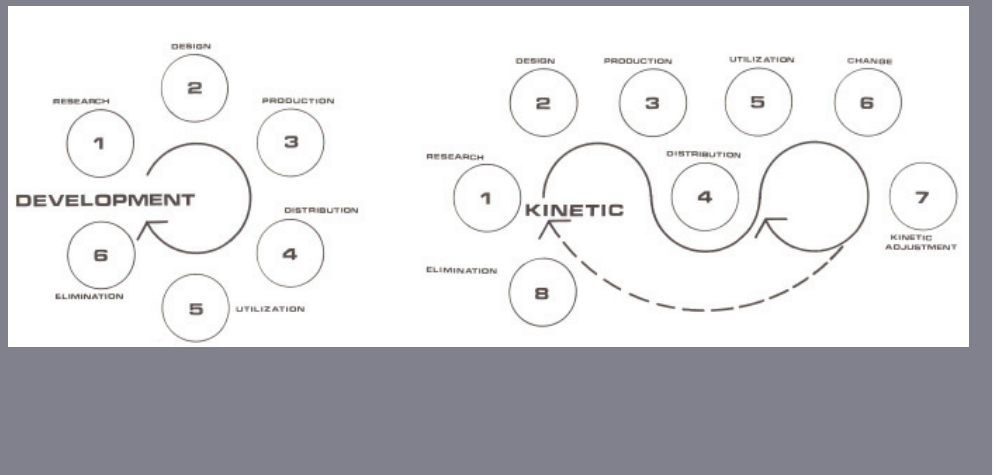


Diagram of cycles of design, Normal vs. Kinetic

ANALYZE

There is much adaptation to think about when taking a design to an alternate area. Those adaptations take on the idea of free body or total movement. The idea is to either create a form (organism) that has the same tools for different objectives, or a multi-use tools for many objectives.

Some of the basic components to think about relies on the amount of interaction the interpretor will take on. This will produce the end result to be of some mechanism that people will have all direct actions on the outcomes, or will the machine be one of spectacle. An example might be of a pump and screw, where the other end might be something of a robot with Heuristic Design (Learning Capacity).

Trends have shown the likes of mobile and disposable architecture through the nomads and American Indians. The materials that were moved were of the earth, showing the idea of impermanence.

ANALYZE (Cont...)

The next idea would to be to develop an idea of architecture that would give precedence to the idea of transportation. The old concept of massive, fixed walls around a city given way to quick-responding, active instruments, such as artillery and antiballistic missiles. “In movable architecture (Kinetic Architecture), structure is key, or the pivotal aspect of the feasibility and workability of the whole concept.” (p. 32)

Movable components can be replaced or accompanied by any form to be manipulated. These key elements help to stress the idea that anything can be re-evaluated towards a better goal. Some of the factors in the past that have been rearranged are:

*Moving Partitions (sliding doors and partitions)
*Movable Bleachers (IBM Pavillion)
*Movable Roofs (Coliseum, Hard verse. Soft)
*Translating Room (elevators, spatial movement without rotation)
*Turntables (railroads, restaurants, ramps)
*Multiple Moving Parts

CONCLUDE

Initial form doesn’t have to be correct, since they are kinetically changed to meet pressures not satisfied

“Ours is the age of change…dynamicism, of unrest, of revolution.”

“Life itself is in motion, from a single cell to the most complex organism, man.”

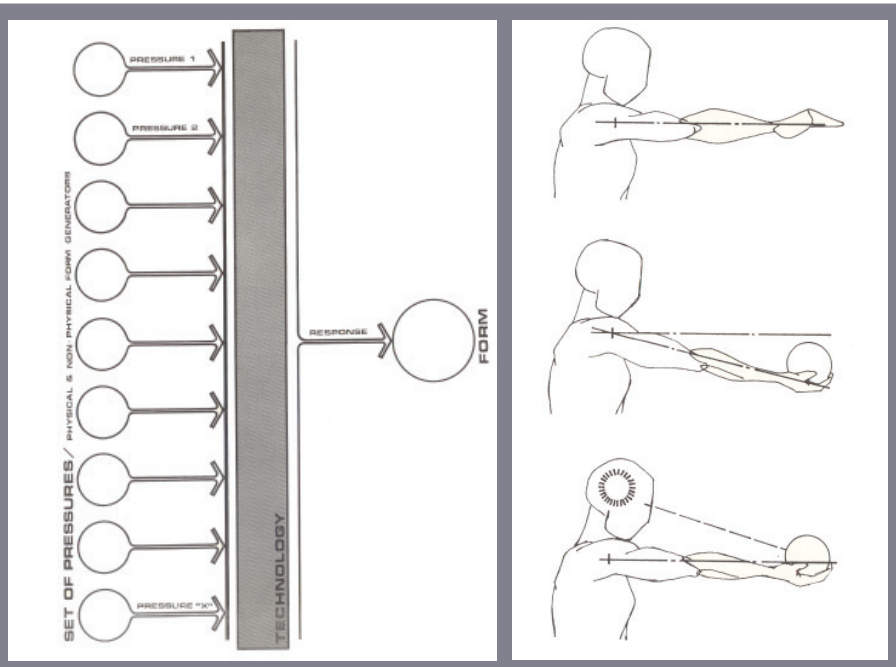


Diagram showing Pressures and Response
Human Pressure with an Object

Light Tech, 1995

DESCRIBE

Light is the first dimension in architecture. In English there are two meanings; one having to do with the idea of illumination, and the other about lightweight, lightness, or non-heavy. When referring to lightness some of the prescriptive ideas are to touch the earth lightly, physical lightness, light on form, aesthetics of light and color, lightness of touch, lightness in relation to energy and the environment, and 'social lightness.'

'High-Tech' - Architecture centered on realities of our thoroughly 'technicalised' society.

'Light-Tech' - Materials and lightweight construction are active design factors. 'Dry' on site assembly verse. Prefabrication. Lightness overcomes mass and rigidity.

Precedents:

Aircraft

Sailboats

Space Flight - Characterized by mobility and lightness

'Arch-tectonic' + 'Micro-Architecture'

-To move in air and water unlike stone and concrete

Visible Harmony of Transformation:

-Openness causes uncertainty, vulnerability, and constant transformation.

Design should be a balance of influences and objectives. It should be about creating a particular solution and exploring the sources. In Horden's projects, he works between traditional architecture and aerodynamics which can bring him to design that work in land, sea, and air. Architecture is about 'lightness,' finding new ways to achieve more with less, optimizing visual and technical attitudes to minimize the overuse of materiality.

DESCRIBE (Cont...)

Each individual project takes on some element of the natural environment. Horden designs aluminum frames, like sailboats and planes. The use of these materials most often suggest the 'changing of the weather.' Certain lightness of material, like aluminum and carbon fiber, helps in the prototyping process, for keeping cost low, and maximizing skill and speed. It also allows the design to be opened up to the exterior environment. Sailboats to him are an example in the symbology of beauty of modern engineering and the freedom of innovative and creative thinking in architecture

Richard Horden, Ski Shelter

ANALYZE

"God is in the details" - Mies Van Der Rohe

Reveals how it is disposed, not hidden or concealed and how it functions.

There is no system, or design that cannot be made better, lighter. As stated by the Chinese, dynamic ideology and the heightened sense of history, certainly seem aware of the deeper association between crisis and change. This lightness in architecture can overcome the mass and rigidity that is often associated with it.

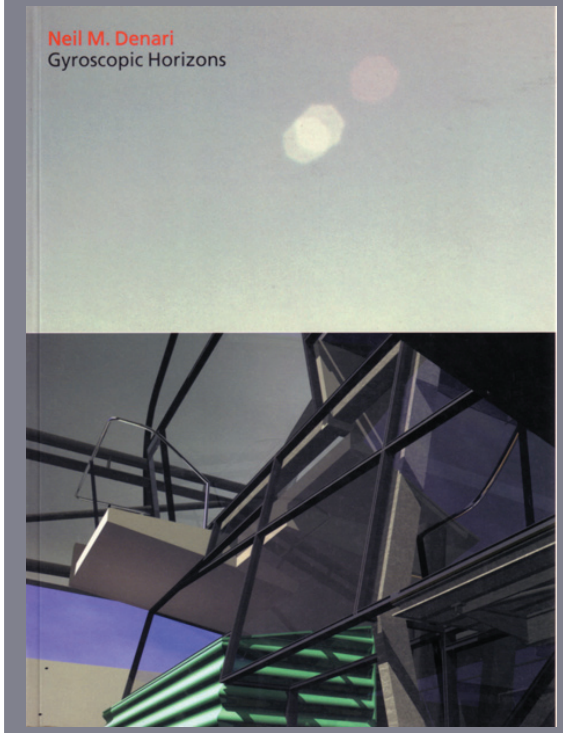
"Experimental technology in architecture can be a source of creativity as a desire for clear thought... the art is not neglected and the tectonic is allowed great latitude."

RIchard Horden, Peak Lab, Cliff Dweller

CONCLUDE

Eero Saarinen once said, "Architecture consists largely of placing something between the earth and sky."

RIchard Horden, Ski Haus



Gyroscopic Horizons, 1999

DESCRIBE

Space is Place:
-Bound physical space is now comprised by mobility, technology, the fluctuation of borders, and the heterogeneity of cultures. So much architecture must conspire with complex forces at work in resolution of placements. Adaptability is a constant flow and movement of technology, politics, and economics which must find orientation without the fixity of place. Denari states, “Today architecture is not about clearing out, it is about a lack of fitting in.”

Media is a gigantic machine of hyperbolized banality

-Experience therefore is oscillation, disorien tation, and play
-Movements can’t occur, therefore, if resistance is based on nostalgia

Architecture is an artificial landscape responding to fluctuating conditions, deploying supple forms, and programs that have the potential to elude the restrictions of its own universe of doubt, that is too big, too heavy, and too mute to accurately describe or produce our world. Adaptability should involve a reifying of knowledge into a usable and/or readable state, one where sensations of material space provide ineffable feeling.

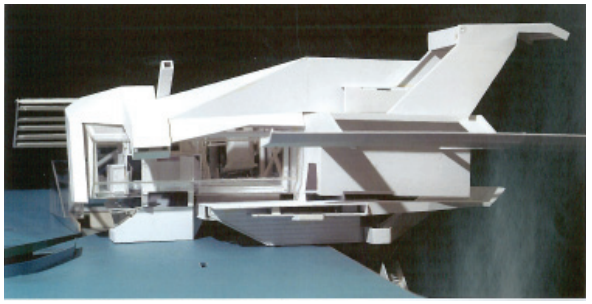
Repetition can be used as innovation, as mechanism of liberation, of life and death; Repetition as will, as the opposite of laws of nature; Repetition as new morality beyond habit and memory; Repetition that only attains tension and creativity with the fissures of difference; with equilibrium, innovation.

Example:
-Roller coaster 3-dimensional artificial landscape supported by a massive superstructure designed to simulate the effects of a smooth space somewhere between land + flight.

DESCRIBE (Cont...)

-Why build up when nature already provides the forms necessary?

Contours are the physical surfaces and systems that govern both the data and the intuition of the work. They are the manifold conditions of the physical, static, and cultural forms at play.

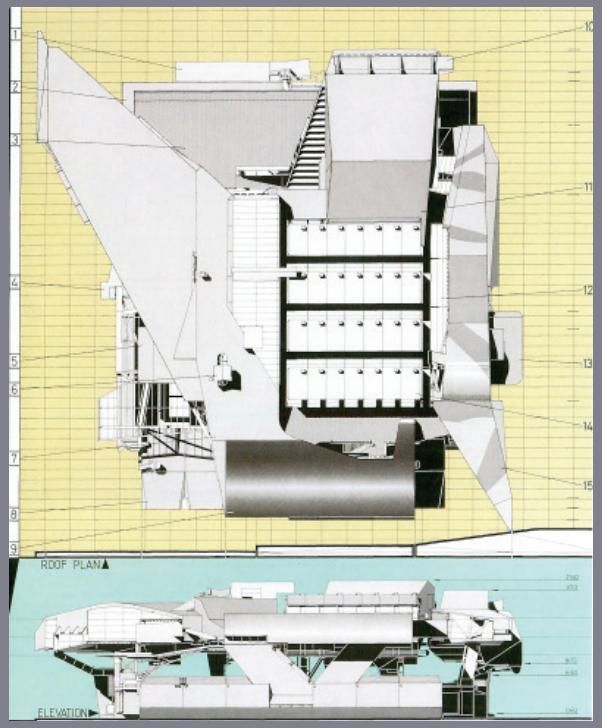


Neil Denari, Model

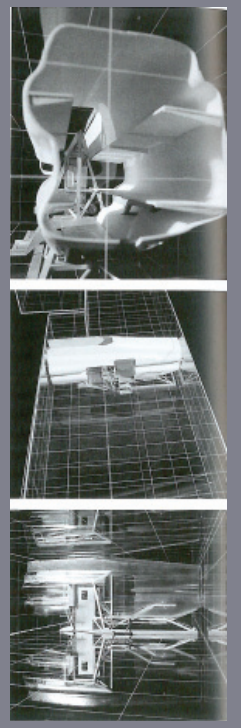
ANALYZE

“Architecture were such not by virtue of their technical or geographical conditions, or by the materials from which they were constructed, products of will – a subjective desire to manifest a vision of the world not through symbols or images, but by means of new and changing special experiences.” Alois Riegl – Ignasi de Sola – Morales “Differences” Cambridge, MA; MIT Press 1997, p.95

In the realm of design Denari discusses the possibilities of creating a piece of architecture that has relevance to everything and nothing at all. When you look at the images to the right, you see his work in progress in a state unlike the architecture around it. In his work he denotes a sense of impermanence through his choice of materials and abstract forms. The architecture has a sense of interaction with the components relying on visual stimuli and concrete physical manipulation.



Neil Denari, Plan + Elevation



Neil Denari, Built Images

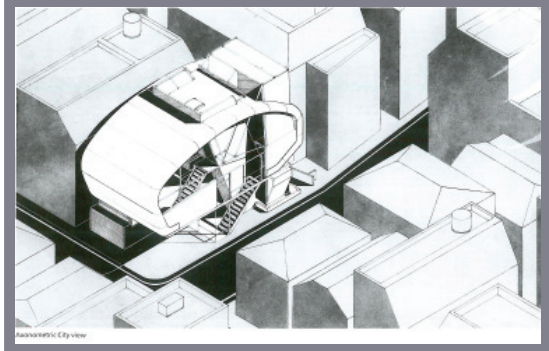
In the book, “Gyroscopic Horizons,” Denari likes to explain the built environment against the context of the Metroplex and military housing in the 1960’s and 1970’s. This formality helps to explain his anti-suburban confrontation on which builds a foundation for his reasoning. He explains this as a code for unlimited possibility with the right desire and ingenuity. By looking at site and form as a technological expression we can create a formula for the personal, authentic, and machinic aspects of built production.

CONLCUDE

Denari states, “Today architecture not about clearing out, it is about a lack of fitting in.”

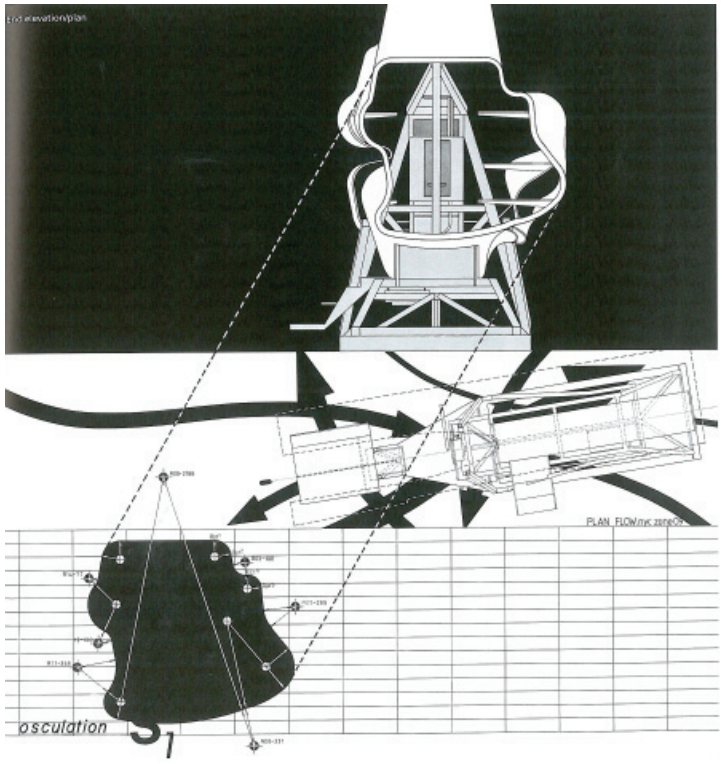
Geometry should not be independent of experience.

“Let us imagine total space as a body of water, into which we may sink certain vessels, and thus be able to define individual volumes of water without however destroying the idea of a continuous mass of water enveloping all.” Adolf von Hildebrand from book “The Problem of Form” New York, Stechert, 1907



Isometric Elevation

Models



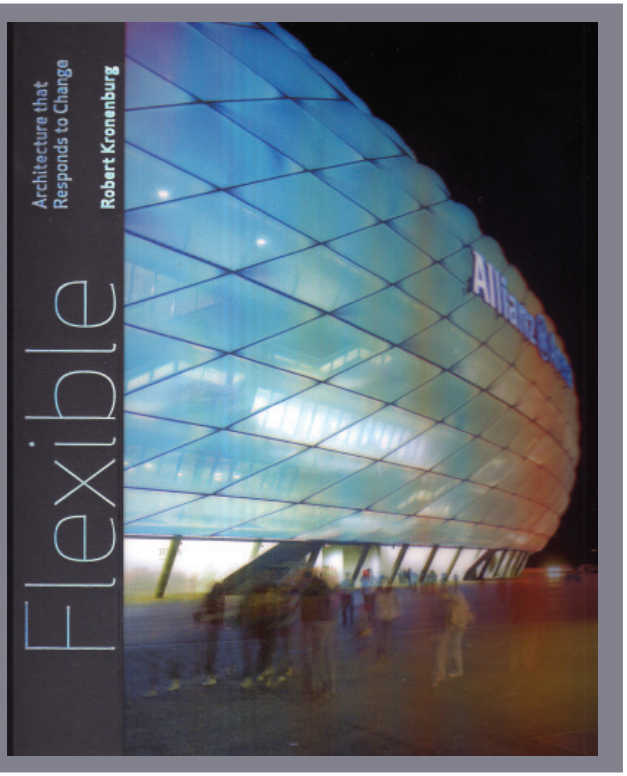
Abstract Plan + Elevation

DESCRIBE

There was a time when our existence was based on our capacity of movement and adaptability. Most culture now lead sedentary lives, but it could be that flexibility is once again becoming a priority in human development and that technological, social, and economic changes are forcing, or encouraging, a new form of nomadic existence. Consider a house specifically designed to offer changing opportunities – it could be something designed for a single person during the week or six at the weekend, or a home you took with you on business trips. Building now is a mass-production process struggling to achieve its real benefits when it should be able to use to accommodate variety, specificity, and change of products.

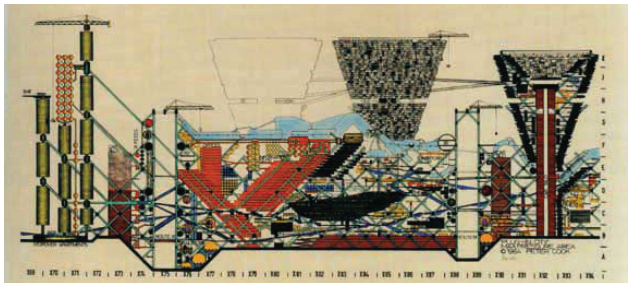
All buildings have operational features such as windows, doors, even the furniture is movable, but architects only design to a certain level for items to be repositioned. An important part of succes that can be attributed to adaptable architecture relates to how well it functions in regards to static architecture. One important controlling aspect in adaptable architecture, is its ability to open to the external environment. The conditions to take into affect are light, air, and features relating to both the interior and exterior protocols.

The concept of movable architecture understands the idea that a form is made to move from place to place. Building since the beginning of history have been made to be static, to show permance of the artifact, and mobility is the transitional element taking place on a more intimate level. The success of humanity is the ability to act and react - to recognize and analyse situations and respond to them in an appropriate manner. Automation - an action that is carried out to a predetermined, unchangable pattern; and an action that is carried towards a predetermined solution with a variable to change along the way.

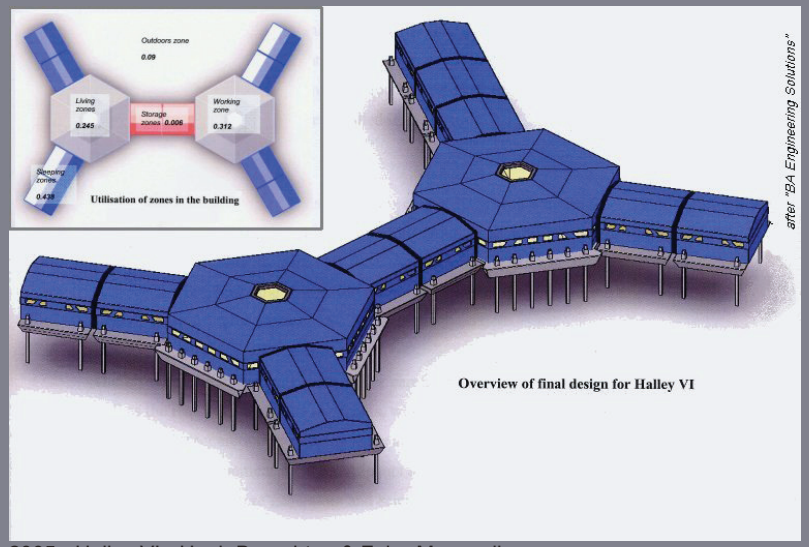


Flexible: Architecture that Responds to Change, 2007

ANALYZE



1964 - Plug-In City - Peter Cook - Archigram



2005 - Halley VI - Hugh Broughton & FaberMaunsell

1949 - GeoDesic Dome - Buckminster Fuller

Society is never static – usually towards progress and improvements in the condition of human existence. Roads are extended and re-routed, building demolished and re-built, nevertheless, this method towards buildings and responding to change has gone virtually unchallenged

Personal transportation, computing, mobile phones, and access to affordable air travel are becoming subject to the phenomena of 'pluralization of lifestyle', where the conventional family is replaced by more fluid groupings that differ in size and make-up and are subject to make frequent change.

Adaptable architecture supports the servant role due to 24-hour work patterns in the home; changing family size + groupings; ecological issues that are questioning the desirability of commuting; lifestyle issues that envisage a more fulfilling personal life; and the possibility of remote working due to communications technology.

