

DEPTH OF PERMANENCE: CONVICTION TOWARDS PERMANENCE VALUE
DESIGN PHILOSOPHY

by

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ABSTRACT

This thesis provides an account of the degrading values present in the current (twenty-first century) design of the built environment, and proposes an ideology and objective end goal methodology for the re-evaluation and re-administration of critical values for the future design of architecture. Focused around the core value of permanence --a value which proves to structure other architectural values, this thesis's proposes: permanence value design philosophy. In short permanence value design philosophy refers to a means to grasp and provide conviction towards permanence and the qualities present in the design of architecture that is recognized for attaining a "timeless" nature which continues to endure permanently either in its built physical presence or in the reminiscent minds and archived resources of history. The establishment of this philosophy and the objective methodology is put forward to provoke and exemplify the necessity for convicted, innovative, intelligent design approaches for the rehabilitation and future development of the built environment. As a test for the ideology, this thesis provides precedent studies representing past and present examples of highly innovated projects; analyzed as either already of a permanent quality or as executing design intelligence and construction practices in line with achieving permanent quality. As a final test of the ideology, and re-evaluation for the objective methodology, this thesis proposes a program and project design for a new library/learning center extension from the already existing Renne Library located on the campus of Montana State University. The design of a new quasi library/learning center has been chosen as the design problem for testing this methodology because of the current change and redefinition that both of these institutions (traditional libraries and universities) are presently experiencing. As a result of the project design and program development adaptations to the permanence value design methodology have been included, and a focus on four separate objectives have been realized as being critical values for permanent minded design.

1. PREFACE

The end of the twentieth century and the beginning of the twenty-first century has continued a trend as a self-centered era focused on the acceleration of production and commerce. The continual desire for increased revenue, the nature of economic driven society, has led global markets on a rabid search for increased profit, too often leading to the commoditization of unwarranted disciplines. Modern architecture and the design of the built environment as a whole has become an example. With less respect and knowledge of the discipline from current society, the discipline has lost its keep as a self-sufficient market. In an attempt to retain integrity, design firms have been forced to sell out to the current capitalist markets as another form of commodity and means to generate revenue. As a commodity, unwillingly in competition to fulfill immediate needs quickly and cheaply, architecture and related fields have been left with no other choice than to sacrifice critical values to time and budget restrictions; sadly leading to much of the current demise seen in the built environment.

In the essay *Less for Less Yet: On Architecture's Value(s) in the Marketplace*, author Michael Benedikt focuses on these realities and creates a visualization which illustrates the relationship of current marketplace issues directly to the devaluation of modern architecture. He states, "And so the economizing continues, round after round, the average architect delivering less and so being asked to deliver less for less yet: three-dimensional shadows of real buildings."¹ Benedikt exemplifies that architecture fallen

¹ Michael Benedikt, "Less for Less Yet: On Architecture's Value(s) in the Marketplace," in *Commodification and Spectacle in Architecture*, 8-21, ed. William S. Saunders (Minneapolis, MN: University of Minnesota Press, 2005), 15.

into current marketplace demands has become nothing more than “shadows” of something real; expressing that contemporary commoditized building has not held up to historic values of true architecture, but has become simply a vague shape reminiscent of reality. In the essay *Junkspace*, world renowned Dutch architect Rem Koolhaas describes the current environment as literal junk—“space-junk [...] human debris that litters the universe, [...] the residue man leaves on the planet.”² Koolhaas in his perpetual critique of the current era defines and develops on “Junkspace” in every realm of existence. Frustrated, Koolhaas struggles with society’s self-centered economic outlook and understood choice for the devastation of the environment.

Benedikt and Koolhaas recognize significant concerns for the current era’s development of the built environment. Values that have been held at the highest regards through time have become lost to financial insecurity, and the commoditization of architecture. The design of architecture cannot and should not compete with the ever changing commodities of the global market. Environmental design is not the same as the design of many of the successful “hot” commodities of today’s world. Luis Fernandez-Galiano supports this in the essay *Spectacle and Its Discontents; or, The Elusive Joys of Architainment*, providing an example stating “Architectural images may be scoring well in the game of fashion, a game whose only rule is that today’s big thing is tomorrow’s big yawn, but for a discipline that yearns for permanence, those goals can lead to nothing but an endgame.”³ The value of architecture is of a different nature than that of technology,

² Rem Koolhaas, “Junkspace,” in *Obsolescence*, 175-190, (MIT Press, Spring 2002), 175-190.

³ Luis Fernandez-Galiano, “Spectacle and Its Discontents; or, The Elusive Joys of Architainment,” in *Commodification and Spectacle in Architecture*, 1-7, ed. William S. Saunders (Minneapolis, MN: University of Minnesota Press, 2005), 5.

entertainment, media, fashion or other thriving commodities in today's market. Cell phones, iPods, laptops, cars, clothes, movies, and other "hot" commodities hold far different value and impact on society. As commodities, the end goal and success of these items is their ever-changing, always advancing nature. Far different than that of architecture, as Galiano expresses, architecture is "a discipline that yearns for permanence."⁴ The design and development of architecture that is valuable with the end goal of being responsible and successful in its design requires incredible amounts of time, resources, money, and labor. Architecture requires a commitment to design that cannot always be changing or sought after to change, instead its permanence needs to be embraced by current culture and the design of the built environment needs to be conscientious of this reality. Even in current times, architecture is one discipline which should not be forced down the economic track as a commodity. When it is, its value becomes stifled, and all that is left are the complacent "shadows" of architecture and "Junkspace" of the current environment.

Architecture has held significant value throughout history. Entire empires are remembered by architectural advancements, i.e. the Egyptians, Greeks and Romans. Yet in contemporary times, the value of architecture is losing its status. Accelerated life has forced architecture to become something that it is not, a commodity. A commodity that is not representative of architecture's true value to society. Successful architecture is of a timeless nature, for it possesses a unique ability to increase the connections among people, and between people and their environments. Successful architecture provides a means for problem solving; it is the space where questions can be stimulated and the

⁴ Ibid.

place where answers are discovered. Built as a path between man and environment, architecture creates space which holds people, allowing for relationships to exist, life to flourish, and culture to progress. As the accelerated lifestyles of today's era attempts to compromise architectural values for the future, it is critical to be convicted in the discovery of new solutions, and to re-evaluate, and re-instates conscientious design values which have proven permanent and critical for the development of societies throughout time.

2. INTRODUCTION

Thesis Intent: Introducing Permanence

The intent of this thesis is to examine and make a statement towards the design of architecture based on value for the twenty-first century. As part of the process, the thesis explores values acted upon throughout history and proposes a methodology for understanding how certain architecture has earned timeless qualities which endure in both a physical and abstract sense. The goal of this thesis is the proposal and testing of new objectives for the design of architecture and the built environment; objectives based from past values that have been re-evaluated and reinstated in a manner which leads towards continual progression of quality architecture for the current and future era. A return to value-based design is necessary for contemporary architecture. On a whole, current society has been victim to the degradation of design values. Much of current architecture has forgotten its place, integrity, and its responsibility to the continued development of genuine design which connects people to people and people to environment --connections that are critical in the continual development of culture. As a means to re-evaluate and reinstate these virtues of design the focus of this thesis is to evaluate one core value: the value of permanence. Permanence is a pertinent value in architecture --a value that is a foundation to many others-- and has meaning in both the architectural realm and the outside world. The value of permanence will be used as a link between the two, and further as a link to help improve connections among people, and between people and their environments. As a core value, the principles of permanence can be sought after as

an end goal to re-evaluate standards that have been displaced, and establish new innovative virtues for contemporary design.

The definition of the word *permanence* as found in the dictionary is: 1) the fact or condition of being permanent, abiding, or fixed; indeterminately long-continued existence, operation, tenure, or the like. and 2) the quality of being permanent, enduring or fixed; abidingness, or perpetualness.⁵ The same source defines the root word *permanent* as “continuing or enduring in the same state, status, place or the like; [...] not temporary or transient.”⁶ The word permanent is profound in meaning, derived from the Latin term *permanentem*. The literal translation of the word is to remain, endure, continue, and stay to the end, all of which are translations highlighting the significance of the principle of permanence as a value.⁷ The idea of permanence in architecture is ancient and timeless. Vitruvius, often considered to be the first architect, wrote in his book *De Architectura* commonly known as *The Ten Books on Architecture*, that three values of architectural structure: *Firmitas*, *Utilitas*, and *Venustas*, translated as firmness, commodity and delight, must be withheld in successful design. The first *Firmitas*, or firmness, references the idea of permanence as being strong, durable, and long lasting.⁸ As Vitruvius had his three values of architectural structure, eighteenth century theorist John Ruskin has his seven lamps of architectural principles. In his extended essay *The*

⁵ William A. Neilson, Thomas A. Knott, and Paul W. Carhart. Eds., *Webster's New International Dictionary of the English Language: Second Edition Unabridged* (Springfield, Mass: G.&C. Merriam Co., 1943), 1824.

⁶ *Ibid.*, 1824.

⁷ "Online Etymology Dictionary."

2001. [http://www.etymonline.com/index.php?search=Permanence&search mode=none](http://www.etymonline.com/index.php?search=Permanence&search%20mode=none) (accessed 03/12/2010).

⁸ Ingrid D. Rowland, *Vitruvius: Ten Books on Architecture* (New York: Cambridge University Press, 1999), 26.

Seven Lamps of Architecture, Ruskin elaborated on seven demands that good architecture must meet. Ruskin's Sixth Lamp, The Lamp of Memory, discusses concepts of permanence, sharing what had concerned him as a witness to a changing era. In Ruskin's 27th Aphorism he discusses permanence through his writings about memory, stating:

And if indeed there be any profit in our knowledge of the past, or any joy in the thought of being remembered hereafter, which can give strength to present exertion, or patience to present endurance, there are two duties respecting national architecture whose importance it is impossible to overrate: the first, to render the architecture of the day, historical: and, the second, to preserve, as the most precious of inheritances, that of past ages.⁹

This quote exemplifies Ruskin's conviction that memory is held through the longevity of architecture and its sacred nature through time. He felt that architecture should be regarded with the highest respect and should not be altered. He believed this because he found architecture to be the work of man's soul through the doings of his hands, work that was not just done for his own but for the future as well. Ruskin continues:

Therefore, when we build, let us think that we build forever. Let it not be for present delight, nor for present use alone; let it be such work that our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands have touched them, and that man will say as they look upon the labor and wrought substance of them, "See! this our fathers did for us."¹⁰

Ruskin, who errs on the side of extreme, believes that architecture should be built to remain forever, never being altered or changed. He considers the glory of a building to be

⁹ John Ruskin, *The Seven Lamps of Architecture* (New York: Thomas Y. Crowell & Company, 1880), 235.

¹⁰ *Ibid.*, 245.

found in its age, and what he refers to as the “voicefulness” of its walls.¹¹ He believes that the stories and life of a place are what create value in architecture, that architecture must be built to be permanent and desired to be occupied forever to be of quality.

Vitruvius and Ruskin share values in design that are timeless. They both discuss a purpose for architecture that is dependent on the quality of permanence. Permanence created through a physical lasting nature which provides necessary time for connections between people, and people and the walls/materiality of the architecture to occur.

Present day author and architect, Michael Benedikt writes in his book *For An Architecture of Reality*, that “we count upon our buildings to form the stable matrix of our lives, to protect us, to stand up to us, to give us addresses, and not to be made of mirrors. Buildings are what one might call ‘primary objects’ necessarily permanent and largely impassive.” Benedikt goes on to say that, “We should not begin to lose them to the ‘communicators’-the directors and actors and musicians, politicians [...] and to whom with an undying interest in telling us what we want to hear, showing us what we want to see and keeping us tuned into the collective dream [...] will loosen us even further from the possibility of an architecture grounded in fact and a sense of the necessary.”¹²

Benedikt, a contemporary author, writes about the realities of architecture and the values that need to remain in order to withhold consistency in great design for the current age. Reading Benedikt’s writing it is clear that the quality of permanence needs to remain a crucial part of contemporary design value. The concept of permanence provides conviction in design. It bestows the desire for great architecture to be built to service the

¹¹ Ibid., 246.

¹² Michael Benedikt, *For an Architecture of Reality* (New York: Lumen Books, 1997), 14.

needs of society, and designed for the highest quality of life. Conviction towards design is mandatory for a designer's performance. It holds a designer accountable through time. Without conviction, quality is virtually impossible to achieve, but with it, respected work can be generated and maintained through time.

The 1979 publishing of architect and theorist Christopher Alexander's book, *A Timeless Way of Building*, brought about a new reference for the design of the built environment for the late twentieth century. Providing a qualitative approach for perfection of design, Alexander's text exemplifies his method for viewing the world and designing the built environment as a contiguous language, never separating the qualities of life, natural and humanistic, from the design and building of the environment.¹³ The text elaborates on Alexander's methodology, which he refers to as the "pattern language," as a process to achieve the highest quality of design; a quality that he believes is indefinable, so refers to as, "the quality without a name."¹⁴ Alexander's text is centered on the notion of reaching this quality, and is broken into three interrelated sections for understanding and achieving "timeless" design that is of this essence. The three sections are: *The Quality*, describing what the "quality without a name" truly is; *The Gate*, a section which develops the methodology of a "pattern language," a series of systematic guidelines that must be followed in order to reach "the quality without a name;" and *The Way*, a section on the practice of the "timeless way," needed for when the process of the "quality" is reached.¹⁵

¹³ Christopher Alexander, *A Timeless Way of Building* (New York: Oxford University Press, 1979), 354-358.

