Master's of Architecture Graduate Exhibit
Fall 2018

MONTANA STATE UNIVERSITY | College of Arts & Architecture

School of Architecture

Master's of Architecture Graduate Exhibit

Fall 2018

MONTANA STATE UNIVERSITY | College of Arts & Architecture

School of Architecture

Montana State University
School of Architecture
P.O. Box 173760
Bozeman, MT
59717-3760

arch.montana.edu
architect@montana.edu

Congratulations to the Master of Architecture class of 2018!

After completing four years of undergraduate studies in architecture and the very demanding graduate comprehensive studio, you earned the right to conclude your architectural education engaged in a one year research and design exploration of your own choosing. This sequence mirrors that of the first publicly funded institution of architectural education, the Ecole des Beaux-Arts, founded in 1671. Both then and now the final research and design project is intended to serve as an intellectual bridge between your academic education and your professional aspirations, activities, interests, research and responsibilities.

As a group you have explored a wide variety of subjects and this reflects well on the School of Architecture as we pride ourselves in having a community of scholars sharing a common belief in excellence but having disparate ideas, values, skills, intellectual interests and teaching strategies. To have successfully found your own voice through the web of our course offerings, challenges and faculty is a major achievement and you should take great pride in the successful completion of your Masters Studio Research and Project.

We, the faculty and staff of the School of Architecture at Montana State University, are pleased to welcome you to our community of scholars. Through your collective work you have continued our tradition of demonstrating the breadth of social, cultural, artistic and technical subjects in which ARCHITECTURE MATTERS!

Ralph Johnson, AIA, APA

Director of the School of Architecture

Contents

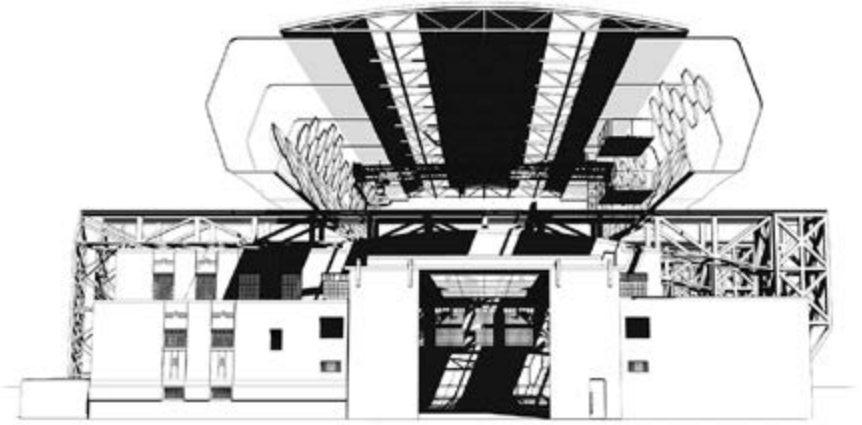
Prosthetic Architecture

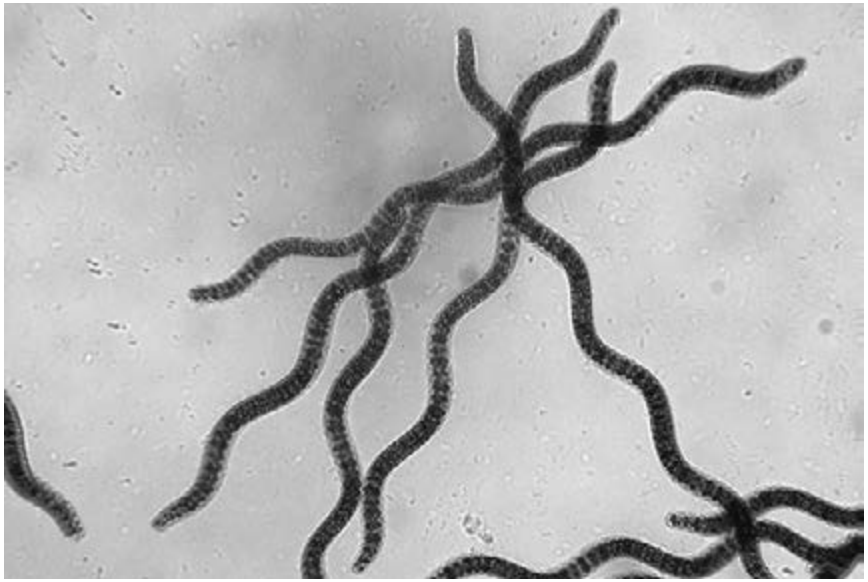
Clay Amann
Advisors: Chris Livingston, Andrew Vernooy

The notion of the "prosthetic" has evolved due in no small part to the advancement of technology and our understanding of the natural world. The hook has been replaced by the 3D printed hand; the "pegleg" of swashbuckling antiquity: by the Olympic qualifying carbon fiber blade. Soon parametric modeling, augmented reality, and the potential for quantum computing will expand the mind. This new notion of the prosthetic no longer endeavors to correct a deficiency; it endeavors to elevate the original construct to a new plateau. When applied to architecture, this creates an exciting new methodology for considering spirit, design, and implementation within the discipline of architecture.

As architecture is a technological extension of the human form the development of this appendage by integrating new and emerging technologies may mitigate many of the demands placed upon the built environment in this modern era. To better explore this potential an examination of classical & modern instances of prosthetic examples; the effects, integration, and implementation on architecture; and the relationship of a prosthetic theory with the future of the built environment is necessary. The result of this critical analysis, rather than a formulaic approach to generating a prosthetic architectural style, aims to provide the reader with a frame through which to view the built environment from a different perspective, an integrative perspective sensitive to the component language of this artificial world.

To demonstrate this theory a prosthetic algae manufactorum + incubator was applied to the abandoned armory in Bozeman, MT. This prosthetic application aims to assist the community in three ways: to reduce the Montana cattle population and mitigate their effect on global warming while providing farmers with an alternative protein product, to reduce the impact from the loss of farmland due to urban sprawl, and the reclamation of building exhaust for use in an algae production system applied to downtown Bozeman.





The Cost of Doing Business

Jacob Ballweber
Advisors: Chris Livingston, Henry Sorenson

A veteran is someone who writes a check to the U.S. Government for up to, and including your life. This is the deal made with your country and the simple truth accepted as a service member. While less than half a percent of the nation choose to serve in the armed services, these brave few shoulder the burden continually as the nation shields itself from this reality. As we round year 16 of war in Afghanistan, with two previous wars in Iraq, has yielded a vast number of returning vets. It is estimated that 460,000 vets have PTSD with a similarly ever increasing trend. Of the exiting service members, one in three will be diagnosed with some form of mental condition.

Ultimately, the suicide rate among veterans is at an alarmingly high at over 8,000 a year. A veteran dies by his own hand every 65 minutes. Since 2005, 78,000 veteran suicides will be recorded this year. Many reasons exist for these elevated rates that may cause vets to find themselves in this situation. In identifying the contributing factors yields a greater understanding and opportunity to help these individuals.

Where the war machine exists there will always be those who return in need of help. It is naïve or perhaps just unrealistic to exact change at the source, man has been at conflict with one another since the beginning of time. Therefore, the nation is obligated to help its returning veterans, to rehabilitate and offer services to those in desperate need. The conclusion reached in researching this project and my own first hand knowledge of this process, is that the Department of Veteran Affairs does a poor job at addressing the circumstances and the actual treatment of veterans with mental issues. The resultant outcome is evident in the astronomical number of suicides. As a Marine I feel a moral obligation help my brothers, to leave no one behind. The best way that I can fulfill my duty is to examine the solutions that architecture can provide. What can architecture and programing provide to these veterans in need? That is the question that I address in my thesis project.

People & Place: Mòn Briye Primary School

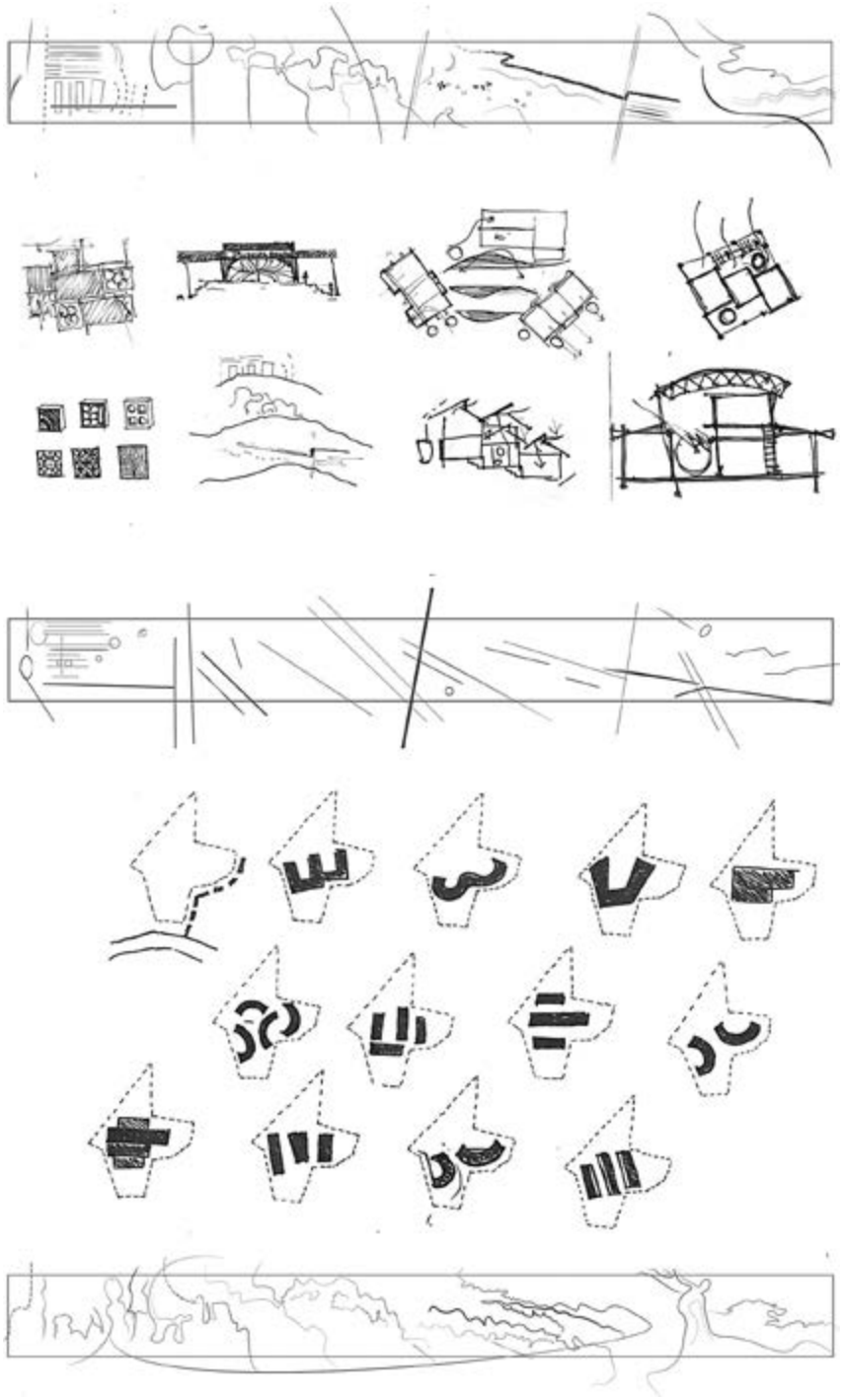
Heather Bing
Advisors: Marie Conrad, Ralph Johnson

By looking at how we perceive our surroundings and the relationship between people and place, we see that our environment can nudge us into ways of being, thinking, and feeling. Perception and relationships are important because superior design can achieve goals beyond providing physical needs.

There is no single recipe for this endeavor, but to begin it is necessary to recognize that a building design exists in three realms of human understanding; behavioral, mental and emotional. The physical relates to the way we behave in a building, the mental, as we have thoughts that cross our minds as we experience a place, and we have emotions that arise based on our surroundings. It is essential that the designer imagine the interaction between her project and the individuals that will inhabit the space.

The tremendous influence our surroundings have on us makes design a tool we can use to promote stronger, healthy communities. The beautiful country of Haiti is in the Caribbean Ocean, part of the Greater Antilles. Haiti has been devastated and destructed by earthquakes, hurricanes, flooding and tropical storms. I am prosing to design a Primary School based in Haiti as part of the island's continual rebuilding and growth. It will focus on designing spaces that are needed for physical shelter but transcend the requirements of shelter to include emotionally supportive and cognitively engaging environments.

The planning of the Primary School in Mornes Brieux, Haiti aims to provide a place for children to begin their education, focusing on children and education as a tool to move out of poverty. The rural area consists primarily of agricultural industry without a school for the rural children. The building needs to feel welcoming and inspiring for children, should fit in with the surrounding environment and act as a beacon for the community. The building should incorporate local materials and colors to blend with the lush surroundings and the beautiful ocean views. It will incorporate shaded areas to spend time outdoors and natural ventilation indoors to provide a comfortable learning environment. The architecture will aim to support students learning by including colors, texture and natural lighting. The school design will aspire to allow space for both the students and teachers to feel part of the school community and allow room for expression.



