

ENGINEERING
THE DIGITAL WORKPLACE
The Architecture of Changing Social Interaction

Eric Lagergren, Thesis 2013

ENGINEERING THE DIGITAL WORKPLACE

The Architecture of Changing Social Interaction

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

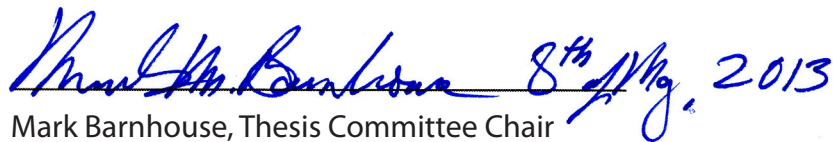
By

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Master of Architecture

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thesis **abstract**

“Engineering the Digital Workplace” explores how meaningful design can inform, and be informed by, social interaction in an increasingly connected and less private society.

The thesis proposes to create a model for how productivity can be sustainable in a culture where electronic interconnectedness threatens tangible interaction.

This problem is best explored through the architectural creation of the headquarters for a firm designing first generation 3-dimensional holographic communication software on a site in the developed downtown of Sioux Falls, SD.

Key Words: social design, privacy, interaction, productivity, software engineering.

problem **statement**

What is the role of architecture in the context of an increasingly social and interconnected society?

statement of **intent**

The Project Typology

The typology of this thesis is a software engineering firm. The office workplace is an environment where people congregate to be both social and productive, and is undergoing incredible change in conjunction with the evolving ways in which we connect with one another.

Claim

Growing electronic interconnectedness threatens privacy and forces changes to take place in the way people interact on both personal and professional levels.

Premises

With more of our lives spent interacting over electronic networks, we are losing out on some of the intrinsic value of face to face meeting.

Privacy around in the work environment is threatened by the volume of information collected by employers (Palm, 2009).

Boundaries are set, in terms of privacy invasion, based on ethical standards throughout history.

Face-to-face interaction is an irreplaceable human need.

Theoretical Premise/Unifying Idea

Architecture will be a vehicle with which society can remain productive through social-electronic innovation, without sacrificing tangible interaction.

Project Justification

As civilization innovates, privacy disappears and our lives become increasingly public. Evolving electronic interconnectedness threatens humanity's need for tangible interaction.

narrative proposal



Figure 11.1 - site photo, Eric Lagergren



Figure 11.2 - site photo, Eric Lagergren

This thesis will examine how meaningful design can inform, and be informed by, social interaction in an increasingly connected and less private society. Essentially, it is my research-supported belief that with properly designed spaces, we can continue to interact and become more productive in spite of, or because of, technological innovation.

Electronic devices are becoming more and more intelligent with each and every revolutionary product. Alongside that intelligence comes an improved opportunity to remain virtually “connected” to others at all times. Perpetual interconnectivity has become an asset for business by enabling employees to work virtually anywhere; marketing to reach more people and enabling transactions to take place faster than ever.

Innovative software and electronics have absolutely transformed the nature of personal, social lives. Social media has enabled every person in the developed world to connect and interact with one another in a “virtual context of zeros and ones,” regardless of geography.

Despite the apparent opportunities, a by-product of the revolutionary technology at work today is the sequestering of privacy. Whether under the cold gaze of a security camera, pinpointed by your cell phone’s GPS or tracked on an institutional data network, very few moments out of the day are truly private. As time and innovation march ahead, the concept of privacy becomes more and more foreign leaving us to question the price we are willing to pay for productivity.

Better electronic communication presents opportunities to connect, work and play differently. Still, however, there is an undeniable,

uniquely human need for physical interaction that cannot be replaced despite our best efforts to make everything electronic and instantaneous. A well designed software engineering firm, is the ideal vessel with which to study the relationship the built environment has on our interactions, and to create a model for a social place people want to be productive in.

user/client **description**

The site and building are owned by the software engineering firm, a developer of communications software utilizing emerging holographic technologies, and used by employees and management of the firm. Most, if not all, will have degrees in business, technological or design fields and consider themselves in the middle or upper-middle class economically. The business owner(s), management, programmers, designers, marketers, human resources personnel and custodial staff will primarily occupy the building. On occasion, corporate customers will arrive to negotiate business deals and test products.

The design will provide for 24/7 occupancy to respect creative freedom, privacy and support the families of employees. The nature of “virtual environments” allow work to take place beyond the occupied spaces of the building. Custodial work is an evening operation and an occasional conference may be hosted on a weekend.

Parking spaces will be made available for office staff, but design will encourage the use of bicycle and other alternative transportation. Many of the employees will live within a 10 to 20 minute commute from the site. The site’s proximity to the bus station will be essential in persuading employees to utilize Sioux Falls’ bus network.

The downtown and the riverfront are evolving as the city grows. Crime in the neighborhood, is something to be aware of. It is not prevalent enough to pose any great danger to the employees, but does pose security concerns.

major project **elements**

research.

The fundamental purpose, of this facility, is to further the process of discovery in an evolving sector of communications software development. Strong visual connections to the surrounding community will serve as a reminder that the research is about connecting people. These spaces will also be most equipped for inevitable change in the software testing procedures.

productivity.

Offices, storage and private spaces for employees to work will be needed. At the point when research becomes production, staff must be able to complete tasks in a focused environment, while never far from the collaborative spaces of the facility.

collaboration.

Collaborative spaces will encourage the regular gathering of researchers and developers, and will be situated near work spaces in a manner which promotes sustainable productivity and efficiency.

presentation.

On occasion, a corporate customer or tour group may seek out this facility for a demonstration of their cutting edge products. This influx of the public demands spaces which subtly express the building's attitudes about sustainability and respect the importance of human interaction.

relaxation.

A well-run, sustainable business, such as the one proposed here, must regard its programmers, researchers, marketing staff and all employees as valuable individuals. Spaces for eating and relaxation will promote a healthy and happy mind, body and spirit yielding productive employees and a positive environment.

site information

Downtown Sioux Falls is a dynamic area undergoing a great transformation. The Big Sioux River is within a block of the selected thesis site, and with the threat of flooding reduced by a diversion, the city is concentrating on the development of the riverfront as a tourist destination. This section of the river is of historical significance to the city, and the project site itself is not far from the former location of Fort Sod.

Bicycle trails offer a connection to the river and the rest of the city while proximity to the metro's main bus station will encourage users of the site to consider alternative means of commuting.

The site itself consists of surface parking situated adjacent to two banks and less than a block east of Phillips Avenue and the center of the historic downtown. An arterial one-way street lies just to the south, yet the neighborhood is pedestrian friendly. As the city grows to its boundaries, redeveloping this site will create a model for how meaningful design can increase density for the better.



Figure 16.1 - site photo, Eric Lagergren



Figure 16.2 - site photo, Eric Lagergren



Figure 16.3 - site photo, Eric Lagergren

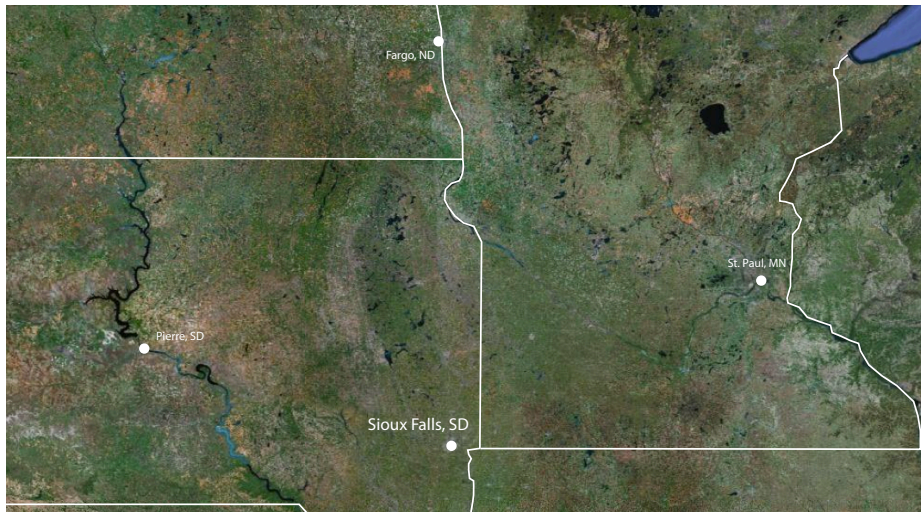


Figure 17.1 - regional map, Google Maps

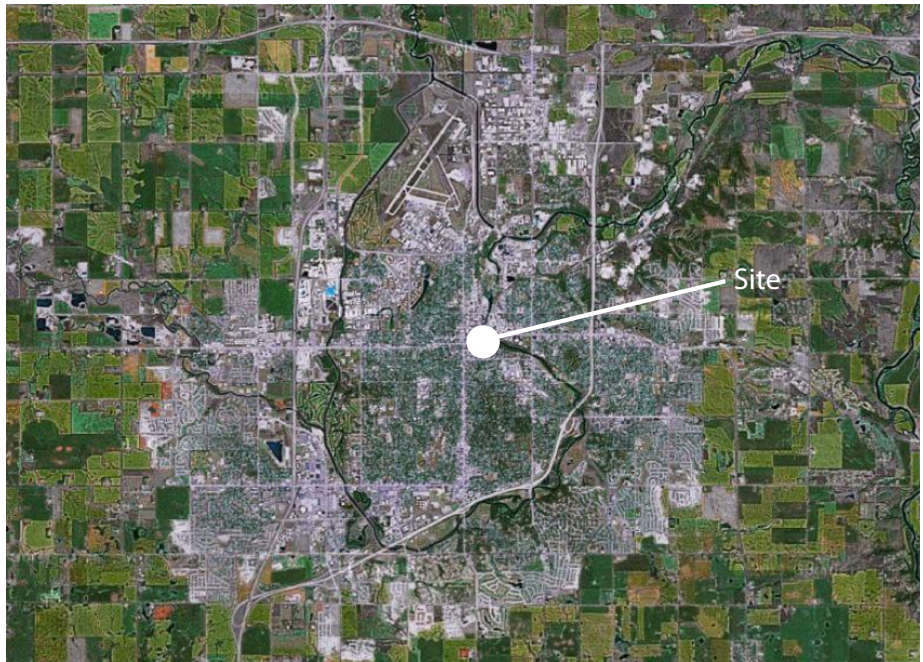


Figure 17.2 - citywide map, Google Maps



Figure 17.3 - downtown map, Google Maps

project **emphasis**

The thesis will explore how the social tendencies of society are changing due to dependence on technology. It will then channel that knowledge into a useful model for creating a productive and satisfying environment to occupy.

Design energy will be focused on creating space where discoveries can be made by individual people with the tools to rapidly transition to a collaborative space and share those discoveries. The project will be about connections within the space and to the surrounding context.

plan for **proceeding**

research direction.

The theoretical premise/unifying idea will be the focal point to which all research is tied. Case studies will form a tremendous part of the body of knowledge by informing spatial characteristics, programmatic requirements, movement, form and a plethora of other aspects of the typology being studied. In depth research into the historical context, including city growth, economics and traditional industries, will be imperative to understand. Analysis of movement patterns throughout downtown, the masterplan for the riverfront and an awareness of public land patterns will all play a role in understanding the site. Climatological information will also be instrumental in implementing passive environmental design strategies.

design methodology.

Mixed Method, Qualitative/Quantitative Analysis including Graphic and Digital Analysis.

Concurrent Transformative Strategy:

Guided by the theoretical premise/unifying idea, quantitative data, in the form of scientific measurements and statistics, and qualitative data, from observations and archival study, will be collected to yield an effective thesis.

previous studio **experience**

Fall '09

Tea House, Boat House

Joan Vorderbruggen

Spring '10

Montessori School, Unconventional Dwelling

Darryl Booker

Fall '10

FM Food Coop, NDSU Downtown Wellness Center

Cindy Urness

Spring '11

Physical Therapy Center, Fossil Conservation Center

Steve Martens

Fall '11

High-Rise, KKE Trash To Treasure

Don Faulkner

Spring '12

Agincourt Rail Depot

Ron Ramsay

Fall '12

Water Resource Experiment Station

Mark Barnhouse

documenting the design **process**

All process work and information will be duplicated and stored separately, on external hard disks, on-line drop boxes or both, not less than once per week. Work originating on paper or in physical form, will be scanned or photographed on this schedule with the digital version archived. Upon completion of the project, material not used in the final thesis submission will be made available in a separate collection, available digitally.

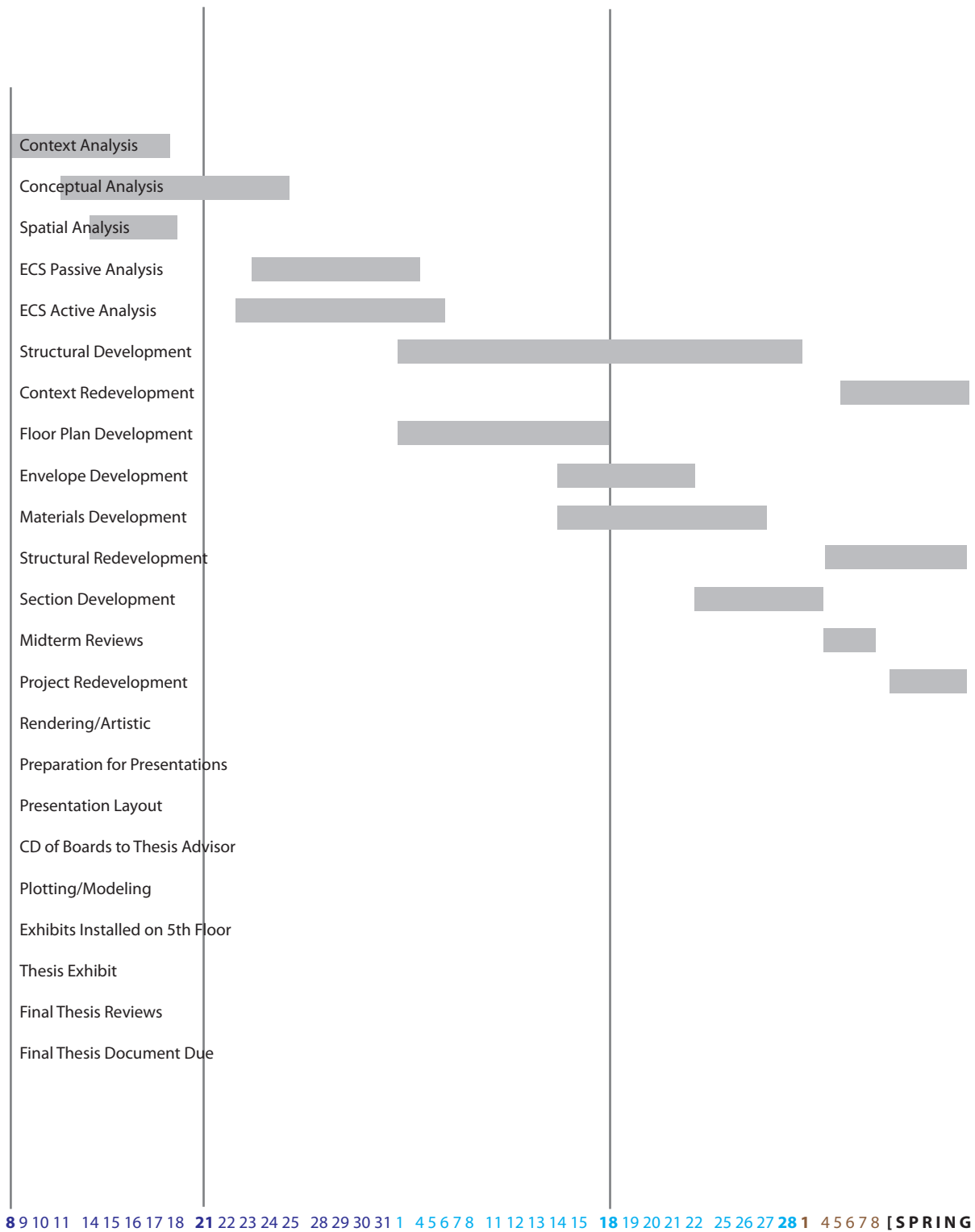


Figure 22 - design schedule, Eric Lagergren



the **program**

This thesis research explores and demonstrates the phenomenon that architectural design can have a positive or negative effect on interpersonal relationships whether they manifest themselves in the tangible or the digital realm. Architecture, as a process and a product, guides the movement and interaction of people by first stimulating a relationship between the occupants and their environment. The study of human interactions with technology, the idea of privacy, technology-driven communication, and the ever-changing workplace all provide insight into how one might craft an architectural object in response to the need for interactive spaces.

Technological Interaction

At the core of human progress lies the ability to fabricate and interact with objects. These objects are tools, which enable us as living things, to complete complex tasks which we would ordinarily be unsuited to attempt. Well crafted tools permit tasks to be completed more efficiently resulting in an increase in productivity. Technological fabrications, such as the modern computer, are no more than tools, however, they have propelled human progress considerably by allowing the species to be exponentially more productive. The affect on our productivity and communicative endeavors has been so profound that it brings into question the nature of our interactions and whether, in the context of the digital medium, they undermine aspects of our humanity.

Fundamentally, the computer is tool geared towards increasing productivity, set apart from any other device in history by its ability to not only display information, but to store and process it (Jacko 2003). In our interaction with it, our minds go through a process of encountering stimuli and eliciting a response. Use of a computing device is

a goal-oriented venture where the human inputs commands and interprets the results as preparation for the further input of commands (Jacko 2003). The entire experience is a string of exchanges between a machine, which is strictly calculative and without bias, and a human, which possesses the capacity to play interpreter, analyzer and decision maker.

The most efficient piece of computing technology is one which is designed around human intuition and the mental processing capabilities of a living user. At one point, it was theorized that emotion played no part in the psychological processes essential to computer interaction. More modern views, however, indicate that no action may take place with an electronic device without some form of emotional commitment on the part of the user. From the perspective of a software developer, this is of the utmost importance as a more successful design is one who's functionality can change or adapt to reflect the emotional state of the user (Jacko 2003). To do so allows the technology to be perceived as more comfortable, inviting and intuitive. One of the great difficulties in computer technology is human modeling as its composition includes physical, psychological and sociological aspects. A thorough understanding of these areas is essential in designing for human and computer interactions and supporting the development of interfaces with which both can work harmoniously towards greater productivity. To create interactive technology implies an understanding of the evolution of each entity involved. The computer is constantly changing and being re-imagined better than the previous model. Humans, on the other hand, have spent the bulk of their existence largely unchanged in terms of cognitive abilities. Poorly designed software interfaces make the mistake of attempting to illicit conformity on the part of the human rather than themselves changing and

being flexible. Software designed for diversity, on the other hand, recognizes that while humans are cognitively stagnant in evolutionary terms, we differ on the individual level enough to merit adaptable user interfaces (Jacko 2003). Another daunting challenge in software design is dealing with the ethics surrounding behaviors in an electronic context. Access to people and knowledge through an intangible medium, presents an entirely new context, and set of behaviors, potentially in need of ethical evaluation. Communication between individuals is subject to change as the medium transforms (Jacko 2003). In the span of a few years, communication has grown from phone calls via fixed locations to a global network of wireless and instantaneous video transmission. The technologies that enable such light-speed communication, however, have changed more than just how one reaches a friend in another country.

Privacy

People have always had a belief in the concept that control over the portrayal of our personal lives and components of our character is fundamentally important. Beginning back in the 1960's, this concept of privacy became cause for concern as forward-thinking society threatened to innovate it into extinction. Author Myron Brenton said, in 1964, that "we stand on the threshold of what might be called the Age of the Goldfish Bowl" (Solove 2008). Attitudes of the time foresaw society slipping, perhaps at the mercy of surveillance technology, into automation where individual privacy would merely be a nostalgic concept. Today, it seems, society continues to slide towards privacy's absence, albeit in a much different way than in the Cold War climate. Certainly, millions of people are concerned with privacy during arguably the most social time in human history, but the actions of the public raise questions about the nature of this concern.