¹⁴ Christopher Alexander, *A Timeless Way of Building* (New York: Oxford University Press, 1979), ix-xi.

¹⁵ *Ibid*, ix-xv.

As a whole, Alexander's book is set around the management of building, and the process for achieving "timeless" or permanent design. Specifically, in the third section of the book, *The Way*, Alexander references a model of constant flux as he goes about relating the ever changing, yet permanent quality of the natural environment, to the continual process of flux seen in the built environment. Depicting the manner in which architecture is always variant, yet always permanent. Alexander writes:

An organism, which seems at first sight like a static thing, is in fact a constant flux of processes. [...] Cells are born, and die, unceasingly. The organism which exists today is made of different materials from the organism of yesterday. It preserves those broad invariants, which define its character, within the flux. Yet even these are changing slowly, over time. So, what there is, in fact, is a perpetual flux, which is reborn and reshaped every day. [...] A town or building also is a constant flux of process. If we visit London or New York today, it is a different thing from what it was five years ago. As in an organism, there is a process going on which shapes new buildings constantly, destroys the old, replaces and rebuilds and modifies the fabric. But, again, just as in an organism, there is also something which remain the same there is an invariant continuity behind the flux, a character, a "thing," a "structure," which remains the same. [...] And it is the pattern language which, like the genes distributed throughout the cells, makes certain that there is this structure, this invariant permanency, in the flux of things, so that the building or the town stays whole.¹⁶

Alexander's concept of permanence is yet again from a different scope, illustrating a different view from that of Vitruvius, Ruskin and Benedict. Alexander references a more abstract depiction of the topic, one that initially seems to be about the impermanence of building, as provided in his writings about the destroying of old, replacing, and continually modifying the built fabric. The physical aspects of change referred to in the text are impermanent. Alexander recognizes the changing identity of the natural

¹⁶ Christopher Alexander, *A Timeless Way of Building* (New York: Oxford University Press, 1979), 356-357.

environment and relates its adaptive qualities to the impermanent and adaptive character of the built environment by illustrating that the true quality of permanence in both the natural and built environment is the abstract essence and unique character allowing these environments to adapt and survive through time. As exhibited through the different texts and authors, the term permanence is diverse in meaning and application. This is why the term can be viewed as a core value. For the different concepts of permanence have not changed as a value in design since the birth of formal architecture, but have remained in the mainstream through the multitude of eras, and now currently need to be remembered and reinstated as pertinent values for contemporary design.

It is important that meaningful values and lessons of past cultures are reevaluated and reinstated. It is not uncommon for important lessons to be neglected and in need of refreshment and reintegration for contemporary cultures. Historically, great empires and societies have become consumed by advanced breakthroughs of their own time and in turn digressed from their own value systems, often committing the same mistakes as those in the past. It is in the times of great progression that important values are easily forgotten, but also in these times that the recollection of values is the most necessary, and the potential for great advancement is highest.

The Renaissance of fourteenth-century Europe is a primary example of this. The Renaissance was a time of rebirth throughout Europe when a return to classical sources reestablished a commitment to intellectual, political and social advancements, leading to great gains in the fields of math, science, philosophy and the certainly the arts. The Renaissance, rooted in a return to classical ideology, caused great cultural advancement.

The time period has even been seen as a bridge between the Middle and Modern Ages. Prior to the Renaissance, the Middle Ages had become an era that had deviated from the path of classical learning and had become anguished by depopulation, deurbanization, and increased Barbarian invasion. The returned commitment to classical value during the Renaissance created a spark that ignited European culture from the fourteenth to the seventeenth century, establishing the advancements that led into the Modern Era.¹⁷ Remembering and building from past trails and resolutions that cultures have gone through, such as the Renaissance, is pertinent in the continual advancement of contemporary society.

Currently, society is rapidly accelerating through an era that has been deemed the “The Information Age”. It is an era defined by gigabyte technology, never ending mass media, and continual entertainment through the constant stimulation provided by cell phones, music players, and handheld computers. Today’s world is not facing an era of depopulation or deurbanization, but one of over population and urban sprawl. Interstate highways, fast food chains, strip malls and big box stores are consuming the built environment. It is a changing time, one of exponential acceleration. As the world becomes increasingly rushed and caught up in self-centered economics it is more important than ever to remember the values that have been tested through history. It is time to recognize something twentieth-century science has taught. We truly are what we eat. What is put into the world now, as people, as members of this society, is what is going to come out. Actions taken now are the actions that will define this era. Impacts on

¹⁷ Encyclopaedia Britannica, “Renaissance,”
<http://www.britannica.com/EBchecked/topic/497731/Renaissance>
(accessed April 23, 2010).

the world now will be the impacts on the world forever. For this reason, in this accelerated time, it is most critical to remember, rely, and reinstate the value systems that have proven vital in history. Value systems rooted in the goal of furthering connections among people, and between people to their environments. The design of architecture and the built environment is one field where these values must be upheld. The built environment makes up a vast amount of the ground on which these connections are made, and is the space in which economic explosion is happening. Now more than ever, values in design need to be held to their highest. Design values such as permanence necessitate re-evaluation and re-integration --not in a manner which will stifle economic and commercial expansion but in a manner that will rejuvenate a relationship between man and environment. If continual economic growth is desired, the highest quality of design intelligence is demanded; there cannot be one without the other. Remember, we are what we eat, and in a world of nonstop development and construction we absolutely become and are defined by what we build.

The Importance of Value Architecture

The phrase “you are what you eat” has become a common and very accurate cliché of the nutrition/whole foods market. Research has shown, and the general public has accepted, that as humans we really are what we eat. Ingesting large amounts of fatty foods causes our bodies to possess large amounts of fatty tissue. Filling our bodies with vitamin and nutrient-enriched foods provides our bodies with high levels of vitamins and nutrients. Yet, the phrase “you are what you eat” does more than simply point out the physical implications of diets. It also is an identifier of different cultures and lifestyles,

and even affects a person's mood. Diverse eating styles and food traditions depict and reflect on different cultures' way of life. Traditional foods and food ceremonies identify cultural values, location and history. And a variety of foods have been proven to affect brain chemistry through the stimulation of neurotransmitters, greatly changing how one acts and feels. The expression, "you are what you eat" carries much more meaning than the initial cliché takes advantage of. A similar expression, "we are what we build" has not yet earned mainstream cliché status, or for that matter been publicly voiced until now, but for the future success of the built environment needs to reach mainstream status fast. It's easy to initially admit or accept the concept of "being what we build," but a true, in-depth understanding and reflection of this value is often over looked and not acted upon.

A person becomes who they are because of the environment that they live in, both physically and emotionally. Whether or not it is of conscious knowledge we are what we build. In the essay, "Andy Goldsworthy's Art as a Cultural Measure" author Lenore Metrick takes from William Ray's book *The Logic of Culture* where Ray explains two interdependent cultural "modalities" which determine identity. Ray distinguishes individual struggles from communal assertion as two primary cultural identifiers. Ray explains the first as individual struggles, or those struggles which push one's self towards individual perfection, in turn creating identity. But more importantly he describes communal assertion by saying, "Culture as communal identity tells us we become who we are in spite of ourselves, effortlessly and inexorably, as we unconsciously internalize

our community's habits of thought, values, and forms of behavior."¹⁸ Ray, an expert on cultural identity explains that individual identity is not claimed by individual struggles and internal feats alone, but that an individual's identity unconsciously absorbs community thoughts, values and behaviors simply by existing in a place. In *A Timeless Way of Building*, Alexander supports Rays by stating, "The fact is, a person is so far formed by his surroundings that his state of harmony depends entirely on his harmony with his surroundings."¹⁹ In the twenty-first century, society as a whole has had the tendency of overlooking valued design principles for much of the design of the built environment. Whether it is the high-speed economic drive of current society and the obsession for profit, or any other reasons, the design of architecture and the built environment at large have seen a decrease of commitment and value. As Alexander and Ray illustrate in their texts this is an issue of incredible relevance seeing as though quality of life is defined by the quality of spaces in which life is lived.

As a culture, choosing to build and surround society in poor architecture, built in a rush to satisfy immediate needs and desires for money, without giving an opportunity for value driven design to take place, has an effect no different than that on one's body when filling it full of fast food burgers and convenience store garbage. If society's desire is to have communities formed around strong values, then as a culture there is a need to build and design communities with strong values. If the aspiration is to continue to progress as an economic force, then there is a need to build an environment that is going to provide

¹⁸ Lenore, Metrick. "Andy Goldsworthy's Art as a Cultural Measure," in *(Im)permanence: Cultures in/out of Time*, edited by Judith Schachter, and Stephen Brockmann. Boston: Twayne Publishers, 2008, 166.

¹⁹ Christopher Alexander, *A Timeless Way of Building* (New York: Oxford University Press, 1979), 106.

the necessary factors for the continued pursuit of economic growth. As both Ray and Alexander exhibited, the environment truly does determine cultural identity, as a culture the choice is no others. It is time to step up, recognize issues, and make a move for solutions, time to recognize the impacts that current building practices on a whole are having on the definition of current culture.

An annual physical will inform that, “we are what we eat” but society is in need of fearless, convicted individuals and “value driven design” to lead by example, showing that we are what we build. Benedict writes in *For an Architecture of Reality*:

A touch on our shoulder: we are here. So familiar is the ring of truth, the tenor of reality, the ‘bite and sweet gravity’ (Sontag) of things real and beautiful that if we are, most of us, as I surmise, fairly expert at discerning what is really real from what is not, then there lies here a tragedy of some proportion: we will not claim the expertise for fear of appearing unworldly.²⁰

The quote by Benedict expresses a tragedy of society. Benedict writes that society actually knows what is beautiful but is too afraid, out of fear of being ‘unworldly’, to share their views. A fearless conviction for “value design” is needed for the future of the built environment. In this era of progression, self-centeredness has too often become a way of life. Far too many people have become overly concerned with their own desired way of living, and means of survival, that any conviction towards quality in culture on a whole has been completely lost.

Yet, as self-centered individuals of current society it is critical to remember that identity is inevitably defined by culture and environment on a whole. The cities, towns, communities, metropolitan areas, rural country sides, suburbs, parks, transportation

²⁰ Michael Benedikt, *For an Architecture of Reality* (New York: Lumen Books, 1997), 22.

systems, pollution, technology, natural environments, and all, are unavoidable identifiers of current culture and individual identity. The beauty of the situation is that society is in control of all of this, and in turn is in control of its own cultural and individual identity. What, where and how the built environment exists is in the hands of society. If there is a desire for a culture built on values, on the success of the economy, on profiteering, on material and resource exploration and on simply general human advancement, then as a people of this era there is a need to design a built environment with strong architectural principles that are going to support these activities. -- “We are what we eat” and we are what we build -- If society’s desire is to live well then it must reevaluate current practices and reestablish conviction and values in the design of its own environment.

3. THEORETICAL FRAMEWORK

Permanence Value Design Philosophy

The idea of permanence as a value—as an end goal—is a critical value in the design community. It's a value which has been critical in the past, but too often forgotten in the present; a value that is a core value, that holds up and structures other values in design the way the roots of a tree structure and hold up the body of the tree. The intent of this thesis is to do more than simply recognize that permanence is a value; it's also to prove a theory that conviction towards permanence in design will enforce the creation of higher quality architecture. The goal of this thesis is to propose a methodology for design that develops an understanding that will initiate a system for acting upon values leading to architecture that is conscientious, that embraces its existence and its future, and helps improve interconnectedness among people. The result is an architecture that is owned by culture, that is the product of societies understanding and desired identity. From this point on, this methodology or convicted ideology will be most often referred to as, *permanence value design philosophy*.

In brief, permanence value design philosophy is a methodology for design with the end goal of developing architecture of the highest caliber. Permanence value promotes design for the built environment that will remain through time and presents itself enduring. In order to make sense of this approach, it is easiest to work conceptually backwards from the end goal of permanence, the root. The rest of the essay as it presents itself will explain further distinctions and explanations supporting the buildup of the

ideology. Working backwards, in short, the basis for this idea is this: Permanence, in the sense of this writing implies endurance and a lasting nature; in order for something to endure it must be something that has value; if it has value that means it must be something people care about and in turn care for; the reason something is cared about and cared for is that it is of quality or carries a certain quality. The questions then become: What is quality? How is quality achieved? The concept of permanence value design philosophy formulates an approach for value design, based off of responses and answers to these questions. The following essay elaborates on the individual connections that have been made to generate the methodology used in the conception of permanence value design philosophy.