Giving Presence to Absence

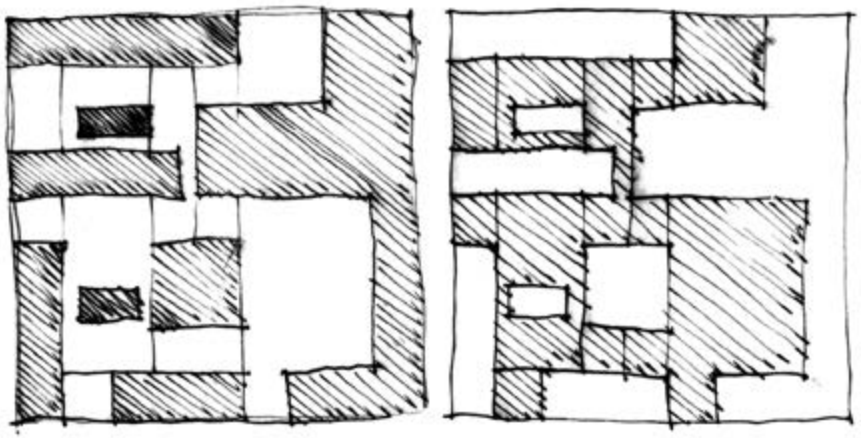
Darren Brown
Advisors: Jack Smith, Steve Juroszek

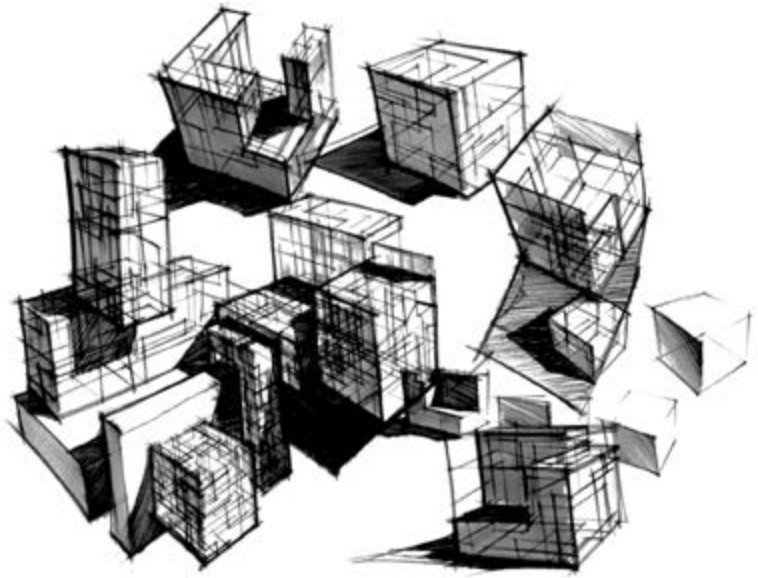
I first came across the concept of presence and absence—or more precisely, emptiness for absence in architecture after reading Michael Benedikt's *For an Architecture of Reality*. Benedikt focuses on four components of architectural design that contribute to the "realness" of buildings: presence, significance, materiality, and emptiness.

At face value, it would seem that a dichotomy exists between presence and absence, that these terms are diametrically opposed by definition. In reality, however, they are yin and yang to one another, complementary and interconnected. Oxymoronic as it may seem, space is the presence of absence, the void—or negative space—between objects in a mass creates that space. This means that space is not a void but the object of absence. In other words, the space between things isn't nothingness but is in itself embodied. Architecture is that embodiment.

Contemporary architecture has lost much of its artistic value—it is becoming a product of globalization, acting for the so-called "benefit" of the collective human race to fit existing architectural styles, or even yielding to economic pressure, political gains, and social purposes. As a result, something is lost at the individual, creative level. According to Juhani Pallasmaa, the underlying problem in contemporary architecture is "ocularcentrism", the over-reliance on the visual sense. Contemporary architecture distillation has become pregnant with buildings that are emotive, expressive sculptures that scream "look at me!" and "what am I?" instead of focusing on the human imprint. As a result, we have the architectural equivalent of a *selfie*—boastful and ostentatious and ultimately discardable. This phenomena is not just happening in the United States but all over the world.

Relying solely on sight and the visual presence of architecture as the only way of perceiving it is incomplete: but by accounting for the holistic relationship between presence and absence—by what's there and what is not there—architecture can elicit intellectual, physical, and spiritual responses. The complementary relationship between presence and absence fundamentally brings awareness to the simple pleasures of experiencing the built-environment, enhancing the enjoyment of physically being in the space, and—just as significantly—the spaces around them.





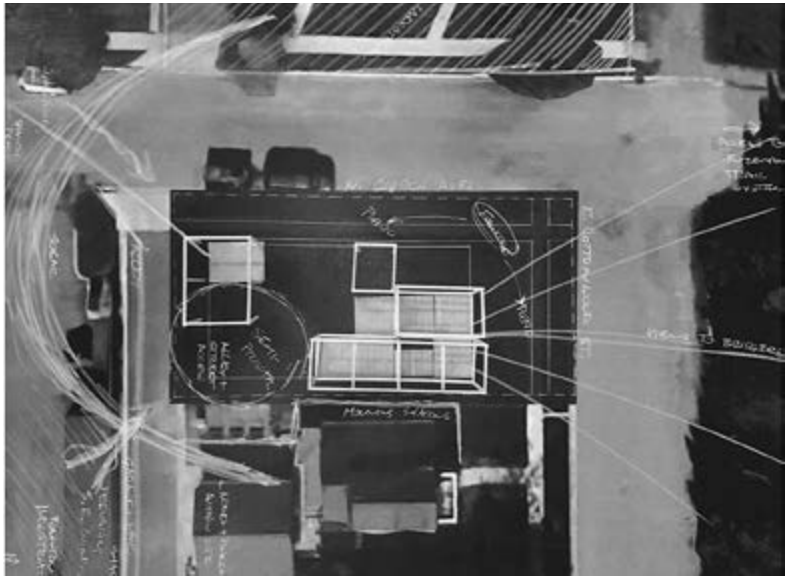
The Contemporary Case Study

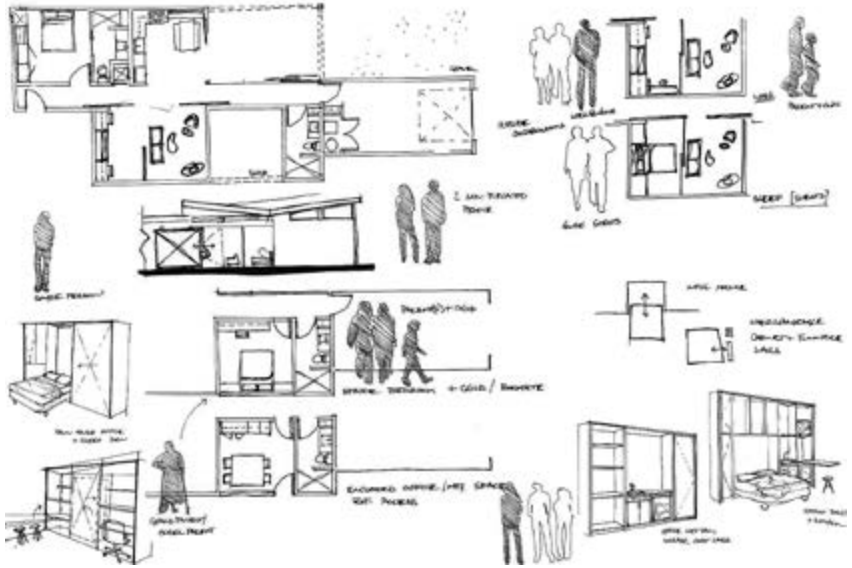
Casey Burke
Advisors: Susanne Cowan, Steve Juroszek

The post–World War II Case Study House provided a model for a new style of living for the contemporary, nuclear family, rejecting the designs from standardized mass housing projects by creating a new approach to single-family residential living. While the case study homes were never mass-produced, they provided a model for the Eichler neighborhoods, which modernized the post-war tract neighborhood with affordable, functional and unique homes. While this type of mid-century residential architecture has come back into vogue, the needs of today's home buyers have changed. Because of the differences between the post-world war II family and the variety of today's family types and lifestyles, the contemporary case study house needs to offer more flexibility than the traditional family home.

This project will employ strategies to increase density through neighborhood infill and evaluate the limits of our current Bozeman zoning requirements. The contemporary case study house in Bozeman will explore options for residents of any generation looking to downsize, own an affordable house, and expand when needed and or share their lot for rental purposes. In this project, the flexibility of the house will respond to the economic, environmental and social demands we are currently facing. The base model of the house will start with a modest square footage and expand or contract as the occupants' needs evolve.

By defining the contemporary case study house, this project will promote a new process and set of parameters for designing detached infill housing, which is flexible for all generations, while meeting the triple bottom line, and ensures sustainable economics, social dynamics and environmental outcomes in the built environment. A standardized, modular kit of parts will be provided for the clients to inhabit a primary structure on the lot. As their needs and life evolve, the occupant can incorporate customizable portions to expand or contract the program capacity within the provided framing.



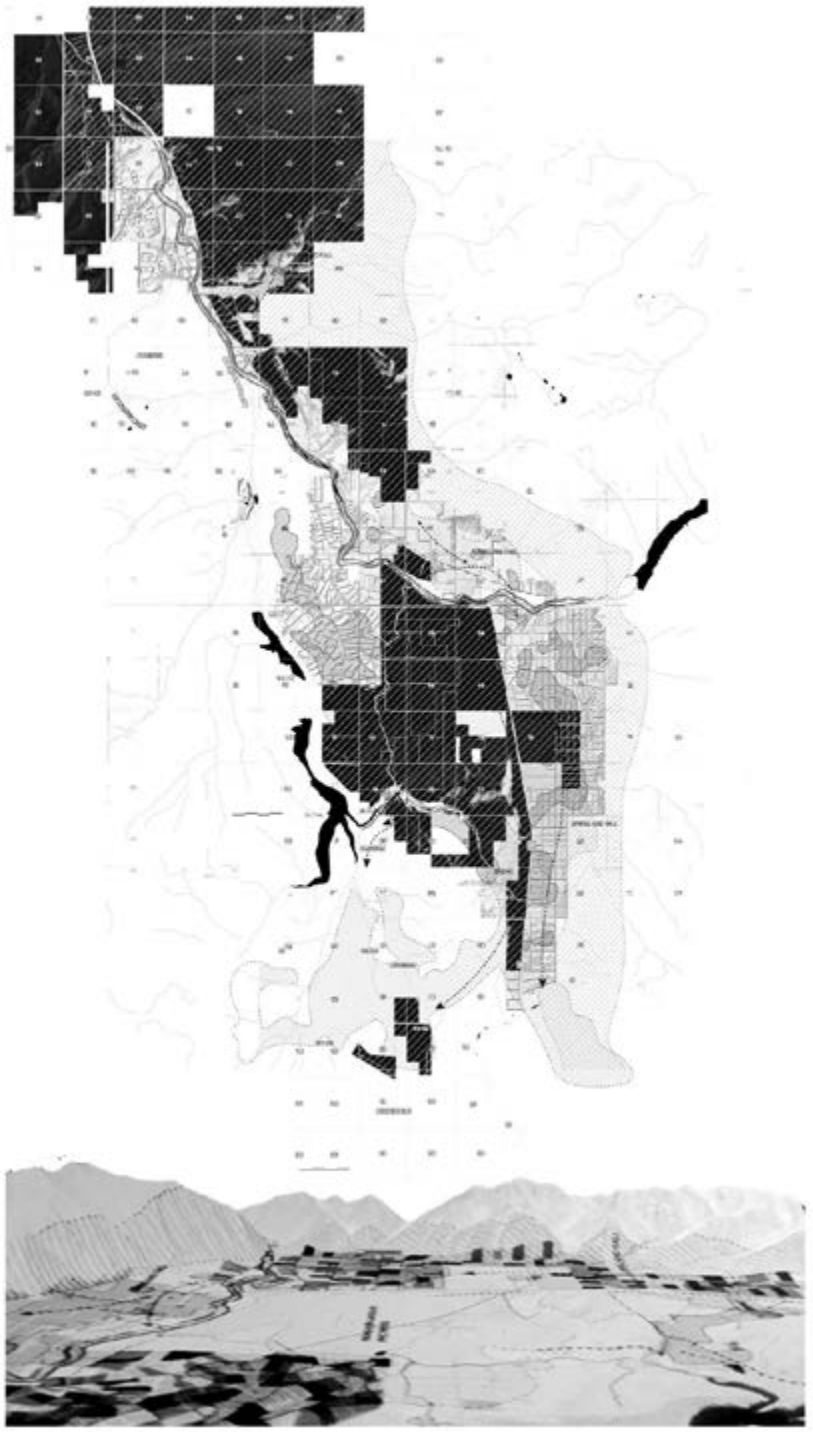


Reconsidering Boundary:
Land Use Planning and Ecosystem Services in the American West

Andrew Clark
Advisors: John Brittingham, Bradford Watson

Beginning with Thomas Jefferson's Land Ordinance of 1785, the platting of the American West brings with it a system of grids and boundaries which overlay complex ecological networks - microclimates, ecosystems, watersheds, and varied topography. The pervasive language and measure of the grid is built on efficiency. This includes the inability to survey the vast land acquisitions prior to being sold, an increasing demand in moving west, the ability to plat and sell land from a great distance, and the non-hierarchical structure of the grid in reinforcing freedom and equity. Hard political lines are drawn over complex ecological networks. This pattern in land use and planning reinforces the dualism between manmade and natural systems in the American West, and over time, has lent itself to economic development at the expense of lands in their natural state. Recognizing this loss among other factors, the 21st century cultural attitude is beginning to prioritize environmental preservation over economic development. In the face of increasing population trends placing increasing pressure on these natural systems it is important to address their connectivity and interdependence, provided our well-being is greatly dependent on ecosystem services. In reconsidering the boundaries which have been set in place, the project engages four measures in utilizing mutualism as a land use planning strategy: shifting cultural/philosophical values, new frameworks for policy in land use, economic measures of ecosystem services, and the ability of architecture and planning to engage both systems at the community level.

An indicative case study is illustrated in the relationship between private land ownership in the 20 counties adjacent to Yellowstone National Park, and the impact increasing rates and types of development have on the health of the Greater Yellowstone Ecosystem (GYE). The project isolates a case study in the Madison Valley, Montana, and provides an alternative to current land use patterns. The proposed model does not promote one system at the expense of the other, but offers a mutualistic understanding of how both systems inhabit space and the opportunities and advantages in their overlap and interconnectivity.



Well-being is the Heart of Architecture

Stephanie Cooper
Advisors: Chere LeClair, Barry Newton

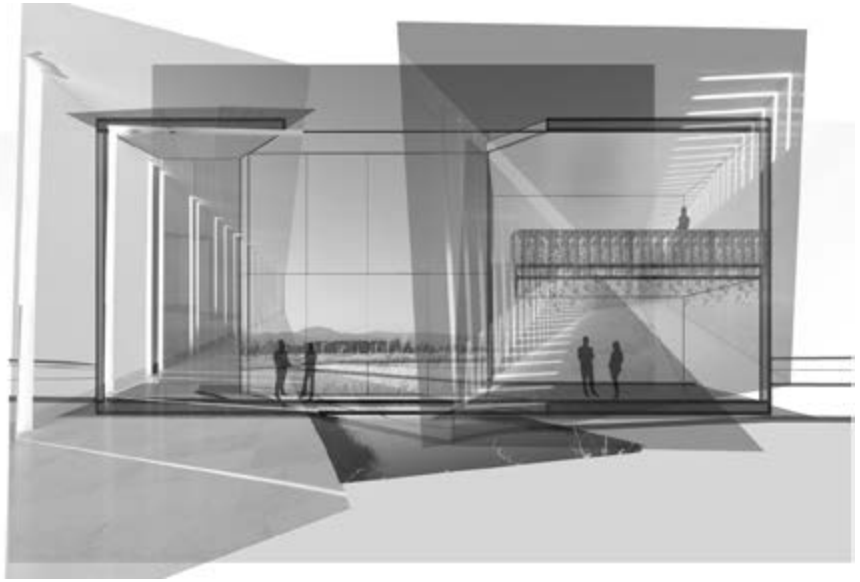
Architecture is a part of our everyday lives; it affects us both mentally and physically. It provides comfort, pleasure, dignity, and security—it provides well-being.