-Wright "Usonion House" was simple, affordable + modular in design
-Corbu 5 precedents in Architecture
-Rietveld Schroeder House (1924)
-Eileen Gray (E-1027) (1926-29)
-Maison de Verre (1927-31) Pierre Chareau
-Dymaxion House (1929) Buckminster Fuller, Wichita House (1945) Buckminster Fuller
-Eames, Charles Tray (1948) Beno Saarinem
-Plug-in city (1964) Peter Cook Arch.gram
-Dense housing prefabricated in fluctuating condi tions
-(1975) future systems Cabin 300, NASA work
-Richard Hordon + Haack + Hoeffner architects

CONCLUDE

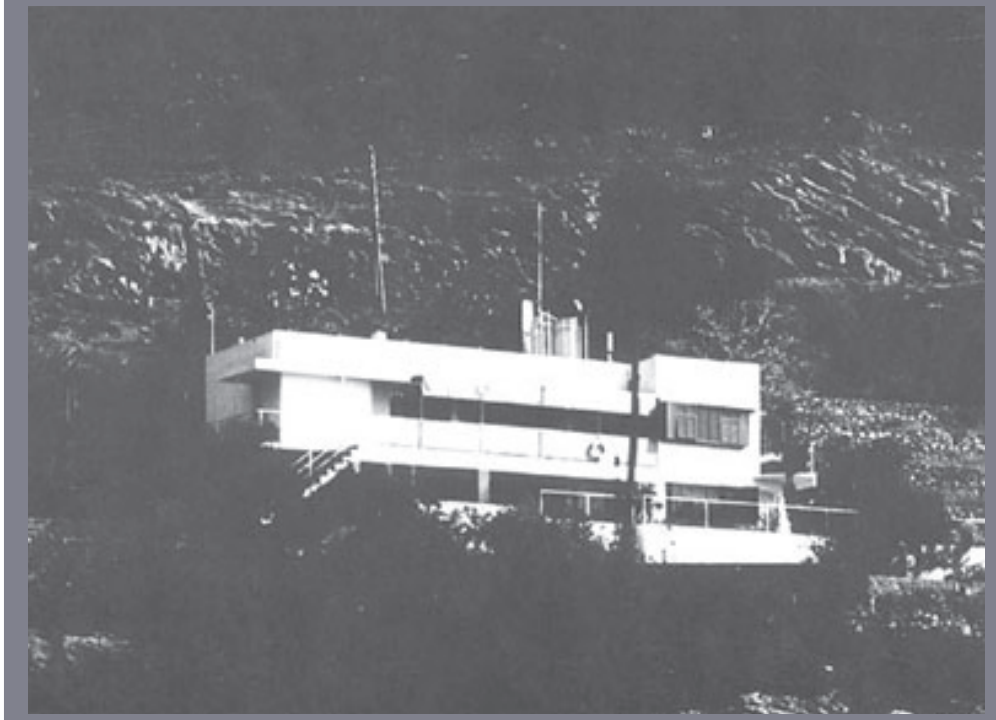
-Heidegger once said, “recognizing a sense of place is not established by just building, but by any method human being can use to recognize what place is.”

-Nietsche says “place is the product of lived space and lived time.”

-Jones Partners homes can be changed at will during use:

- -With the working parts being shown you begin to understand operability of the architecture
- -Cheap house can be recycled after a few years.

-Ideas should go against ‘one size fits all’, and be fine-tuned to fit every user in a special way. Skin can be replaceable and internal parts quickly relocated. The house is a laboratory, test-tube, + Petri dish of new forms, technologies, + living patterns! Architecture is so focused on time, we forget to consider the temporal dimension of the event in architecture.

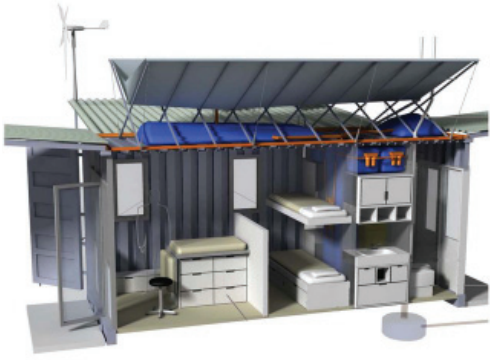


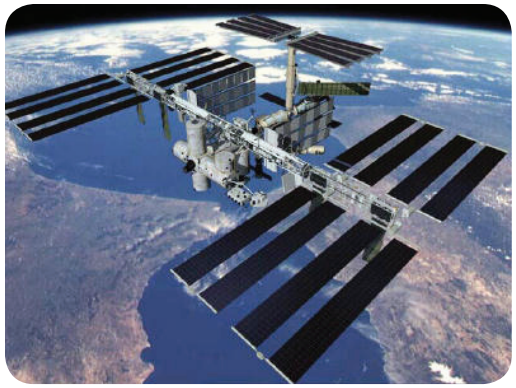
E1027: Eileen Gray, 1924

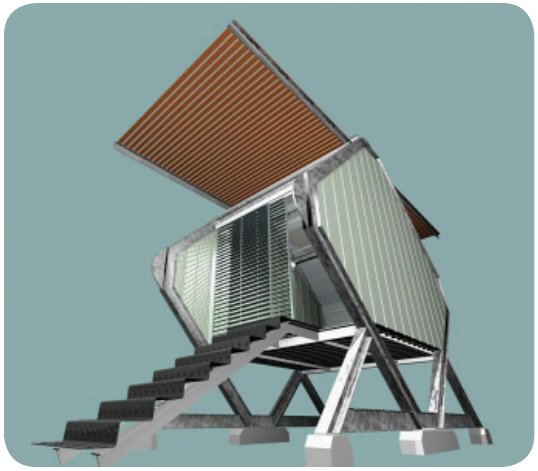
CONCLUSION

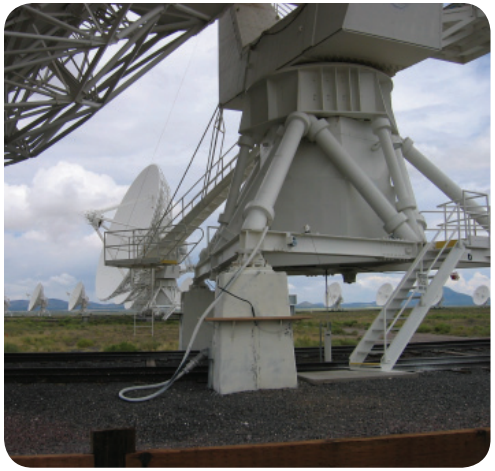
When starting this part of the precedent study, I chose pieces of text that had modern relevance to the changing conditions of the built environment, and how these authors were choosing to react. A broad range of texts in terms of time period, were created an idea structure in how time has transformed products and their outcomes. Corbu began by laying the foundation, talking through the essence of design throughout the past, and how product were created with strict design criteria. I ended the readings with Robert Kronenberg to see examples of what types of projects were being created, and the theory behind the versatile types of transformation that were occuring.

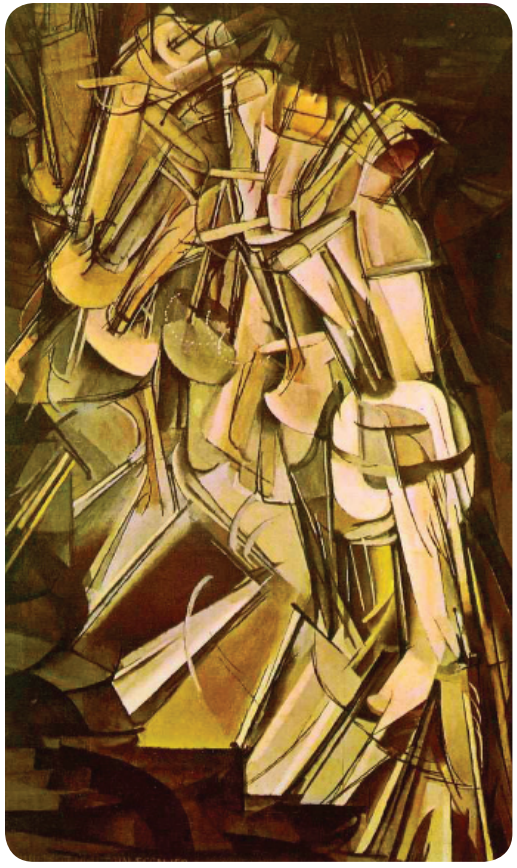
TECHNOLOGICAL
PRECEDENTS

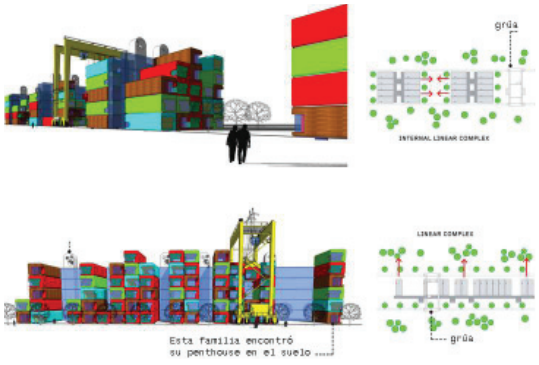


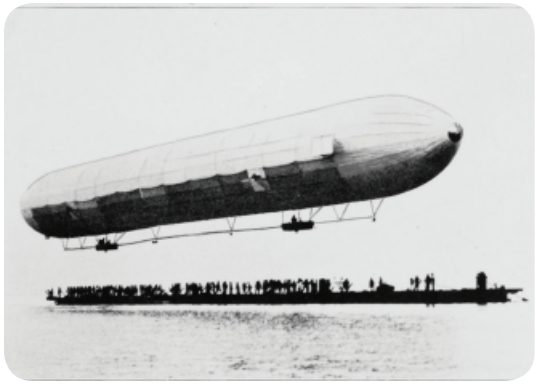


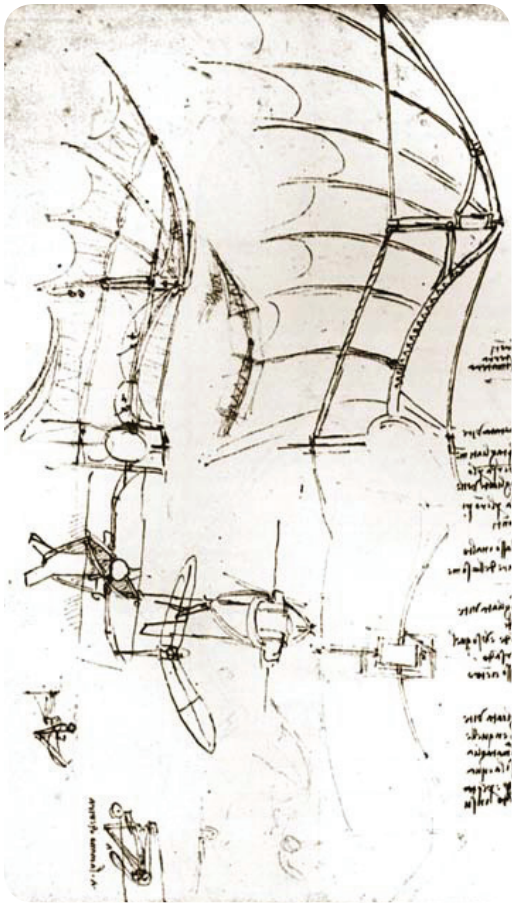


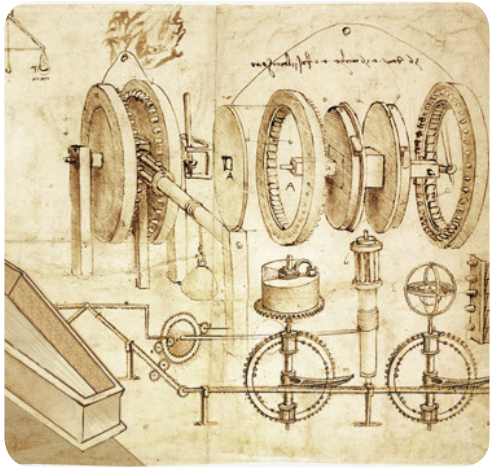


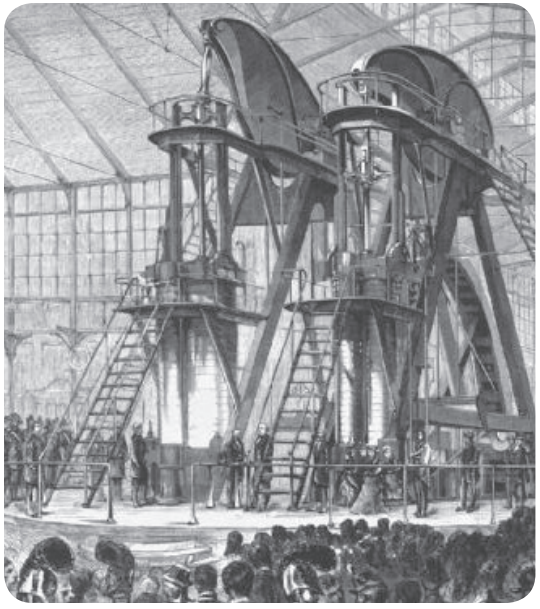


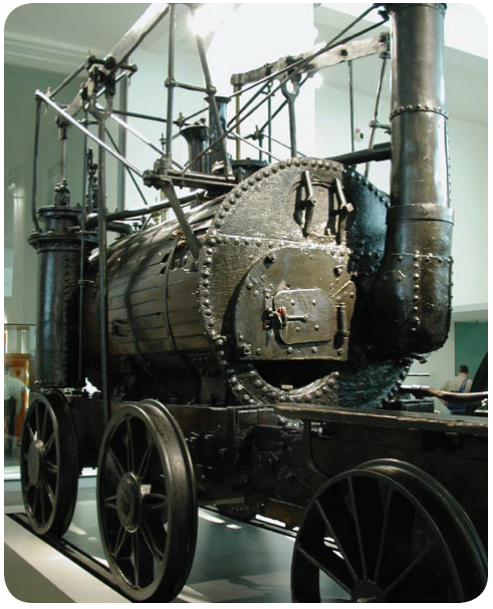

grúa
INTERNAL LINEAR COMPLEX
LINEAR COMPLEX
Esta familia encontró
su penthouse en el suelo
grúa

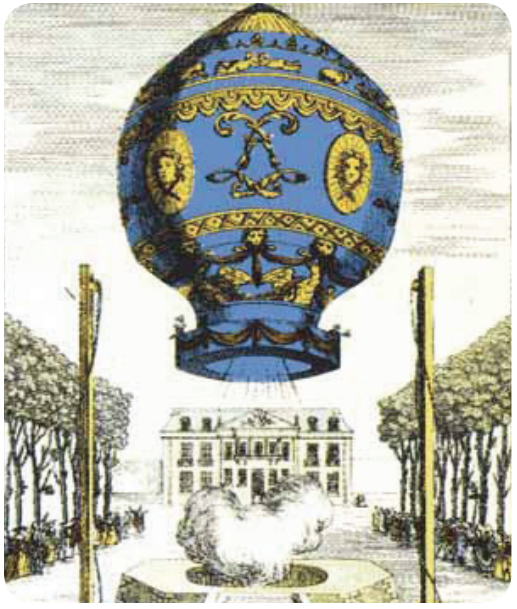












CONCLUSION

This string of precedents, were looked at for broad range in topic and type. I was trying to cast a net, as it were, to open understanding in range of technological precedents. I started as early possible looking at what individuals were doing, and the outcomes they were producing. The images covered anything from early sketches, paintings, projects, and architecture that could be considered transformable in the early stages. The images set against the text of the readings, gave me understanding from the Industrial Revolution up to present day. In the Industrial Revolution, tools were being created that helped improve a way of life, a betterment of society, and strengthening of cultural values. The Revolution at the same time showed how architecture was rooted in its past, and showed no integration of a society that was becoming very mobile and sophisticated.

DESIGN ARENA

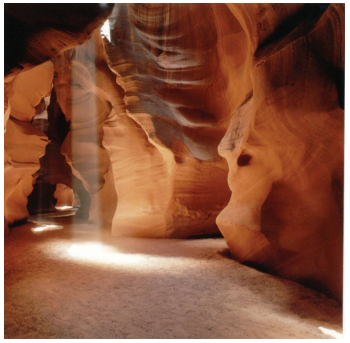
SITE

The objectives for choosing a site for an adaptable use that were put forth was: having multiple environments with extreme differences, that the qualities of these sites would be harsh, and that the sites would need extensive research towards why something would want to be adaptable within its realm.

With choosing areas of the United States I negated the idea of social context, culture, political and similar issues, in keeping these factors out of play I could work with the idea of placelessness. Placelessness dealt with time and place modernity, place changing while time becomes more abstract. Being an avid outdoorsman, I started with a base of knowledge of the extremeness each site might posses. From there different areas of the map started to stand out in terms of ecologies (climatology and geology). These ecologies became the vehicle for my research as to why something would want to be adaptable.

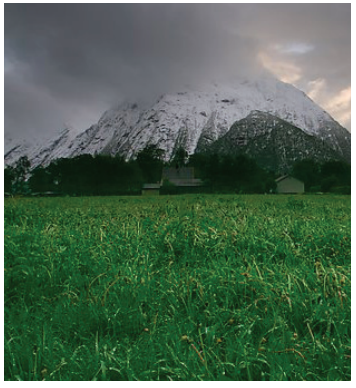
The host for the vehicle of the site would be NOAA (National Oceanic and Atmospheric Administration) and USGS (United States Geological Survey).








38

EVERGLADES NATIONAL PARK, FL

[Latitude: 25°57.9 degrees North]
[Longitude: 80° 6.8’ degrees West]
[Elevation: 0 to 8 feet]

GENERAL

Everglades National Park is the largest subtropical wilderness in the United States. The area boasts rare and endangered species, such as the American crocodile, Florida panther, and West Indian manatee. It has been designated an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance.

The park takes up over 1,506,539 Acres of land on the southern most tip of Florida. There are many ecologies that can be found in that expanse of land, they are, cypress, marine and estuarine, freshwater marl prairie, freshwater slough, coastal lowlands, mangrove, pineland, and hardwood hammock.

Geology
The rocks beneath the Big Cypress Swamp are among the oldest in South Florida. Six million years ago a shallow sea covered this area. Sediments of silt and sand and particles of calcium deposited on the bottom of this sea gradually cemented into limestone. Today this rock is called the Tamiami Formation. Other rocks beneath the Everglades were formed during the time of the Great Ice Age.

PRECIPITATION

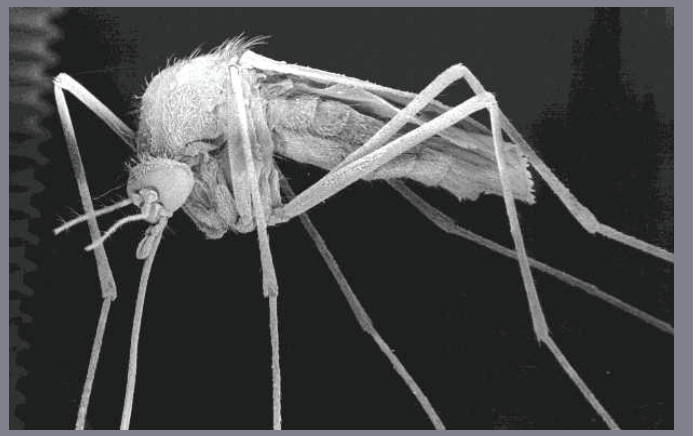
Average annual
Precipitation: 0.07 in / 0.18 cm
Month to date precipitation: 0.91
Year to date precipitation: 49.29

Dew Point: 65 °F / 18 °C
Precipitation: 0.27 in / 0.7 cm
Wind: 8 mph / 12 km/h
Gust Wind: 22 mph / 35 km/h
Sea Level Pressure: 30.12 in / 1017 hPa
Average annual rainfall: 60 inches per year

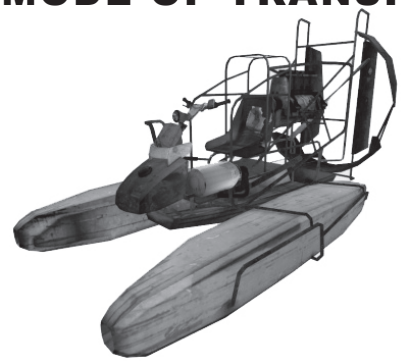
Rain Season: June - October
Mosquitos coincide with rainy season

MOSQUITOES

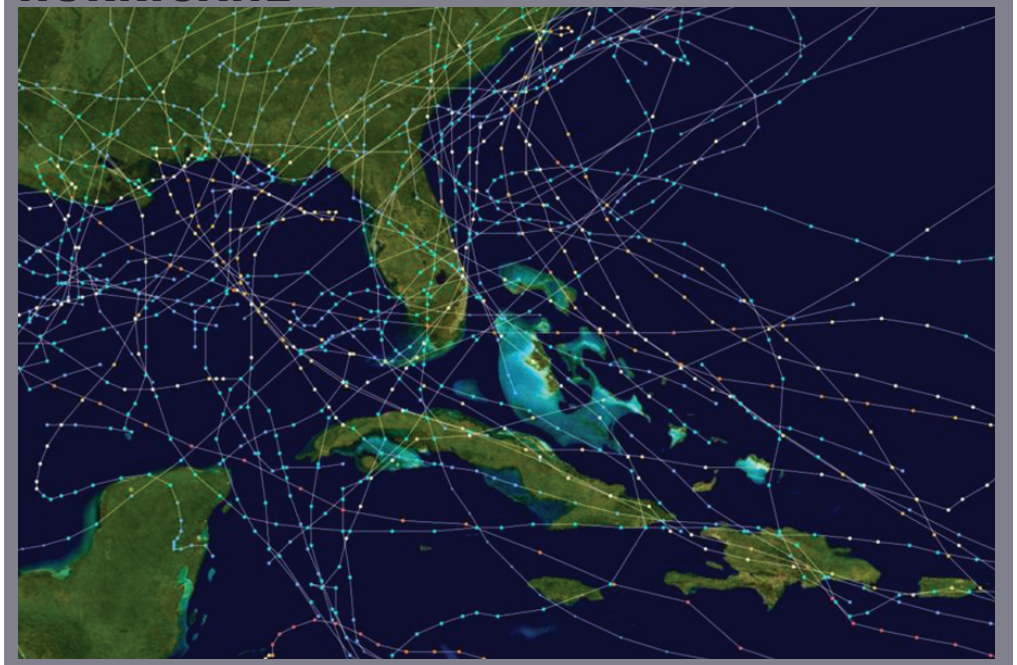
There are currently 80 species of mosquitoes known to occur or have been identified from various collections in Florida, more than any other state. Of these, 33 species can cause pest problems for man and/or domestic animals in all or parts of the state.



MODE OF TRANSPORTATION



HURRICANE



WIND

Category	Wind Speed	Barometric Pressure	Storm Surge	Damage Potential
1 (weak)	75 - 95 mph 65 - 82 kts 33 - 42 m/s	> 28.94 in. Hg > 980.0 mb > 97.7 kPa	4.0 - 5.0 ft. 1.2 - 1.5 m	minimal damage to vegetation
2 (moderate)	96 - 110 mph 83 - 95 kts 43 - 49 m/s	28.50 - 28.93 in. Hg 965.1 - 979.7 mb 96.2 - 97.7 kPa	6.0 - 8.0 ft. 1.8 - 2.4 m	moderate damage to houses
3 (strong)	111 - 130 mph 96 - 113 kts 50 - 58 m/s	27.91 - 28.49 in. Hg 945.1 - 964.8 mb 96.2 - 97.7 kPa	9.0 - 12.0 ft. 2.7 - 3.7 m	extensive damage to small buildings
4 (very strong)	131 - 155 mph 114 - 135 kts 59 - 69 m/s	27.17 - 27.90 in. Hg 920.1 - 944.8 mb 91.7 - 94.2 kPa	13.0 - 18.0 ft. 3.9 - 5.5 m	extreme structural damage
5 (devastating)	> 155 mph > 135 kts > 70 m/s	< 27.17 in Hg < 920.1 mb < 91.7 kPa	> 18.0 ft > 5.5 m	catastrophic building failures possible

Bibliographic Entry	Result (w/surrounding text)	Standardized Result
Earth Science. Englewood Cliffs, NJ: Prentice Hall, 1987.	"If the wind speed is less than 75 mph it is not a hurricane at all and the most severe hurricanes are more than 150 mph"	34 m/s (min.) 67 m/s (most severe)
"Hurricanes." *World Book Encyclopedia*. Chicago, IL: World Book, 1998: 452-456.	"Level 1, 74-95 mph Level 2, 96-110 mph Level 3, 111-130 mph Level 4, 131-155 mph Level 5, 156 mph"	33-42 m/s, 43-49 m/s, 50-58 m/s, 59-69 m/s, > 70 m/s
Burroughs, William. *Weather*. Sydney: Weldon Own, 1996.	"These winds can reach nearly 200 miles per hour."	89 m/s
Sigda, Robert. *Earth Science*. New York, 1977.	"A typical hurricane has sustained winds of 100 - 150 mph. Winds in some stronger storms may exceed 200 mph.	44 - 67 m/s > 89 m/s
Hurricane Categories. Southern Regional Climate Center. Louisiana Sate University.	[see table below]	33 - 42 m/s 43 - 49 m/s 50 - 58 m/s 59 - 69 m/s > 70 m/s

TEMPERATURE

Average annual
Temperature:
Max Temperature: 84 °F / 28 °C
Mean Temperature: 75 °F / 24 °C
Min Temperature: 66 °F / 19 °C

Temperature is mild, and pleasant
December - April with rare conditions where cold fronts move in causing freezing conditions.