The activities undertaken through the computer paint an interesting picture, “although polls indicate that people care deeply about privacy, people routinely give out their personal information and willingly reveal intimate details about their lives on the Internet” (Solove 2008). Governmental bodies are constantly called upon to define and protect privacy. Legislating privacy becomes complex as the rights of the individual, strictly on the grounds of preserving individuality, are difficult to defend in the face of societal values such as free speech. The protection of privacy is reached by understanding that individuality is not something separate from society, but, as John Dewey states, something “...inextricably bound up in society” (Solove 2008). Society provides the support system that serves as a foundation for a healthy individual. Invasion of privacy is a source of extreme discomfort for a population. One of the most intrusive activities on the part of a governing body is the surveillance of its’ people. The legal system of this nation, and others around the world, have taken the initiative, over several decades, to ban certain levels of domestic surveillance and wiretapping. While observation is not an explicitly harmful activity, prolonged observation becomes surveillance. Human nature dictates that the act of surveying a person influences the actions and feelings of the person observed. While not automatically negative, surveillance becomes a form of social control. On one hand, this control may be a factor in deterring criminal activity, but on the other, it can adversely affect basic civil liberties (Solove 2008).

Communication

Technology has opened the door for new methods of communication to spring up. In doing so, it has also changed the nature and the predominate attitude towards communication and what it means to be connected to

one another. The perception of the world has changed. Through most of history, the speed and versatility of communication has been limited by the limits of the human body, our ability to domesticate other living creatures and the engineering of fuel-consuming machines. But as with everything subject to the flow of time, that has changed. The technology that permits virtually anything to pass as a pulse of light underneath the oceans once crossed by ships on long voyages, has fostered a waning appreciation for the scale of the planet, and opened the door to a perplexing and potentially deceiving level of social exchange. This new super-connectedness combined with advances in the portability of technology has yielded a need to continually become more connected. Society places an expectation upon the individual that he or she must be reachable at any time of the day via a portable device or through any of several communication mediums. With such a demand placed on people for their constant attention and contact, the content of what is communicated is more subject to scrutiny. The result is talking and messaging which lacks meaning, yet runs the risk of being perceived different than the intent and causing unneeded distress. Communication in a sociocultural environment dominated by technology essentially assumes two forms outside of the in-person face-to-face. The first is text-based and the second is face-to-face interaction. Kappas (2011) argues that, particularly in text-based methods of communication the cues we rely on in conversation are filtered out by the computer or other device in use. With video communication, however, the technology has allowed users, dependent on bandwidth of course, to convey some of the previously lost visual and audible cues. The technology to support this is changing at an unprecedented rate allowing greater realism and transmission of more and more of the cues ordinarily

received through the space between people. These technologies continue to adapt. Voice transmission has existed for some time, and the ability to do, over the internet, what the telephone has been permitting for decades via land lines is not particularly advantageous. The features available with the online method do little to change how cues are conveyed through the voice. Instead, voice transmission offers its benefits in the form of the technologies it is paired with. While it's widely understood that one of those is video, another is a three-dimensional avatar (Kappas, 3). Online, three-dimensional environments exist within which users can create a representation of themselves capable of interaction with other character representations. Presently, the relationship here between the human, their avatar, other avatars and other humans is not elaborate enough for consumer use in transactions outside of a gaming or recreational environment. Research into the creation of real time, three-dimensional interactive renderings began as far back as the 1950's, according to Van Broeck, author for the Bell Labs Technical Journal (2011). The research, however, was halted due to the lack of "...media production, transportation, as well as consumption..." (Van Broeck, 2011). In recent times, these factors are no longer an issue. Thus, Bell Labs has taken the opportunity to continue researching. While the ongoing mission of any research in this area of communication is to increase the ability of an artificially created avatar to mimic the behavior of the living being after which it's modeled, the research at Bell is set on developing applications, based on communication with immersive 3D models (Van Broeck, 2011). In order to create a viable and truly responsive 3D avatar for communication, the model must essentially be generated from real-time characteristics of the person it's seeking to model. The issue with avatar technology, some of the first of which was demonstrated in 2001,

is that the model must be prepared ahead of time and therefore fails to accurately model circumstances as they are (Van Broeck). As this is an ongoing problem which current science is far from solving, the most promising research focuses on bringing live video into a virtual environment. To do this, current three-dimensional cameras utilize two, two-dimensional cameras pointed at an object to triangulate its position in space by cross-referencing the spread of two-dimensional images from each lens. When the images are spliced together, creating a single, three-dimensional image, software filters must be applied to eliminate background imagery where appropriate as well as other types of interference. This method of generating a three-dimensional image is effective at eliminating the chore of creating an avatar. The user is spending very nearly no time modeling and customizing a virtual form ahead of time. This saves time, is more efficient and permits the created object to adapt to changing circumstances unhindered by the user's modeling technique. However, there are drawbacks. Current technologies limit the rendered image to a lower quality. The cost and bandwidth requirements also risk jumping tremendously if the multiple users are added to the virtual environment. As an afterthought, security and privacy are predominate concerns with any experimental virtual setting. The nature of transmitting visuals from the real world into a three-dimensional virtual setting can best be described as a mixing of realities. When light is captured by one or more cameras pointed at the subject or user, the camera synthesizes and packages the information for transmission across a network or to other users in the environment. Upon recipient of this information, the server and processing equipment constructing the virtual world must open, extract and interpret the captured imagery information and map it in three-dimensions such that it can be rendered for view by users.

Networking, argues Brian Collins (2012), “... has long been a staple of business practice in many fields.” Indeed, forming relationships with people enriches our life and allows us to achieve goals. A common piece of wisdom often imparted on the young is it’s not necessarily what you know or the knowledge you have gained, but rather whom you know and where your personal connections lie. Our world is a more connected place, and in the future it’s likely to become even more connected. Being connected is essential, but the concept itself is an umbrella for many methods, some more meaningful than others, in which connections can take place. Professional environments have a certain flavor to how relationships grow and flourish. Companies often push employees to attend conferences for the purpose of continuing education or to make connections with other businesses and people within the same industry. Memberships within organizations are another, more permanent method of connecting with a dedicated group of individuals. Generally these organizations will include an even more specialized group of specialists, leaders, vendors and much more. Each of these are more successful when they are reciprocal, in that they are mutually beneficial to all parties involved (Collins, 2012). While any good organization will utilize a multitude of different communication methods, the focal point of their connectivity is the action of people physically assembling to exchange ideas and information. Even with all of the innovative ways we use technology and pulses of light and energy to communicate, a human still is most engaged and appreciative of the personal nature of the tangible encounter.

Technological Workplace

In recent years, the building industry and businesses alike, have observed technol-

ogy playing a greater role not only in the design and construction of buildings, but in their management and upkeep. Technology, such as building dashboards, enable buildings to serve as tools for learning by displaying information about the environmental conditions of built space and offering users the ability to easily control building systems or simply observe the automatic regulation of the building by itself. Building maintenance, however, is only one department which can benefit from the integration of buildings and technology. John Worthington (1997) states, using compiled research, that the plausibility of a “virtual corporation” is non unreasonable. Building technology for communication and automation has aroused a great deal of interest in how an organization might eventually move outside of the physical building envelope. Ideally, the organization would be less limited in its ability to conduct business everywhere relying on intelligent buildings as nodes in a vast, possibly international organizational network. Historically, brick and mortar organizations demonstrated their prosperity and growth by investing in greater and larger physical spaces in which to work (Worthington 87), and depending on the scale or need, different business functions might find their way into different buildings in a campus-style community. The desire to cut costs in an increasingly competitive business world has forced a change in the way business is planned out. The grand building downtown is not necessarily the symbol of a company anymore. The low-cost of participating in urban sprawl has persuaded businesses to move much of their operations to less grand structures on inexpensive property skirting the city. Taking the place of the powerful front entry on a downtown main street is a website. Physically, the organization is more fragmented, but by taking advantage of networking technology, it is able to coordinate operations as well as it could when all

functions were under one roof (Worthington 88). The sacrifice that is made is the ability for personal encounters to happen. The business has taken one step towards physical isolation.

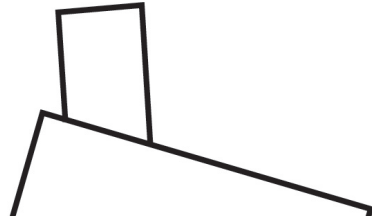
Summary

The theoretical premise and unifying idea research for this thesis centered around four areas which are intended to support the notion that architecture can be a vehicle through which all areas of society can remain productive via a type of social-electronic innovation and, in the process, assure it does not sacrifice tangible, face-to-face interaction. The following summary will take into account each of the major avenues explored in the process of this research and provide the reader with an overview of the knowledge gained from the compilation of this research. The first section of the research discusses the topic of technological interaction. The understanding that the reader should enter this section with is that technology exists in a manner which permits and encourages its use as a medium and a device for interaction between human beings. The section first begins with an analysis of the computer as a tool and how, at its most fundamental level, the goal of using it is to increase productivity and become more efficient. The computer must interact with the user, and vice versa, in order to merit its development in the first place. The first part is also a discussion and analysis of human-computer interaction and the nature of stimuli and response. Across the span of time, the human mind and body have undergone evolutionary changes at a rate hardly measurable to the point of near stagnation. Computer technology on the other hand, continually evolves at an astounding rate, albeit by the human hand. Deeply concerning is the idea that from within these changes emerges

interfaces between technology and people that demand that the human conform to an unnatural set of standards in order to partake in the efficiency the device has to offer. Section two is an analysis of privacy from an ethical and legal standpoint. As stated above, views on privacy have always been conflicting since the Cold War and the dawn of the information age. Consistently, privacy has always been threatened by some group while the general populous fights back. The disconnect has always been the people generally have a vague concept of what privacy is. Everyone wants it, but aside from knowing it pertains to personal property, lives and information, society does not spend considerable time safeguarding themselves against invasions of it or truly understanding its value. The third section explores communication and its applicability via networks and devices. As communication takes place, it assumes either tangible, in-person interaction, voice only communication, visual exchanges, three-dimensional avatars or some combination of two or more. Each of the technologically enabled methods filters out some of the essential cues to fully engaging conversation. The challenges faced included creating secure, cost effective virtual environments and utilizing them in ways which don't remove the human element from person to person communication. The final section contains in-depth research into the technological workplace and the increasing role it plays in business today. Society has smart buildings, run by computers, which automate environmental settings and provide building occupants with a unique insight into the functions of the spaces they inhabit. This link between buildings and computers has transformed the way businesses represent themselves from brick and mortar establishments which put a face on organizations to website fronts with physical nodes on inexpensive land contributing to urban sprawl.

typological **research**

case studies
graphic analysis



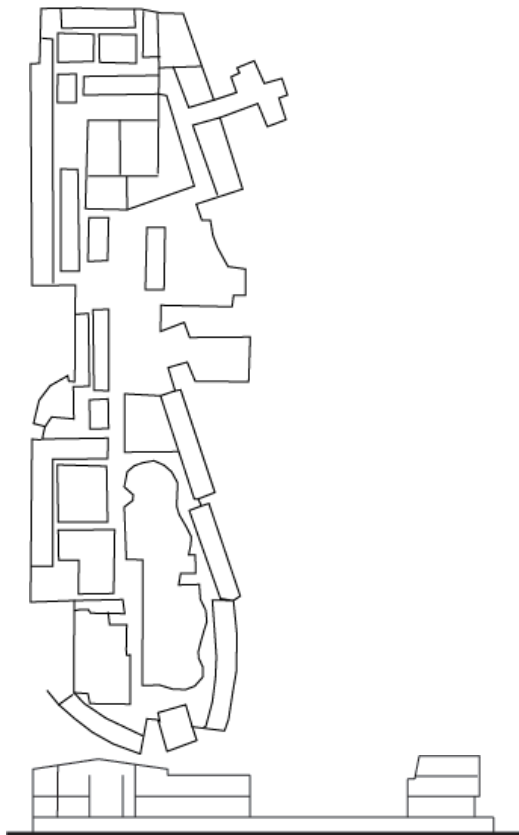
structure



natural light

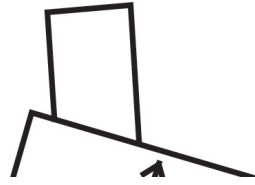


massing

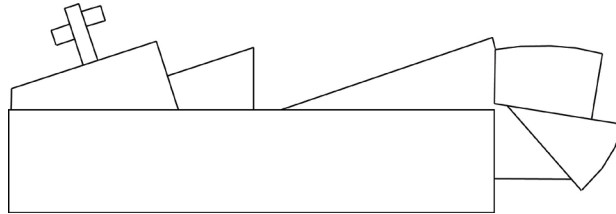


plan to section

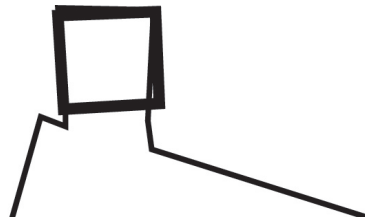
Figure 39 - Google graphical analysis, Eric Lagergren



circulation to use space



geometry



hierarchy

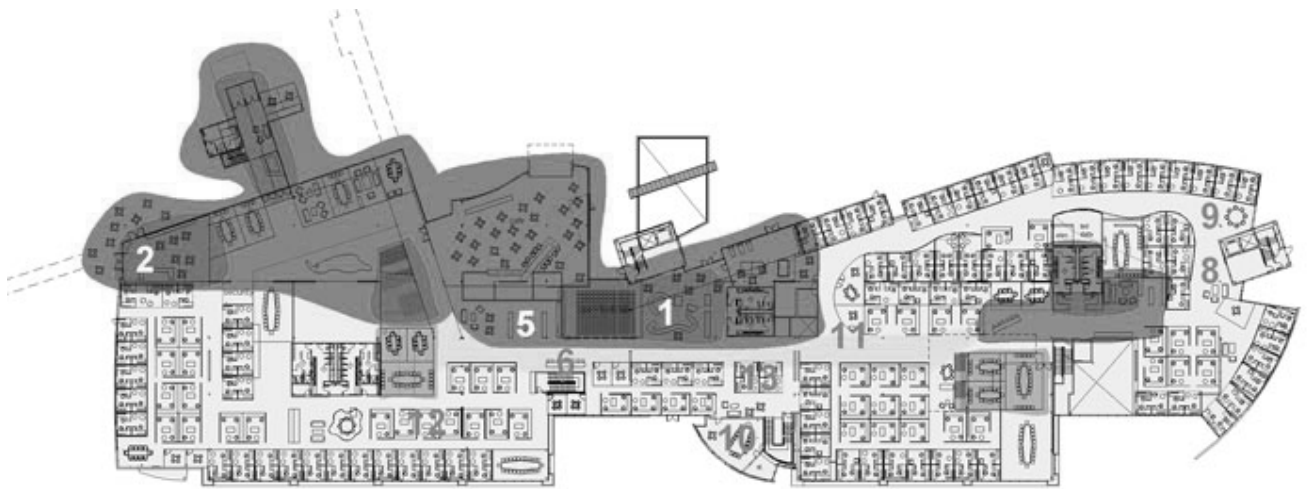


Figure 40.1 - Google plan, archdaily.com

Googleplex Building 43

Mountain View, CA



Figure 40.2 - Google section, archdaily.com

**CASE STUDY REPORT:
GOOGLEPLEX BUILDING 43, MOUNTAIN
VIEW, CA**

Google is one of the world's most profound corporate success stories, and its buildings and operations centers are no accident of design. The Googleplex is a campus in Mountain View, California designed to house the headquarters operations of one of the largest and historically fastest growing software and technology companies on the planet. Located at 1600 Amphitheatre Parkway, on a campus that has grown and changed as rapidly as the company that owns its acreage, building 43 is a set of spaces geared toward fun and creativity. The structure provides offices for the business executives and founders, a chef to prepare fresh, organic meals each day and engaging working environments for its top employees.

When Google remodeled the building in 2004, the companies founders played a strong role. The resulting building was "...a playground for engineers that more nearly resembles a movie set than real life" (Vise, 212). The remodel involved tearing out much of the interior finishes to create spaces with an open feel and expose the functional systems of the building for a playful, industrial atmosphere. Vivid color schemes and toilet paper-free restrooms complement named rooms and visual design humor. The details are incredibly important and every measure has been take to avoid offices becoming blocks of cubicles (Vise, 213).

With the goal of becoming a carbon-neutral campus and company, the management has spend millions on green initiatives. One of the staples of the Googleplex is its innovative transportation network, which includes a fleet of luxury, double-decker buses to pick up and shuttle employees around the campus and back and forth between home and work. They're

also heavily invested in wind and solar farms for both the headquarters and data centers around the world. For the time being, the purchase of carbon credits allows the company to appear carbon-neutral on paper (Dumaine, 2012).

ANALYSIS

This case is the product of a unique formula for the creative development of software solutions. The built environment is incredibly detail-oriented and seeks to draw upon the playful nature of the human spirit. The design is a response to cultural concerns and global concerns. Factors such as the changing climate and the persistent concern over privacy, both demand and enable to design and function in an honest fashion with a true commitment to sustainability.

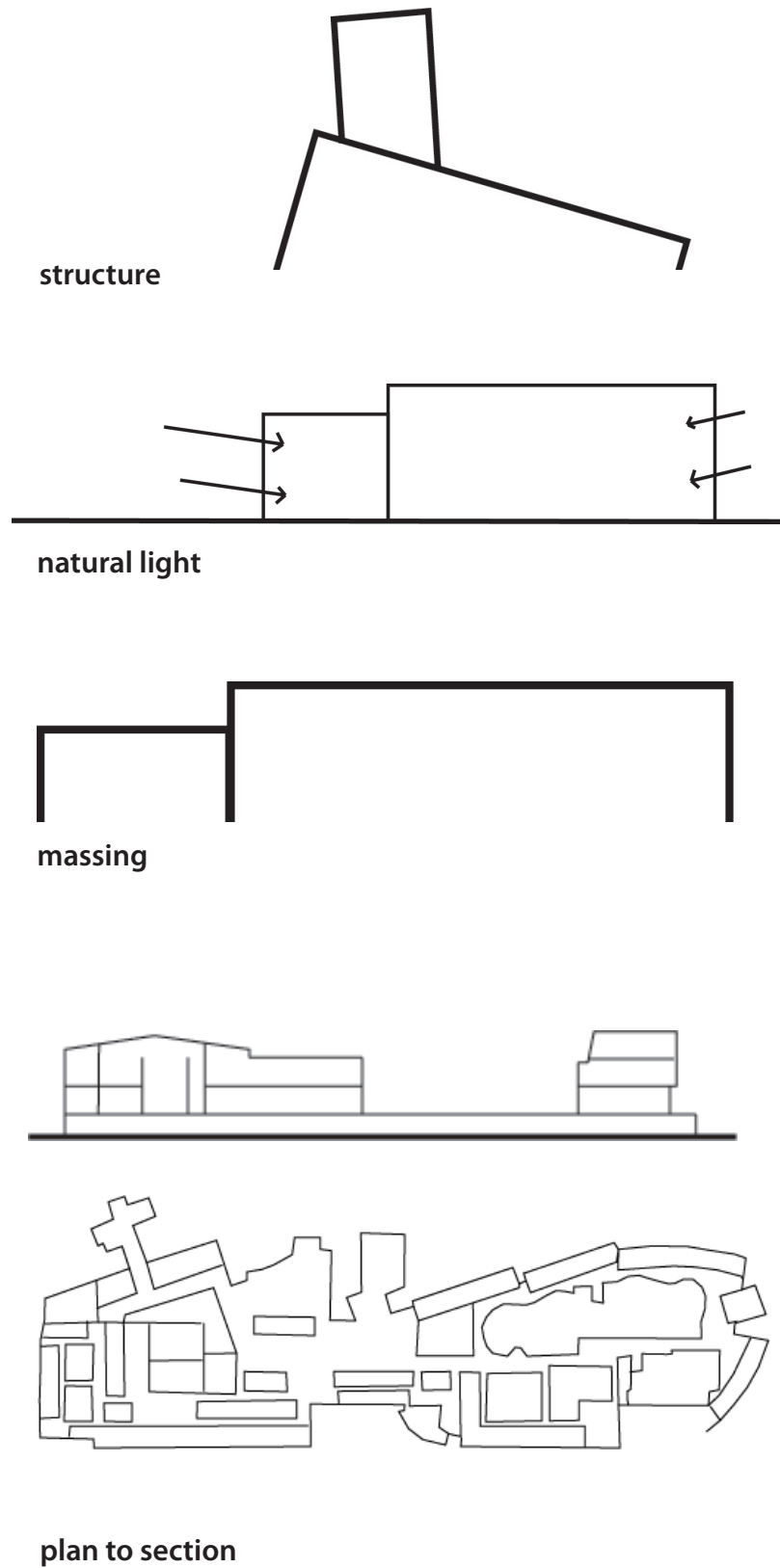
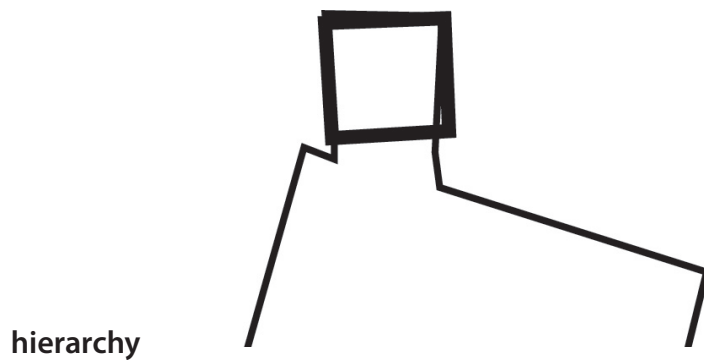
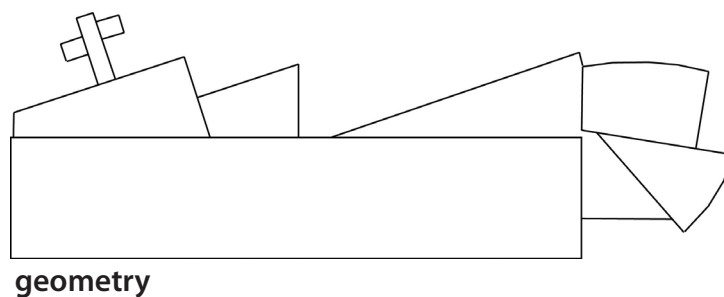
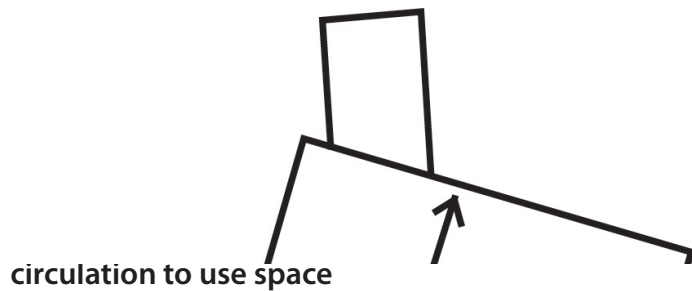


Figure 43 - Skype graphic analysis, Eric Lagergren



Skype Corporate Headquarters

Luxembourg City, Luxembourg

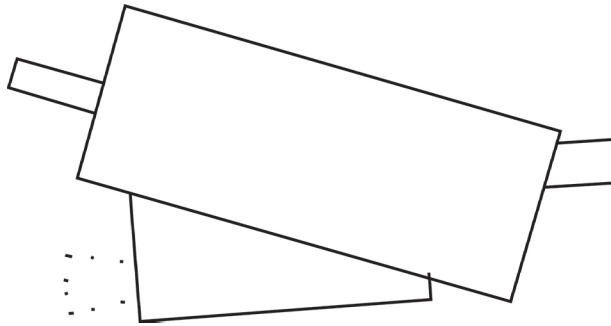
**CASE STUDY REPORT:
SKYPE HEADQUARTERS, LUXEMBOURG
CITY, LUXEMBOURG**

A pioneer of human communication, Skype has transformed the way in which people communicate across the planet. The company's global headquarters in Luxembourg City, Luxembourg is a leading example in the reuse of otherwise mundane industrial facilities. Located within the heart of the old city, this future-looking communications technology company has made a concerted effort to intermingle with the local culture. However, on the global scale, they've managed to spread far and wide marketing their product to a multitude of cultures. The new corporate headquarters for Skype Communications is designed by Walker and Martin (WAM) Architects of the United Kingdom. WAM has been doing a variety of work in commercial, retail, residential and other areas since 1995. The new building for Skype is part of a larger regeneration and restoration of an existing brewery. The brewery is located in Clausen quarter, which is an older section of Luxembourg City (Archdaily). The goal of the firm in designing this new space for Skype was to provide an interior environment which would help to inspire staff. By bringing this inspiration directly into the spaces that people will inhabit on a daily basis the company hopes to continue breeding its success in connecting people. However, as inspiring as the space might have wanted to be, the designers had to keep in mind that the air of corporate sophistication must still prevail. Skype demanded that their audio and video technology and the spaces for the use of this technology be top notch. In an effort to provide flexibility for a company that is rapidly changing and growing, the designers created the office spaces to be dynamic and flexible. In order to better achieve these goals, WAM first reviewed the strategies in place at Sky-

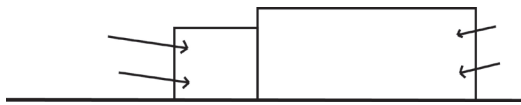
pe and subsequently expanded upon them. Ultimately, it was intended Skype offices around the globe would subscribe to this new formula. The formula included the opportunity for communication between different teams to be better thanks to a dynamic and very fluid layout. Many Skype employees tend to roam around the office while they work. The architects took notice of this fact and designed the meeting spaces and offices to enable and encourage the practice. The design of the ceiling is one of the first things noticed in the building. Alongside the building is a river that, at one time, served the brewery. The movement of water is important here thus the ceiling was designed to encourage movement through the space adjacent to the water feature. Another reference to the old brewery are the timbers that frame in the meeting areas. These timbers serve a dual purpose by also giving the space a warmer and more sustainable feel. The pod-like feel and dispersal of the meeting areas, like the ceiling, also encourage movement. Mechanically, the ceiling contains fully integrated lighting and building services. The nature of the building's skin lets in tremendous natural light and provides excellent ventilation (Archdaily).

ANALYSIS

The company itself becomes an interesting case to study as its business addresses a fundamental human need, and the nature of how such a "virtual" industry establishes itself in brick and mortar. Further study of this building will yield valuable information to anyone seeking tangible solutions for buildings for communicative software.



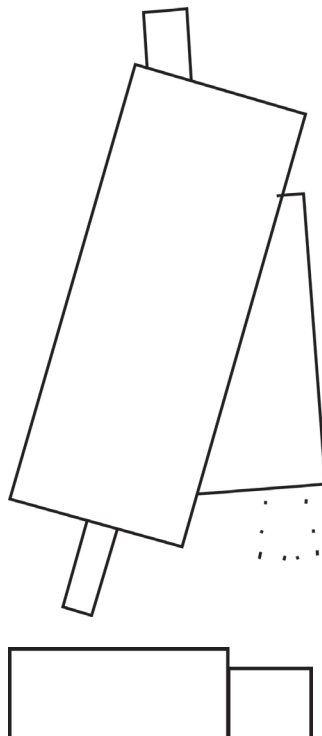
structure & geometry



natural light

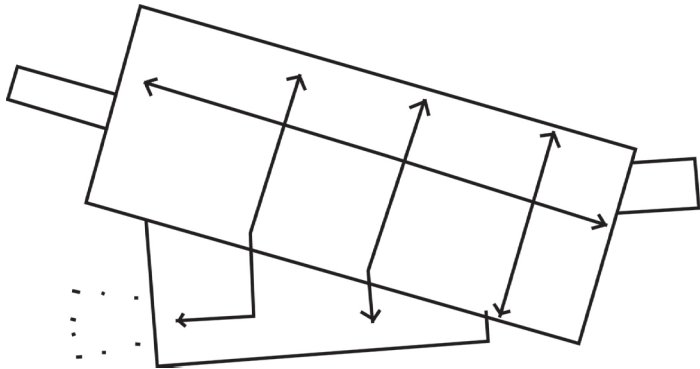


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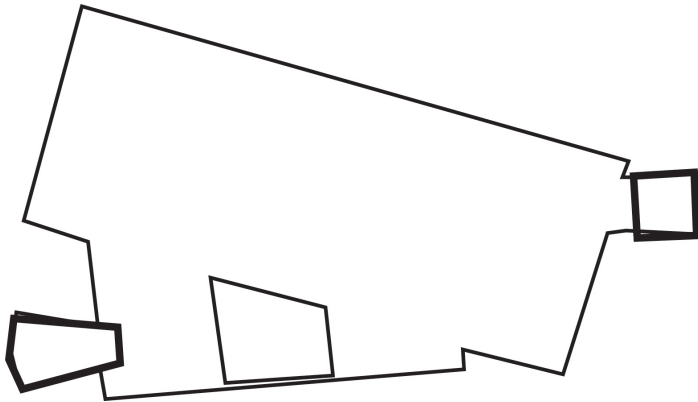


plan to section

Figure 47 - Microsoft graphic analysis, Eric Lagergren



circulation to use space



hierarchy

Microsoft Dynamics
Fargo, ND

CASE STUDY REPORT: MICROSOFT CAMPUS, FARGO, ND

Microsoft Fargo is a division of Microsoft Corporation, based in Redmond, Washington. The Fargo campus is the location of a major development center for the Microsoft Dynamics business platform, as well as home to a number of Microsoft's other global operations. Located at 3900 Great Plains Drive South in Fargo, the eighty-acre campus was originally developed in the 1980's with the founding of Great Plains Software by local entrepreneur Doug Burgum. In, 2001 Microsoft acquired the campus thereby contributing to a major transformation in North Dakota's technological business sector.

The acquisition of Great Plains Software allowed Microsoft to gain a competitive edge in the small to mid-size business market. The vision at Great Plains was that the future of business software existed within internet-based applications rather than exclusively along the traditional lines of desktop applications. This business move was a way for Microsoft to diversify its services by first gaining an understanding of the software market they wished to infiltrate (Callaghan, 2001).

The five-building software development and customer service campus has been contributed to by architects including Julie Snow Architects and Perkins + Will, both of Minneapolis. The design of the original buildings intended to express the one of the most significant elements of the agricultural prairie: the shelterbelts. Each Julie Snow building in the program is linear, from east to west, indicative of plains roadways terminating at the horizon. The building's systems and arrangement respond to a need for fast connections, and the ability work collaboratively as well as on an individual basis. The unique design of the mechanical systems allows fresh, unconditioned air from

the outdoors to be used in the warmer parts of the late spring and early fall (Snow, 2005).

ANALYSIS

This case has evolved over time to meet differing needs, all the while experiencing continuous growth. The design maintains strong experiential connections to the land, but has a large footprint on the earth. The architects, as well as the client, have shown a strong awareness of environment in which they built these spaces for work that couldn't be more removed from agriculture. Socially, the interiors have been successful at yielding productivity while existing as destinations for the employees. A job at this facility is certainly not something undesirable, and carries with it a strong reputation.

SUMMARY

Each of the case studies examined for the research in production of this thesis is a facility geared towards the research, development and production of software for people around the globe. Each building examined is also part of a chronological evolution of one or more buildings on the site in question. Similar principles, regarding the treatment of the environment and design that are sensitive to the need for a highly desirable workspace, hold true from case to case. Indeed, the typological research was one of the primary shapers of the thesis' theoretical premise/unifying idea research. One component of the theoretical research was into technological workplaces. As technology advances and the building industry becomes more sensitive to the environment and the lifecycle of a building, integration of the two becomes beneficial for society and for the environment. Buildings integrated with technology have the ability to automate themselves for efficient interior environmental regulation. They also provide the occupants with the unique ability to gain a real-time understanding of how the building they are in functions and interact with it on a deeper level. In this chapter of building history, buildings have the opportunity to, more than ever before, be teaching tools for the public. Moreover, as the built environment becomes more intelligent and business begins to take notice, the tendency, for businesses, drifts toward cost saving measures. Software enabling corporations to exist virtually as much as if not more than tangibly is woven into the fabric of each of these case studies. Microsoft Fargo is one of several Microsoft campuses located around the nation. Not only is the company networked across the country, but the campus itself is broken up into different buildings serving the purpose of delineating different functions and giving a certain community feel

to the workplace. Google is a monster of this type of satellite operation with physical nodes all around the world feeding the company's needs on demand. In Google's case, however, much of the people-oriented operations take place at the central campus in Mountain View, California. The nodes around the globe are merely data centers staffed by minimal numbers of specialists. Nonetheless, the bulk of the company's operations take place online, and the nodes simply process the exchange of information. Skype Communications probably runs the slimmest operation in terms of physical overhead. They operate several offices around the globe, none of which is as large as Microsoft or Google's corporate headquarters. And for serving over six hundred million users, their brick and mortar footprint is very small.

Both Google and Microsoft adopt the campus feel which creates a certain sense of community by utilizing proximities to create a strong company culture. Skype, on the other hand, has utilized smaller, more intimate and individually designed cells of productivity throughout the world to harness creativity on a global scale. One approach is geared far more towards employee satisfaction. Given the volume of employees need to support operations, this is not surprising. The other approach minimizes operational overhead, creating an environmentally friendly and more efficient company. They become more flexible to change since most operations are in some sense virtual and customers undoubtedly will support a company which is treading carefully on the planet.

The sites chosen by each company for their buildings or headquarters are strongly reflected in the architectural design decisions applied to form and space. Microsoft's campus in Fargo is composed of long, linear prairie architecture providing the occupants with views and light, which appear not to end at

the building skin. Google modified some existing buildings, and in an environment where transportation can be prohibitively expensive, adapted the campus design to reflect it by offering employees transportation and incentive to stay at the office for more of the day.

Google is arguable more successful at branching out from the traditional and purging the image of a cubicle from the office environment, yet each design understands and appreciates the value of well-connected meeting and collaborative workspaces. Employee happiness is a top priority. Creating playful environments with high levels of freedom stimulates employees to be creative and present ideas without fear of the corporate beast.

historical **context**

A Fundamental Social Issue.

As humans are social creatures, communication is essential for a fulfilling life. On the everlasting quest to create tools which can do human tasks better, faster and more efficiently this species has begun to innovate within a realm which truly forces us to question the ethics and boundaries of our existence. Interaction in an environment which is virtual and intangible is a tremendous win from an efficiency perspective, but can quickly become confusing when analyzed in the context of traditional social interaction. Societies with the means to innovate have been gradually advancing towards allegedly more social behavior. Interconnectedness, by means of devices, gives the sense that greater contact and more fluid exchange of knowledge is one in the same with social interaction. Ironically, this apparent socialization actually risks diminishing the human spirit. The architectural challenge is to address this trend in one of the environments where it has the most diminishing effect. Software design and engineering companies are both the source and a powerful example of how lives can be less full of life due to this modern revolution and how many are the most desired workplaces as a result of quality, innovative design.

A Contrasting Context.

The physical and context within which this thesis is proposed to take place is one that is, historically, unfamiliar with software engineering. Southeastern South Dakota is an urbanized cell within a deeply rooted agrarian society. Surrounded by farmed prairie, the upper midwest region has showed promise as a safe haven for software firms to set up offices. Urban Sioux Falls, however, has a strong meat-packing history, and a very brief history in the technology sector. The project site is adjacent to one of the strongest natural features for miles: The Big

Sioux river, and a strong urban revival is budding along its banks. The urban area seeks to become a destination in the region by drawing upon its natural features and economic strength. Software engineering which responds to a hard-working culture and supports the notion of an urban destination will thrive in this context.

The city of Sioux Falls, South Dakota is the county seat of Minnehaha county and also sits in Lincoln county. The city was settled in 1856 but did not achieve city status until 1883. It sits on the banks of the Big Sioux river and is named for the falls located on the river in the center of the city which generate some electrical power. The town was abandoned for three years from 1862 until 1865. The construction of Fort Dakota permitted the site to be resettled by providing security against raids by Native Americans. Sioux Falls is currently South Dakota's largest city and in addition to processing meat it is the center for industry and shipping for a large agricultural region. Many products are manufactured there and several prominent educational institutions reside there. The University of Sioux Falls, Augustana College and the South Dakota School for the Deaf as well as the state penitentiary are found in Sioux Falls (Sioux Falls, 2011).

The cascading falls themselves took their current form approximately 14,000 years ago. The most recent sheet of glacial ice, as it melted, channeled the flow of river water along its present looping course. The force of such fast moving large volumes of water carved away the soil exposing the bedrock that makes up the falls seen today. The falls have long been an icon to many different people. Nomadic tribes inhabiting the area in prehistoric times chose the area for the placement of their burial mounds. After these inhabitants departed, a more permanent agricultural society existed in the area. It was in the seventeen hundreds that Dakota and Lakota Native American tribes arrived in this area, and

allegedly used the site to meet the first European explorers to visit the falls area (City of, 2012). Land speculation in the 1850's was responsible for the settlement of Sioux Falls prior to the arrival of settlers or railroads. The two companies claiming large pieces of falls area land worked collaboratively for defensive purposes. Threats from hostile native tribes instigated the construction of an all sod fort aptly named, Fort Sod, which stood through the town's first winter. Sioux Falls began as a town not much different from any other. The Cataract Hotel, on Phillips Avenue, was the focal point of activity just as the hotel in any other town of the time played a similar role. Following an 1870's building boom and a legislative process culminating in the acquisition of city-status, the railroads entered the picture bringing with them prosperity and a population boom. In the twentieth century, the John Morrell meat-packing plant, the infusion of military infrastructure and the completion of the interstate highway system contributed to impressive growth which still continues today (City of, 2012).

The four-hundred mile long Big Sioux River provides a major feature in the physical context of this thesis. The river flows generally south from northeastern South Dakota terminating at its junction with the Missouri River at Sioux City, Iowa. The river forms a large loop in southeastern South Dakota which largely encompasses the heart of the Sioux Falls metropolitan area. Along this stretch of river, right in downtown, lie the famed falls. Although the falls are in downtown, they are some distance from the thesis site and not visible. Flooding was once a problem in the heart of the city, but since the construction of a diversion enabling water to bypass the city altogether, sites right adjacent to the water no longer need to cope with this complication. The thesis project site is not directly adjacent to the water, but it has a strong relationship to it. Across the street to the northeast lies a con-

crete walkway with runs parallel to the river, at street level, but high above the water at all times. This man-made funnel for pedestrians creates a physical separation from the water, something which is not the case in other areas along the downtown stretch of the river. Now that historic flooding is no longer a logistical issue in infrastructure planning, riverfront property has greater value. Several hotels are under construction or built directly on the river. These hospitality venues are creating plazas and other spaces which bring the public to the water's edge and highlight the importance of maintaining the river's greenway and banks. With the passage of time, more of the riverfront will be developed (or left undeveloped) to this end. To the thesis project site under consideration, the proximity to the river must be considered. Any design on the site will have excellent views of the river, and should highlight those views accordingly. A project which successfully invites the public to interact with it might be the first step in drawing more of the river-seeking public to this corner of downtown. From there, a modification to the river walk on the project's side to open it up to both the newly created design and the ancient water feature will add value to the experience and give the design an element of timelessness.

The world's inhabitants today are experiencing change at a greater rate than any group of people in history. With a population, planet wide, of over seven billion, resources are being stretched and, more importantly, an awareness of the finite nature of much of the fuels we use on a daily basis is beginning to permeate the psyche of people everywhere. Information and its dispersal have changed in the minds of politics and society. In the past, powers ruled through the deprivation of information and isolation of people. Today, he who wields knowledge also wields power, but in recent decades the willingness to give that

power to the people has prevailed. With the establishment of the internet and of sites on it like Wikipedia, anyone on the planet with access to an internet-ready computer can find information on virtually any topic which has a quality guarantee from the thousands of users combing the site on a daily basis. Information which everyone can contribute to poses an immense risk in an immature database, but when the volume of traffic through the information reaches a threshold, the accuracy of information becomes something regulated by the prevailing opinions and feelings of the culture. The exchange of information in an academic context is at a truly remarkable point in our history, but the high-speed connections and global networking capabilities that enable the world's two and one-half billion internet users to communicate has a prominent social context as well. Gone are the days of mailing letters to loved ones or relying on making a phone call from a land-line as the only means to communicate with someone in a distant nation. The emergence of online applications such as Facebook or Twitter, Google Plus or any other social media tool left unmentioned have radically altered the nature of getting in touch with friends and loved ones. Facebook, has served as a vessel for middle-aged users to connect with friends from high school while offering a controversial platform for anyone to instantaneously upload their thoughts, be it wise to do so or not, such that hundreds if not thousands of others can read them. As a software application, Facebook presents an interesting case study as it offers so much potential as a collaborative platform. Fundamentally, it presents users with a profile, which includes a so-called "wall" upon which anyone with the proper permission settings may post thoughts, links or information. Also among the fundamental capabilities it has is the ability to sent text messages to others, and chat live either via instant text message or video.

Many groups have utilized its communicative features and ability to host groups to allow the dissemination of information to vast numbers of people within a specific organization. Even groups at the collegiate level commonly use Facebook, this arguably unprofessional platform, as a means to post group information. The group capabilities found use internationally during the rebellions against many middle-eastern governments in the past two years. Facebook has also initiated a small business revolution. By providing users with a free experience, many start up companies have been able to get their foot in the door without spending overhead on advertising. Baconsalt, for instance, is a company, which created a Facebook page for their first product. From that point on, they have not invested a cent in advertising, relying on Facebook pages and the users of Facebook to promote their product for them. Advertising is both a practice and a type of media which has changed with the introduction of the computer and networking technologies. If it seemed as if advertising was everywhere prior to the computing revolution, then it's permeated even farther now. The internet offers free services quite frequently, but the truth is these services aren't free. They're paid for by advertising most of which lines either the sides or the top of the pages or application the user is interacting with for free. The single greatest change to the world of advertising, is the ability to produce custom ads which are geared toward the specific interests of a given internet user. Ad agencies and websites use cookies and other tracking technologies imbedded in a user's internet browser to track activity online, whether on retail websites or simple information searches. This information is analyzed by automated systems to determine which ads would have the greatest success of selling a particular product to a customer and subsequently places them on future pages the user navigates to.

Software design has a basis in a fundamental activity for humans: the making of tools. When we make tools, they're then used to make other tools which become successively more advanced until the point at which they can be utilized in purposeful activity. Designing computer software systems also harnesses the human's ability to communicate as the design for a piece of software must be communicated to those who will be developing it. Thirdly, an element of timelessness must be present. The ability to communicate is not enough unless it includes passing ideas on to future generations such that they can understand them enough to reverse engineer reuse. Design quality is especially important on all scales from airplane flight controls to microwave ovens. While one potentially puts lives on the line, the other causes inconveniences to efficiency. What is unique with software design, is that the work of development is a backwards process. Software is a tool which is extremely forward looking compared to other tools. The designers must design the software in anticipation of a highly uncertain future using only the tools available in the present (Budgen, 4-5). Essentially, the outcome must be ascertained as accurately as possible prior to the production of any software. This idea offers up some explanation as to why software is updated so frequently. Designers are unable to anticipate enough of the changes and issues to come at the time of creation. Versatility and flexibility provide answers to much of the questions in software development. Understanding their importance as design themes will guide the development of this thesis project.

site analysis

The site chosen for the implementation of this thesis project is an urban parking lot less than one block southwest of the Big Sioux River in downtown Sioux Falls, SD. The location carries with it tremendous energy from the powerful river feature adjacent to the site as well as its immediate link to the metropolitan public bus transit center. To stand on the site gives one the perception of being only slightly removed from the arterial flow of activity downtown such that the hustle and bustle is avoided without losing the visual connection or logistical link.

Nearly every surface is paved. The site is surrounded by roads and access alleys and is paved with asphalt. Some effort has been put forth to plant trees as a vegetative barrier between the pedestrian and the roads, but the site's link to nature leaves much to be desired. To the west, old masonry materials adorn the backside of food and drink establishments making up the historic Phillips Avenue corridor. And to the east, a large and recently constructed bank building separates the site from the river, its drive-thru snug against the border of the site. The visual connection to water is achieved across an access road and small building to the north, and across ninth street. The opposing riverbank is in the midst of construction.

A walk around the site takes about five minutes. The breezes on the warm day of my visit were light, and much of the site's square footage is exposed to the late summer sun. A few trees have been planted in an effort to achieve pleasant urban spaces by bringing nature into the walkable city. This old urban area seems to be caught in a tug-of-war between the remnants of a well-meaning effort to preserve the historic buildings of downtown Sioux Falls, and the urban riverfront transformation. Like many American prairie towns, much of the urban landscape is parking, and the city is scaled to the automobile. But in south-

eastern South Dakota, a change is brewing. Exposure is the feeling to best describe standing at the extreme northern or southern ends of the site. The noise from traffic is fairly profound, during rush periods, in contrast to standing on the Phillips Avenue sidewalk less than a block away. Ninth street skirts the river north and northeast of the site and its four lanes of parking-free tarmac do not encourage the drivers to slow down, nor is the sidewalk on either side pedestrian friendly. If the choice is made to walk nearer to ninth, then the only reason must be to ultimately reach the other side, and the river. A small access road does approach the site from the north although its use only as parking access leaves it sparse. Heading the other direction, E Tenth street is a one-way westbound road. While it does begin to create a buffer for pedestrians with parking on either side, the three lanes of traffic racing westward do not create a street-scape conducive to anything tranquil. Across tenth to the south, two structures garner interest. The first is one of the city's old railroad stations. Now an outdoor sporting goods store, this historic building not only looks beautiful but has an outdoor plaza on its east side with places to sit and unique sculpture. Next door to the outdoor goods store is grand central station of Sioux Falls. The central bus station for the city is a monument to the lack of creativity possible with concrete. Granted, it is only a bus station, but in combination with the parking structure to the west of it, a very poor view is created to the south. While the visual concerns are an issue, the presence of a hub for public transit so near to the project may present opportunity. Sioux Falls is a fast growing city, and with that rapid expansion more transit options should be made available to avoid an unhealthy addiction to automobile traffic and permit substantial urban infill to take place. This thesis is a part of something greater for the downtown: an increase in density which

will bring more variety and culture into not only the consumer spaces, but in the residential sector as well. Increased density downtown will make the area far more efficient. People will be more apt to enjoy the results of this thesis project on foot or, perhaps via bicycle. One of the other highly important features for the site is the Sioux Falls bike trail which follows the river, to an extent on both sides, through the city providing a scenic, fresh and enjoyable means to get from one end of town to the other.

Built Features:

Basic parking infrastructure exists on the site. Buildings of various scale border the site on three sides.

Light Quality:

Bright light is virtually unobstructed from the south in the summer months. In the winter, a parking structure across the street to the southwest provides some shade. The site is adequately lit by artificial street lighting after dark.

Water:

The site appears to drain well. The river is the closest permanent water, and due to the existence of a diversion channel, flooding is no longer a concern for the area.

Wind:

Winds from each of the prevailing directions are affected by existing built structures on three sides and across the street on the south. The site benefits from some shielding from icy winter winds.

Human Characteristics:

Humans have engineered the surface to serve the automobile. People with either a city contract or a bank contract walk to and from their cars on the site. The south border of the site is also one way to reach a park along

the river from Phillips Avenue.

Distress:

A vacant storefront can be seen across from the south side of the site, and aging river-walk infrastructure to the north.

soils

Sioux Falls is in the “Warm Moist Prairie” soil region of South Dakota. Soils in this region, along the Big Sioux River, fall under the Bon-Davis-Chaska Association. These soils are generally found on flood plains. In the case of the project site, the urban soils have been mixed substantially over time thus, representing a mix of soil properties.

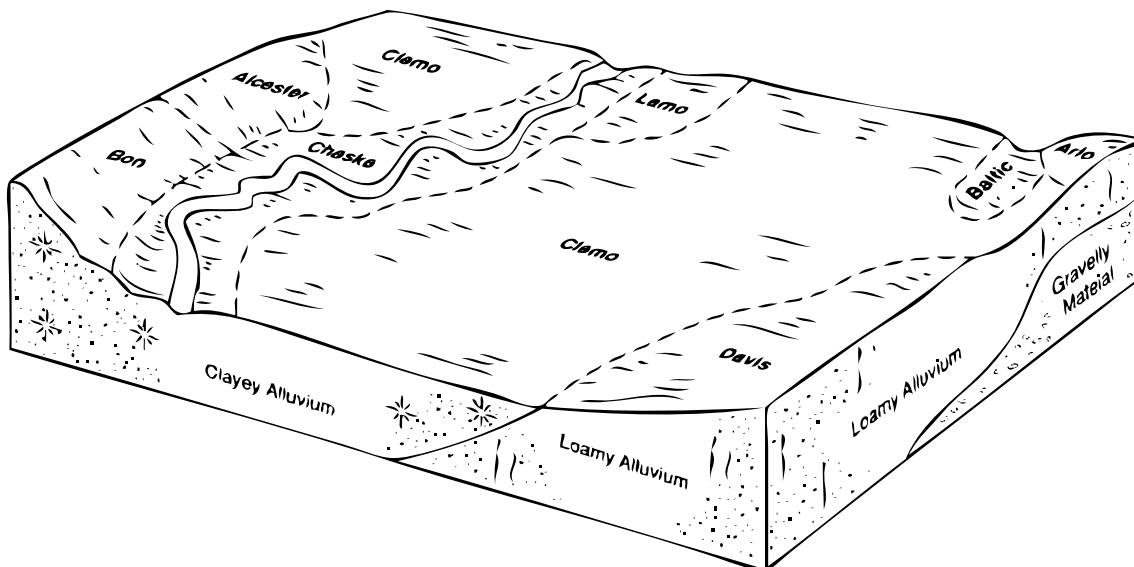
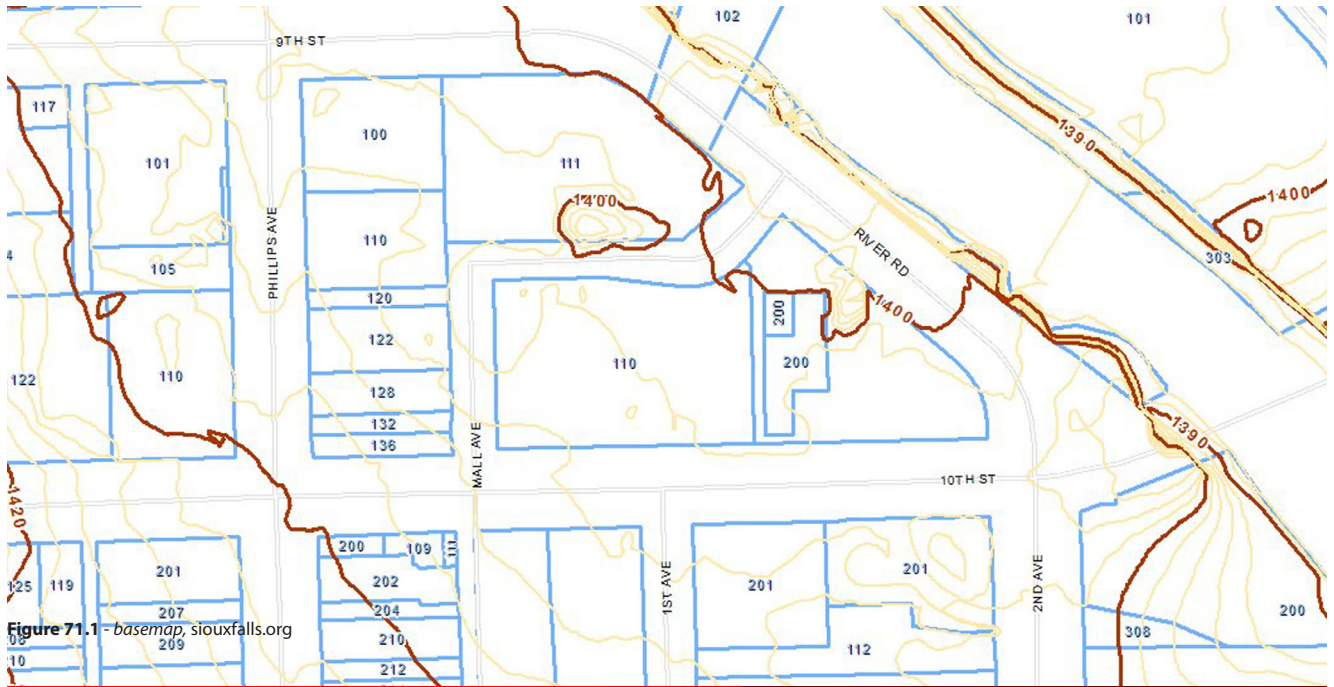


Figure 70 - soil, USDA

base map



topo survey slope analysis

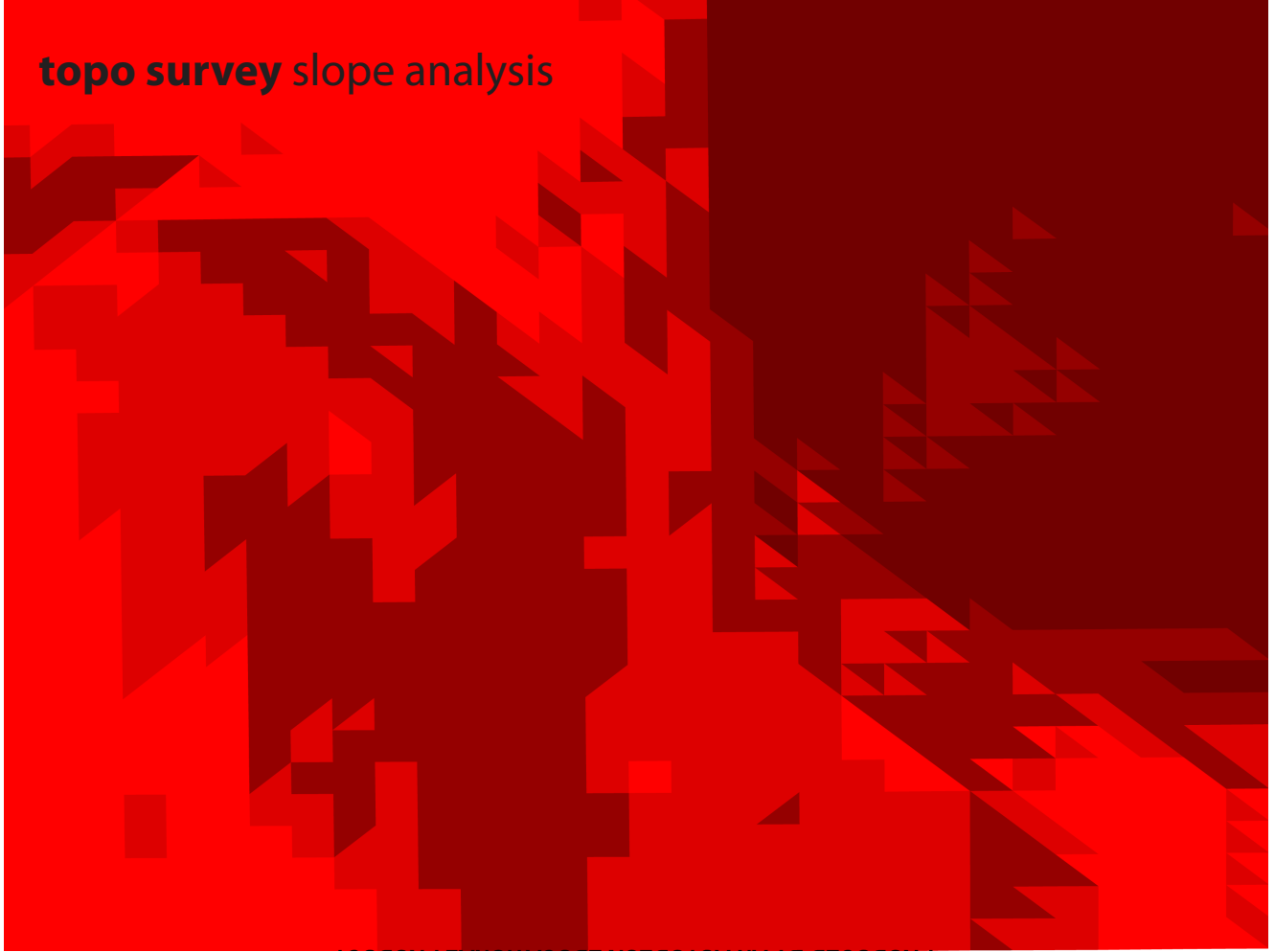


Figure 71.2 - topography, Eric Lagergren

site photo-reconnaissance



Figure 72.1 - site photos, Eric Lagergren

vehicles & pedestrians

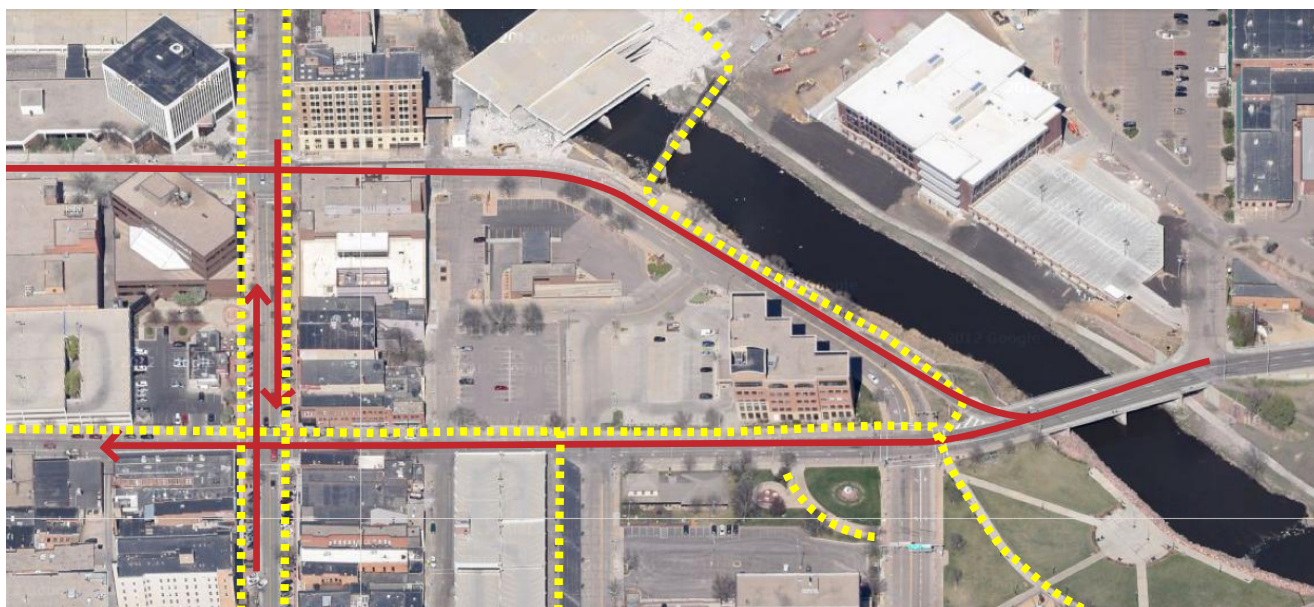


Figure 72.2 - movement map, Google Maps, Eric Lagergren

climate **data**

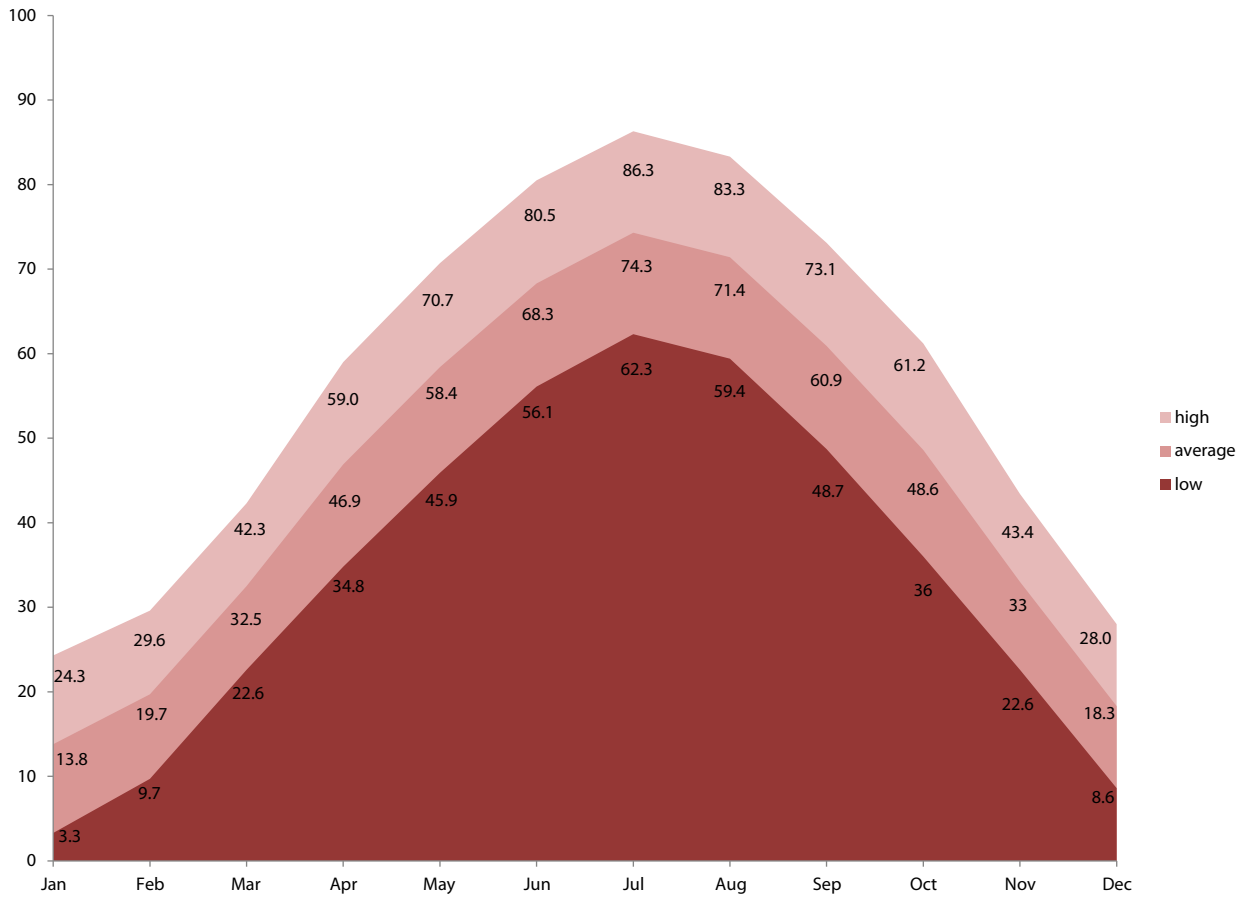


Figure 75.1 - temperatures, Eric Lagergren

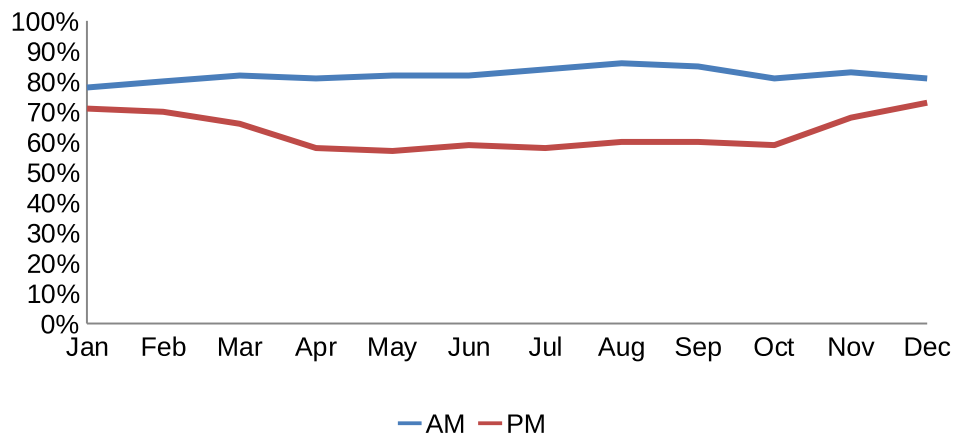


Figure 75.2 - relative humidity, Eric Lagergren

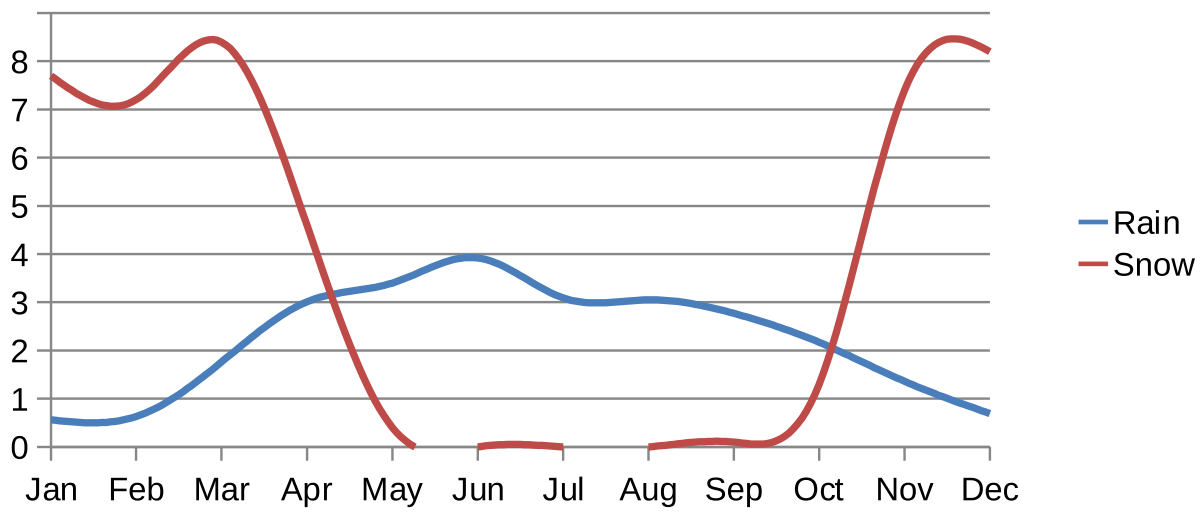


Figure 76.1 - precipitation, Eric Lagergren

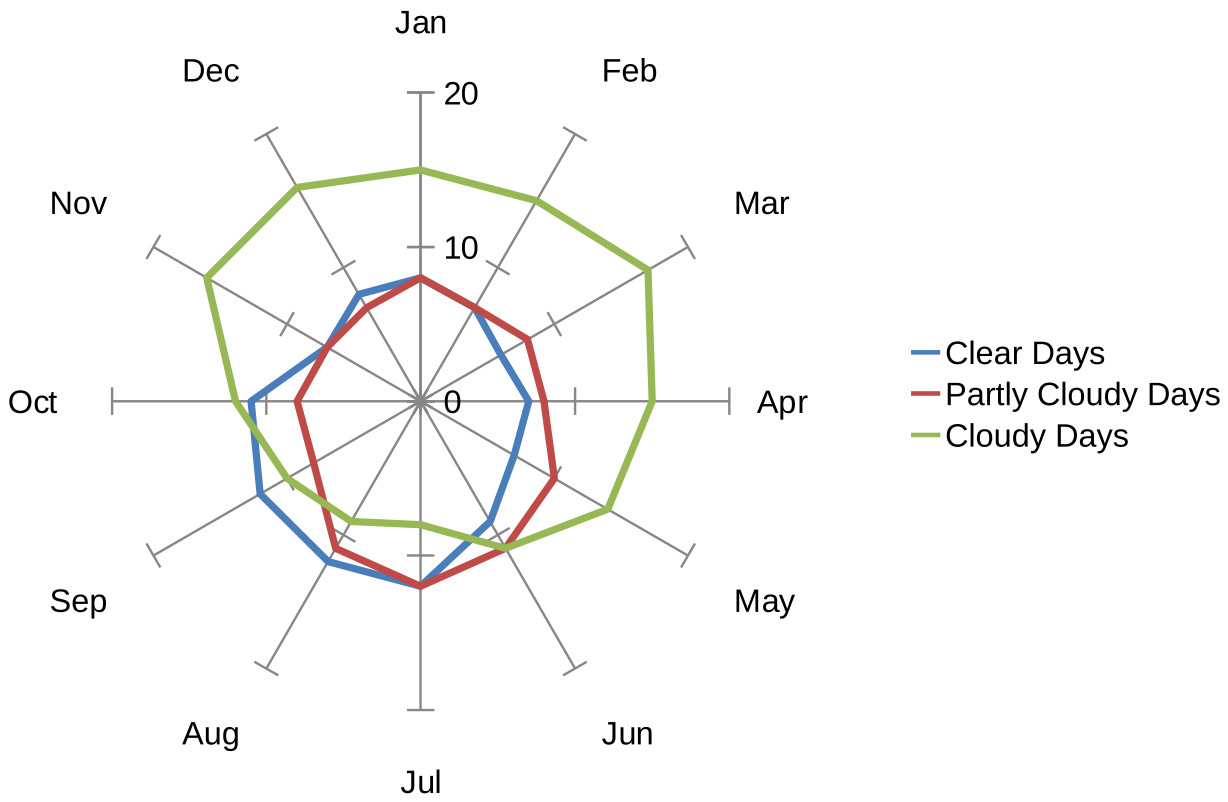


Figure 76.2 - cloud cover, Eric Lagergren

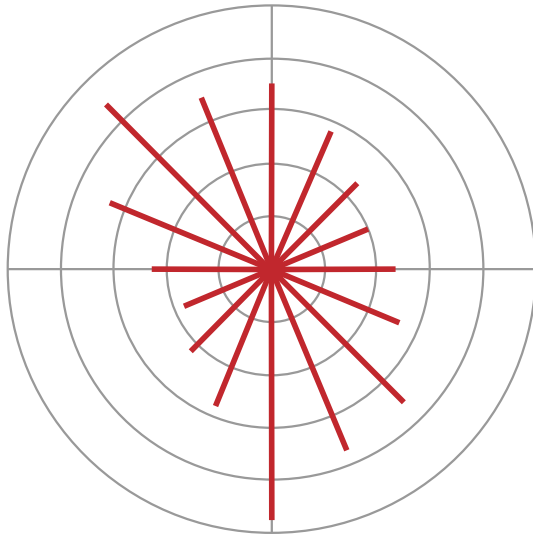


Figure 77.1 - wind, Eric Lagergren

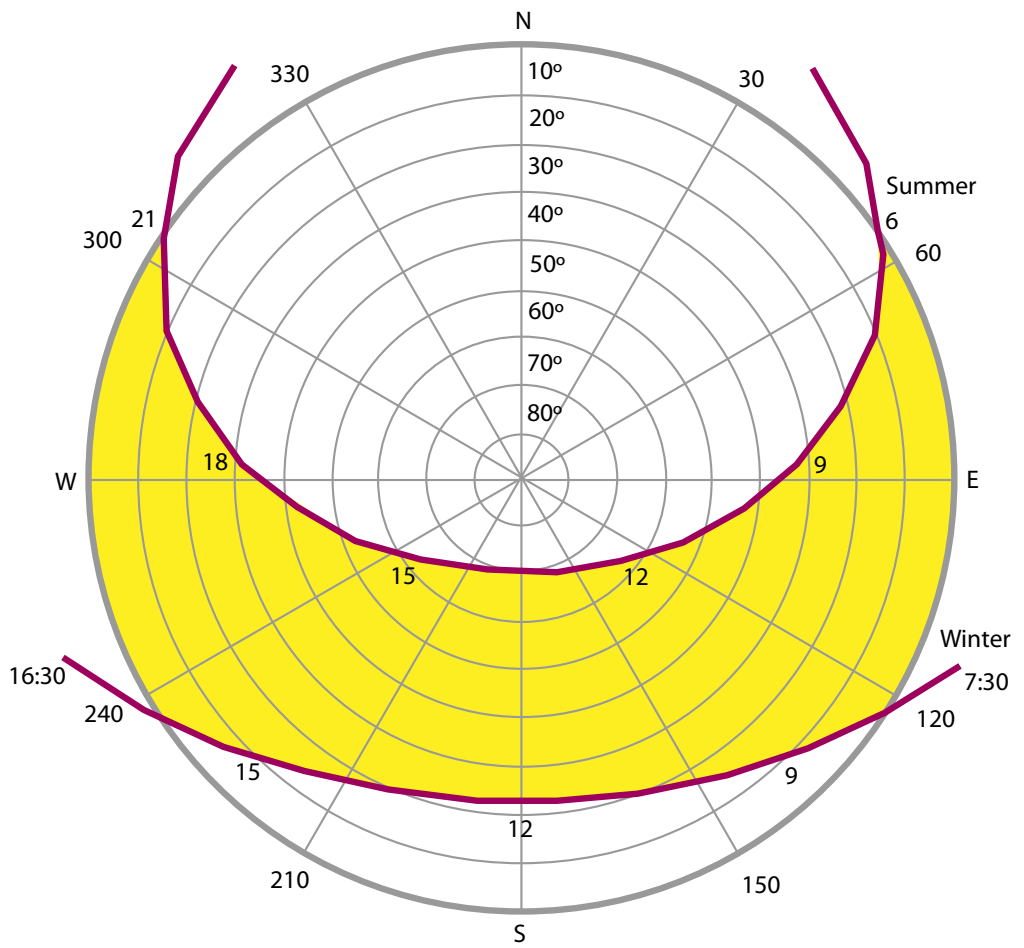


Figure 77.2 - sun, Eric Lagergren

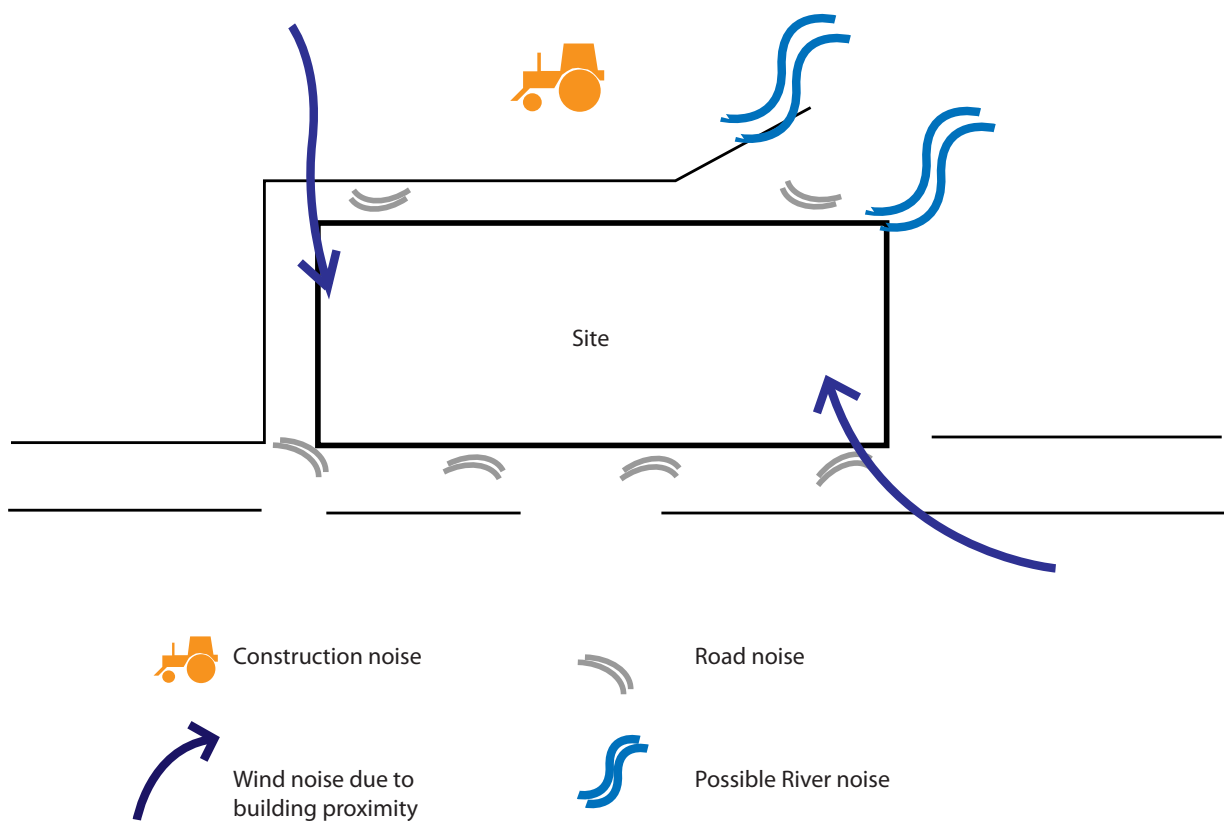


Figure 78 - noise, Eric Lagergren

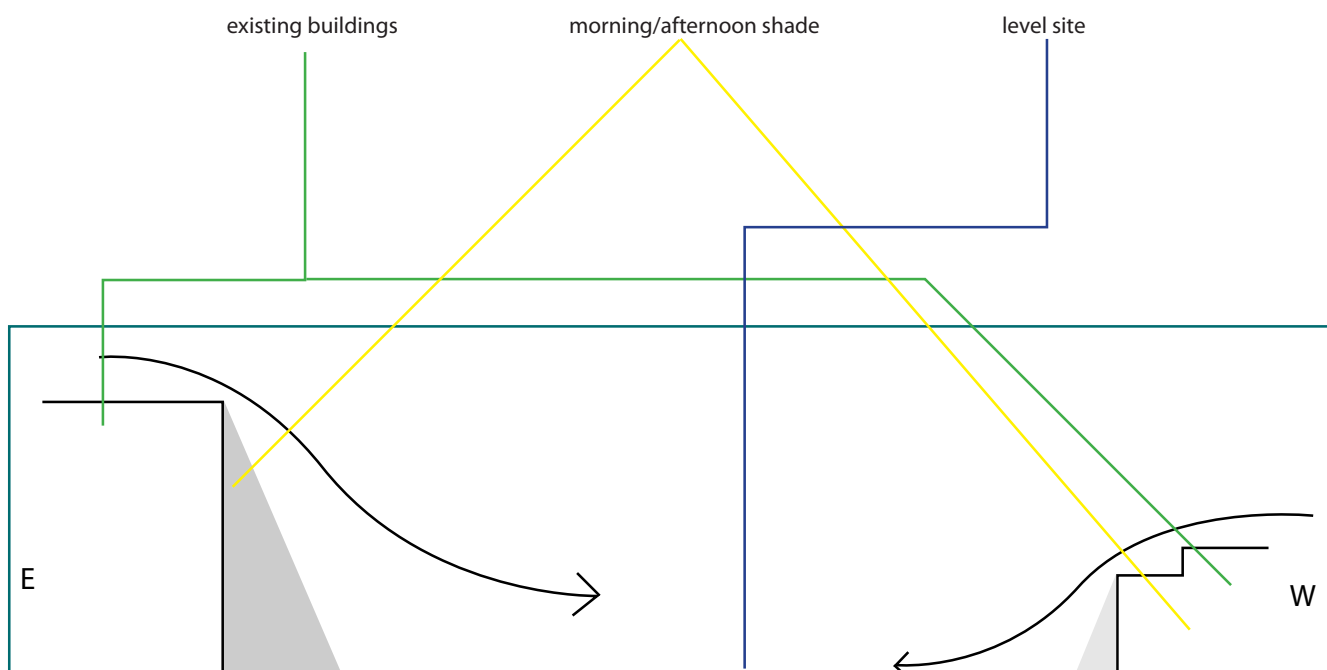


Figure 79 - topographic influence, Eric Lagergren

programmatic **requirements**

space allocation

sqft

Entry	600
Restrooms	1200
Meeting Rooms	1500
Management Offices	2500
Director Office	400
Software Development Floor	10000
Product Testing Rooms	6000
Server Room	800
Cafeteria	5000
Kitchen	2000
Recreation	7000
Public Presentation	1800
Childcare	1000
Storage	2000