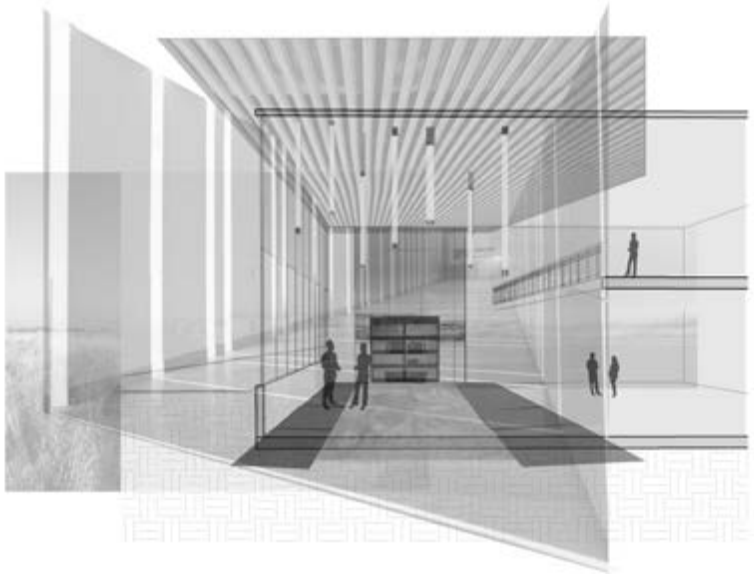
Designing for well-being is what creates architecture. It is embedded by the use of comfort, happiness, security, pleasure, and health. Well-being can be described as having two components: hedonic and eudaimonic. Hedonic is defined as a focus on increased pleasure and pain avoidance, whereas eudaimonic is based on the premise that people feel happy when they experience purpose. Architecture has an effect on the user's and the public's mental and physical health in an unconscious manner, whether negative or positive, and can be defined in these terms as well.

There are various types of buildings in our environment, some are designed with a sacral experience in mind that provides a person with amazement; others are designed with a functional experience that leaves a person underwhelmed. All architecture, even buildings that house the prosaic, has a responsibility to engage the user and the public in a manner that supports well-being.

Well-being and architecture should work together in any building typology and at any site location, even in the prosaic. Oftentimes, prosaic is associated with dull and minimal, not with, comfort, happiness, security, pleasure, and health; but it can and should be. Architecture is an anchor for our everyday lives because it is the environment people inhabit every day. By this definition, prosaic architecture should establish the minimum standard for design, and well-being should fall into that standard so as to create a better environment for the user, the public, and the all-encompassing environment. A building that supports a person's well-being makes for a healthier population overall. The user's well-being is what all architectural design needs to be centered around. Well-being and architecture need to work together in order to provide happier and healthier occupants.

Sarah Goldhagen stated, "Good design, be it small, medium, large, or extra-large, is an essential factor in promoting human health, development, and well-being."





Invisible Architecture

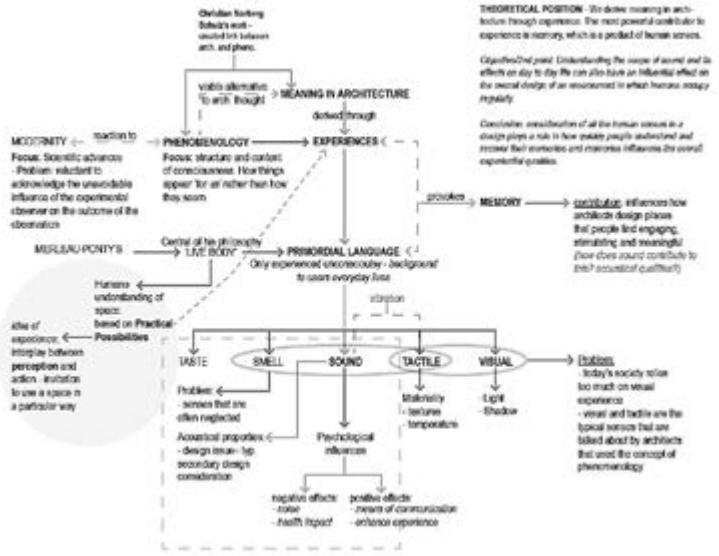
Dian Dela Santa
Advisors: Ralph Johnson, Jaya Mukhopadhyay

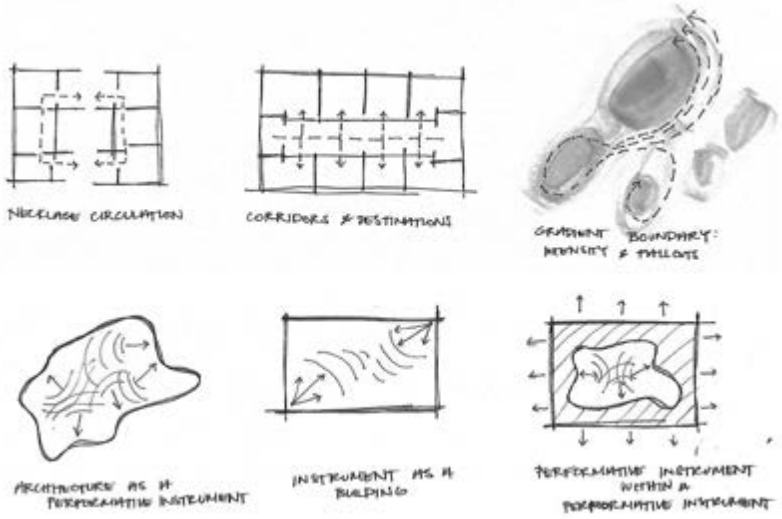
The way society has been shaped to prioritize the dominance of visual senses over all other human senses has negatively impacted people's perception, especially in architecture. This resulted in a type of architecture that is only appreciated through visual experiences to tell a story. Neglecting the importance of the other senses leads to an architecture that is only experienced through visual value. Meaning in architecture is driven by the experiential quality of spaces, with memory as its main primary influential contributor. Memory is provoked through the primordial language, where all the human senses equally play important roles.

The term "invisible architecture" emphasizes the importance of designing for the overall qualitative experiences and enhancing human connections by reflecting their sensual existence on earth. In this case, the sensual is not necessarily only referring to the human senses but is driven by a strong innate relationship with the production of memory, as well as influences of socio-cultural factors, ocularcentrism in particular, and stories that people tell. The emergence of invisible architecture occurs through expressions of the neglected senses, sound, touch, and smell. Only by shifting away from ocularcentric thinking, towards embracing invisible architecture, can designers begin to create true "authentic" architecture.

Primarily focusing on sound, the theoretical stance of this project exposes the greater role sound plays in architecture's natural and built environment. Listening allows for a perceptual connection to the world which affects human's behavioral state of mind and creates a foundation for long term emotional memory to develop.

The inspirational works of Sean Lally's Material Energies, with a focus on gradient boundaries as sensorial envelop, and Peter Zumthor's Architecture as a Performative Instrument has greatly influenced and opened new opportunities to explore the auditory environment with an emphasis on an individual's conscious and subconscious participation in a dynamic social exchange within a space at different levels: human social interaction, human to material interaction, and human to building interaction. This project emphasizes the relationship between the role of sound in architecture in evoking memorable events as an integral component of the overall experiential quality in architecturally designed spaces, unlocking new possibilities for creating spaces for the creative mind.





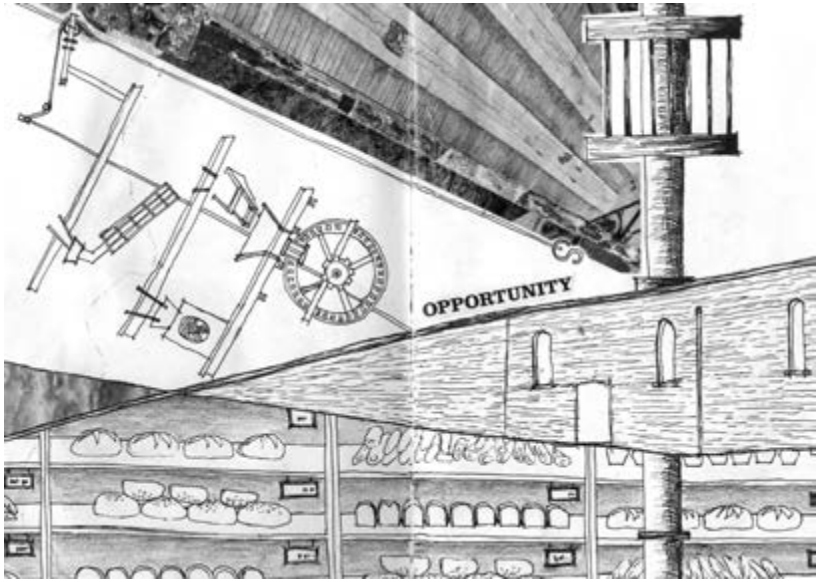
Narrative Architecture and the Value of Wonder

Mary Demro
Advisors: Chris Livingston, Henry Sorenson

In an economically-centric world, architecture has become valued as a commodity – a product. The continual advancement of technology, as well as the accessibility of information, lend to the notion that design is deemed successful when its performance is readily measured through programmatic or technical metrics. As such, during conceptual development designers focus their efforts on creating functional, well-programmed buildings – efforts which address quantitative needs. While this approach develops efficient building systems and complex programs, its advantages are coupled with a drawback – evaluating the built environment purely through its economic value. These methods of design create limitations where architects engage less with the imaginative, the playful, and the complex which are characteristics essential for addressing qualitative needs and instigating compelling, contemplative architecture. It is the qualitative components which generate vivid, distinct, and memorable architectural experiences – experiences necessary for understanding how we think about our surroundings, how we better understand ourselves and relate to others.

Narrative becomes the methodological tool for removing implied limitations and preventing the stagnation of architecture's capacity for conscious engagement. As indicated by Sophia Psarra, narrative "explores the potential for architecture to overcome conventional norms, instead generating a rich potential for meaning." In this way, architectural narrative serves three essential purposes: (1) it creates lasting memories and notable experiences, (2) it engages play, inventiveness, experimentation, and curiosity as key components of design, and (3) it challenges accepted standards generating more interesting, contemplative architecture.

Concentrating on how to actively engage with macro-scale issues facing the architectural community, narrative can be applied through the relatable, compelling, and universal medium of a fairy tale. Fairy tales describe an inner state of mind using scenes and events, translating internal processes into visual images. This visual stimulation makes complex concepts accessible and promotes insight into often unconscious processes. A fairy tale then has enormous overlap with architectural narrative – both engage inventiveness and prompt contemplation. By combining extensive research, an uninhibited exploration of concepts, and a universal medium, an architectural narrative using text and illustration attempts to capture some of the built environment's more ineffable qualities and challenge architecture's role in crafting community.



Abstract

Wesly Ditmeyer
Advisors: Chere LeClair, Faith Rifki

The craftsman upholds a desire of doing something well for the sake of itself. He understands that experience and memories directly affect our perception of life, and that both the psychological and physical aspects of experience are implicitly tied together. By understanding the principles of intimacy, he can become more connected with what he does and further develop skills than by reason alone.

There is a certain level of intimacy within craftsmanship (of anything) that must not be ignored. "All skills, even the most abstract, begin as bodily practices; second, that technical understanding develops through powers of imagination." Craft involves a careful and conscious development of skill, which stems from a few basic principles that apply to anything that may be crafted, physical or otherwise. In order to fully develop good craftsmanship, one must understand and apply the principles of intimacy, by realizing the power of the perception of experience, memory, and empathy.

By analyzing how architects utilize furniture as a study for architecture, I am proposing to reverse the process and design three installations that aspire to enhance spatial intimacy in the Clyfford Still Museum in Denver, Colorado. In this building, the procession through the galleries is very specific, and the architectural qualities respond to the work in each space. The intention of my installations is to heighten the users' awareness of these changing qualities to emphasize architecture's role in the experience of place.

Transportation Shift: Design for Experience

Ryley Enich
Advisors: Steve Juroszek, Faith Rifki

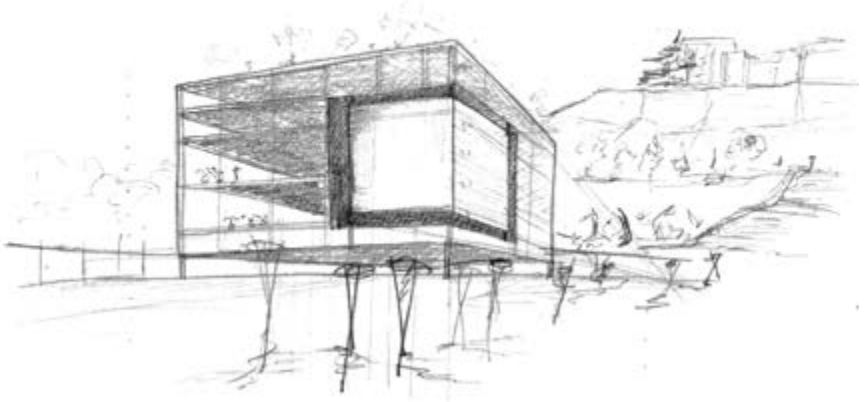
"The city is a place dominated by movement and progress. Cyclists, pedestrians and motorized vehicles beat their own paths through space and time, as a result of which a complex network arises of trajectories of different sorts of speeds which overlap and intersect. The choice of vehicle used to slice through the urban tissue is all- determining for the way in which the city is experienced." - Martin Bril

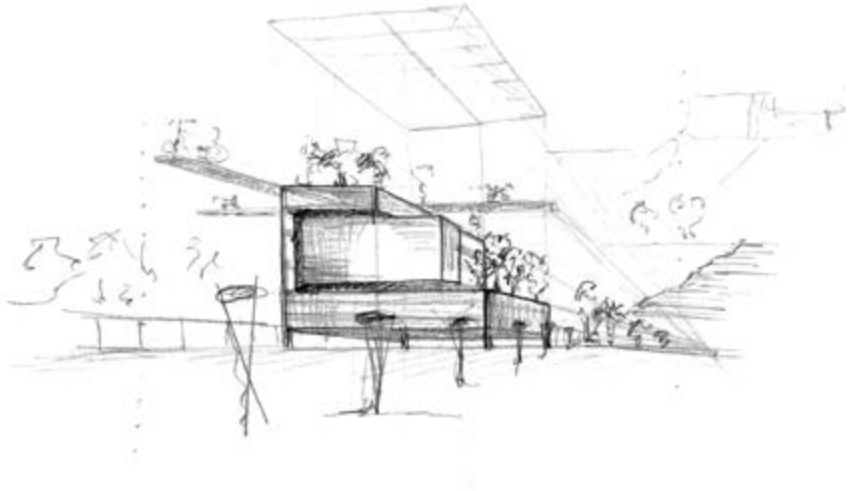
The way in which one chooses to move through a space will ultimately affect the way in which they experience the space. Speed, scale, time, enclosure, and clarity all play a crucial role in the experience of movement. One's senses are used in different ways when forced through the urban fabric by different modes of transportation. In our society today, the lifestyle of most urban cities around the world has pushed us to experience our immediate environment at an accelerated pace.