Winter High 77 degrees F
Low 53 degrees F

Summer, Hot and Humid Avg. 90 degrees F
over 90% Humidity

Atlantic Hurricane Season
June - November

JOSHUA TREE NATIONAL PARK, CA

[Latitude: 34 degrees degrees, 4', 10'' North]
[Longitude: 116 degrees, 23', 10'' West]
[Elevation: 1244 Ft.]

GENERAL

Joshua Tree National Park consists of 1,017,748 Acres. This desert park only hints at its vitality. A closer examination reveals a variety of plants and animals that make their home in this land shaped by strong winds, unpredictable torrents of rain, and climatic extremes. The dark night skies are beautiful while the desert temperature can drop to extreme lows. Joshua Tree has many types of vast desert regions within lending to fascinating geological features.

There are two types of desert regions within this parks, partly because of the Transverse Mountain Range running East to West, instead of the typical North to South.

There are four main ecologies situated in Joshua Tree, tectonic, volcanism, mountain-building, and stark erosion. The ecologies provide a vast array of physical features, such as, sand dunes, dry lakes, flat valleys, extraordinary rugged mountains, granitic monoliths, and oases.

The site contains over six distinct mountain ranges such as Little San Bernardino Mountains, Cottonwood, Hexie, Pinto Mountains, Eagle, and Coxcomb ranging from 2,000 ft. to 6,000 ft. above sea level.

Month	Average high (°F) temp	Average low (°F) temp	Average rainfall (inches)	Average snowfall (inches)
January	63	36	0.5	0.7
February	68	39	0.4	0.0
March	74	43	0.4	0.0
April	82	49	0.1	0.0
May	91	57	0.1	0.0
June	101	65	0.0	0.0
July	105	72	0.6	0.0
August	103	70	0.7	0.0
September	97	64	0.5	0.0
October	86	53	0.2	0.0
November	72	42	0.2	0.0
December	63	35	0.4	0.3

PRECIPITATION

Yearly Averages
precipitaion: 4.06 in. (10.31 cm)
humidity: 21.6%
wind velocity: 6.6 mi/hr (10.6 km/hr)
clear days: 230 per year

Weather Records
highest daily precipitation: 3.90in. (9.91 cm) 10/9/43
highest annual precipitaion: 12.32 in (31.29 cm) 1983
lowest annual precipitation: .27 in (.69 cm) 1956

TEMPERATURE

Days are typically clear with less than 25 precent humidity. Temperatures are most comfortable in the spring and fall, with an average high/low of 85 and 50°F (29 and 10°C) respectively. Winter brings cooler days, around 60°F (15°C), and freezing nights. It occasionally snows at higher elevations. Summers are hot, over 100°F (38°C) during the day and not cooling much below 85°F (29°C) until the early hours of the morning.

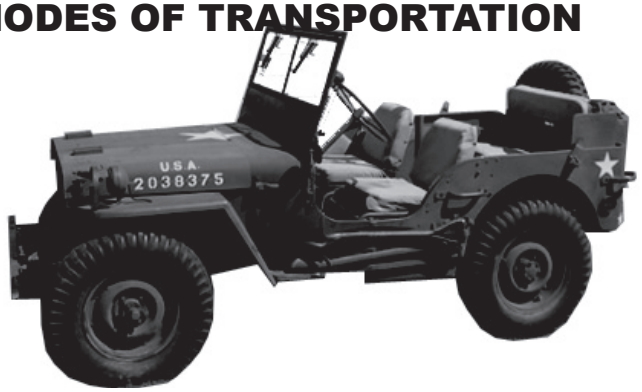
Yearly Averages
maximum temperature: 83.26°F (28.4°C)
minimum temperature: 51.43°F (10.76°C)

Weather Records
highest temperature: 118°F (47.3°C)
lowest temperature: 10°F (-12.1°C)

Yearly Averages
precipitaion: 4.06 in. (10.31 cm)
humidity: 21.6%
wind velocity: 6.6 mi/hr (10.6 km/hr)
clear days: 230 per year

Weather Records
highest daily precipitation: 3.90in. (9.91 cm) 10/9/43
highest annual precipitaion: 12.32 in (31.29 cm) 1983
lowest annual precipitation: .27 in (.69 cm) 1956

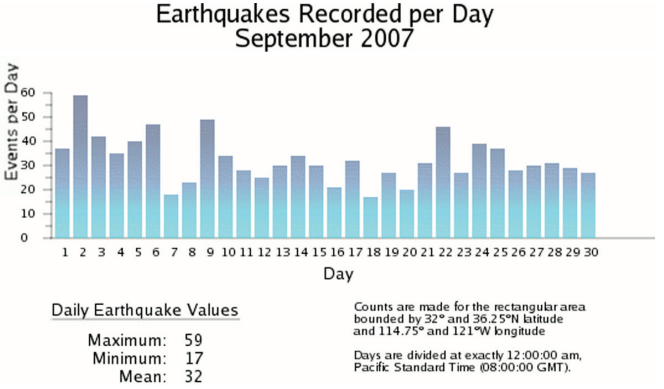
MODES OF TRANSPORTATION



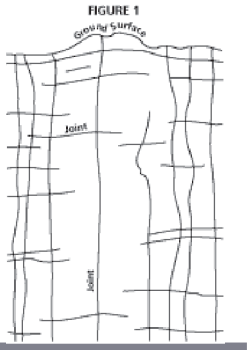
SEISMIC

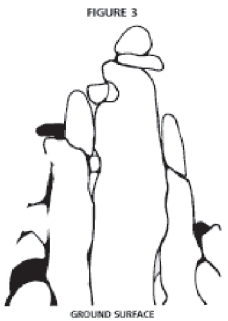
A magnitude 7.1 earthquake rocked the Joshua Tree National Park region at 2:46 a.m. local time Sat., October 16, 1999

There are over 100 criss-crossed faults, some measuring 13 meters in width, that can be seen from key vantage points throughout the park.



FAULTS





DENALI NATIONAL PARK, AL

[Latitude: 63 degrees, 43’ North]
[Longitude: 148 degrees, 58’ West]
[Elevation: 2,070 Ft.]

GENERAL

Denali contains over 6,000,000 acres of land to its cause. Denali has a dynamic glaciated landscape supporting a diversity of wildlife with grizzly bears, caribou, wolves, Dall sheep and moose. The park also boasts of the highest point in North America with Mt. McKinley at 20.320 ft.

Protecting vast landscapes preserved the rich complexity of living organisms and their interactions that woven together make up the fabric of life. Researchers should look to the vast landscapes of Denali to collect baseline data on how natural systems function so we can better detect how things are changing and why.

There are also five major terrains in the park:

Gravel River Bars: these flat, rocky surfaces characterize most major rivers in the park and provide fast, easy travel.

Wet Tundra: this terrain is marshy and interspersed with hummocks. Travel can be slow and tiring.

Dry Tundra: dry tundra exists at high elevations. Understandably, many of the most popular units are predominately Dry Tundra terrain.

Brushy Tundra: accessing many backcountry units requires bushwhacking. Brush can exceed six feet in height, and thickness oftenlimits visibility.

Glacial Moraine: located at the base of glaciers and often denoted on maps by stippled areas, a moraine consists of ice covered with dirt and debris. This is extremely rough and time-consuming travel.

PRECIPITATION

Average annual
total precipitation Average annual 13.92
total snowfall 82.4

Preciptation
Jan - Feb - Mar - Apr - May - Jun - Jul - Aug - Sep
.81 .68 .66 .52 .68 1.36 1.98 2.58 1.79
- Oct - Nov - Dec
1.11 0.89 0.86

Month	Average precipitation
JAN.	0.7
FEB.	0.5
MARCH	0.6
APRIL	0.4
MAY	0.8
JUNE	2.5
JULY	3.2
AUG.	2.4
SEPT.	1.6
OCT.	1.1
NOV.	0.9
DEC.	0.9

Snowfall
Jan - Feb - Mar - Apr - May - Jun - Jul - Aug - Sep
12.6 9.8 10.0 6.7 1.1 0.0 0.0 0.1 2.1
- Oct - Nov - Dec
11.9 13.4 14.8

Snow-depth
Jan - Feb - Mar - Apr - May - Jun - Jul - Aug - Sep
26 29 31 26 4 0 0 0 0
Oct - Nov - Dec
4 12 20

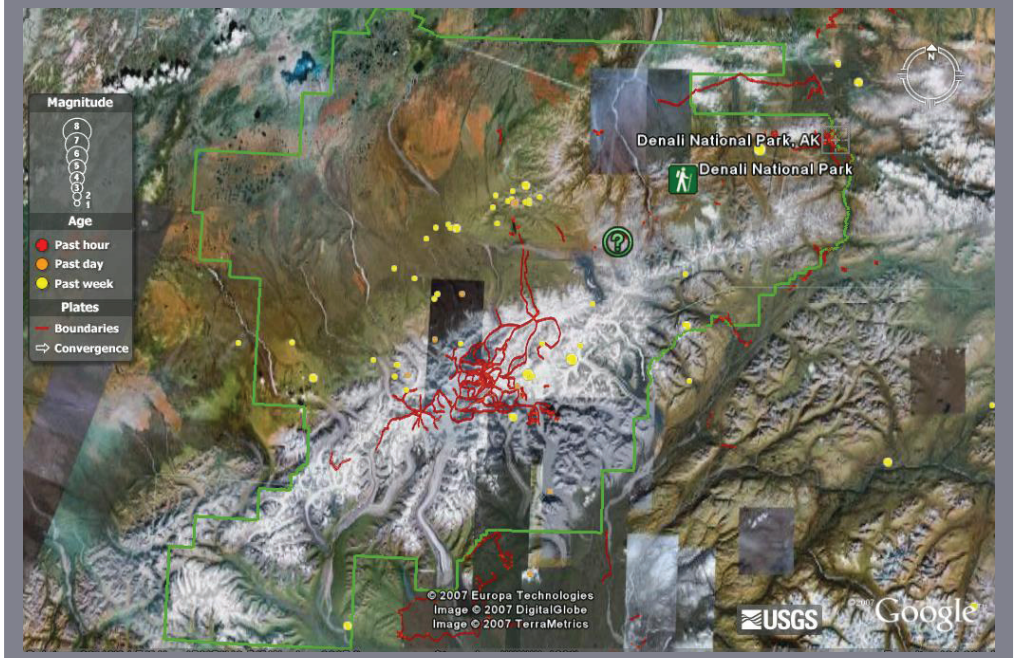
Throughout the summer, four-day rainy periods are likely an average of once a month; four straight days of dry weather are likely twice a month

AVALANCHES

Numerous avalanches consisting of snow and ice happen throughout the year - no time in particular are they expected.

SEISMIC

600 Seismic Avg. Per Year
70% M1.5 - M2.5 taking place under Mount McKinley with mid M4's avgerage high's. On May 21 1991 there was a M6.1 earthquake, and on November 3, 2003 the earthquake's Mainshock was M7.9



PERMAFROST

Permafrost underlies one fifth of the world's land surface, pertaining to soil at or under the freezing point of water. Freezing can occur from extents of a few inches below the surface down to as deep as 1,000 feet.

TUNDRA

Tundra is topsoil collected on rotten, fragmented rock moved by thousands of years of glacial activity, and contents such as mosses, ferns, grasses, and fungi fill that topsoil.

MODE OF TRANSPORTATION

TEMPERATURE

Average annual
high temperature Average annual 31.1
low temperature Average annual 12.9

North Park - Is blocked by the Alaskan Range
-The weather has less precipitation but greater change in temperature.
-Temperatures can reach:
-50 Degrees F in the Winter &
90 Degrees F in the Summer,
but still freeze

Average annual
Dew Point: 16 °F / -9 °C
Precipitation: 0.31 in / 0.8 cm
Wind: 2 mph / 2 km/h
Gust Wind: 18 mph / 30 km/h
Sea Level Pressure: 29.82 in / 1009 hPa

Month	Average high	Average low
JAN.	10	-8
FEB.	14	-6
MARCH	26	1
APRIL	38	15
MAY	53	29
JUNE	64	39
JULY	67	42
AUG.	62	39
SEPT.	51	30
OCT.	32	13
NOV.	17	-1
DEC.	12	-6

DESIGN ARENA

PROGRAM

DESCRIPTION

The National Oceanic and Atmospheric Administration (NOAA) and the United States Geological Survey (USGS) have built a venture in the pursuit of science. They are to acquire research from both climatic and geological environments, relating to site specific conditions (ecology). The groups need a new research unit, that will adapt to varying sites based on site specific conditions. The extreme level of worst-case-scenerio is to be assumed in the design, in hopes that the research unit will provide them with optimal capacity and safety.

The research unit will hold two people and needs to adapt to multi-pitches, have capabilities for both wet and dry surfaces, able to cope with extreme conditions (i.e. hurricanes and earthquakes), and outfitted with the latest in technology to perform their research and obtain off-the-grid renewable energy.

PROGRAM:

Sleeping Quarters:	40 SQ. FT.
Kitchen Area:	100 SQ. FT.
Work/Office Space:	150 SQ. FT.
Restroom:	40 SQ. FT.
Leasure Space (Internal/External):	50 SQ. FT.
Mechanical Area:	100 SQ. FT.
TOTAL:	480 SQ. FT

REQUIREMENTS

PROGRAM:

The research laboratory shall include at minimum:

- be able to adapt to seasonal deployment conditions
- multi-use design for research unit stabilization
- be able to conduct research for climatic conditions and ecological conditions
- multi-tool design for research equipment
- provide enough space for (2) individual researchers simultaneously
- provide protection for researchers from prolonged exposure to the elements
- provide a sleeping area, work space, office space, kitchen area, and restroom facilities.
- Medium kitchen for moderate meals
- provide researchers with basic backpacking and first aid equipment
- permanently affix identification number and beacon for rescue operations

REQUIREMENTS (Cont...)

SITE:

Three sites will be developed to show a range of environmental conditions that a research facility of this magnitude will be adversed to.

-Joshua Tree National Park, Twentynine Palms, CA 140 miles East of L.A., 175 miles North east of San Diego, and 215 miles South west of Las Vegas.

-Denali National Park, Denali Park, AK - Located in Talkeetna, AK, approximately 100 miles north of Anchorage, AK 240 miles north of Anchorage, AK, 125 miles south of Fairbanks, AK, and 12 miles south of Healy, AK

-Everglades National Park, Southern Tip of FL 5 miles south of Highway 41 (Tamiami Trail), on State Road 29, in Everglades City. From Interstate 75 (Alligator Alley), take exit 80 (State Road 29) south and proceed 20 miles to Everglades City

CLIENT:

The research laboratory being developed, is for a joint venture between the National Oceanic and Atmospheric Administration (NOAA) and U.S. Geological Survey (USGS) for use within the National Parks Service (NPS)

The one-off system developed is to be particularized as expressive potential. Modernity has become more general, while time has proven to be abstract. The particular unti being developed will hint at the idea of otherness, while containing the capacity of its occupants.

This lab while taking on qualities of a research unit, will also show adaptability in regards to the type of change, degree, cause, experience, and method. The types of change that one facility will experience, has reference to the research units form, space, surface, mass, scale, material, color, transparency, or other.

REQUIREMENTS (Cont...)
BACKPACKING GEAR LIST

Gear	Manufacturer Model	Weight (oz)
Boots	Civetta Extreme	122
	Super Feet	X
Overboots	Forty Below Purple Haze	46.5
Gaitors	OR Expedition Crocs	13
Socks	Liner Socks X2	3.5
	Vapor Barrier Socks(x2)	6
	Expedition Weight Socks X2	11.5
Down Slippers	Feathered Friends	9
SnowShoes	MSR Denali Ascents + Extensions	72
	SnowShoe Straps	X
Clothes-Top	Saturn Suite-Midweight	19
	Short sleeve cool-max	8
	Midweight Top (Green)	8
	Marmot Sharp Point Jacket	22.5
	Monstone Uber Sauvage	32
	Marmot 8000m Parka	52
Clothes-Bottom	Underwear (X2)	9
	Silkweight Bottom	6
	Schoeller pants	15
	Arc'Teryx Pants	18
	MHW Chugach	25
	Clothes Suff Sack	3
Gloves\Mittens	Marmot Power Stretch Gloves	3
	Windstopper gloves	8
	Black Diamond Shells	5
	Midweight Fleese	3
	OR Shells	6
	Marmot Expedition Mitts	13
Hats	OR PS50 Light Balaclava	2
	OR WindPro Balaclava	3
	OR Windstopper Face Mask	1.5
	Fleece Hat (OR Peruvian Hat)	2
	Sahara Hat	3
	Gloves\hat Stuff sack	4
	Glacier goggles	4
	Goggles	4
	Nose Guard	X
Sleeping Gear	Moonstoon Cassin	80
	Thermarest	41
	Thermarest Game Kit	5
	RidgeRest + Blue Sit Pad	13
	Bivy Bag	25
	Inflatable Pillow	2.5

Gear	Manufacturer Model	Weight (oz)
	Thermarest Chair	10
Expedition Pack	AstraPlane	
	Shove it	
	Rabbit Runner	2
Stove\Eating	MSR XKG	18
	Stove Stand	3
	33oz Fuel Bottles	7
	New Style Pump	3
	Lighters	0.04
	Backpacker Baker	3
	XKG Repair Kit	2
Eating	Water Bottle Parka	12
	Water Bottles (Empty)	13
	Collapsable water bottle	3
	1 Lg Insulated Cup-Food	5.5
	Spoons	0.75
Ice Axe	Plus cord and Biner	21.5
	Ice Axe Guard-top - For Shipping	
Harness	BD Alpine Bod	13
	Pearabiner and Belay Device	5.2
	2 jumars	15
	2 Locking Biners (for Jumars)	4
	Chest Harness+Biner	6
	Rescue Pulley+Locking biner	4
	Chest Harness+Biner	6
	4 Wiregate biner	5
	2 Prussiks\ 2 single webbing	5
	Locking Biner x2	6
	Gear sling webbing	3
Shovel	Voile With Saw	34
Crampons	BD Sabretooth	38
	Crampon Pouch	6
	Avalanche Probe	10
Protection	Picket+webbing+biner	38
Trave\Navigation	Sled	216
	Biner\Prussiks	X
	GPS	6
	Map\Compass	
	North Face Duffel Bag	80
	Or Duffel Bag	32
	Knife	5
REI Thermometer	On Pack	0.02
Medical Kit	Tylenol	5

Gear	Manufacturer Model	Weight (oz)
	2nd Skin Pad	X
	Diamox	X
	Gingko Biloba	X
Personal Gear	Spare Contacts	29
	Spare Glasses	X
	Contact Solution	X
	Eye Drops	X
	Nail Clippers	X
	Ear Plugs	X
	Wet Wipes (24)	X
	Tooth Brush	X
	ToothPaste	X
	Lipscreen SPF 15+ (X2)	X
	Small Sunscreen	2.5
	Food Powder	X
	Sunscreen SPF 35	X
	Hand Cream	X
	Dermatone Face cream	1
	Nalgene Flat Bottle-Pee Bottle	3
	Toilet Paper	
Entertainment	Book	8.5
	Cards	4.3
	Journal+Pen	11.5
	Digital Camera	25
	Stand+Spare batteries	X
	Spare AA Lithium Batteries	8
	CD Player+Headphones+Cd's	24
	Binoculars	7
	Extra 6mil cord	9
	Ski Poles	22
Group Gear	Repair Kit	14
	Spare Gaitor Strap	x
	8 Stakes for tent	10
	Food\seasonings	848
	Lemon Pepper Seasoning	1.5
	Butter - 1 Pound	
	Total Weight	**2401.81**
	Travel Expenses	
Alaskan Airlines	Plane Ticket to\from Anchorage	
Alaskan Airlines	Extra Luggage (Sleds)	
Denali Overland	Shuttle Service	
Talkeetna Air Taxi	Flight to\from Glacier	
National Park	Permits	

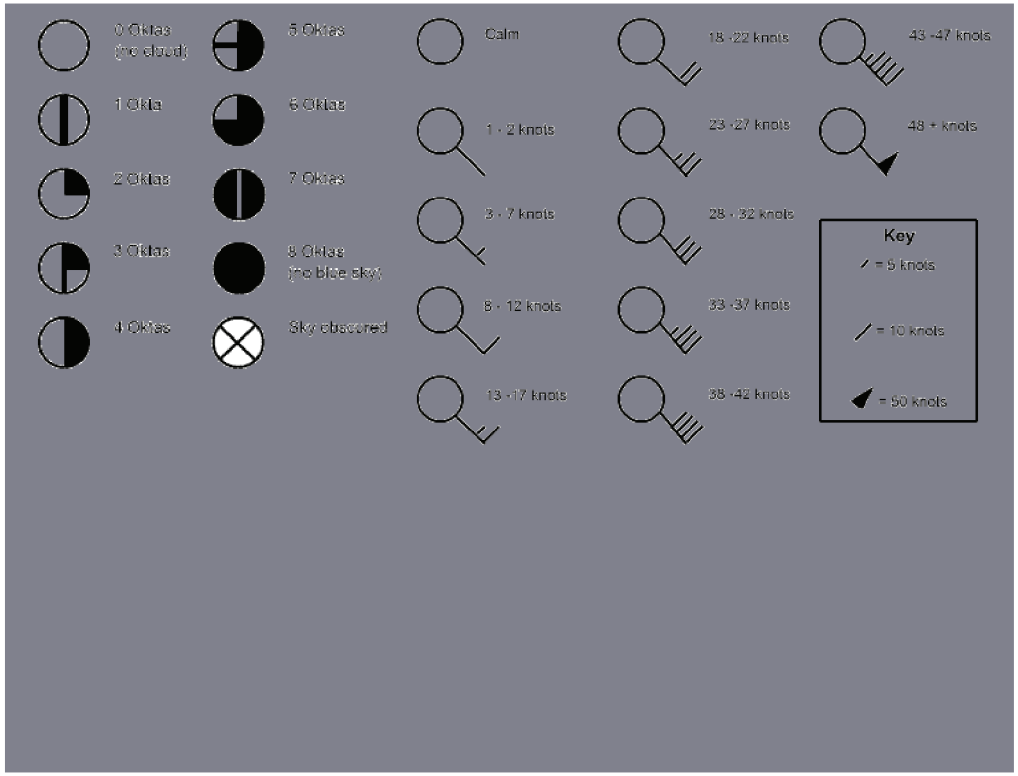
PERFORMATIVE REQUIREMENTS
DYNAMIC GEAR

Skids
Pontoons
Appendages
Claws
Tractor Tires
Snowmobile Treads
Telescoping Feet

Crampons
Hull
Air Shell (Buoyancy)

PERFORMATIVE REQUIREMENTS
ACTIVE GEAR

Thermometer[Climatic]
Barometers
Rain Gauge
Weather Vanes
Barograph
Hydrometer
Weather Radios
Antenna
Receiver / Transmitter
Processor / Display
Geophones
Gravity Meter
Roll-Along Switch Box
Betsy Seismic Gun
Sercel Eagle Opseis 388
Short Period Borehole Seismometer
Voltage Regulator
GPS Units



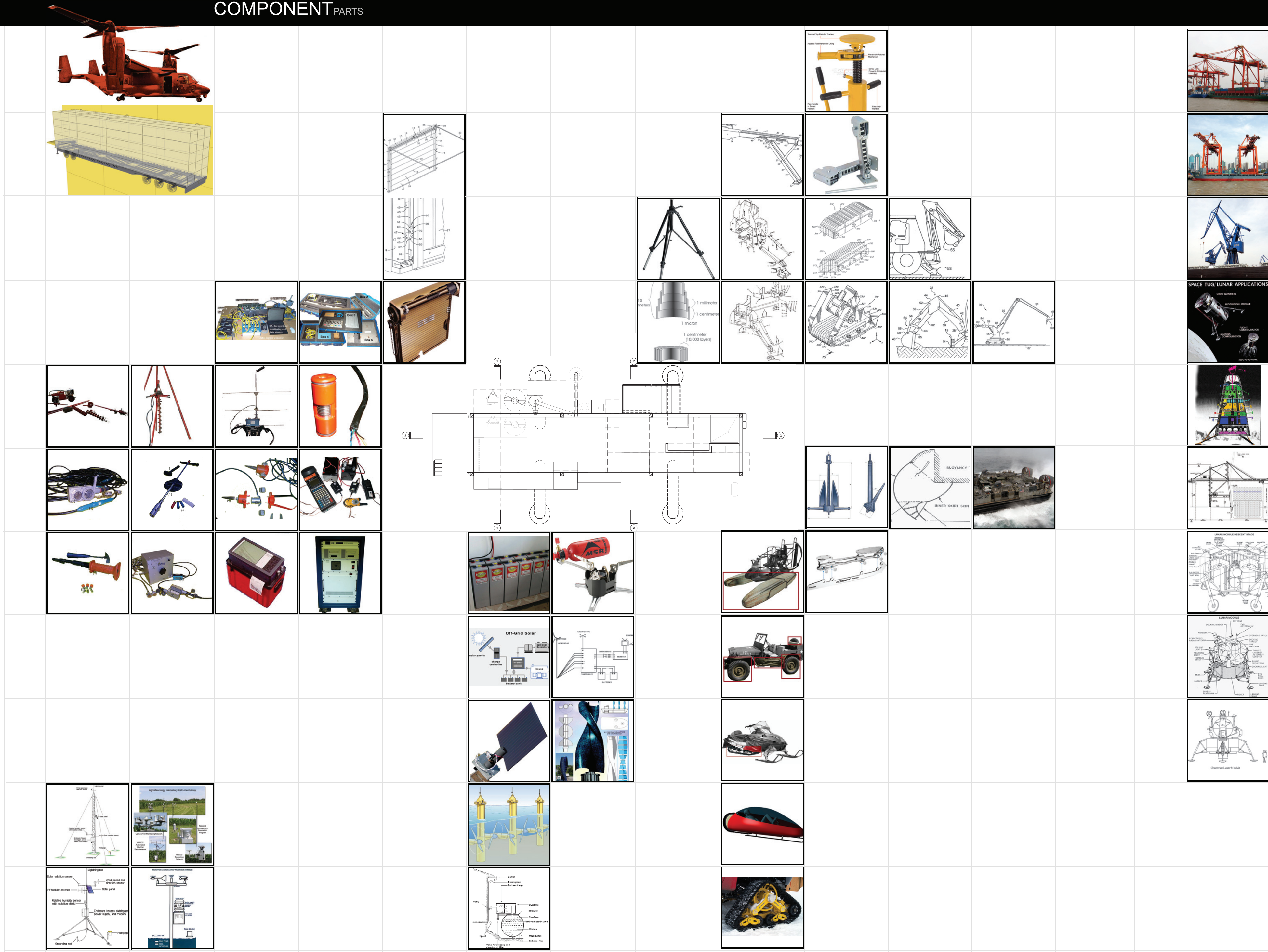
PERFORMATIVE REQUIREMENTS
PASSIVE GEAR

PV Panels
Wind Turbine
Water Collection System
Back-up Power (Generation)

CONCLUSION:

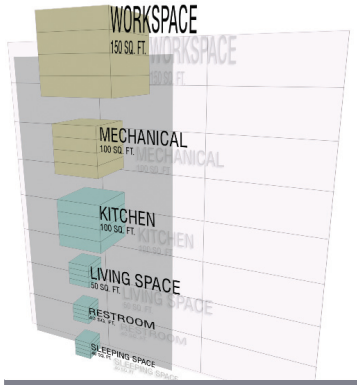
By beginning to understand what the program would be and what the components were, I could visualize basic space requirements. The tools that were to be used could begin influence or even become part of the design. Laying down the framework of the proposal and client gave me a better started to define transportation problems, the frame with which to standardize the design process, and how adaptability would start to become incorporated.

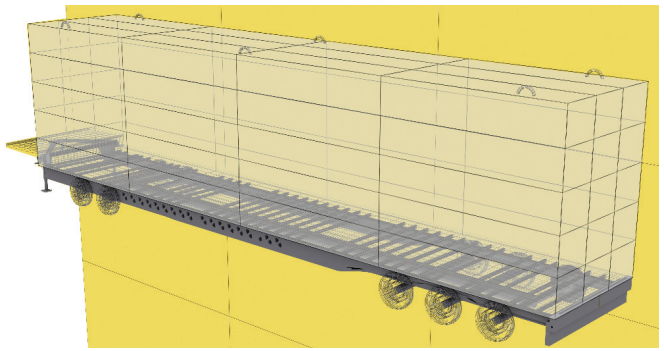
COMPONENT PARTS

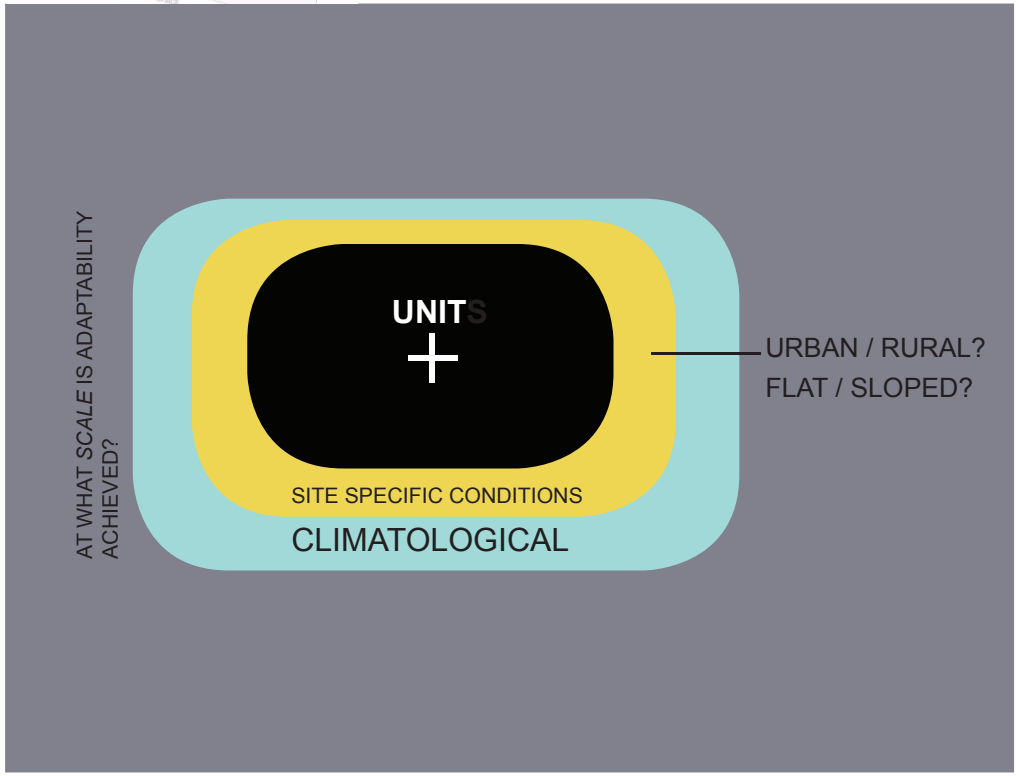


INITIAL DESIGN

CONCEPT

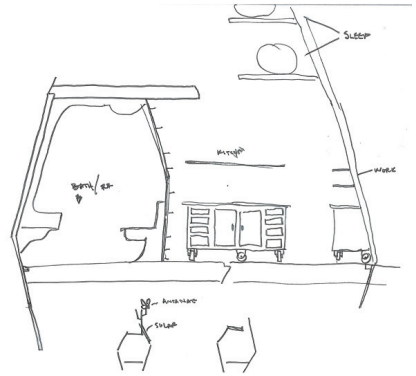


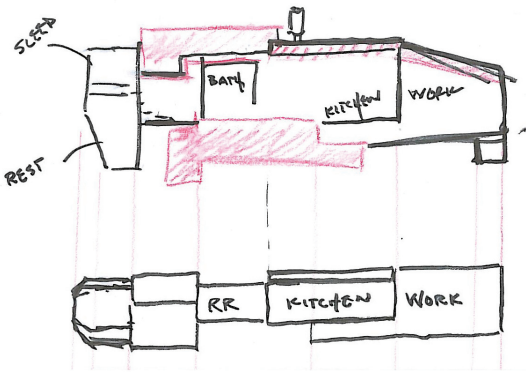


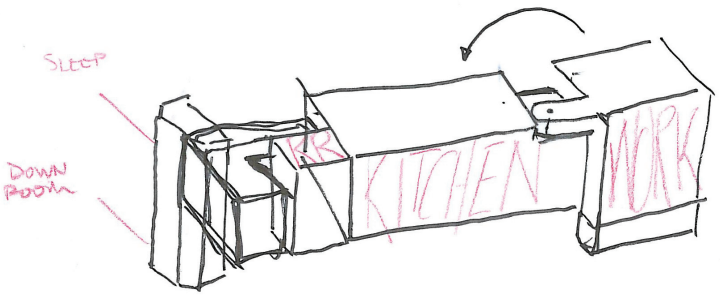


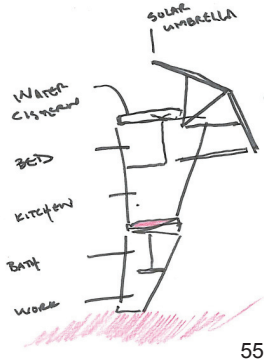
When starting the schematic design phase a few objectives were necessary before moving ahead. First was to lay out the program in terms of general sizing standards. Next, I began to consider the terms in which this unit would be deployed. My basic idea was that of a truck bed trailer, without it having to be characterized as wide-load. Finally, an intial strokes were taken toward which the program would fit in a volumetric space.

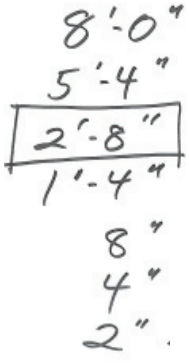
SPACE PLANNING

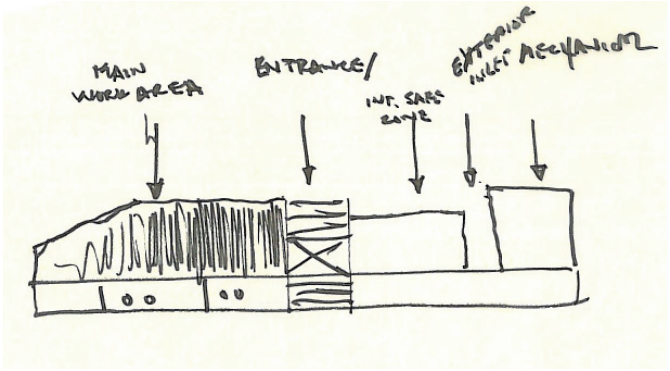


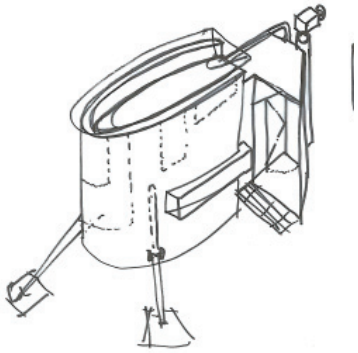


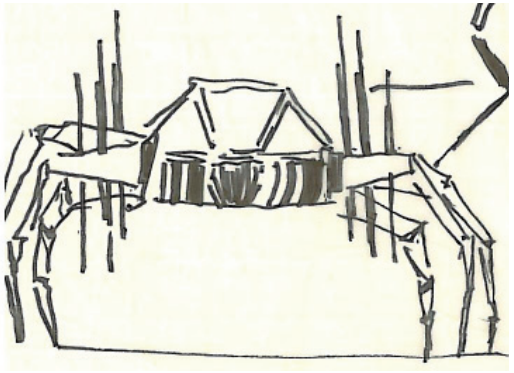










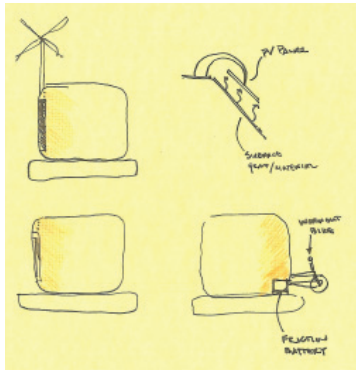


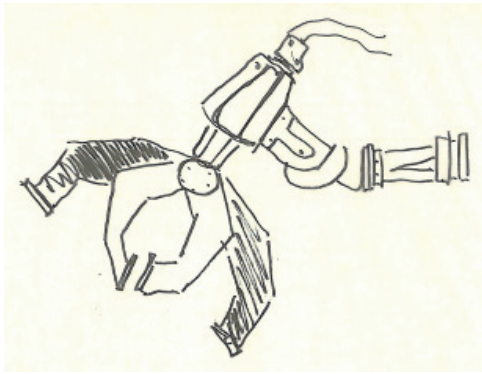
FRAME + COMPONENTRY

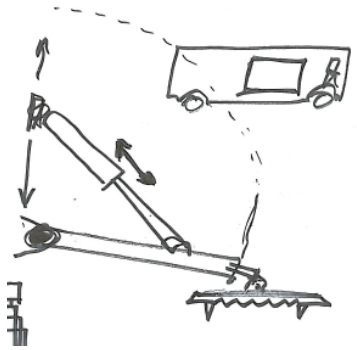
After figuring out the general spatial program requirements, there was need to standardize the base structure not only for time sake, but also from an engineering point of view. The frame that was to come would be the base fpr the parameters that could be achieved by the inhabitants, and for the equipment this research unit was to hold. The structure was to be constructed to have ample storage room not only for tools, but personal supplies, and weight requirements for deployment.

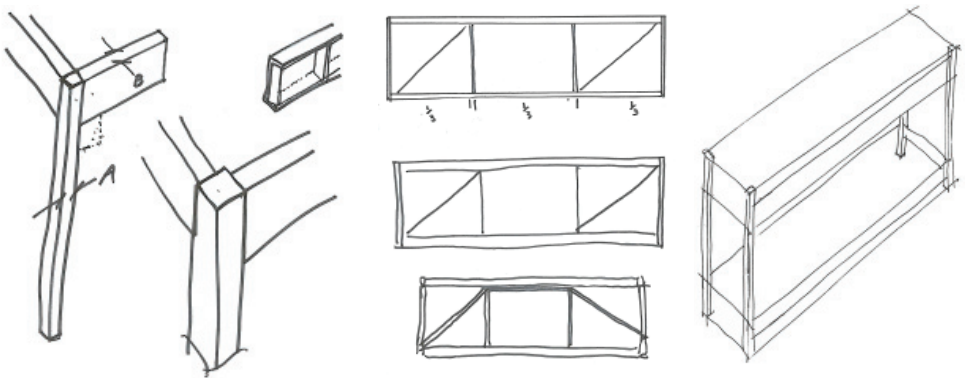
In terms of the frame a standard numbering system was divised so that bay were equal to provide a free canvas to attached the design if the structure. This would limit the panels to be sized accordingly, openings and closings to be consistent, and free the main spaces which the scientists were to inhabit to be open for any number of reasons. At the same, the structure would have to coexist with the componentry which I was also trying to work in.

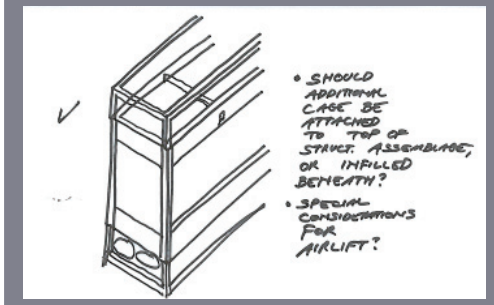
Initial sketches on expressive forms + componentry

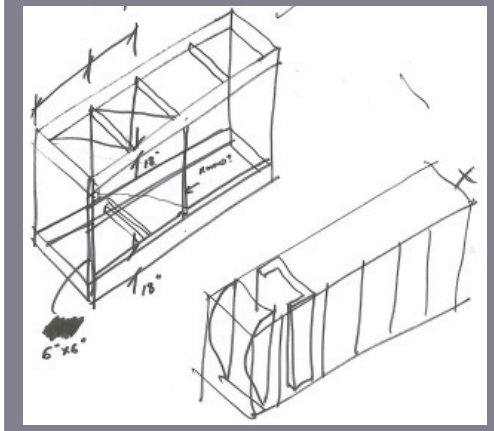


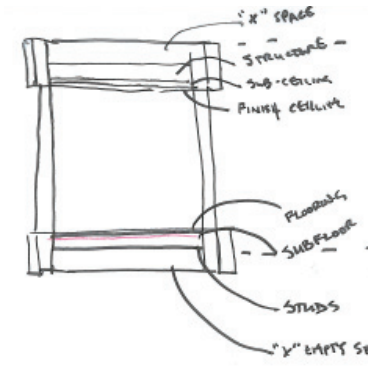


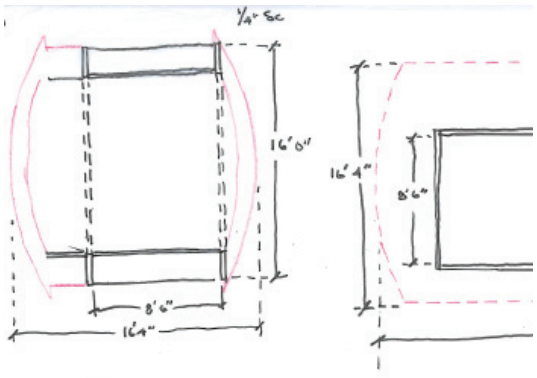


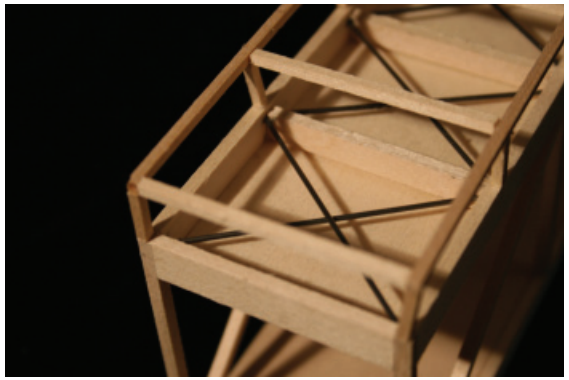


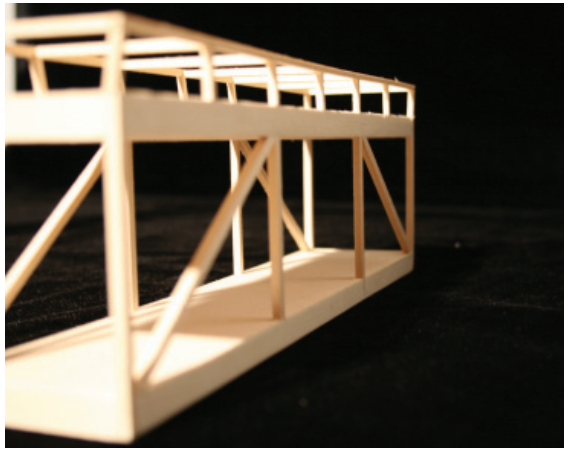

• SHOULD ADDITIONAL CAGE BE ATTACHED TO TOP OF STRUCT. ASSEMBLAGE, OR INFILLED BENEATH?
• SPECIAL CONSIDERATIONS FOR AIRLIFT?