Total: 41,800

Figure 82.1 - interaction matrix, Eric Lagergren

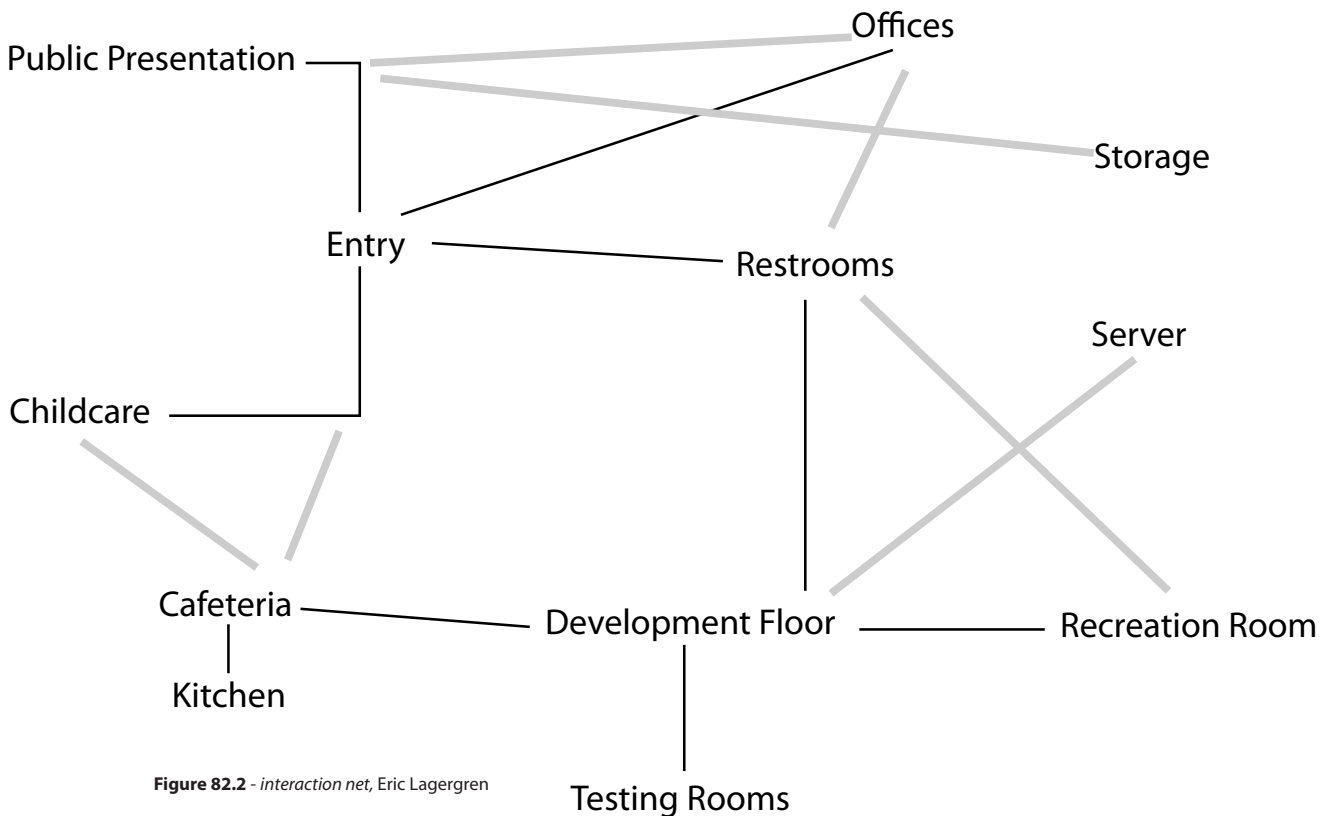
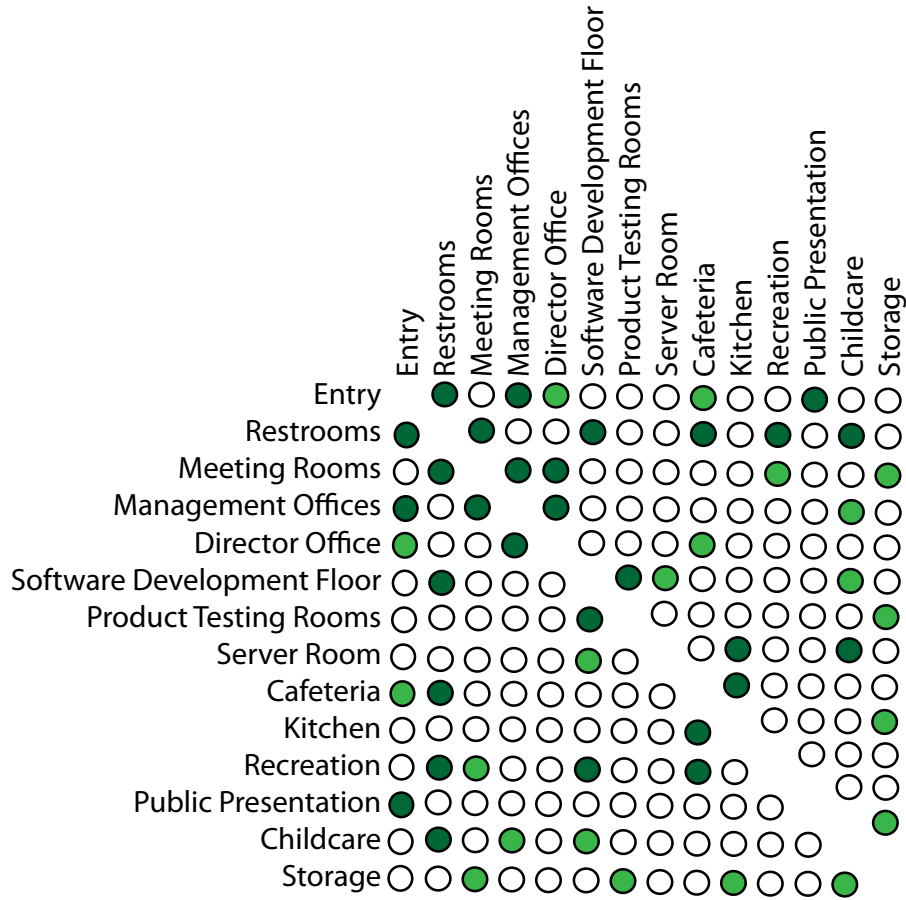
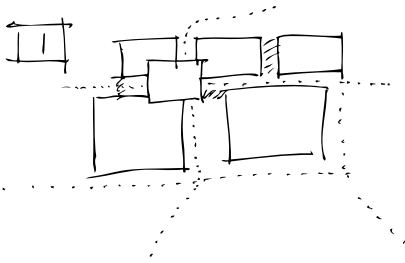
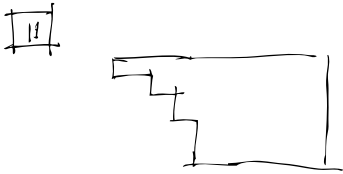


Figure 82.2 - interaction net, Eric Lagergren

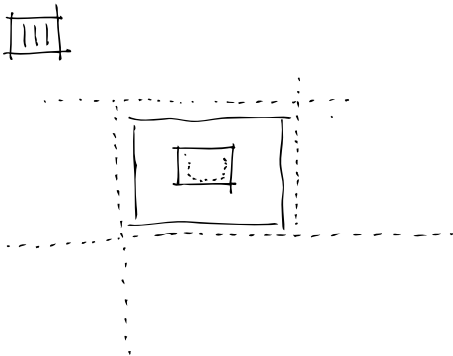
process **documentation**



PERMEABLE, STRONG WALKABLE CONNECTIONS,
"FINGERS" OF OUTDOOR SPACE PENETRATING THE FORM,
CAMPUS-FEEL



TWO-SIDED IDEA, (STILL SOME QUESTIONS)
PERMEABILITY CONDITION (EAST TO WEST)
TOWNTOWN V THE RIVER AS A METAPHOR FOR
THE POTENTIAL "TWO-SIDED" CHARACTER TO THIS EDGE



CENTRALIZED. HIGH VALUE = PRIVACY. CENTRAL SPACE
(COURTYARD) AS A PRIVATE, OCCUPANT SPACE,
IE.. A COUNTER TO THE NEGATIVE, INVASIVE EFFECTS
OF CONNECTIVE/SURVEILLANCE TECHNOLOGY.

Figure 84 - design process, Eric Lagergren

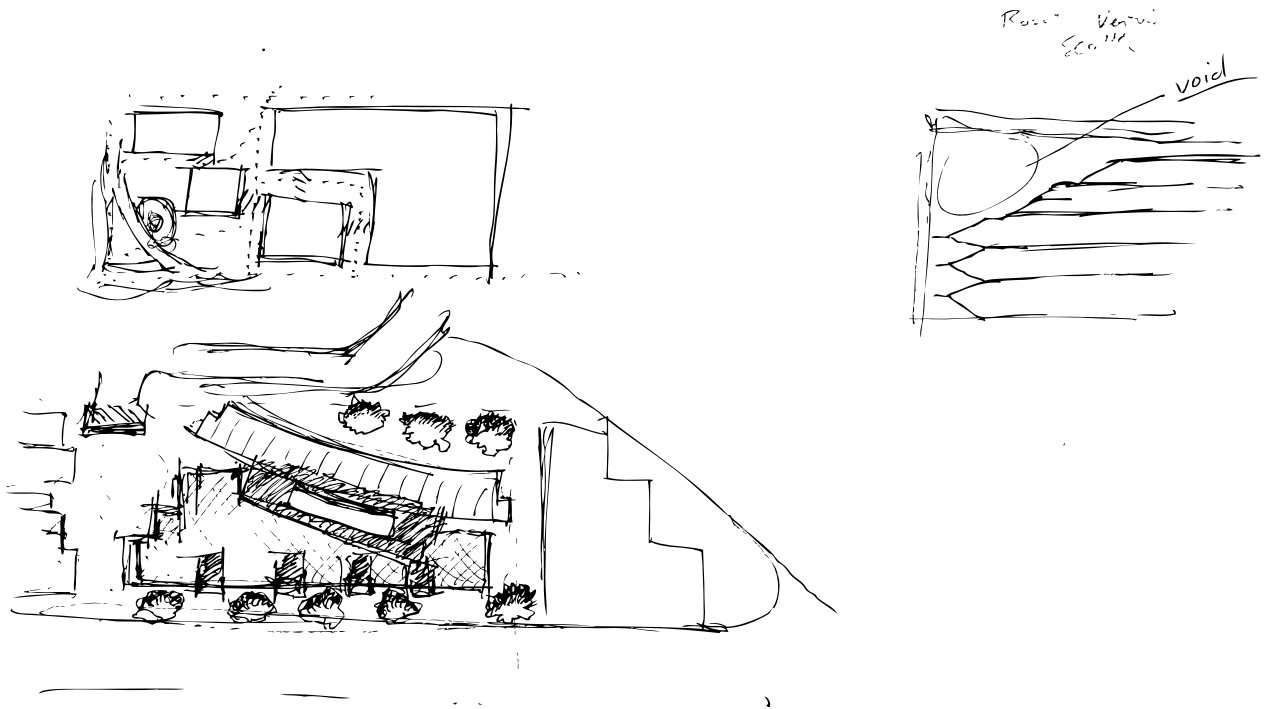
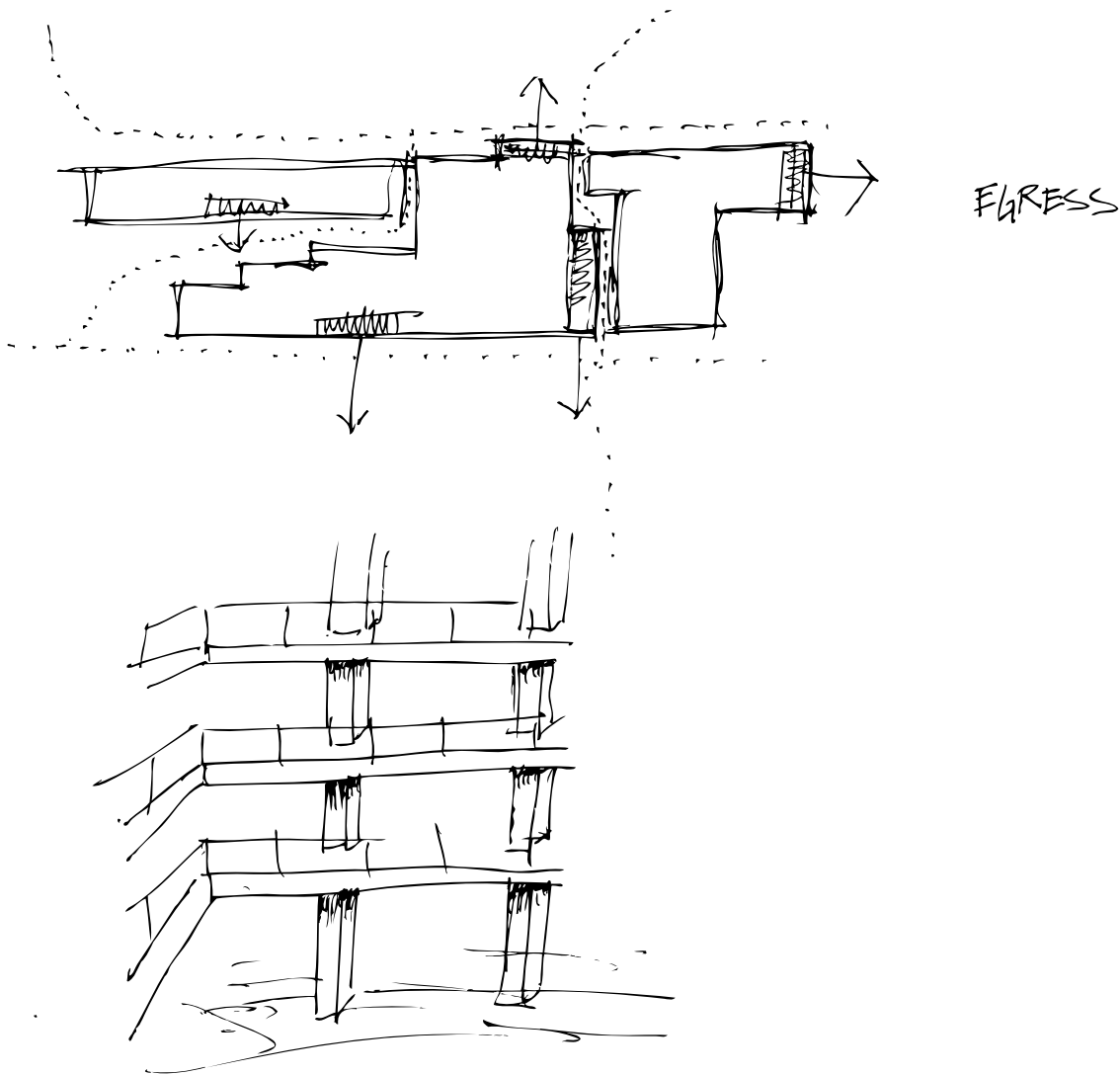


Figure 85 - design process, Eric Lagergren



DELIVER: large scale "plan" showing site relationships + interior spatial arrangements to scale.

* drawing showing site as "layers", including parking below grade section ???

Figure 86 - design process, Eric Lagergren

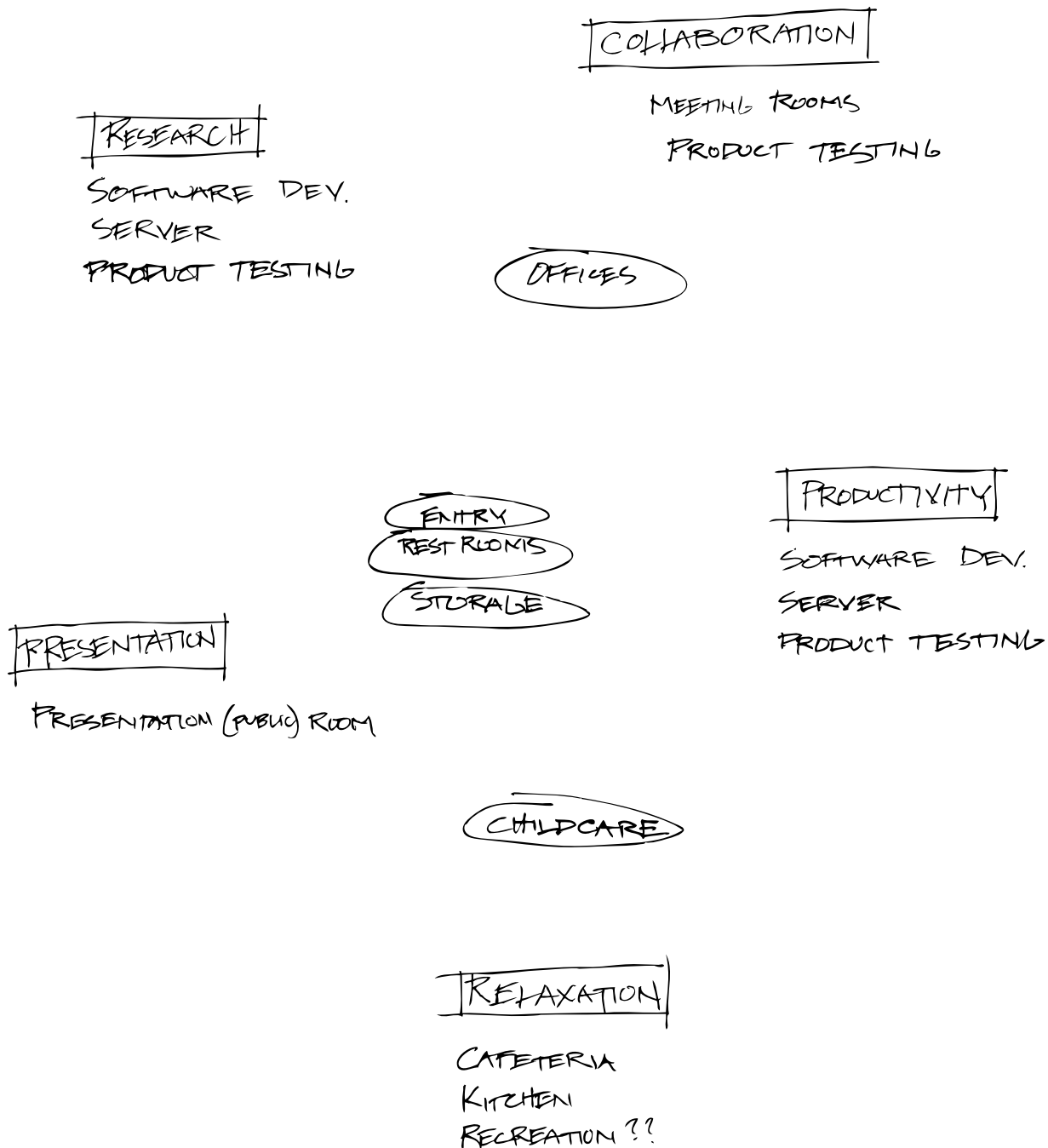


Figure 87 - design process, Eric Lagergren

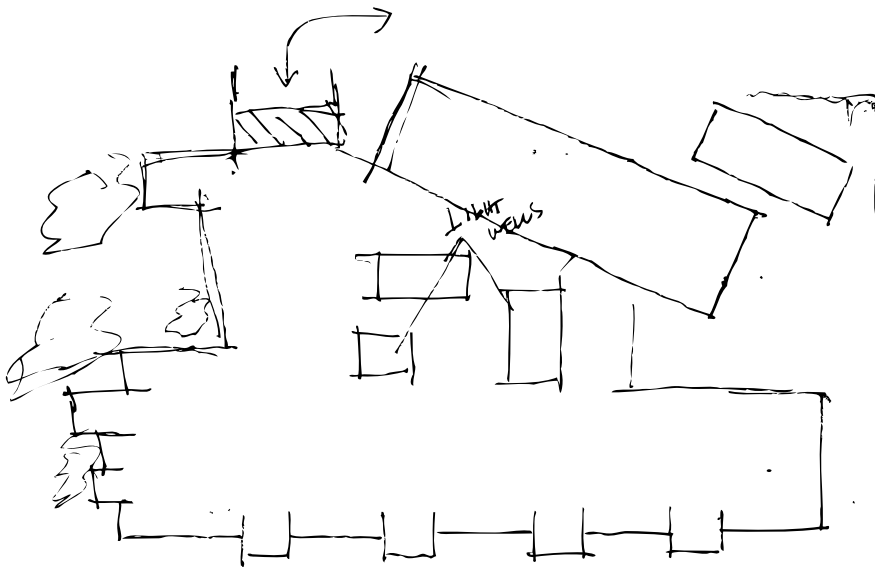
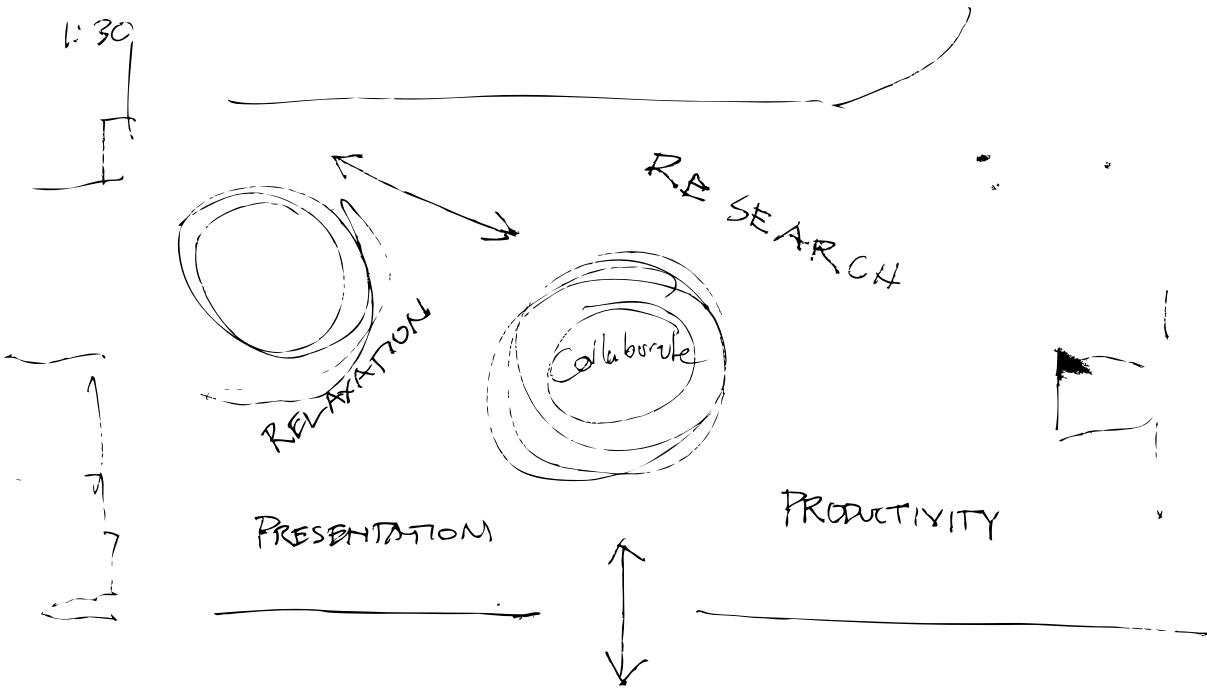


Figure 88 - design process, Eric Lagergren

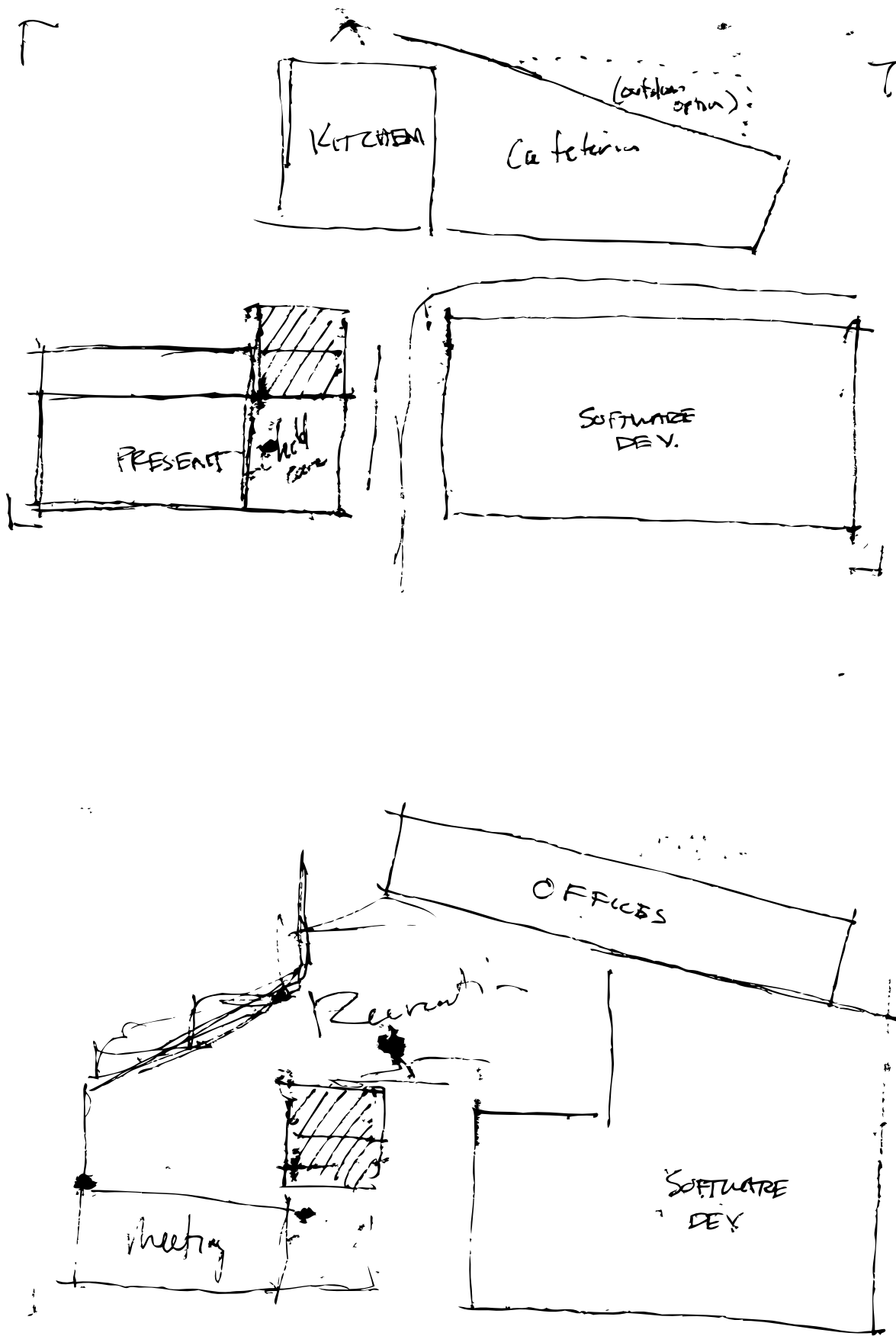


Figure 89 - design process, Eric Lagergren

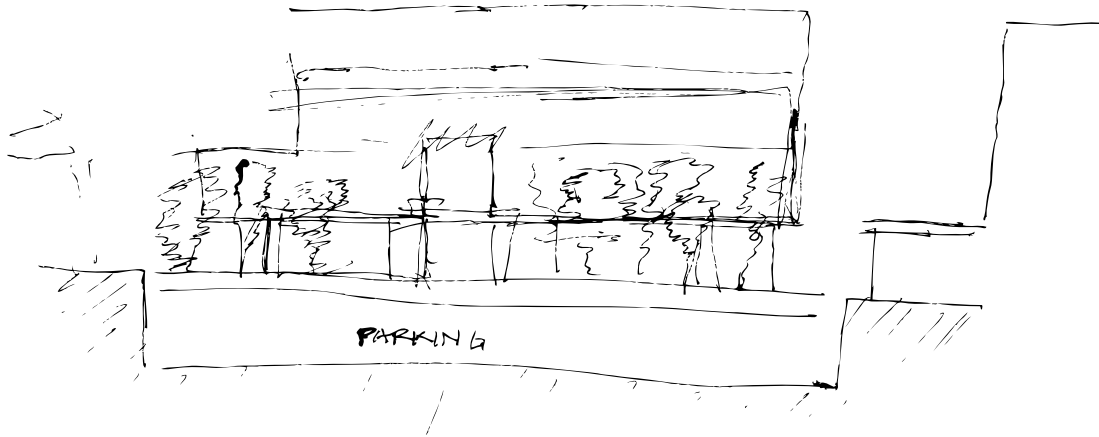


Figure 90.1 - design process section, Eric Lagergren

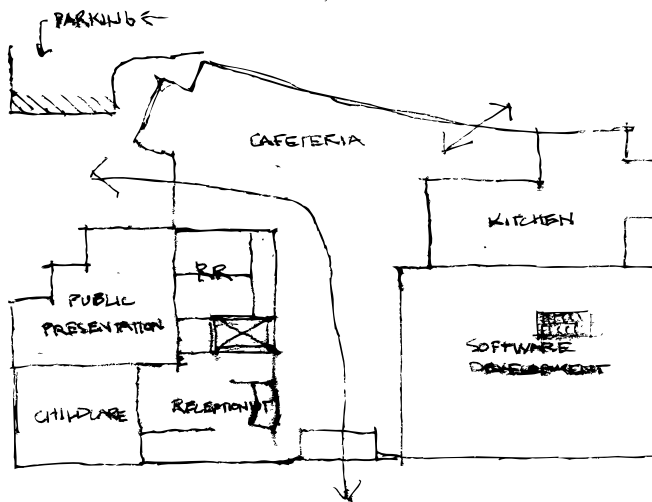
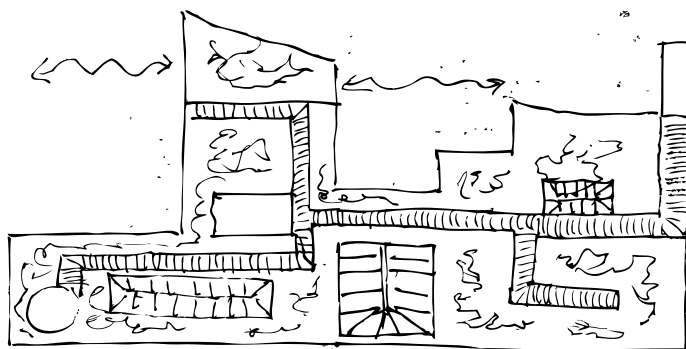
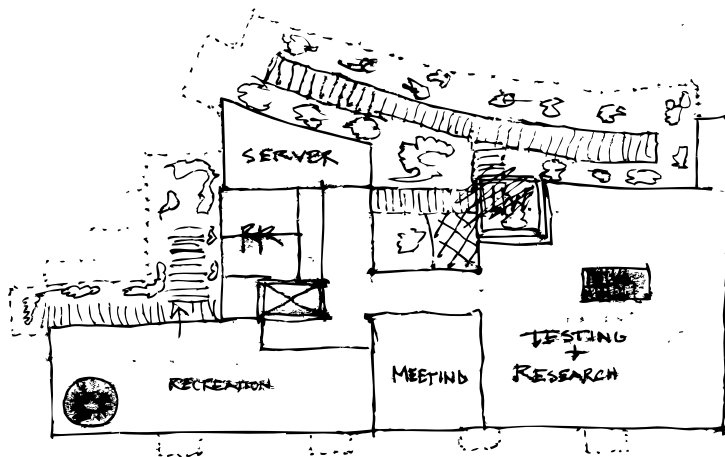


Figure 90.2 - design process plan, Eric Lagergren

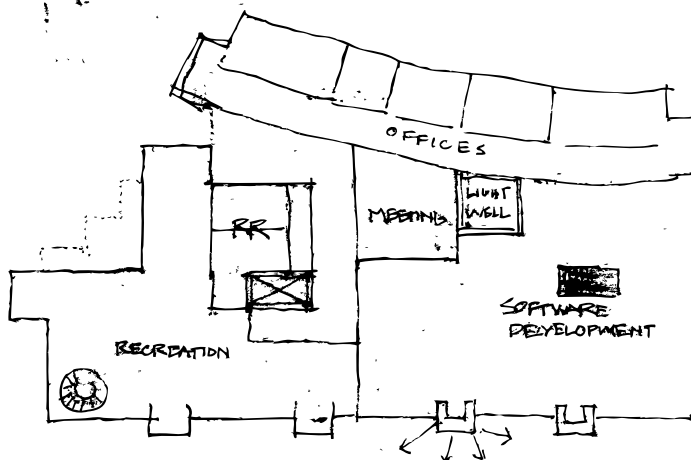


Roof



3

Figure 91 - design process upper level plans, Eric Lagergren

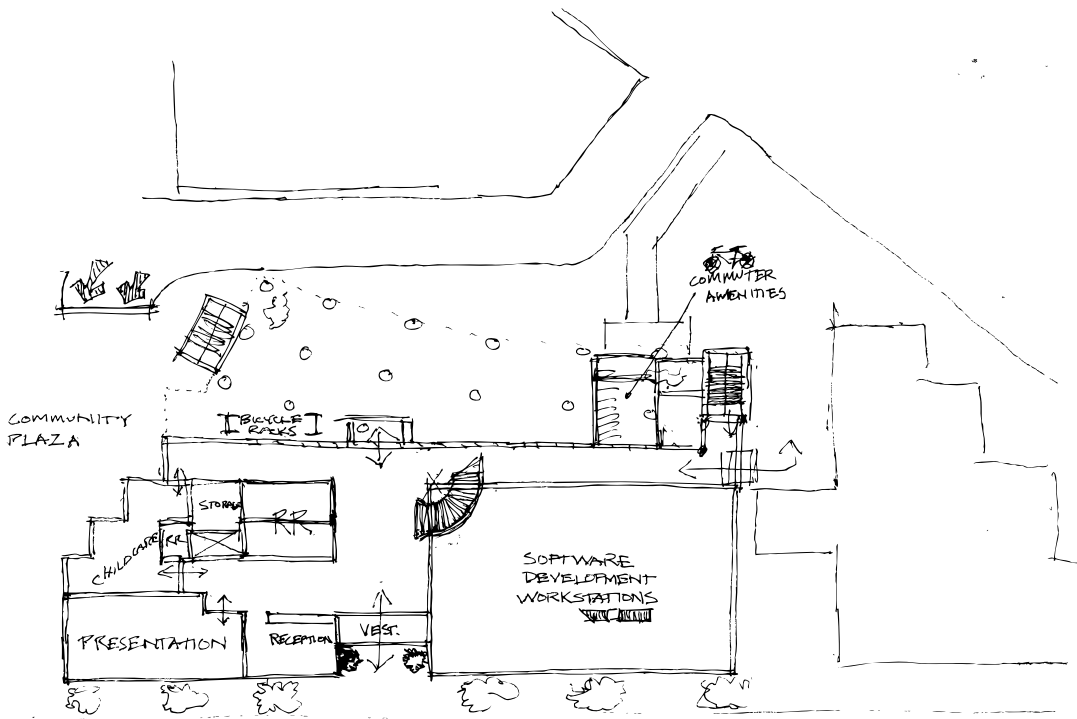


2

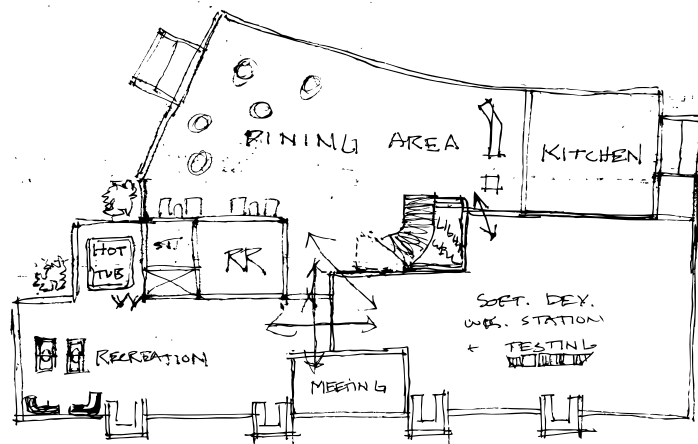
- ↑ similar
- SPREAD ACTIVITIES
VERTICALLY = LOCALIZED
CIRCULATION
 - CHILDREN → MORE AMENITIES
= LARGER
FOOTPRINT
 - COMMUTER BICYCLE
SERVICES
 - SHOWER
 - LOCKER
 - "INDOOR BIKE
"STORAGE"

CAN PROGRAM
ACCOMMODATE
THIS?
 - SERVER ROOM →
HIGH UP = PASSIVE
COOLING FROM
WIND
(WINTER)
RIVER WATER
(SUMMER)

Figure 92 - design process notes, Eric Lagergren



1



2

Figure 93 - design process plans, Eric Lagergren

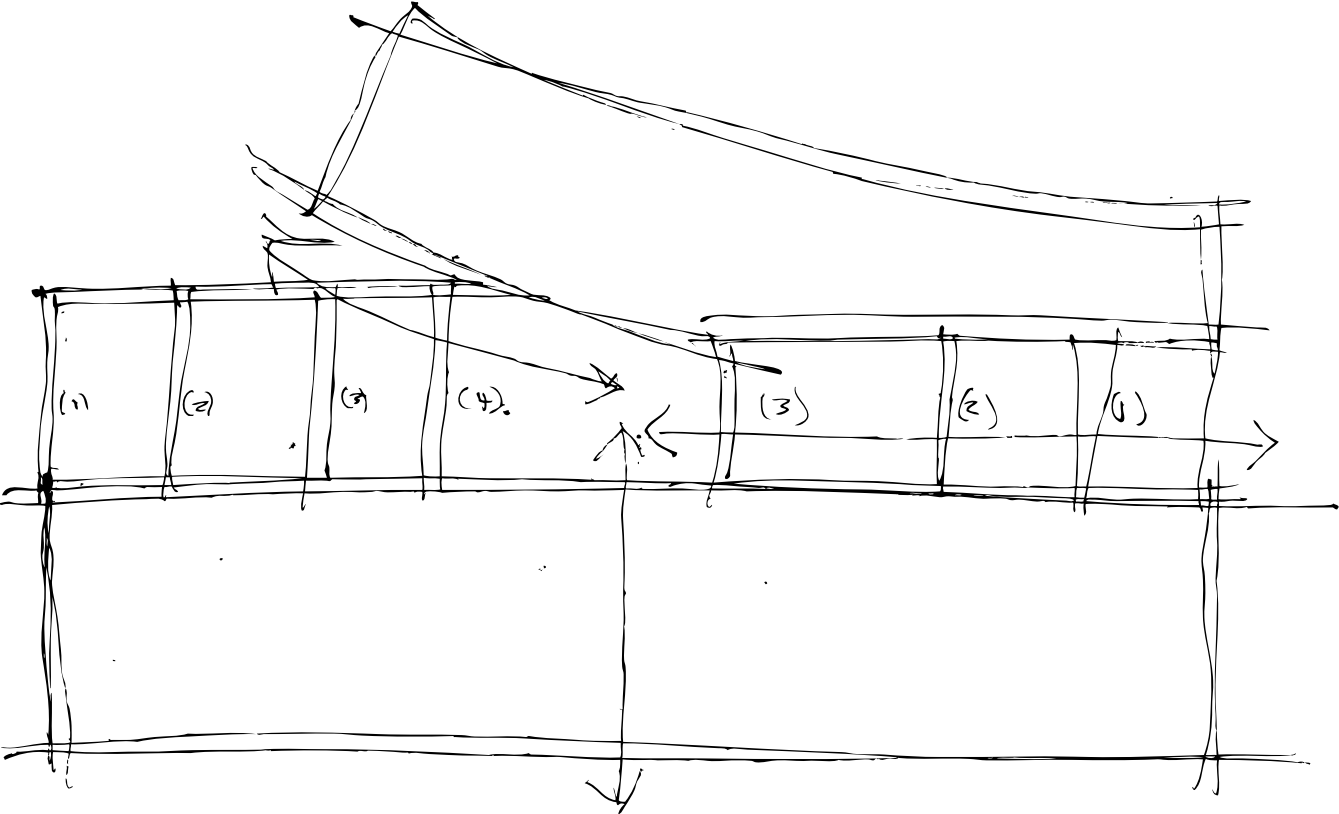


Figure 94 - design process, Eric Lagergren

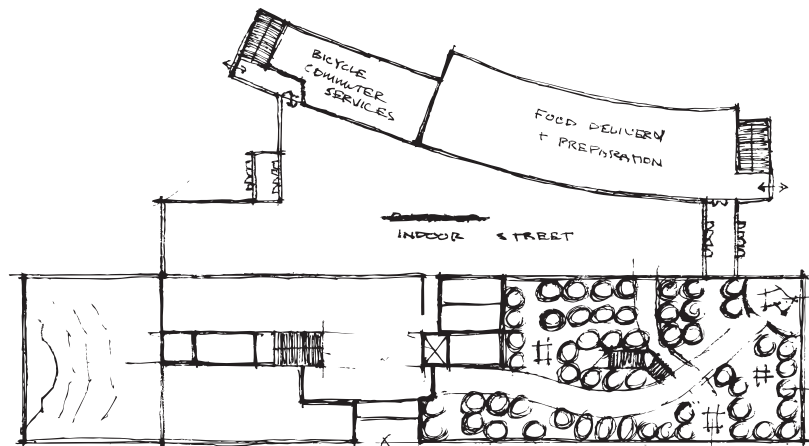
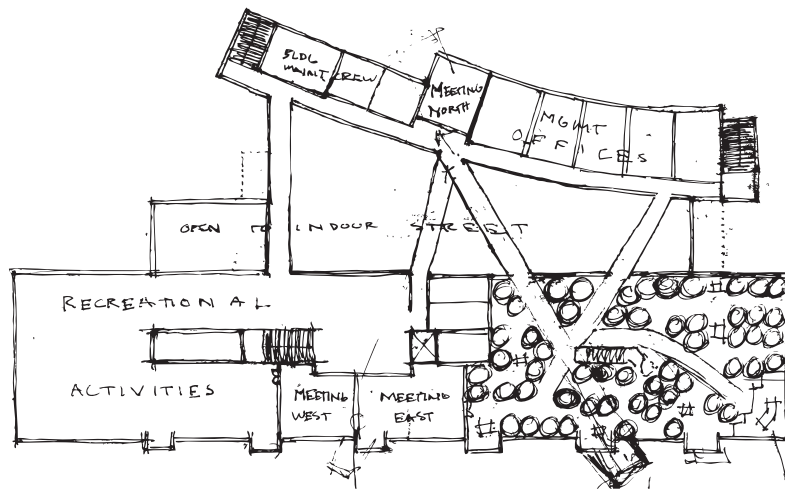
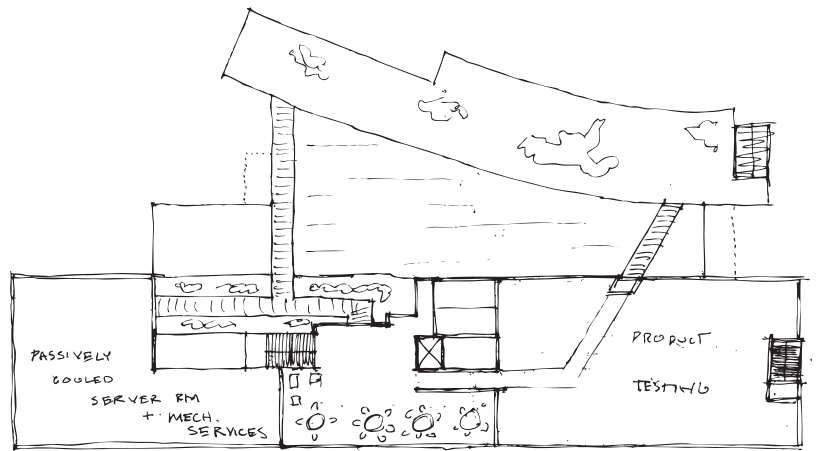
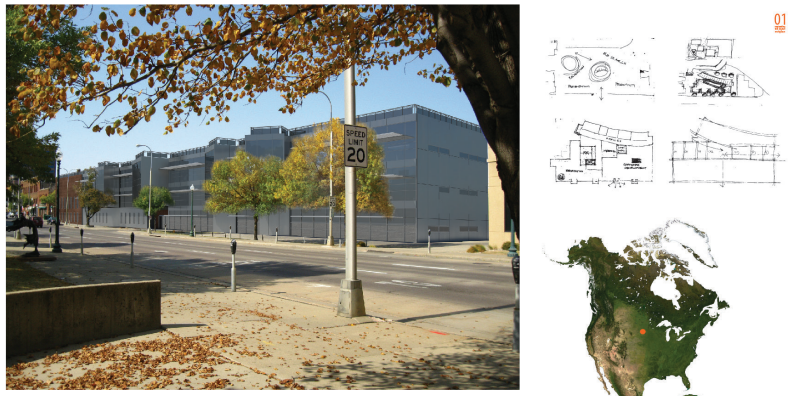


Figure 95 - design process advanced plans, Eric Lagergren

project **solution**



ENGINEERING THE DIGITAL WORKPLACE

The Architecture of Changing Social Interaction

Eric Lagergren

Thesis 2013

Energy of Place

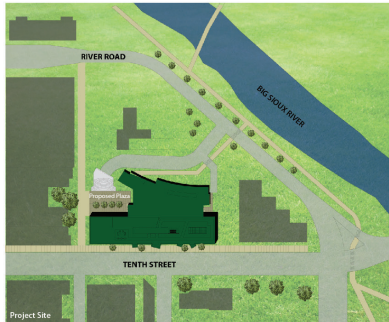
Design Brief As the world undergoes a shift from tangible interpersonal communication to digitally-driven methods of interaction, the human species finds itself at a turning point in history. Architecture is a powerful tool in shaping human interaction, and a well-designed software engineering firm is the ideal vessel with which to study the relationship the built environment has with our interactions. This proposed urban development will serve as a model for a social place where people want to be productive. It will connect employees and their families by providing useful amenities supporting the playful nature of the human spirit. The business will foster interconnectedness within the community by supporting recreational use of the riverfront and encouraging the use of human powered and shared mobility. Composed of spaces categorized under research, productivity, collaboration, presentation and recreation, this sustainable and dynamic workplace will encourage innovation by respecting individual freedom and facilitating both tangible and digital collaboration.



Tri-State Region

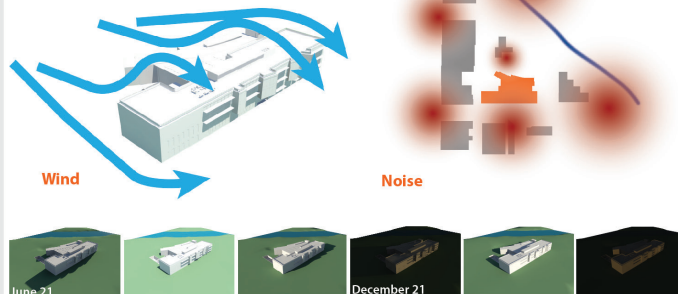


Downtown



Historical & Contextual Background

Sioux Falls, SD is currently the 47th fastest growing city in the United States. With a rich history as a hard-working agricultural hub and meat-processing center, the recent expansion of sectors such as medical care and technology are a new and less-familiar phenomenon. Almost on the exact location of historic "Fort Sully," the project transforms an underutilized parking lot into a welcoming social hub and productivity center. With the city's downtown bus station to the south and the developing Big Sioux riverfront to the north, the project fosters connections geographically between employees, commuters and outdoor enthusiasts. The project recognizes the importance of removing barriers which prevent direct contact with the riverfront now permanent countermeasures prevent flooding.



Department of Architecture and Landscape Architecture, NDSU
 ARCH 772, Design Thesis, Spring 2013
 Engineering the Digital Workplace: The Architecture of Changing Social Interaction
 Software Engineering Firm, 121,142 SF
 Eric Lagergren
 Steve Martens, Primary Thesis Advisor
 Jared Sorenson, Intern, Auralize, 3DS Max, Illustrator, Photoshop

Figure 98 - presentation board one, Eric Lagergren

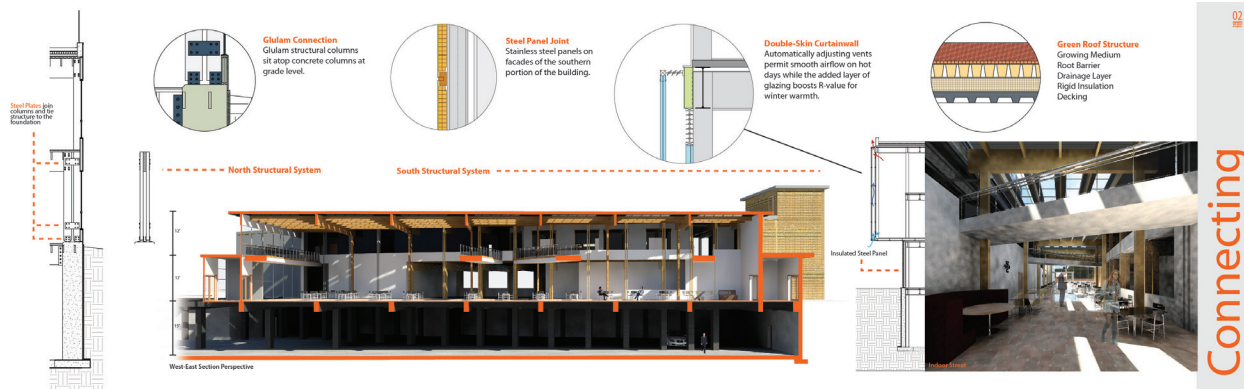


Figure 99.1 - presentation board two, Eric Lagergren



Figure 99.2 - presentation board three, Eric Lagergren

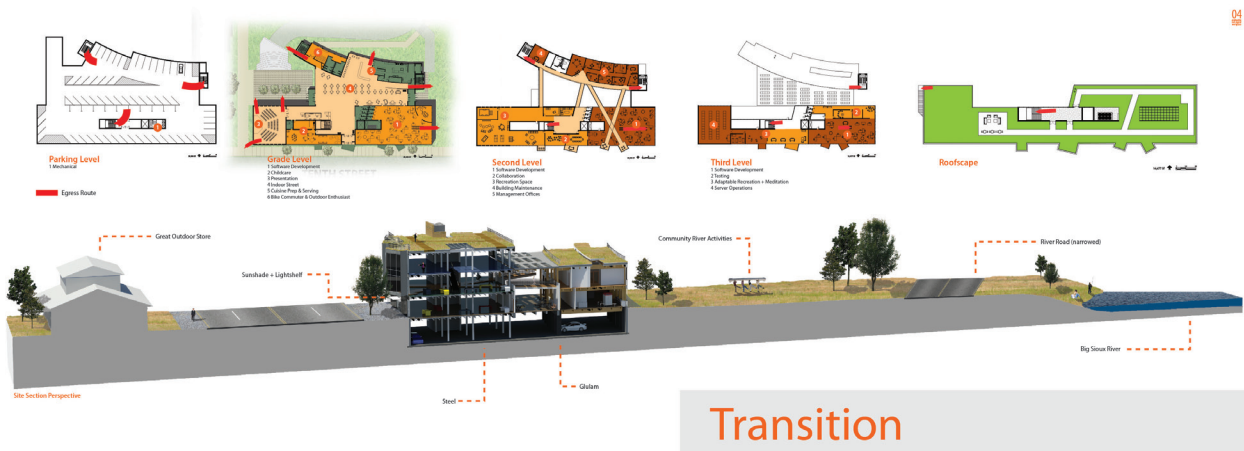


Figure 99.3 - presentation board four, Eric Lagergren

02

Connecting

03

04

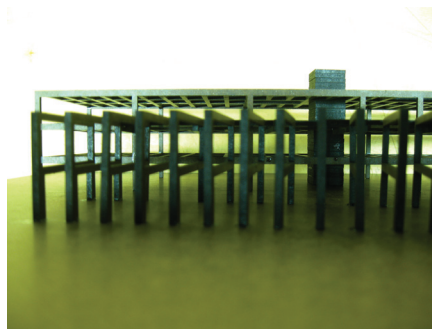
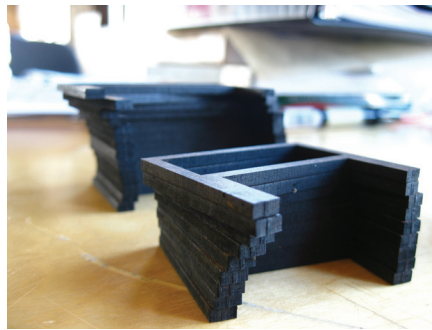
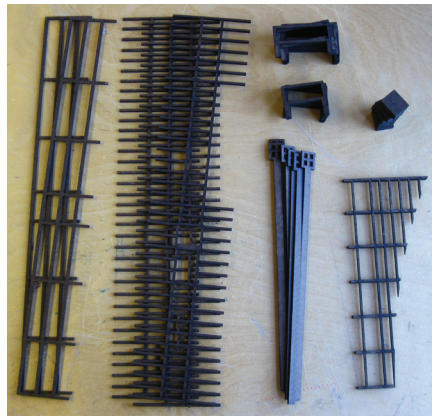


Figure 100 - structural model photos, Eric Lagergren

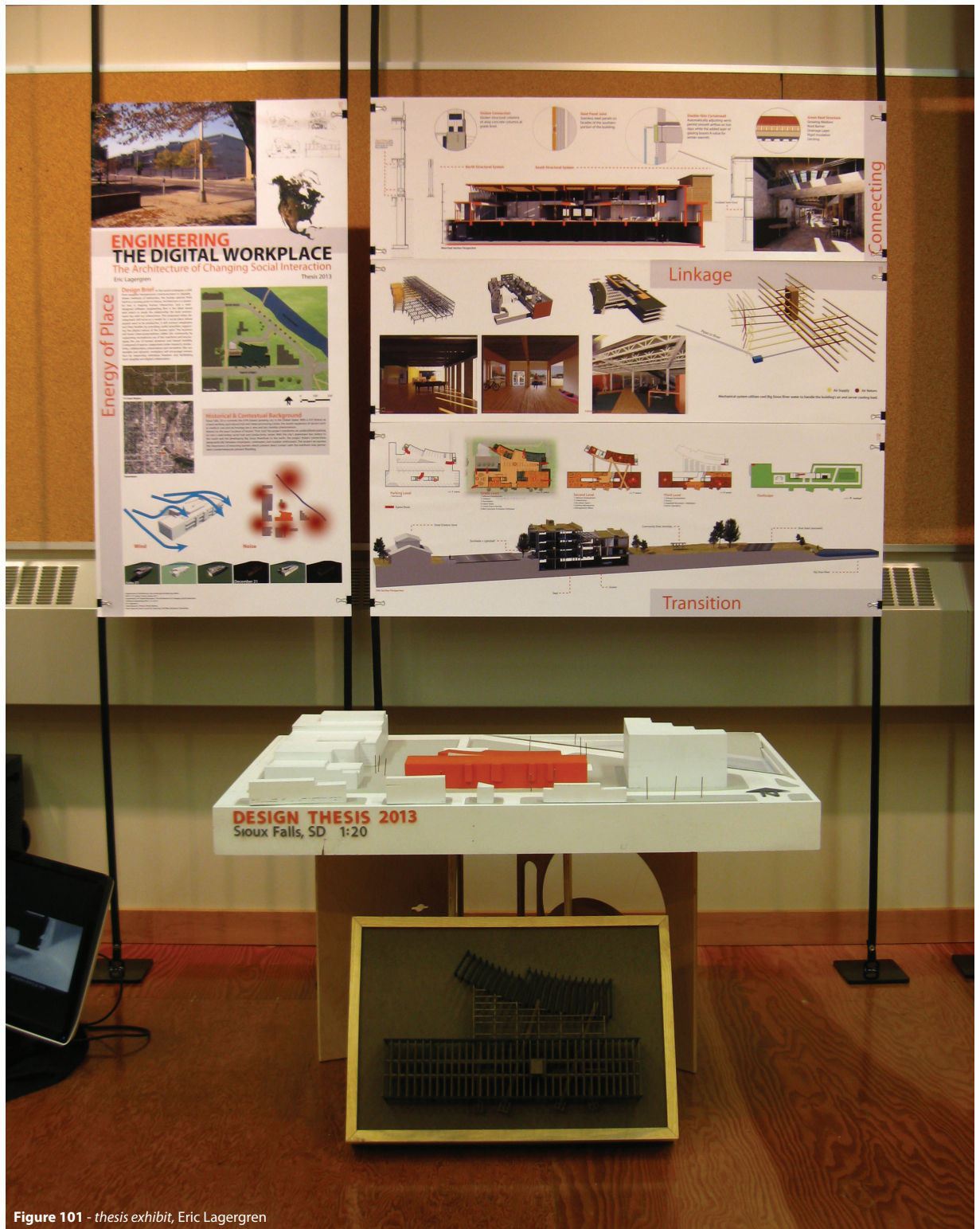


Figure 101 - thesis exhibit, Eric Lagergren

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personal | information



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"Go bison!"