Design has the unique ability to change what people desire. By studying how design affects the way someone desires a space, a system, a product, or one method over another, we can use desire as a design tool. How could we use this tool to create spaces which shift people to desire to travel by bike rather than private vehicle?

Athens is a complex city with rich history and more recently, devastating economic problems. The recent economic crisis has caused the people all over Greece to make changes to their everyday lives in order to live comfortably such as saving money by riding a bike. Athens becomes an excellent location to create spaces to shift this desire because the shift is already present.

The project looks at five very different sites among the city with different qualities and characteristics. By identifying them as a system and how they can relate to one another one can begin to masterplan this new biking trend. Furthermore, different programmatic strategies can achieve a shift in desire the way we travel The goal of this project is to create design strategies which can be implemented into cities around the world to make this a common trend of transportation and capture the experiential connection bike travel gives one with a city.





Streamlining Affordable Housing Development in Los Angeles;

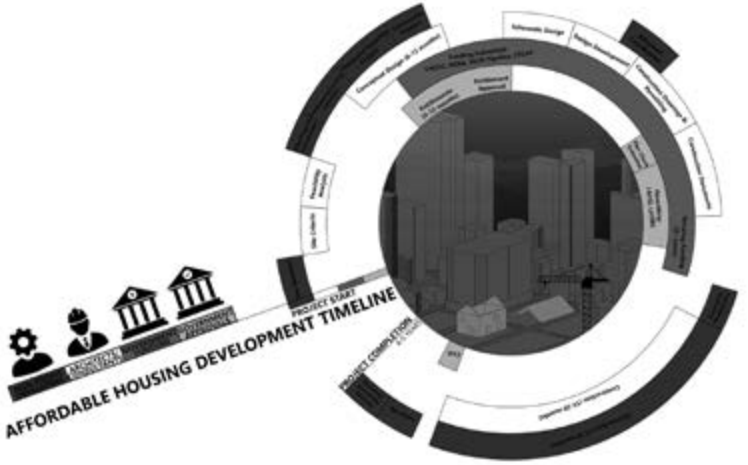
Taylor Falcon
Advisors: Susanne Cowan, Faith Rifki

It's no secret that as a society, there is an acute need for reform in how social housing projects are approached. Many government created "projects" are generally considered to be a failure and have resulted in demolition. Meanwhile, the need for affordable housing continues to increase at alarming rates. In some cities, nonprofits have stepped in and played a notable role in creating affordable housing, yet most are lacking the ability to scale up their impacts.

Los Angeles County is facing a shortage of over a half million affordable rental homes in order to meet the needs of its lowest-income renters. This unfortunate shortcoming confirms the need for improvement in how housing is developed in order to make significant impacts in these cities. For this advancement to occur in LA, nonprofit developers and government agencies must collaborate to understand, regulate and combat factors that can be detrimental to affordable housing development. Analyzing the variances between how government agencies and nonprofit developers work begins to show how convoluted social housing development can be. While attending an affordable housing conference in Los Angeles, the complexity of conflicting social and political factors, funding and agendas became apparent.

Inefficiency related to government bureaucracy as well as the funding and approval processes for affordable housing projects is extremely problematic, involving multiple government agencies, funding sources and differing funding processes. This inefficiency results in housing projects being delayed for months and even years, which proves disastrous when the need for affordable housing is consistently growing.

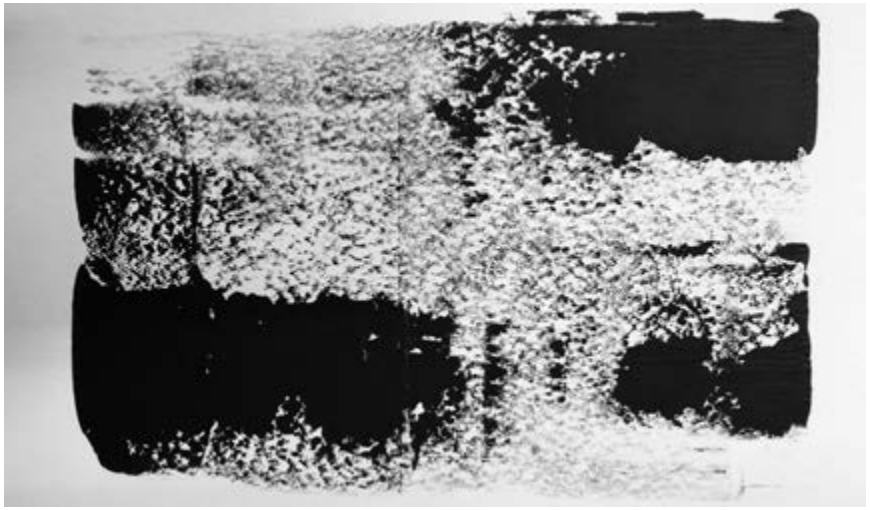
This research analyzes the working timelines for nonprofit developers, government funding agencies, government approval agencies and architects/consultants in order identify where adjustments must be made. Through the design of a streamlined process and earlier coordination, affordable housing development can be expedited. These changes could result in an increased number of affordable housing projects and more efficient working relationships between nonprofit developers and government agencies.



Cathartic Architecture in the Age of Immediacy and Social Media "Reality"

Katelyn Gibbs
Advisors: Chris Livingston, Andrew Vernooy

In the present technological era, our psychological repression is directly linked to the manipulated realties our contemporary culture has built in response to the worlds we have virtually created. The introduction of immediacy, and its demand to occupy the here and now, has caused the psychological need for stimulation and instant gratification at rates insurmountable of being produced from the natural world. Developed through social media platforms that aim to connect communities and provide space for expression, the human need for immediacy is fulfilled through likes and shares. Our dopamine-driven dependency on social media platforms to find approval and acceptance has manifested as psychological control over the user. Fearing the potential for judgment, our culture has created a world of "wardrobes" and "shells", withholding our true sentiments in exchange for manipulated realities. Consequently, these perpetual behaviors of social media use have caused epidemic concerns for psychological repression. Carl Jung and Sigmund Freud describe psychological repression as the manipulation of the human psyche through the suppression of emotions, thoughts, and feelings. Hiding our true sentiments within the unconscious brain, repression has become an unconscious behavior in our virtual-driven society. Cathartic therapy, as proposed by Josef Breuer, facilitates individual psychological purging and uses various mediums of art to move patients to recognize and release their repressed thoughts, emotions, and feelings. Leveraging the limitations of contemporary cathartic therapy and the demand for a universal platform to express the psychological repressed, this paper explores the role of the built environment in cathartic healing. Using the works of Gaston Bachelard, Jun'ichiro Tanizaki, Michael Benedikt, and Peter Zumthor, a discussion of authenticity and "realness" in the built world proposes the following principles of cathartic design; emptiness, seduction, and presence. Aligned with the design strategies of User-Experience Design developed by Apple, Google, and other virtual platforms, UX design provides a user-driven experience of pleasurable stimulation and immediacy that cathartic design seeks. Using the strategies of UX design and the principles of captology as architectural design strategies for cathartic architecture the manipulation of human behavior is used to disrupt the addictive use of social media on hand-held devices.



Architectural Scaffolding

Jordan Hantke Campbell
Advisors: Susanne Cowan, Mike Everts

Nearly one billion people live in the rural-urban fringes of slums, accounting for approximately a quarter of humanity. While slums are the fastest growing human habitats, their illegitimacy produces constant displacement, creating physical and social barriers to those who find refuge in them. Despite their economic benefits for emerging nations, acting as infrastructural support for urban development, their unprecedented growth rates decrease the quality of life within them. While Governments and Non-Government Organizations are actively battling the issues and conditions of slum development, their short-term focus on immediate needs increase the long-term sustainability of substandard living conditions. Thus, Architecture becomes relevant in redefining the status quo of informal spaces by providing the basics of functionality in a way that questions and alleviates the current injustices of slum life.

In doing more with less, the creative nature of architecture can align with the ingenious resourcefulness of slum dwellers, using the basic struggles of survival as a way to rethink the fragmented social, economic, and political systems of slum life. Through systemic thinking, these entities can work together to create a framework – the process, knowledge, and tools – needed to facilitate an emergence of community-based intervention. Through this process, new patterns of slum morphology unfold, bridging the gap between short-term needs and long-term improvement. By stimulating humanitarian intervention, advocating an improved standard of living, promoting local independence, and enabling sustainable development; community capacity is elevated, creating positive identification for a slum.

Concentrating on the slum of Kibera, climate change presents itself as a critical issue. Compounded by its equatorial location, inappropriate materials, insufficiency of knowledge, high density, and lack of both vegetated and open space, Kibera's residents fear for their lives as temperatures continue to rise. Consisting of sheet metal, eucalyptus branches and soil, the assemblage of scavenged materials exacerbates the endothermic quality of Kibera's informal settlements. The precarious nature of these dwellings provides the opportunity to challenge the way scrap is employed, creating a better determinate use of material, intended to catalyze a new typology of habitation. Through the architectural exploration of utilizing Kibera's existing systems and entrepreneurialism, a re-assemblage is enabled, neutralizing the issues at hand while maximizing positive social impact within the slum community.

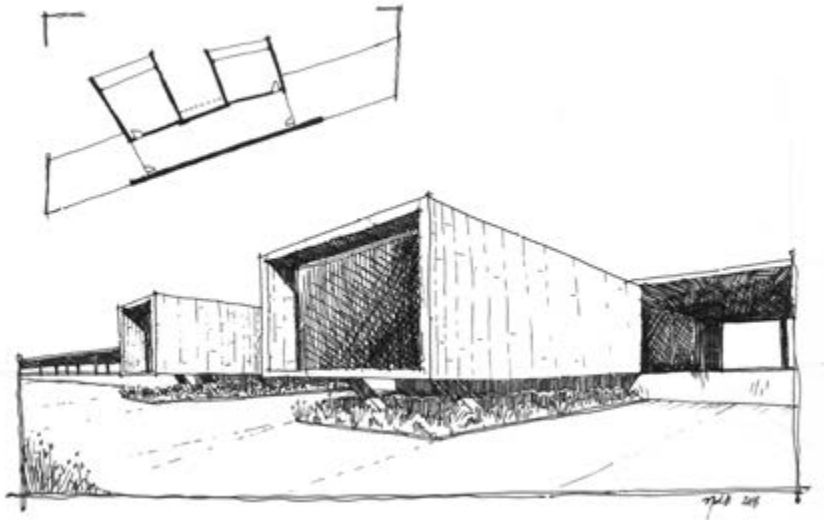
Supportive Architecture in Urban Environments

Nathan Heldt
Advisors: Steve Juroszek, Henry Sorenson

Urban areas have their challenges in terms of delivering healthcare. Some issues are the higher use of emergency services such as ambulances, help flights, and in-home visits. In addition, some people choose to not receive or seek out care. These issues can lead to lower health conditions in developed countries than in developing countries.

In urban areas professionals also have a difficult time delivering care because of the residents' financial situations, lack of infrastructure, whether or not it's culturally acceptable to receive care, the availability of the clinic, and density – creating a lack of availability for project sites - causing issues in terms of being able to choose a site on which a clinic can be built.

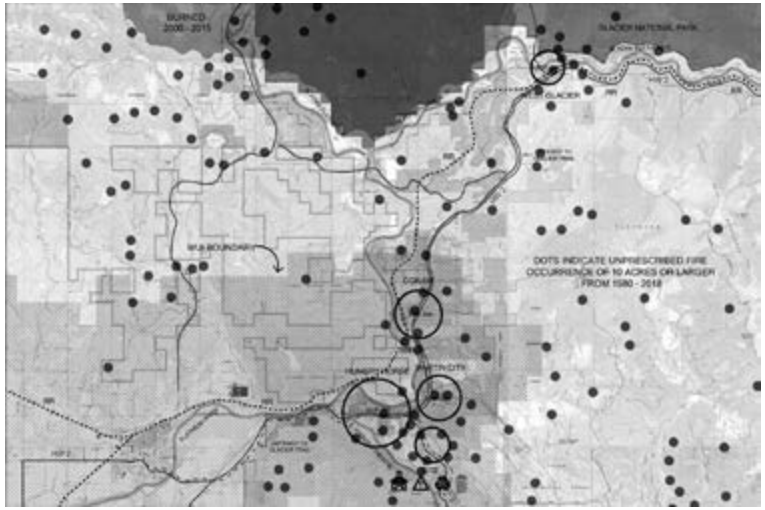
This project will create a precedent example project by using principles for selecting urban healthcare sites that are burdened as well as using principles design in a healthcare setting. Porte Chapelle in the 18th Arrondissement in Paris is being used as precedent site and supportive care methods that can be addressed with architecture are being developed for the immigrants in the area. This project will help integrate the immigrants to Parisian life in the long term by teaching them the skills that they will need in order to function on a day to day basis.