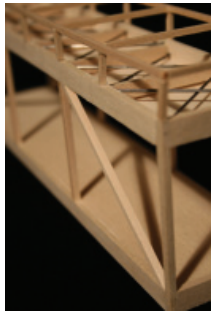

6"x6"


"x" SPACE
STRUCTURE
SUB-CEILING
FINISH CEILING
FLOORING
SUBFLOOR
STUDS
"x" EMPTY SP

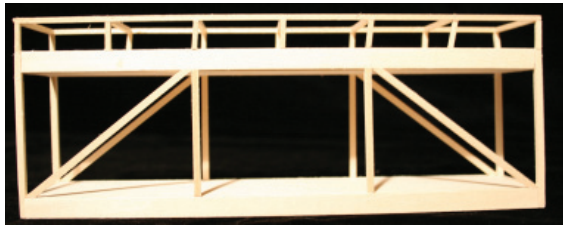

1/4" SC
16'0"
8'6"
16'4"
16'4"
8'6"





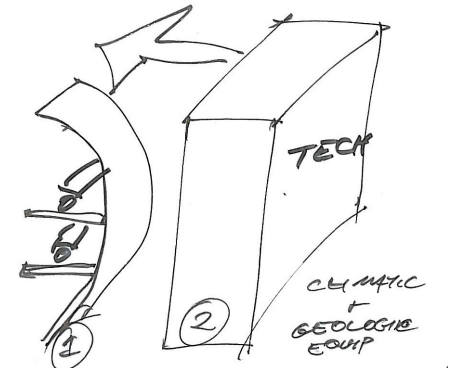


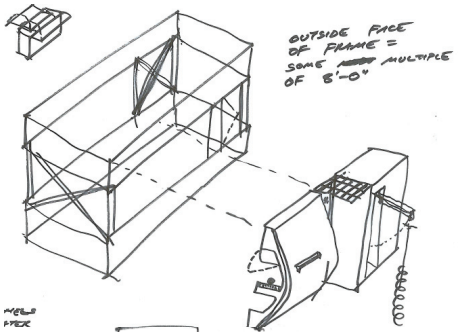

STRONGEST
STRONG
IF NOT
STRONGER

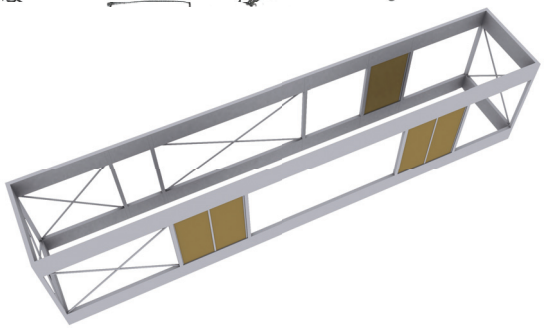


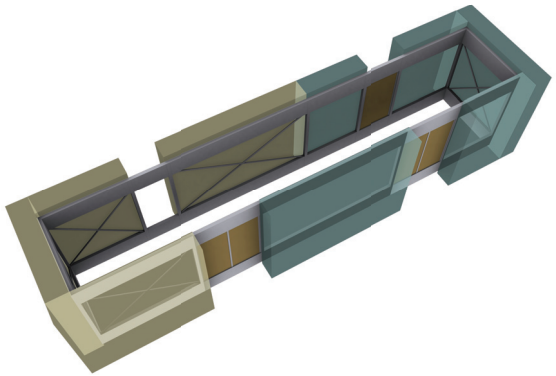
FRAME

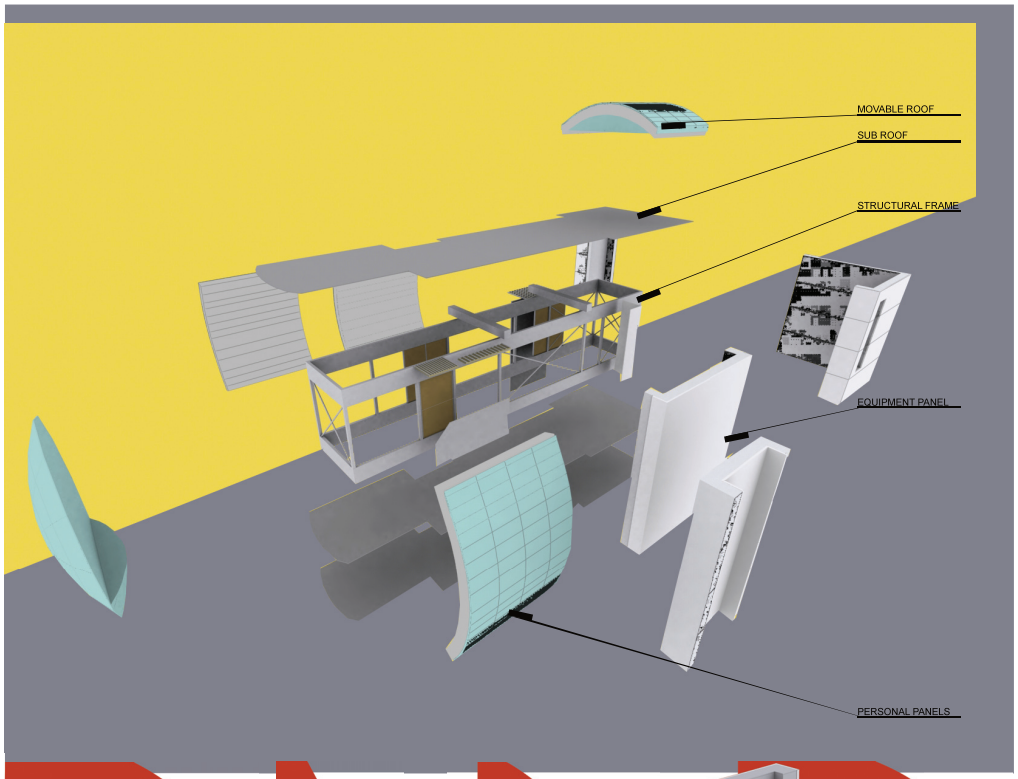
The last objective of this semester was to address the paneling system. The goal was to produce two types of expressive panels that could begin to tell a story of what this unit was doing or maybe what it was trying to achieve? From my understanding this panels would be duplicated over the structure depending what was happening on the interior. I came to the conclusion that one would contain the look of a scientific panel, and the other would have some qualities of being domestic.

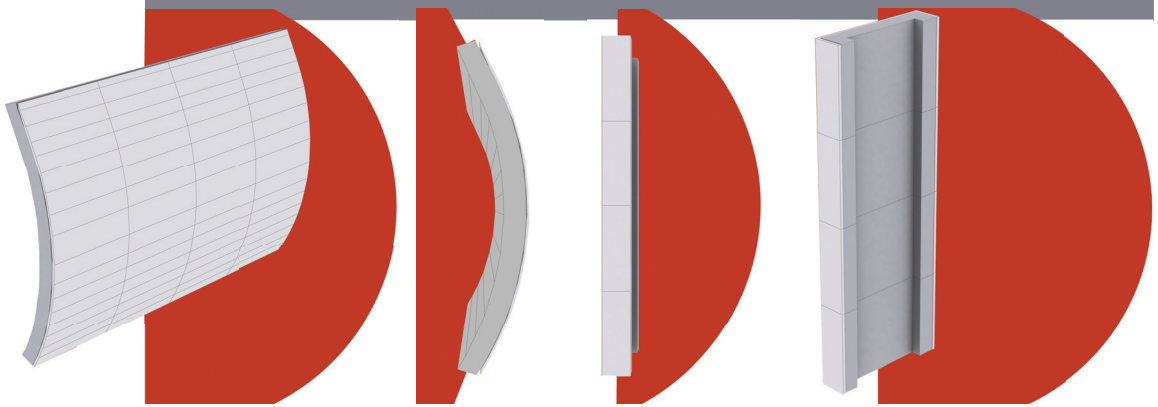




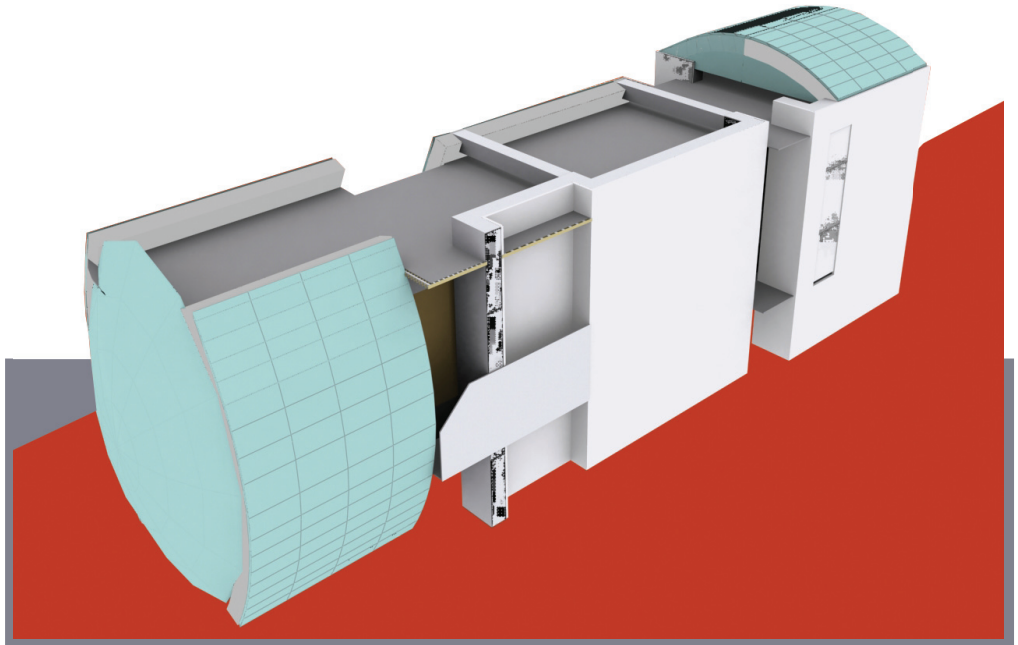


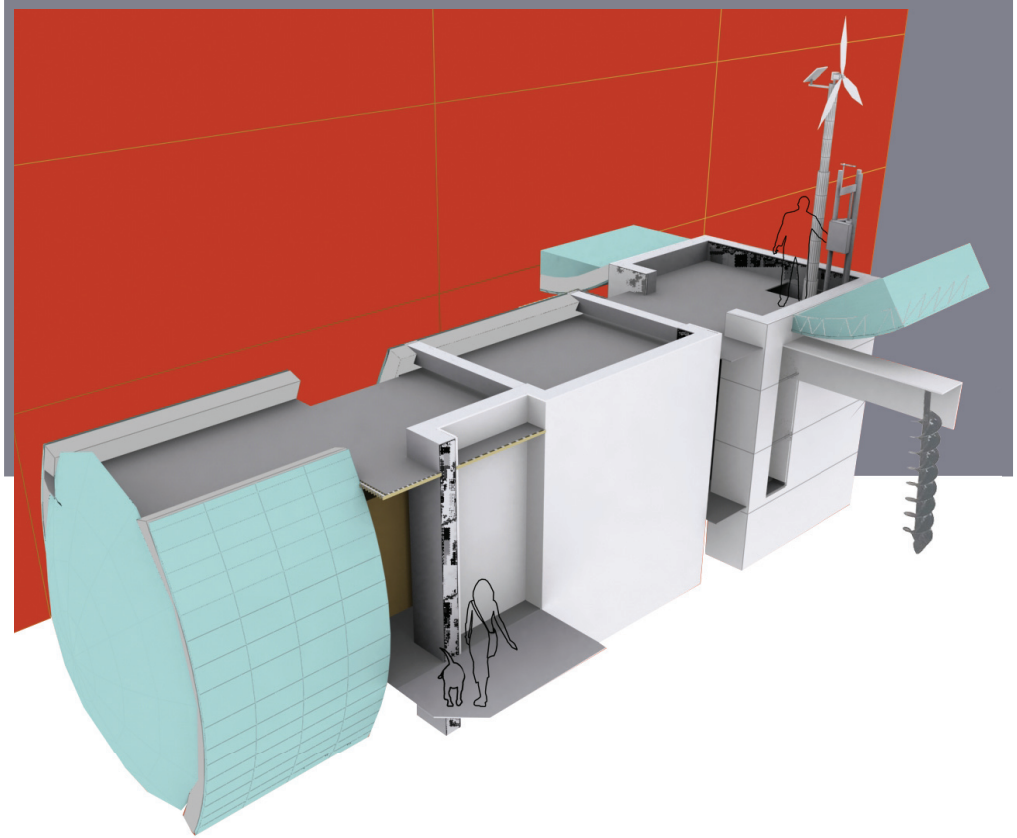


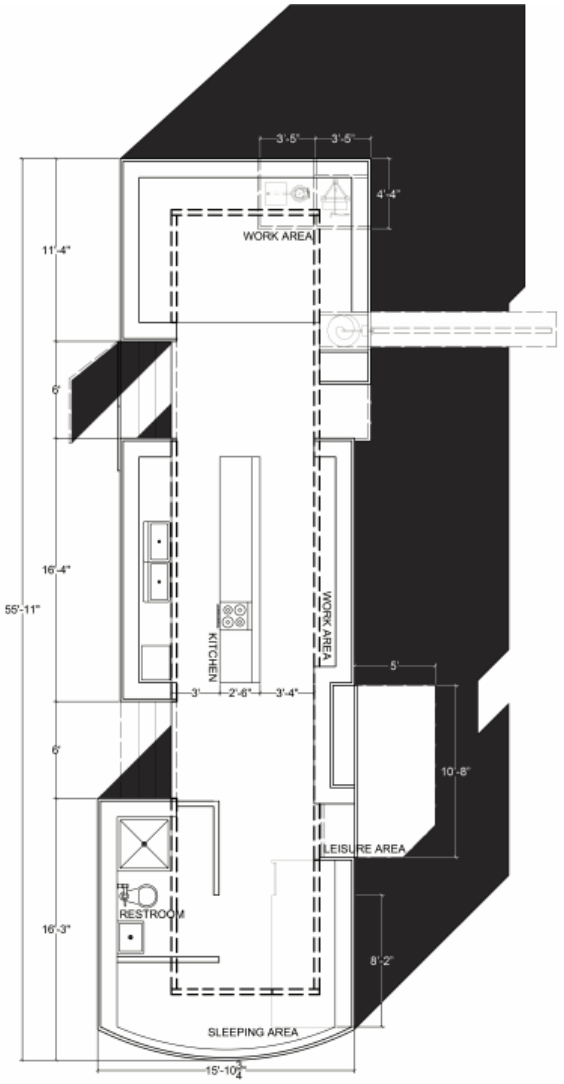


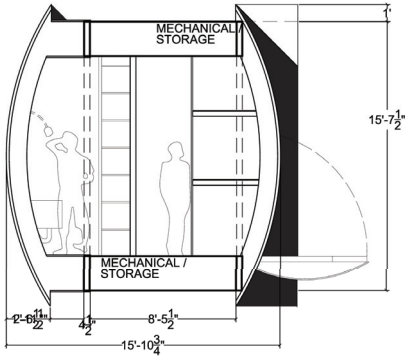


PANELS



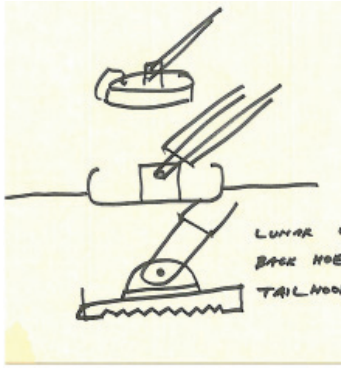


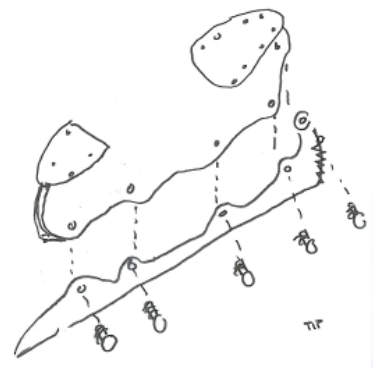


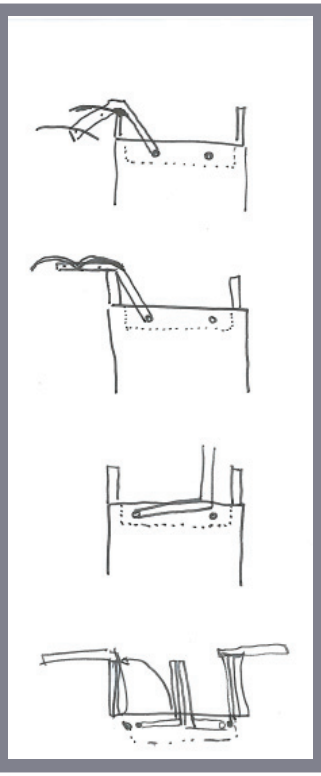


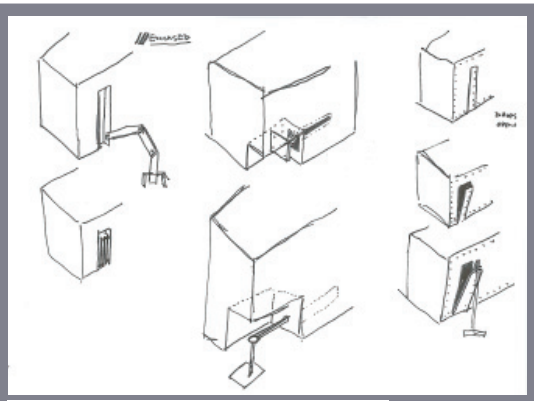
CULMINATION FIRST SEMESTER

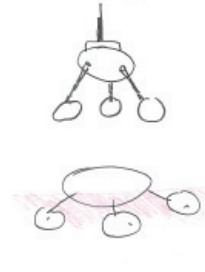
FINAL DESIGN

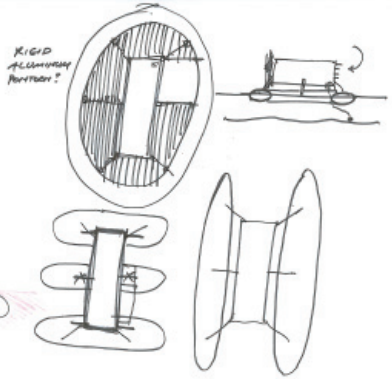






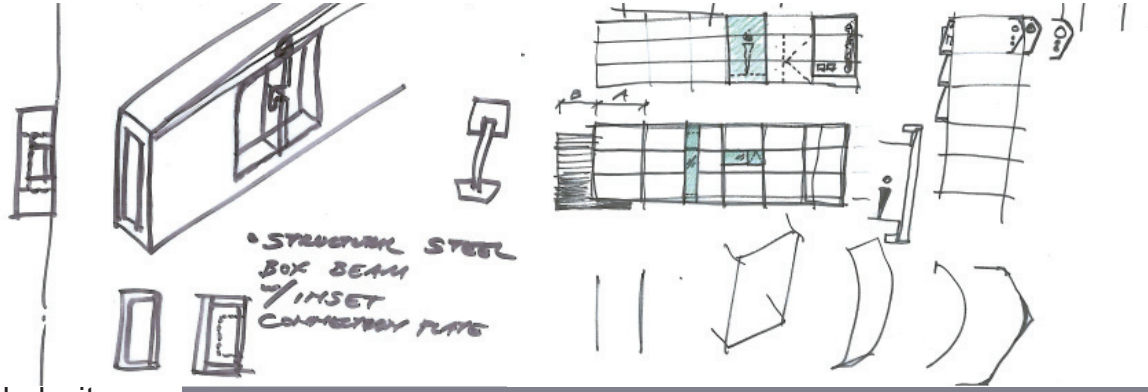






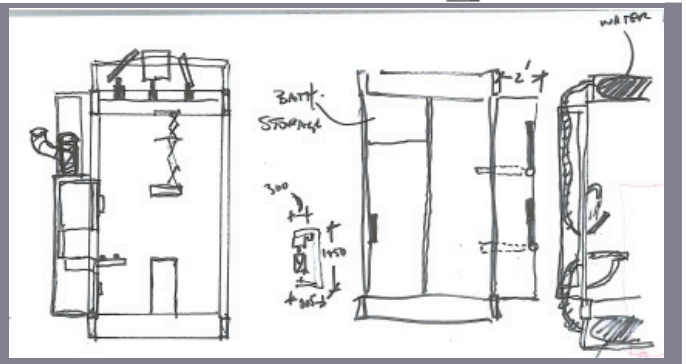
Entering second semester began a drive of full on design. Before anything else the frame had to be signed off on, and the rest of the equipment chosen. Each component had to be inspected for further custom design and variation after variation were pumped out. The componentry drove the design, but the structure drove the project. In the end it was a fine tuning to mesh the structure and equipment together.

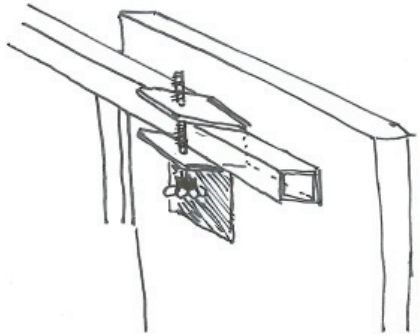
LARGE SCALE COMPONENTS

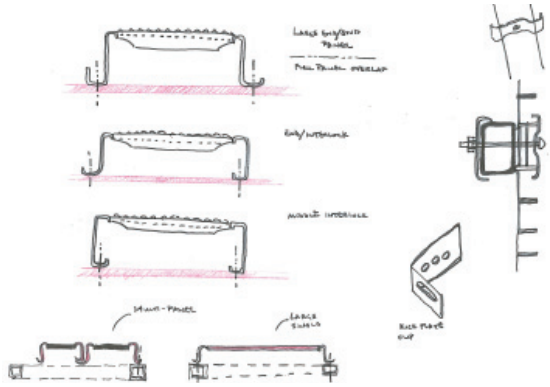


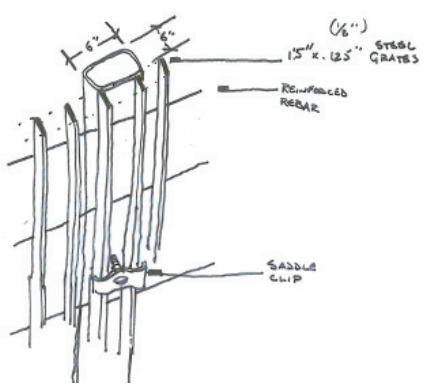
ATTACHMENTS

When looking at the research unit as a whole, it was important to start to develop an enclosure. This enclosure, after being developed would also start to direct openings, connections in terms of nuts and bolts, and how the research unit overall would read. This process was very tedious looking at everything from materiality, to weight, durability, and the like. The technical part was most satisfying, getting into the cracks and figuring how everything would connect to form a new whole.

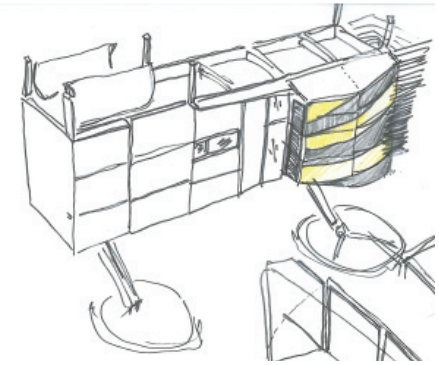


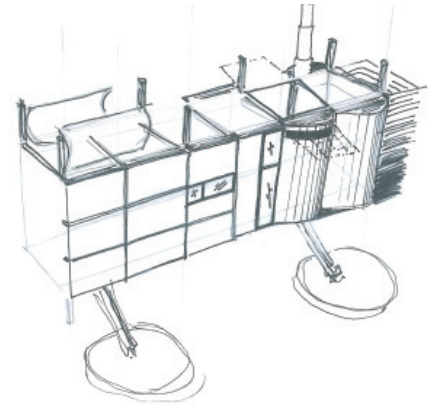


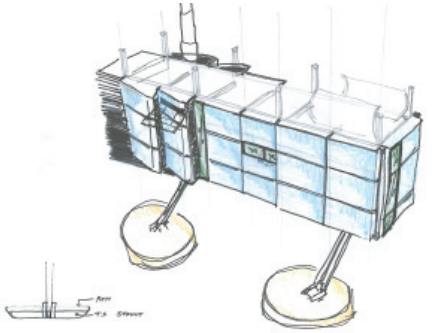


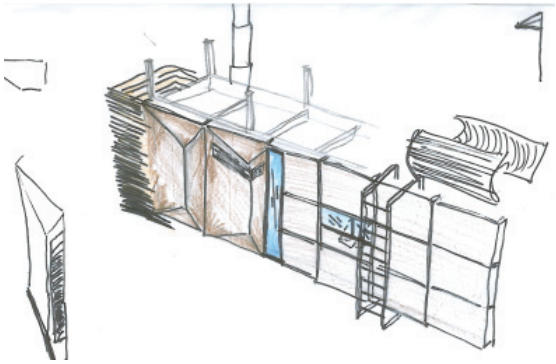


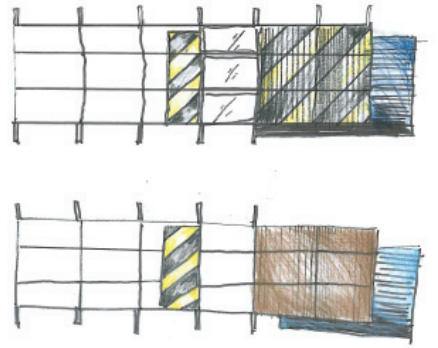
Last but not least, it was time to work solely on different types of paneling systems and how the structure would read. This also allowed time to think of how this unit would be conceived in terms of color, technicality, or even expressiveness. Multiple design features were considered including, warning stripes, vents, windows, plastic paneling, metal paneling, etc.