Permanence

As stated in the intro to this essay, conceptually it is easiest to trace backwards through this methodology. So starting with the end goal, permanence in the sense of this writing is most closely identified with the word “endurance.” Initial perception of the word permanence leads to the words root, permanent, which makes it hard to avoid the notion of lasting forever. The built form of architecture cannot and should not last forever. Architecture as construct emplaces itself in the natural environment, and with this it is in the hands of nature’s forces. Curator Jan Schall in her essay, *Curating Ephemera: Responsibility and Reality* makes it very clear when she declares, “—Entropy is a fact of nature. Nothing is permanent.”²¹ Schall’s quote exemplifies the authority of nature, expressing the power of continual change and disorder in nature which never

²¹Jan, Schall, “Curating Ephemera: Responsibility and Reality,” in *(Im)permanence: Cultures in/out of Time*, edited by Judith Schachter, and Stephen Brockmann. Boston: Twayne Publishers, 2008, 166.

allows for permanence to exist. Christopher Alexander approaches the subject through a different lens, one driven by his own design convictions and search for an architecture that achieves the —quality without a name. He writes about architectural materials and the lifecycle of architecture, a consciousness of beginning and end. Alexander writes:

But to reach the quality without a name, a building must be made, at least in part, of those materials which age and crumble. Soft tile and brick, soft plaster, fading coats of paint, canvas which has been bleached a little and torn by the wind, ...fruit, dropping on the paths, and being crushed by people walking over it, grass growing in the cracks between the stones, an old chair, patched, and painted, to increase its comfort...None of this can happen in a world which lasts forever. [...] The character of nature can't arise without the presence and the consciousness of death.²²

Alexander's writings tell about patterns and sequences that need to be followed in the design of buildings in order to reach the —quality without a name. He sees the patterns in nature as the guide for the development of successful conscientious design. Alexander believes the design of buildings that are fluid and relaxed in their geometries simulate design in nature and are most alive. But he also believes that part of being alive is the understanding of nature's lifecycle and acceptance of death. Alexander writes, "This is the character of nature. But its fluidity, its roughness, its irregularity, will not be true, unless it is made in the knowledge that it is going to die."²³ Recognizing a building's lifetime and acceptance of an end is crucial; great architecture, great design, great innovations in the physical sense will have its time and pass on but great architecture, great design, great innovation will never die, for its essence will eternally endure in a timeless way through its memories and the lessons left behind. In this regard,

²² Christopher Alexander, *A Timeless Way of Building* (New York: Oxford University Press, 1979), 153.

²³ *Ibid.*, 152.

permanence, as the end goal of permanence value design philosophy, is not sought after as physically remaining forever. Instead the goal of this final tier is to be of a quality so successful that the essence of its design will endure in a timeless manner as memory, revisited thought, remembering the quality and essence of the design forever, the highest and most significant level of permanence.

Endurance

As stated above the term endure in this writing identifies very closely with the concept of permanence. Of any of the terms used in this methodology, it is the most straight forward and normative in application, yet due to the realm of the writing it is easy to solely connect the physical application of the word and disregard the more abstract meanings that it elicits. The physical nature of the terminology in this text is important, as it is a document persisting in a conviction for increased quality in the design of the built environment, a conception that is intuitively physical in reality. Yet the value of the philosophy is created in the abstract nature and relationship of the chosen words assembled together. The meaning that is created when these words are linked together as a unified assembly becomes the depth of this concept, the root system of the theory, structuring the body of the philosophy, and holding up the end goal. All of the words individually— such as “endure”—hold value as relevant qualities or concepts in relation to their physical nature, but their true power and most profound essence comes from the abstract connection as one assembly, and one philosophy.

The relevance of the word endure, and its counterparts endurance/enduring, is tri-fold in its connection to this methodology. In this approach there are two physical

concepts that go along with the word endure, The first being very straightforward, referencing the ideas of duration, a time period of lasting, and remaining; simply acknowledging the long lasting physical nature of architecture that stands up and functions over long periods of time. Alois Riegl late 19th century art historian coined the classification—“age-value” which matches very directly to describe the first physical quality of the term endure for this writing. Riegl in his text *A Modern Cult of Monuments: Its Character and Its Origin* developed the — “age-value” classification in order to describe the simplest and least significant manner in which meaning and historical development of monuments could be classified prior to the modern period. —Age-value to Riegl was a necessary but an unrefined classification form, for anything that had remained through time, relevant to culture or not, was regarded as having —age-value.”²⁴ It is critical in architecture to recognize the same way, it is relevant to value architecture that has endured through time, yet it is equally important to evaluate why a piece of architecture has survived, or as Riegl would say, to examine its — “historic value”.

Being structured from the basis of age value the quality of historic value illustrates the second physical conception of the term endure and crosses the line into a more abstract sense. Historic value is inclusive of age-value as a quality that is defined by its existence through time, this being its connection to the physical understanding of the word, but further classified as historic because it possesses a presence that has been recognized as significant in the further progression of culture. The second meaning of the

²⁴ Alois, Riegl. “The Modern Cult of Monuments: Its Character and Its Origin,” transl. Forster and Ghirardo, in *Oppositions* 25 (Fall 1982), 21-56.

term endure does much more than simply exist through time, but it exists and is valued for existing because of the lessons that can be learned from it, and the value in understanding why it was able to exist for so long.²⁵ These lessons are much more important than the physical nature of the word alone. Ruskin in his *Lamp of Memory* writes at length about this concept of —age-value crossing into —historic:

For, indeed the greatest glory of a building is not in its stones, nor in its gold. Its glory is in its age, and that deep sense of voicefulness, of stern watching, of mysterious sympathy, nay, even of approval or condemnation, which we feel in the walls that have long been washed by the passing waves of humanity. It is in their lasting witness against men, in their quiet contrast with the transitional character of all things, in the strength which, through the lapse of seasons and times, and the decline and birth of dynasties, and the changing of the face of the earth, and of the limits of the sea, maintains its sculptured shapeliness for a time insuperable, connects forgotten and following ages with each other, and half constitutes the identity, as it concentrates the sympathy, of nations: it is in that golden stain of time, that we are to look for real light, and color, and preciousness of architecture; and its not until a building has assumed this character, till it has been intrusted with the fame, and hallowed by the deeds of men, till its walls have been witness of suffering, and its pillars rise out of the shadows of death, that its existence, more lasting as it is than that of the natural objects of the world around it, can be gifted with even so much as these possess, of language and of life.²⁶

Ruskin's writing goes far beyond the simple concept of successful architecture having age. He describes the qualities, and deep essence inscribed in a space through history. Ruskin continues to share his convictions in his text, later writing that a building should not even be recognized as architecture or in its "prime until four or five centuries have passed over it."²⁷ As shown earlier in this writing, Ruskin is extreme in his convictions, but there is incredible value in his words. Ruskin's words illustrate the transition that can

²⁵ Ibid., 21-56.

²⁶ John Ruskin, *The Seven Lamps of Architecture* (New York: Thomas Y. Crowell & Company, 1880), 246.

²⁷ Ibid., 255.

be made going from the physical nature of “endure,” primarily meaning “to last,” to the more abstract notions that the counterpart words “endurance” and “endures” exhibit.

By activating a notion of memory and experience as Ruskin does in his convictions for architecture, a deeper abstract meaning is brought to the word endure. The counterpart words endurance and endures have a further conceptual quality to them when thought of outside the physical realm. In today’s world the term endure has very little or no physical representation; in some regards this is a problem, in others, it is simply a reality of the time. The current trend in impermanence among architecture leads to, including but not limited to; wasted material, energy, money and time. Even more of a concern for architecture is that the lack of endurance physically, in turn affects the abstract value of endurance for the field, and is destructive for its progression. As Ruskin touched on, much of architecture’s wonder comes from the experience, life and sense of place as it is created through time. This is why it is important to re-analyze and reinstate quality values, re-explore what it means for something to last a decade versus a century. We certainly live in a changing time, where values and lifecycles are turning over much faster. The quality of endurance is inevitably going to be affected by this change. In some situations it is fine, but in others the consequences of the trends need to be analyzed and an understanding of effects of endurance both in the physical and abstract state need to be recognized.

4. OBJECTIVES

The final portion of the Theoretical Framework brings about a number of objectives that desire to be recognized, and specified for the exploration of permanence value design philosophy. These objectives are not a series of rules that must be followed, but are guidelines that come to existence through the development and understanding of the ideology. It is a wish that there could exist a straightforward set of “go to rules” that when followed left a trail of consequences that were brilliant, conscientious design solutions that did everything asked for of the designing of the built environment. But, simply that is not possible, what is offered is a group of objectives that are meant to stimulate convictions for design methodologies based from the past, present and futuristic goals which grow from a desire to create architecture and design for the built environment that is long lasting in both a physical and mental sense.

Responsive: Permanent architecture responds to its surroundings, to site conditions, climate and seasonal changes, to the program it is used for and the people it is being used by. It is designed pragmatically, reaching all initial programmatic and spatial goals, yet has the awareness of future change and need for adaptability in mind. Enduring architecture creates opportunities for foreseen and unforeseen opportunities/interaction to exist.

Connective: Permanent architecture connects program and building together. It is designed and built with care and through a methodical approach providing effective dialogue between architecture and site.

Embedded: Permanent architecture is secured in the surrounding environment. It becomes part of the environment, connecting people with people and people with place. It responds to human senses creating sensory experiences, memory and identity from the use of different materials as well as the allocation of differing programmatic spaces.

Resistant: Permanent architecture resists extinction physically by being well built with good lifecycle costs. It continues to endure because it is built from materials which respond to the goals of permanent architecture. Permanent architecture resists replacement because it effectively meets the needs of its users, creates its own identity, and is designed with an awareness of a changing future as well as strategy to adapt/grow and endure anyways.

The objectives are presented to be a spine; to be used as a backbone of support for the stimulation of individual design methodologies specific for each problem, yet based on conviction supporting permanence value design philosophy, illustrating a desire to create conscientious architecture for the built environment.

5. PRECEDENT STUDIES

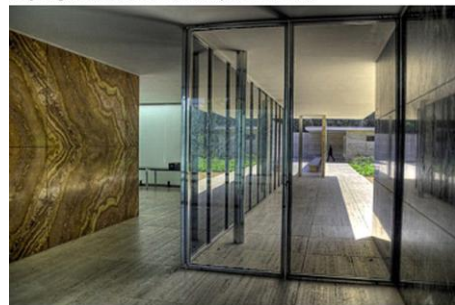
Barcelona Pavilion

The Barcelona Pavilion is located in Barcelona Spain, and was designed by architect Ludwig Mies van der Rhoe. Project Summary: The Barcelona Pavilion was the German Pavilion for the 1929 International Exposition in Barcelona, Spain. The project was a small ceremonial hall, designed for no other functional purpose then the reception

of the King, and Queen of Spain as they signed the “Golden Book” officially opening the exposition. No functional program determined or influenced the buildings appearance, and none of the interior was taken up by exhibits, simply just functional furniture. The pavilion itself was the exhibition, rather than being a pavilion holding an exhibition. The Barcelona Pavilion represents the purist form of High Modernism; the project was simply derived from a De Stijl-Elementarist open



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form aesthetic of over lapping planes floating in space, met by Corbusian Domino principle with floor and ceiling slabs supported by a grid of rigid cruciform piers between partition walls.²⁸ Mies built the project of the finest materials, simplest of forms and free flowing elegant space. Built on a travertine podium the Barcelona Pavilion allows a transverse passage of visitors up a small set of stairs, past a beautiful reflection pool,

²⁸ Marvin, Trachtenber, and Isabelle, Hyman. *Architecture*. Boston: Twayne Publishers, 2003.

through a series of free flowing spaces, directed by partition walls, and gracefully out on level ground.



Image_Left: <http://fineartpublicity.com/wp-content/uploads/2009/04/barcelona-pavilion.jpg>
 Image_Right: <http://www.flickr.com/photos/gregoroni/4179618593/>

As part of the International Exposition the Barcelona Pavilion only existed for six months, after those six months the project was dismantled and sold off. Fifty four years later in 1983 the Mies van der Rohe foundation was constituted, recognizing the significance of the Barcelona Pavilion as a testament to 20th century modern architecture the foundation began reconstruction of the project on its original site. Completed in 1986 the reinstated Barcelona Pavilion has been exhaustively studied and has been a source of inspiration for the work of generations of architects all over the world.

Precedent Relevance

Mies van der Rohe's Barcelona Pavilion provides an interesting conversation about permanence, or what may be even better described as impermanence. The Barcelona Pavilion is a relevant piece of architecture for explaining and supporting the different meanings of permanence and endurance as discussed earlier in the theoretical framework. The Barcelona Pavilion is an example of a building that has survived the test of time in a unique way; it is a building whose permanence and endurance has been tested

over eighty years and today stands as a testimony to why. Yes, there are numerous other buildings that have survived long over eighty years, even thirty times as long, but the survival and existence of the Barcelona Pavilion is unique in its permanence, as it has endured strictly because of its character, essence of space, and continual impact on culture.

What makes the Barcelona Pavilion unique is its timeline over eighty one years. The Pavilion, being an exposition piece was built and intended to exist for only a short period. In the year after the International Exposition in 1929 the German pavilion was disassembled and the pieces, being made of very expensive materials, were sold and shipped off. During its year of existence the Pavilion was visited by thousands, but very little interest in it was ever spoken, few photographs were taken, and it left very little initial impact. Often it is thought that Mies's Pavilion must not have been seen by any who could recognize good from bad or in the case of the Barcelona Pavilion good from great. Sure enough though, this was not the case. Author Juan Pablo Bonta studied the history of the Pavilion in great length in his book *Architecture and its Interpretations: a study of expressive systems in architecture*. Bonta shares, "It was not only the journalists who overlooked Mies's Pavilion. Many of the most prestigious architectural critics and historians, some of whom later became known as the quasi-official chroniclers of the Modern Movement, were just as slow in realizing the pavilion's significance."²⁹ Bonta's text further provides descriptive analysis of Mies's building collected from a variety of sources written in 1929, the year the Pavilion was standing, all of which accurately

²⁹ Juan Pablo Bonta, *Architecture and its Interpretations: a study of expressive systems in architecture* (New York: Rizzoli International Publications, INC. 1979), 135.

describe the pavilions presence of space and obvious value.³⁰ Bonita proves that the Pavilion did not go unnoticed because it was unclear or indiscernible to the current culture, but went unnoticed because it was simply a head of the time.