From Threat to Asset: Woody Biomass Utilization to Increase Community and Wildland Resilience

Jackson Hill
Advisors: Maire Conrad, Bradford Watson

As we become numb to the carnage all too commonly present during the Western US fire season, the worsening trends continue and the toll on communities located within the Wildland Urban Interface relentlessly builds. There is a need, more than ever, to address this growing threat and develop solutions that counter the threat of wildfire in ways that generate lasting community resilience. Community resilience, defined as the capacity of a unified group or people who share goals, values, purpose and geographical connection to anticipate risk, limit impact, and bounce back rapidly through survival, adaptability, evolution, and growth in the face of turbulent change, is the measure of flesh and blood that attempts to maintain and improve upon the ways of living we have come to know. Montana, known for its small populations and majestic beauty, faces many of the nations most severe wildfires as well as one of the largest annual expansions of land area located within the WUI. This expansion of the WUI when coupled with state's declining forest products industry and rampant forest pest infestations is fueling the threat of wildfire to extremes yet seen. Rural communities, which many Montanans call home, prove to be the most vulnerable to this increasing threat of wildfire. This project focuses on the group of rural communities within Hungry Horse/West Glacier corridor that are currently facing a substantial decline in forest industry jobs, limited community services and an inability to respond to the states greatest concentration of wildfires. By way of demonstration through the master planning and design of the Badrock Canyon Elementary School, serving communities located between Hungry Horse and West Glacier, this project envisions the resurgence of a local forest products industry by shifting from a reliance on high value timber products to products whose production promotes participation in forest management strategies. This alternative to the high value timber market has the means to not only create a new and needed source of revenue but also strengthen a community's physical resilience through the removal/utilization of woody biomass that's accumulated over many decades of forest mismanagement and environmental changes. While a focus is placed on the utilization of woody biomass, this project's aim is to integrate new and established methods of wildfire risk reduction to achieve maximum resilience.



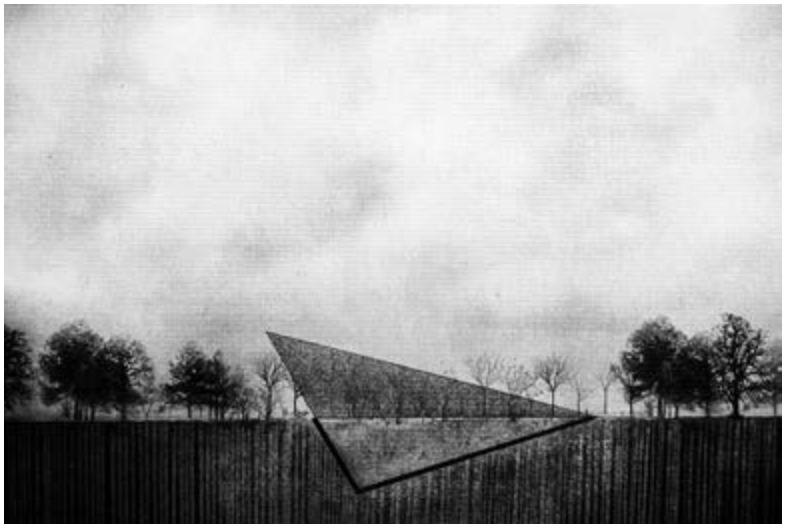
A Sacred Experience:
Integration of Site and Architecture to Constitute the Sacred

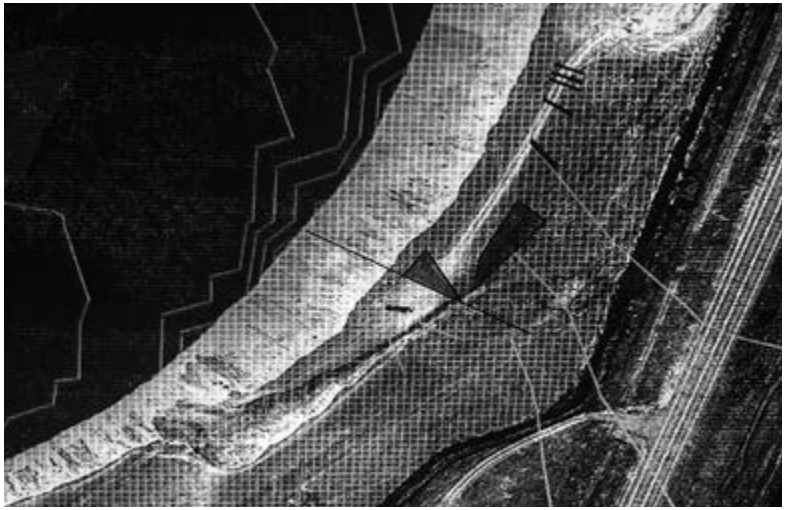
Nicholas Netherda
Advisors: Chere LeClair, Jaya Mukhopadhyay

Humans possess an innate predisposition to seek their place within a larger system. Certain abstract and representational qualities of a site are sacred, these characteristics must be embraced in the architectural design. If successful, these spatial qualities provide the observer a sacred experience that is beyond oneself. A successful architectural design exposes and leverages the overall sacral qualities of the site. If architecture is disconnected from these qualities, this will result in the disconnect of humans from the site, and the sacred. There are various intensities of sacred aspects associated with each site and the architecture that dwells within these landscapes is dependent upon these. An exploration was studied of the interdependent relationship between architecture and site through an examination of the sacred experience.

The creation of a space that integrates architecture and site is fundamental to encounter the interdependent relationship between the elements of the sacred and the human senses to arrive at a sacred experience. Characteristics of a site expose users to a sacred experience by placing users within architecture and site cohesively. The potential for architecture to fully incorporate the natural elements of a site result in spaces that allow users to become aware of the sacred through a heightened awareness of an individual's senses. It is imperative to design in relation to the elements of a site and an individual's senses in order to thoughtfully incorporate change in the realm of architectural design. The creation of architecture requires an understanding of place. Through consideration of the interconnection between architecture and site, designs can transform the profane and can definitively provide a sacred experience.

The intention of this project is to provide evidence of a sacred experience through the interdependent relationship between architecture and site. The human interaction with architecture and the elements of a site provide experiences that place users at the center of the design, the axis mundi allows users to experience the three realms and inherently the sacred. The environment on which we build is sacred and through realization of the interconnection of architecture and site, change is able to occur. This change will result in a deeper organization of space where a user's senses are able to engage with the elements of the sacred, and archetypal objects that dwell within the landscape.





Distance and Food Waste

Taylor Noel
Advisors: Chere LeClair, Barry Newton

Considering the global historical events regarding world population and the planets natural resources distance has become an important lens/framework in which to look at agriculture. Before mobility was so convenient, people's diets were made up of solely what was available around where they were settled. As agriculture developed diets began to change. Large industrial farming and specialization aided in reducing diversity in both crops and human diets. Specialization also increased the distance food must travel both for processing and for consumption. The distance, in turn, has created a lack of awareness and value for our resources and has led to a sickening amount of food waste.

THESIS STATEMENT

The disconnect between people and their food sources (agricultural process) has become a leading cause and contributor of food waste. Through the introduction of a food hub to the Bozeman community, the processing, marketing, and distribution of locally grown and raised products can aid in the reduction of that distance and eventually in achieving local sustainability.

| terminology |

Throughout this thesis project the word distance is discussed in both it's actual physical sense in terms of space, but it has also been utilized to describe the more psychological journey in which human beings have strayed from their original instinctual and intertwined state with nature... measurable through time. But, not necessarily due to movement from a specific location/place.

ex. of definition 1

The actual space and land between Bozeman and Missoula. measurable by miles (202.3 miles), and travel time (3h 21).

ex. of definition 2

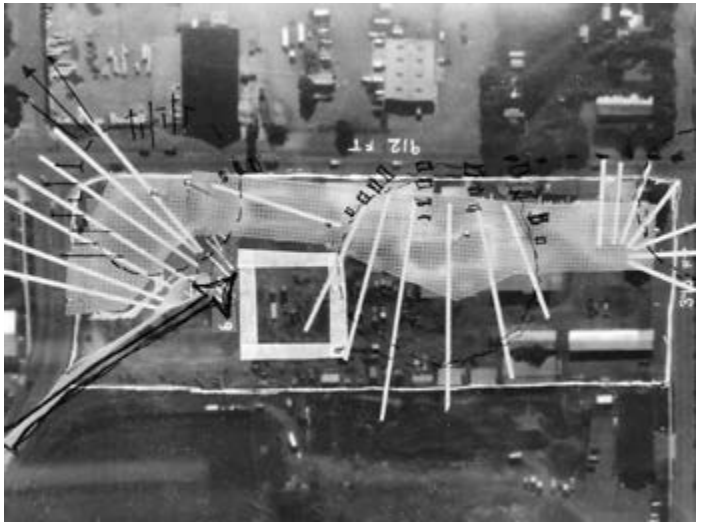
The amount of time, knowledge and events that have passed between current day Bozeman and what it was in 1876. Measured through time, cultural values, means of living, and technology.

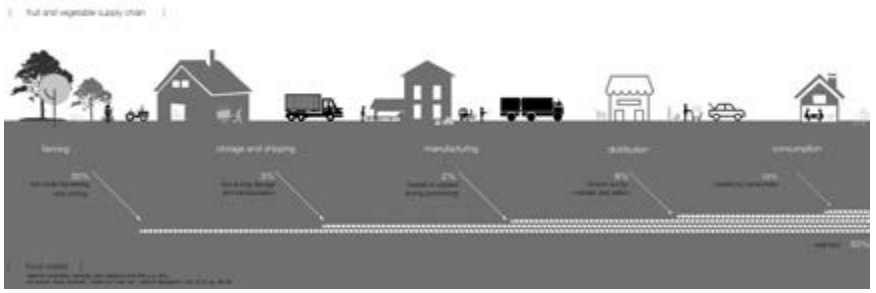
Secondly, for the purpose of the research, the definition provided by the International Council for Local Environmental Initiatives (ICLEI) has been chosen to define local sustainability:

AN AREA DESIGNED, BUILT, AND OPERATING IN A WAY THAT UTILIZES ENERGY AND NATURAL RESOURCES EFFICIENTLY AND EQUITABLY, FOR BOTH THE PRESENT AND FUTURE GENERATIONS OF HUMANS AND OTHER SPECIES.

lastly, local: within 100 miles of Bozeman

regional: within 300 miles of Bozeman





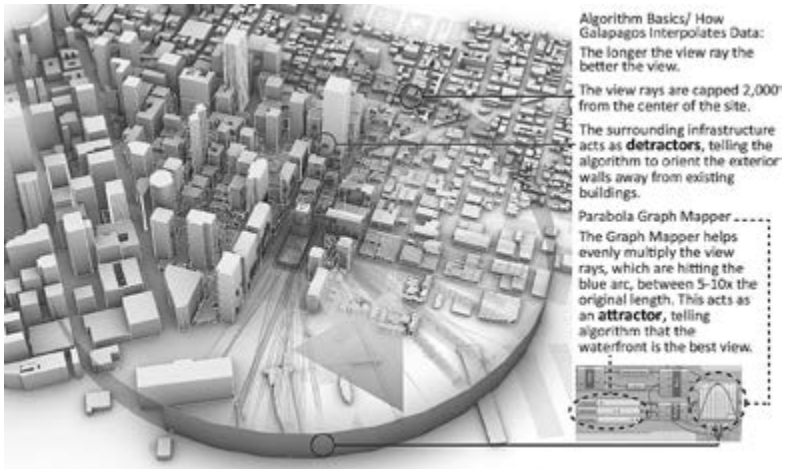
Genome Two – The Architect's Role in the Integration of Algorithmic Parametricism

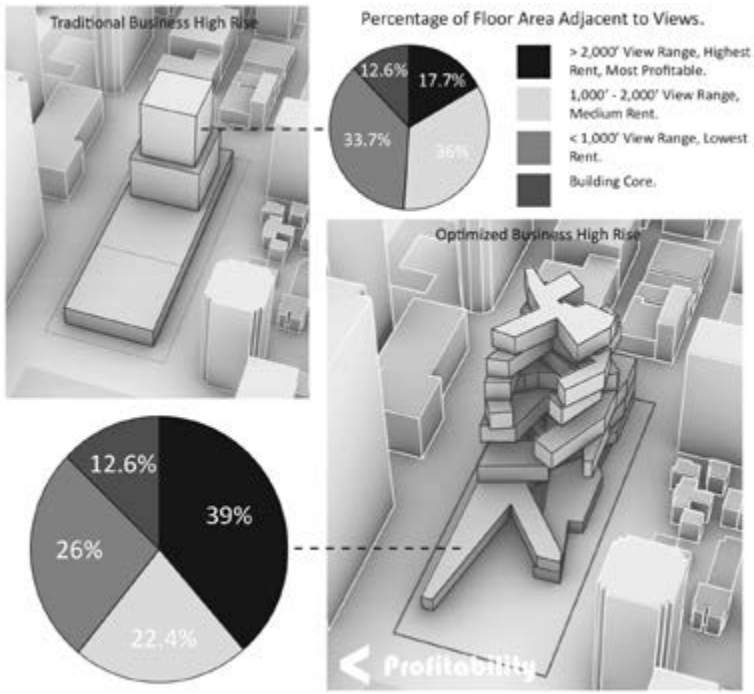
Alyssa Parsons
Advisors: Mike Everts, Bradford Watson

Architecture is making advances in the digital world through computational design. By looking at advanced architectural tools such, as parametrics and algorithmic solvers, we can see the potential for collaborative workflows between multidisciplinary players on a scale and depth which has not been fully embraced in the design world. These revolutionary tools have the capacity to improve our built and emotional environment by providing and manipulating data sets in the relationship between design intent and design response. With the combination of parametrics and the algorithmical exploration of multiplicities, optimal and performative designs can be achieved. As architectural design in the modern world is moving towards a technologically based platform, the understanding of these digital design tools is becoming crucially important.

This project aims to explore the relationship between design intent and design response through a collaborative workflow between the designer, grasshopper (an algorithmic aided design software) and Galapagos (an evolutionary solver plug-in for grasshopper). This project optimizes a high-rise building for startup businesses in downtown San Francisco. A script was written and designed to generate a building form based on a complex interpretation of views. The program Galapagos analyzes the surrounding infrastructure and detracts from it, while also analyzing the waterfront as an attractor. There are dozens of design constraints and parameters within the algorithm that constrain certain design outcomes set by the designer.