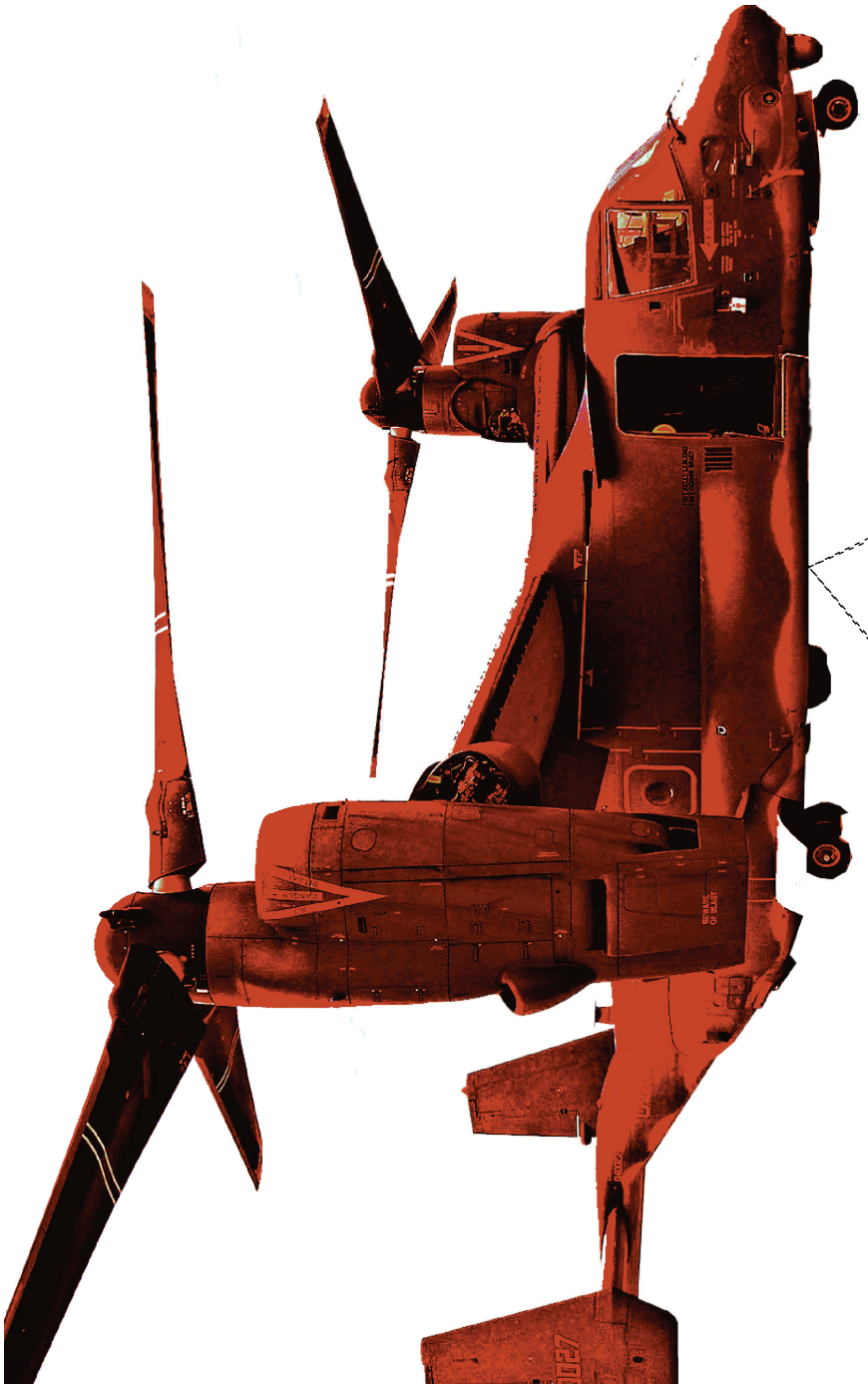


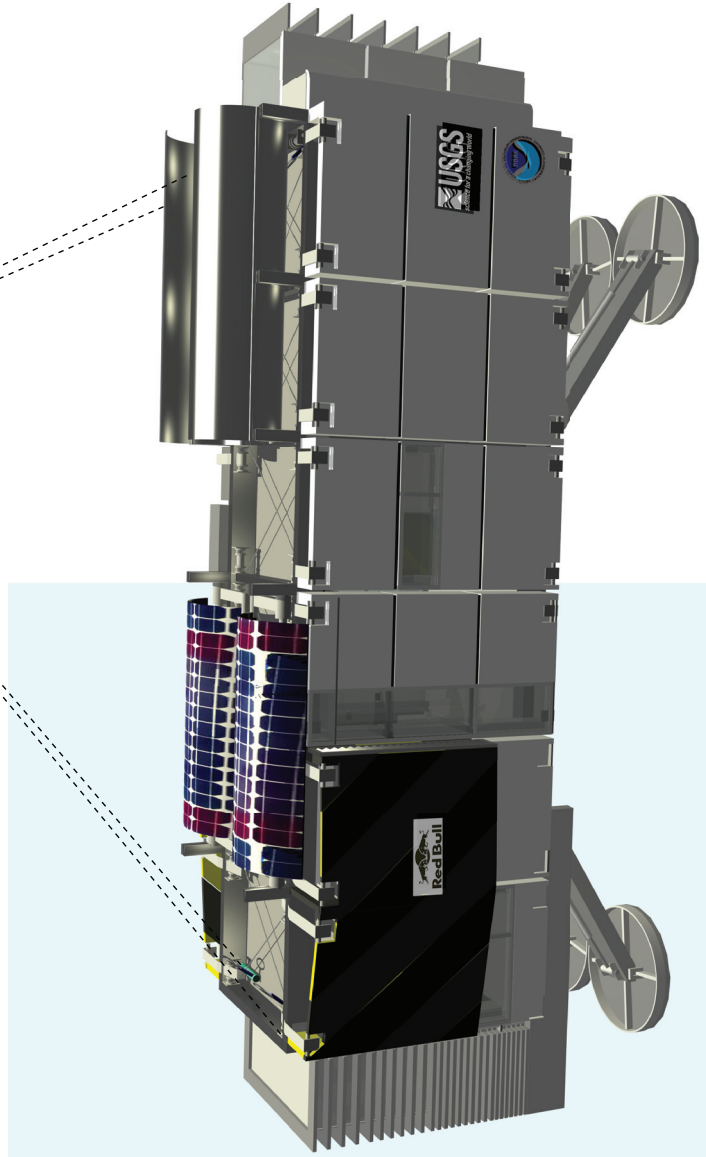


FINAL PANELING + COLOR

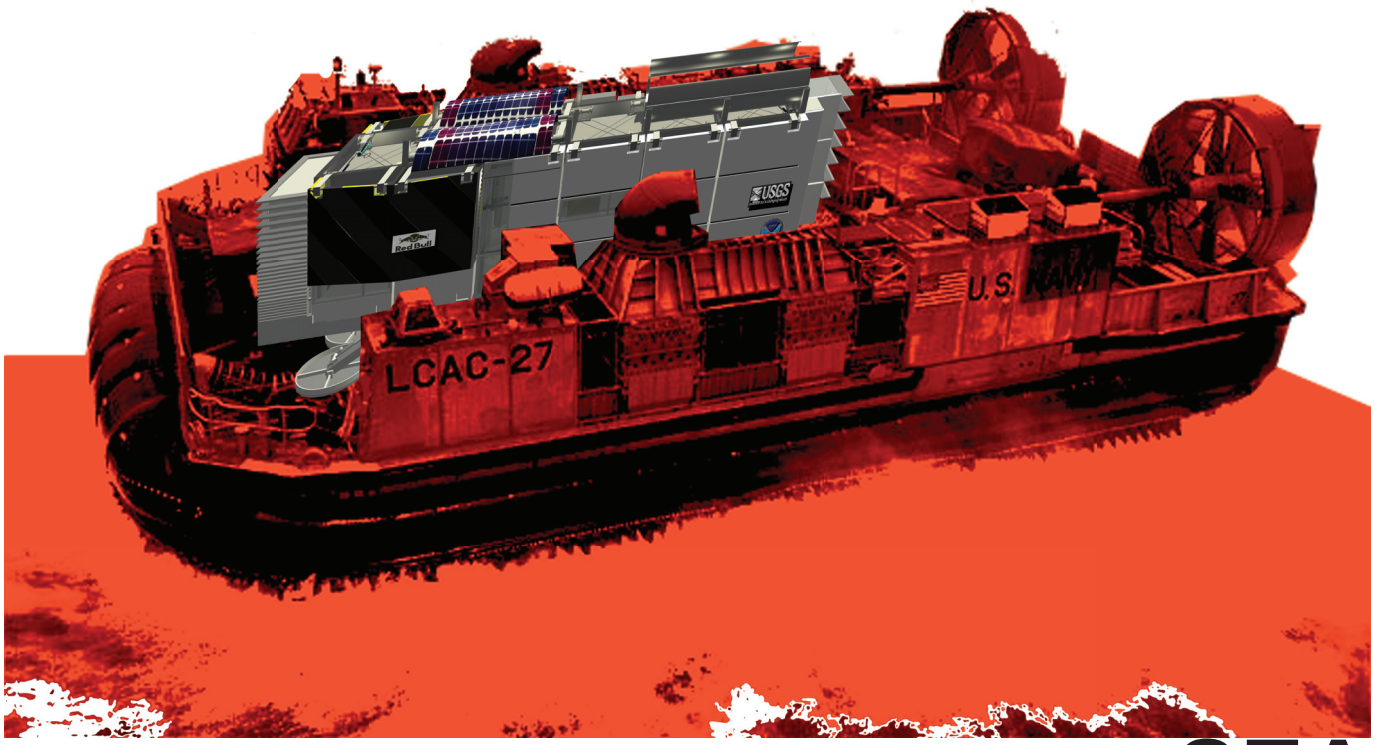
DEPLOYMENT

AIR



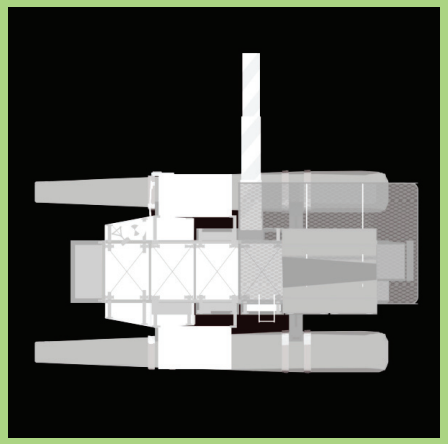


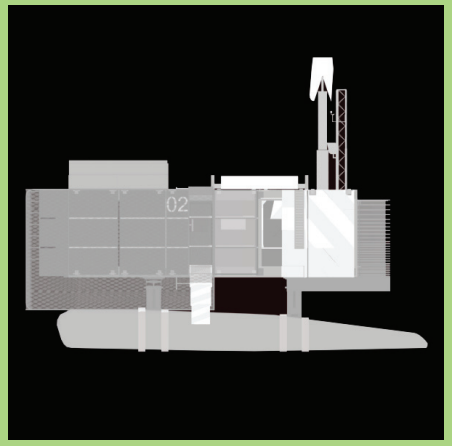
LAND

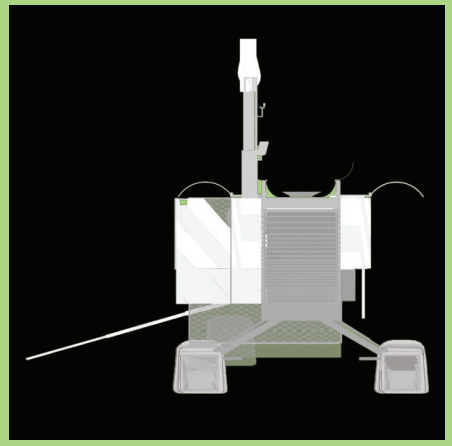


SEA

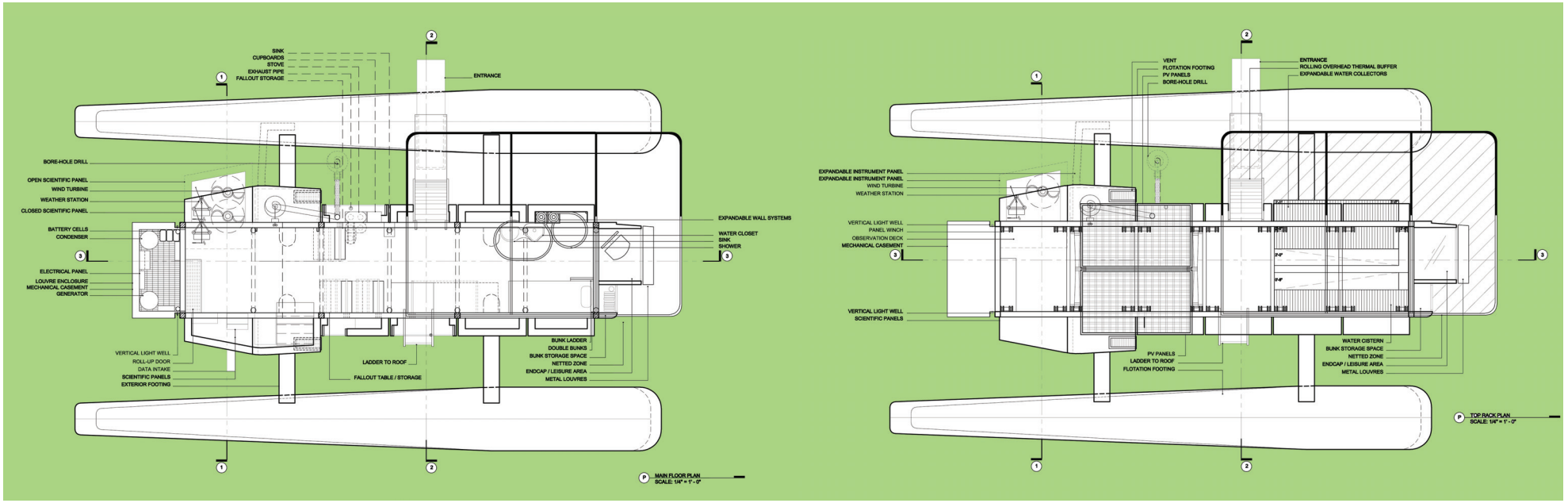
EVERGLADES NATIONAL PARK

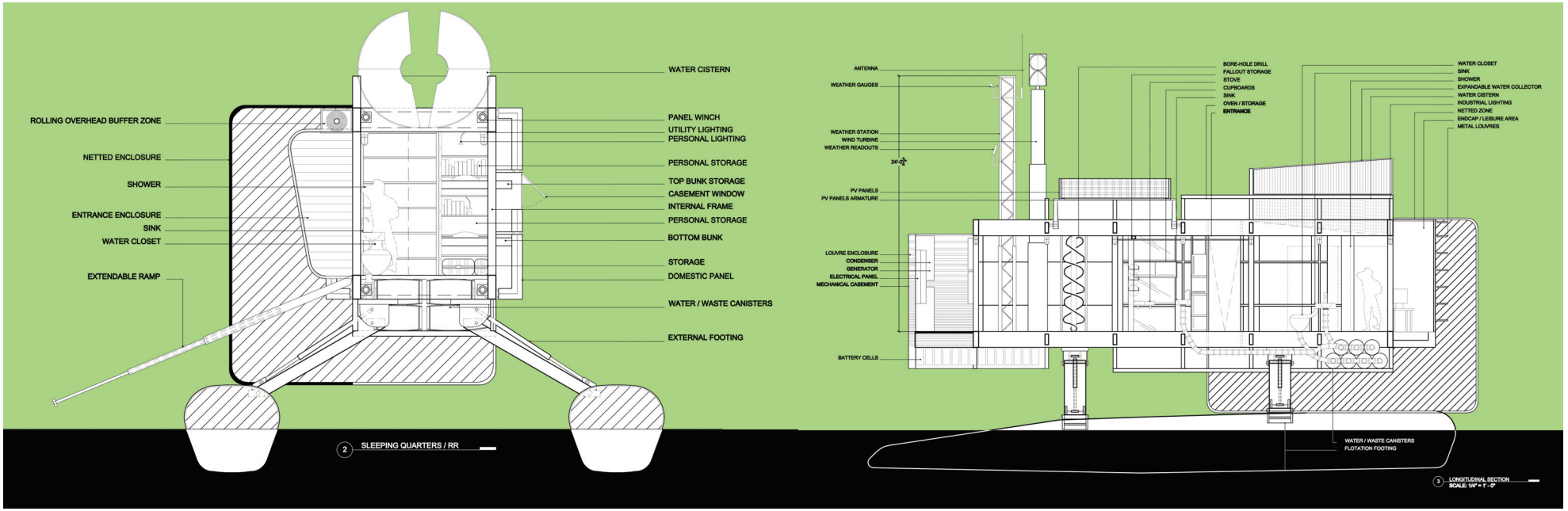




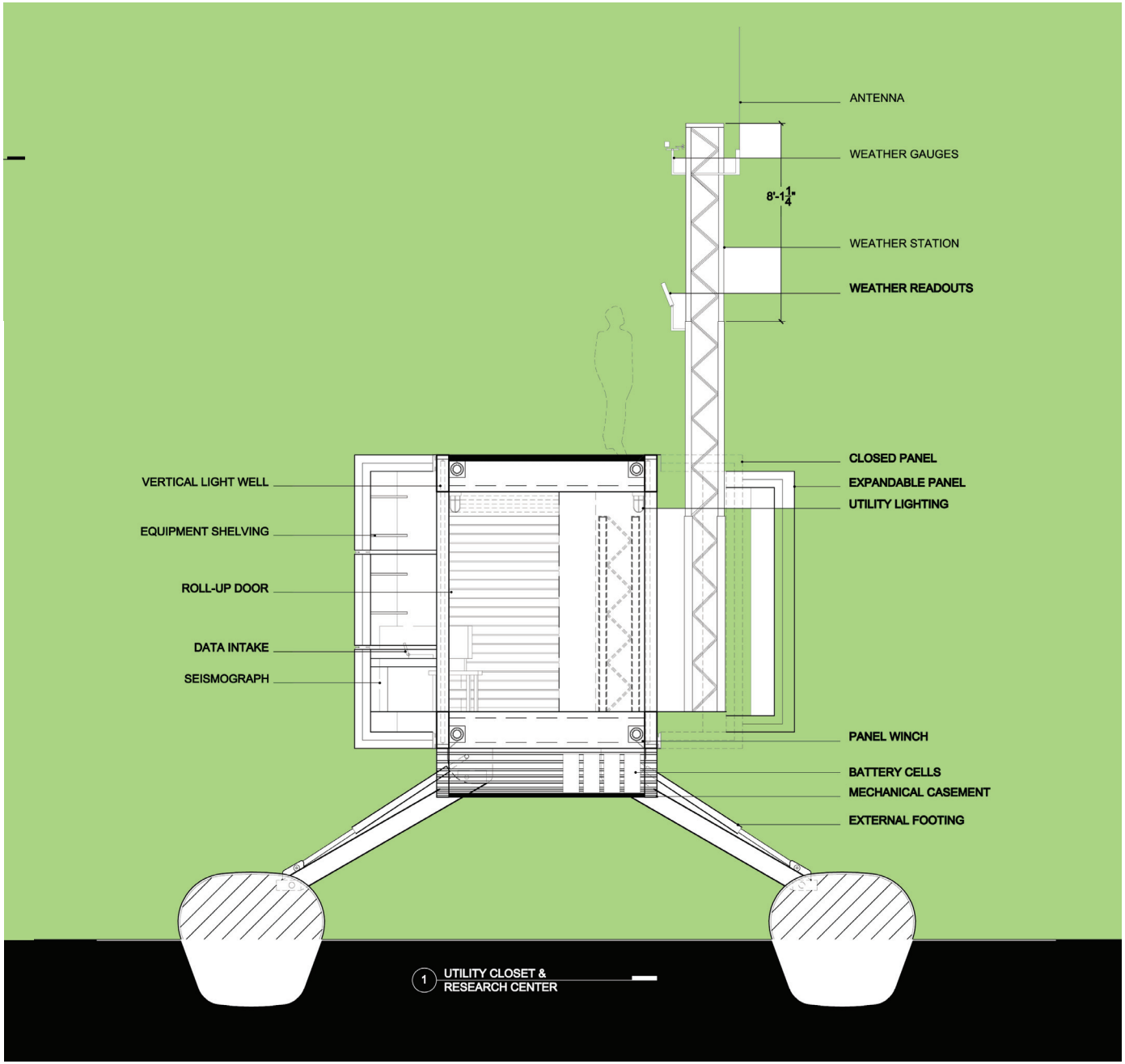


EVERGLADES NATIONAL PARK

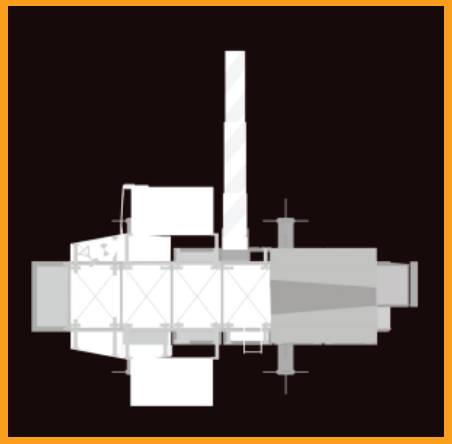


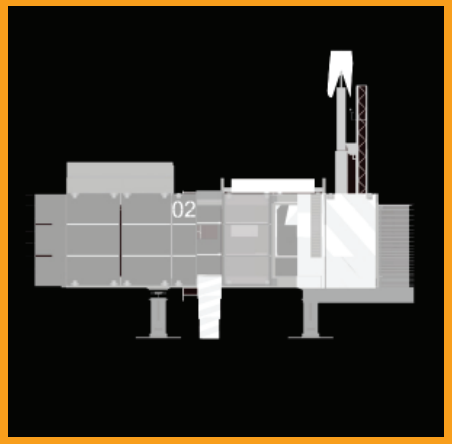


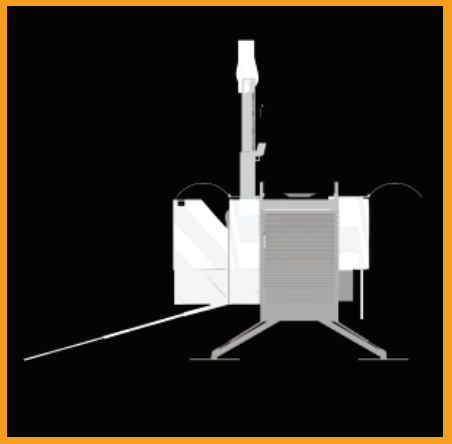
EVERGLADES NATIONAL PARK



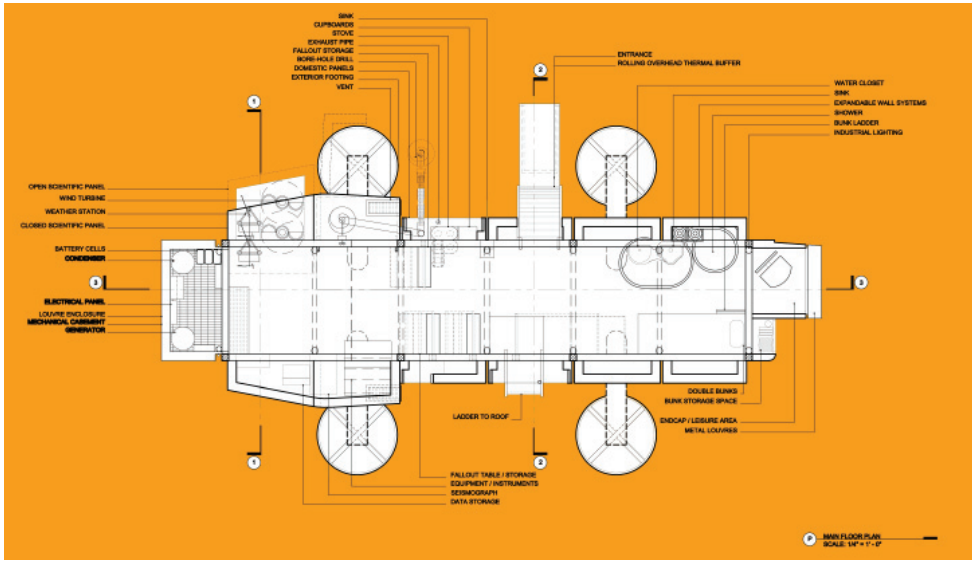
JOSHUA TREE NATIONAL PARK

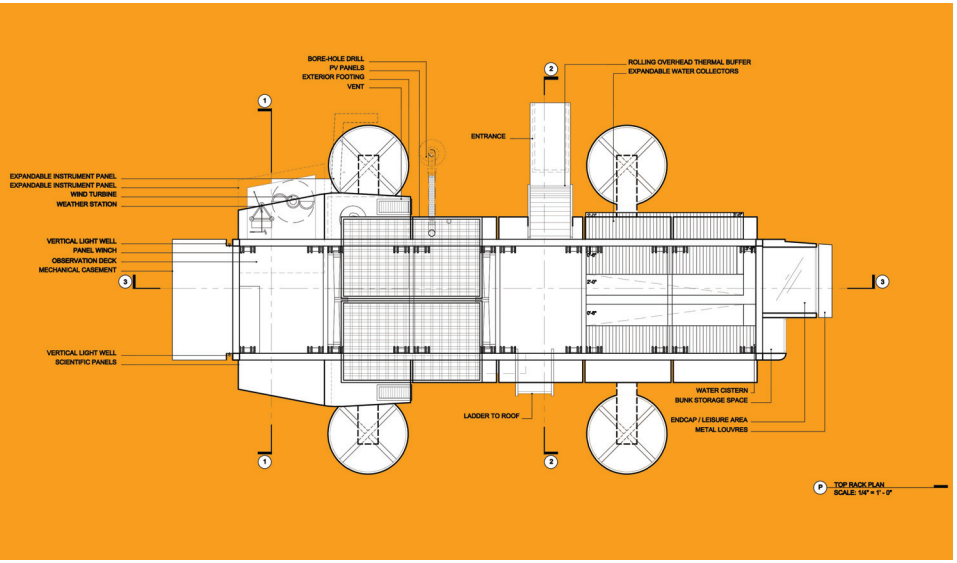


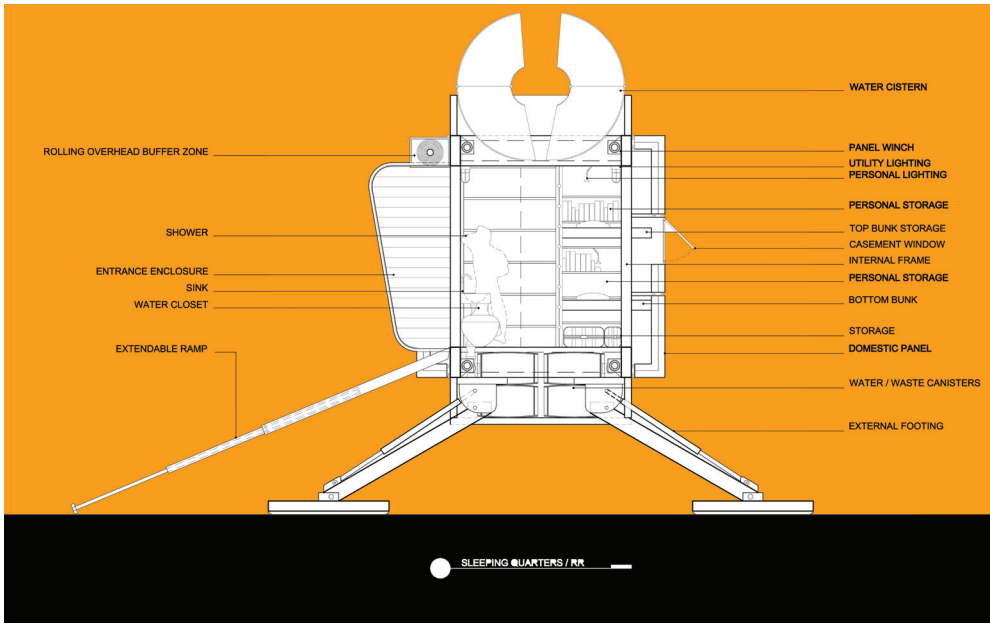


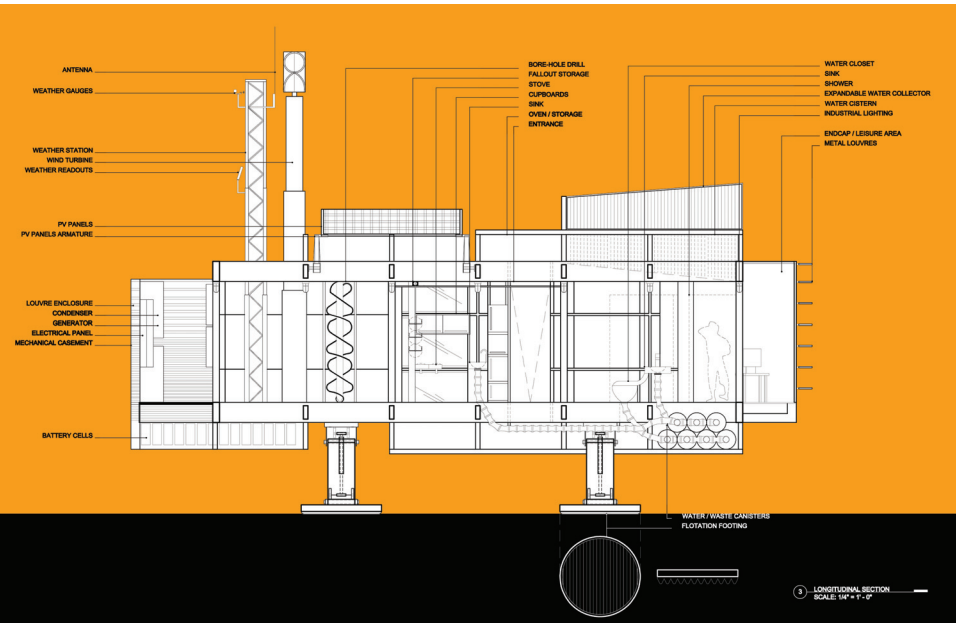


JOSHUA TREE NATIONAL PARK

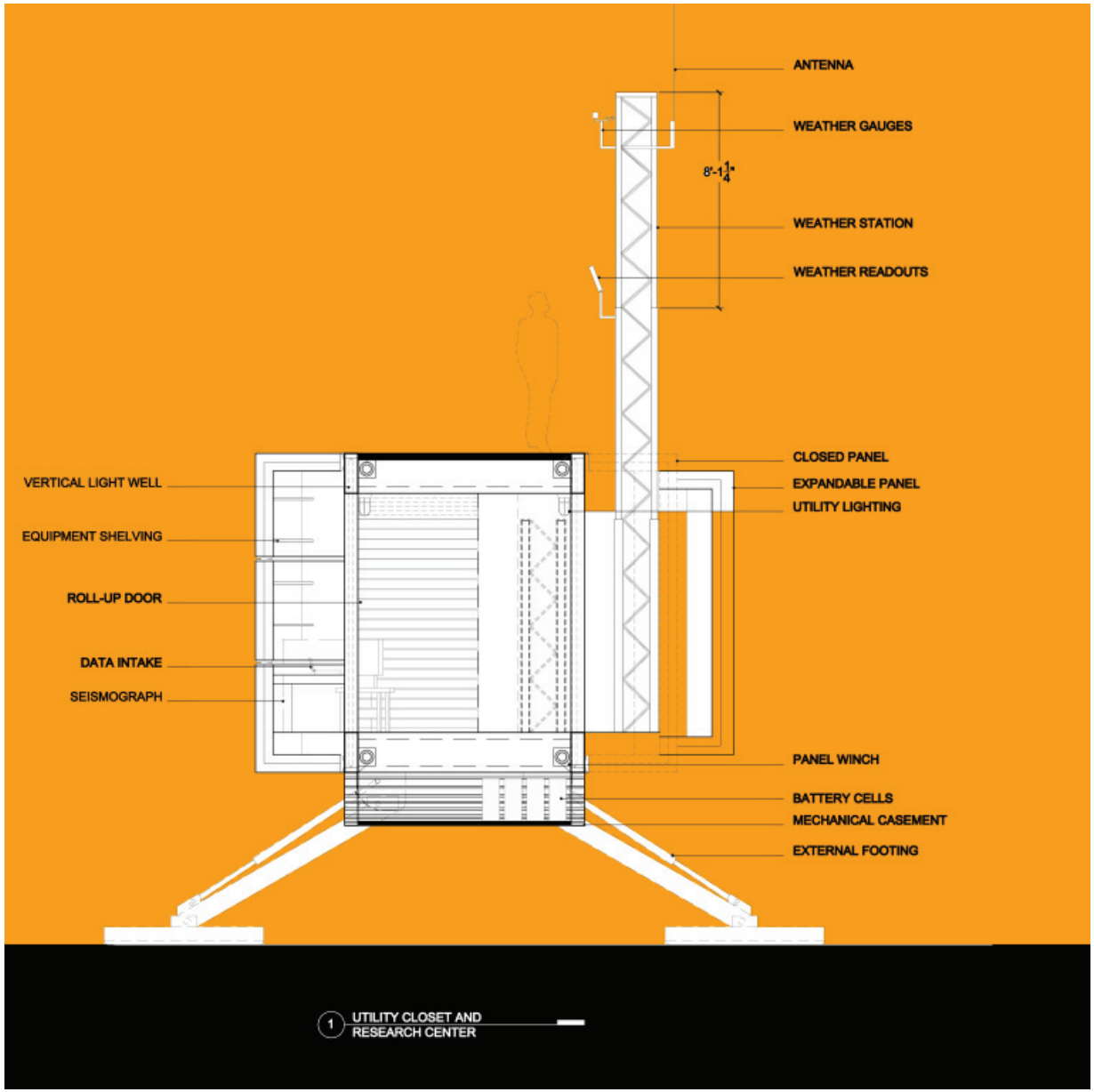


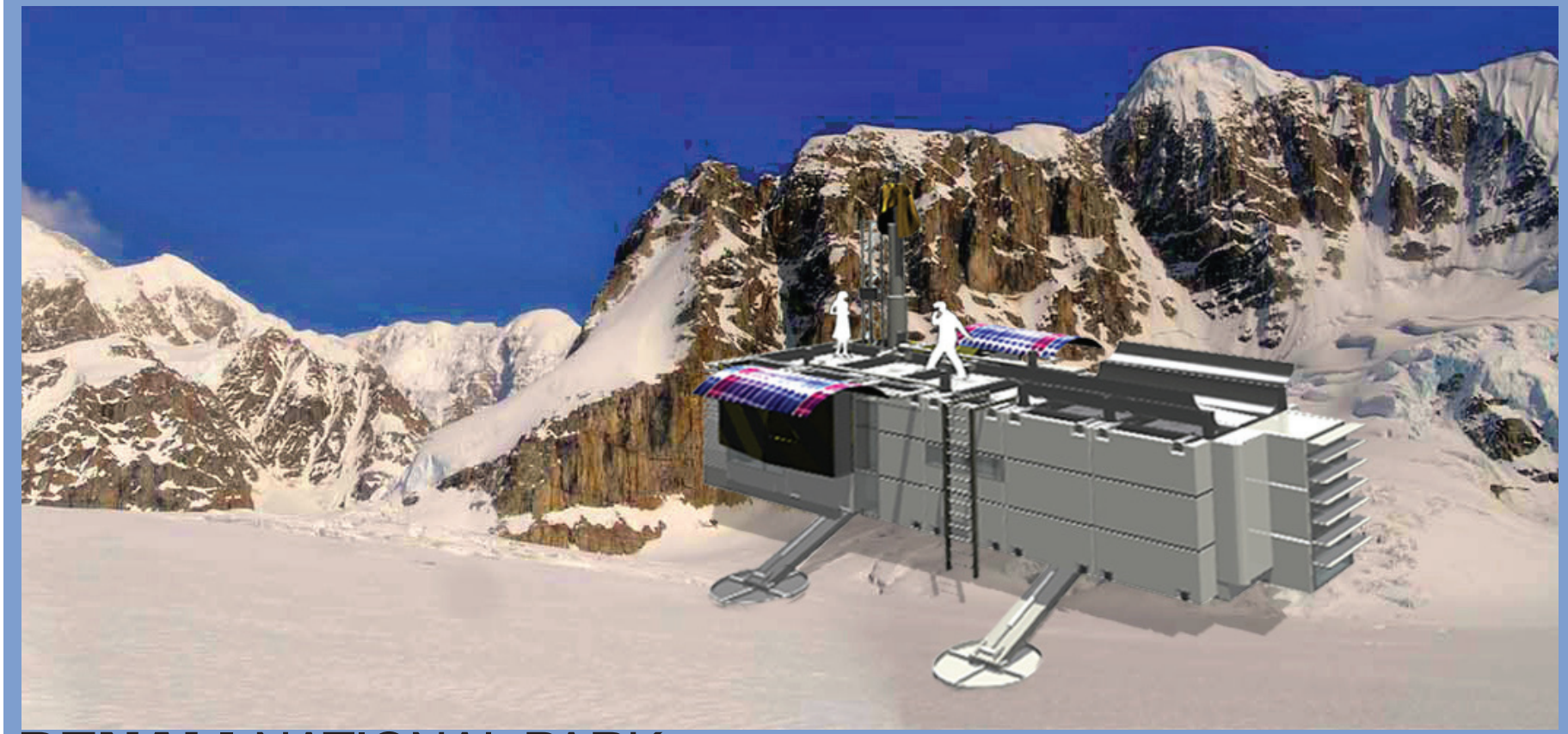




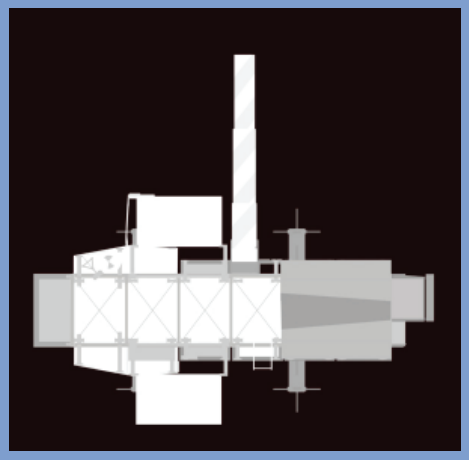


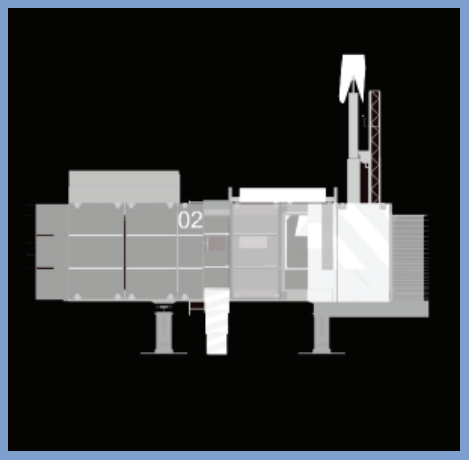
JOSHUA TREE NATIONAL PARK

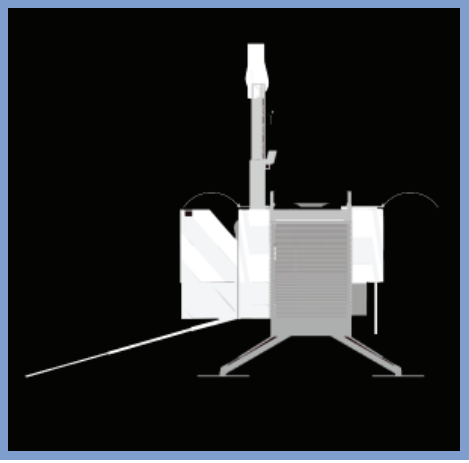




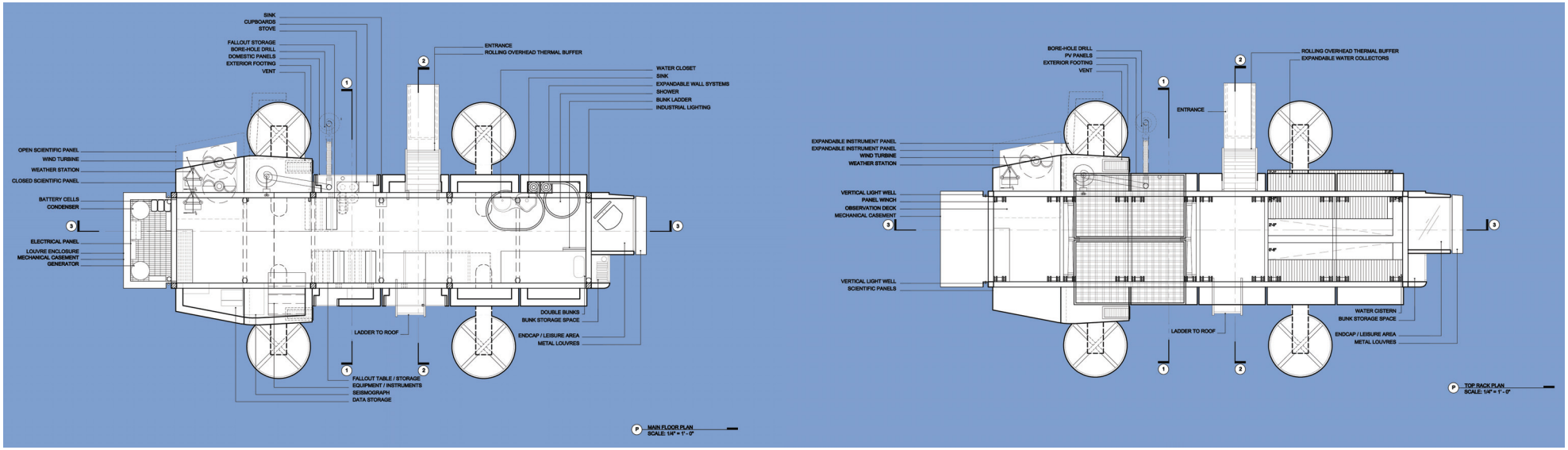
DENALI NATIONAL PARK

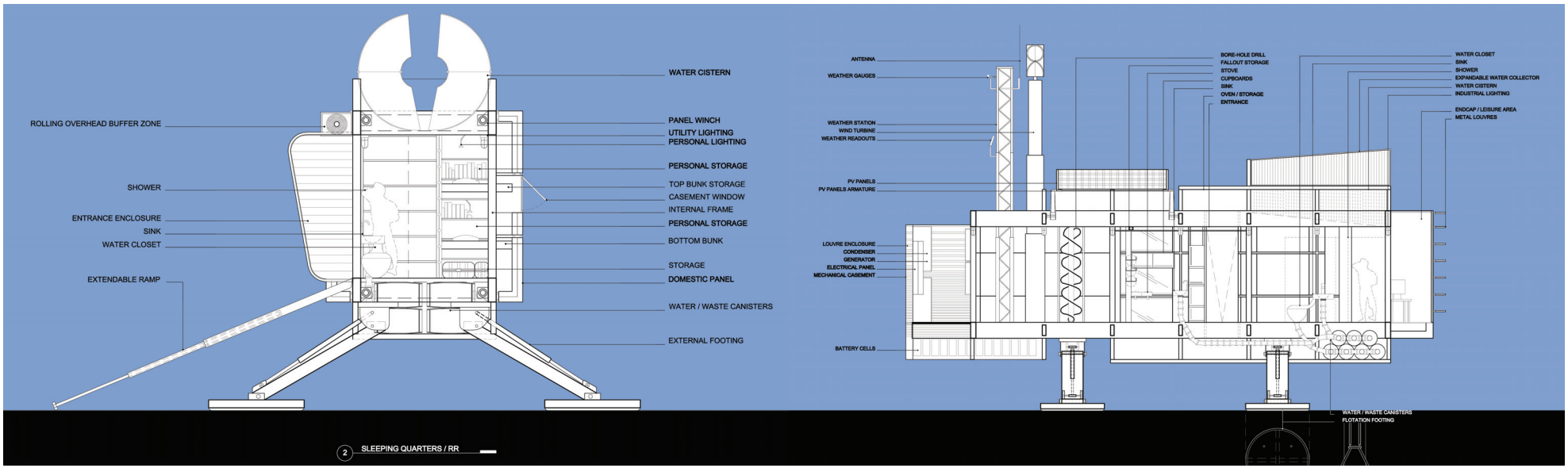




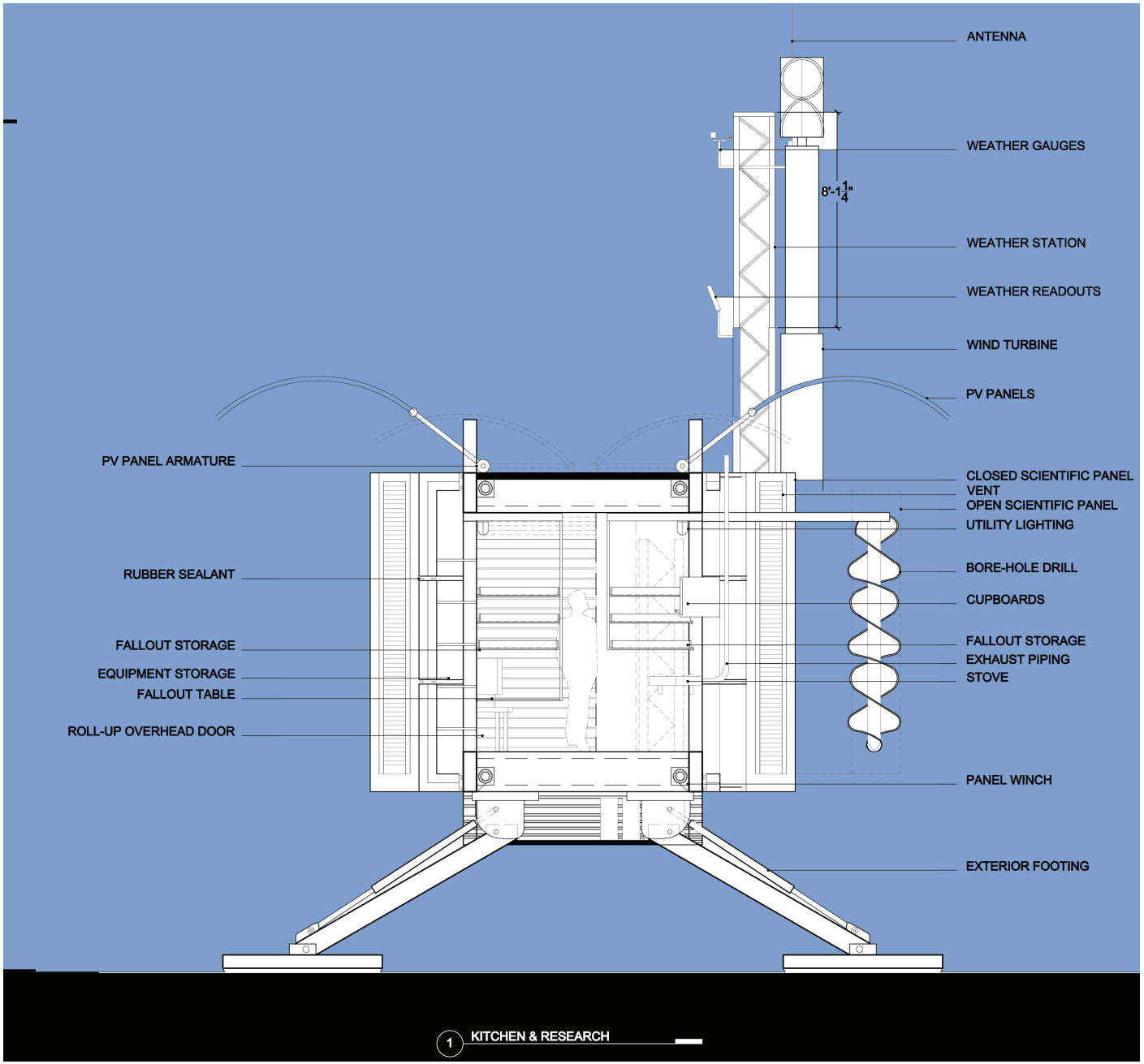


DENALI NATIONAL PARK

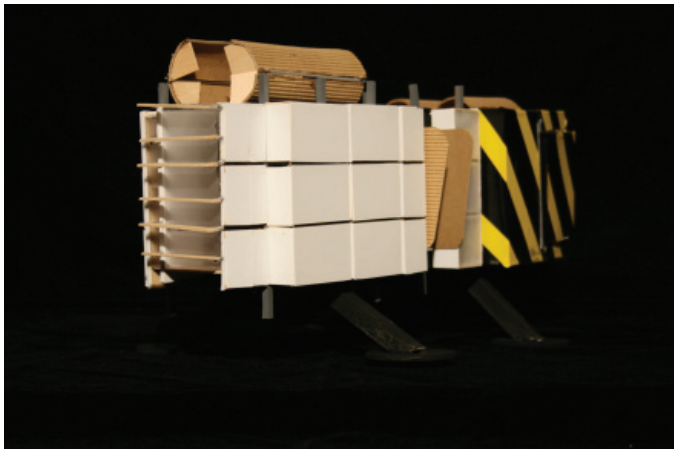
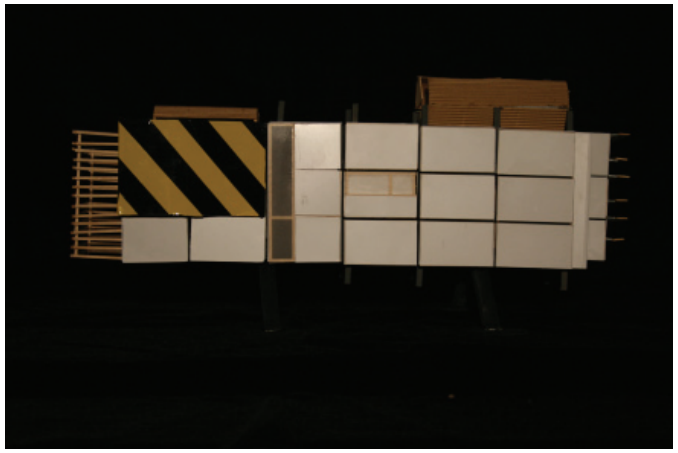


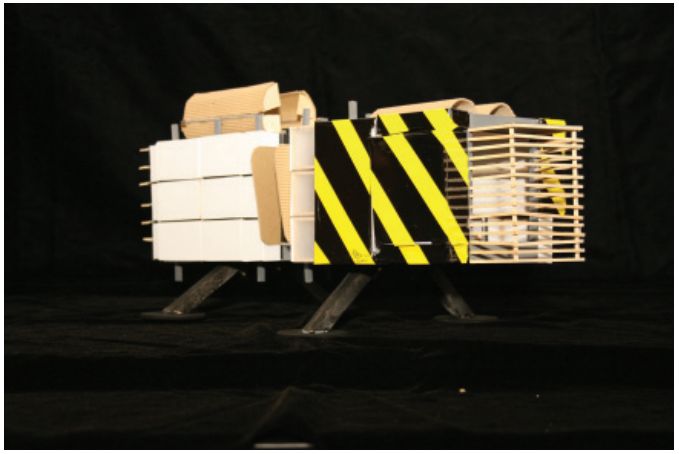
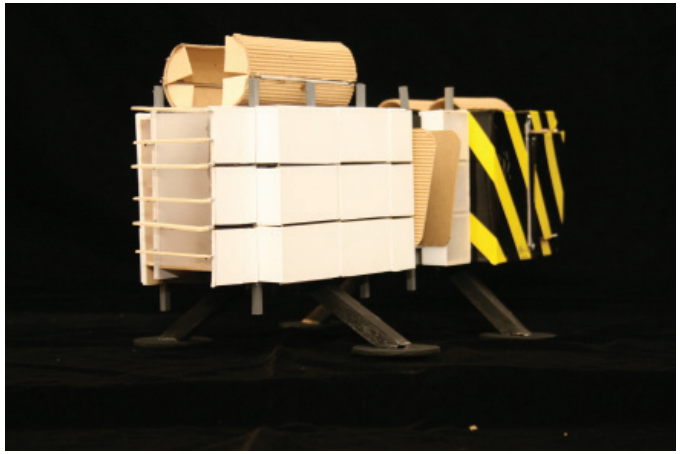
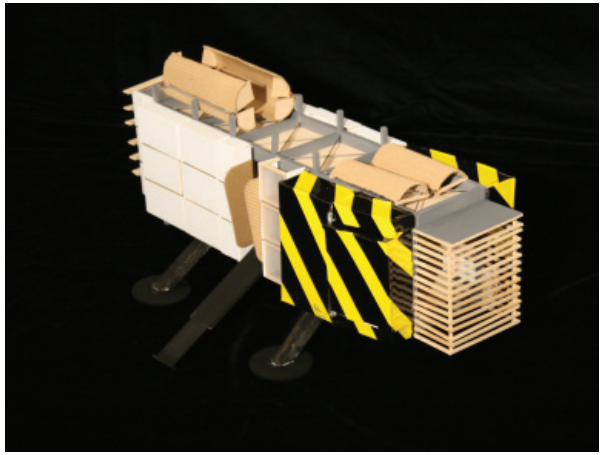


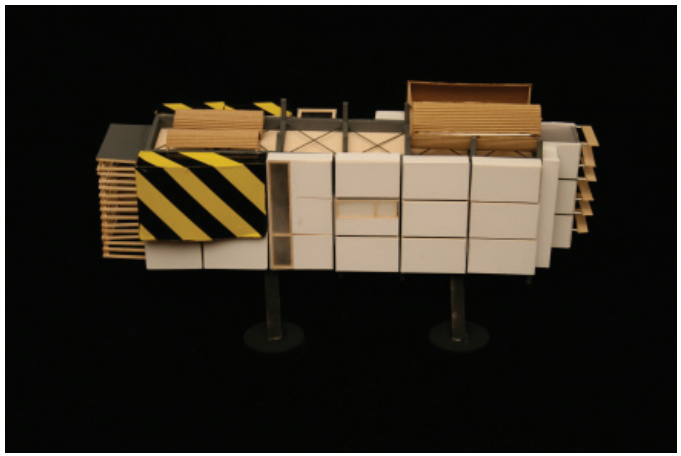
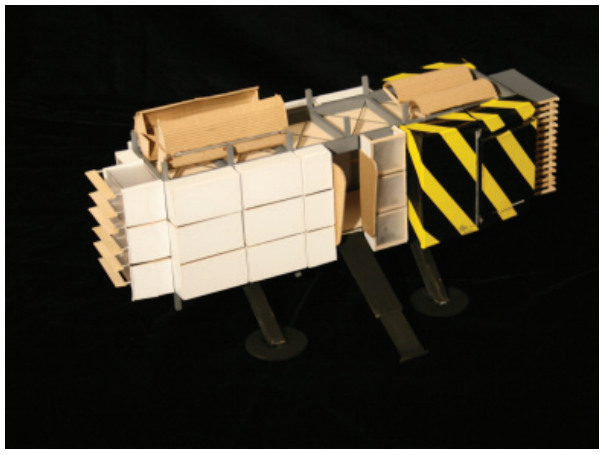
DENALI NATIONAL PARK

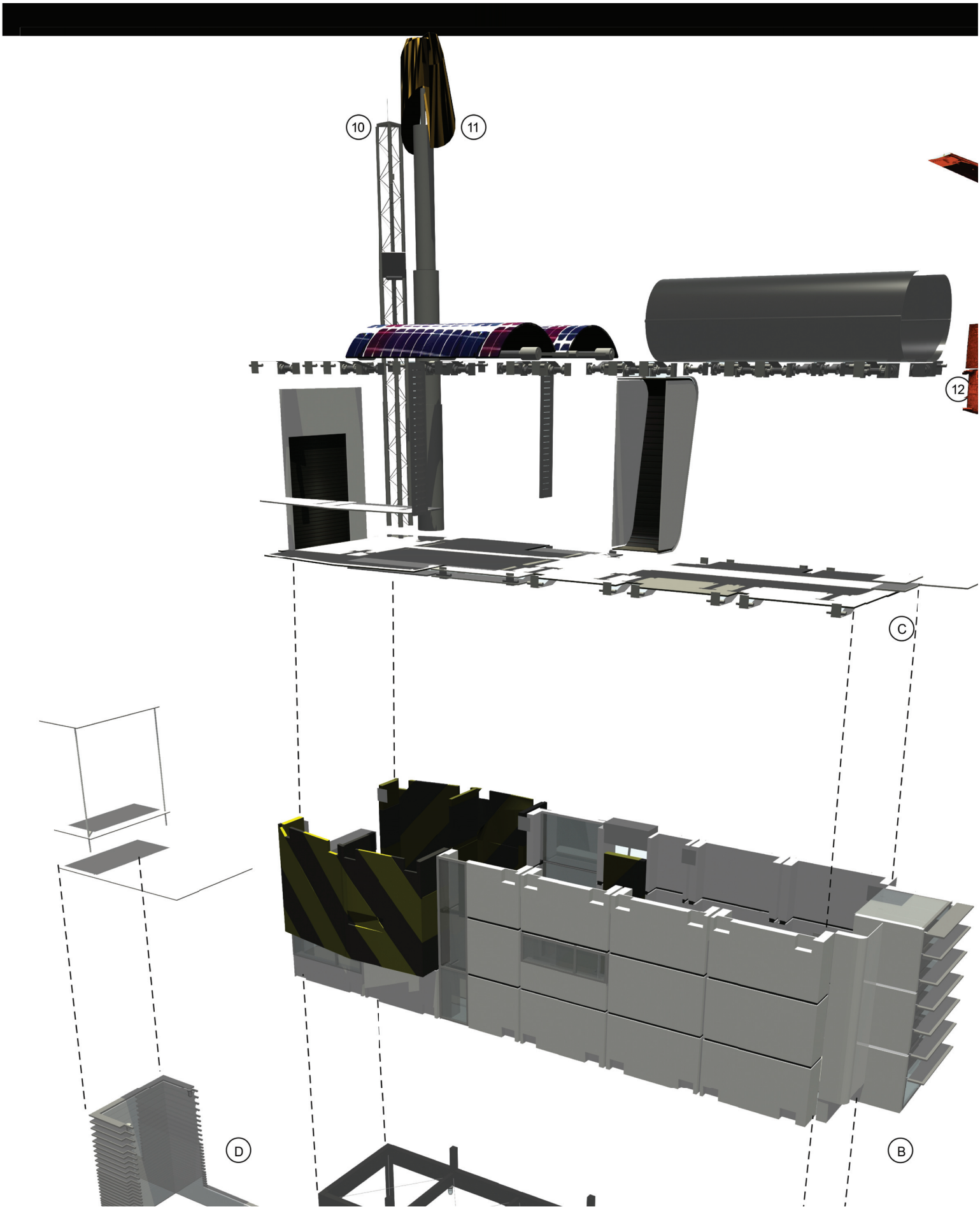


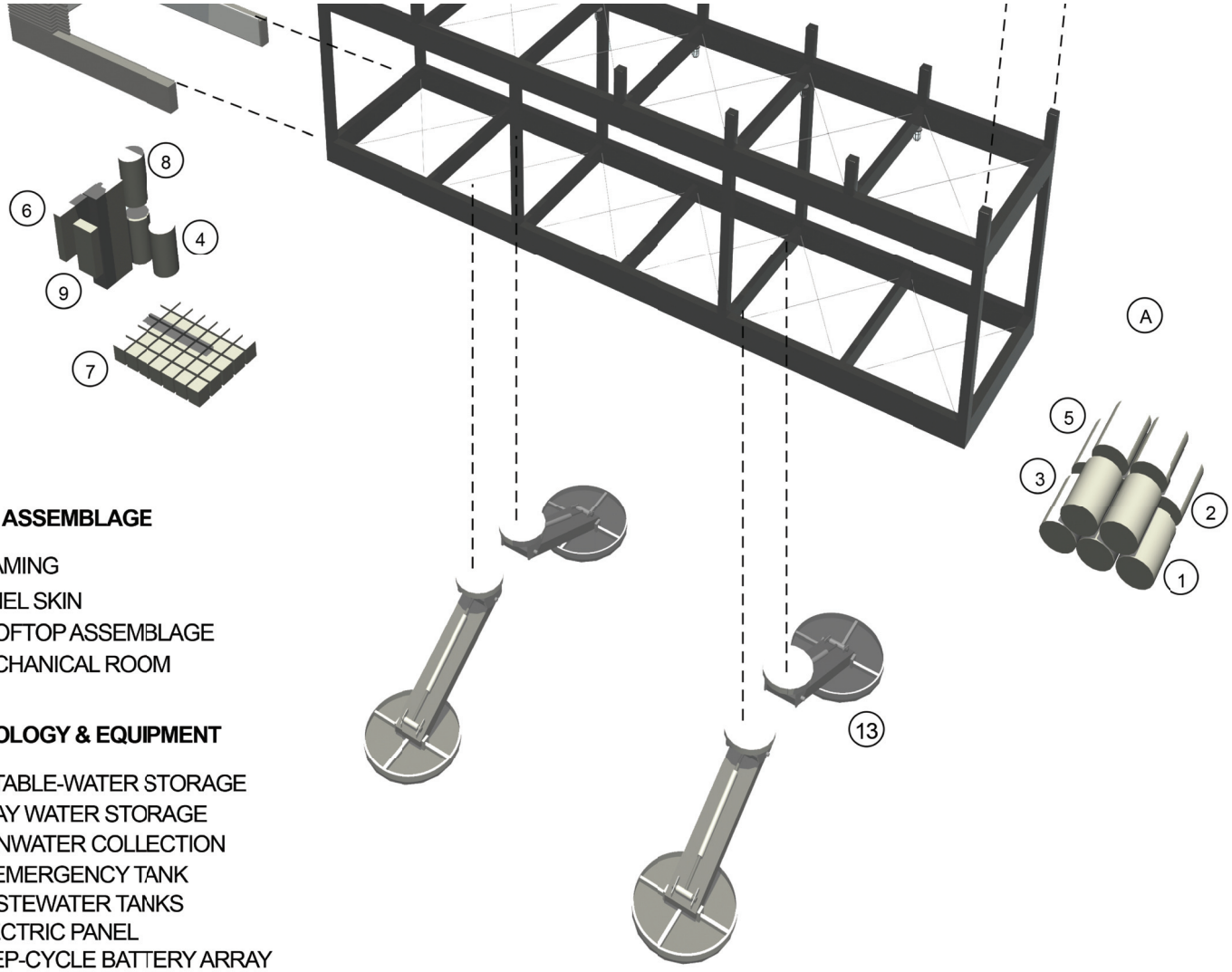
SCOPE OF MODEL


10
11
12
C
D
B



ORKAN ASSEMBLAGE

A FRAMING
B PANEL SKIN
C ROOFTOP ASSEMBLAGE
D MECHANICAL ROOM

TECHNOLOGY & EQUIPMENT

1 POTABLE-WATER STORAGE
2 GRAY WATER STORAGE
3 RAINWATER COLLECTION
4 LP EMERGENCY TANK
5 WASTEWATER TANKS
6 ELECTRIC PANEL
7 DEEP-CYCLE BATTERY ARRAY
8 FAN-COIL CONDENSER UNIT
9 WHOLE HOUSE FAN
10 WEATHER STATION
11 WIND TURBINE
12 WINCH ASSEMBLY
13 GENERAL FOOTING

EVALUATION OF DESIGN

Notes: Mathew Smith

How adaptable is Architecture?

What is the difference between engineering and architecture?

What is the big point that led to the design?

What does engineering address?
    What does architecture then address?
    What does it convey?

If your research unit can adapt to environments, can it possibly adapt to situations?
    What does it say to larger society?

The architecture should contain more of an expressive quality, rather than carry the traits of something that is engineered.

The adaptable part of the project could of almost been taken less literal
    -Performance Criteria...AKA...R-Value of the walls

What does architecture add to the performance?

Terms Versatility vs. Adaptablility

The research shows different sets of parts, what is really different about each design or situation that this project encounters?

How would each site affect the architecture?

Notes: Kristin Ubben

Start with the idea of a proposition, not a big question!
    Then spend all year trying to answer it.

Social cultural adaptability, not just environmental (i.e. Urbanism, Location)

Design a “kit”...deployed from Kansas City
    What is the bigger point?

Level of intensity in army aesthetic

Ir-reducible architectural design to minimize it down

Not about the “branding” it as a familiar thing
    Architecture versus Engineering...Monochromatic colors???

EVALUATION OF DESIGN

This project is the anti-architecture if looked at by history / theory

In the end “context doesn’t matter because it is a machine that is anti-social / cultural

Un-technologized Environment
- All three remotely similar transformations nothing to transform in these envi ronments. Not like if placed in New York City, Rome, Lincoln, etc.

Sleeping, eating, bathing, maybe dictate its level of transformable architecture

Cornicopia of crap not about performance at all?
- Knife doesn’t need architects to design an engineering piece of perfor mance, like the swiss army knife

Architecture is wrapped up in non-architecture reducing architecture
- Technical drawing would be expected from an engineering student...but what about construction documents in the workplace?

Level of appropriateness of situations...knife for hiking, etc.
- How is it reflected in the thesis?
- Blow up and focus on these differences (The Apprpriate Performances)

Walking-City as a manual

How is this project different than an RV? or an old VW bus?
- More responsive or industrial design?
- Putting on layers in cold weather, closing windows...
- Could’ve kept adding / subtracting components
- Bare skeleton that was added to in performance

Geology / Climate were focused on ONLY!

Aesthetically the same - didn’t show the process that occurred in the aesthetic look

CONCLUSION

This project has explored the idea of adaptability in architecture. The process has been developed looking at a historic past set against the theoretical precedents. The precedents were then put up against a barrage of equipment and tested against the client of the outdoors. NOAA (National Oceanic and Atmospheric Administration) and the USGS (United States Geological Survey) were two entities in conjunction with the National Game and Parks that gave the research unit grounds to be developed in an adaptable atmosphere looking at means of deployment and versatility in design. The architecture brought thought through critical analysis injected into a cycle of real world application.

The term of an adaptable architecture yearns to be referred to as ‘provocative architecture’, or to be an advocate for the expressiveness to be produced through innovative design solutions that might one day become a reality. Even if I didn’t think that this Design Thesis was a success, it would be rooted in ‘innovation’, a word that means directly relates to the creative process. This process is one we can learn from even if it is directed in the wrong direction. Even bad project can bring about positive influence.

As stated by William Zuk, (p.3) Kinetic Architecture, “Surely our present task is to unfreeze architecture-to make it fluid, vibrating, changeable backdrop for the varied and constantly changing modes of life. An expanding, contracting, pulsating, changing architecture would reflect life as it is today and therefore be part of it. If it is not, rigor mortis is bound to set in.” Too long architecture has stood as permanence, recording specific moments in history. This history is a test of faith to the artisans, sculptur, and builders of the past, and the skill they possessed. Today is a moment of change compounded by time, mobility has changed due to technology and mechanic invention. It is important at this stage not to reiterate the vernacular, but to express the proactive role.

RECOMMENDATIONS

The goal of this thesis was to develop a new kind of architecture that could be both expressive and influential. In doing so it not only dealt with the objectives of the current state, but those of future tenses as well. The process should keep to the outer realm of being almost fictional as long as possible, while the facts and rules of engagement generate collective thought. Though this process dealt primarily on the facts of theory and tools implemented, others might take a more abstract role into the analysis being derived, interjecting other pressures for adaptability to take place. In doing so, new ways to introduce adaptability and versatility might be achieved.

From the research gathered, adaptability is a looped process, in which new ideals can be asserted and plugged into a formula for varying outcomes. Failure only strengthens the stances taken, reasserting the primary role of architecture to become superb ideally to the one that might have been initially conceived. When all is said, not all conclusions will be positive in the way in which you might have wanted, but starts to advocate a realization in architectural practice to produce solutions that are real.

In terms of this project, much of the opposing thought came from Doug Jackson (Hyde Chair), in which one of the point was repeated brought up and that was, “In making your case for adaptability in architecture I’d urge you once more to consider the distinction between performance (the mere fact of being adaptable, which I would say is only related to the mundane, building-specific aspects of the work in question and so is therefore not architectural) and expression (the statement that such adaptability makes, its ability to evoke, etc., which I would say is architectural). Through many of the statements like these, I began to gauge myself in terms of what I really meant by being adaptable. Opposing thought can definitely provide direction when strayed at any junction of any topic.

In any case, remember to have fun and be passionate about what it is you are trying to achieve. Only than can you muster the tenacity to pursue an architectural meaning that you can be satisfied with.

REFERENCES

***Denotes primary theoretical precedents**

Banham, Reyner. Architectural Monographs No. 38: The Visions of Ron Herron. New York: St. Martin's Press, 1994

Banham, Reyner. The Architecture of the Well-tempered Environment. Chicago: The University of Chicago Press, 1969

*Corbusier, Le, Towards a New Architecture. Paris: 1923

Cook, Peter, Warren Chalk, Dennis Crompton, David Greene, Ron Herron, and Mike Webb. Archigram. Great Britain: Studio Vista Publishers, 1972

*Denari, Neil. Gyroscopic Horizons. New York: Princeton Architectural Press, 1999

Horden, Richard. Architecture and Teaching. Berlin: Birkhauser Verlag, 1999

*Horden, Richard. Light Tech. Berlin: Birkhauser Verlag, 1995

Kronenburg, Robert. Transportable Environments: Theory, Context, Design, and Technology. New York: Routledge, 1998

Kronenburg, Robert. Transportable Environments 2: Theory, Context, Design, and Technology. New York: Spon Press, 2003

*Kronenburg, Robert. Flexible: Architecture that Responds to Change. New York: Spon Press, 2007

Lim, C.J.. Studio 8 Architects. Mulgrave: The Images Publishing Group Ltd., 2005

Lucie-Smith, Edward. A History of Industrial Age. Oxford: Phaidon Press Limited, 1983

Noblet, Jocelyn de. Industrial Design Reflection of a Century. Paris: Miroir du Siecle, 1993

Safdie, Moshie. Form and Purpose. Boston, Massachusetts: Houghton Mifflin Company, 1982

Williams, Trevor I.. The History of Invention. New York: Facts on File, 1987

Wilson, Richard Guy, Dianne Pilgrim, and Dickran Tashjian. The Machine Age. New York: Harry N. Abrams, 1986

*Zuk, William, and Roger Clark. Kinetic Architecture. New York: Van Nostrand Reinhold Company, 1970

ACKNOWLEDGEMENTS

DESIGN THESIS MENTOR

Chris Ford

DESIGN THESIS CRITICS

Doug Jackson
Jeff Day
Hyun Tae Jung
Sharon Kuska
Peter Hind
Martin Despang
Nate Krug

Keith Mitnick - U. of Michigan — Thanks for all the assistance, keeping me on my toes, and giving me the much needed insight. It was very rewarding sharing my thoughts and interests, and receiving reciprocated response.

Thanks to all my family, friends, and colleagues who understood and pushed me for what I had to do. To all the professors who ever gave me inspiration and the push to excel. And finally, I want to ackowledge the life-long friendships that were made, to being able to one day reminisce, and know that there are people out there like you guys! I wouldn't want it any other way!

Again, "Thanks to All"