The two images at the beginning of this interpretation are both photographs of Ludwig Mies van der Rohe's Barcelona Pavilion. The image on the left was taken in 1929 while the original Barcelona Pavilion built by Rohe was on site at International Exposition, and the image on the right is one taken around 80 years later of the replica building built back on its original site by the Mies van der Rohe foundation in 1986. An interesting dichotomy exists between the two images, a history, an account of permanence and endurance that was decades before its time.

The original Barcelona Pavilion's value went unrecognized for around two decades, it is not that it wasn't seen or understood, it was that it existed and then was gone, all before an era of true Modernism was developed and the value and technique of it was established. When historians, architects, critics, ect. look back on the Modern Era the simplicity, proportion, materiality and scale which Mies executed went without understanding because it was so progressive of its time. Bonita's book provides interpretation of this by explaining the construction and evaluation of a canon, or a fundamental principle, general rule or standard criteria. Bonita explains that although Mies's work was understood, and although the Modern Era was already developing in existence, a certain canon had been formed, certain standard criteria had been stated, and a fundamental principle of what Modernism was had been developed. Mies's Barcelona

³⁰ Juan Pablo Bonta, *Architecture and its Interpretations: a study of expressive systems in architecture* (New York: Rizzoli International Publications, INC. 1979), 139-140.

Pavilion did not fit into this preconceived canon; it was above the quality, value and understanding of the conceptualized Modern canon. So far ahead, that it took close to three decades for quality and value of Mies's work to be fully registered as the purest form of High Modernism. What is so amazing, and what the dichotomy between the two Pavilions truly represents is the understanding of space, the quality, and the presence in architecture that Mies was capable of. This is clearly shown in the honest analysis of the Pavilion's timeline and the recognition of an architecture that was able to be held in the minds of thousands but not fully understood, recognized and signified for decades. In a time like the current era understanding the essence, and the permanence of Mies's Pavilion needs to inspire designers to push the level of current disciplinary canons, not get caught in the current disregard for valued architecture but be convicted to architecture that can service people the way Mies's architecture has inspired designers for decades.

EPFL Rolex Learning Center

The EPFL Rolex Learning Center is located in Lausanne, Switzerland and designed by Kazuyo Sejima and Ryue Nishizawa/SANNA. Project Summary: beginning conceptual understanding of the projects program and goals led to the creation of the architecture's very unique form. Functioning as a laboratory for learning, part of the projects 20,000 sq meters of fluid space holds over 500,000 volumes, while in addition its organic form wraps around outdoor patios and undulates providing a wide variety of seamless network services, along with places for information gathering, social

interaction, study areas, auditoriums, restaurants, cafes, and many different outdoor spaces. Located at the

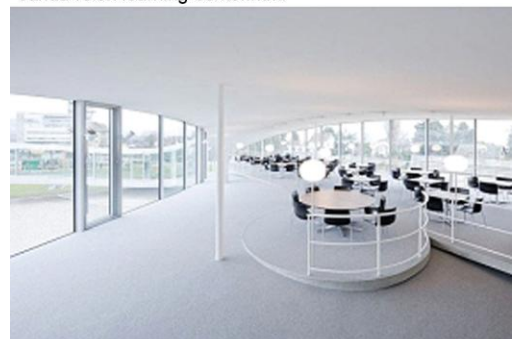
Ecole Polytechnique Fédérale de Lausanne in Switzerland is an ambitious institution very advanced and recognized throughout the world. With the design of this project the school was looking to achieve a flagship/point of entry for the campus. The goal of this design was to develop an educational space for everyone, not just the students of the school, but also the public. The approach for achieving this was to think of it as a park, creating spaces that provided the chance and opportunity for communication to start, avoiding any crossroads, and accentuating curved paths with the desire to create more diverse interactions. Located at the center of the EPFL campus, the Learning Center is a hub to the rest of the institution. It's very square plan, with parallel concrete undulating floors and roof lift the project off the ground, giving it a very light character and open air central entrance accessible from all sides, as well as providing opportunities for natural ventilation, day lighting, and acoustic separation.



http://static.dezeen.com/uploads/2010/02/dzn_Rolex-Learning-Centre-by-SANAA-11.jpg



<http://www.designboom.com/weblog/cat/9/view/9197/sanaa-rolex-learning-center.html>



<http://www.archdaily.com/53536/rolex-learning-center-sanaa-by-iwan-baan/18epfl-sanaa-10-01-5864>

Precedent Relevance

The EPFL Rolex learning center is a new piece of architecture, literally just finished and opened to the public on February 22, 2010. As any new design this project has been met with criticism. Criticism that is mainly focused on a concern for wasted space due to the designs curved nature and undulation of spaces. The continual ramping, raising the design up and down in space brings about concern for handicap accessibility as well as successful use of floor space for more than simply circulation.

Concerns and criticisms will always exist and time will define the success of this project but from an initial design scope and methodology, the Rolex Learning Center embodies the aims and philosophy that the EPFL desired and is true to the values and future goals/expectations that that the built environment must withhold to. The design of the Learning Center was incredibly thought out, involving an extensive amount of research and testing, developing a strong ideology for the project, Kazuyo Sejima and Ryue Nishizawa where able to design with thoughtful understanding, and strong conviction in order to meet the institute's goals. The architecture provides the opportunity for collaborative, cross-disciplinary interaction, while also offers flexible space for new technology and working methods to be absorbed as they come to life. The design of the building is a landmark; it emphasizes sociability, provides space for both public and private to interact and stimulates opportunity for informal encounters throughout varying disciplines.

The structure of the design also continues to push the advancement of architectural, engineering and construction fields. Revolutionary methods of engineering

and constructing were needed in the building of the continuous, parallel, three dimensional concrete shells that make up the design. Since the building is made up of a single structure, all the elements including the roof had to be strategically jointed and poured continuously to provide flexibility, in turn accommodating for any possible changes that could occur both naturally and structurally. In order to achieve the light, lifting character of the building by allowing it to span such great distances huge advancements in concrete structure and reinforcing were developed. Projects like the Learning Center which necessitate conscientious high quality craft not only better the built environment, but do more by pushing the continual progression of all disciplines involved.

Being completely new there is no way to determine the projects age value yet, but in regards to conceptual exploration, testing, and construction execution the Rolex Learning Center has provided itself with a variety of the components (objectives) necessary to be a conscientious piece of architecture for the built environment. A piece that will hopefully be recognized as exhibiting the “quality without a name” one which withheld to design values and now creates its own value and presence on the EPFL campus and in the community of Lausanne, Switzerland as well.

Seattle Central Library

The Seattle Central Library is located in Seattle, Washington and designed by architectural firms OMA and LMN. Project Summary: : In 1999 Dutch designer Rem Koolhaas and firm OMA (Office of Metropolitan Architecture) won the competition and

were hired to design Seattle’s new Central Library. Located in the heart of Seattle’s downtown, the Central Library is the flagship library of Seattle’s Public Library system, and a bold icon for the city. Ground breaking for this project didn’t happen until early 2002 after the proper removal and demolition of the existing library, and the official completion and inauguration to the public happened on May 23, 2004.



Images_both http://lmnarchitects.com/assets/work/seattle_public_library/images/1hi.jpg

For the design of the Central Library contemporary designer Rem Koolhaas teamed up with local Seattle architecture firm LMN to bring the city a revolution in design. By pushing the “norms” of what had been contemporary library design and establishing an entirely new ideology for understanding the purpose of a library in current time, OMA and LMN developed an architectural masterpiece that opened doors to entirely new thought processes for design. OMA/LMN design process for the new Seattle Public Library reevaluated what it meant to create public space, and what the institute of a library as public space meant for a current era. Their ambition was to “redefine the Library as an institution no longer exclusively dedicated to the book, but as an information store where all potent forms of media-new and old-are presented equally and

legibly.”³¹ They achieved this by initially moving through the buildings program combining like with like, and progressing along further by separating the collected data into two distinctions, five “stable” and four “unstable.” The “stable” represent the programmatic factors that are architecturally

designed for maximum, dedicated performance, but the “unstable” spaces are far more radical and connect between the Central Library’s “stable” spaces as trading floors where the library itself is able to inform and stimulate. This “unstable” interface created by

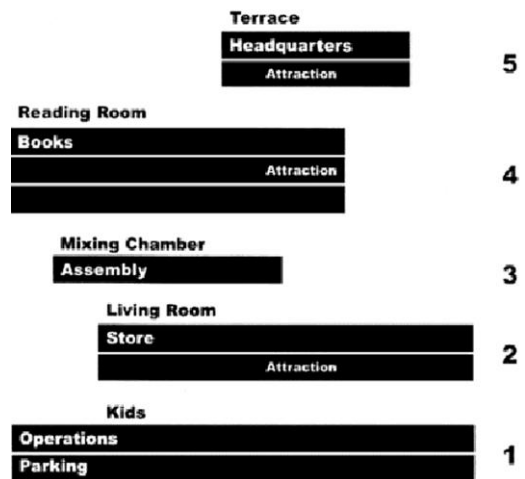


Diagram <http://www.spl.org/lfa/central/oma/OMABook1299/page38.html>

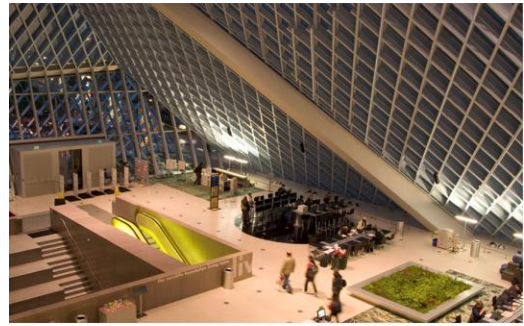
The Central Library is further developed around what they refer to as the “tailored flexibility” of spaces. A refined approach for organizing the library into spatial compartments dedicated to, and equipped for specific functions, but not excluding or inhibiting other compartments from their service. With this development the idea and names of the different public and service stations in the library were developed. The main ones being the: The Living Room, The Mixing Chamber, The Book Spiral, The Meeting Level, and the Reading Room. These five spaces are what truly define the essence and the aesthetic of the library. All of these spaces, flexible yet tailored, create dynamic levels and circulation as they transition in and out of one another creating separate distinction, yet increased unity and ease in the use of the facility. The living room, opening off of 5th Avenue, is one entrance to the library, and is very welcoming and inspiring to enter into. As a space with computers,

³¹ http://www.e-architect.co.uk/seattle/seattle_public_library.htm

magazines, fictional stacks, coffee shop and the book store the Living Room exhibits a very comfortable feeling, as its name assumes it would, and creates very important physical and visual connections to the rest of the building. From the living room bright colored circulation, (chartreuse and bright red) and defining signage, designed by Bruce Mau to help visitors connect architectural form with programmatic content, guide to either the Mixing Chamber, the main collection in the Book Spiral, down to the Children's Center, or up to a suspended box within the Living Room known as the Meeting Room. The Meeting room is most easily recognized by bright red stairs that peel away the wall to form curving volumes which house a number of meeting and conference rooms that look over the Living Room and incredible views of the city. Another set of stairs, also red and curving in nature connect the Meeting Rooms to the Mixing Chamber. The Mixing Chamber is a revolutionary concept for library design, located between the library's physical and digital collections it is the library's area for in-depth interdisciplinary exchange.³² This area has done away with the classical reference notion of earlier library philosophies, where there was an information desk where a question was fielded and specialist off in specific zones that would need to be visited. The Central Libraries new approach of the Mixing Chamber removes the entire step of visiting separate specialized areas to discover what is desired. The Mixing Chamber puts a group of experts all in one area, with a few branching out into specific zones and connects them all by radio, allowing all questions to be fielded and answered through a collaborative effort from one spot, saving countless trips and repeated questions that unavoidably arise in the traditional library reference methodology. As would be assumed the Mixing

³² Statistics and facts <http://www.spl.org/lfa/central/oma/OMAbook>

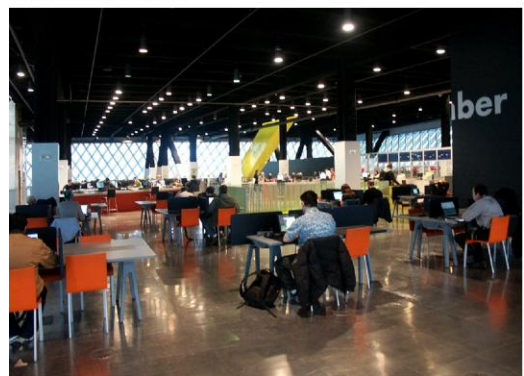
Chamber has direct connection into the library's main collection, so as soon as questions are answered resources can be found. The library's bookshelves are no different than the rest of the building's design, just another area where the designers continued to push new opportunities, never making a move without reason and certainly not in any mundane ways. In the same way the design of the Central Library provided increased reference efficiency, it also went about resolving issues that have become increasingly present in growing bookshelf organization. A new design referred to as "The Book Spiral" reconciled the much compromised Dewey Decimal System, by creating a continuous ribbon of shelving stacks that allowed for continual flexibility of books to grow and compress as needed in time. The new system was designed to house the libraries 780,000 collection upon opening with the ability to grow to 1,450,000 books without the addition of a single new bookcase, but by



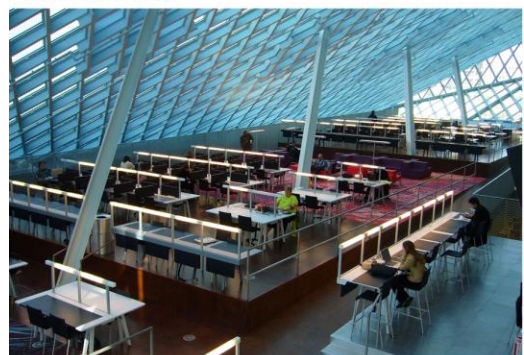
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<http://www.spl.org/lfa/central/oma/OMAbook>

simply adjusting a few simple location numbers, elegantly designed to change by the libraries cooperative graphic designer Bruce Mau. The book spiral is a provocative and functional design that continuously ramps down four stories of the building, revitalizing a compromised organization system and creates the library core which remains rooted in the written word. Last stop in circulation throughout the public realms of the library moves through different circulation routes to the Reading Room or back to either the Mixing Chamber or Living Room. The Betty Jane Narver Reading Room, located on at the top of the Book Spiral is a north facing space, allowing controlled light with the least glare and a beautiful panoramic view of the entire city, designed to resemble historical reading rooms of past libraries with floral carpeted floors and quiet zones for optimal study and reading conditions. The new Seattle Central Library is a progressive advancement for library design. The designer's creative approach to functional problem solving produced a piece of architecture that is revolutionary in its function and iconic in its interior and exterior aesthetic. New radical techniques were developed in the design of the architecture's programmatic spaces which in turn led to new equally as progressive techniques needed for housing them. OMA and LMN responded to all of the needs of the project with full force from start to finish. Teaming up with ARUP Engineers and numerous glass and construction consultants the public library was designed and constructed using cutting edge technology and construction techniques in a manner that reflected and exhibited the beauty of the city and responded and met the programmatic needs of a continually advancing and developing library system.³³

³³ Statistics, facts, <http://www.spl.org/lfa/central/oma/OMAbook>

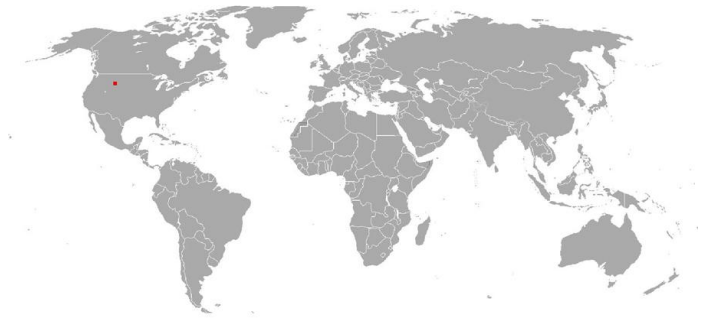
Precedent Relevance

OMA and LMN's thought process, analysis, methodology and consistency in the development of Seattle's Central Library is indefinably of the highest caliber for design of built environment. The form of the building boldly presents itself as being simply what it is, an honest response and profound structure, iconic in its design, looking over the city as an incredibly successful answer to a vast and rigorous design problem. The methodology of the design process and care for the program executed by OMA/LMN was of the absolute highest quality. It was time stricken and incredibly difficult but with conviction in it OMA/LMN was able to provide a monument for a city that is so much more than a simple library, but a public realm that is a service for the entire community. Discovering and rewriting new methodologies for library design OMA/LMN has led by example, pushing the progression of the entire field of architecture to continue learning and remembering what it means to design responsibly for the built environment.

6. SITE DESCRIPTION

Bozeman, Montana USA

Bozeman Montana was established in 1863 and is located four hundred miles west of the North Dakota border and three hundred miles east of the Idaho border, at an elevation of 4,795 feet. It is a beautiful high mountain valley surrounded on three sides by the Bridger, Gallatin and Tobacco Root mountain ranges. The population of Bozeman Montana is 27,509.



<http://commons.wikimedia.org/wiki/File:BlankMap-World-v7.png>

History

With the presence of the Northern Pacific Railway, Bozeman continued to be met by settlers in search of new beginnings, looking to enjoy the beautiful environment and prosper off of the rich landscape. Bozeman has continued to grow and develop ever sense. In 1883 the Northern Pacific Railway finished its pathway to Bozeman through what is now known as the Bozeman Pass. This route paralleled the Bozeman Trail and is now Interstate 90, and is a constant reminder to Bozeman's beginnings.



<http://www.bozeman.net/bozeman/residents/history.aspx>; and <http://www.bozemanonline.com/history.php>

The state of Montana was established in 1889. The first pioneers of the state came to Montana primarily in the continued search for Gold. After discovering Montana’s vast open country, ranching and agriculture were established and prospered in the area. With that, cowboys and miners became the primary figures in the area and responsible for the formation of the “Treasure State.”

The story of establishment for the state is also true for the discovery and placing of the city of Bozeman. Miner John Bozeman, born in Pickens County, Georgia, (1835) a man of the Civil War era, was struck by the gold fever and in search of the Wild West for his own fortune. Bozeman found himself headed to Colorado in 1858 and in 1862 without much success in the mining industry headed north to Montana with new business ventures in mind. His new goal was to go into business supplying two mining cities, Bannack and Virginia City. In 1863 seeing the opportunity to profit in the area Bozeman and one other man John Jacobs developed the Bozeman Trail which was a cutoff route from the Oregon Trail through the heart of the Gallatin Valley to Virginia City, and planted the namesake city of Bozeman in 1864.



<http://www.downtownbozeman.org/light-images/oldbozeman/image-5.jpg>



http://www.flickr.com/photos/paul_heaston/3020896725/



http://www.flickr.com/photos/paul_heaston/3020903383/>

John Bozeman lead new settlers over the Bozeman trail for three years, before its closing in 1866 by the Cheyenne and Sioux Native American tribes, who feared all the new settlement in the area. Yet, those three years presented plenty of time for

many to fall in love with the beautiful area and create the beginnings of the current city. John Bozeman, only able to live in the area for four years, was murdered in 1867 just east of Bozeman; inconsistencies in the murder story leaves Bozeman with a bit of a local mystery, but still today his grave can be visited at Bozeman's local Sunset Hills Cemetery.

Climate

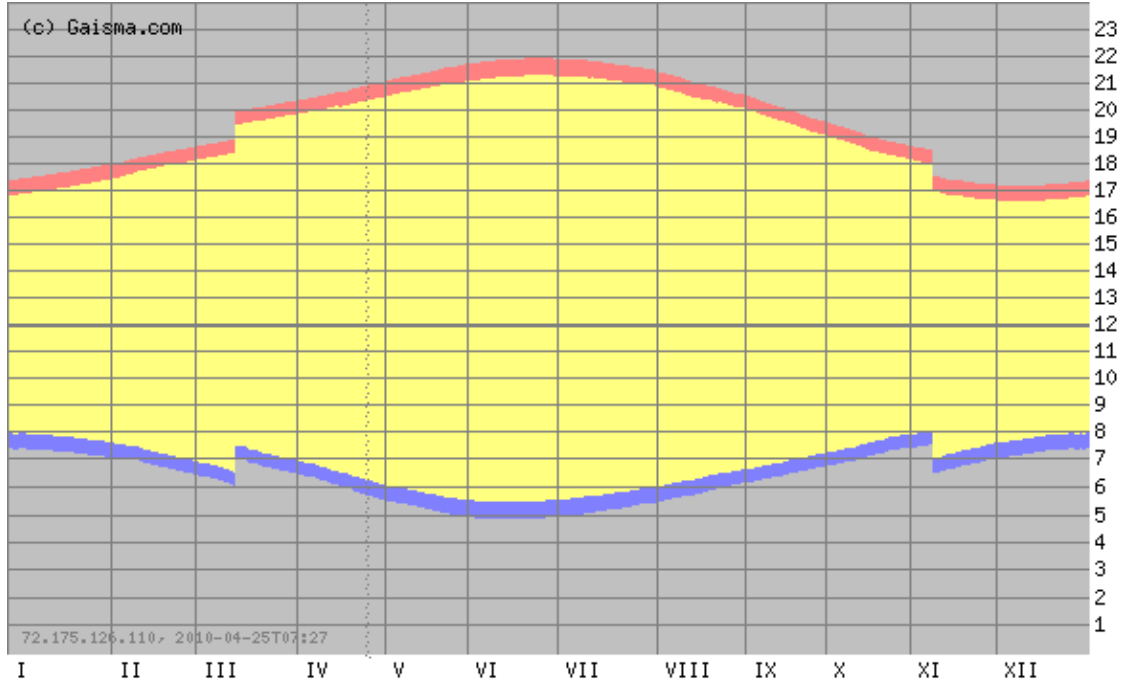
Period of Record Monthly Climate Summary: Period of Record 1892-2005

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Average Max. Temperature (F) | 31.4 | 35.4 | 42.4 | 53.7 | 63.1 | 71.5 | 81.1 | 80.2 | 69.1 | 57.5 | 42.1 | 33.7 | 55.1 |
| Average Min. Temperature (F) | 11.9 | 15.2 | 21.3 | 30.5 | 38.5 | 45.1 | 51.0 | 49.5 | 41.1 | 32.9 | 22.2 | 14.6 | 31.1 |
| Average Total Precipitation (in.) | 0.88 | 0.73 | 1.33 | 1.82 | 2.86 | 2.90 | 1.36 | 1.24 | 1.73 | 1.50 | 1.09 | 0.86 | 18.30 |
| Average Total SnowFall (in.) | 12.7 | 10.1 | 16.0 | 12.4 | 4.1 | 0.5 | 0.0 | 0.1 | 0.8 | 5.4 | 11.0 | 11.6 | 84.8 |
| Average Snow Depth (in.) | 5 | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 2 |

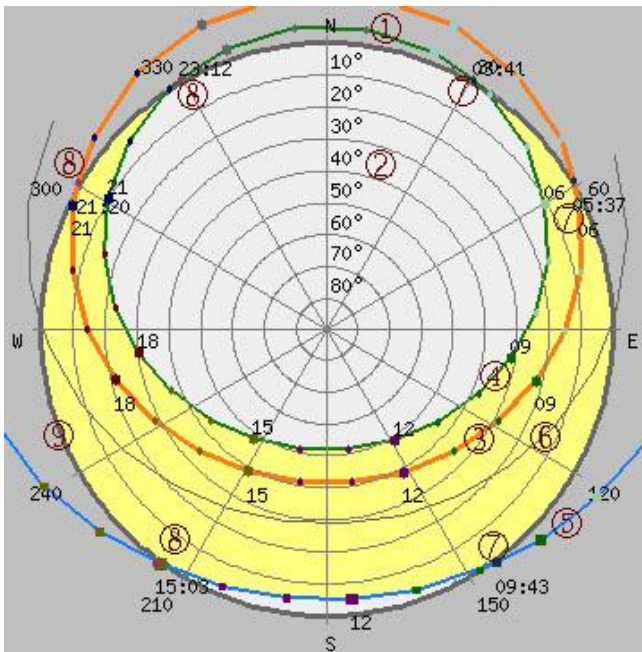
<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mtboz1>

Bozeman, Montana: Sunrise, sunset, dawn and dusk times: tables and digrams

| Date | Sunrise | Sunset | Length | Change | Dawn | Dusk | Length | Change |
|-----------|---------|--------|--------|---------------|-------|-------|--------|---------------|
| Today | 06:21 | 20:24 | 14:03 | | 05:49 | 20:56 | 15:07 | |
| +1 day | 06:20 | 20:25 | 14:05 | 00:02 longer | 05:47 | 20:57 | 15:10 | 00:03 longer |
| +1 week | 06:10 | 20:33 | 14:23 | 00:20 longer | 05:37 | 21:06 | 15:29 | 00:22 longer |
| +2 weeks | 06:00 | 20:42 | 14:42 | 00:39 longer | 05:26 | 21:16 | 15:50 | 00:43 longer |
| +1 month | 05:43 | 21:00 | 15:17 | 01:14 longer | 05:07 | 21:36 | 16:29 | 01:22 longer |
| +2 months | 05:35 | 21:18 | 15:43 | 01:40 longer | 04:57 | 21:56 | 16:59 | 01:52 longer |
| +3 months | 05:59 | 21:02 | 15:03 | 01:00 longer | 05:23 | 21:37 | 16:14 | 01:07 longer |
| +6 months | 07:53 | 18:23 | 10:30 | 03:33 shorter | 07:22 | 18:53 | 11:31 | 03:36 shorter |



Above_Gray: Darkness, Blue: Dawn, Yellow: Sunshine Red: Dusk



Sun Path Diagram:

Above_Graph: shows location's sunrise, sunset, dawn and dusk times for the whole year. Start of dawn and end of dusk times are based on the definition of civil twilight.

Left_Sun path diagram: visualization of the sun's path through the sky. This path is formed by plotting azimuth (left-right) and elevation (up-down) angles of the sun in a given day to a diagram.

1. Azimuth angle
2. Elevation angle
3. Sun's path today
4. Sun's path on the 21st June
5. Sun's path on the 21st December
6. Sun's path during the equinox
7. Sunrise
8. Sunset
9. Horizon

Montana State University: Bozeman Montana

Montana State University Bozeman was established February 16, 1893, and titled the Agricultural College of the State of Montana. It was renamed The Montana College of Agriculture and Mechanic Arts, or MAC in the 1920's and on July 1, 1965 with

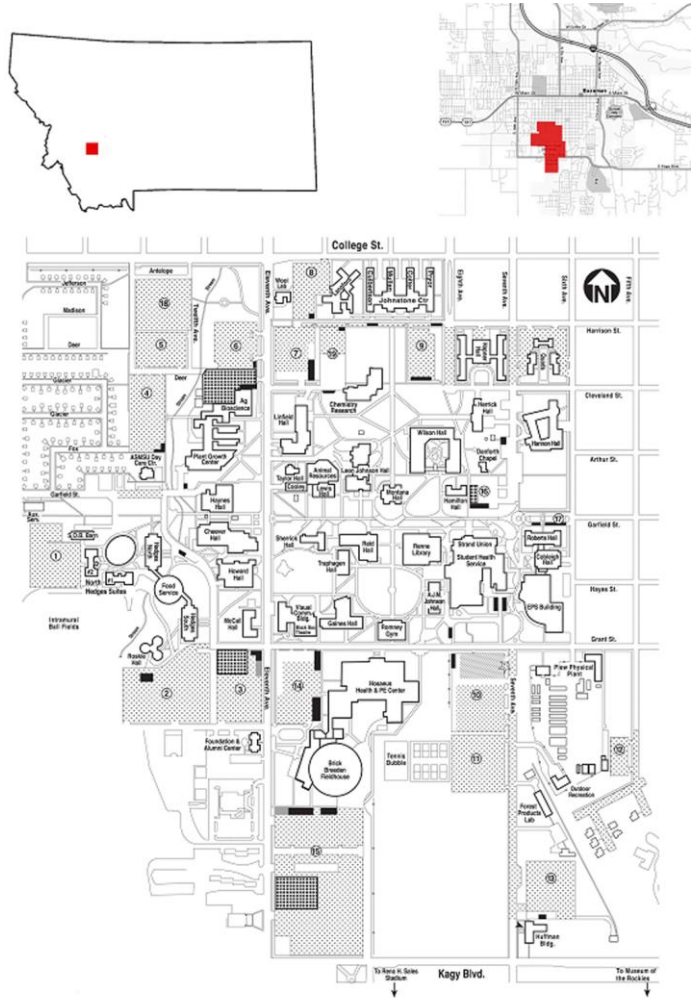
recognition of enormous advances in the College's commitment to scientific and humanistic research was named Montana State University. It is a public unit of the Montana University System: Montana's Land Grant Institution and classified as a research university, offering degrees in Bachelors, Masters and Doctoral.

The University's departments include: The College of Agriculture, College of Arts and

Architecture, College of

Business, College of Education, Health and Human Development, College of

Engineering, College of Letters and Science, College of Nursing and University College.



<http://www.montana.edu/admissions/images/parkingmap.pdf>
<http://www.50states.com/maps/montana.gif>
<http://www.mapquest.com>

In the fall of 2009 the enrollment for Montana State University was 10,840 undergraduate students and 1,924 graduate students, totaling 12,764 students. Fifty-four percent of the student body were male and forty-six percent female; sixty-three percent of the students residents, thirty-three percent out of state and three percent international, representing seventy-one countries of the world.



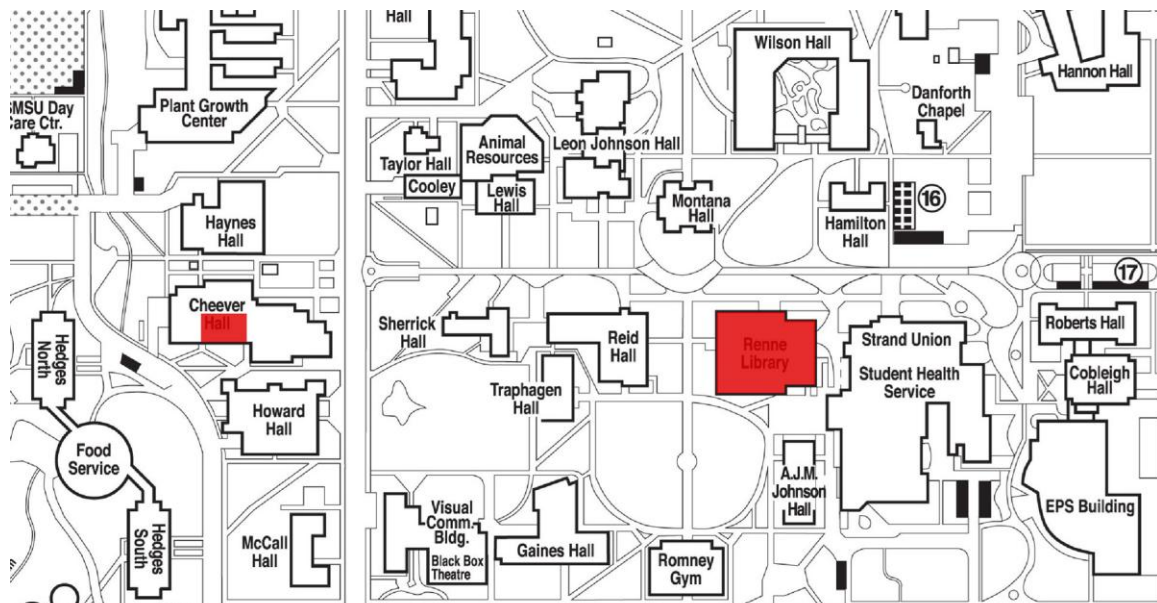
<http://www.montana.edu/cpa/gallery>

The vision statement of Montana State University is that, “Montana State University will be the University of Choice for those seeking a student-centered learning environment distinguished by innovation and discovery in a Rocky Mountain setting.” The University’s mission statements are: to provide a challenging and richly diverse learning environment in which the entire university community is fully engaged in supporting student success, to provide an environment that promotes the exploration, discovery, and dissemination of new knowledge, to provide a collegial environment for faculty and students in which discovery and learning are closely integrated and highly valued, to serve the people and communities of Montana by sharing our expertise and collaborating with others to improve the lives and prosperity of Montanans, and in

accomplishing our mission, we remain committed to the wise stewardship of resources through meaningful assessment and public accountability.³⁴

Montana State University: Libraries

Montana State University's Library system is comprised of two individual libraries, Renne Library, the campuses main and central library, and the Creative Arts Library, the Universities arts and architecture library.



<http://www.montana.edu/admissions/images/parkingmap.pdf>

The two libraries employ seventeen librarians, three professionals, thirty-three support staff, and twenty-seven student assistants cataloging 499,548 books, and approximately 150,000 un-cataloged government documents. Between the dates of July 1, 2008 and June 30, 2009, 802,420 people visited the libraries, checking out (not including renewals) 60,260 items and making use of 155,365 electronic resources. The Libraries did a vast

³⁴ "Montana State University." <http://www.montana.edu/opa/policy/MissionBozeman.html> (accessed 03/12/2010).

amount of outreach, answering 21,216 reference questions and loaning 19,902 items to other libraries through the Inter Library Loan system while continually striving to meet its mission statement, which states that:

The Libraries will continue to provide information, education, and services in response to the university's teaching, research, and outreach programs. Electronic and other non-print formats will be assimilated continually so as to complement the collection of books, periodicals, and other physical formats. Library services and resources available at MSU Libraries will shift from one based on resident collections to one based on access to more diverse and greatly expanded world of electronic information. Given the vast amount of information available in electronic formats, individual libraries will no longer be self-sufficient. This will necessitate the increased sharing of resources among institutions through alliances of electronic networks and databases, which in turn will further broaden the resource base.³⁵

In attempt to meet the goals of the Libraries mission statement the library is home to 7,382 cassette and DVDs, 2,194,691 microforms, 1,998 compact discs and 4,066 musical scores, as well as provides seating for 733 occupants in 12,000 square feet of floor space.



<http://www.lib.montana.edu/about/>

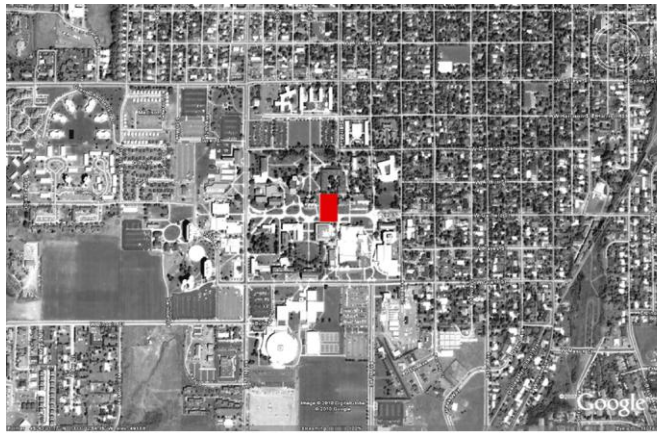
³⁵ "Montana State University." <http://www.lib.montana.edu/instruction/limission.php> (accessed 03/12/2010).

7. PROJECT DESCRIPTION

The Link: A Technological Learning Extension of MSU's Renne Library

The site for MSU's new campus library is located directly north of the existing Renne library, and will assimilate into the campus profile as an extension of the current facility, creating a

technologically advanced library core at the center of the MSU campus. The goal of this project is for the re-evaluation and innovation of the university's academic resource facilities. In response to the current campus and library mission statements the design of a progressive, new piece of architecture centered on technological resource advancement will support



Maps_Courtesy Google Earth Views to the Bridger Mountain Range to the Northeast, and Hylite Range to the Southeast

Montana State University's ambitions and will stimulate the campus academically. The new extension will have a physical connection, a tunnel eighty feet in length joining The Link to the existing facility, as well as an exterior spatial connection as a section of the

campus Mall in front of Renne Library will be re-examined and designed to unite the two library facilities.



Top_Left: View of site to the NE, Top_Right: View of Site to the S,
Bottom_Left: View of site to the NW Bottom_Right: View of site to the SE

The reason for the designing of The Link and the problem developed is the legitimizing of the permanence value design philosophy as a methodology leading to a higher understanding and production of quality, value based architecture for the current and future eras. The means at which to achieve the validation of the philosophy is through testing the theoretical framework objectives, collecting data, analyzing, and re-developing, in order to best insure the objectives pertinence as guides for developing

individual methodologies for specific design problems in turn developing architecture which matches the goals of permanence value design philosophy.

Testing the Ideology

Realistically, the best way to test the ideology is to try it- to design a project with the understanding and convictions for permanence value design philosophy by following the objective methodologies placed, and then in turn analyze the results. In the architecture world, this is not an easy approach, an approach that is nearly impossible to do in whole at full scale. And, for that reason it is one of those critical distinctions which separate the design of architecture from other design disciplines, such as technology, fashion, entertainment, or even car design; further expressing why the commodification of the field has had such a negative effect on the current quality of space being produced in the built environment. It is impossible to build a full scale mockup of the majority of architecture design solutions and walk it around the block, analyzing how it affected society and how society has affected it in all aspects. It is different than the majority of commodity designs, and confirms the notion that it shouldn't be grouped together or classified as a commodity at all. Yet, it is possible to still test and analyze different objectives and develop truly intelligent innovative design strategies.

As is shown in the introduction of this writing, methodologies can originally come to life through lessons learned in history. From there, an accurate interpretation of current times informs the determinate needs of a methodology, allowing current solutions to be created, and innovation is able to be achieved with a vast perception of future

problems, requirements or advancements which may apply to the methodology. With a deep understanding of these three; past, present, and future, a problem can present itself and a methodology's objectives can be tested.

In the architectural world, the harder the problem, the better the solution, it is the hard questions that stimulate the profound answers. It is the hard questions that harbor the potential for innovation in design, for the poetics of problem solving, and for the true testing of objectives and methodologies to occur. The hard problem for testing permanence value philosophy and the objectives proposed is designing for a subject which is changing and redefining. A true test would be to design for something that was of great significance as necessarily permanent in the past, but today, is changing into something that is redefining itself as im-permanent.

With the aspiration of achieving the most honest of answers, and the truthful evaluations of the objectives proposed, the hard problem which has been chosen as the test for permanence value philosophy and the objectives provided is the design and re-evaluation of a library. Not simply a public library which serves as equal part city center and local landmark, but a library on a university's campus, deeply connected to the institution of knowledge collection and academic advancement. In an era deemed "The Information Age," the institution of education and the act and ability to be "informed" is at the highest level of significance. The era is deemed "The Information Age" because society has advanced with new progressive forms of technology that are allowing a tremendous increase in the ability to share knowledge. With the advancements, the means in which information is being shared is changing dramatically; putting to test the past

methods and locations that have been the most substantial and critical means for knowledge transfer.

In the past, the physical location of colleges, universities, schools in general have been unanimously thought of as the location and the home of knowledge transfer. The entire philosophy behind going to school to become educated has been the physical act of literally going to that place where the knowledge is, and being there to receive the information. In the past, one has always had to be in the location where the information was accessible to receive the knowledge, and physically speaking, the library has been historically the location where much of this information is stored and where the information could be accessed and knowledge achieved. This is no longer the case in today's society. Due to advancements in technology new methods for sharing and acquiring information and knowledge have been established. The presence of the internet and online databases has brought about entirely new philosophies on information and knowledge transfer. Currently, it is possible to achieve college degrees without ever crossing into university property lines; it is even possible to achieve college degrees from universities that do not have property lines. The internet and advancing technology is changing the way in which information is gathered, physical locations such as universities and libraries that have been necessary in the past are being forced to redefine and re-evaluate their reality for existence. This forced re-evaluation and potential for lost physical presence is the reason a university library is the perfect grounds for the testing and analysis of the methodology and theoretical frame work behind permanence value design philosophy, designing a program with the end goal of being permanent, significant

enough to remain a critical and valued location in an ever changing and redefining environment.

It is my personal belief that both a library and a university are two necessarily permanent features for the continued advancement of human culture. Both which are far more than just structures which hold books, or provide the space for education and the transfer of knowledge. The goal of this project, as the requirements below begin to express, is to develop a piece of architecture, a library, an innovative, revolutionary library for Montana State University's current campus and futuristic academic goals. A library that is designed in a manner which illustrates and helps MSU move forward in their mission to continue advancing as a technologically advanced university, and library that increases the ease for students to learn and facilitates the advancement of academic excellence and student relationships. The end goal for the project and the final step in the development of this ideology is the analysis of its worth, and the reevaluation and redefinition of the objectives as discovered need be. In the end reflecting on the methodology developed, based off of the objectives presented which are rooted in the essence of creating an architecture that is progressive, that is designed with the conviction of enduring both physically and in memory. An architecture that is of quality, and therefore is valued, cared about so then cared for, and finally endures as an example of architecture that has presence embracing its conscientious existence and future in culture by increasing connections between people, and people and the built environment.

8. PROJECT REQUIREMENTS

The project requirements are goals and objectives that will help establish new and innovative design solutions for the design of MSU's library extension.

R1: must be located near students

- 1.1 central location on campus
- 1.2 connected to existing library
- 1.3 easily accessed from all sides
- 1.4 coffee shop/ social areas (24/7)
- 1.5 expanded hours

R2: must integrate, and innovatively connect to the rest of campus

- 2.1 easy to pass through
- 2.2 activates the mall
- 2.3 invokes students attention and interest
- 2.4 provides outdoor landscaping
- 2.5 respect Montana hall, yet rejuvenate, and express advancement of education on campus

R3: must provide and express advanced computer and internet access

- 3.1 desk top working stations
- 3.2 ease of printing
- 3.3 group computer modules
- 3.4 video conference abilities, Skype

R4: must be conducive to learning

2.1 group study space

- public tables
- flexible furniture
- private space, meeting areas
- group technology interface (plug-ins, internet, projectors/monitors, cameras)

2.2 individual study spaces

- controlled
- private desks
- private computers
- technology interface (plug-ins, internet)

4.1 noise considerations

4.2 light consideration

4.3 knowledgeable staff

4.4 restrooms

4.5 connections to the outdoors

4.6 ergonomically designed

4.7 clean

4.8 not distracting

R5: must be tech based service center

5.1 free

5.2 tech mixing chamber

5.3 easily approached

-comfortable environment for someone not knowledgeable in the field

5.4 needs to have it all; be as futuristic advanced representation of cloud computing as possible

R6: architectural design must be exemplary of the spread the knowledge

6.1 be technologically revolutionary

6.2 space for presentations/meetings/conferences

-Colloquium

6.3 informative of news/ weather/ current events

-tvs, tickers, clocks providing visual connections to the rest of the world

outside of Bozeman Montana, to increase awareness

R7: must be future usable, progressively designed for the future

7.1 designed space for holding the library catalog one day

7.2 designed with the desire to remain technologically revolutionary

7.3 easy to maintain

9. PROGRAM QUANTITATIVE

The programmatic and code analysis currently presented is done with the expectation of change, change in regards to design development and further focused analysis of library and learning centers. The current programmatic and code analysis is based off of existing statistics for library use at Montana State University, and precedent library studies. It will adapt and change with future discovery, but is presented to help as a tool in the conceptualization and design process, rather than a hindrance in the end. The site for the project is currently 300 FT by 200 FT, includes the open plot of land in front of Renne Library which is where the project will be constructed, but also includes the mall and additional sidewalks surrounding the open plot. The building footprint and the square footages estimated here are for a portion of this total area, 200FT by 180 FT or 36,000 square FT, where the rest of the site will be designed for outdoor integration and connection to Renne Library and the rest of Montana State University's campus.

Ground Floor:

Lobby/ Entrances:

4,000 sq FT

Main/Information Desks:

1,000 sq FT

Social Gathering/Study:

5,200 sq FT

Public Speaking Adaptable with Social Gathering:

3,400 sq FT

ITC Reference Center:

11,000 sq FT

Coffee Shop:

3,000 sq FT

Offices:

2,800 sq FT

Rest Rooms:

1,200 sq FT

Mechanical:

600 sq FT

Storage/Supply/Cleaning:

200 sq FT

Total:

32,400 sq FT

Second Floor:

Flexible Group Study:

13,800 sq FT

Private Group Study Conference Rooms (20 rooms):

4,000 sq FT

Rest Rooms:

1,200 sq FT

Mechanical:

600 sq FT

Storage/Supply/Cleaning:

200 sq FT

Outdoor Patio Space:

12,600 sq FT

Total:

32,400 sq FT

Third Floor:

Service Centers: Research/Reference:

10,000 sq FT

Individual (quiet study areas):

18,960 sq FT

4 people or less study rooms (10 rooms):

1,440 sq FT

Rest Rooms:

1,200 sq FT

Mechanical:

600 sq FT

Storage/Supply/Cleaning:

200 sq FT

Total:

32,400 sq FT

Basement:

Archive/ Future Book Collection:

18,400 sq FT

Tech Equipment Storage:

12,000 sq FT

Rest Rooms:

1,200 sq FT

Mechanical:

600 sq FT

Storage/Supply/Cleaning:

200 sq FT

Total:

32,400 sq FT

Total Building Square Footage:
square feet

129,600

These square footages are calculated with proposed space for mechanical which can include elevator access, but does not take into account all circulation space needed. An excessive of approximate square footage for these spaces has been allocated to provide for circulation.

10. CODE ANALYSIS

Chapter 3: Use and Occupancy Classification

Section 303: Assembly Group 3

303.1 Assembly Group A

A -3 Assembly use intended as library

Chapter 5: General Building Heights and Areas

Type I Construction A or B: [Table 503]

Type I.A: Unlimited stories, unlimited area

Type I.B: 11 or less stories, unlimited area

Chapter 6: Types of Construction

Section 602: Construction Classification

602.2 Type I and II [Table 601]

-Type I and II construction are those types of construction in which the building elements listed in table 601 are of noncombustible materials, except as permitted in Section 603 or elsewhere in the code. [Section 603]

Table 602: Fire Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance

-Occupancy group A where the fire separation is greater than 30 feet there are no requirements for exterior wall fire rating.

[Table 602]

Chapter 10: Means of Egress

Section 1004: Occupant Load

[Table 1004.1.1]

-Assembly without fixed seats:

Unconcentrated (tables and chairs): 15 net for 3,000 sq FT = 200

-Library

Reading Rooms: 50 net for 56,800sq FT = 1,136

Stack Areas: 100 gross for sq FT = 184

Total Occupant Load: 1,520 people

Section 1005: Egress Width

1005.1 Minimum Required Egress Width [Table 1005.1]

The means of egress width shall not be less than required by this section.

The total width of means of egress in inches (mm) shall not be less than

The total occupant load served by the means of egress multiplied by the factors in Table 1005.1 and not less than specified elsewhere in this code.

Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. The maximum capacity required from any story of a building shall be maintained to the termination of the means of egress.

-stairways require .2 inches per occupant if sprinkled

-other egress components require .15 inches per occupant if sprinkled

Section 1015: Exit and Access Doorways

1015.1 Exit or Exit Access Doorway Required [Section 1015.2.1]

-[...] The exit doors or exit access doorways shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or are to be served measured in a straight line between exit doors or exit access doorways.

Section 1019: Number of Exits in Continuity

1019.1 Minimum Number of Exits [Table 1019.1]

-For floors with occupancy load 1-500 = 2

-For floors with occupancy load 501-1,000 = 3

-For floors with occupancy load greater than 1,000 = 4

Section 1020 Vertical Exit Enclosures

1020.1: Enclosures Required [Section 1020 for specific exit strategies and safety requirements]

Chapter 29: Plumbing Systems

Section 2902: Minimum Plumbing Facilities

[Table 2902.1]

Library

Water Closets per Male: 1 per 125: 760 occupants = 7 Water Closets

Water Closets per Female: 1 per 65: 760 occupants = 12 Water Closets

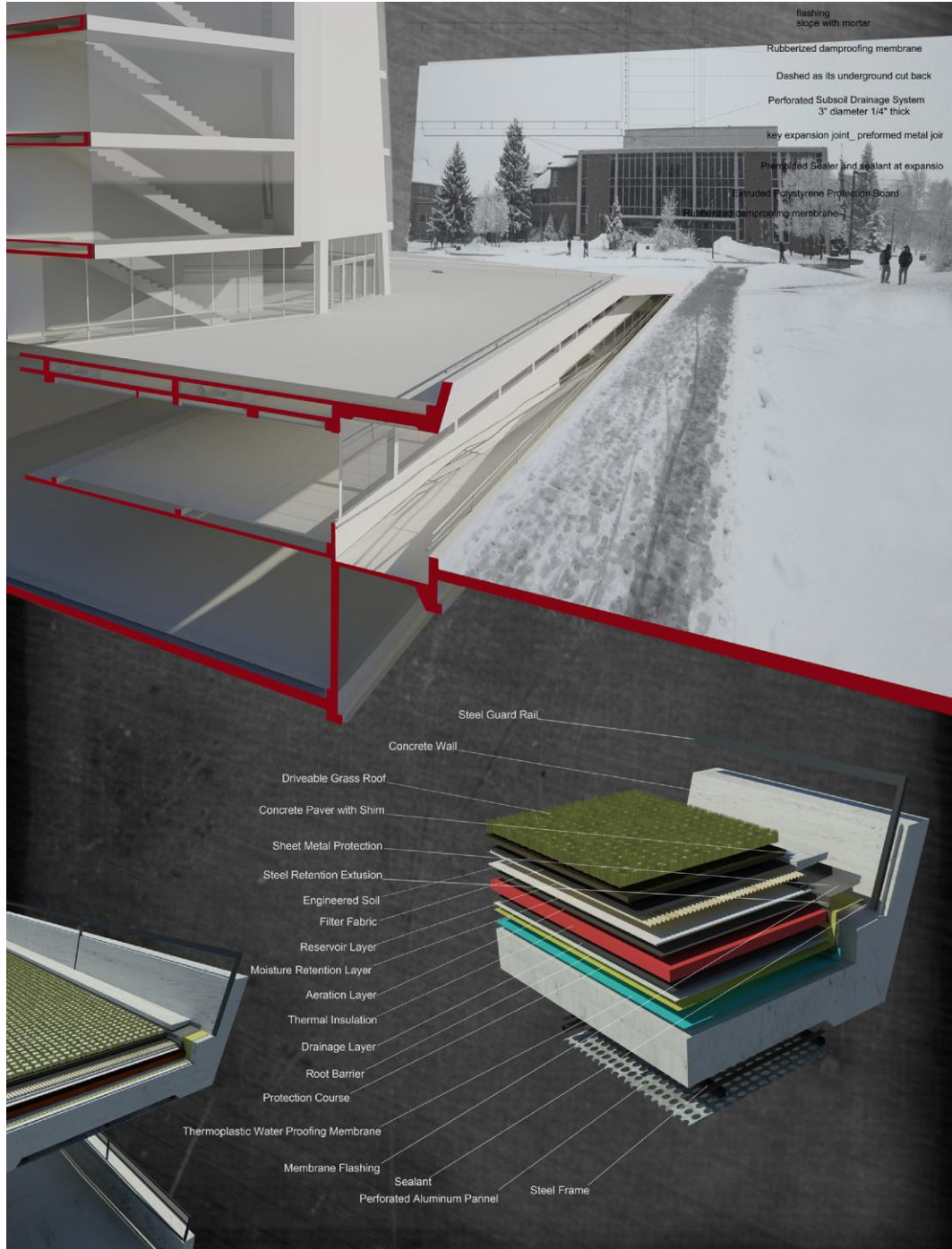
Lavatories per Men: 1 per 200 occupants = 4 Lavatories

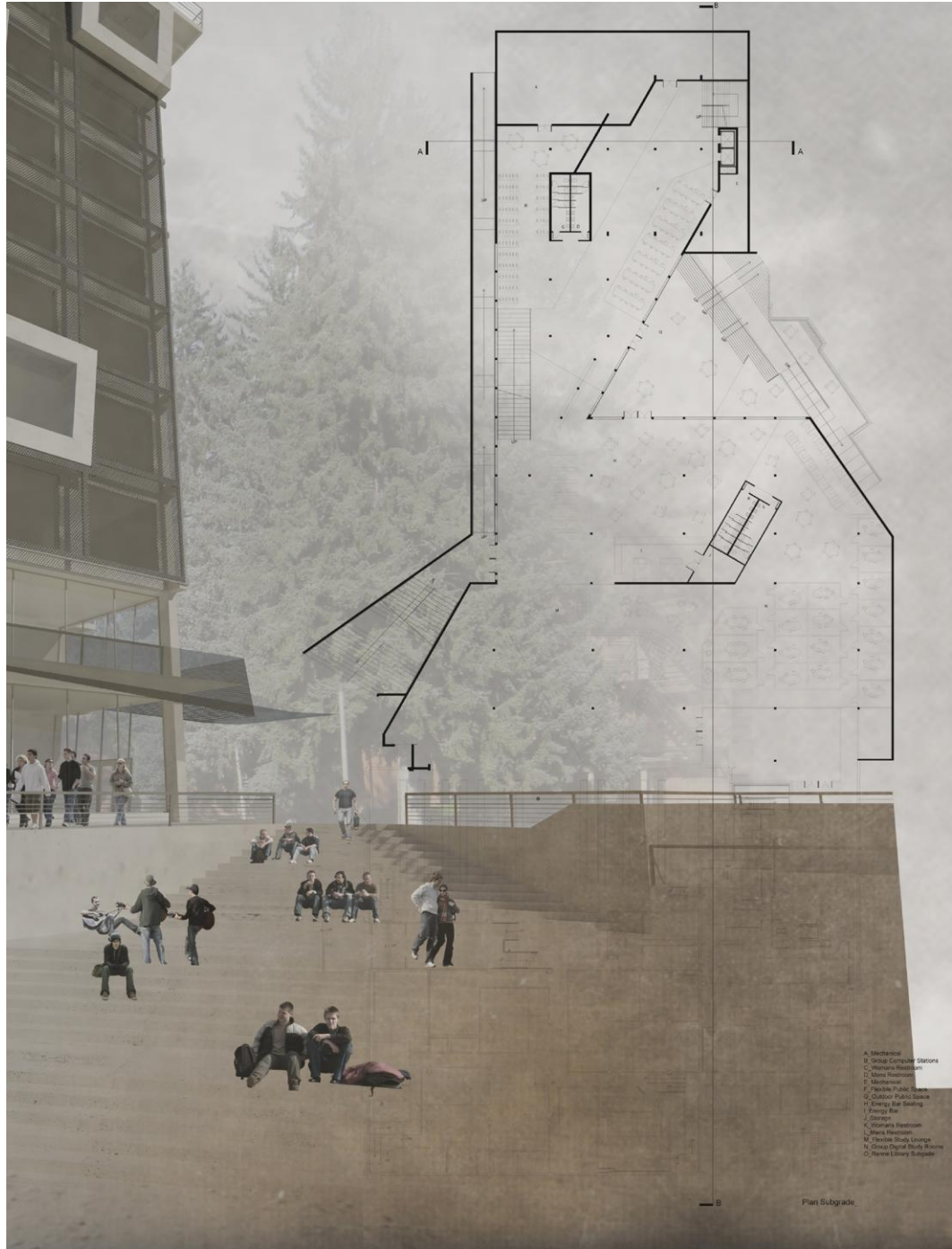
Lavatories per Women: 1 per 200 occupants = 4 Lavatories³⁶

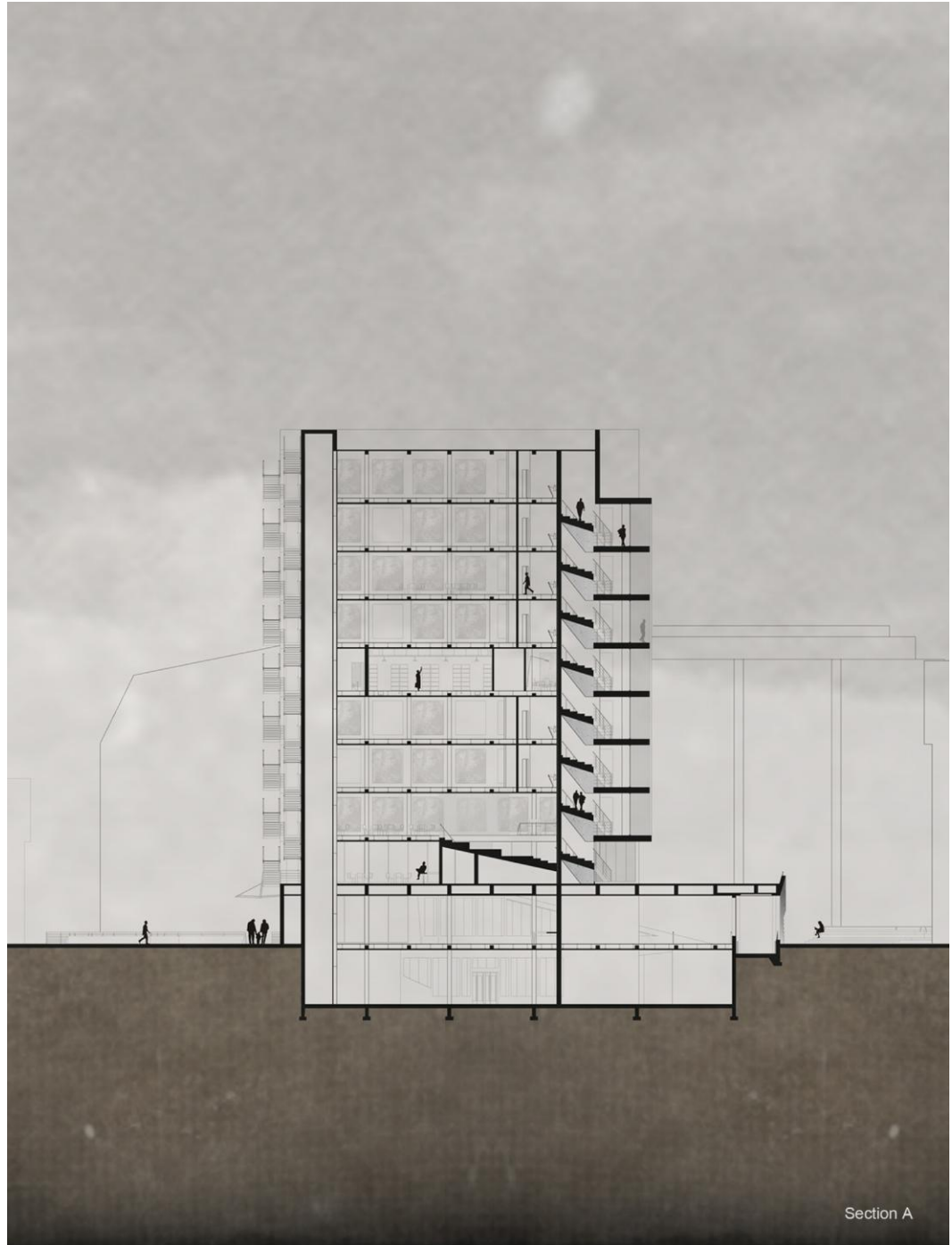
³⁶ All_Code: International, Council. *International Building Code 2006 : Softcover Version*. Boston: Twayne Publishers, 2006.

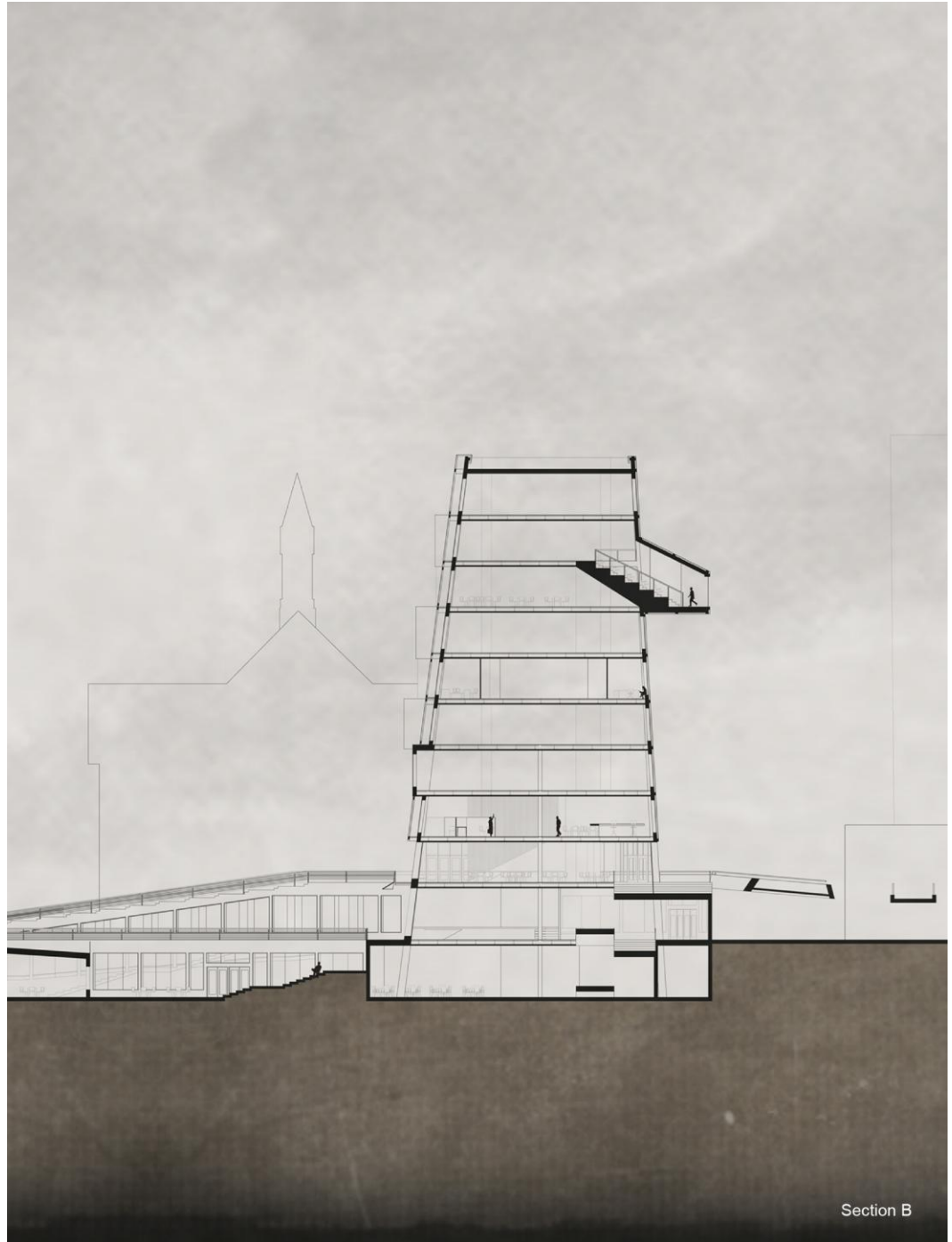
11. SOLUTION

















REFERENCES CITED

- Alexander, Christopher. *A Timeless Way of Building*. New York: Oxford University Press, USA, 1979.
- Benedikt, Michael. *For an Architecture of Reality*. Boston: Twayne Publishers, 1987.
- Benedikt, Michael. "Less for Less Yet: On Architecture's Value(s) in the Marketplace," in *Commodification and Spectacle in Architecture*, Minneapolis, MN: University of Minnesota Press, 2005, 8-21.
- Bonta, Juan. *Architecture and Its Interpretation*. Boston: Twayne Publishers, 1979.
- Council, International. *International Building Code 2006 : Softcover Version*. Boston: Twayne Publishers, 2006.
- Fernandez-Galiano, Luis. "Spectacle and its Discontents; or, The Elusive Joys of Architainment," in *Commodification and Spectacle in Architecture*, Minneapolis, MN: University of Minnesota Press, 2005, 1-7.
- International Building Code 2006, from MADCAD.com e library,
<http://www.madcad.com.proxybz.lib.montana.edu/library/IBC-06/> (accessed April 30, 2010).
- Koolhaas, Rem. " "Junkspace," *Obsolescence* " vol.100 (Spring 2002): 175-190.
- "Montana State University."
<http://www.montana.edu/opa/policy/MissionBozeman.html> (accessed 03/12/2010).
- OMA/LMN. "Seattle Public Library Proposal."
<http://www.spl.org/lfa/central/oma/OMAbook1299/page4.htm> (accessed April 11, 2010).
- "Online Etymology Dictionary."
 2001.<http://www.etymonline.com/index.php?search=Permanence&searchmode=none> (accessed 03/12/2010).
- Riegl, Alois. "The Modern Cult of Monuments: Its Character and Its Origin," transl. Forster and Ghirardo, *Oppositions* 25 (Fall 1982): 21-56.
- Rowland, Ingrid D. *Vitruvius: Ten Books on Architecture*. New York: Cambridge University Press, 1999.

Ruskin, John. *The Seven Lamps of Architecture*. New York: Thomas Y. Crowell & Company, 1880.

Schachter, Judith, and Stephen Brockmann. *(Im)permanence: Cultures in/out of Time*. Boston: Twayne Publishers, 2008.

Trachtenberg, Marvin, and Isabelle Hyman. *Architecture*. Boston: Twayne Publishers, 2003.

William A. Neilson, Thomas A. Knott, and Paul W. Carhart. Eds., *Webster's New International Dictionary of the English Language: Second Edition Unabridged*. Springfield, Mass: G.&C. Merriam Co., 1943.