After the evolutionary solver is completed and a form is generated, there is a second stage of design which encompasses the integration of design response into the initial design intent. These steps are not optimized by a computer program but negotiated by the designer. Some of the design goals include dividing startup businesses into three categories based on their core values and desired rent per square foot, and locating them accordingly based on the quality of views within a space. Another parameter is maximizing the allowable square footage of each floor, which entails the pushing and pulling of walls on axes with its perpendicular view ray. Another major modification includes locating a building core, service area and means of egress, where views will be less impacted. This involves finding a cohesive verticality between the low rent zones of each floor. The physical and emotional properties resulting from this design approach creates a collaborative working environment within a socially equitable building, while enhancing business workflow and productivity.



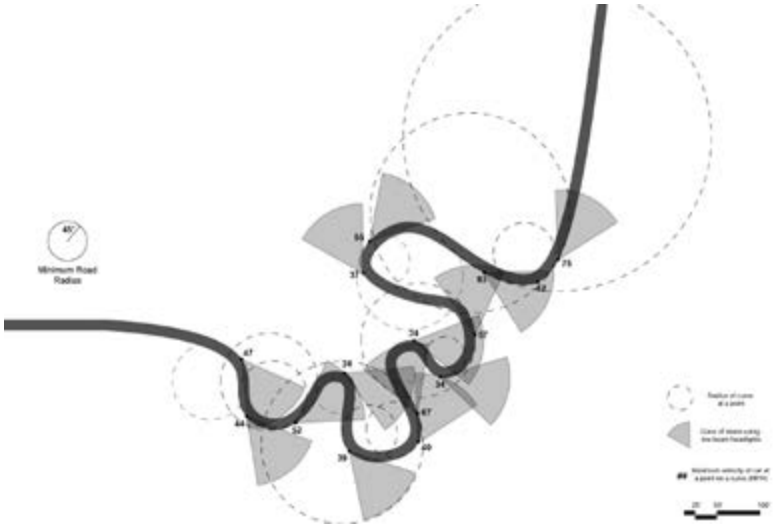


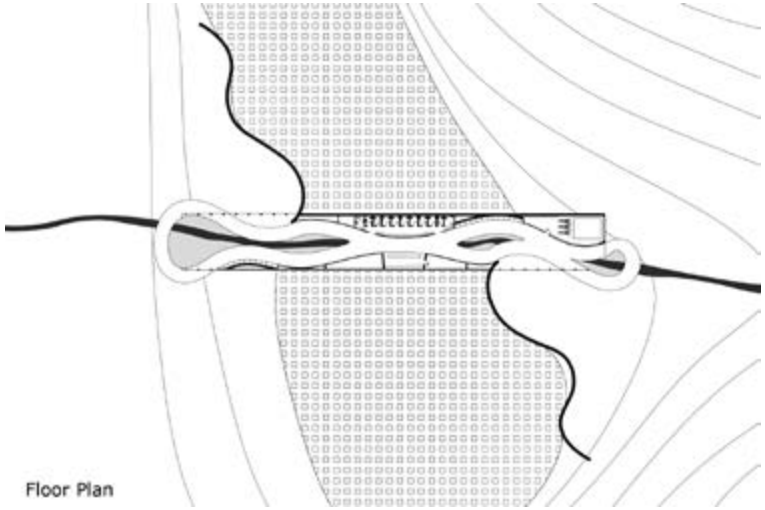
Effective Continuity:
Systematic Wildlife Corridor Design for Wolf Creek Canyon, MT

Claire Pepper
Advisors: Mike Everts, Bradford Watson

This project focuses on habitat fragmentation and its negative ecological implications. Beginning with an analysis of the different modes of habitat fragmentation and spatial patterns of public lands this project aims to build upon current research in ecological fragmentation by developing a new strategy for connectivity. Currently, public lands are disrupted by human-built infrastructures such as highways and cities, creating a highly fragmented spatial pattern of open land. These public lands are also of great value to outdoor recreators, and due to conflicting interests people are actively destroying the landscapes and systems they value most. The challenge then becomes, through design, to create a solution that fosters a mutualistic relationship between infrastructure, recreation, and wildlife. Wolf Creek Canyon, between Helena and Great Falls, MT, is chosen as the site to test the potential for a design intervention that improves overall system function for these three players. This site is chosen because within the canyon there are conflicting needs for I-15, desirable recreation land, and an important habitat corridor for grizzly bears. Bears are the chosen species of focus due to their status as an umbrella species, meaning, many other species also benefit from the protection of suitable grizzly habitat.

The design solution is multi-faceted. Three different interventions take place in the canyon, including, a highway redesign, trail system creation, and rest stop/engagement point. Each intervention brings a benefit to the people using it as well as improves the connectivity of natural surrounding system. The highway redesign takes place in three different locations in the canyon. The highway is curved to slow traffic to a speed that allows for safe wildlife passage. This intervention also benefits the driver by connecting them to the landscape while driving and reducing the risk of car-wildlife collisions. The trail system provides more outdoor recreation opportunities and is designed to avoid core grizzly bear habitat. The rest stop/engagement point provides an amenity to drivers on the highway and is also an access point for the trail system. The building itself is built under the highway into a man-made hill that is currently blocking big bear gulch, an important drainage path. The building reconnects this drainage, through the hill, to little prickly pear creek, the primary water source through the canyon.





The Halcyon House

Joel Ronish
Advisors: John Brittingham, Henry Sorenson

The Halcyon House is an update of the concert experience and concert hall design. It is a design that accommodates the demands of the present day. It is a design that dissolves the boundary of stage and auditorium so that the audience is a participatory entity of the concert, rather than just spectators of a performance. Taking its inspiration from the Disco era's use of technology and spatial arrangement to excite the audience and engage with the music. It uses 3D projection and LED technology to create graphic imagery to accompany to the music. It accommodates 4 main types of concert patrons. The first is the performer this is a person that loves to be seen and wants to show off their moves. The second is the socialite this is a person that loves to dance with their friends and interact with their fellow patrons in a large group. The 3rd is the observer, this is a person likes to go to concerts to see the band play some music. The 4th is an introvert they are a person that doesn't care much for crowds of people and just want to see some people perform.

Located near the Madison river the Halcyon House is a destination to visit and escape the business and stress of the present day. The design takes a responsive approach to the delicate site. The concert hall and site interventions interact with the site through their form, fenestration, and materiality. The building and site are designed to be used for single and multiple day events, because of this campsites are included as well as overnight housing for the performers. The site design helps excite the visitor and exposes them the wonderful moments on the site and accentuates the wonderful views of the area, all while minimizing the damage to the site that large crowds bring.

How Appropriate Building Envelopes and Forms Contribute to the Provision of Adequate Daylighting and in turn Positively Impacting Occupant Visual Satisfaction, Occupant's Productivity, and Health in Office Building.

Nima Safaein
Advisors: Maire Conrad, Jaya Mukhopadhyay

Daylighting has often been recognized as high quality lighting which provides a pleasant visual environment in buildings. Unfortunately, some architects tend to increase the portion of windows to bring more natural light into the building without considering how the uncontrolled daylight can affect the occupants' thermal and visual satisfaction. These potential problems are often not considered or understood, although the knowledge is available. This paper studies daylighting design strategies which include internal and external factors to maximize the quantity and quality of the daylighting penetrating office environments which reduces the issues of discomfort glare.

Dancing through Space:
Communicating a Perceptive Architecture

Carmen Scraper
Advisors: Michael Everts, Barry Newton

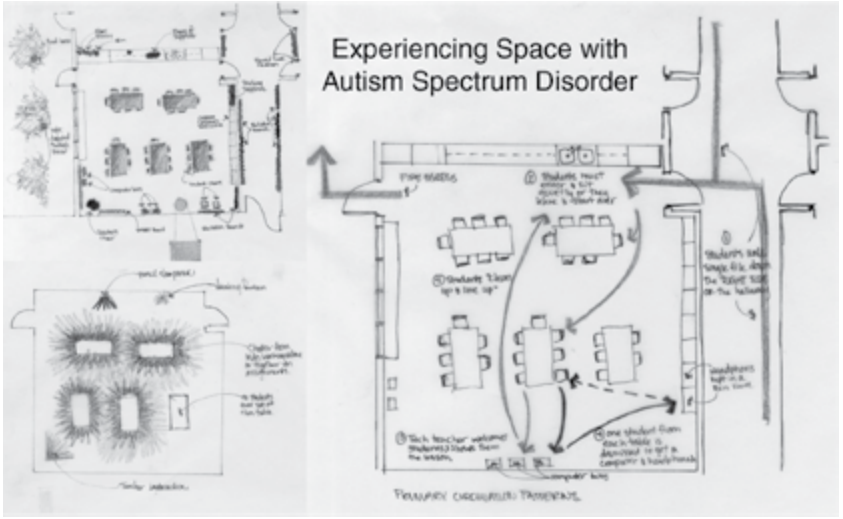
The disciplines of dance and architecture render themselves entangled in complex humanized connections bound through the notions of time & speed, memory & expression, and manipulation & scale. Whether applied to the artistic qualities of a performance or related to the average person and their experiences gained through an everyday built environment, the ultimate goal is to convey ideas effectively to an audience and to provide an individualized interpretation of event, place, and experience. Because of its dynamic quality, the art of dance conveys a strong medium in which to analyze the interconnectedness of optic and haptic experience to improve spatial awareness and inner sensibility of an audience with respect to space. By documenting space created in dance through the tangible qualities of silence, reality & mirage, and asymmetry, an architectural syntax emerges; articulating a vocabulary that architects aspire to recreate through communication of the built environment. Formal notation provides architecture with the opportunity to learn from dance; acquiring methods in which to restore communication and increase spatial perception of the built environment through the resolution of the optic and haptic experience, allowing architectural practice to render theoretical experiential qualities.

Architecture for Autism – Designing for an Inclusive Tomorrow

Elizabeth Seidel
Advisors: Susanne Cowan, Chere LeClair

In 2016 the CDC published an article stating that the prevalence of diagnosis for Autism Spectrum Disorder rose to 1 in 68. The purpose of this research is to understand ways in which a person with Autism Spectrum Disorder (ASD) might experience the built environment. Through the gathering and analyzing of data, architects and designers now have the ability to create spaces and experiences in a way that accommodate neuro-diverse persons.

By applying design principles manifest in an approach called Sensory Design Theory, this research demonstrates how slight modifications to an educational setting render positive behavioral outcomes for those on the spectrum. While doing so, it is demonstrated that design criteria necessary for the success of a person with ASD is characteristically design criteria that a neurotypical individual would also find pleasing. Thus, this inclusive design approach should be the basic standard to which we design. It is after all a part of ADA compliance.



Bozeman-Community Plaza

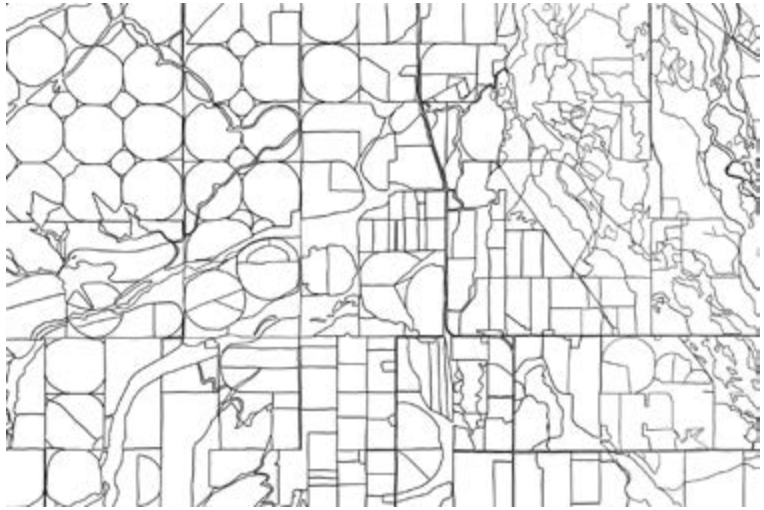
David Sinnott
Advisors: Maire Conrad, Faith Rifki

Bozeman is quickly changing from small town to city, and the downtown core needs to evolve to accommodate the growing population. Events like Music on Main, The Christmas Stole, and Bozeman Bite crowd the streets to an uncomfortable level and need additional space to grow. My project is focused on generating a central plaza for communal development through pedestrian activity that revitalizes downtown.

Located adjacent to Main Street, the plaza becomes an appendage for the downtown core. An addition of a new city hall creates a landmark effect that turns into a wayfinding object within the city layout. Wayfinding objects create mental imagry of place and should be designed from the heritage of the area. What makes Bozeman unique is the fertility of the Gallian valley and the town's history in agriculture development. A plaza is more than just a stepping stone as one moves around the city, it's also a place that can host large social events due to its open plan.

With a large flexible open space in the center, the plaza can host large events in all seasons. It can be transformed into an ice-skating rink or ice climbing wall in the winter and a flea market or food truck market in the summer. But a plaza is defined by what characteristics and level of activity make up the facades of the edge condition buildings. Revitalizing the southern facades of the existing building breathe new life into the downtown markets and adding buildings to enclose the square create the feeling of an outdoor room. By having a very active edge the plaza provides the ability for these programs to expand and contract as needed.

To contribute to the feeling of an outdoor room pedestrian become the occupants to design for. Cars are a nuisance to the pedestrian and inflict a sense of anxiety on people walking by streets, by restricting vehicular movement the pedestrian can relax and feel safe. The Goal is that this plaza becomes a place for various members of the community can come and share goals, ideas, and opinions openly and safely in a social setting.



