FORM FOLLOWS FEELING: A CULTURALLY-BASED APPROACH TO EXPERIENTIAL DESIGN

by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master

of

Architecture

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Samuel Paul Martinez

April 2012

DEDICATION

I dedicate this work to my grandfathers, Samuel Límon Martinez and Paul Franklin Wilson. This work is also for my family, to acknowledge all that they have given me and all they have done to help me get where I am today.

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ABSTRACT

Through our training and expertise, architects become very visually-oriented in their approach to design. Having become subservient to sight, we have mostly forgotten how to design for other sensory experiences. If we ask our clients a specific line of qualitative questions, we might better understand how the spaces we create can perform from an experiential standpoint, thereby enabling us to create richer, deeper experiences of place. Furthermore, I propose that we can use the information garnered from this questioning to begin an architectural design by working from details at the micro scale and using them to drive the larger formal issues of our designs.

My intent was to synthesize responses from interviews to determine significant qualities of space. These responses were then used to identify details of chief importance in engaging sensory experiences through the project design. These details were coalesced to formulate key experiences of the larger design, which allowed me to approach the grander gestures of the project as a whole. However, rather than focus on a fully-resolved design for the site and the building, my chief concern was focusing on the aforementioned details of the design in order to support the proposed methodology. The project focused on three key spaces that were often referred to in interviewees' responses: the gathering space, the outdoor areas, and the study rooms.

At the conclusion, I found that it was in fact possible to start from the smallest microcosm of the building design, the human scale, and work outwards. This became a simultaneous exploration of scales (human, the scale of spaces, the building scale, and the site) through four facets: 1) tactility, 2) light, 3) flow, and 4) social interaction. I've found that focusing on these facets through the lens of interviewees' responses allows architects to create experiences of space centered around people and the human body. Key questions arose at the conclusion: At what point do you move beyond iterations to a resolved design? How does one quantify whether or not the design meets the experiential needs of the users? Answers to these questions necessitate deeper exploration still.

Form Follows Feeling:

A Culturally-Based Approach to Experiential Design

Samuel P. Martinez
Montana State University
ARCH 590 Thesis, Fall 2011-Spring 2012

For my grandfathers, Samuel Límon Martinez and Paul Franklin Wilson, and to a family who I hope to one day give as much as they have given me.

'...the world of perception is, to a great extent, unknown territory as long as we remain in the practical or utilitarian attitude. I shall suggest that much time and effort, as well as culture, have been needed in order to lay this world bare and that one of the great achievements of modern art and philosophy...has been to allow us to rediscover the world in which we live, yet which we are always prone to forget.'

Maurice Merleau-Ponty, *The World of Perception*, p. 39

'Maybe it *meant something.* Maybe not, in the long run...but no explanation, no mix of words or music or memories can touch that sense of knowing that you were there and alive in that corner of time in the world. Whatever it meant...'

Hunter S. Thompson, *Fear and Loathing in Las Vegas*, p. 66-67

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Statement of Purpose

By the very nature of our training and expertise, architects become very visually-oriented in their approach to design. As architectural training in the academy biases us toward visual qualities of space, the rest of our senses, which make up the very essence of our humanity, fall by the wayside. Having become subservient to sight, we as architects have mostly forgotten how to design for other sensory experiences. If we ask our clients a specific line of qualitative questions, we might better understand how the spaces we create can perform from an experiential standpoint, thereby enabling us to create much richer and much deeper experiences of place. Furthermore, I propose that we can use the information garnered from this questioning to begin an architectural design by working from details at the micro scale, and then use these details to drive the larger formal issues of our designs.

My intent was to synthesize responses from interviews to determine significant qualities of space. These responses were then used to identify details that were of chief importance in engaging sensory experiences through the project design. These details were coalesced to formulate key experiences of the larger design, which allowed me to approach the grander gestures of the project as a whole. However, rather than focus on a fully-resolved design for the site and the building, my chief concern was focusing on the aforementioned details of the design in order to support the proposed design methodology. The project focused on three key spaces that were often referred to in interviewees' responses: the gathering space, the outdoor areas, and the study rooms.

At the conclusion, I found that it was in fact possible to start from the smallest microcosm of the building design, the scale of the person, and work outward. This became a simultaneous exploration of scales (the human, the scale of spaces, the building scale, and the site) through four facets: 1) tactility, 2) light, 3) flow, and 4) social interaction. I've found that focusing on these facets through the lens of interviewees' responses allows architects to create experiences of space centered around people and the human body. Key questions arose at the conclusion: At what point do you move beyond iterations to a resolved design? How does one quantify whether or not the design meets the experiential needs of the users? Answers to these questions necessitate deeper exploration still.

Samuel Paul Martinez
April 2012

Chapter I.
The Senses and Contemporary Architecture

For the last several decades, architects the world over have been constantly redefining what is considered striking or avant-garde. Rapidly-advancing design and construction technologies, in conjunction with global communication, have created an unfathomable library of architectural imagery available for reference in design. Throughout this transformation of the practice of architecture and, at a greater level, our world, architects' design processes have become subordinate to our sense of sight.

In turn, the majority of practitioners have come to forget that the experience of a work of architecture is holistic; the experience can bring forth particular feelings, engage all of our senses, and activate a sense of kinesthetic awareness within us all at once. If architects are to employ these senses in the way people engage the spaces they inhabit, it will be necessary to develop a deep understanding of our relationship to these senses and the nature of perception.

The ideas we are pursuing here are nothing new, but they are seldom used by contemporary practitioners. Professionals and academics in many fields, and even some within the field of architecture, have recognized that it is not sight alone, but all of the senses working in unison that structure our experiences of space. Great volumes of work have been produced in related fields, such as anthropology, psychology, philosophy, and sociology that address the necessity of engaging our perceptual and sensory capabilities. Here we are presented with a critical opportunity to utilize these findings by expressing them in built form.

Sensing Opportunity

As a result of new technologies and advanced means of communication, humanity is, for the first time, threaded into one global network. In architectural practice, we now are able to take inspiration not only from our immediate surroundings, but from societies and cultures a world away from the places we inhabit. This phenomenon has only compounded the architect's bias toward visual qualities, as we pool imagery from here and there to drive our design processes.

Architectural design, by and large, has become an avenue for artistic expression (Fig. 1-4). By way of this transformation of our practice, we are steadily relegating ourselves to the task of decorating buildings. If architects are to hold greater relevance, we have to think about our methods differently. We must ask ourselves questions that move us beyond our comfort zones. Is our design approach meeting experiential needs? Can we address emotional, spiritual, or cultural dimensions with imagery alone? Finnish architect Juhani Pallasmaa, in *The Eyes of the Skin*, echoes this call for a deeper level of consideration when he writes that an "architectural work is not experienced as a collection of isolated visual pictures, but in its fully embodied material and spiritual presence"[1]. We are held to the lofty

[1] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005, p. 44.



Fig. 1 - Experience Music Project, Seattle, WA; architect: Gehry Partners



Fig. 2 - City of Music, Rio de Janeiro, Brazil; architect: Christian de Portzamparc



Fig. 3 - Centre Pompidou-Metz, Paris, France; architects: Shigeru Ban and Jean de Gastines

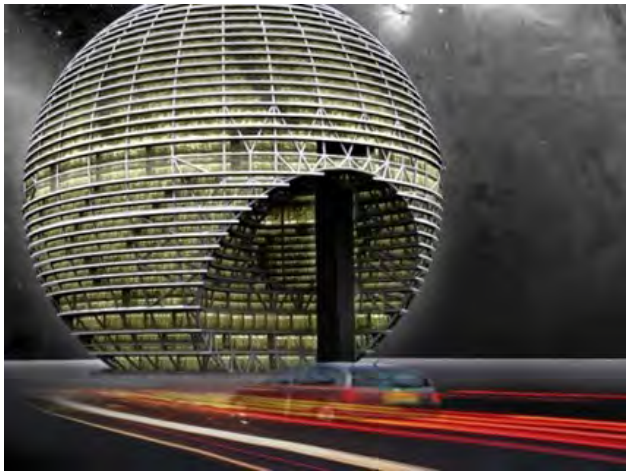


Fig. 4 - Ras al Khaimah Convention and Exhibition Centre, Dubai, UAE; architects: Rem Koolhaas and Renier de Graff

expectation that our work can have the capacity to address human societal issues. Images and visual spectacle are hardly the best tools we can employ to address them.

As we begin to grasp the significance of sensory experience and perception, there is a fundamental concept we must recognize. Edward T. Hall, in his seminal 1966 work *The Hidden Dimension*, established that there are unique ways in which people behave in and use space, and that there is a spatial dimension to human communication[2]. This concept hinges on an understanding of culture. Hall writes, "...man's very perception of the world around him is programmed by the language he speaks, just as a computer is programmed. Like the computer, man's mind will register and structure external reality only in accordance with the program"[3]. Thus, spatial experiences vary in the way they are structured as a function of culture. What a space symbolizes for one group may be perceived and experienced altogether differently by another. This further exemplifies the need for specific qualitative questioning in the design process.

Beyond Visual

> '...modernist design at large has housed the intellect and the eye, but it has left the body and other senses, as well as our memories, imaginations, and dreams, homeless.'
>
> Juhani Pallasmaa, Eyes of the Skin[4] (pp. 19)

While sight is undoubtedly our primary means for reading space, it must also be recognized that sight acts in harmony with all of our other senses. Our comprehension of what we see is more often than not informed by what we have learned from our other senses. For example, when we look at bare concrete, we sense the temperature that it holds, we feel its solidity and the weight of its mass, we anticipate the resounding echoes of the sound it reflects, all of which are qualities informed by senses other than sight. I will refer often to *Eyes of the Skin*, as Pallasmaa's work brings several salient points to our discussion of sensory experiences and perception.

Anthropologist Ashley Montagu states that "the sense of touch was undoubtedly the first to come into being. Touch is the parent of our eyes, ears, nose, and mouth"[5]. The tactile system is the first sensory system to develop in humans, while sight is, not ironically, the last[6]. Our sense of touch is guided primarily by our hands, but we sometimes forget that it is also informed by our largest sensory organ - the skin. Susan Lederman, Professor Emeritus at the Psychology Department of Queen's

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[2] Zeisel, John. *Inquiry by Design: Tools for Environment-Behavior Research.* Cambridge: Cambridge University Press, 1984, p. 111.

[3] Hall, Edward T. *The Hidden Dimension.* Garden City: Doubleday & Company, Inc., 1966, p. 2.

[4] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005.

[5] Montagu, Ashley. *Touching: The Human Significance of the Skin.* New York: Harper & Row, Publishers, Inc., 1986.

[6] Hall, Edward T. *The Hidden Dimension.* Garden City: Doubleday & Company, Inc., 1966, p. 40.

University in Ontario, explains the extraordinary ability of our hands and skin to read surfaces, stating, "As you move your hand, your fingertips are grossly squashed inwards and sideways. Your skin also deforms to follow, in part, the tiny irregularities on the surface of the object. These small-scale deformations may be sensed as vibrations of the tiny areas of the fingertips because the moving hand changes the spatial patterns of deformation to the temporal ones at any given point on the finger"[7]. Through our skin's ability to read textures, feel temperatures, and even communicate emotions, we attain a level of awareness within us that serves to inform visual readings (Fig. 5-6). As a result of our collective experiences that stem from inhabiting our own bodies, we develop an ability to read objects or surfaces visually because we know them intuitively from our sense of touch; we might say that touch has its own sense of memory.

The sense that is usually given the least attention is our sense of smell. Hall comments on this curious aspect of American culture, noting that our cities, unlike those of our European neighbors, "lack both olfactory and visual variety" [8]. Any American who has visited another country has undoubtedly noticed this differentiation; along our travels we are confronted with a cornucopia of odors, pleasant or otherwise. Although it often occurs subconsciously, smell can rekindle a wealth of memories tied to past experiences of place. In the words of Pallasmaa, "A particular smell makes us unknowingly re-enter a space completely forgotten by the retinal memory; the nostrils awaken a forgotten image, and we are enticed into a vivid daydream. The nose makes the eyes remember" [9]. I consistently think back to the smell of my grandmothers' kitchens; any scent of food that even faintly recalls a familiar smell from those places immediately brings to mind imagery of the organization of the space right down to the minute details. Thus, we find that when it comes to our sense of smell, rather than our eyes serving as the facilitator, it is olfactory sensations that cue visual imagery.



Fig. 5 - Unity Temple, Oak Park, IL; architect: Frank Lloyd Wright; sense of temperature from material



Fig. 6 - Mission San Xavier del Bac, Tucson, AZ; architect unknown; perception of depth informed by richness of texture and surface

[7] Lederman, Susan J. "The Perception of Texture by Touch." In *Tactual Perception: A Sourcebook*, by William Schiff and Emerson Foulke, 130-167. Cambridge: Cambridge University Press, 1982, p. 132.
[8] Hall, Edward T. *The Hidden Dimension.* Garden City: Doubleday & Company, Inc., 1966, p. 47.
[9] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005, p. 54.

Our ears describe to us the limits of a space. When we are in a stone canyon, a visual reading will tell us that the walls are stone, but our ears and our mind, in the way they work cohesively to interpret sounds reflected off of those walls, tell us things about the nature of the space and qualities of the stone that the eyes cannot read alone. Pallasmaa suggests, "A space is understood and appreciated through its echo as much through its visual state, but the acoustic percept usually remains as an unconscious background experience"[10]. This description of sound, as something that takes place in our subconscious rather than the forefront of our consciousness, brings to light an interesting aspect of our perception of sound. We do not always notice sounds when they are in harmony with our experiences of space, but we perceive auditory signals immediately when they are out of place with the setting we are experiencing. In a natural setting, you would undoubtedly notice the sound of machinery firing up off in the distance. What is crucial about this aspect of hearing as we consider a design project is the need to screen out noises that would be perceived as disruptive, while at the same time being careful not to dampen out sounds that can contribute to a positive experience of place.

Taste is perhaps the most difficult sense to address in a discussion on design, which is probably why it is the sense least written about. Do we really want to taste the spaces we are experiencing? When spaces are covered in stone, wood, tile, or carpet, do these materials embody characteristics that entice our sense of taste? Most likely not. When we are in a natural setting, however, the argument for an experience of taste becomes more reasonable (e.g., a blade of grass or a piece of hay). On the other hand, a space can present us with a *smell* that we can almost taste. I imagine myself in a cheese shop trying to envision which might have the finest taste. Another example is the smell of bacon in the morning; here we inhabit a mental space that subconsciously suggests the start of another day-cycle. Taking forth our knowledge that smells have the capability to illicit strong positive memories, perhaps we can use smells we can almost taste to accomplish the same.

For the purpose of our discussion, I will argue that there is also the presence of a sixth sense, one that I will refer to as "positional awareness." Positional awareness allows us to sense the relationship of our bodies to other objects in space in order to guide movement. This is not the same as proprioception, which is the *unconscious* perception of spatial orientation. To give an example, when I want to walk from point A to point B in an urban setting, I read the space at several sensory levels to come to a conclusion as to how will be the safest way to navigate it - I look and listen for oncoming traffic in the form of vehicles or other people, I visually touch the ground plane to decide where is the surest place to step, I smell for things that are out of place or disagreeable, such as a fire or the urban aroma of methane. I do not dart out into the street to achieve the shortest travel distance. Structuring these movements requires active play of several senses in unison. Moreover, I believe it is this sense of positional awareness that guides us as we navigate works of architecture. The architect has the ability to suggest or imply certain types of movement, and our positional awareness informs the most natural way to achieve these movements between points of interest, even though we don't always have to take the suggestion.

[10] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005, p. 50.

Thus, while sight is undoubtedly the first sensory tool we rely on to form perception and translate our experiences of space, the rest of our senses are inextricably integrated with the structuring of these experiences. In the field of architecture, we can no longer turn a blind eye to our shared human experiences for the sake of artistic style. Pallasmaa succinctly writes, "Contemporary architecture posing as the avant-garde, is more often engaged with the architectural discourse itself and mapping the possible marginal territories of art rather than responding to human existential questions. This reductive focus gives rise to a sense of architectural autism, an internalized and autonomous discourse that is not grounded in our shared existential reality"[11]. All of our senses must be exercised for adequate mental and spiritual functioning, just as we need physical exercise for prolonged health. To allow intellectual discourse in architectural design to trivialize our senses is to allow a constriction of that which makes us human. It is time for the field of architecture to reassert the significance it is steadily losing. This will only be achieved by designing around people and the human body.

> 'To shut off any one of the senses is to reduce the dimensions of reality, and to the extent that that occurs we lose touch with it; we become imprisoned in a world of impersonal words, sans touch, sans taste, sans flavor.'
>
> Ashley Montagu, *Touching: The Significance of the Human Skin,* p. xiii[12]

[11] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005, p. 32.
[12] Montagu, Ashley. *Touching: The Human Significance of the Skin.* New York: Harper & Row, Publishers, Inc., 1986, p. xiii.

Chapter II.
Examining Sensory Experiences Through Qualitative Questions

> 'I would love to do low-income housing. I did a low-income housing project in Brooklyn that was built and very successful. Do I need to engage with the people who live in these units? No, I don't believe so, because I believe that the architect is supposed to know more about what they want if they could know what they wanted.'
>
> Peter Eisenman, from the film *Citizen Architect*[13]

The preceding quote from world-renowned architect Peter Eisenman is indicative of how some high-profile architects regard the people they are commissioned to design for. Some might regard this statement as incredibly arrogant in its authoritative placement of the architect on an intellectual pedestal, yet Eisenman's quote does underscore a very real dilemma we face in our designs. Once we move beyond quantitative questions, clients are not always able to put into words what they expect from a space or how they expect it to perform experientially. However, rather than assuming that clients don't know how to describe what they want or what they expect, perhaps we can find better ways of asking.

The project that I will be pursuing in the design portion of this exploration is the Native American Student Center for the Montana State University campus in Bozeman. A number of factors have contributed to my selection of this project. First, although it is a few generations back in my paternal ancestral line, my family is part Ute, and our Mexican ancestors were part Toltec. I have not been very much in touch with this part of my ancestry, but at this juncture in my life I have started to discover how some of our family values have related to Native sensibilities. Second, the building is a proposed project in the university's Master Plan, and the Native student population has reached a number such that students and faculty are generating a critical mass of support for the project. At this critical juncture in time and place, the center provides an opportunity to test the ideas I am exploring, as well as an opportunity to highlight the need for deeper understanding between various cultures for the continued advancement of our university. Finally, there is an accessible group of students and faculty here on campus, who have graciously made themselves available for consultation, that will one day either use the center or oversee its development.

Working through a series of iterations, I began to establish a set of questions that attempted to get closer to an understanding of sensory qualities and perception. In order to determine how significant sensory experiences can be used as precedents in the design process, a series of interviews were conducted to examine sensory experiences and perception as they pertain to people from different Native American cultures. The questions posed addressed issues regarding the following:

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[13] *Citizen Architect.* Directed by Sam Douglas. 2010.

- meaningful experiences in a place and how the space they were in contributed to it

- what sights, sounds, smells, tastes, or textures reinforced their experience of spaces

- their perception of how they interpret their own experiences of nature

- the importance of gatherings and the way people come together; also how the scale of the space impacts these gatherings

- spaces where they might feel uncomfortable or out of place

- their perceived significance of textures and textures that remind them of home

- smells as they pertain to memories

- how they engage with people from other tribal groups

- their view of a perceived lack of visibility of Native students on campus

- what they recognize or feel in their body as they move through spaces

- what beyond a Native American student center could create identity or a sense of place for Native students

Interview Findings

To move forward with my inquiry into qualitative questioning, I consulted a group of four people, made up of two Native American faculty members and two Native American students, each from a unique tribal community. It should be noted that all of the interviewees were male, primarily due to the time frame I faced and the group of people I became familiar with. This fact may affect the interpretations of and responses to the questions presented. While there was a variety of responses to the questions, I found many common threads that established significant qualities of space, sensory experiences, and perception in Native cultures, while some observations simply led to further questions. Some of these unresolved questions might be able to be addressed in the design process. The table below lists my observations as well as commentary on the implications of these observations. The complete list of interview questions can be found in Appendix A.

Observation	**Implication**
For many Native students, coming to college is their first time away from their families and communities; as a foreign space campus can be a source of tension and disorientation	A Native American student center should create a place on campus that feels more like a community or "home"
All interviewees mentioned running water, usually streams or rivers, as a reminder of home	The design might highlight the ethereal qualities of water by making use of rainfall, snowfall, and wind
Common perception that Native Americans focus on shared experiences that will bring them together rather than focus on differences between groups that will divide them, creating a sense of comfort in the presence of other Native people	As one becomes a part of the MSU Native community over the semesters, differences between groups become less relevant

Favorite places were commonly characterized by natural settings; a sense of peace consistently derived from observing the surrounding landscape	People from Native American communities may be more comfortable within the building if it instills a sense of a natural setting
Hills and landscape perceived as a grounding reference point, while a lack of natural landmarks can be a source of disorientation	Views to natural landmarks in Bozeman should be preserved (e.g., the Bridger Mountains)
Two preferences for study settings: spaces that facilitate creative collaboration, and spaces that allow one to be alone in their studies	Design must incorporate two types of study settings
Common interest in the tactile qualities of natural textures (stone, trees, leaves, grass,) rather than synthetic textures; these natural textures were tied to experiences of home	Highlights preference for natural, regional materials as a reminder of home
All interviewees described the smell of sage, sweetgrass, rain, and fresh hay consistently as odors tied to deep memories; tied to visual qualities also	Include sage and sweetgrass, or even hay, as part of site vegetation?
Interviewees commonly described smells of food as provoking strong memories; can be attributed to the importance of gathering over meals as families and communities	Need for inclusion of community space where people can gather for meals
Darkness can be employed as a way to activate other senses	Some spaces may have lower lighting levels to heighten other sensory experiences
Some discussion of the idea that we will not always perceive sounds that are appropriate for the setting we are in, but that we will notice sounds that seem incongruent with that setting immediately	Need for screening of disruptive noises from areas adjacent to the site
Interviewees consistently described crowded spaces as creating a sense of discomfort due to having to "navigate" a space with many people, preferred more open flow	Spaces should accommodate large groups without creating a feeling of overcrowding
Consistent preference for a more organic flow within and between campus buildings, embracing natural energy flows and creating a more fluid sense of movement (e.g., a canyon)	May necessitate the use of flowing, organic forms in the center's design
Perception exists that the generic qualities and designs of MSU buildings lack authenticity and compassion; leads to a sense of non-inclusiveness that keeps some students from studying on campus	Campus design as a whole could create an environment more welcoming of non-Western cultures and perspectives, again tied to the idea of more flowing, organic forms
Sound of birds as a source of comfort and feeling of home	Preserve the natural site qualities that attract birds (e.g., trees)
Concept of the arrival of spring as the start of a new cycle; spring as "new birth"	Can the design highlight the arrival of spring?
Existence of different perceived levels of sharing: "visiting"- small, informal conversations in small groups as a way of sharing; gatherings and sharing of food as an important event for families and	Design must accommodate both scales of sharing/gathering

communities	
Support for Native students is compartmentalized: each college can reach out to Native students so that center becomes a support element for student success instead of the only location for it; lack of Native faculty might make campus feel less inclusive	Need for campus as a whole to embrace other cultures at a deeper level; may be unachievable through the student center design
Consistent description of the sound, and even the feeling, of drums as being related a feeling to home	Should a space be included to allow for drumming? How would this sound be screened from disrupting other spaces?
Brick Breeden Fieldhouse is the only round building on campus; Annual Powwow is seen as a means to bridge differences between cultures; feeling is intrinsically tied to the Fieldhouse in its ability to host large groups of people	Design for the Native American student center should not detract from the experience of the Powwow at the Fieldhouse as the primary annual gathering
Perceived need for campus to connect with Native spirituality and ecological sensibilities; importance of spirituality and prayer as a guiding force; sweetgrass/cedar/sage smudging as spiritual gesture of cleansing	Should the design provide space for private spiritual ceremonies?
All interviewees discussed a feeling of deeply meaningful or spiritual experiences derived from being out in nature, rather than within buildings	Need for the building to be carefully integrated with the site and its natural qualities
Strong connection to families (e.g., many Native students have spouses and children) keeps some Native students from spending more time on campus	The establishment of a Native American student center will not automatically draw all Native American students; the center may need to provide support for families (e.g., daycare, playgrounds)
Perceived need for Native students, as well as the rest of campus culture, to overcome their respective barriers to achieve understanding between groups; sense that a level of mutual respect, interest, and, curiosity can help us overcome prejudgments learned elsewhere, making it comfortable to learn about each other and ask questions	How can the design for the center invite the rest of the campus culture to share and develop understanding of Native cultures, and vice-versa?

At the outcome of the interview process, we are able to find confirmation of Hall's contention that experiences of space are structured differently from culture to culture. The interviewees' responses do indicate that Native American student's experience of the Montana State University campus is inherently different from that of the prevailing Western academic culture, and I also would argue that we would find this observation to hold true if we were to interview groups of students from other non-Western cultural backgrounds.

What is striking is the existence of one place (the United States) being experientially inhabited in various ways by different cultures. An example from Jonathan Hill's *Immaterial Architecture* effectively illustrates this point: in Shanghai, at the end of the Bund (the Westernized waterfront district), there is a park that used to display a sign stating "No Dogs or Chinese." In Hill's words, "Today the sign is absent and two parks occupy the same site. Visitors who know nothing of the city's history experience one.

Shanghaiese who know about the sign experience the other. How we understand and experience a space depends on what we know about it through personal and shared experiences and cultural and social affiliations"[14]. What Hill's observations suggest in the context of American history is uncomfortable at best. For some Native students, there is, as one student characterized it, an "intergenerational trauma" that contributes to the difficulty of adjusting to the campus environment. However, interviewees suggested that through more open dialogue and understanding between Native people and the prevailing campus culture in the future, this barrier will be overcome.

Many students experience difficulties being on campus and away from home for the first time, but this feeling can be very deep for Native students, given the importance that is placed not only on immediate family, but one's entire extended family and community. In my interviews, it became clear that a student center, in order to achieve the goals of the Native American community on campus (e.g., student success, providing a comfortable environment, creating a sense of place, and building relationships with the rest of campus), would have to create an environment for Native students that recalls a greater feeling of home and community, because there are elements of the campus environment that can be cold and isolating. As stated by one faculty member, "There's nothing that visually connects Native culture to this campus...it gets back to Native interests because the environment so reflects a Western point of view. You know, North-South, East-West surrounding prominent buildings...it's very planned, and that's nice...but it just doesn't feel alive."

The interview process also highlighted a fundamental aspect of perception in Native American cultures. When asked about meaningful or memorable experiences tied to place or home, answers were consistently tied to descriptions of experiences in the natural landscape. There was little discussion of these types of experiences within buildings, except where it involved community gatherings. Moreover, there is a deep spirituality tied to these experiences of nature that is incongruent with Western views of nature. The response from one student was exemplary of this spirituality:

> ...I think about the spiritual sense of the trees, the air, the earth, the water...they're just not some commodities that are simply in existence and are there for our use and our consumptive use and profit, but there's also a spirit to them. Just like the water is just like another human being, you talk to it, just like I'm talking to you right now...that's how I've been raised think of it. But...they have supernatural power to them that, when approached in the right way, could really benefit you, and your children, and your loved ones, and yourself...when you look at it that way, it's more of a fulfilling and it's more of an in-balance sense of being. You don't feel so out of place. You feel like you're right where you're supposed to be out there in the natural world...that's one of the big disconnects that dominant society has with Native American culture, with Native American people. We're a humble people, you know...and we're really spiritual. A lot of the way we operate is...you have to believe it to see it, whereas in the dominant culture, in the white man's world, you have to see it to believe it.

In regard to community gatherings, there is great importance to the gesture of people coming together to share meals and share in celebration as a community, which is a gesture that many Western cultures do not partake in. While we may gather over certain holidays as a families, rarely do Western

[14] Hill, Jonathan. *Immaterial Architecture.* New York: Routledge, 2006, p. 92.

cultures come together as a community for the sake of celebration. One student stated, "What's really important about it is...when people gather it's usually a cause for celebration... to celebrate the act and the emotion and the intention of celebration is usually what underlies most of our gatherings..."

In addition, there is a common perception that the annual Powwow, held at the Brick Breeden Fieldhouse on campus, is the most important event for the Native American community in Bozeman. One student described the significance of this gathering in terms of being able to play host to the greater community, stating, "It's a point of pride for the entire Native community to be a host...it's the one time throughout the entire year where we feel like we can be the host for the entire community of Bozeman, you know, you invite them...to witness and observe our culture and our heritage where we can play that host, and that's really meaningful, especially being away from home." In the words of another:

> ...the importance of just getting together as a tribe, one of the main times we do that is during our powwow celebration...celebrate life, come together, appreciate one another, talk good to one another, pray with one another too, and experience dancing, singing, sharing songs, sharing dances, stories. It's that whole aspect of building the community, the integrity of the community, through relationships and understanding, especially with other tribes too when they come over...when they come over, we try to show them respect...kind of like you're building allies. You take care of them, they take care of you...you respect them and get along good and have a lot of friends. That way...your life is more fulfilling, it's more enjoyable, back to that integrity of your life...That's one event that makes me feel at home, makes me feel comfortable, makes me really connect with this university, because knowing that this university is, you know, sensitive to our culture in that regard...I connect with it. Connect with it more on a deeper level because they're receptive and they're sensitive to our culture, and they're respectful of it, and they encourage it.

Thus, the ability to hold the Powwow in the Fieldhouse has been a deeply significant event in building support for the Native American community on campus, and the fact that the university has allowed the community to hold it in such a large, important community space has made many people feel more welcome, not only from the Native community, but from the Bozeman community as a whole.

> 'I honestly think in some years' time that MSU is really going to have an epiphany where we go...if we're going to take Native students seriously...there's going to be that aspect of artistic appreciation."
>
> Student response

Chapter III.
Precedent Studies

If we are to put forth a methodology for using qualitative client input to develop details to drive sensory experiences and perception in a larger design, it would benefit us greatly to look to the work of other architects and their approach to addressing sensory experiences in their designs. Though some of these projects may not necessarily engage all of the senses we have discussed, we will examine the ways in which they do engage the senses and perception to determine what can be considered useful, as well as where they fall short, in relation to this proposal for an architectural process. The precedents I will discuss are buildings that I have visited in person, as I will be able to describe them from my own perception and sensory experiences there while examining them through the critiques of others.

The Pantheon, Rome, Italy

Standing as one of the most advanced buildings in the history of construction, the Pantheon is simply stunning as a holistic experience of architecture. No builders since have been able to reproduce the dome of the Pantheon without the use of reinforcing steel, which is a testament to the expertise of Roman builders. As a second-year student in architecture, I had experienced no other work of architecture that prepared me for the feeling of this space.

The building appears somewhat underwhelming when observed from the Piazza della Rotonda, located in front of the building (Fig. 7). However, as you move closer to the portico entryway, the building seemingly grows larger and larger until you are almost overcome by the mass and weight of what stands in front of you. This phenomenon grows deeper as your line of sight draws you further into the building's interior. Positional awareness takes hold as you calculate every movement to navigate the crowds flowing inward and outward at a constant pace. When you reach the interior and find room to pause, your eyes follow the details up the walls along the wall texture and the depth of the coffers until they reach the oculus at the top (Fig. 8-9). You come to recognize that all of the light within comes from this broad opening, which allows natural light to generously flow down the coffered ceiling and the walls, enriching every surface of the space. As Norwegian architect Christian Norberg-Schulz suggests, "The Romans treated space as a substance to be shaped and articulated, making it active and no longer an 'in-between', secondary to the surrounding plastic bodies. It becomes a primary concern of architecture, and is defined by walls which are intended as continuous surfaces, rather than by masses"[15]. These surfaces are brought to life by the ethereal ray of light emanating from the oculus.

While your eyes and body are interpreting the volume of this space and the depth of its details, auditory sensations are at first suspended in the background. Rather than being perceived as a disruption, the murmur of the crowd seems in perfect harmony with the space around you. As you begin to move, you are still aware of the position of your body in relation to the oculus; it hovers above you as an omnipresent observer, and whatever point you choose to stand is in relation to this opening to the sky above. Shortly thereafter, the sound within begins to contribute to the experience of this

[15] Norberg-Schulz, Christian. *Meaning in Architecture.* London: Studio Vista, 1980, p. 42.

Pantheon, Rome, Italy



Fig. 7 - Portico viewed from Piazza della Rotonda



Fig. 8 - Detail of wall surface



Fig. 9 - View of oculus and coffers above

space. It feels as though every voice in this building is heard; the heavy walls echo and reflect the sounds of people within, and you become aware of yourself as one in a crowd.

The Pantheon also exhibits a unique characteristic inherent in many Roman buildings that is not seen in the other precedents we will examine, and that is the introversion of a grand public space[16]. The sheer volume of the space is awe-inspiring; the void carved out of the building's mass is as much a feature of the architecture as the building itself. The gesture of turning the public space inward creates

[16] Davey, Peter. "The Magic Labyrinth." *The Architectural Review*, 2001: 44.

a more intimate experience of space, naturally deepening relationships between bodies inhabiting the space; we are less inclined to perceive this when we are in an open plaza. In a manner that downplays this sense of the public realm, public spaces are nowadays typically pushed outside of the building. Furthermore, the concept of corporate plazas as a "public" program element has only led to the privatization of spaces that were historically reserved for public gatherings.

A reading of the sensory experiences accumulated from a visit to the Pantheon presents us with a starting point for a discussion of perceptual qualities and sensory experiences engrained in built form. The ability of the architect to bring public spaces within buildings stands out as means to create spaces that can promote civic engagement, public celebration, and private contemplation. In the case of the Pantheon, these qualities are driven by the use of natural light and the richness of surfaces and textures. The manner in which this space engages positional awareness is an important consideration for the design of the proposed student center. Having noted that tight, crowded spaces are perceived as uncomfortable, we will have to provide ample space for movement if we are to bring public gathering spaces within.

Neurosciences Institute, La Jolla, California

In the hills of La Jolla, just beyond Louis Kahn's timeless Salk Institute, sits the Neurosciences Institute (NSI), an architectural work by Tod Williams Billie Tsien Architects. The location is at the heart of a world-class research center, with the Scripps Research Center and the University of California, San Diego adjacent to it. The site was conceptualized as a "monastery for science," as described by Tsien in her characterization of NSI founder Dr. Gerald Edelman's aspirations for the project[17].

This project is deeply significant to our discussion in terms of its siting and the way it integrates with the surrounding landscape. In contrast to many works of contemporary architecture, it is a complex that sits *in* the landscape, rather than on it. A series of ramps, staircases, plazas, and terraces allow you to move about the site in a variety of ways that afford several significant vantage points. As you travel these various paths through the site, you sense your body's movement upward and downward in relationship to the natural features and architectural landmarks positioned on the site. Each position you inhabit on the site is a unique experience of it. In addition, the placement of the buildings on the site effectively screen the bustling roadway below, as well as the sprawling campuses beyond, contributing to a more holistic experience of the place the architecture occurs.

The natural materials used by Williams and Tsien in the design to contrast some of the large concrete forms also create a human scale about the site, whereas the Salk Institute creates a much more monumental experience in its expansive use of concrete and travertine[18]. From fossil stone panels that feature imprints of seashells, to the redwood paneling that lines the auditorium entry (Fig. 10), to contrasts between smooth stone in the plaza butted against rough concrete walks, a level of textural interest is instilled within you; you can hardly help but reach out and touch these materials.

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[17] Freiman, Ziva. "The Brain Exchange." *Progressive Architecture*, April 1995: 76-85, p. 77.
[18] ibid, p. 76

Neurosciences Institute, La Jolla, California. Architects: Tod Williams Billie Tsien Architects



Fig. 10 - Auditorium entry



Fig. 11 - Fountain above conference room



Fig. 12 - View of reflecting pool (looking southeast to auditorium)



Fig. 13 - Terrace (looking north)



Fig. 14 - View of the "Theory Center"



Fig. 15 - Detail of fossils in limestone panels

Furthermore, these materials are used to highlight key areas in the design, enabling them to speak to our sense of vision in order to lead us around the site.

The material palette unfortunately underscores a shortcoming of the project in relation to our proposed design. Although the materials appear contextual in relation to the surrounding landscape, they are actually far from it. The fossil stone panels were brought in from Texas, and the serpentine stone used in the plazas and building entrances was imported from Italy[19]. If we are to design a project that speaks to Native sensibilities of the natural world, it would not befit us to choose materials with such a high level of embodied energy. Regional materials would be more appropriate from this perspective.

There is one characteristic of this project not exhibited in the other precedents named here, and that is the use of flowing water. The auditory sensation of flowing water, emanating from a fountain adjacent to the conference room and a reflecting pool in the main plaza, establishes an overtone to the experience of the site as you move between the buildings, again humanizing the architecture an lending the site a more natural character.

A few fundamental concepts emerge from our discussion of this large-scale institution and its architecture. The primary consideration we must take away is the ability of the siting of buildings to humanize them, as well as to integrate an experience of the surrounding natural landscape. Secondly, we can take cues from Williams and Tsien's use of natural materials to create rich surfaces that we experience with our hands, meanwhile taking the care to assure that the materials are regionally appropriate in their character and embodied energy. Finally, we may observe how the use of flowing water on the site and grounds can create an air of serenity, even in the presence of solid, heavy materials.

Nelson-Atkins Museum of Art, Kansas City, Missouri

At first glance, there is an apparent clash between the two parts of the Nelson-Atkins Museum of Art, with architect Steven Holl's 2007 addition resting adjacent to the 1930s Beaux-Arts design of Wight and Wight of Kansas City. As you experience a fluid sense of movement through this important cultural complex, you actually find that a harmonious interplay has been achieved between the old and the new.

In a manner similar to the Neurosciences Institute, we again find significance in the project's siting, which is strengthened considerably by Holl's addition. Again, the buildings sit *in* the landscape instead of on it. When viewed from the southern slope of the site's topography, you can see the way that the translucent block forms of the addition gradually step up the hill to the east until the final pieces nestle themselves against the original structure (Fig. 16). By taking the time to walk the entire site, I gained a sense of awareness of how my body weaved its way through the components of the design. From the subterranean galleries of the addition, I followed the walkways within up and into the

[19] Freiman, Ziva. "The Brain Exchange." *Progressive Architecture*, April 1995: 76-85, p. 82.

Nelson-Atkins Museum of Art, Kansas City, Missouri. Architects: Wight and Wight (original building), Steven Holl Architects (addition)



Fig. 16 - Blocks stepping uphill to the old museum



Fig. 17. - Reflecting pool with oculi to garage below

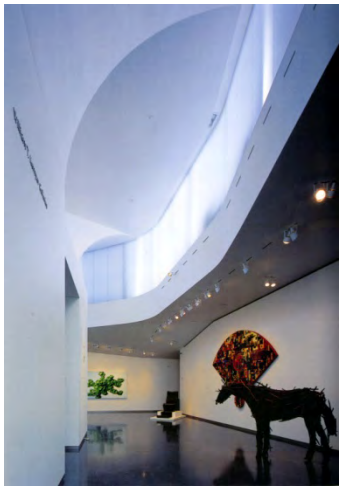


Fig. 18 - Daylit gallery



Fig. 19 - "Lens" illuminated at night

original museum, which in itself delivers a much more sequential experience by creating a tempo of expansion and contraction, then walked out to the grassy lawn that spills down to the road below, back up the curving walkways that meander alongside the geometric forms of the addition until I arrived back at the junction between the old and the new. You come to realize that one can navigate the entire site from top to bottom without taking a staircase; an overarching sense of fluidity is gained from the ability to navigate it through topography alone.

Unlike the previous case studies we've included in this discussion, there is a phenomenological quality in the way the site embraces the changing of the seasons. At the conclusion of my interview process, I found myself wondering how a building could celebrate seasonal changes, and this complex presented itself as a perfect example. As part of Holl's addition, a grand reflecting pool replaced a large part of the plaza that sat in front of the old Nelson-Atkins museum (Fig. 17). This pool, designed by artist Walter De Maria, includes thirty-four oculi that puncture the ceiling of the parking garage below,

so that natural light refracted through the water creates a "vehicular Arrival Hall"[20]. When the cold Midwest winter rolls around, the reflecting pool freezes, but still affords patrons in the parking garage a view up through the ice. In this manner, the site highlights the changing of the seasons by incorporating them into the design.

The expansion to the existing museum also achieves qualities of space not typically associated with an art collection. The five translucent glass boxes, which Holl conceptualized as "lenses," feature a double-glazed cavity with a special insulated glass that diffuses light, so as not to expose the art to harmful sunrays[21]. This was achieved in conjunction with the gesture of sinking the gallery spaces into the hill, allowing the protruding glass forms at the ground level to act as clerestories above the gallery spaces. In addition, carefully-placed openings in the lenses create views out onto the lawn, again supporting the perception of a fully-intertwined site.

Some key considerations can be drawn from an experience and examination of this project. First and foremost is the ability of a building's integration with the site to create a fluid experience of space. While the importance of siting is also evident in the Neurosciences Institute, the unique characteristics of the siting in this project creates a different perceptual experience. In the NSI, the siting allows one to move about from vista to vista, but the design dictates particular pathways necessary to reach different experiential points. In contrast, the Nelson-Atkins, in its the integration of the old with the new, allows for a much more fluid experience of space, allowing us to weave our way through the complex with much greater freedom than is perceived at the NSI. Next, the design demonstrates how we might be able to embrace the seasons through its use of the reflecting pool atop the parking garage. The site for our proposed project could be made much more in line with the perception of Native communities if it spoke to, for example, the idea of winter as the end of a cycle and spring as the beginning of renewal or rebirth.

Casa Curutchet, La Plata, Argentina

As you navigate the tight urban fabric of La Plata searching for this landmark in the career of Le Corbusier (it was his only built work in South America), those familiar with Corb's work might find themselves anticipating an encounter with an open park featuring one of Corb's famous white free-standing buildings. However, when you finally come upon it, you find a house gently nestled between buildings in an urban context that is still exemplary of Corb's "Five Points" (Fig. 20): the building is lifted off the ground on pilotis, the facade is pulled away from the structure to allow for free expression of its characteristics, an open floor plan provides for configuration of spaces without the obstruction of dividing walls, ribbon windows skirt the facade, and roof gardens occupy parts of the upper levels to replace the vegetation displaced on the ground plane. However, it is not the inclusion of these characteristics that make your visit a meaningful architectural experience, it is the integration of the Five Points with rich architectural detailing that lend the building an air of poetry.

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[20] Futagawa, Yoshio. "Steven Holl: Nelson-Atkins Museum of Art, Kansas City, Missouri, U.S.A." *GA Document*, 2007: 8-31, p. 15.

[21] ibid, p. 14

The house was commissioned by Dr. Pedro Curutchet, intended to be his residence and his medical office housed within the same structure. It is important to note here that this project took place from 1948-1953, some years after Le Corbusier's initial introduction of these Five Points in built form, encapsulated in the Villa Savoye outside of Paris. While Corb's work is primarily visual, and his early philosophy was authoritative in putting forth these ingredients for pure forms of Modern architecture, Pallasmaa reminds us that Corb's later work takes on a wealth of tactile experiences that were uncharacteristic of the architectural dogma that Corb expounded [22] (Pallasmaa pp.70).

As you walk in through the garage, you quickly encounter a unique integration of man-made elements with the natural. A large tree at the ground level thrusts its way up between the levels of the house, creating the inner courtyard that is characteristic of so many Latin American houses. At this juncture you come upon a series of white-walled ramps that striate the space: one leads down past the tree to the back-of-house and washing areas, while the other leads from the garage up to the living area (Fig. 21). Here, another ramp leads up to Dr. Curutchet's office and study, only to lead you to another ramp up to the private bedroom areas. Even though it is linear, there is a flow about this space that the body recognizes as one transverses these levels.

Sensory experiences are to be found in many other areas throughout the house as well. They are engendered in the wood trim that lines the ramps, and they are to be found in the hand-operated wood louvers that let in natural light (Fig. 22). Our eyes are drawn along the blue paint that coats the window frames in the doctor's study, while our hands are drawn to the ornate wooden book shelves that line the same space. The tile floors in the living quarters and bedrooms instill a sense of coolness as your ears take in the sound of feet on the tile. There is also an ethereal quality in the way the roof overhangs project out only far enough to expose the tree canopy and the open sky above as we look up from the inner courtyard.

Unfortunately, there is one aspect of Le Corbusier's design process from which the entire project suffered at a crucial level. Le Corbusier carried out the entire design project from his Paris office, having never visited the site in La Plata. The house stood empty for nearly twenty years after Dr. Curutchet could no longer bear the heat in his bedroom behind the fully-glazed window panels[23] (Wild pp. 79). The building was restored in 1988, and the building to the rear now houses the La Plata Colegio de Arquitectos (College of Architects).

The experience of this work of domestic architecture highlights some key considerations for the design process I have proposed. First, there is the necessity of using natural materials to be experienced through the sense of touch. Next, the choice of a material such as tile for the flooring surface exemplifies the ability of a material to suggest different temperatures that can affect our level of comfort within. The material palette within the building heightens the sensory engagement of the interior spaces, and, frankly, without them I believe the house would come across as rather cold and lifeless, leaving us with only barren white concrete surfaces. Next, Corb's lack of understanding of the site and the place in which the architecture was to occur was a shortcoming that left the building nearly

[22] Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005, pp. 70.
[23] Wild, David. "Design at a Distance is Fraught and Flawed." *Architect's Journal*, 1997: 79, p. 79.

uninhabitable. As evidenced by the observations and implications from my inquiries in the interview process, a lack of understanding of this particular site could leave the building not only physically, but also spiritually, uninhabitable.

Casa Curutchet, La Plata, Argentina. Architect: Le Corbusier



Fig. 20 - Urban context



Fig. 21 - View of ramps from living space

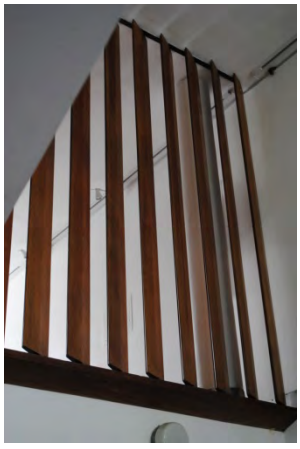


Fig. 22 - Hand-operated wood louvers



Fig. 23 - Tree protruding from courtyard below

Chapter IV.
Site Qualities

As you arrive at the project site and begin to experience it, your senses are immediately engaged. Situated at the east end of the Centennial Mall, with Hannon Hall, an all-female residence hall, immediately to the north, and Roberts Hall, home to the College of Engineering, across the parking lot to the south, the project site sits at a major crossroads on the Montana State University campus. Its location is significant in that it is an edge condition on the primary axis of campus, as well as a buffer zone between the campus and the adjacent residential neighborhoods to the east. Hundreds of students move across the site daily, superimposing several paths of movement on the site grounds.

Upon setting foot on the grounds, one immediately feels the lumpiness of the grass, or the softness and spring of the dirt path and wood chips underfoot. At the east end of the Centennial Mall, you perceive it as a unique place on the MSU campus, existing away from the hustle and bustle so apparent in the activity in front of Reid Hall, Montana Hall, or the Renne Library. You sense an air of tranquility - this is a place where one can meditate and reflect. People are studying, eating lunch, drawing, and walking or riding to and from class.

A particular type of movement occurs on this site. When people cross the site, they most often follow along a dirt path that leads from the southwest corner to the northeast corner of the site. Walking this path from the neighborhoods onto campus places us directly on axis with the Centennial Mall, opening a vista that immediately engages us with the heart of campus and reminds us of our place. A sense of arrival permeates the air, and it occurs in both directions. One has either arrived upon the threshold of campus, or has come to the end of an experience on campus.

The Site in Context

This is the final open site for building on the eastern edge of campus, lending the project a level of significance similar to the National Museum of the American Indian (NMAI) in Washington, D.C., and the Payne Family Native American Center at the University of Montana in Missoula, both of which were given the final open building sites on their respective malls. The proposed site is currently split in half by a wide sidewalk that leads from 6th Street west to the parking lots adjacent to Hamilton Hall. The site is again divided, in this case diagonally, by the aforementioned dirt path that cuts from the southeast corner.

Every building adjacent to the site has a view to it from different levels, which means there will be a high degree of exposure for the project being considered. Offices in Roberts Hall, Hamilton Hall, and the Strand Union have a view into the site, albeit somewhat restricted by several tall trees, while the dorm rooms on the south elevation of Hannon Hall have an unobstructed view down onto the site. There is also clear visibility on the approach from East Garfield and the adjacent portion of South 6th Street.

Taking time to allow the site to inform your senses, you begin to develop a sense of how this place exists in relation to its surroundings. You can hear the seemingly ever-present magpies, cars navigating the parking lot, the bells of Montana Hall, bicycles passing, and people passing in conversation. There are also a set of disruptive sounds that come hand-in-hand with an experience on the site. Construction equipment seems to beep incessantly, backing up before once plowing forward once again. This noise comes from the direction of Herrick Hall, and will only be a disturbance for the near future. Bookending the winter months are the sounds of weed-whackers exerting their dominance over the grass, which seems ironic after so much effort and resources have been committed to grass-growing. However, there is one sound here that bellows its disruptive chorus above all others, and that is the sound of the mechanical units atop Hannon Hall. These units whine throughout the day and into the night without cease, and while on-site you are constantly aware of this machinery.

Here, the seasons are on full display. Several trees occupy the grounds, with a healthy mix of deciduous and evergreens altering the site's visibility as the seasons rotate. This mix of vegetation may be beneficial to the experience of the site in the winter since the diminished foliage will allow more sunlight into the site. The diagrams on the next several pages begin to explore the site's experiential qualities.

Pedestrian/Bicycle Movement

- Independent Paths: Paths created by people transversing the site
- Primary Paths: Paths suggested by existing sidewalks

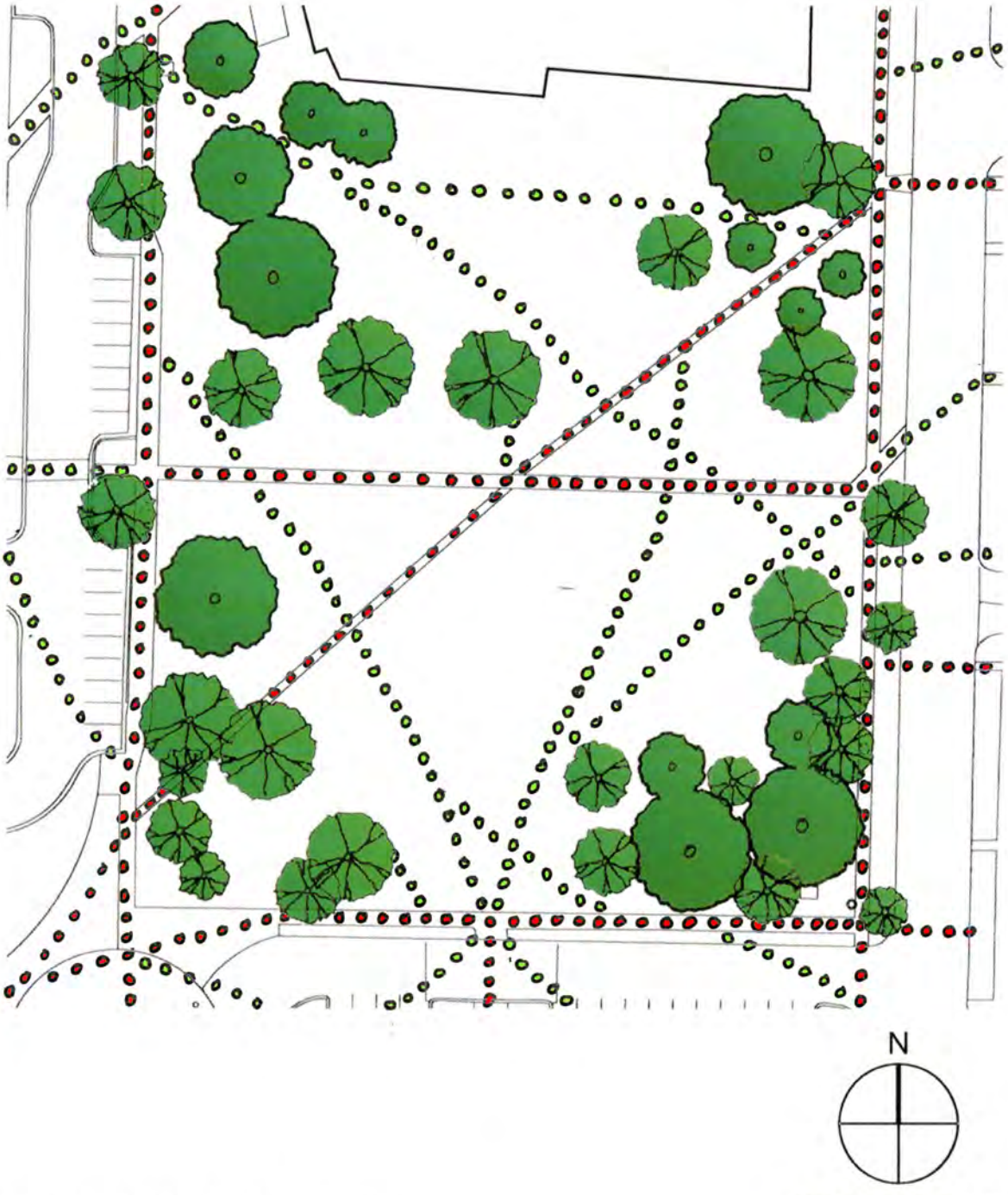
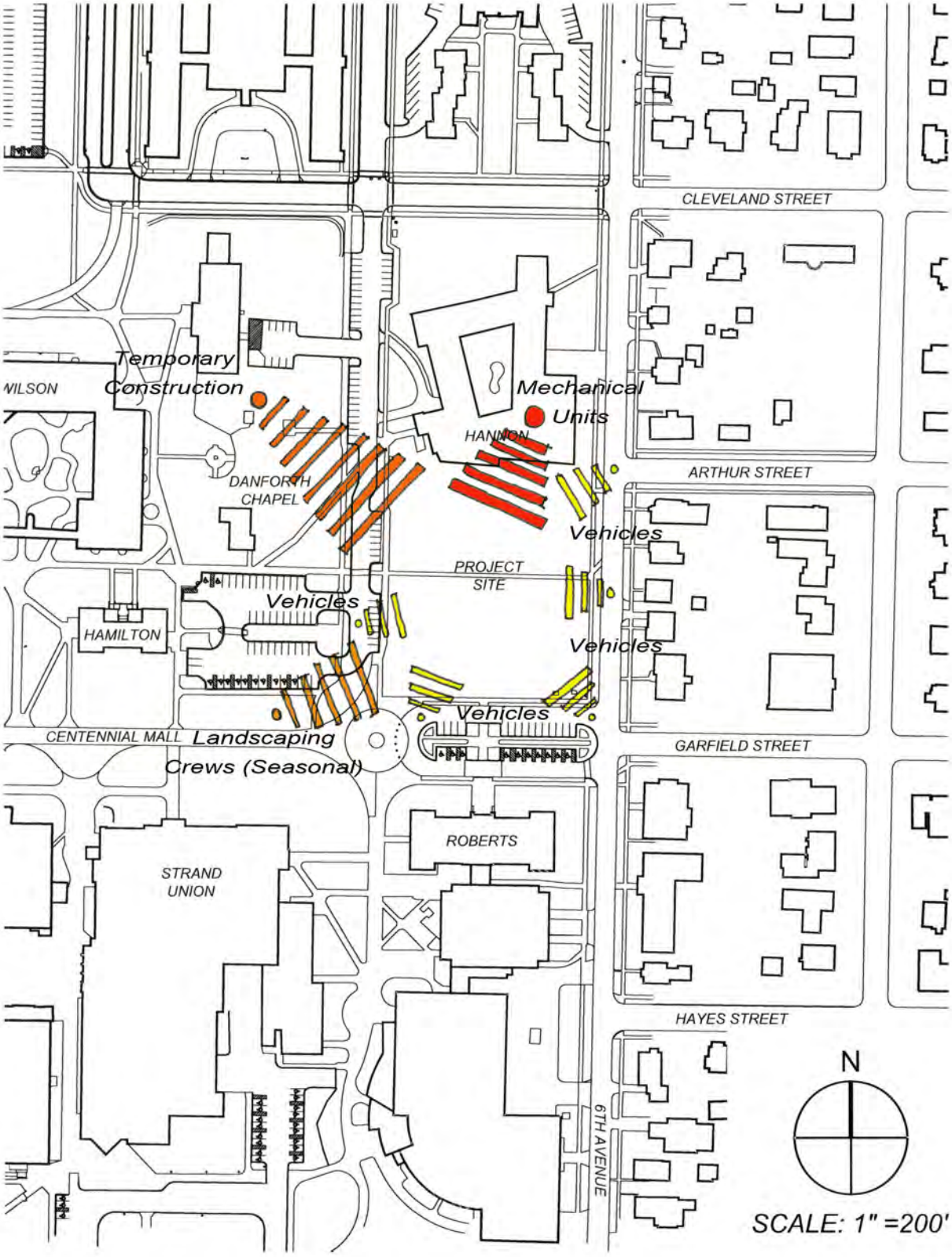


Fig. 24 - Pedestrian/bicycle movement

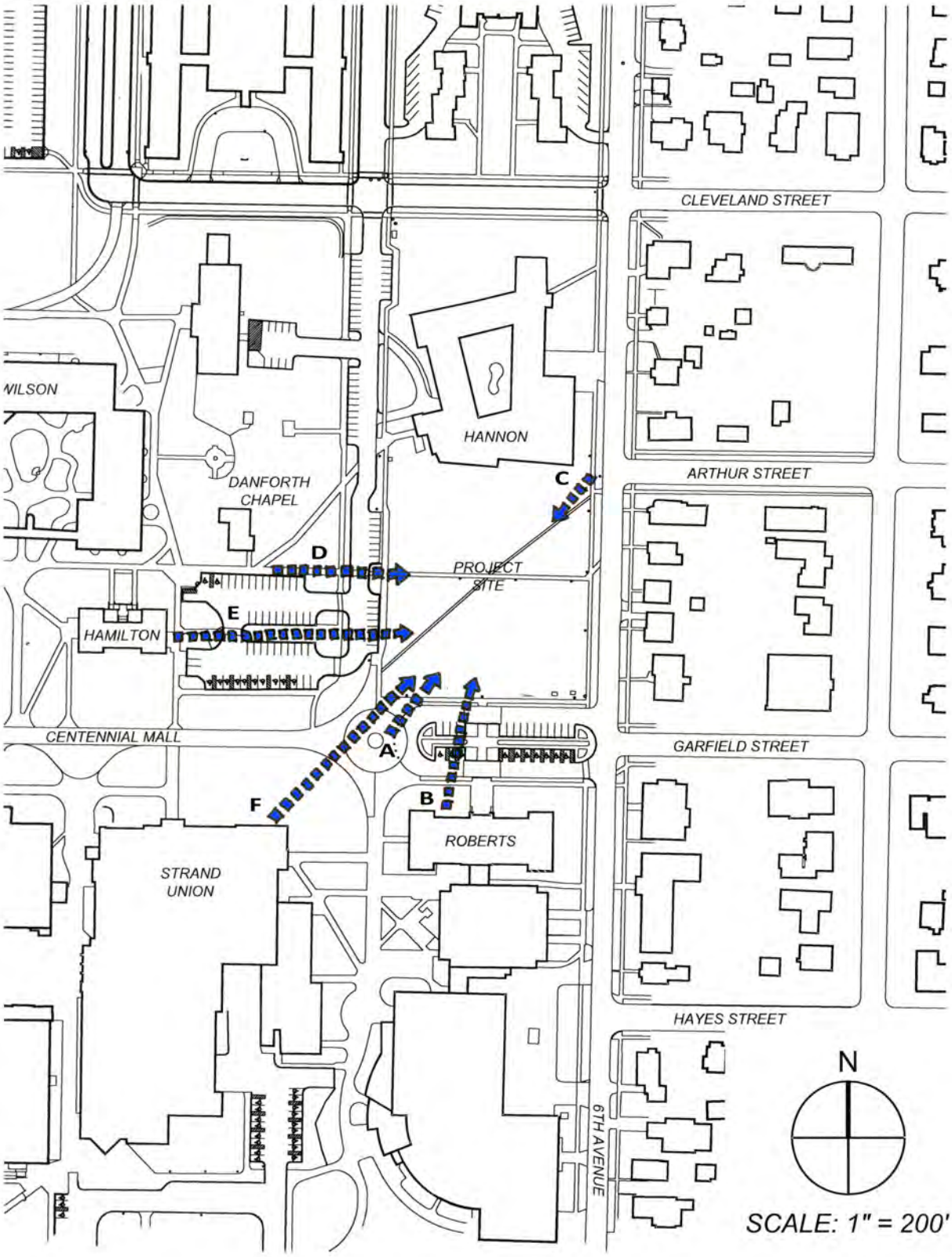
Noise

Fig. 25 - Noise



Primary Views of the Site

Fig. 26 - Primary views of the site



Primary Views of the Site



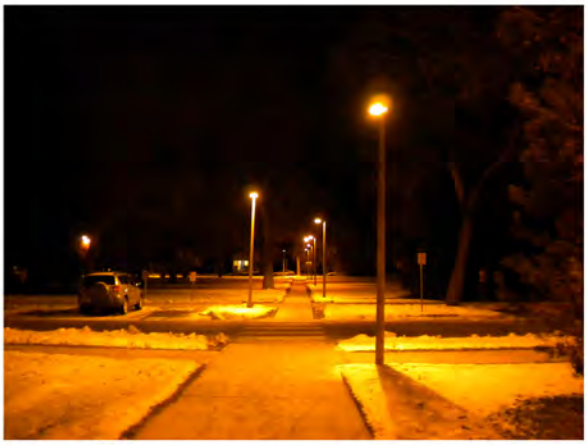
A. Centennial Mall - east end



B. Roberts Hall - 2nd floor



C. S. 6th Ave. - Northeast corner of site



D. Danforth Chapel



E. Hamilton Hall - 3rd floor



F. Strand Union - 3rd floor

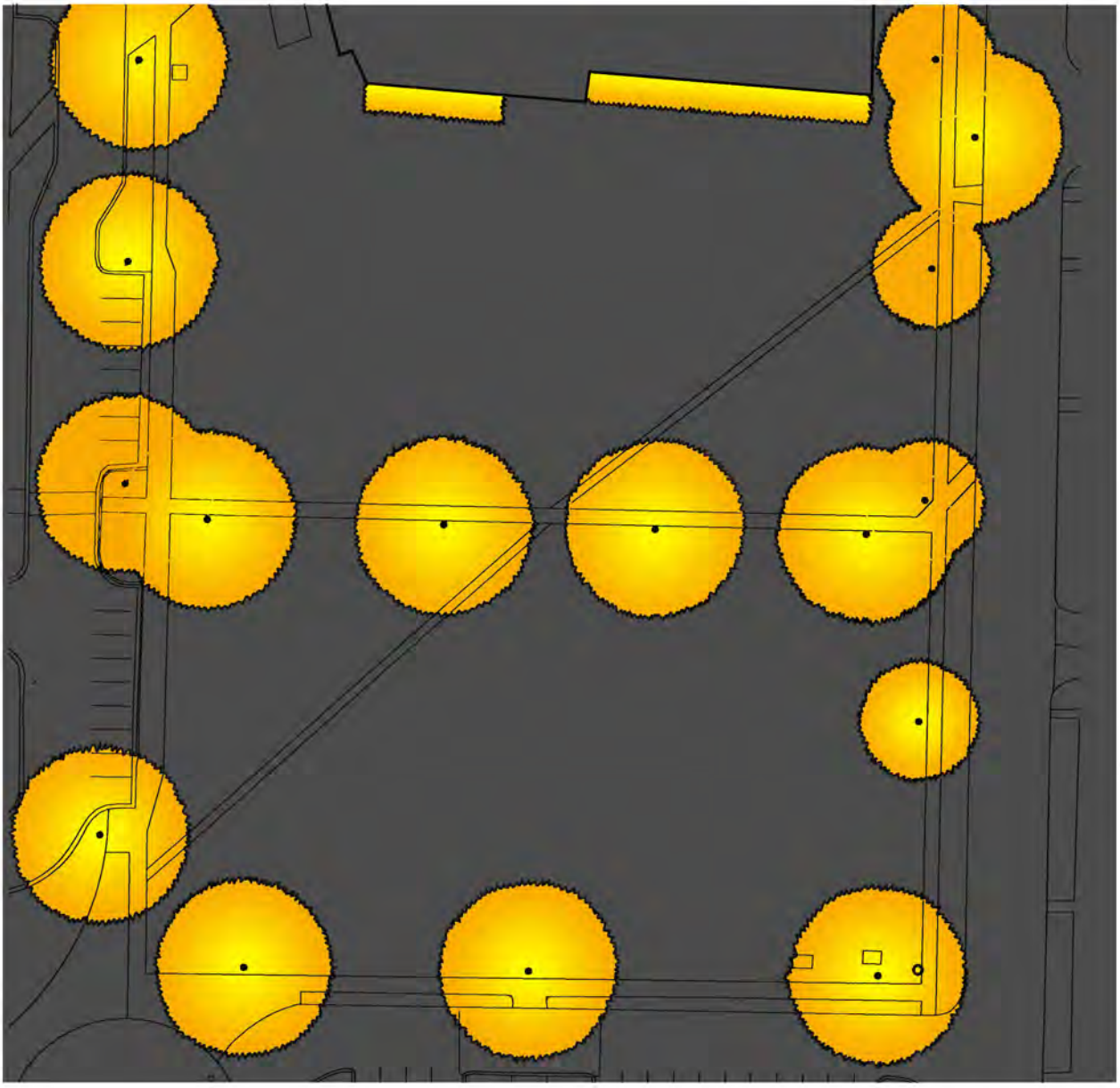
Fig. 27 - Primary views of the site

Seasonal Vegetation



Fig. 28 - Seasonal vegetation

Night Lighting



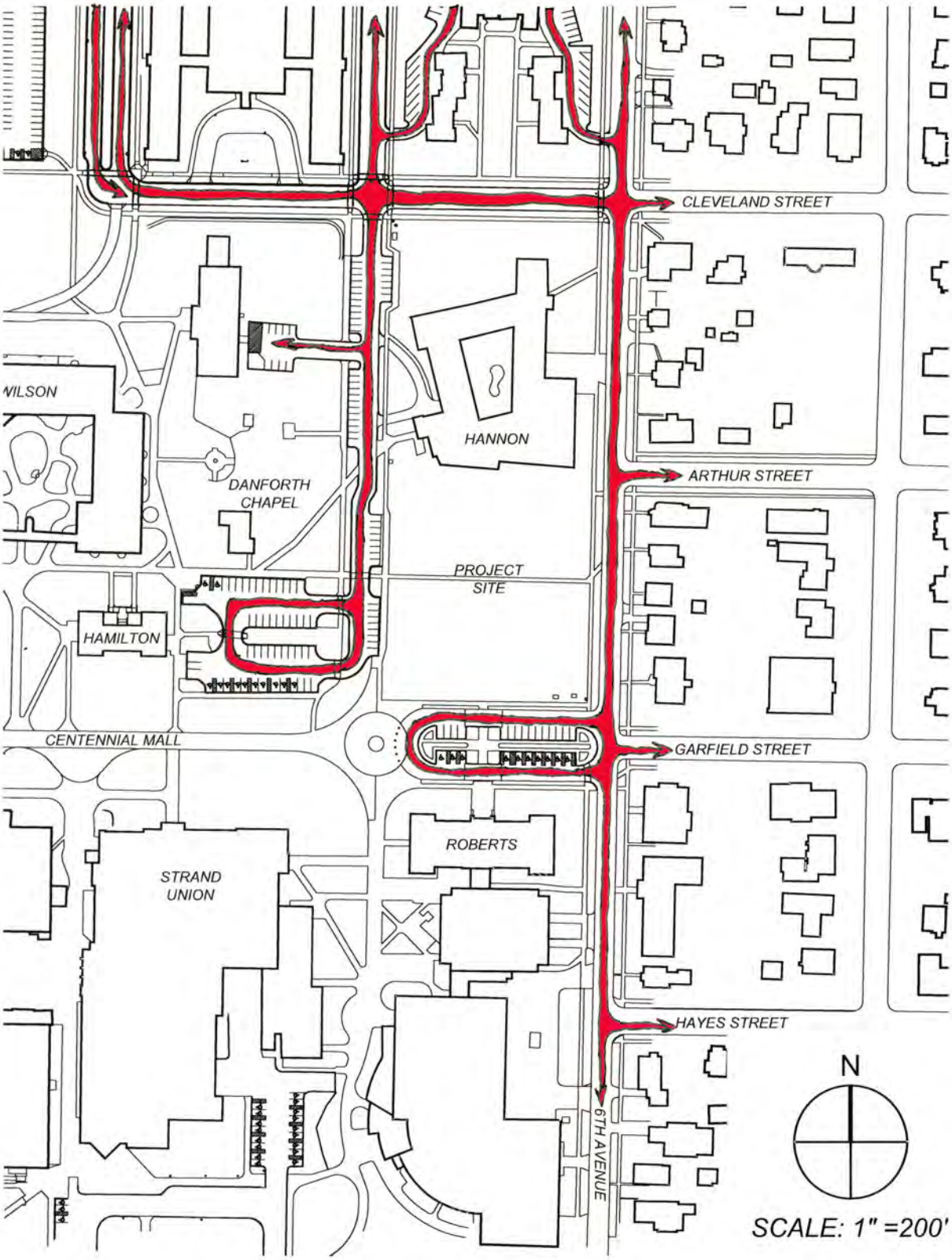
N

SCALE: 1" = 60'

Fig. 29 - Night lighting

Vehicle Circulation

Fig. 30 - Vehicle circulation



Sun Angles



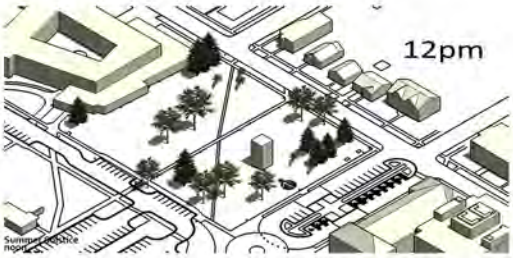


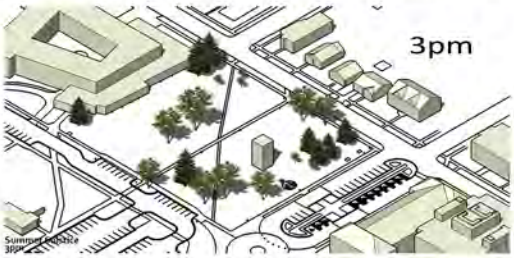


Spring/Fall Equinox

Solar Elevation
9am = 17.93 degrees
12pm = 41.52 degrees
3pm = 39.18 degrees

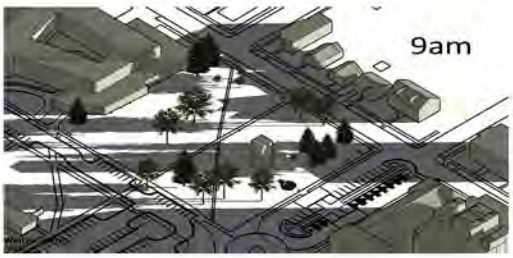






Summer Solstice

Solar Elevation
9am = 32.73 degrees
12pm = 61.77 degrees
3pm = 60.74 degrees







Winter Solstice

Solar Elevation
9am = 7.17 degrees
12pm = 20.74 degrees
3pm = 12.23 degrees

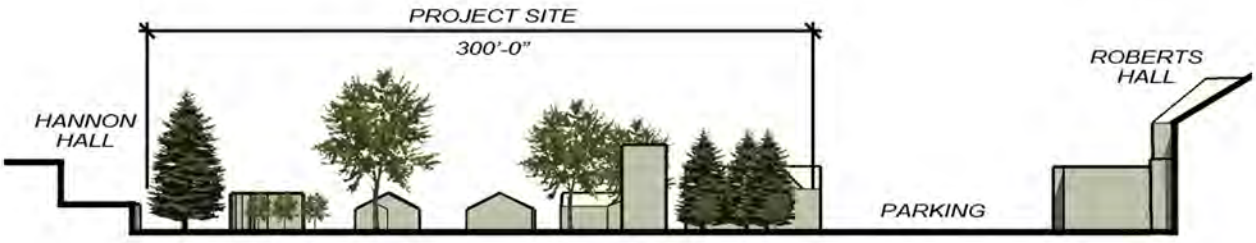
Fig. 31 - Sun angles

Site Sections



Longitudinal Section Facing North

Summer Solstice
3pm



Longitudinal Section Facing East

Summer Solstice
3pm

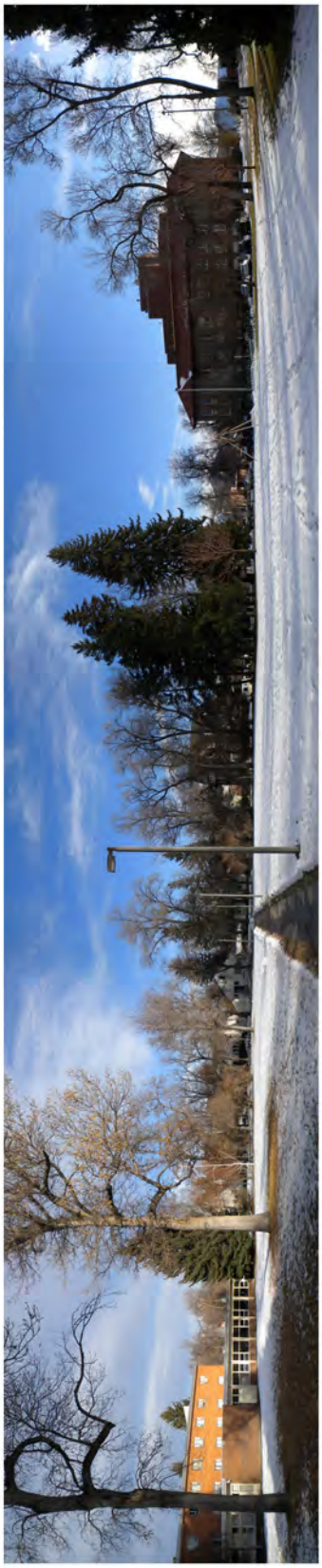
Fig. 32 - Site sections

Panoramic Views

Fig. 33 - Panoramic views



Sept. 19th (Monday), 1:30pm - View from Roberts Hall parking lot, looking north across site



Nov. 23rd (Wednesday), 2:00pm - View from Hamilton Hall parking lot, looking east across site



Nov. 23rd (Wednesday), 2:30pm - View from S. 6th Street, looking southeast across site

Historical Perspective of the Project

My exploration of the design for the Native American Student Center at Montana State University (MSU) is not the first approach to this project. In 2005, the Montana Board of Regents authorized the university to move forward with plans to build the center through private donations. The projected cost of the center at the time was $6-8 million. Subsequently, the university commissioned design architect Dennis Sun-Rhodes, principal of the firm Great Horse Group, in partnership with the Bozeman-area firm ThinkOne, to produce a design for the center. Sun-Rhodes, an Arapaho architect and graduate of MSU, also carried out the design with his close friend and college roommate, artist Jim Dolan[24]. At the time of approval in 2005, the center was slated to be completed in 2008. Only recently, as of November 2011, did the university finally place this project on its priority list in carrying out the campus master plan.

The conceptual plans and rendering produced by the team can be found in Appendix B. The design is characterized by two primary gestures. The first is a large roof structure that recalls a feather, which swoops over the south-facing atrium. The second is a large space reminiscent of a turtle shell situated at the north side of the building, which encompasses the study hall. In my discussions with the director of the Native American Studies program, it was suggested that while Native American groups in the Bozeman community were generally happy with the design, there was some agreement that perhaps there were better ways to use the design of the building to describe what it means to be Native American without relying on symbols or motifs. This inspired my exploration of the methodology I've proposed for this project.

The plans showing the established program spaces will be useful references during the design portion of the project, as these will assist me in interpreting, or reinterpreting, the needs and aspirations of the Native American community. These plans will also provide a good starting point in the process of determining what sort of spaces the proposed details will be incorporated into.

[24] Schmidt, Carol. "College friendship is impetus to proposed MSU Native American Student Center ." *MSU News Service.* May 23, 2005. http://www.montana.edu/cpa/news/nwview.php?article=2440 (accessed December 9, 2011).

Chapter V.
Proposal for a Design Methodology

The design portion of this project focused primarily on three spaces that were often referenced in the interviewees' responses: the gathering space and adjoined drum room, the outdoor spaces, and the study rooms. I approached the design of these spaces as I had proposed at the outset, starting at the smallest scale of the architectural design, that of the human body, and working outward from there.

There proved to be some difficulties and key questions that arose as I began with this approach. The design of each space developed incrementally, but each space came to a point where it had no relationship to the context of the site in terms of solar access, disruptive noises nearby, or the site topography that it sits in. As I arrived at this juncture, it was clear that the building design could not achieve coherence by examining the human scale and the space itself in isolation. It became necessary to explore the conditions of the site that would suggest where certain spaces should be located on the site in greater depth.

A Different Process

As I worked through several iterations of these spaces by examining different scales, I was unable to make sense of the process by presenting it in a linear fashion. It became clear that I had to reorganize the work I had done to present the work as a coherent design process. I soon realized that there were four different things I had been examining over the course of the semester: 1) tactility, 2) light, 3) flow, and 4) social interaction. These were the four key elements of the design that I had been focusing on to create spaces rooted in the human experience and perception, and I came to think of them as "facets" of the design. There were also four different scales that I had been exploring within each of these facets: the human scale, the scale of the space, the building scale, and the site scale. With each of the three spaces I was focusing my efforts on, I had started at the human scale. However, as I started to make discoveries about experiences at the human scale, I found it necessary to move to a larger scale to resolve other issues (such as the aforementioned solar access, disruptive noises, site topography, etc.).

Tactility

With tactility, I started by exploring details such as material, texture, temperature; the aspects of the design that confront primarily touch and sight. Some of the quotes taken directly from the interview responses began to suggest the nature of the material palette that should be used in the spaces. Each material and texture also had implications at the scale of the space. I also attempted to take a very nuts-and-bolts approach to determine how construction details started to create the tactile experiences I was pursuing. Taking that one step further, I found that these details informed decisions about the structural systems and connections that began to formulate ideas about the larger building.

Tactility

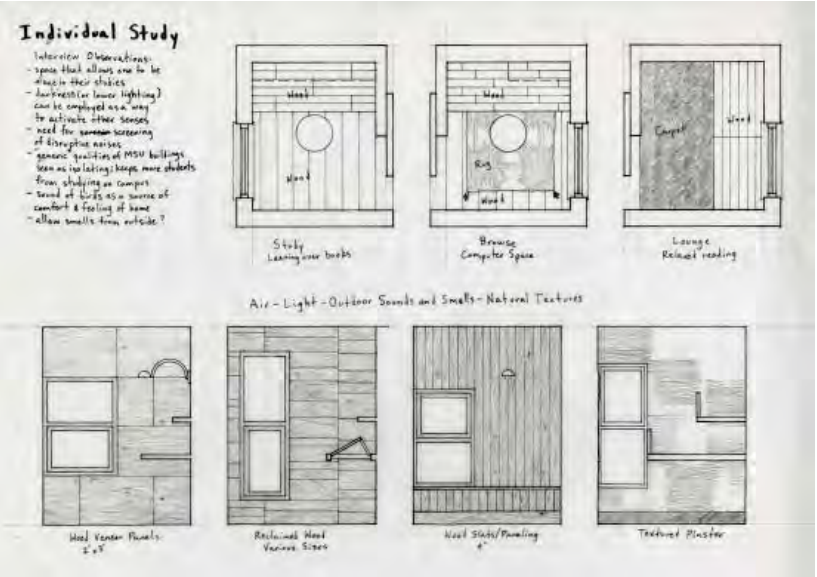


Fig. 34 - Study carrels: desk and window arrangements, textures/materials

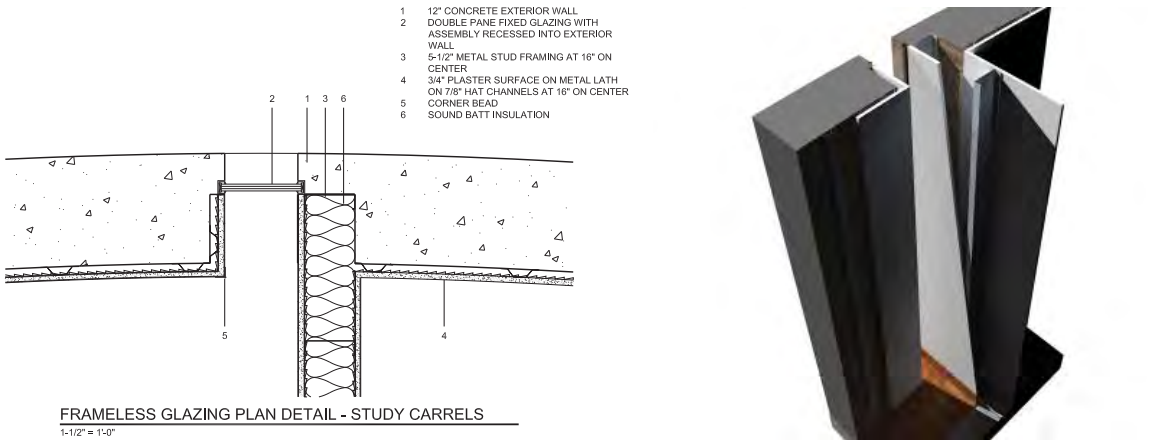


Fig. 35 - Study carrels: window/wall construction affecting tactility

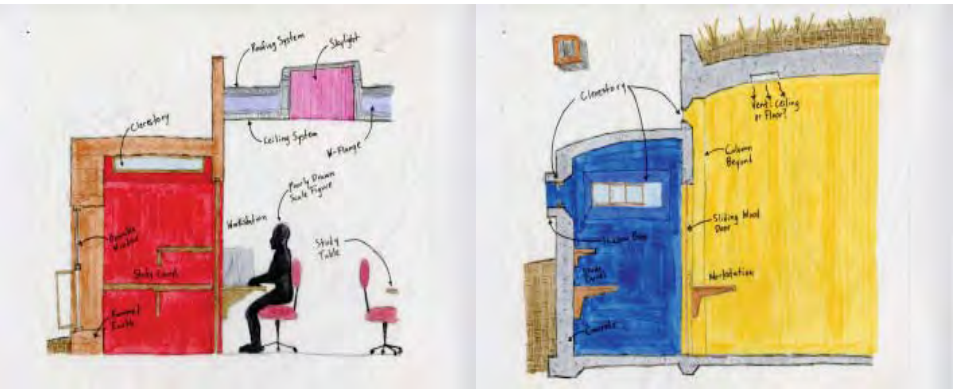


Fig. 36 - Study carrels/study lounge: spatial relationship between study carrels and study lounge

Tactility

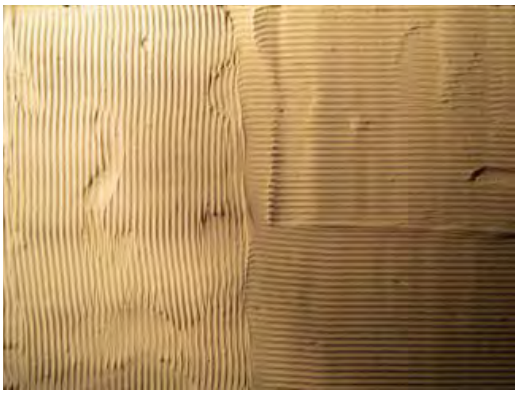


Fig. 37 - Study carrels/study lounge/gathering space: wall textures that create a more flowing/ natural feel



Fig. 38 - Study carrels/study lounge/outdoor areas/gathering space: buckskin door handles recalling culture

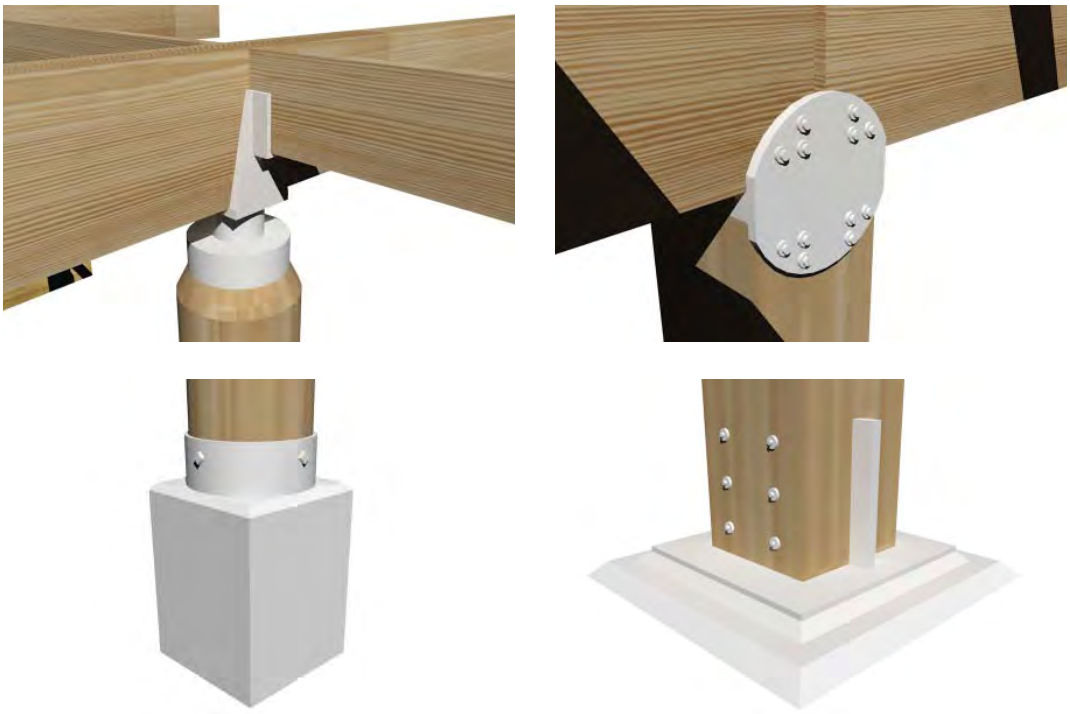


Fig. 39 - Study carrels/study lounge/outdoor areas/gathering space: structural details suggesting construction/organization of spaces

Light

With light, I looked at principally how and where natural light enters a space, and what the quality of that light is. Would it be evenly distributed? Would it be focused? In Native American cultures, the drum often plays a large role in community gatherings and spirituality. Part of the program called for including a drum room where the MSU's drum group (the Bobcat Singers) and students could practice. Taking this into consideration, I tried to heighten the spiritual sense of the drum room by creating an ethereal quality of light within. In the study carrels and larger study lounge, I explored how the natural light that the spaces admit affects perception and the experience of the study setting. Here, I found that exploring light took me back to the discussion of tactility as I was examining how the admittance of light brings certain textures and surfaces to life. Another topic that came up in the interviews was highlighting solar events throughout the year. In one example, a student referred to the spring equinox as "Indian New Year," where elders come together early in the morning to pray and celebrate the arrival of a new yearly cycle. This led me to examine how solar events throughout the course of a year could be highlighted by the design, and led to deeper exploration of the social interactions these events create.

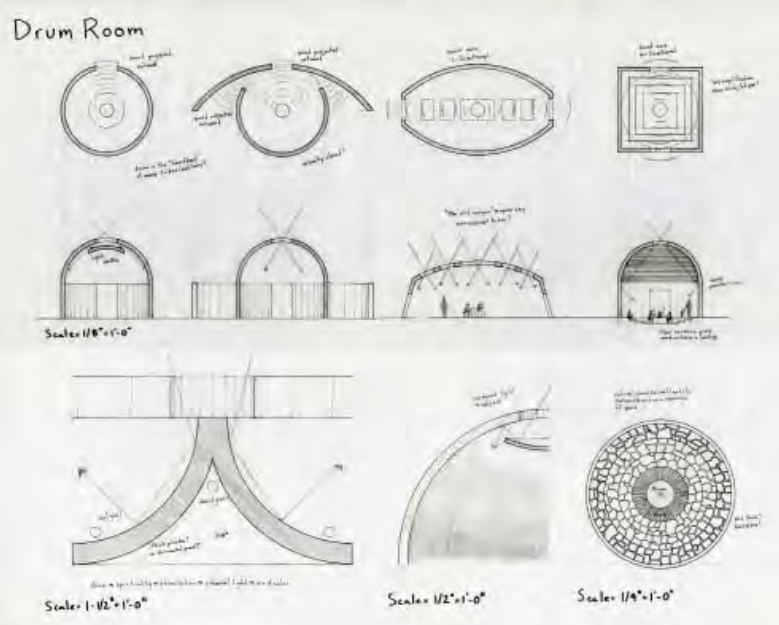


Fig. 40 - Drum room/gathering space: lighting conditions of different roof openings, movement of sound, materials affecting light/sound



Fig. 41 - Drum room/gathering space: light baffles and the daylighting conditions they create

Light

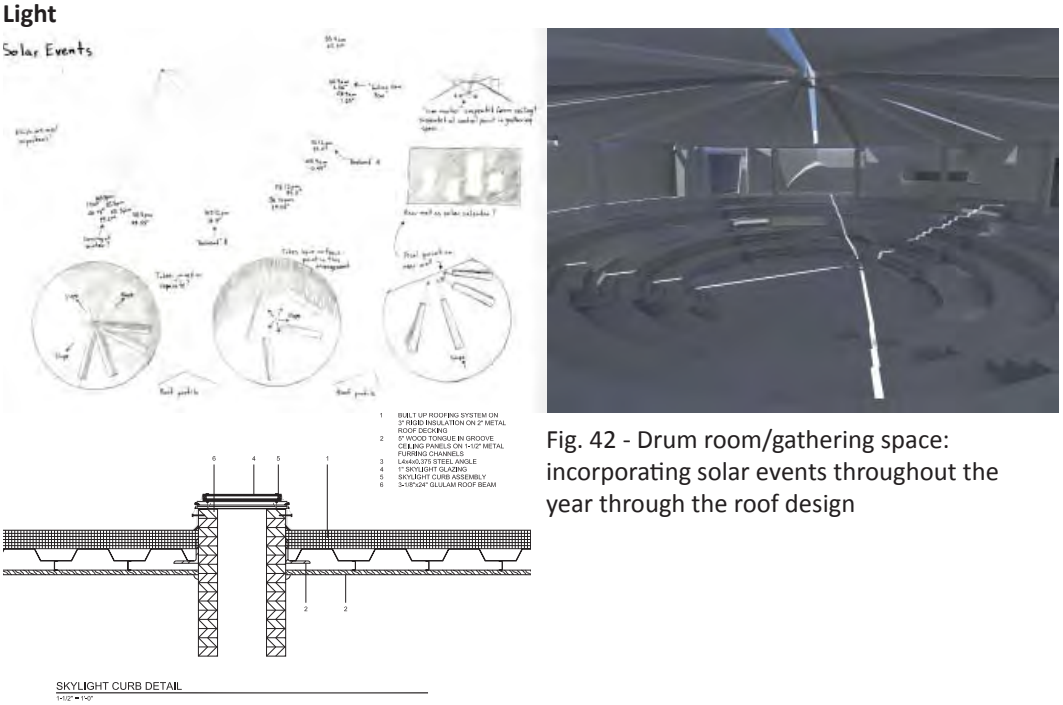


Fig. 42 - Drum room/gathering space: incorporating solar events throughout the year through the roof design

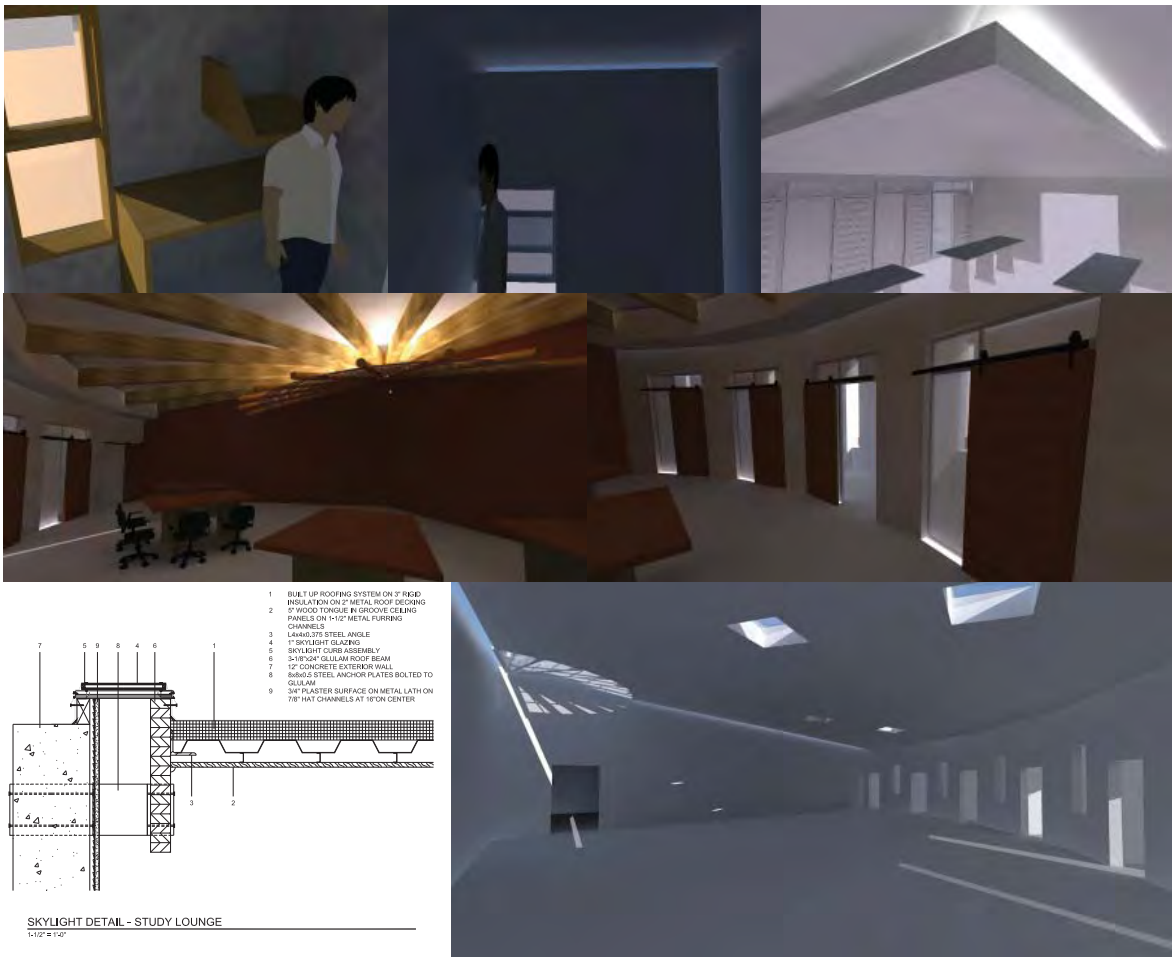


Fig. 43 - Study carrels/study lounge: lighting conditions created by different aperatures

Flow

Flow describes many different ideas. It can describe the circulation of people through spaces, between spaces, around the site. It can also describe the flow of wind, smells, sound, or the changing sunlight over the course of a day. I started by examining these characteristics on the site as it exists.

I found this to be a very important site in terms of the flow of people, because it sits as a buffer zone between campus and the outlying community. People crisscross the site in several different patterns of use as they arrive on campus or leave for the day, but there are two primary paths that people take advantage of. I explored ways that those paths could be enclosed within outdoor corridors to connect program spaces, with the goal being to draw smells from site vegetation through the corridors. This led me to ideas about how topographical changes made to the site would start to affect bodily movement, site vegetation, and navigation of the site.

These steps brought forth questions at the building scale regarding space adjacencies and methods of interior circulation, and furthermore circulation through the building as it sits in relation to the site. Here, I understood that interior circulation couldn't be resolved without determining how people were moving through the site. I referred back to the responses from the interviews to drive my thinking here. I came to understand that for Native American students, campus can be alienating by its very design, and it seemed appropriate that the student center needed to work to create an area of respite from the larger campus environment. The best way to do that seemed to be to screen out the rigid orthogonal context of campus by turning the center's focus inward on itself. Through the context of Native American cultures, shapes begin to have deep implications for flow as well. The circle, for example, is viewed by several tribes as a sacred shape that embodies not only the journey of life, but the cycles of life and rebirth from year to year over the seasonal cycles. From this perspective, it became intuitive to orient the program spaces around the perimeter of a circle to focus them toward a center and give prominence to the sacred shape.

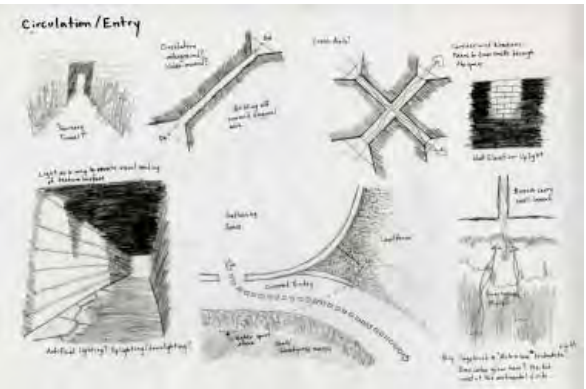


Fig. 44 - Outdoor areas: sense of flow through smells, topography changes, and one's sense of their body navigating the site

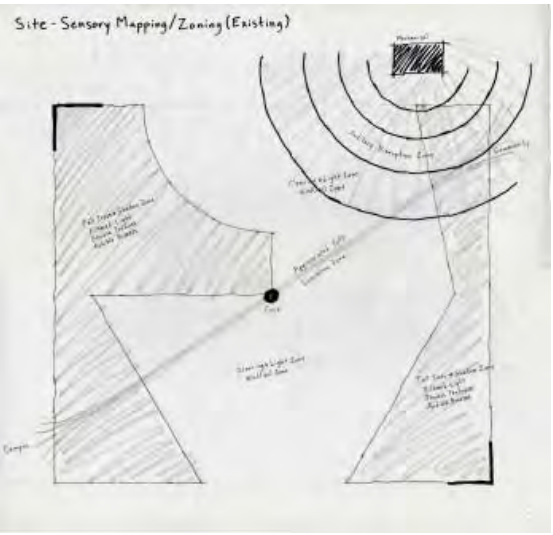


Fig. 45 - Site: existing sensory qualities

Flow

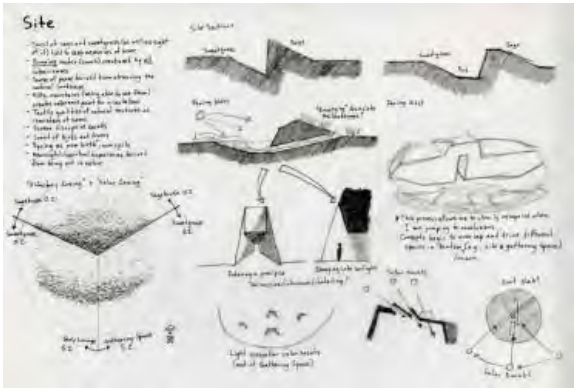


Fig. 46 - Outdoor areas: flow in the form of topography changes, movement of the sun, navigation through circulation spaces

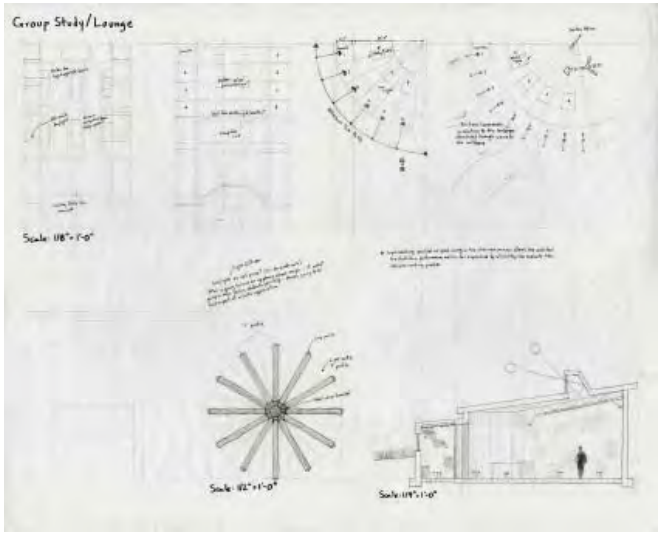


Fig. 47 - Study carrels/study lounge: movement of people between spaces, movement of the sun, means of admitting natural light



Fig. 48 - Outdoor areas: circulation corridors carrying smells/sounds, tactile experience of moving through

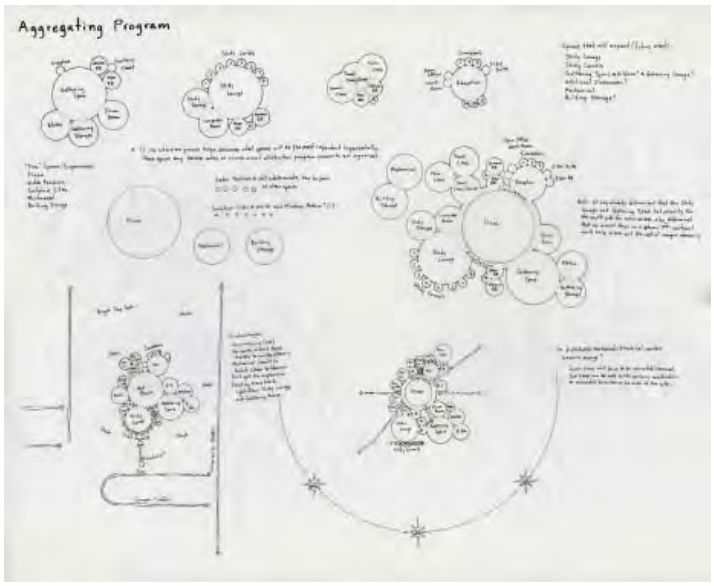


Fig. 49 - Building/site: clusters of program spaces on the site, adjacencies between clusters, means of navigating through these groupings, movement of the sun in relation to them



Fig. 50 - Site: effect of various topographical changes on navigation of the site and perceived bodily movements

Flow

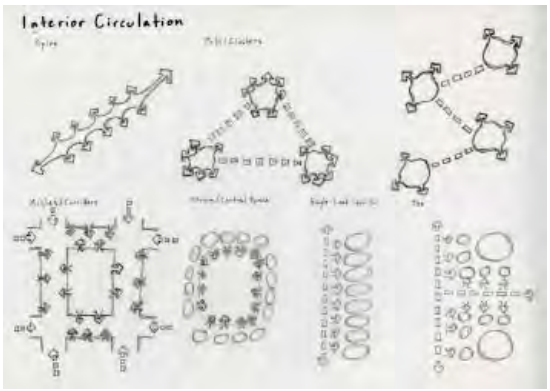


Fig. 51 - Building: various means of interior circulation

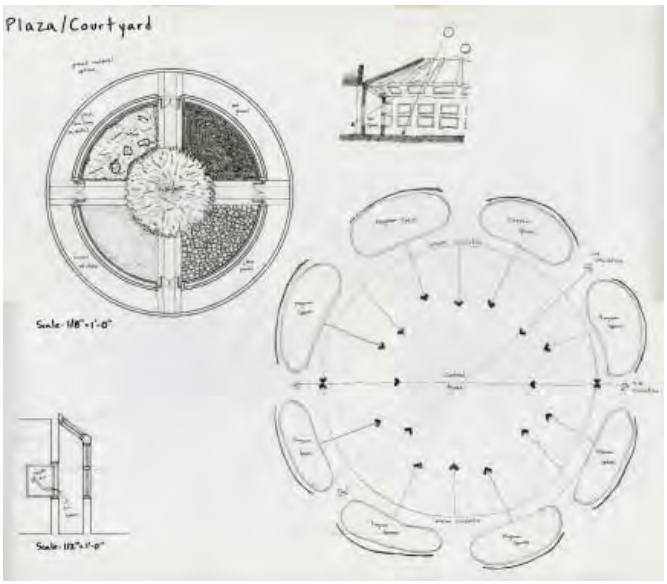


Fig. 52 - Outdoor areas: turning the focus of the center inwards to screen out the context of campus

Social Interaction

In terms of social interaction, I explored the interactions that happen between people as they engage with the spaces, the building, and the site in a variety of different ways. To do so, I approached this facet through the lens of Bernard Tschumi's work in the Manhattan Transcripts, where Tschumi stated, "Architecture is not simply about space and form, but also about event, action, and what happens in space"[25]. If we look at social interaction in these terms, different interactions can be interpreted as events that take place in spaces at different times. If we take the gathering space for example, I identified at least five events that would take place within: 1) small dance/powwow gatherings, 2) council meetings for the student organization, the American Indian Council, which plans the annual powwow, 3) graduation ceremonies specific to the department and Native American students, 4) cultural visits from elementary and junior high schools, and 5) elder gatherings for special events throughout the year. Thus, the meaning of a space and the way people engage with it changes based on the specific event that occurs in it at given times. It was also clear that it was not only important how many people engage in these events and how they engage with them, but the space between people was explored as well. As I developed a deeper understanding of these events, I then returned to ideas of flow and reexamined how people move from space to space at the building level or the site level.

[25]Tschumi, Bernard. *Bernard Tschumi Architects.* http://www.tschumi.com/projects/18/ (accessed April 15, 2012).

Social Interaction

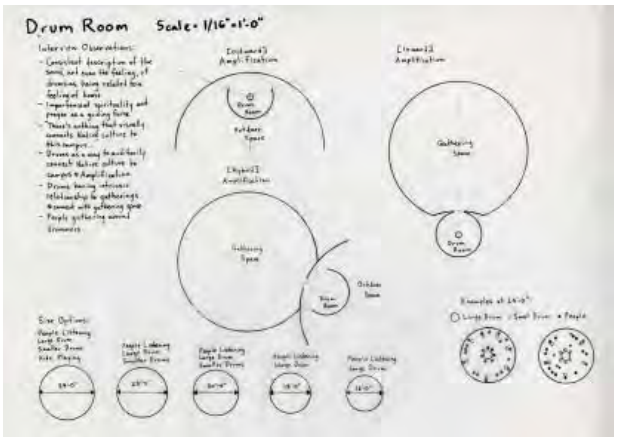


Fig. 53 - Drum room/gathering space: number of people in a space based on different sizes/dimensions

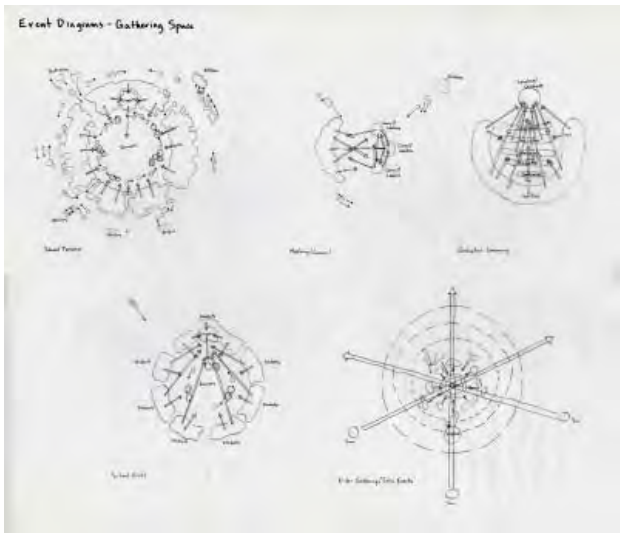


Fig. 54 - Gathering space: ways that the space is used based on the event occuring within

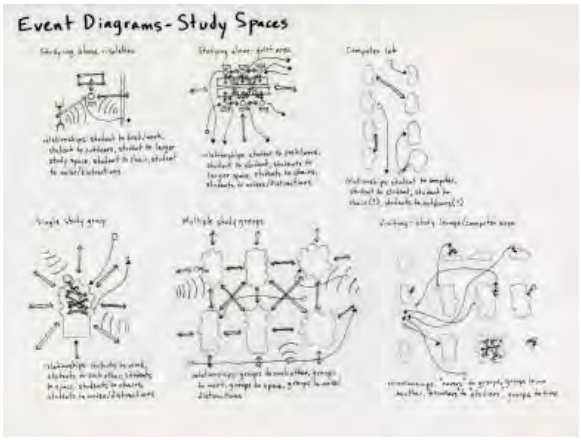


Fig. 55 - Study carrels/study lounge: various interactions/events created in the study setting



Fig. 56 - Site: interactions/events created by altering the site topography

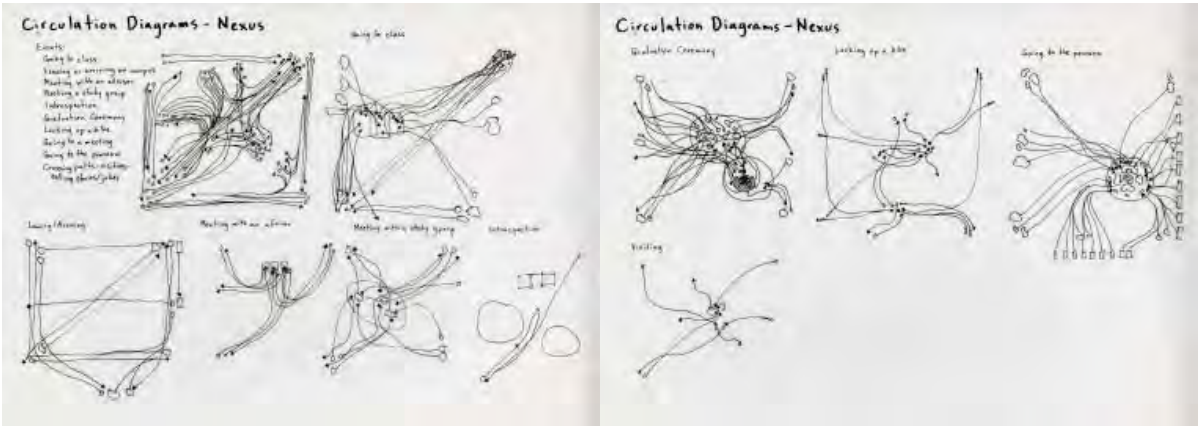


Fig. 57 - Outdoor areas: different events occurring throughout the day through different uses of the spaces/building/site

Social Interaction

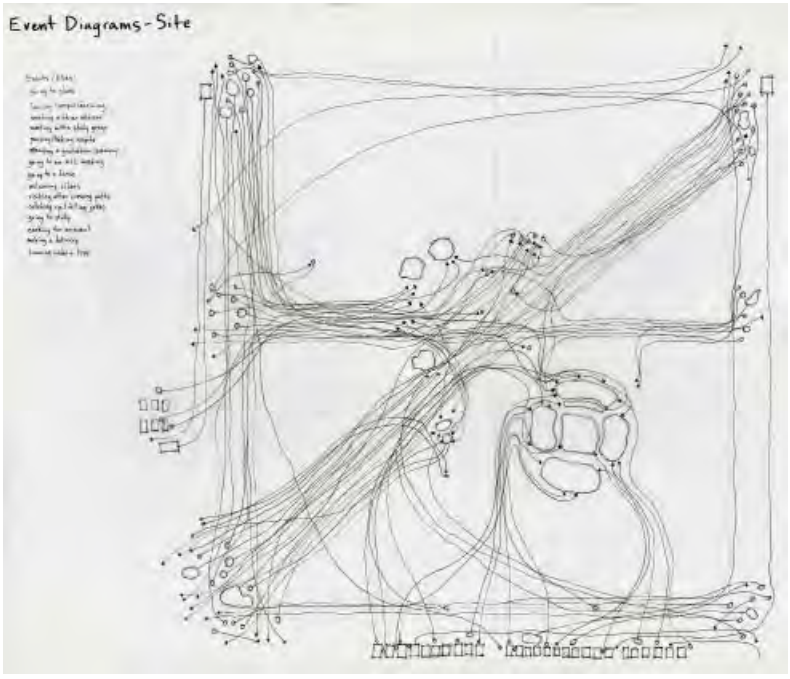


Fig. 58 - Outdoor areas/building/site: site events/interactions layered on top of each other to describe pockets of activity/exchange on the site

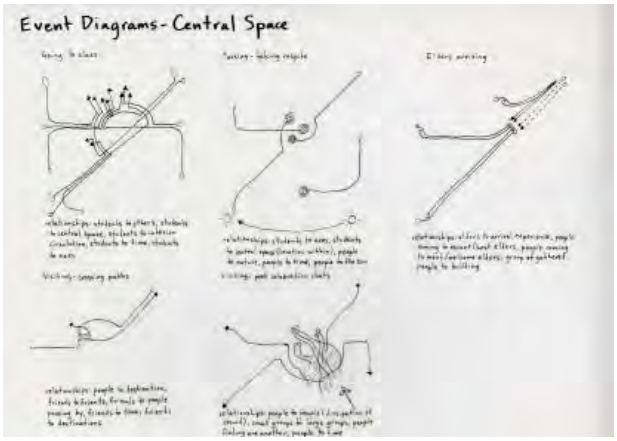


Fig. 59 - Outdoor areas: events/interactions in the central outdoor space between other program spaces

Conclusions

By working through these iterations and interweaving between the different scales of the facets, each of the three spaces began to reach a level of clarity, not only in themselves, but in relationship to the whole. I found that by starting at the human scale in one facet, (e.g., flow), I often had to move to the next scale within another facet (e.g., social interaction at the space scale), and it was this method of operating that gradually built the most clarity for each space. Thus, I determined that it was not pertinent to work in any one facet or any one scale from start to finish, but it was of chief importance to begin each facet by working at the human scale to keep the design focused on sensory experience.

A few key questions arose at the conclusion of this exploration. First, as I worked through the project, I was asked several times what the thread was that connected all the ideas and pieces of the design. I would have to say unequivocally that that thread is the responses taken from the interview process. I believe that implementing qualitative questioning in the interview process allows the architect to establish a performance metric for human experience by which they can evaluate their decision-making process. If the architect approaches qualitative questioning from a cultural standpoint with open ears, respect, and an open mind, then an architect can step beyond their own cultural paradigm.

Secondly, I was asked exactly how this design process is different from a traditional design process that an architect would follow. I believe that this methodology for the design process enables to focus on human experience at all levels of the design. It seems like most of the time in traditional practice, we take the client's set of needs and formulate them into a concept. As a result of that, I think the design and the design process often become a slave to the concept and the intellectual dialogue rather than the actual building users, taking us back to Pallasmaa's statements in *Eyes of the Skin*.

Third, I was asked *why* this process had to be different. Why couldn't this project be approached through a traditional design process? From the beginning of my research it was clear that when architects are designing for cultures other than their own, we often fall back on motifs and symbols to address culture in the design. With this particular project, I found that almost every person I talked to who had seen the design had some objection to it, even though it had been designed by a Native American architect. So the question became, "How do we address culture in a design beyond symbolism and imagery?" I found that there was no set process that addressed this question, especially when we're talking about the senses and perception, so I felt it necessary to come up with one myself.

This was a complex process of discovery to undergo and one that was a great challenge for me to approach. By stepping beyond my own culture, I was able to make a number of decisions based on the interviewees' responses I wouldn't have made before following this process. For example, I had never used curvilinear forms in any of my designs; I had always worked to produce simple, well-detailed rectilinear forms. Also, I had never taken some of these aspects of a design into consideration in another project. The decisions I made may not seem fully justified or well-considered when viewed from the paradigm of Western culture, but they were appropriate to the culture I was designing for, and that was what I deemed the most important. All of this has left me with a very relativist perspective on design. This brought me full circle back to Hall's quote, as I've found that design, and even design processes, have different value and validity depending on the cultural biases you examine them from.

I feel that the architecture that I have produced leans most towards traditions of the northern plains, which is obviously more appropriate to Montana and the tribes that reside here. The solution that I arrived at is one of only several possible solutions. It is not problematic to have several such solutions if the solutions respect the important characteristics derived from the qualitative questions in the interviews.

Images of the proposed solution can be found on the following pages. The structure rests low to the ground, emphasizing its horizontal nature and the horizontal quality of the experience it presents people with. This created an intimate connection with the site and the landscape that recalls the tribes of the northern plains and their close relationship to the land. However, this brought forth questions about how this process might have differed if it were carried out for Native American cultures in another part of the country. If we were a people of the desert who have hogans or kivas as architectural tradition, what does architecture look like to us? What about people who have longhouses as architectural tradition?

This project has been a truly transformative experience. Perceptually, I feel as though I live in a different America from the one I inhabited when I started. Unfortunately, many white Americans often address Native American communities and the reservations as though they are separate, static entities populated with poor, downtrodden people trapped in traditional ways of living. Much to the contrary, Native American cultures are very dynamic and very alive. These cultures have survived and maintained their identities, respect for their traditions, and their dignity through all the adversity white Americans have brought to them. Now as ever before, I believe that we are one American people, one culture inextricable from the other. Each culture is as much a part of others as the others are part of it, and I believe the Western perspective in American culture can learn something from Native Americans' respect for one another's communities, their respect for the land and the earth, and their innate understanding of the interconnectedness of all things.

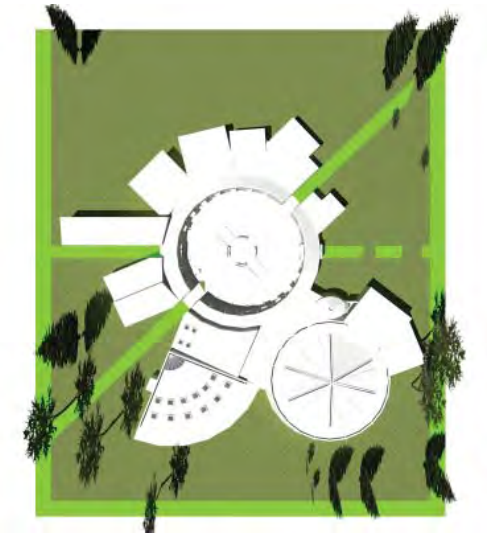


Fig. 60 - Proposed site plan

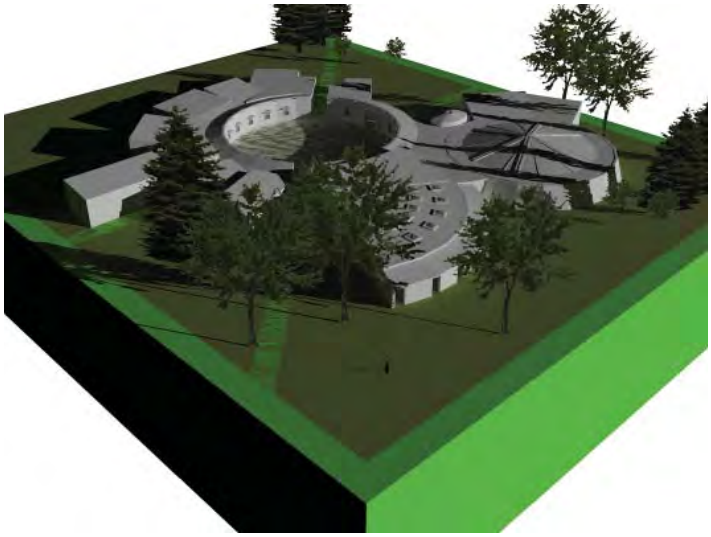


Fig. 61 - Aerial view of proposed building



Fig. 62 - Section through central space/study lounge/study carrels (facing east)



Fig. 63 - Section through gathering space/drum room (facing west)



Fig. 64 - Proposed central outdoor space



Fig. 65 - Proposed study lounge/study carrels



Fig. 66 - Proposed gathering space

References Cited

Davey, Peter. "The Magic Labyrinth." *The Architectural Review*, 2001: 44.

Citizen Architect. Directed by Sam Douglas. 2010.

Freiman, Ziva. "The Brain Exchange." *Progressive Architecture*, April 1995: 76-85.

Futagawa, Yoshio. "Steven Holl: Nelson-Atkins Museum of Art, Kansas City, Missouri, U.S.A." *GA Document*, 2007: 8-31.

Hall, Edward T. *The Hidden Dimension.* Garden City: Doubleday & Company, Inc., 1966.

Hill, Jonathan. *Immaterial Architecture.* New York: Routledge, 2006.

Lederman, Susan J. "The Perception of Texture by Touch." In *Tactual Perception: A Sourcebook*, by William Schiff and Emerson Foulke, 130-167. Cambridge: Cambridge University Press, 1982.

Magazine, Detail. "Centre Pompidou-Metz." *Detail*, November 2010: 1040-1045.

Merleau-Ponty, Maurice. *The World of Perception.* New York: Routledge, 2004.

Montagu, Ashley. *Touching: The Human Significance of the Skin.* New York: Harper & Row, Publishers, Inc., 1986.

Norberg-Schulz, Christian. *Meaning in Architecture.* London: Studio Vista, 1980.

of Architects, American Institute. "Monastery of the Mind." *Architecture*, 1996: 82-???

Pallasmaa, Juhani. *Eyes of the Skin.* West Sussex: John Wiley & Sons Ltd., 2005.

Schmidt, Carol. "MSU News Service." *Montana State University.* May 23, 2005. http://www.montana.edu/cpa/news/nwview.php?article=2440 (accessed December 9, 2011).

Tschumi, Bernard. *Bernard Tschumi Architects.* http://www.tschumi.com/projects/18/ (accessed April 15, 2012).

Thompson, Hunter S. *Fear and Loathing in Las Vegas.* New York: Random House, Inc., 1971.

Wild, David. "Design at a Distance is Fraught and Flawed." *Architect's Journal*, 1997: 79.

Zeisel, John. *Inquiry by Design: Tools for Environment-Behavior Research.* Cambridge: Cambridge University Press, 1984.

Zjawinski, Sonia. "Rem Koolhaas Designs a Death Star for the UAE." *Wired.com.* May 21, 2007. http://www.wired.com/underwire/2007/05/rem_koolhaas_de/ (accessed December 2, 2011).

Image References

Figure 1. Photo by author

Figure 2. Photo by author

Figure 3. Magazine, Detail. "Centre Pompidou-Metz." *Detail*, November 2010: 1040-1045, p. 1040.

Figure 4. Zjawinski, Sonia. "Rem Koolhaas Designs a Death Star for the UAE." *Wired.com.* May 21, 2007. http://www.wired.com/underwire/2007/05/rem_koolhaas_de/ (accessed December 2, 2011).

Figure 5. Photo by author

Figure 6. Photo by author

Figure 7. Photo by author

Figure 8. Photo by author

Figure 9. Photo by author

Figure 10. of Architects, American Institute. "Monastery of the Mind." *Architecture*, 1996: 82-???, p. 93

Figure 11. Photo by author

Figure 12. of Architects, American Institute. "Monastery of the Mind." *Architecture*, 1996: 82-???, p. 85

Figure 13. of Architects, American Institute. "Monastery of the Mind." *Architecture*, 1996: 82-???, p. 84

Figure 14. of Architects, American Institute. "Monastery of the Mind." *Architecture*, 1996: 82-???, p. 89

Figure 15. Photo by author

Figure 16. Photo by author

Figure 17. Futagawa, Yoshio. "Steven Holl: Nelson-Atkins Museum of Art, Kansas City, Missouri, U.S.A." *GA Document*, 2007: 8-31, p. 8.

Figure 18. Futagawa, Yoshio. "Steven Holl: Nelson-Atkins Museum of Art, Kansas City, Missouri, U.S.A." *GA Document*, 2007: 8-31, p. 28.

Figure 19. Futagawa, Yoshio. "Steven Holl: Nelson-Atkins Museum of Art, Kansas City, Missouri, U.S.A." *GA Document*, 2007: 8-31, p. 12.

Figure 20. Photo by Laura Esslinger, Montana State University School of Architecture

Figure 21. Photo by Laura Esslinger, Montana State University School of Architecture

Figure 22. Photo by Laura Esslinger, Montana State University School of Architecture

Figure 23. Photo by Laura Esslinger, Montana State University School of Architecture

Figure 24. Diagram by author

Figure 25. Diagram by author

Figure 26. Diagram by author

Figure 27. Photos by author

FIgure 28. Diagram by author

FIgure 29. Diagram by author

Figure 30. Diagram by author

Figure 31. Diagram by author

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Figure 33. Photos by author.

Figure 34. Drawings by author.

Figure 35. CAD drawing and rendering by author.

Figure 36. Drawings by author.

Figure 37. Model by author.

Figure 38. Rendering by author.

Figure 39. Renderings by author.

Figure 40. Drawings by author.

Figure 41. Renderings by author.

Figure 42. Drawings, rendering, and CAD drawing by author.

Figure 43. Renderings and CAD drawing by author.

Figure 44. Drawings by author.

Figure 45. Drawings by author.

Figure 46. Drawings by author.

Figure 47. Drawings by author.

Figure 48. Renderings by author.

Figure 49. Drawings by author.

Figure 50. Renderings by author.

Figure 51. Drawings by author.

Figure 52. Drawings by author.

Figure 53. Drawings by author.

Figure 54. Drawings by author.

Figure 55. Drawings by author.

Figure 56. Rendering by author.

Figure 57. Drawings by author.

Figure 58. Drawings by author.

Figure 59. Drawings by author.

Figure 60. Rendering by author.

Figure 61. Rendering by author.

Figure 62. Rendering by author.

Figure 63. Rendering by author.

Figure 64. Rendering by author.

Figure 65. Rendering by author.

Figure 66. Rendering by author.

Figure 67. Rendering by Great Horse Group/ThinkOne.

Figure 68. Site plan by Great Horse Group/ThinkOne.

Figure 69. Floor plan by Great Horse Group/Think One.

Appendices

Appendix A - Interview Questions

1. What is one of the more meaningful experiences you've had in a place? How did the space you were in contribute to the experience?
2. Are there any sounds you feel are specific to your tribe or your home? For example, songs, instruments, or even sounds you hear outdoors. Where would you like to be when you hear them?
3. When your community comes together or gathers, what is important about the manner in which you gather?
4. What do you feel around people from other tribes?
5. Try to think of a place you have enjoyed spending a lot of time in. What was important to you about that place?
6. Are there spaces where you feel out of place? What places make you feel uncomfortable?
7. In your studies or your research, what kind of space do you like to be in when you carry out your work?
8. What catches your interest about a texture of a surface and makes you want to touch it?
9. What textures remind you of your heritage or the place you are from?
10. What smells bring back strong memories?
11. Can you think of a smell that you can almost taste?
12. If you were blindfolded in a space, how could that space remind you of home?
13. How do you interpret your own experiences of nature when you are in it?
14. What do you see, hear, smell, touch, or taste as you move through nature?
15. What do you notice in your body or your muscles as you move across a space? What is significant to you about these movements?
16. What is an important event for you and your peers when you are here away from home? What kind of space does this occur in? Is it a big space or a small one?
17. What level of connection with the prevailing culture on the MSU campus could help Native students better succeed?

18. Some faculty have commented to me that they don't notice many Native students as they walk around campus. What reasons do you think there are for students being less visible on campus?

19. Do you feel like there is solidarity between tribes on campus? How would you make someone feel included if they felt unheard or excluded?

20. Beyond a Native American Student Center on campus, what else do you think could create an identity and a place for Native cultures on campus?

Appendix B - Previously Proposed Design

Proposed Design for the Montana State University Native American Student Center
Architects: Dennis Sun-Rhodes, Great Horse Group; ThinkOne

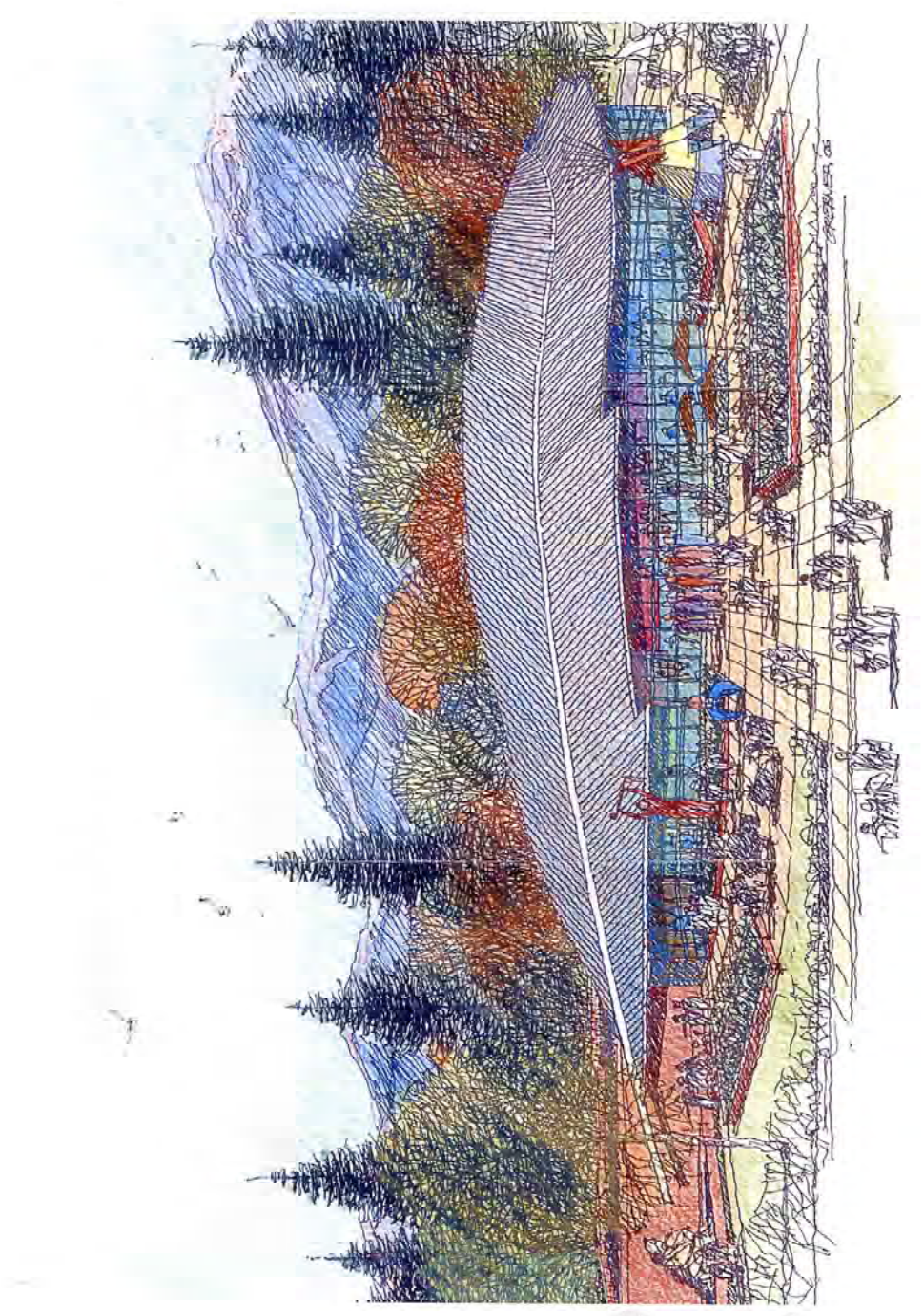


Fig. 67 - Original proposed MSU Native American Student Center

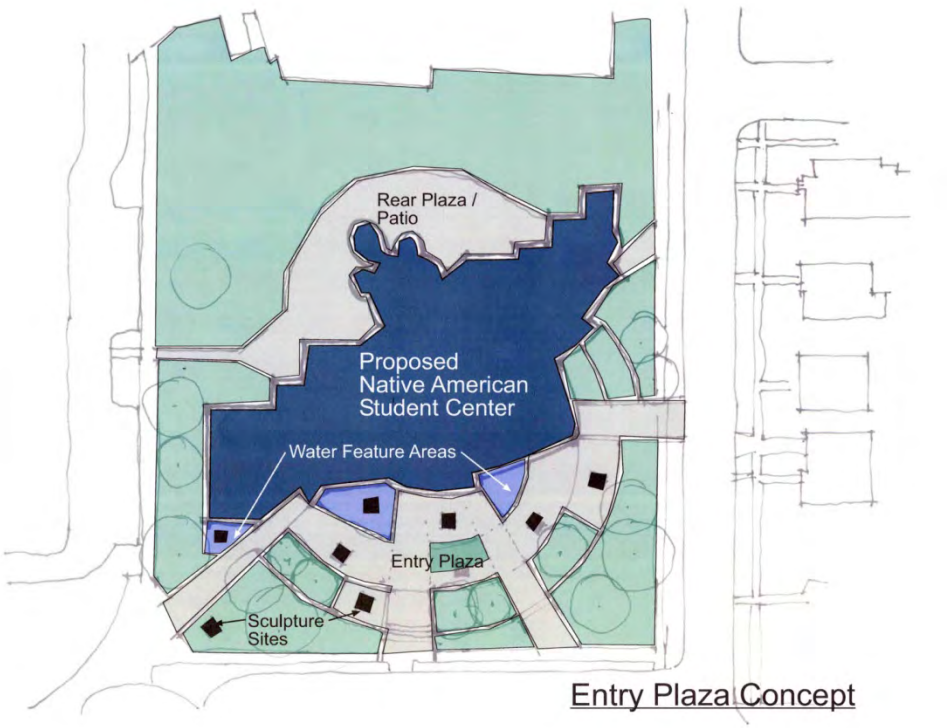


Fig. 68 - Original proposed site plan

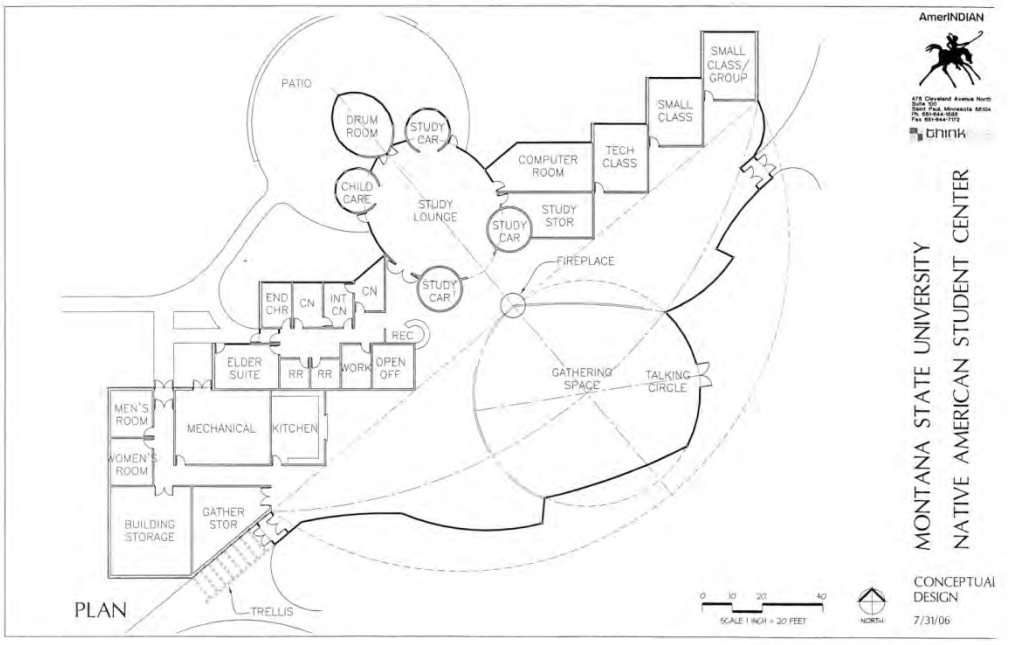


Fig. 69 - Original proposed floor plan