Architecture and Ritual

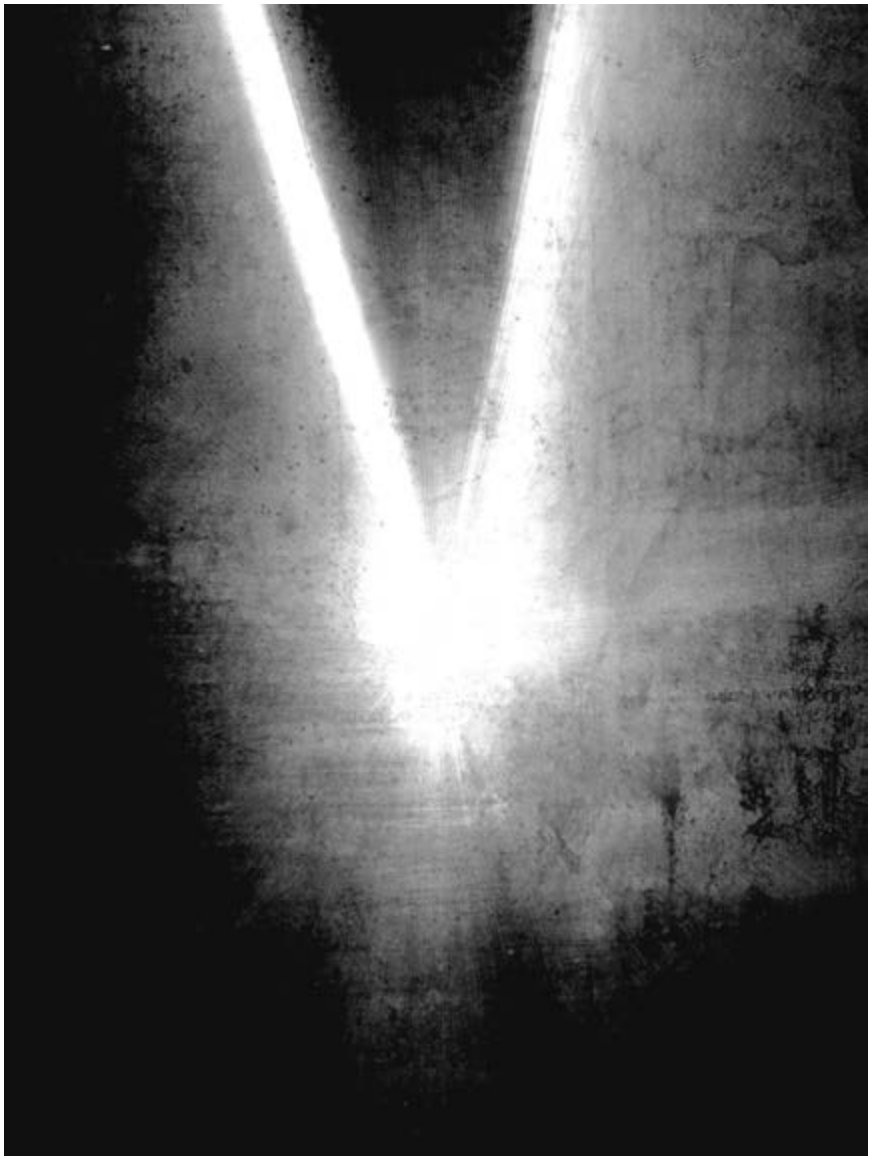
Michael Sisemore
Advisors: Chere LeClair, Jack Smith

While I would not consider myself as religious, or even spiritual, I have, however, experienced architecture that has awakened me to an indescribable 'other' that cannot be forgotten. I didn't know of a word to describe this 'other' at the time, but I would come to realize the term is ineffable. The ineffable is too great or extreme to be expressed or described in words. It was this connection to the ineffable that left me wanting for something more significant in the profane aspects of my life and my architecture.

As I reflected on the architecture of this profound experience, I began to delve into the aspects of the design that allowed the ineffable to manifest. The void, the silence, the sequence of movement to the chamber, the faint light entering the space, the passage through a pronounced threshold was designed with such a degree of attention and care to detail that the architecture became ritual. It is through these specific qualities of architecture, and the interweaving of the unique essence of place and site that allows humanity to transform the built environment into something far more significant.

Yet the built environment that we inhabit today has been stripped of these sacral qualities over the last three hundred years leaving the majority of buildings nothing more than empty husks. While these structures provide shelter for our physical survival, the majority of buildings continue to alienate our shared experiences and connections. These buildings do not address the requirements of architecture to simulate human cognition and provide access to the sacral, both of which are essential to survival and self-actualization.

However, a return to architecture as ritual and designing spaces with a holistic view can create a future that enriches humanities shared experiences and connections. Architecture as ritual enables humans to experience sacrality in the form of space. These spaces interact with the physical, sensuous, and emotional connections of humanity and elevate them to the sacred. By tapping into the inherent qualities that transform buildings into architecture, Architecture allows humanity to transcend their mundane human existence and give meaning to the profane.



Calculating Outdoor Thermal Comfort

Paul Snyder
Advisors: Andy Vernooy, Chris Livingston

Over the past decade there has been a shift in the appreciation of outdoor spaces for commercial use in Bozeman, MT. This has led to a proliferation of outdoor spaces being created to entice patrons to visit, wander, and consume. Some of these spaces have been more successful than others, my question is why?

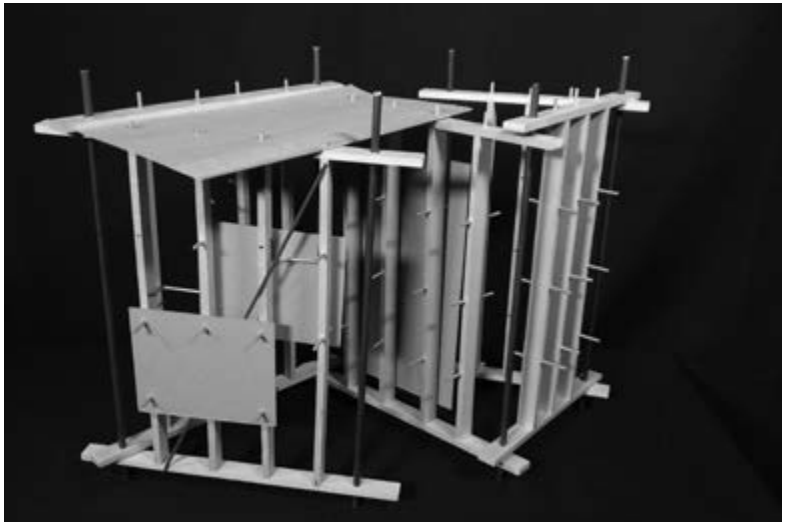
Recently there has been a release of several tools to help evaluate performance in architecture. These tools are rather young, and their adoption has been slow, a result of steep learning curves across somewhat disparate disciplines. However, these tools present an opportunity to evaluate outdoor spaces through the lens of microclimate and thermal comfort by bringing together tools typically reserved for specialists (Computational Fluid Dynamics for wind, Energy Modeling of Surface Temperatures and Radiant View Factor for Mean Radiant Temperature).

This project seeks to assess two existing outdoor spaces, The Garage a popular local restaurant with an active and successful outdoor space, and Montana Provisions, a new restaurant, that has struggled to use its outdoor space effectively. Additionally, this project seeks to look at what influences could hinder or help make Montana Provision's outdoor space more thermally comfortable, whether that be further improvement on the property or larger commercial development adjacent to it.

Calculating Outdoor Thermal Comfort

Ian Sobol
Advisors: John Brittingham, Barry Newton

At a time where the clarity and strength of architectural projects are being sacrificed for saving money, details in architecture offer designers the ability to bring those attributes back through conscious and thoughtful design. The current trend in present day architecture is to eliminate the small special moments in architecture, like water shading off the roof, and to make these elements after thoughts in the design. While these moments seem small, they are the defining elements in architecture that allows the inhabitants of a space to gain an understanding of the spaces they are entering. Through the use of literary analysis of prominent architects who have studied detailing and studies of projects that utilize detailing to strength their overall concepts, this thesis explores the benefits detailing can offer designers. The project is to physically create details at a 1:1 relationship in order to solve the issue of small public structures designed to keep inhabitants warm or to be given privacy. The spaces shall be no bigger than 200SF and should be able to be assembled by a two person team. The final product shall be a full mock of one of the structures in order to test out its real world applications and advantages, along with an exploration of other details for different typologies.



Biodiversity at the Edge of Urbanism

Jerome Steckler
Advisors: Ralph Johnson, Faith Rifki

Biologically rich environments provide essential resources to humans daily, often without society realizing it. Urban settings are the pinnacle of humanity overriding natural ecology, forgetting the services the environment provides, and destroying it with every passing day. Rapid urbanization is occurring on a global scale, and often materializes too quickly for an accurate development-response to take place. The mass urban sprawl of Los Angeles has destroyed, and is constantly threatening, biologically rich environments along the coast of California. How can cities remedy the detrimental effects development has had on their urban ecology? What could a symbiotic urban-ecological system look like?

Creating urban policy for a badly degraded ecological site in Los Angeles proposes ideas for how a symbiotic future could occur. The goals in this policy are derived from a combination of Systems Theory, Biophilia, and equitable social conditions outlined in the New Urban Agenda. Together, these ideas are implemented throughout the site, restoring natural ecology while integrating the needs of a growing metropolis and a changing climate. This development proposal occurs on a 80-year time scale, paying close attention to rising sea levels. With projections of oceans rising 4-5ft by 2100, cities such as Los Angeles must start thinking for the long term to not lose trillions in development. Informed planning requires viewing these cities as highly complex systems, where no entity exists independently, and everything is interrelated. Identifying and acting upon opportunities within these systems is how a symbiotic urban ecology can sustain itself into the future.

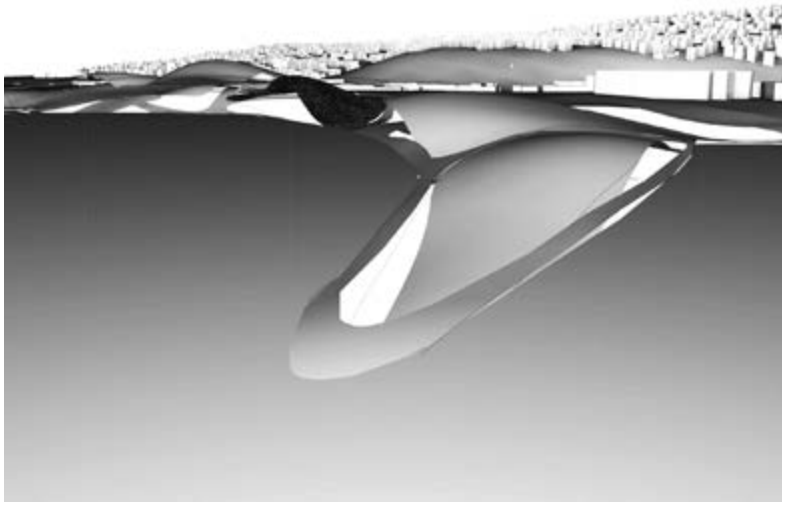
The Weave at Terminal 91

Taryn Strope
Advisors: John Brittingham, Mike Everts

How can a site that has been previously dominated by industrial uses be replenished back to its original roots? How can one embrace the history of what the site has become, but prioritize the uses that were forgotten over the past 100 years. This Waterfront Proposal explores combinatory relationships of what the Port of Seattle's economic development potential of the Terminal 91 site. The site is located at the Terminal 91 cruise port in the Interbay neighborhood of Seattle, WA. The proposal is a 200-acre urban restoration that prioritizes ecosystems through the use of a Cruise Port, Link Rail Station, Fishing/ Boat marinas, and connective park spaces between. Influenced by precedents such as Fresh Kills, Port Yokohama Cruise Terminal, and UN Studio's proposal: Three Museums one Square; the framework for the design began to take place.

The Port of Seattle oversees $4.2 Million in capital investments, with the real estate development portfolio being the Ports strongest way of creating jobs in the Seattle Area and increasing the Ports overall revenue. This proposal explores the possibilities in the new node north of Seattle's downtown core, creating an extension to the Waterfront Renewal that is happening near Pike's Place. The new proposal will be the gateway to Seattle from the water. The connection of the site then is extended from the water, into the downtown core through the use of a new transit-rich location.

This proposal explores the possibilities that the site has to offer without it being overpowered by construction and buildings.



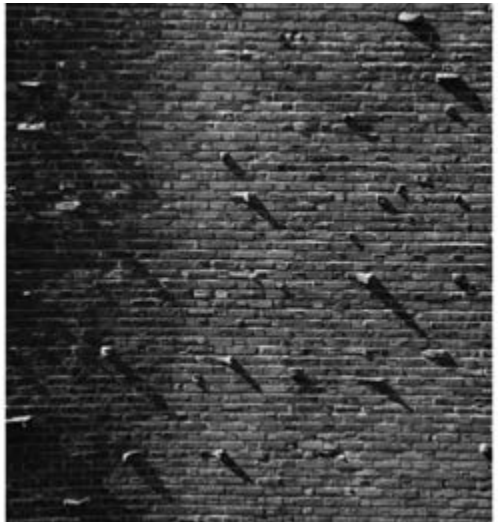
An Endeavour in Craft

Michael Thornburg
Advisors: Barry Newton, Henry Sorenson

"The ultimate aim of all artistic activity is building! ... Architects, sculptors, painters, we must all get back to craft! ... The artist is a heightened manifestation of the craftsman. ... Let us form … a new guild of craftsmen without the class divisions that set out to raise an arrogant barrier between craftsmen and artists! ... Let us together create the new building of the future which will be all in one: architecture and sculpture and painting."

Walter Gropius.

The aim of this paper is to cast vision for the creation of a new space, one in which Walter Gropius's words: "Let us together create the new building of the future which will be all in one: architecture and sculpture and painting," become a reality. I envision a place for reconnection of what made architects great in the past tinctured with advanced modern day education. By beginning with a discussion of craft and the evolution of the hand-mind connection, this paper proposes to establish the relationship between thinking and crafting. In exploring Matthew Crawford's idea of manual disengagement, and Richard Sennett's parallel ideas throughout the paper, I proposed the need for a shift in how we view the future of craft and education. Craft contains the critical thinking that could unpack the current state of architecture.



Cities on the Sea

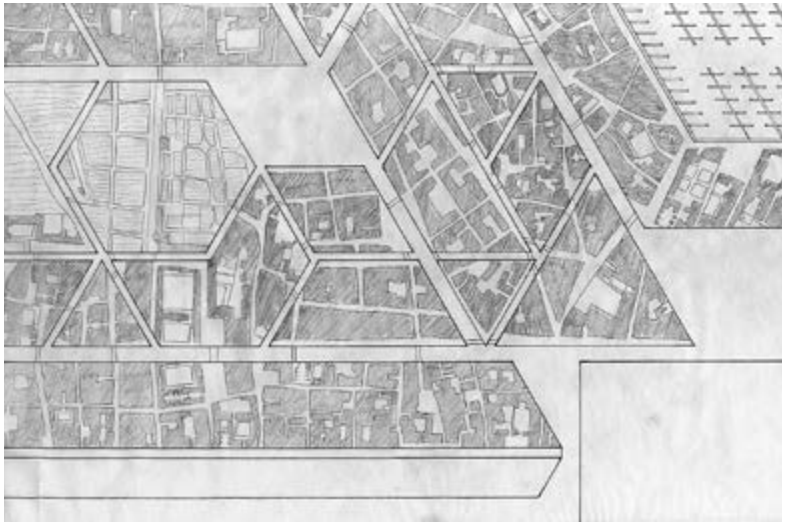
Colin Tippett
Advisors: Marie Conrad, Jack Smith

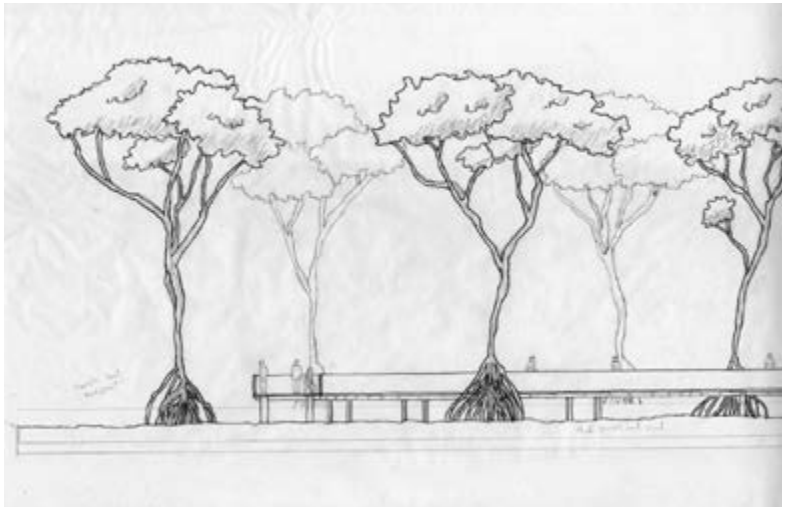
70% of the world is covered in water. As the seas rise and populations grow, the Earth becomes more crowded. Either the population must shrink, or people must find new ways to expand. Elon Musk is pushing for the colonization of Mars; an important step in human advancement. Another solution is to start developing the 70% of the planet. It is cheaper, easier, and safer to build on Earth than in space. Cities on the sea is a solution to overpopulation while space travel is improved. Development on the oceans will be inevitable; the question becomes: how will architecture change on the ocean?

I have an interest in a self contained city. In McHarg's 1969 Designing With Nature he has an analogy of placing a dome over a city and over a farm. The city cannot provide for itself and the ecosystem within will deteriorate. The farm however has enough diversity to sustain itself even with the dome in place. A city is more than an ecosystem however; there are social and political dynamics.

Polynesians have traveled the Pacific Ocean since roughly 1,400 B.C. For hundreds of years the Uru people of Peru have been living on man made floating islands in the middle of Lake Titicaca. The 15th century was the beginning of the Age of Discovery where Columbus traveled to America, Elcano circumnavigated the world, and Europe expanded to the West. People lived and worked as a community during these times in varying conditions on the water. The Seasteading Institute has taken a modern approach to make a dozen floating 'cities' by 2020.

The ocean is a widely untapped resources that, if used correctly, could be sustainable.





[uncanny] an architecture of unease

Elly Usick
Advisors: Chris Livingston, Barry Newton

Fear, anxiety, discomfort, terror, desolation, grief: sentiments of the uncanny as seen through the eyes of the dark Other. The uncanny has a rich history of unconscious fear, Freudian theories, and architectural avoidance. Such a phenomenon implies the repression of unwanted emotions and marks the manifestation of a visceral reaction and deeper meaning. It is the nocturnal side of humanity that houses this world of dark existence. The exposure of repressed darkness can cause a shift in perspective, a questioning, or even a movement. To encounter the uncanny fully and expose the dark Other, rejected emotions should be manipulated and experienced through the physical world. Architecture is perhaps the best conduit of the uncanny due to its reciprocity with the human body and its existence in both time and space. The complete experience of the Other available only through the built environment can house and trigger the repressed emotions and reactions of the uncanny. A discovery can be created as the audience is faced with the unexpected and is made to feel something deep and lasting.

The uncanny can take many forms, most of which are tied to an extraordinary event or place. Destabilization, heterotopia, wrongness, suffocation, and strange familiarity are just a few operations in the toolbox of uncanny. At the base of the Beartooth Mountains, in a town partially dead, is the perfect breeding ground for the uncanny. Born from a coal mining tragedy that devastated Bearcreek, Montana and its occupants, the Other exists in the unnatural juxtaposition of life and death. Not entirely ghost-town, the abandoned buildings, empty lots, and destination-less roads breath life into the exposure of darkness. Framed by rusting mine and lonely cemetery, the overall experience a progression of emotion in history. A series of architectonic interventions are used to explore and expose the architectural uncanny. By maneuvering operations of the uncanny, such as disorientation and injury, transparency and reflection, materiality and weight, human emotions can be manipulated to reveal something once hidden. The full assemblage of uncomfortable spaces and interventions exhibit ideas of the uncanny and create a previously unexplored experience.

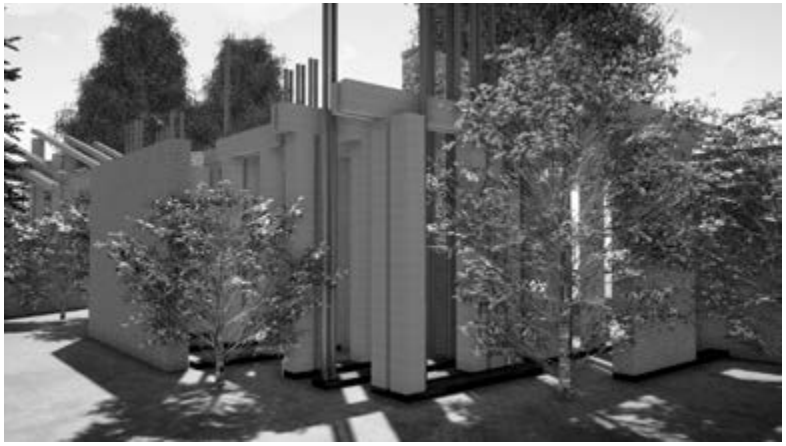
Secular Humanism: Architecture as Experience

Daniel Waiksnis
Advisors: Jack Smith, Andrew Vernooy

Secular-humanism explores architectural experience through emotional delight. The spatial experience describes inherent human needs as a threshold alternating experientially between interiority and centrality. Previous research exposes historical precedent as critical to modern culture. The ineffable power captured in the religious experience can be analogical to the subliminal architectural experience, as it commemorates emotion, intellect, and spirit. Furthermore, this design project places the urban mind in a sacred experience that connects man to the existential landscape, as opposed to a literal and natural landscape. The original and natural landscape will inform strategies and architectural tools for the space. Space rooted in the primitive experience and sited in the modern cityscape exists liminally, on a threshold always between levels of being experientially exterior.

Design is used for inquiry into this powerful spatial experience of secular-humanism. In order to not limit the experience to the bounds of an arbitrary program, Pyotr Tchaikovsky's Violin Concerto in D, Op. 35, inspires, instead, an emotional experience by which to reference conceptually. The music did not become a formula for producing identical forms, but merely to incite a story of emotions that could be felt on a deeper interior level, as anthropological metaphor.

Finally, the "Secular-Humanism" pavilions exhibit sensitivity to the simple and powerful human perception of sublime architecture as a synthesis of multivalent existential, phenomenal, and mystical spatial anomalies.



Celebrating a Global Spirit within the Local Culture

Lauren Waldenberg
Advisors: Ralph Johnson, Susanne Cowan

Throughout history, international exhibitions have provided an opportunity for individuals from around the globe to engage in a discourse on prevalent issues of contemporary society. Architects have played an integral role from the start, providing answers to the questions posed and creating the built environment for expos to take place. Exhibition architecture offers host cities the possibility of an incredible legacy while also supporting experimentation with latest technology, creative problem solving, and cross-cultural exchange that advances the global culture of today's society and is critical to the growth of the architectural profession.

With the aid of digital technologies and mass media, information can be sent freely from one location to another. The boundaries between nations have disintegrated and cultural identities have surpassed national borders, establishing a worldwide culture. Exhibitions, as a meeting ground of many nations, must address the issue of how to represent this global culture. In order to do so, the architecture should celebrate the current status of technology, as it is this technology that brought about a global culture. Balancing this technology, architecture should have greater aims of designing for the human experience, creating sustainable buildings, and highlighting local craft, context, and artistry.

Due to its heavy focus on the interaction of many nations in this digital era, Expo 2023 in Buenos Aires, Argentina has been selected as the design proposal location. While the expo has positive aspirations of bringing creative minds together to tackle problems, the qualities for developing design that stem from local conditions, culture, and art have been left behind in favor of the purely digital. The strong focus on digital technology may have established an event of global status, yet critical elements are missing in order for the expo to fully resonate with today's global culture. To address this, the proposed project will showcase experimentation, allow for cultural representation and inter-cultural exchange, and enhance the urban environment of Buenos Aires. Veering away from the expo's overarching focus on digital technology, the project will instead aim to respond to the local environment, support the growth of creative fields, and celebrate the global spirit today.

Durable Significance

Mitchell Warthen
Advisors: Ralph Johnson, Bradford Watson

Within the field of architecture, durability is a relative term, one defined by the lifespan of the selected program. For a long term, flexible program, any extension of a building's longevity can enhance its performance and value to a society. Architectural durability can be divided into three primary categories: material durability, economic durability and sociocultural durability i.e. measuring a building's ability to influence a culture. While each category is vital in durable architecture, the economics and material science of architecture have been investigated at great lengths. Sociocultural longevity on the other hand is less measurable, but it can foster community interaction with architecture. For this reason, the durability of architecture will be investigated through its ability to gain and maintain its sociocultural value.

As an architect looks to make a significant social or cultural impact, he or she must investigate the physical location and the societal intricacies of each project. Since each region and program vary from project to project, it becomes impossible to use the same design process for each building. Added are the complexities of durable design, as in each region material properties, economic intricacies, and cultural forces change dramatically. If the goal is to give a project sociocultural value and therefore enhance architectural longevity, then a design strategy is needed that can utilize a region's unique attributes as a design tool. This design process is Critical Regionalism. Combined with a bottom up approach to urban design, critical regionalism gives the criteria needed to design and maintain a durable asset to a community.

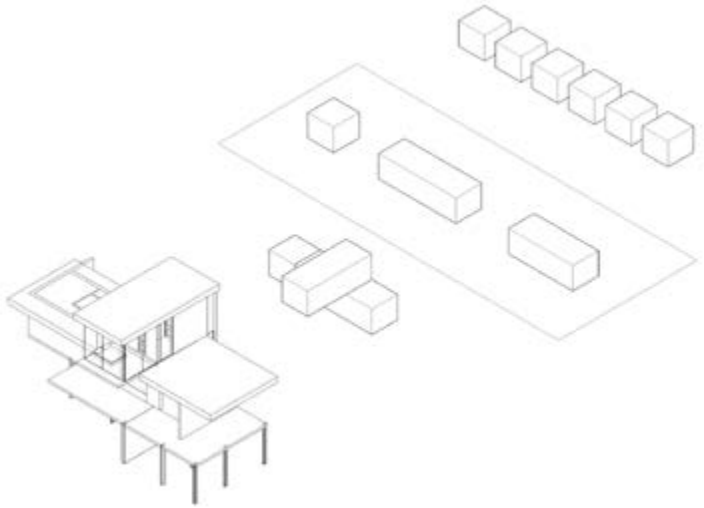
Prefabrication:
A New Generation of Housing Solutions

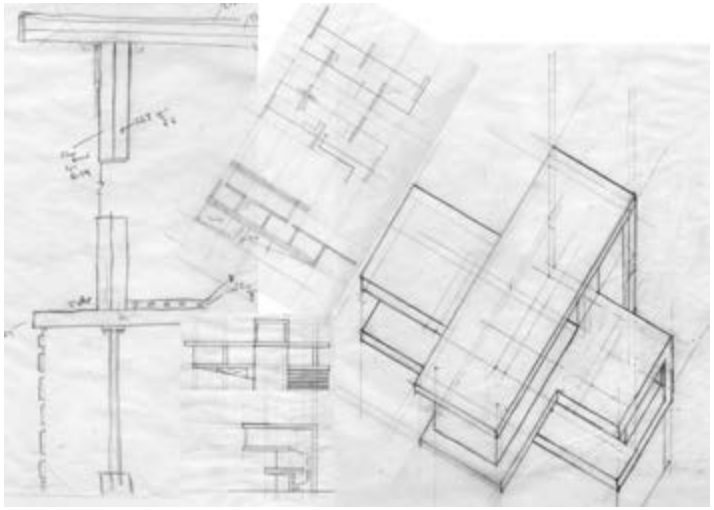
Geofferey Zawora
Advisors: John Brittingham, Steve Juroszek

Applying the possibilities available through Building Information Modeling to prefabricated construction techniques begins to open new ways to design and construct unique structures. By utilizing solid computer modeling software, the building industry can follow the aerospace and nautical industries in realizing the possibilities in applying modulization to construction. The ability to realize a design inside virtual space allows it to be an easily customizable object.

The Millennial generation is the largest generation to reach adulthood in the U.S. The economic crash of the late 2000s has slowed the traditional homebuying path that previous generations have followed. Now Millennials have different priorities in home ownership than the market is currently providing. As this generation begins to make a larger impact on the housing market, designers and builders need to figure out how to meet these needs. Applying the abilities of computer modeling with the precision and custom construction now offered by prefabrication, homes can be constructed faster, cheaper, and with less waste. This ability can be used to address the needs of Millennials while also moving the building industry forward and preparing designers for utilizing advancing materials technology.

This project examines the possibilities presented by two sites in areas that show significant growth in the Millennial demographic. The use of different materials in different climates while using similar modules to create unique spaces begins to show how mass customization is now available. By realizing the capabilities of our tools, we are not taking a static step to address a current problem but evolving the work and scope of the architect. Using BIM in concert with prefabrication is essentially adapting to the possibilities allowed by technology. These tools will not only make today's work better but also be compatible with new materials as they emerge and allow the profession to adapt to new possibilities faster. This is not just a way to address the immediate issues faced by Millennials but represents a strategy to remain flexible for the future.





Notes:

Notes:

Notes: