

EXCHANGE – OPTIMIZED

THIS PAGE
INTENTIONALLY
LEFT BLANK

EXCHANGE OPTIMIZED

*UTILIZING PREDICTIVE PATHS OF TRAVEL TO IMPROVE CIRCULATION EFFICIENCY
AND URBAN INFILL PATTERNS, AS APPLIED TO
FARGO'S WEST ACRES MALL*

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

By

Carlos Montoya

In Partial Fulfillment of the Requirements
for the Degree of
Master of Landscape Architecture



Primary Thesis Advisor



Secondary Thesis Advisor

May 2019
Fargo, North Dakota

THIS PAGE
INTENTIONALLY
LEFT BLANK

THESIS ARCHIVAL NOTE

The following thesis project, entitled ***EXCHANGE OPTIMIZED: UTILIZING PREDICTIVE PATHS OF TRAVEL TO IMPROVE CIRCULATION EFFICIENCY AND URBAN INFILL PATTERNS, AS APPLIED TO FARGO'S WEST ACRES MALL***, was composed over the course of the 2018-2019 academic school year. The Thesis Program, as contained here, was initiated and completed in the fall semester as a part of the LA 563/763: Programming and Thesis Preparation course. Supplemental material, including the Thesis Boards and the Thesis Presentation documents, were generated in the spring semester as a part of the LA 572/772: Design Thesis studio. Any inconsistencies between the different documents, in terms of research and design, should be excused per the evolution of the project across the two semesters.



TABLE OF

CONTENT

THESIS	
ABSTRACT	1
NARRATIVE	3
PROJECT	
TPOLOGY	7
EMPHASIS	8
GOALS	9
ELEMENTS	11
USERS DESCRIPTION	13
THEORETICAL PREMISE	17
LITERATURE REVIEW	
PARAMETRIC NETWORK MODELING	20
URBAN SPACE DIMENSIONALITY	26
USER EXPERIENCE DESIGN	34
CASE STUDY	40
PROJECT JUSTIFICATION	53
PROJECT CONTEXT	57
SITE ANALYSIS	61
PERFORMANCE CRITERIA	65
APPENDIX	71
PERSONAL INFORMATION	72



LIST OF

TABLES +

FIGURES

FIGURE 1	44
FIGURE 2	46
FIGURE 3	48
FIGURE 4	50
TABLE 1	51
FIGURE 5	62
FIGURE 6	62
FIGURE 7	62
FIGURE 8	64
TABLE 2	68
TABLE 3	68
TABLE 4	68
TABLE 5	68
TABLE 6	70



THESIS
ABSTRACT



The rapid expansion of American cities led to historical marketplaces morphing into ubiquitous suburban shopping malls. For the last two decades these shopping malls along with the entire retail sector has experienced a sustained decline. As an effort to revitalize these spaces and curb this declining trend, developers and designers have applied urban infill techniques to declining mall sites. In many cases these techniques have proven to be an insufficient intervention to produce lasting results. This ineffectiveness, raises the need for new archetype in the language methodology of design. The site of shopping malls are largely generic in dimensionality and building footprint, making them ideal candidate for the use of a parametric network analysis software. This thesis will take the site of an existing mall, approximately 100 acres in area, with a 1/2 mile x 1/2 mile perimeter. A parametric network analysis software will be applied on the selected site to generate an optimized circulation network. The resulting network will act as the primary guideline tool, from which the infill redesign of the selected site will be organized. The design synthesis of urban infill principles and parametric network analysis, will yield a new archetypal design model for the retrofit design of declining shopping malls.



THESIS
NARRATIVE



This thesis will explore a new methodology utilizing a parametric network analysis software, as a way to optimize circulation and exchange opportunities. This approach will revisit open space location, dimensionality, and circulation patterns of infill retrofit design guidelines, specifically that of the archetypal mall site. These sites lay across American city landscapes, many of which have failed and sit abandoned or are experiencing signs of economic decline and social diminution.

Classic marketplaces were the centers of life and a crucial component of a city's urban fabric. As rapid suburb expansion began to overwhelm American cities in the mid-1900s, the marketplaces were turned inward resulting in the classic mall archetype. These mall sites attempted to control and more easily program a user's experience. And for a couple of decades this formula prove very successful. However, a recent change in shopping trends has occurred, where consumers more frequently utilize online shopping and travel to physical retail spaces less to acquire goods. This trend has created an economic pressure on retail development. Developers and designers around the globe are creating models and guidelines, looking for a solution to curb this trend of decline. A favored technique borrows from urbanist design language. These interventions focus on increasing



density, add site amenities, and implement new methods of advertising to incentivize user participation. However, these guidelines have been exhausted and we continue to see retail chains of all sizes close down stores or file for bankruptcy on a weekly basis. The one area that remains unexplored, and is the focus of this thesis, is the concept of easing transactional and encouraging civic exchanges in the redesign of retail spaces.

The leading question for to open this thesis is, what are the optimum locations and dimensions of urban squares, links, and nodes that maximize exchange opportunities in the infill redesign of declining malls? And what new technologies can we use to help in solving this problem? This question is relevant to Landscape Architecture for two reasons. First, as the designers of the spaces between buildings used as linkage, we can apply this knowledge to enhance the experiences of consumers and merchants in malls.

Secondly, the field of Landscape Architecture has never tried to design utilizing a network analysis software to produce a parametric pattern for the form shaping of open spaces. By implementing the knowledge produced by this project, Landscape Architects will have a methodology with which to restructure the retrofit design approach of declining mall sites. This question was framed from a subjective assumption, one which states that current retail retrofit design does not take into account the maximization of exchange opportunities. This assumption came through preliminary first-hand observation of user interactions within mall sites, as well as literature review of various retail planning and design guidelines. It is assumed that the dimensionality of connective spaces play a significant role in exchange. I believe that analyzing and possibly redefining this dimensionality will increase the exchange experience of users, ultimately leading to an increase

in site popularity, the retention of users, and lead to an increase in site revenue and value.

The first step will be to inventory and analyze sites which have successfully implemented the urbanist infill methods. The sites will be selected for meeting the guidelines dictated by the Sprawl Repair Manual in the infill of declining malls chapter. Once the sites have been identified as fitting the prescribed model, their open and connective spaces will be identified, measured, and analyzed for their impact in exchange opportunities within the context of the infill intervention. There are two parts to my thesis research, the first one will use a projective design strategy to delineate quantifiable components required in the programming of my design. I will be using computer theory analysis research to produce the guiding principles of my project design. The reasons these strategies were selected is because design elements will be measured, analyzed, and prescribed to the selected site via the projective design

strategy. While a two dimensional network analysis software will be implemented via the Computer Theory software as way to produce a parametric network pattern to guide the form making of the design. The synthesized result of the two research strategies will help prove the thesis statement and demonstrate it can be applied to similar locations for further testing. The results will incentivize developers and designers to try a new methodology of open and connective spaces within infill projects of declining malls. Developers will benefits from having new spaces which are uniquely marketable and revenue generating. While designers, will be presented with a new design component capable of being adopted into urbanist design guidelines of retrofit infill design.

I will select site that meet all or most of the Sprawl Design Manual mall site infill requirements. A digital site model will be produced showing all key points of access for utility, commerce, and circulation. These access points will be ranked using an inherently quantitative value to then be mapped utilizing a two-dimensional network analysis software. This methodology will produce a parametric network pattern, as a two dimensional graphic, of users predictive movement patterns, as per convenience and points of interests. The resulting network pattern will be analyzed for areas of high transit, nodes and collection. Leaving the least engaged areas to be allocated for infill structures. The collected information, derived from software generated network pattern, will prescribe the optimal location for open spaces, corridors, and nodes. The implication of these findings will aid to increase circulation and exchange opportunities in the infill design of declining malls. The application of my findings will help optimize infill design to maximize, not only density and aesthetics, but also the fundamental component of exchange, a component that all retail spaces require to succeed. I predict that maximizing exchange will greatly impact the economic and social value of the site and its surroundings.

The thesis research proposed will use quantifiable measurements to draw out a conclusion which can applied in multiple locations. The conclusion will have a real world application if proven successful. The profession will gain insight into the application of network-analysis software to predict user patterns and provide a new design component which can be implemented to existing and future retail design. This design component will prove beneficial for infill design projects of declining malls by incentivizing investors, increasing merchants' revenue, and creating a unique experience for users.





Project

Typology

Urban Infill for declining shopping mall sites



Project **Emphasis**

The thesis will generate a new methodology to the urbanist design language, specifically referring to the infill design of the declining mall sites. This new methodology will emphasize the optimization of circulation, allowing for better mobility of goods, people, and thoughts - exchange. A parametric network analysis software will be utilized to create a unique pattern with the best suited routes for circulation. This pattern will prescribed the best location for infill structures which do not interfere with the circulation of exchange and ultimately generating high functioning open spaces and connections throughout the site.

GOALS

OF THE THESIS PROJECT

I anticipate my thesis to open up a new conversation in the infill of declining malls utilizing guidelines of urbanism.

In the Landscape Architecture educational curriculum, urbanism guidelines for urban infill practices are used as exemplary work which students should understand and imitate in their practice. The urbanism guidelines are an excellent foundation for design in the modern urban fabric. However, these guidelines often fail to address the fundamental and varying needs of uses in the spaces it is interjected. I utilized the foundational knowledge about urbanism I acquired from my academic career to influence my thesis project. I expect my thesis to be utilized as an additional resource in the academic setting, to expand on the education of principles of urbanism as a layer above its foundational guidelines.

In my experience, I have noticed that Landscape Architects have a very limited involvement in the new design or infill design of retail spaces. In this realm the physical structures are seen as the most important component. This project is intended to break this design practice and bring Landscape Architects to the table at an earlier stage of design of retail spaces. I anticipate a revision in the focus of design practice, enhancing the subjective value of deliberately, purposeful, and high functioning landscape forms and open spaces.

Urban infill focuses on user experience within a site by improving walkability, enhancing transportation access, and increasing plantings. This type of intervention is often successful, however, the maximizing of movement and exchange is overlooked. This project will provide a new approach to planning the infill of declining malls with a focus on highly functional routes, connections and open spaces. This functionality will then reciprocate to user experience and in turn increasing their usability, making the intervention a viable and profitable pursuit.





PROJECT
ELEMENTS

DESIGN

Civic Services

Program Civic entities within the site to attract a more diverse group of users. Post Office, DOT, libraries, etc

Cultural/Events Center

Buildings or spaces allowing large congregations of people. This will require the largest space, but be flexible to remain utilized when not activated.

Mixed Use Buildings

Retail/Office or Retail/Housing Buildings, each would require a different type of access and movement.

THOROUGHFARE + TRANSIT

Emerging Transportation

Understand and plan for transportation needs of the future. Uber/Lyft pick up services, bike and scooter share programs.

Rapid Bus Connections

Public transit connection required to allow for better connection with city at large. A main thoroughfare to allow for better mobility of buses and an efficient terminal

OPEN SPACE

Community Park

Can be programmed adjacent to event center to create a multipurpose green space, (between sizes 150x60ft) Ice Skating or other activity component used activate site throughout the seasons

Centrally Located Plaza

Place of convergence, sitting opportunities, Interactive Water feature.

Variating nodes

Rooms along a path Green space, Water Treatment, Sitting and reading, etc. Focused in intersections.

Water Management Components

Swales, retention ponds, permeable paving, structural soils/silva cells to compliment urban type plantings.

PARKING

Parking Structures

Consolidate space required for parking by building up parking structures to support site needs.



USER + CLIENT

DESCRIPTION



PRIMARY CLIENTS

Investing Development Entity

This client is always looking to investments in new projects across a region, with a focus on maximizing the return on their investment. Their input is regarded as the most crucial one in the design and construction phases of a project. Avoiding unnecessary expenses, keeping within or below the project budget, and the optimal use of resources are these client's goals.

Design Firm

This client is ready to apply their knowledge of design to the project. Design firms attempt to sell their design concepts to their client(s) in the conceptual and early stages of the design process. In order to satisfy client(s), design firms create concepts with the best ROI value or have the least amount of economic risk or waste associated with them. These concepts are usually very conservative and elementary in design.

These two first clients will jointly benefit from the results of this project. Designers will have a new design tool to support their concepts and make a better case for their efforts when trying to push the envelope of design with a development entity. In turn, the Development Entities will have supporting evidence as to why these new concepts and programming elements are necessary to maximize their ROI.



SECONDARY CLIENTS

The City Planning Department

Growing cities across the country have master plan guidelines for the projected growth of their borders developed by the city's planning commission. These guidelines try to curb trends, create a cohesive design language across a city, and provide access to resources and necessary information. Cities entities are usually cautious about drastic change to their guidelines or land use codes. These type of changes require supporting evidence and time to be annexed.

This project will generate the supporting evidence required and the application of such to convince city entities that a revision to their codes is necessary. With the success of the project, sites like West Acres will become economic interesting for private investment turning the site into an economic powerhouse and tax generator for the city.



USERS

Merchants

This group of users come in all shapes, sizes, and from all walks of life. However, their goal is the same across the various type, achieve financial success from their business venture. Merchants are worried and focus on one simple factor, the customers and the experience they have with their product or brand. The more customers around a business, the better it is for business. For this reason merchants usually gravitate to the most transited areas with them. These concepts are usually very conservative and elementary in design.

Shoppers

Just like the last group, these users come in all shapes, sizes, and walks of life. However, unlike the last group, the goals of these individuals can vary just as much as the are various types of shoppers. Shoppers look for an increase in their value or status at a social, economical and personal level. This group is also the most opinionated of all clients and users. Shoppers will revisit locations based upon a subjective measure of the overall experience at the site.

This project will address the needs of both merchants and shoppers alike by creating a space that attracts and channels users seamlessly. This ease of movement will help maximize the on site experience and interactions of users. This increase in user traffic will reciprocate to businesses on site, leading to growth in profitability.



THEORETICAL
PREMISE



Historical marketplaces were adapted into the ubiquitous suburban shopping malls fading across the American landscape. These prototypical building forms have been analyzed in a multitude of case studies and traditional design research resulting in new models and uses for retrofitting and repairing suburban excesses. However, recent innovations in the retail sector have usurped many of the traditional benefits of urban infill, and a new responsive archetype is needed. Because shopping malls have generalizable locations and footprints and a nearly identical hierarchy of ingress and egress locations they are ideal for this type of digital network analysis.

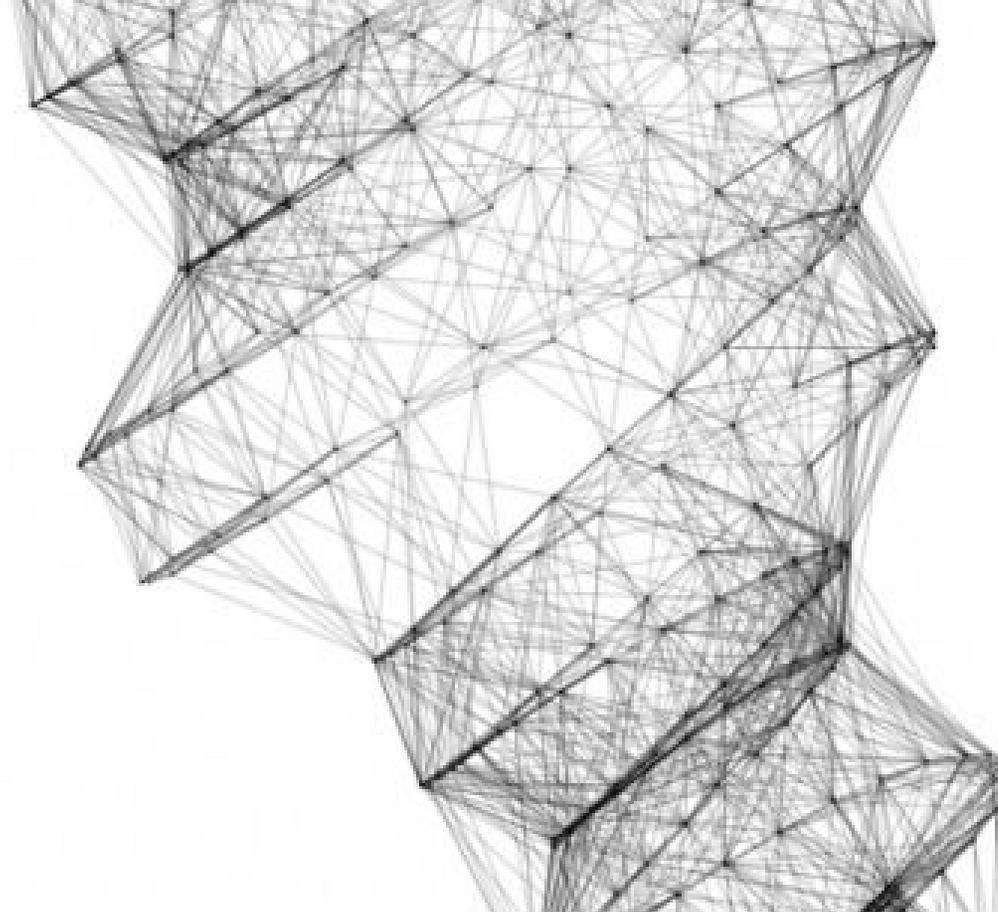
This research applies a parametric network modeling software to existing mall sites as a mechanism to extract the most connective routes and suitable residual spaces for future uses. The data extracted can then be analyzed to dictate the most appropriate forms and locations for open spaces, paths and nodes, stormwater infrastructure and optimizing pedestrian movement and future retail opportunities. This work seeks to create a methodology which can be replicated for infill projects of prototypical suburban shopping mall sites in the future.

The proposed pedestrian network model will be studied further by applying spatial dimensions that optimize the efficiencies and functions of prototypical shopping malls. The results suggest a new responsive model that can reduce walking distances between necessary uses, harness path prediction software, outlines the dimensionality of open space, and guides the performance of landscape and building systems on similar suburban sites.

Once the best performing network model and spatial dimensional have been outlined, the project will move on to the programming and design phase. Research will shift to understand and design for the perceived experience and preference of users, as it relates to the context of open space. Case studies will be analyzed at the same time to formulate site programmatic elements to include in the design. Applying this knowledge at the micro-level of design will result in a fully cohesive project. A project that is fundamentally organized to optimize movement and exchange, spatially defined to support the needs of pedestrian transit, and programmed to attract and retain user interactions within the spaces.



LITERATURE
REVIEW



PARAMETRIC NETWORK MODELING

RESEARCH

The optimal connectivity of a system is crucial for movement and cohesive functionality of a network. Connectivity has been studied at various scales and through the application of different methodologies. The data collected from these techniques gives researchers the ability to analyze existing patterns of movement, prescribe and apply changes to the current network, and review the potential results of the proposed changes. The study of connective functionality of a network through parametric modeling yields guidelines that can be applied at a macro-scale of design, taking in the context of external processes and seeing the way in which the site network operates as a unit.

One of these modeling methodologies was utilized by Perkl in the landscape connectivity assessment, which was applied to the state of Arizona resulting in the identification of Important Connectivity Zones. The findings from the assessment showed that there were nodes of varying importance within Arizona's ecological network. The assessment had the ability to assign each network connection a quantifiable value, based on the cumulative value said connection possess on the entire system. In this connectivity model an assumption had to be made, that movement connections chosen by wildlife is determined based on the same factors as the factors they choose habitat. The study found that by applying a coarse-filter approach helps address the many limitations and variables found in the model's assumption. The coarse-filter applied to the model did not focus on an individual species' needs. Instead, favorable conditions that impacted a larger volume of species was awarded higher value. The study also awarded a permeability level value to areas of the map where wildlife movement is possible. The areas with high permeability and low resistance possessed attributes that

allowed for easy movement, on the inverse, areas of high resistance and low permeability had attributes that restricted movement. A path of travel always incurs a cost on to the traveler, energy is expended both physically and mentally depending on the state of the path. The Effective Distance equates that the shortest distance between two points is not necessarily the optimal one. In the Arizona study the landscape surface was assigned a cost, taking into consideration factors such as slope, exposure, and unnatural features. This allowed the computational calculation of the different routes to be identified, not only as the best naturally suitable, but also the most efficient and most likely utilized by wildlife. The Arizona Wildlife connectivity study utilized a Connectivity Analysis Toolkit, or CAT, is a dynamic, comprehensive, and easy to communicate tool for studying the connectivity of a network. The CAT approach blankets the study site in a network of hexagonal units, each unit is given characteristics of connectivity. Each unit in the network is graded in the connectivity, weighing the most utilized routes higher in importance. The routes highlighted by this approach assesses the links as an entire network in relation to one another as opposed to

isolated connections. The Connectivity Analysis Toolkit can have parameters applied to the network under analysis. One of these parameters is shortest-path connectivity, which links the various nodes together depending on the most effective route available. The Arizona Study applied this, shortest-path connectivity, parameter for their analysis. They applied this approach because the results were easily communicable to an audience with varying backgrounds of expertise. The conclusion of the study was achieved by running models and making adjustments to various parameters leading to a model with a favorable and working network.

An example of a network optimization analysis applied at an urban scale was in the design of the World Trade Center (WTC) Memorial by Monteleon. The study applied two-dimensional computer modeling to predict pedestrian movement. The use of this technology aided designers make decisions in the placement of site structural, aesthetical, and functional elements, within the context of circulation optimization. The WTC Memorial site is located at the heart of a heavily pedestrian-transited district of Manhattan. To achieve the success and full integration of the site it was imperative that mobility was not stifled by the design of the Memorial. The study applied the LEGION software application as their principal network analysis tool. LEGION has the capability to analysis a large amount of data points, allows for changing conditions, and can analyze multiple parameter inputs. The software has the capability to predict how thousands of pedestrians will move across a space to their destination. Individual pedestrian units can be given a set of priorities, activities, and parameters of movement. LEGION can take these parameters and creating a unique pattern of movement for each pedestrian. The LEGION modeling software creates a two dimensional map which identifies areas of low and high use. This result can be analyzed to identify areas where circulation bottlenecks are occurring or if elements are located in appropriately to not interfere with site circulations patterns. With the inclusion of multiple parametric layers, the complexity of the model increased substantially. In order to mitigate this complexity the model was split into two separate study areas, an internal and external area. This approach gave the site analysis a more accurate result and adjustments to model parameters were more easily applied. The study resulted in a realistic simulation of how the site would operate at different times, giving designers the ability to identify areas of congestions,

under use, and conflicts in circulation. This data played an important role in the design decision making phase of the project, "...decisions could now be based on actual data, guesswork was eliminated from the design process... In addition, the number of design iterations and costs were greatly reduced because of data produced from the model output."

There is an online proximity measurement rating known as the Walk Score. This metric is generated utilizes an algorithm that awards point according to the distance a site is to preordained amenities. The amenities range in the social and civic realms, such as groceries, schools, parks, and municipal buildings. Amenities that fall within a 5 minute walk or '.25 miles' are given maximum points. A decay function is applied to points awarded to more distant amenities, with no points awarded for amenities located at a 30 minute walk. The algorithm takes pedestrian friendly street elements into consideration as well. The rating system of a site is a 0-100 scale. This value is algorithmically produced through the analysis of walking routes to grocery stores, schools, parks, restaurants, and retail. The score breakdown as follows: 100-90-Daily errands do not require a car; 89-70-Most errands can be accomplished on foot; 69-50-Some errands can be accomplished on foot; 49-25-most errands require a car; 24-0-Almost all errands require a car.

In the study *Retrofitting Cities* by James Brown, the urban greenway networks within American cities were examined for their design and location. The grid system layout of city planning played, and continuous to play, a large role in the forms found within the urban fabric of cities. This network system creates a direct conflict between the forms of built spaces and those of greenway networks. The study expressed the need for innovation and design of a new urban form layout or network that can lead cities into the future. Brown states, "The speed of movement of goods, people and information, once similar in the various sectors, is gradually being differentiated: people are relatively stable compared to the information transmitted." The Grid System forms cities with an antiquated ideal of how varying land uses, systems, and mobility interact. In modernity the grid like forms of cities act more like barriers than connectors in a city network. The public realm is slowly being compromised and is often overlooked design and planning. New systems of transportation and communications that are not being addressed in the public space design. The study recommends a shift of focus towards the quality and value urban spaces bring to existing city networks, rather than just the quantity of open spaces in a given area. There need to be a purposeful reactivation of "undeveloped land to see how it can be re-purposed to act as a part of a broader network incorporating ecological significance, historical value and contemporary circulation and livability issues." Cities were built on modes of transportation and human interaction based on trade. As both these factors have changed in the present, our cities are in need of a new network model. This model should be innovative, responsive, adaptive, and forward looking to trends and needs of contemporary cities and their inhabitants.



There are many takeaways applicable to my thesis from the Arizona study. The application of a coarse-filter, will prove to be a good starting point to create an overall site network model. Awarding the initial network model with a varying levels of permeability and effective distance metrics, will further delineate the best connections paths of the network which further study can take part of. At this stage of network development the Connectivity Analysis Toolkit can be applied to prioritize network links ahead of weaker links. The use of a network methodology similar to the Arizona study, can be used as a framework to create a local or fine-scale linkage design similar to the scale of my thesis. Producing a coherent and communicable result.

The scale and outcome of the WTC Memorial study is similar to that of this thesis. The LEGION software and its analytical capabilities demonstrate the possibilities parametric network modeling can have. While LEGION packages all analytical components together, there are similar software which can produce similar results, but in a more limited way. By replicating the parameters and producing the layers packaged in LEGION, they can be overlaid to obtain a similar, yet primitive, result as the one generated by the LEGION application. By dividing the site into two part, a network study can increase its accuracy and simplicity. The scale of the WTC Memorial study is most similar to the one of this thesis. A similar approach will be applied hoping to result in the ability to make quick design changes with resolute answers as to the efficiency and effectiveness of these decisions.

The Walk Score is a tool that can help determine if a site is more preferable than others. A similar algorithm can be devised to rate the site prior to the intervention of the network study and rerated once network and programing of the site is revised. If the study intervention results in a rating increase it will give the study even more weight as being a viable design intervention.

This study directly articulates the need for new city network models to be devised to lead cities into the future. Brown speaks about the speed of movement as being the driver for the past city forms. This point to a historic precedent in which cities opted for a system that optimized exchange. This thesis will be finding a new model to directly respond to this need with exchange optimization as the focal driver. The thesis will also look at future trends that are shaping our social interactions and patterns of movement.





URBAN SPACE DIMENSIONALITY RESEARCH

Once a connectivity network is simulated and the optimal routes are selected, the required dimensionality of these spaces need be achieved. Because the thesis is being applied to an urban fabric, the dimensions at a human scale need to be explored. Studies with this focus aim to determine design guidelines that enhanced user experience and the perceived aesthetics of a site. The results from this research can be applied at the mid-scale that explores the internal spatial functions of a network.

A study, by Dan, looked into the spatial dimensionality and urban forms of Yorkville District in Toronto, Canada. This district is a popular mix-use commercial development destination for shoppers and residents. The study concluded that building facade to the street must be uniform to succeed. In Yorkville, a consistent floor heights at 2 to 3 stories faces the streets. The space between buildings is also consistent in the Yorkville district, a ratio of building height to width of street ratio (W/H) and their perceived influence on movement was identified. If the space exhibits a $W/H < 1$ an enclosed perception will be attributed with the space and a sense of urgent forward movement. If the space exhibits a $W/H > 4$ it too wide to create a connection between opposite sides of a corridor. The study states that a W/H ratio between 1 and 2.5 is optimal to produce a human-scale street which creates a desirable perception for users of the space. The study noted that the Yorkville district, has parking structures that allows access to the site to a larger volume of visitors. On street parking is limited, but encouraged as an attraction for users to show off luxury vehicles. There is one large park that has assisted in shaping of the community, boosted economic

growth and enhanced the surrounding environment. The park serves as a destination for users, visitors and residents. Street plantings are diverse, meet nearby use requirements, and are shaped by the spaces they inhabit along the district. An allée of trees lines a boulevard, while a planting bed compliments a small sidewalk in front of a business entrance. The study concluded that some of these spatial elements outweigh others in shaping the experience of users and the perceived aesthetics of an urban space. However, a case was built that mix-use developments "should consider adding regulations on forming open spaces for activities."

The book Pedestrian Planning and Design by John J. Fruin explores the dimensionality of spaces meant for transit and circulation. There are dimensional parameters in the spaces designers create based upon the intended function of that space. The introduction of the automobile in the urban space altered the dimensions of streets in a major way. "It is a force that has imposed itself on every aspect of urban life, destroying many of the elements that made cities cohesive units dedicated to the social and cultural advancements of their inhabitants." There are many factors that affect the flow value of pedestrian circulation, however, an increase in vehicular traffic density has the most negative effect in this flow value. Pedestrian circulation has characteristics of other circulation patterns. Flow volume is "the number of traffic units passing a point in a unit of time." This value give a channel where movement occurs a rating based on its efficiency. In pedestrian circulation this flow volume measures the amount of users that pass through a one foot wide space every minute. Studies have found that individual pedestrians need about a 25 square foot area to be able to maneuver around a crowd at maximum speeds

-on average 250 feet per minute. However, when trying to reach an optimum pedestrian flow volume through a space, the square foot allotted per user can be decreased. The peak person per foot of walkway per minute (PFM) for pedestrian is on average around 25 PFM, this peak can be reached by minimizing the square feet per person (SFP) to around 5 SFP. The PFM significantly drops off in value with SFP below 5, the spot where PFM is at the most efficient appears to be between 10-25 SFP. Level-of-service is a set of standards that correlates the desired flow levels with the necessary spatial dimensions of a space to achieve this flow. The level-of-service standards give designers a metric to apply in their design, to achieve optimum movement through their spaces. Each Level of Services has its own applications and restrictions. The least restrictive of all levels is A, in which no movement is restricted in any manner, at this level an SFP of 35 or greater is allowed, but the PFM is the lowest at around 7. This level is usually exhibited in plazas or large open spaces. Level C is one where all forms of movement remain available for users, at this level SFP is between 25-15 and PFM has a peak of 15. This type of level is exhibited in heavily used transportation terminals where peaks fluctuate, intensity of movement vary between users and multi-directional movement may exist. The level of service E, is the most efficient in PFM with a peak around 25, but the SFP is decreased to a minimum of 5. Level-of-service E edges at the peak of optimum movement, any sort of disturbance will halt movement and severely decreases movement and users comfort. This level should not be planned for as more than in short time intervals, such as event or peak hour commutes. Level E negates the opportunity to have reverse-flow or cross-flow movement. Most designs that focus on movement and flow, do not take into considerations episodes of user queues. Queues occur

at bottleneck location, such as stairs, ticket windows and entrances. Queue locations have level-of-service standards which designer can studied, and apply at these locations to minimize them and optimize mobility through them. As users mover through a space there are inputs that engages them in a passive or active manner. Buildings and other functional elements act as visual cues to users and should be presented in a clear manner to decrease confusion of users. Cues such as directional options should be presented to pedestrians in advance to allow for continual transit through spaces. This practice can be applied to doorways and openings. Users should be presented with enough options to make their movement through a particular route easy. Too many options will have the opposite effect and overwhelm them. An equation utilizing the level-of-service can be applied to dictate the amount of entrances and doorways that should be present. The largest factor in this equation is time of operation, which slows movement through a doorway and can create a queue at its mouth of an entryway. Design consideration at doorway locations must be taken to make these elements function as intended.

one where all forms of movement remain available for users, at this level SFP is between 25-15 and PFM has a peak of 15. This type of level is exhibited in heavily used transportation terminals where peaks fluctuate, intensity of movement vary between users and multi-directional movement may exist. The level of service E, is the most efficient in PFM with a peak around 25, but the SFP is decreased to a minimum of 5. Level-of-service E edges at the peak of optimum movement, any sort of disturbance will halt movement and severely decreases movement and users comfort. This level should not be planned for as more than in short time intervals, such as event or peak hour commutes. Level E negates the opportunity to have reverse-flow or cross-flow movement. Most designs that focus on movement and flow, do not take into considerations episodes of user queues. Queues occur at bottleneck location, such as stairs, ticket windows and entrances. Queue locations have level-of -service standards which designer can studied, and apply at these locations to minimize them and optimize mobility through them. As users mover through a space there are inputs that engages them in a passive or active manner. Buildings and other

functional elements act as visual cues to users and should be presented in a clear manner to decrease confusion of users. Cues such as directional options should be presented to pedestrians in advance to allow for continual transit through spaces. This practice can be applied to doorways and openings. Users should be presented with enough options to make their movement through a particular route easy. Too many options will have the opposite effect and overwhelm them. An equation utilizing the level-of-service can be applied to dictate the amount of entrances and doorways that should be present. The largest factor in this equation is time of operation, which slows movement through a doorway and can create a queue at its mouth of an entryway. Design consideration at doorway locations must be taken to make these elements function as intended.

The book *Public Places, Urban Spaces* by Matthew Carmona elaborates on the spatial forms of urban spaces. Formal Squares are well composed around a central element and are usually symmetric. Informal squares can take many shapes, but are usually not tied to any one element. There are four styles of squares design: the closed squares have structures that envelope and surround it, casting an even focus to the activities happening within the square; the dominated squares usually sit at the foot of a structure, these spaces act as an entrance or landing to the corresponding building; the nuclear square surrounds a central focal element, usually an obelisk, fountain or art element; lastly, a grouped square is a system of connected squares that are tied together as an experience, a series of changing experiences or functions is formed as a user moves through the different rooms. Streets act as channels and connections between spaces or destinations, which elevates their importance and complexity. The geometry and dimensionality of a street network plays a very large role in the experience of the users.

Open spaces take multiple forms within a city, they can be streets, squares, bodies of water, parks and private courtyards. In *Urban Squares as Places, Links and Displays* by Jon Lang, it is stated that regardless of shape, size and function, cities are making an effort to enhance the public realm for their citizens. Lang expresses that accompanied with this effort, there is no need for cities to create more open space, as they have a very high amount of static, inactive, and neglected open space from which to tap from. Existing open spaces in cities such as streets, squares and parks serve and benefit the urban and natural realms of cities. Streets and squares represent the largest volume of open spaces in cities today. Streets act as links, corridors and connection between different points across a city network. Sun exposure and traffic volume affects the experience of users on a city street. A square is a destination, a place, a localized area for activities other than movement to occur. Pedestrian movement and actions are not homogeneous in streets or squares, pedestrian interactions with these spaces can take many forms. However, these interactions are heavily influenced by surrounding elements. For this reason the ground floor of building and the elements on the surface level of these spaces needs to be carefully designed to influence user actions towards the intended function of the space. Urban squares success or failure is heavily influenced by their location in the context of the site's network, the available access to amenities and ability to catch and retain pedestrians. Squares should allow citizens to inhabit them without purpose, this frees up the user to be socialize in ways that may not be acceptable in cafes, streets or street corners. Although the public realm has been reported to be declining, studies of public and private squares show that well designed open spaces are still alive and well utilized globally. Squares are directly linked with the strength of

city's civic and economic realms. The users, and the needs of the users, that transit squares vary tremendously. Designers have the difficult job of balancing their design speculations, interventions, and autonomy. Lang makes note that, the design of a square should display a level of robustness that allow it to morph into, provide affordances for, and accommodate the needs of urban life in the future. A square can serve multiples needs, but only if the function, location and users are considered in the spatial programming of the site. A square with a focus on event hosting should be large enough to accommodate a large amount of people and be located near transportation areas to allow for easy movement in and out of the space. A square acting as a memorial, landmark or the foreground to a building should surround the object and offer areas movement and repose for users. Squares may also play a role in civic discourse, by allowing for demonstrations to form and be presented to a public audience in a spontaneous manner. The complexity in typology and function of public squares makes the design process of squares a complex process. The general size and dimensionality of square is tied directly with its intended purpose. A parade cannot occur in a square designed as an outdoor room and vice versa. The human scale is also a critical aspect in the dimensional design of a square. When the appropriate human scale is applied users sense perceive control and comfort. A consistent observation has been made by critics about the appropriate size of squares, "...many squares [are] simply too large for the purpose they are supposed to serve and [are] over-designed. Much of the time they end up being windswept, empty voids in the city's urban fabric." A suggested way to mitigate this trend in square design is to half the size of the perceived dimensions for the instrumental function of the square. To create a successful square, the 'WOW factor' should not be a

focus of the design, instead functionality and spatial needs should drive the design. The preferred enclosure type for a square design is an enclosed square with the appropriate building to ground ratio of 3:1. A secondary factor that will increase the success of the design is to ensure that ground floor elements respond to the surrounding buildings. Over-programed elements can overload a space, when the attention should be on the function of the building. The opposite effect can occur when elements within the square and the adjacent buildings do not engage the users, making the experience underwhelming for the user. The formality or informality of a square does not play a significant role in the experiences or affordance the user will have once inhabiting the space. The elements within and those that surround the square have been observed to play a more significant role in the experience and success of a square. The only benefit awarded to irregular, or informal squares, is the opportunities for unique views and rooms to be created. (Lang)

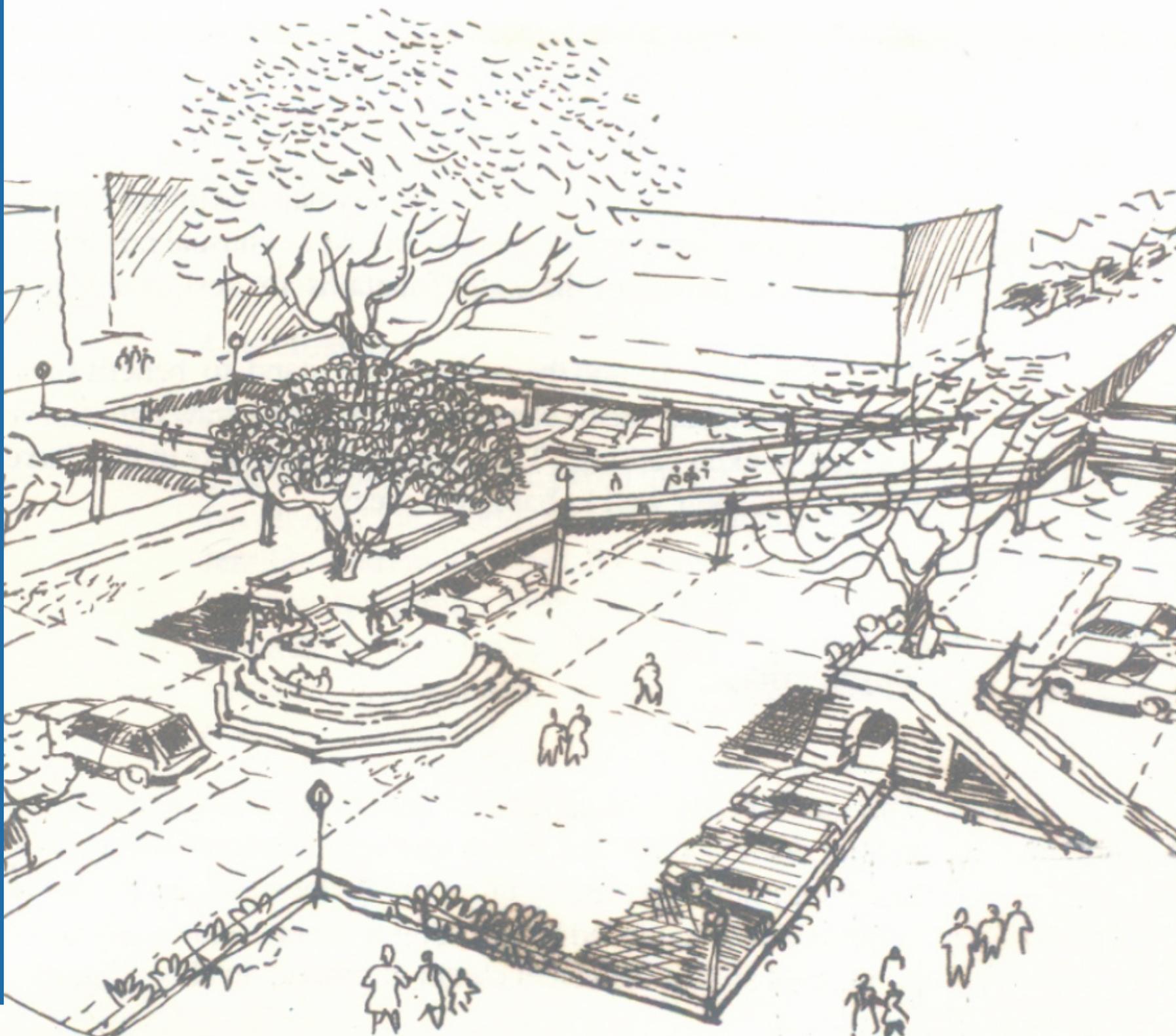


To successfully design the network links and open spaces will require applying appropriate dimensions for the intended function. This study dictates the appropriate ratios to achieve a comfortable human scale perception by users. Another interesting data point taken from the study was the prescription to have uniformity in the facade of buildings along a corridor. The study also observed that a variety of planting styles were injected into the open spaces of Yorkville. By incorporating varying plantings types in available locations, really bring the site to life and creates a unique experience for users as they move throughout the site. The spatial elements brought to light in the study, can be applied to the programmatic and design phases of the thesis to encourage a similar result- the attendance of new and dynamic crowd to the site.

Dimensional characteristics of corridors and open spaces have a direct impact in the maximum flow volume of these spaces. To optimize movement through a space, this thesis will apply research presented by Fruin, such as level-of-service related to with flow volume, to realize the desired experience of the network generated open spaces. Design considerations will also be taken when addressing areas of user queuing. As defined by Fruin, queuing is an inevitable part of circulation, but there are design and planning measure which can mitigate these occurrences and decrease their impact to network movement. Another design consideration brought forth in the book, is the need to clearly present spatial and movement elements to users. This consideration reduces the reaction time of users, allowing them to elect an optimal path of travel maintaining a consistent speed of travel.

In this text Carmona defines the typology of a square based upon the focal point of the design. As the spaces in the thesis become outlined and are given a function, they will can defined using similar language that is used in this text.

In his book, Jon Lang conveys the direct correlation between the function and spatial dimensions that assist in the success of squares. An important point raised by Lang is the need to design squares, and similar opens spaces, knowing they serve multiple purposes in the urban fabric. With careful planning they can be seamlessly incorporated into a circulation network system. This last fact will play a significant role in the development of spaces of the thesis. Another important point tied with the thesis, is the need to simplify the spatial and internal design of square. Sensory and element overload can cause users to disengage and perceive the site as uncomfortable. A balance needs to be reached in the placement, connectivity and dimensionality of open space to achieve a successful thesis design.





USER EXPERIENCE DESIGN

RESEARCH

The last component of the thesis implementation process will require a design at a more micro-level. There is a need to understand user preference in urban space. Studies exploring the elements which are appropriate and preferable by users in the urban fabric will lead this part of the research. The result of this research will help elaborate the context of the open spaces, which up to this point have been selected, outlined and awarded a function.

In the book *Public Places, Urban Spaces* by Matthew Carmona, it is expressed that great urban design follows the concept known as pattern strategic design. The application of this concept addresses that a network of patterns are inherent in the urban fabric of cities, and that none of these patterns operate independently from the rest. The pattern of a site can be summed up to become a pattern unit of its own in the larger context of a city network. It is conceptualized that when looking inward, the network pattern of a site can be broken down to smaller patterns making up the whole. There are overarching principles repeated in most space design prescriptions. The first overarching principle noted, is the need to focus on the human scale of urban space design; the other principle, involves the allowance of some form of control to the user; next, is the idea that urban spaces should be accessible, comfortable to be in, and easy to move through. The dimension and contextual elements of successful urban spaces are ordered, open and defined spaces, and naturalness. These three factors operate together and should be design with the same level of intention. The book suggests that user interaction with space is always experiential, as they move through a site views changes, backdrops morph, and the surroundings transition as users move from room to room. Users appreciate certainty and order to their spaces, a user can pick up on subtle disorder and begin to feel unease. For this reason purposeful and well thought out design elements of open space are important. Hardscapes, in the form of pavers, and softscapes, in the form of planting elements, are important visual components of urban design. Successful urban spaces have elements that are balanced in the context of the space. Plantings, pavers, building facades, and spatial dimensions complement each other and elevate the spaces they inhabit. Carmona elaborates on five types of interactions users can have with a space, which successful urban spaces address. These interactions are level of comfort, relaxation, passive and active engagement, and discovery.

User comfort is guided by environmental factors, physical elements, perceived level of security, and overall design and management of the site. Relaxation can only occur within a comfortable space, but it requires an added layer of separation from stimulating activities. This separation can be achieved by adding plants or water features producing a natural buffer to noise and sight. Passive user engagement occurs where users interact with the site from non-active location, such as people watching. Active user engagement, is not necessarily the interaction with objects or elements of the space. Active engagement usually involves interpersonal communications and interactions, a concept known as triangulation enhance the chances of active engagement. Triangulation occurs where an external element acts as a point common interest between two strangers. Users can experience discovery in an urban space by being a part of a new experience or through a break of a norm, this usually occurs in pop-up markets, concerts, or street performances. As a conclusion the book explains the concept of movement as an essential component to the existence of urban spaces. Predicting pedestrian movement through urban space is complicated because of all the nuances, variations and changes in directions this activity can take. However, a few controllable do allow for further exploration into this subject. An origin point, a destination and the route of travel are three fundamental components of movement that are present in studies. The origin point and the destination are components which cannot be easily altered in movement. However, the route of travel remains flexible, studiable and persuadable. An axial site study can predicts route of travel of users by weighing them in terms of usability, access and preference. When compared to real life movement patterns, an axial study has remarkable similarities to the real life scenarios. Design can be injected in the route of travel as a way to guide or ease the experience of movement, making some routes more appealing to users directing travel through a specific route.

In *Urban Spaces as Places, Displays and Links* by Jon Lang, the experiential effects of elements in open spaces were explored. The amount, volume and quality of light plays a major role in the ambient experience of users within a square. Natural light has a different effect than artificial light, and the manner in which it filters into and interacts with the site has a significant effect on the user's perception on the site. Other sensory experiences can be tapped into through the design of a square. Sound, through the use of fountains; scent, through fragrant plantings; and tactical, by changing paving elements. These changes in perception can be used to draw in and retain users. Users have an intuitive initial reaction when entering a space, this reaction is shaped by past experience in spaces with similar features and elements. The elements present, space functions, patterns, and people of a site have significant effects on how people act, and react to, in the space they occupy. Design can more easily influence the external experience of users than trying to influence intrapersonal interactions with a space. Movement is crucial to the experience of users. As a user moves through a site the observable context changes. Careful design can

make the dimensionality, focal points and aesthetical cohesiveness of the site, from a user's perspective, as they move through a site space more attractive. Movement is only one of the many activity iterations a user can partake in within an urban space. Throughout the course of a year, with the change of the seasons, or as quickly as a single day, users' needs can change. A square should be able to adapt and accommodate an ever changing pattern of uses. Squares have a bipartite existence, one as a space and the other as a link. The latter is often an underestimated attribute that has a significant impact in the functionality of the square and overall context of the surrounding spaces. When designing a 'place,' the formal and the communal types of uses need to be considered. Formal uses can be designed for, programmed in and encouraged. A communal use is spontaneous and only occurs up to the extent to which a site allows. Studied as a link, squares become open corridors. These corridors can be defined through the placements of entrances or through the use of a different paving pattern.

The most obvious pedestrian space akin to a square and serving as a link is the pedestrian mall. These

malls are only highly used if they have many entrances to housing or retail/commercial space opening onto them. They also need to have attractions at both ends (a dumbbell design) and be designed to have smaller places within them. Many pedestrian malls that were formed by closing streets have now been reopened to traffic because they were underused and the commercial enterprises located on them failed to flourish. Spaces shared by vehicles and pedestrians are ambiguous.

Square identity can change tremendously through the course of one day. A square may come to life as a link during commuting hours and as sit down spaces at lunch. Unique illumination elements can become an attraction to a square as night falls. Seasons can play a significant role in the affordances a user may find in a square. The exposure of a square may it cause to remain mostly empty during the day, as the sun bares down on its surface, but as evening temperatures moderate the climatic environment it may suddenly spring to life. Squares can stand as works of art on their own or become spaces where art can be displayed. The context elements and interior elements of a square are often as complex to design as the overall dimensionality and location of the site. A design can easily become

over-programmed and overwhelming with elements in competition with each other. Trying to create unique spaces that engage and attract users, designers may in fact hurt the functionality and affordance the space needs to succeed. A trend has emerged that allows for 'loose programming' movable furnishings, modular and adjustable elements are now the most popular for users. Although trends in spatial and elemental needs are in constant shift within the urban fabric, the integration of technology, minimalistic elements, and loose programming appear to be guiding the current paradigm of square design.

In the book *For Pedestrian Only*, Roberto Brambilla explains that the basic function of pedestrian malls inherently discourage the use of vehicles within their boundaries. There is an increased social, aesthetic and comfortability value of pedestrians in areas that are secluded from vehicular traffic, however, the commercial function of these spaces are times lost in the design. Delivery and other functional access points for business operations need to be considered, allocated for and programmed into the design. Improving public transit access and encouraging other modes of transportation into the site is another way design can make these places function better. Brambilla addresses that vehicular access for users cannot be completely disregarded in a project mean to attract people. While positive trends have led to a reduction in the amount of excess parking of a site, it is still important to make concessions to the driving experience to the site, this experience must remain functional even if it's not the most convenient. Disregarding vehicular access would have led to user inactivity and possible failure of the site especially in smaller American cities. There are many factor that may affect the economic advantage to creating a pedestrian only space. The text point to timing as the most

important factor. In the spiral of decay of a commercial spaces there is a certain stage in which no matter how well-designed a pedestrian district is, it will not be able to economically revive the area. It is imperative that action is taken before a commercial area becomes neglected and ostracized by users. When a commercial pedestrian district is established there are positive economic factors that begin to occur. Usually local, luxury and specialty store begin to thrive as users linger around them and interest builds. Investors become interested in the potential of the space and surrounding areas, this trend has the capability to boost the economy of an entire city. Land value increase in the immediate area of a pedestrian district is. There are environmental benefits associated with a pedestrian district as well. These include a reduction of pollution levels, an improvement of the physical image of the commercial space, and the introduction of better designed and maintained green spaces.

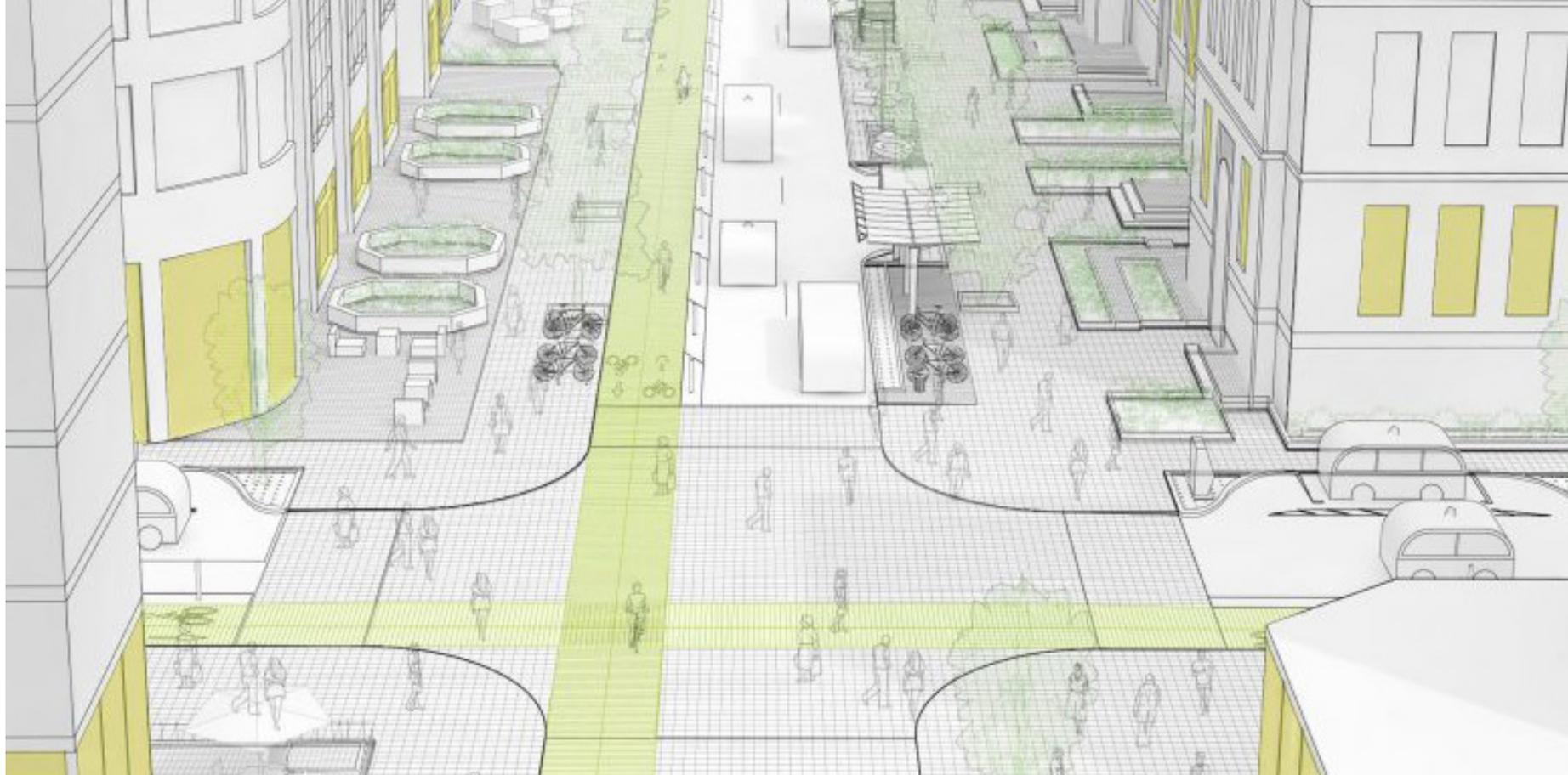


The content of Carmona's findings adds great value to the context and applicable knowledge of the thesis. The text begins by defining some principles exhibited in successful urban space design, these principles will be need to be present as the design phase of the thesis moves forward. Another point that can be applied to thesis design is the user experiential and engagement need. While these factors cannot be predicted, they will still be present in the spaces being formed by this thesis project. In order to create successful spaces the inherent needs of users will need to be allowed to occur, this can be achieved through the appropriate programming of open space elements. The information of the fundamental components of movement within the context of an open space, is also important to success of the thesis project. Understanding that the route of travel is the only component a designer has persuasive control over, makes it clear that route selection of users can be manipulated through the use of appropriate programmatic elements of corridors.

This text raised some important thoughts with regards to the perceived users experience attached with physical and environmental elements of open spaces. As explained by Lang, design can only be succeed and should focus in influencing the external experience for users. By intentionally programming elements within an urban space, the experience of users can be altered and coerced to achieve the intended function. The integration of technology, minimalistic elements and loose programing are component that that will be exhibited in the thesis project. The success and trending outlook of these elements make them applicable components in achieving the goal of the thesis project.

The information presented by Brambilla, introduces a different perspective into the contextual design of pedestrian spaces, commercial spaces in particular. Other research literature focused on the spatial dimensionality and pedestrian experience within the urban realm. The information in this text takes a look at often overlooked components of a pedestrian district design. The thesis project will need to address vehicular mobility and commercial functions as part of the connectivity network system. As other research pointed out, vehicular inclusion to a pedestrian zone is possible, but has negative effects in movement of pedestrians. The benefits listed by Brambilla, as a conclusion to his text, gives supportive context to the thesis goal and validates the need for such an intervention to occur, specifically in the context of a commercial space.





CASE STUDY

RESEARCH

A major component of the thesis project requires the programming of infill elements for the selected site. Program elements must be appropriate for a commercial site and should have precedent in similar sites. Through the use of case study research, program elements that meet this criteria can be selected. The guidelines from the Sprawl Repair Manual by Galina Tchieva, were applied to select the sites to be studied. Following Tchieva's formula in the Mall Site Repair chapter: the selected projects should be forward looking; attempting to transform and revitalized the mall's image and its surrounding; be located near major arterial roads; and have a transportation connection to the city at large. The text prescribes that a repair project for a mall site must show the following qualities: an introduction of new buildings types; a well-connected and repaired thoroughfare network; the rationalization of the parking system; and possess open and civic spaces. These prescribed qualities along with the Walk score were used as metrics to measure the success of the repair projects.



“Malls are the most promising contenders for sprawl repair. Because of their location, parcel size, ownership structure, and opportunities for transit and mixed uses, they have great potential to be transformed into town centers or transit-ready urban cores.” (Tachieva)

The *Urban Repair Manual* prescribes certain parameters for the retrofit infill design of malls. These parameters will be applied to create a list for a case study subjects as well as the selection of the project site. The summarized criteria for consideration are as follows:

- 1. A forward looking retrofitted Mall Site transforms and revitalizes the aesthetics, civic engagement and economy on site and of its surrounding.**
- 2. The site need to be located near major arterial toads and connections**
- 3. In order to raise the retrofit attempt succes rate, the intervention should be proposed and implemented while the mall is economically self-sustaining.**

The following sites were selected because they meet the stated criteria

- **Mashpee Commons, Mashpee, Massachusetts**
- **Mizner Park, Boca Raton, Florida**
- **Belmar, Lakewood, Colorado**
- **The Paseo, Pasadena, California**

These case study site will be researched and analyzed for their implementation or lack of design standards set forth in the *Urban Repair Manual*. The following list will be used as a basic design metric:

- **Design; The introduction of new bulding types and uses.**
- **Transportation; The repair or reconnection of thoroughfares to increase site access.**
- **Parking; Rationalize and downsize the overscaled parking lots.**
- **Open Spaces; Define and inject open spaces within the infill design.**

The stated design components will be used for a preliminary assessment of site ammenitis which will be then further examined utilizing a case study matrix to create a set of project elements derived from the case study data.

Mashpee Commons

Mashpee, Massachusetts

Open to the public: 1986

Site: 77 acre (.25mi x .25mi)

Walk score: 63

In the 1960s a mall called New Seabury Shopping Center with a footprint of 62,000 sq. feet was located on the site of the Mashpee Commons. In 1986 a master plan was developed to create the Mashpee Commons community. The design utilized principles from New England town center design and new urbanism guidelines. The two major focuses of the master plan was to create a community center and attempt to discourage the use of vehicular mobility from the residents of Mashpee Commons. They attempted to do this by locating living essentials within walking distance of the community and provide pedestrian ready access to these amenities and services.





DESIGN

The original site design included 100 stores, however, a stipulation that 70 of them had to be locally owned was implemented. This measure really invigorated the local economy and incentive residents of the site to work closer to home. 40 apartments were also part of the original design. An current expansion design hopes to add another 12,000 sq. feet of retail space and another 52 apartments. Civic services included on site are a post office, library, schools, town hall and a market. While the community is small in acreage it is not very dense, rather the community spreads itself across the landscape.

THOROUGHFARE + TRANSIT

The site is located between two main connective roads in the Massachusetts peninsula. There is access to a regional bus system on site in the form of a bus stop.

PARKING

The area remains very vehicular centric with various small parking lots, not consolidated into any structures.

OPEN SPACE

The open spaces on site included a variety of small plazas and open spaces along pedestrian corridors. The site is hosts to many community events throughout the year a Farmer's market, music events, and block parties. There is not a large park near the site, but a dense forest canopy surround the community overall.

Mizner Park

Boca Raton, Florida

Open to the public: 1991

Site: 62 acre (.17mi x .45mi)

Walk score: 88

The site used to be home to the Boca Mall, a failed mall that opened in 1974. Boca Mall experienced popularity for about a decade before its major anchor stores began to leave. The vacant building took on many temporary skins, IBM and Levitz Furniture were all tenants of this space, and all ended up vacating the space by 1989. That same year a plan was established to turn the Boca Mall into a lifestyle center, this project would include mixed-use buildings. As a first design intervention parking lots were compartmentalized into four structures, opening up the site. A central promenade and civic amenities were introduced into the heart of site. The site quickly gained popularity and became a model for other lifestyle center designs across the USA. The site remains a popular destination to this date, but has experienced a small decline in tenants in the last couple of years. The city of Boca Raton is working along with the owners of Mizner Park to promote the site and curve this slightly declining trend.





DESIGN

The mixed-use buildings included 40 retail shops and restaurants, 262,000 sq. feet of office space, and 272 residential units. The Site includes the Boca Museum of Art to the north and a Post Office and Mizner Park Cultural Center to the south.

THOROUGHFARE + TRANSIT

The access to public transit is achieved through a bus route with stops located around the perimeter of the site.

PARKING

Parking was consolidated into four parking structures located at the main entrances to site.

These structures offer free parking to users and their integration opened up the site to allow for the programming of open spaces.

OPEN SPACE

The open space include the implementation of a large central promenade, which functions as a place for public art displays. A civic amphitheater that doubles as a concert green capable of hosting 4,200 people, is available to host community, civic, and commercial events. Plazas fill the nodes and corridors along the pedestrian routes throughout the site. There is are extensive planting types used on site and have the possibility to manage stormwater.

Belmar

Lakewood, Colorado

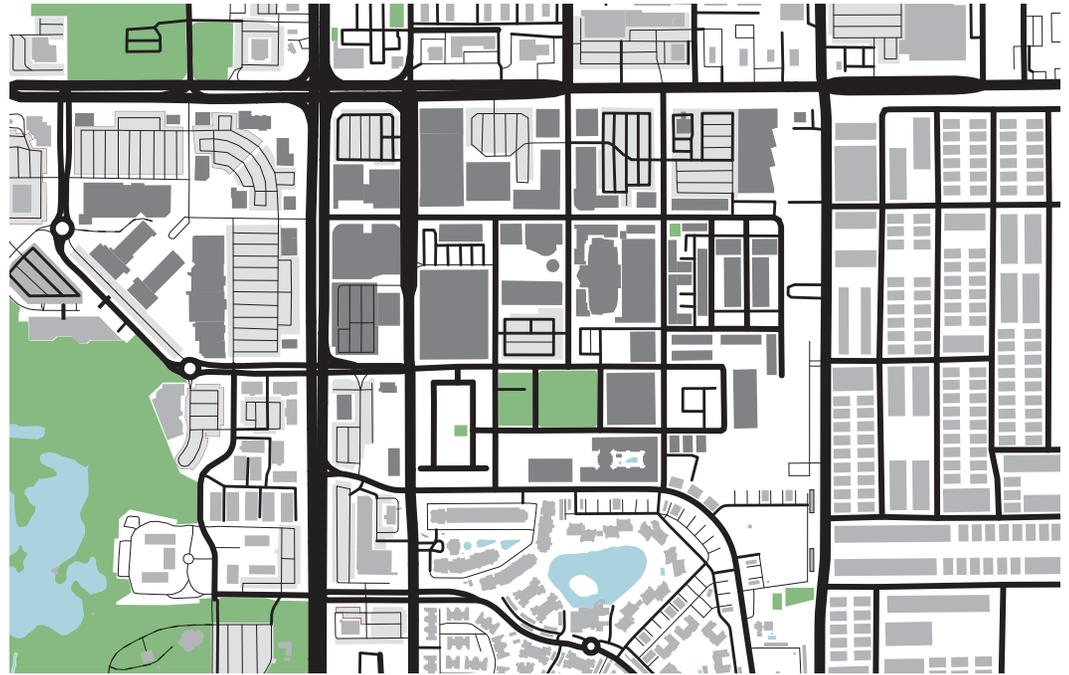
Open to the public: 2004

Site: 120 acre (.25mi x .30mi)

Walk Score: 89

The site used to be home to Villa Italia mall, which opened in 1965. At the time of its opening it was the largest mall in the world. The mall was about 500,000 square feet and designed with an Italian-American theme. The mall was very popular during its inauguration and for about three decades, during this time the mall was in constant competition for users. A second level was added making the building's footprint a massive 900,000 sq. feet. Villa Italia acted as the center of Lakewood and the surrounding suburbs, it also acted as the city's largest tax generator. In the 1990s, the mall began to experience a decline, due to the ever increasing competitive pressure of smaller malls emerging in closer proximity to suburbs. The site continued to decline and became a crime-ridden area, disregarded by the locals and an eyesore for the city. The city of Belmar became proactive at the sign of decline and bought the mall from its owner. A downtown center for the city was planned as a remediation strategy to Villa Italia Mall. In 2001, Villa Italia was completely razed to the ground to make way for the new vision of the site. In 2004, Belmar officially opened to the public and quickly became a popular shopping and dining destination for the citizens and visitors of Lakewood.





DESIGN

The built structures create 726,000 sq. feet of top-tier retail space; 80 stores, 20 restaurants, and is home to 3,500 residents. The community plaza hot spot for community events and reminds constantly busy. A large community center called Block 7, acts as a center for art display and a community forum space. The site uses energy harnessed from solar and wind energy and has and high efficiency lighting, across the site. Another environmentally conscious component of the design was the reuse of materials from the demolished Villa Italia mall.

THOROUGHFARE + TRANSIT

The main transportation elements of the site is allocating parking spots specifically for a car share program. There are connective bus stops around the perimeter of the site, and a light rail connections is located 2 miles from the site.

PARKING

Parking is mostly surface and lacking in maximum consolidation, however, two parking structures are present.

OPEN SPACE

Open space on site consist of a central plaza, hosting open air concerts in the summer months and ice-skating in the winter months. A large regional park is located .5 mile away. There is also a small park for residents located at the south end of the site.

The Paseo

Pasadena, California

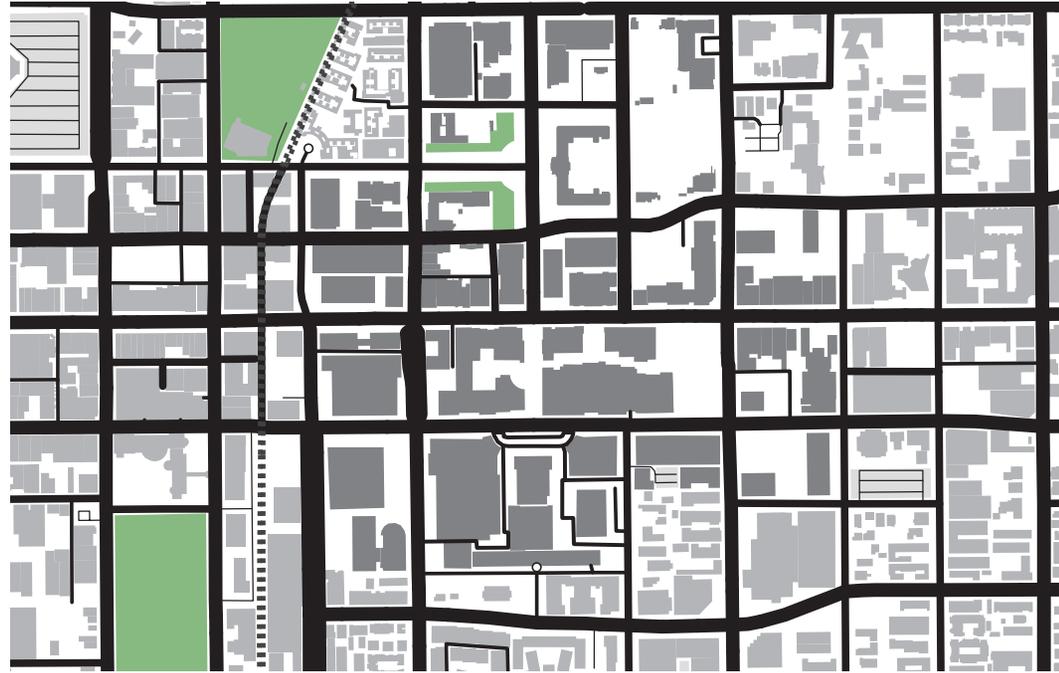
Open to the public: 2001

Site: 100 acres (.25mi x .5mi)

Walk Score: 97

The first selected site was The Paseo in Pasadena, California. Since the forming of the city of Pasadena, the old Pasadena district was always an economic center. As suburb development pulled populations away from city's center, downtown Pasadena began to deteriorate. By 1960s and 1970s the area was in a major state of disrepair. In 1980, a classic enclosed air conditioned mall opened. The area experienced a revitalization for about a decade, thanks to the opening of the mall. After the first decade the mall began losing users due to competing malls popping up in closer proximity to suburbs. By the mid-1990s the mall's reputation was stained with stories of violent crimes, the mall became unpopular, dangerous and an eye sore for residents. During the 2000s, parts of the mall were bulldozed to usher in a new vision for the site. An open air mall with mixed-use building types, bringing a dynamic function to the site, as an effort to reinvigorate the site. The redesign intervention was a success and the last remnant of the former mall was a Macy's building, which was demolished in 2013 to make way for a hotel.





DESIGN

The retrofitted design of the site shows the application of mixed-use buildings. Most buildings have shopping on the first and second stories with housing or office spaces above, there is also a small grocery store on site. There are civic buildings within the context of the Paseo site. Pasadena's city hall, planning office, and convention center are all within the limits of the analyzed site.

THOROUGHFARE + TRANSIT

Public transit amenities are located near the site. A Metro Line is a quarter of a mile away, and a bus route which has stops around the perimeter of the site.

PARKING

Parking is located underground and is accessible 24 hours of the day. There are no time restrictions associated with the public parking stalls.

OPEN SPACE

Open space present in or around the site, include a medium size event space at heart of the mall. All public spaces have movable seating for easy reconfiguration by users. There is are public park of varying sizes less than a half mile away. Some components that were missing from The Paseo site were plantings and stormwater management features.

CASE STUDY MATRIX

	MASHPEE COMMONS 	MIZNER PARK 	BELMAR 	THE PASEO 
DESIGN	<ul style="list-style-type: none"> • 70/100 locally owned businesses • Post office • Library • School • Town hall 	<ul style="list-style-type: none"> • Amphitheater • Boca art museum • Post office • Public art • cultural center 	<ul style="list-style-type: none"> • Solar, wind energy collection • Recycled material for new construction • Art center/Forum 	<ul style="list-style-type: none"> • Open air mall concept • Convention center • Civic buildings • Mixed-use buildings
THOROUGHFARE + TRANSIT	<ul style="list-style-type: none"> • Regional bus connection 	<ul style="list-style-type: none"> • Bus Route along Perimeter 	<ul style="list-style-type: none"> • Car share program initiative 	<ul style="list-style-type: none"> • Bus Route Along Perimeter
PARKING	<ul style="list-style-type: none"> • Various small lots w/ no consolidated structure 	<ul style="list-style-type: none"> • Four parking structures • Free Parking 	<ul style="list-style-type: none"> • Two Parking Structured 	<ul style="list-style-type: none"> • Subterranean • Open 24-hours • Validation available for user • Non-Restricted
OPEN SPACE	<ul style="list-style-type: none"> • Variety of small plazas and open spaces • Hosts community events throughout the year • Farmer market, music, and block parties 	<ul style="list-style-type: none"> • Concert Lawn • Community, City and commercial events • Formal small nodes • No adjacent open park space 	<ul style="list-style-type: none"> • Large regional park located .5 miles • Bustling community plaza, host to ice skating, and open air concerts 	<ul style="list-style-type: none"> • Med Size event space in heart of site • Community park .5 miles away • Plazas and open spaces located near civic spaces



From the case study research, a number of elements begin to be repeated and should be programmed in the final design of the thesis project.

Programming built elements of following typology should be included. Civic entities within the site to attract a more diverse group of users. Some of these may include a Post Office, DOT, libraries, etc. The injection of mix-use building types, whether Retail/Office or Retail/Housing Buildings, requiring a different type of access and movement need. Cultural/Events Center as buildings in conjunction with open spaces allowing for a large congregation of people. This will require the largest space, but should still have programmatic elements that allow it to remain active when not hosting an event.

The research shows that public transit access to a bus connection should be present. Public transit connections creates better user connectivity with the city at large. A main thoroughfare should be included to allow for better mobility of buses and an efficient terminal system. A future outlook on emerging transportation trends should be considered and where appropriate applied. The design should show an understanding and plan for transportation needs of the future. Examples include Uber/Lyft pick up locations, bike and scooter share programs infrastructure. Parking lots should be consolidated into parking structures while still support needs of the site, this move will increase the amount of open space available for design.

A significant component of the thesis project is the optimum integration, placement and design of the open spaces included in the design. A community park is an essential component, this park that can be programmed adjacent to an event center to create a multipurpose green space. Ice Skating and other seasonal activities can be programmed to activate this green space throughout year. A centrally located plaza is another essential open space component, this space can serve as a space where corridors convergence, and as an entrance to a prominent site building. Sitting opportunities, a water feature or art exhibits can also be programmed into this plaza space. Varying node types or rooms along corridors can have unique functions. Some can be programmed as small green spaces, stormwater retention features, nooks for sitting, reading, and meetings. These nodes will be located at intersection points along the connective network. Water management and a variety of planting components will be included along the site. Systems such as swales, retention ponds, permeable paving, Structural Soils/Silva Cells will compliment urban type plantings, and will help to passively manage stormwater mitigate run-off.

PROJECT

JUSTIFICATION

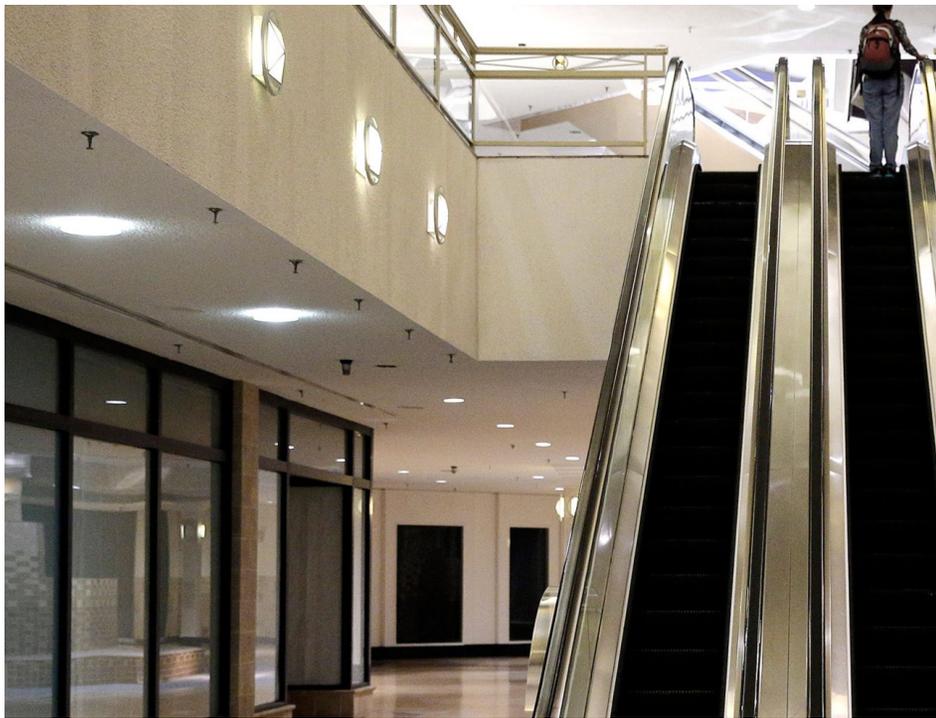


I have a personal interest in seeing the reinvigoration of the public realm. I believe by designing spaces that focus on the exchange opportunities available to users is in desperate needed in our cities and will aid in the reinvigoration of the public realm. The design field of the present day exhibits a heavy user-centric focus. Today, users seek and are accustomed to optimized functionality, exchange rates at ever increasing speed, and the ability to choose their experience and enjoy it uninterrupted. I have taken this personal interest and applied it the historic connection between commerce and the public sphere to create the thesis narrative. Commerce and the public sphere have operated conjointly from the dawn of city development. Only in the last century has the urban fabric experienced a large disconnect between these two functions. Malls were created as nothing more than profit machines for cities, depriving themselves and their surrounding of public spaces. Optimizing movement within existing centers of commerce will reinvent these spaces with a new wave of functions and users. The outcome will be the reconstruction and reinvigoration of the public realm in cities.

As I transition into the professional world, I would like to focus my work in the urban fabric of cities. I would like to acquire an expertise on the urban space design, its needs, future design trends, and possibilities. This insight and expertise would allow me to make a case for the reinvigoration of the public realm in a professional setting. I would love to be able to lead projects with a focus on the purposeful reinvigoration of the public realm. Commerce and urban design have never been experimented with using anything other than urbanism infill guidelines. This approach is often successful at its inception, however, the exchange corridors and functional aspects under perform and in time the design begins to lose steam and decline. A reason for this decline can be attributed to the fact that in archetypal urbanism infill guidelines, the optimization of movement and exchange is not addressed in the design process. This thesis will take a technological approach to optimize exchange and movement as the guideline for infill. This will create corridors and open spaces that are inherently designed to optimize exchange, which can be fine-tuned and designed to serve the functional and aesthetically need of users. This type of infill design methodology has not been applied to a commercial space before, the result will be the creation of high performing open spaces in the urban fabric, specifically within the context of commerce. I will add a technological skill to my design process. Learn how to set up, operate, and analyze two dimensional parametric network modeling software.

Landscape and open spaces design of commercial zones are often the first to be cast aside due to budget constraints and are more often than not value engineered out of existence. With this thesis and its result, I hope to show the value Landscape Architecture can bring to commercial zone design. The landscape and urban spaces should be designed with more intention and be studied more carefully than it has been in the past. The use of technologies is an innovative application to the design process of urban spaces. In the classroom students are encouraged to push the limits of design and explore/develop new methods of design. With this thesis a precedent is set for future students to apply similar technological applications to other sectors of the urban fabric. Another advantage of applying a parametric network modeling software as a tool to the design process of a project is a decrease in design cost. The modeling software is able to provide concrete answers to design questions that could only be theorized or opinionated on before. The implementation of this type of design methodology would help minimize design costs, increase value for clients, and create high functioning open spaces.





Physical spaces for commerce continue to vanish from the urban fabric, as users elect digital systems to achieve their shopping experience. However, not all commercial spaces are vanishing. Spaces that exhibit user-centric design components and prioritize experience, continue to have a continuous stream of users. While these spaces remain relative they do not show an optimization of exchange. If commercial sites exhibited high functioning open spaces, which optimized exchange and mobility, alongside their experience driven design components, the sites would experience a significant growth in user engagement and boost economic growth. There is no current effort being made to explore the optimization of exchange in spatial design of commercial spaces utilizing parametric network modeling technologies. This is not an imperative project and will only show a different approach for design of commercial sites. However, the success of this thesis project can set a precedent and become an imperative component in the design methodology of commerce spaces. Currently the profession of Landscape architecture realm do not see prospects or value in the archetypal mall site. As a student I have no financial responsibility and can explore this realm more freely. I believe that another student could do the same work I am doing, however, inherently not many in the design field have a similar interest or see the possibilities in this typology. West Acres mall is the perfect subject for the thesis project for many reasons. Firstly, it exhibits the elements of an archetypal mall site present across the USA. The mall is currently experiencing a slight decline, and can be reinvigorated while it still hold promise.

HISTORICAL, SOCIAL + CULTURAL

CONTEXT



Shopping malls are in decline as the trend for shopping has shifted from the physical realm to online. Shopping malls and similar retail sites across the American landscape have ingrained roots in the historic context of commerce. Pedestrian networks and urban public spaces allowed for commerce to flourish, and in this symbiotic connection, the ancient system of commerce and trade enabled the establishment of ethics and legal norms, the exchange of good and innovations, and the strengthening of social ties and cultural connections. As western culture evolved, so followed commercial spaces. Commercial spaces evolved to become solely the economic drivers of cities and the last link in the product-chain before reaching consumers. As cities in the USA began to cater vehicular transportation, expansion occurred quickly and remained largely mismanaged. This expansion lead to the degradation of the urban, social and civic fabrics of cities. People started looking at European cities as models for well-formed urban designed. The comparison noted that complexity of street patterns, the presence of plazas and squares, higher density, lively downtowns and low skylines were some aspects absent in American cities. The components that were exhibited by European cities, reflect a slow, carefully planned, and balanced growth pattern, which should be synthesized with American city forms to help enhance the urban fabric.

In ancient or present time commerce system, the presence of people has played an integral role in the system's success. As a way to engage users and reactivate declining mall sites, present-day design of retail sites has observed a trend in services improvement, introduction of live-work building typologies, and the application of entertainment events and venues. Commerce and retail centers have played a significant role throughout history and despite the new vehicle oriented trends they tend to attract pedestrian activities and people. Retail centers have an inherent multiplying effect on the 'natural movement' of a city, with this inherent dependency on pedestrian activity and the complex nature of commerce, it makes this site typology a very interesting subject for investigation and analysis. All these factors make the location, design and physical makeup of retail and commercial spaces should be explored and studied. For most of human history traveling on foot was the predominant method of transportation. Only in last half century has there been a trend, especially in the urban setting, to accommodate vehicular travel over the pedestrian. As defined in the dictionary to be pedestrian mean "to travel on foot along a path or developed area." there are many variable that make street life attractive to users. These variables include perceptual and cultural factors, but physical factors play the largest role in elevating street attractiveness for users. (Niazi) Users look for comfort, safety, distance, and proximity to services when utilizing a street. "The single most important characteristic of pedestrian-supporting spaces is complexity," Niazi continues, "the need to make strong links, both physically and psychologically, between indoors and outdoors. The biggest obstacle that pedestrian movement faces is when vehicular movement is present in a major way. By nature, vehicular transit is geared towards destinations and an isolated experience. In contrast, pedestrian transit is about the journey and the spontaneous interactions which may occur. Pedestrian streets should exhibit permeability, by leading to other streets and never culminating in dead ends.

The forms and dimensions urban spaces remain a point of debate amongst the urban design profession. The grid system pattern for city layout became the model for city planning for most of the American history. This grid system began by creating small block units that progressively grew larger, until they became mega-blocks that divide communities and deterred pedestrian mobility. As a direct counter to this layout system, modernism emerged in urban space design. This movement saw building as disconnected elements from the ground plane, acting independent sculptures which would shape urban spaces and their functions. This movement was never attempted and the discipline began to look at past for inspiration and lessons to take into the future of urban design. Urban design began to show a synthesis between the irregular city forms from European cities and the grid forms of American cities (Carmona).

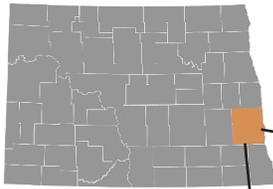


A mixed-use sites are defined as encompassing three or more revenue generating uses which operate together and have compatible functions. These are typically high density sites, tied together with a heavily focused pedestrian network. These sites benefit from pattern of streets or a network of paths accompanied by a hierarchy of open spaces. Buildings and stores are aligned with these pedestrian networks and public spaces, and are dependent on the quality of the public realm. Mixed-use centers are inherently a major attraction for communities, cities, and the region in which they reside. Studies of commerce centers and mixed-use spaces show that Architecture does not play a major role in the connection users make with sites of commerce. The human scale, the adequate dimensionality, ease of movement, and safety, surfaced as the most crucial factors to the success of the open spaces. (Niazi) These factors played the most significant role in the perceived success of mixed-use centers more so than the architecture itself.

Lastly, there needs to be an intention and purpose in the design of urban spaces. Vacant land across the US remains an untapped resource with the potential to provide productivity and benefit to its surrounding if it were to be repurposed. The biggest reason this land remains vacant is due to low economic return on investment (Newman). Utilizing green infrastructure to infill these vacant spaces can be a flexible solution, which can be molded to fit the needs of the specific site. The result of this approach to vacant site can help enhance habitat value, reduce storm surge flooding, and increase appeal of adjacent sites, all of these factors can have major impacts on a city, making these re-purposed space highly valuable. Urban spaces are usually weaved into a sector of a city's function. One of the sectors that lead urban space design in cities is the economic sector. The main objective of the economic sector is profitability and direct competition tactics, this objective is usually in conflict with social objectives (Carmona). When urban spaces are developed with a profit first mentality, the public realm costs are often overlooked for private realm profit. This leads to underfunded and under performing urban spaces, whose social costs are absorbed by the community in which these spaces reside



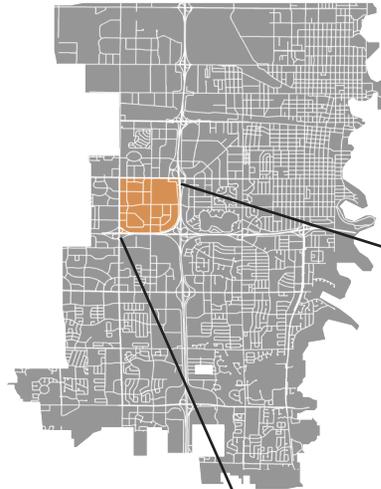
SITE
ANALYSIS



NORTH DAKOTA, USA

Population: 755,000

Founded: 1889



FARGO, NORTH DAKOTA

Population: 2016

County: Cass

USDA Plant Hardiness Zone: 4a

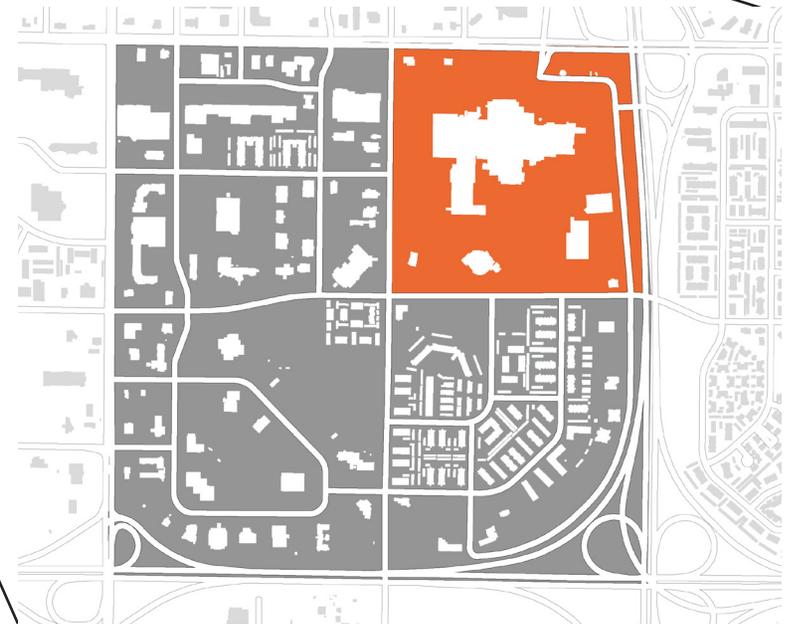
WEST ACRES MALL

Fargo, North Dakota

Open to the public: 1972

Site: 120 acres (.5mi x .5mi)

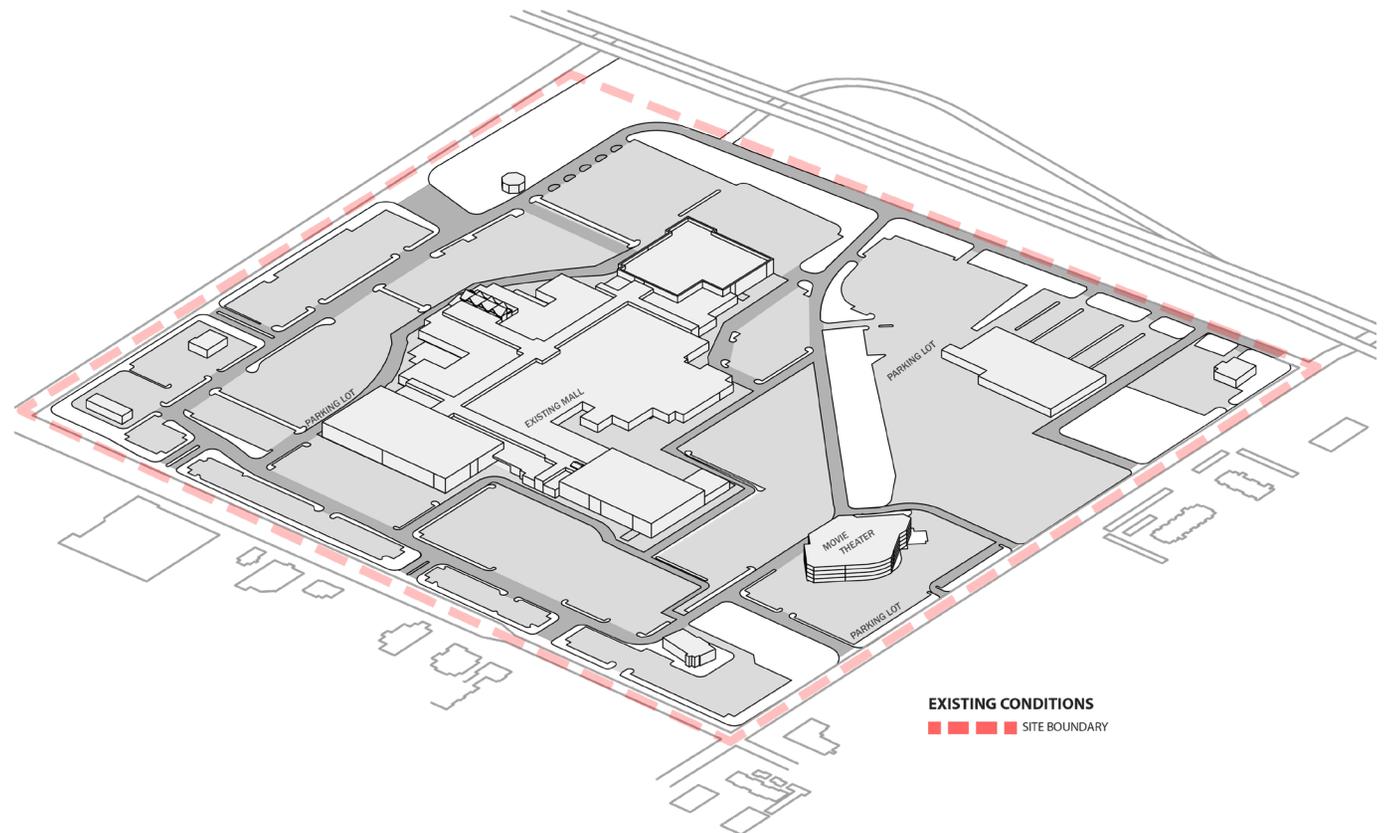
Walk Score: 49





WEST ACRES MALL

This site is the perfect candidate because it checks off all the candidate requirements for infill intervention set forth by *The Urban Repair Manual*. The site displays all of the generic components exhibited by classic malls archetypes across the country. The resulting retrofit intervention produced by this thesis, will set a precedent to apply in other archetypal mall sites.





PERFORMANCE

CRITERIA

Space Allocation

Performance Measure- The site will be measured by the area of the west acres site. In square feet and in acres of the lot size.

Performance Measure Source- The site will be measured using area sums in AutoCAD or google Earth

Performance Analysis- The site will be measured using area sums in AutoCAD or google Earth

Performance Judgement- The site is already delineated according to parcel site, thus making program elements needing to be placed in the site according to dimensionality and available space. The reason the site space will work is because it matches the parcel size allocated for similar archetypal mall parcel.

Environmental Performance

Performance Measure- The site's open space ratio to adjacent buildings will be measurable. Depending on the ratio achieved guides the use of users. Depending on the immediate use of the open space, the ratio of building to open space will be measured to ensure the correct one is being used for the particular use.

Performance Measure Source- The site's open space will be modeled in three dimensions, allowing for the validation of the proper building-to-open space ratio. This ratio can be checked by using AutoCAD or Sketch up measuring tools and calculations

Performance Analysis- This ratio can be checked by using AutoCAD or Sketch up measuring tools and simple arithmetic calculations.

Performance Judgement- When the proper building-to-open space ratio is achieved for the immediate open space the design will be considered a success. The movement of users throughout the site will be dictated in part by the design and dimensionality of open spaces.

Behavioral Performance

Performance Measure- The entire site will be designed with the overall goal to optimize movement and exchange. A two-dimensional pattern prediction software will be applied to ensure that the spaces allow for this movement optimization is achieved.

Performance Measure Source-A two-dimensional pattern prediction software will be applied to the site finalized design to ensure that the spaces allow for this movement optimization is achieved.

Performance Analysis- A two-dimensional pattern prediction software will be applied to the site finalized design to ensure that the spaces allow for this movement optimization is achieved.

Performance Judgement- To reach the optimum movement pattern for the site is the ultimate goal of the project, as long as there are no bottlenecks or restrictions in this movement in the result from the software application the site will be considered a success.

Environmental Impact

Performance Measure- The site will attempt to minimize stormwater runoff. Water retention spaces within the site and utilizing rain gardens will be measured and tested against annual rainfall measurements to check their success.

Performance Measure Source- Water retention spaces within the site and utilizing rain gardens will be measured and tested against annual rainfall measurements to check their success. This data will be measured on an excel spreadsheet.

Performance Analysis- Water retention spaces within the site and utilizing rain gardens will be measured and tested against annual rainfall measurements to check their success. This data will be measured on an excel spreadsheet.

Performance Judgment If once measured again rainfall event the sites water management elements prove to be successful. This criteria will be considered a success.

Cost

Performance Measure- The cost of materials and return on investment will be measured. This data will be collected in dollars for the unit price of materials.

Performance Measure Source- The cost of materials and return on investment will be collected, through inventory techniques. These inventory units will be priced and summed up.

Performance Analysis- These inventory units will be priced and summed up on an excel spreadsheet.

Performance Judgment The cost and return on investment of the open spaces will be the biggest hurdle to overcome. As long as these spaces are cost considerably low and show the capability to attract and retain users, this criteria will prove successful. The biggest hurdle for open space design and reason for value engineering is due to the perceived notion that open space cost are extra and unnecessary. With my thesis I hope to prove the opposite and bring open space design to the forefront.

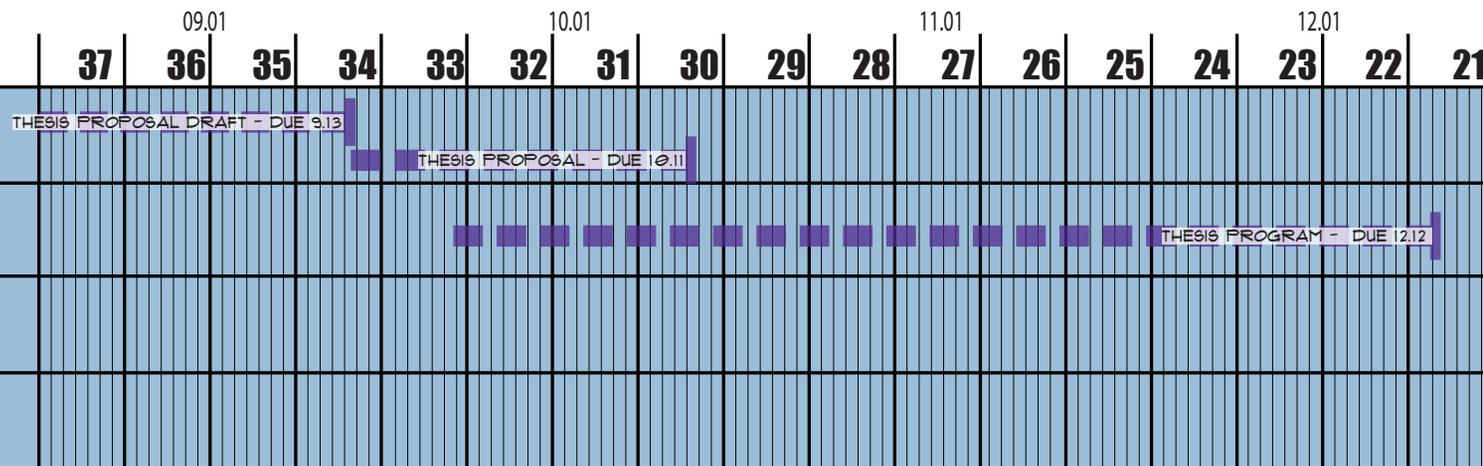


BUILDINGS	100%
Existing	35%
Residential	20%
Office	20%
Retail	15%
Cultural/Civic	5%
Parking Structures	5%

ELEMENTS	100%
Plantings	40%
Seating	25%
Art	20%
Signage	20%
Lighting	20%
Water Features	15%

URBAN OPEN SPACES	100%
Corridors	35%
Node Plazas	25%
Parks	20%
Grand Plazas	15%
Transportation Hub	5%

PLANTINGS	100%
Trees	35%
Shrubs	30%
Stormwater Planting	20%
Pots	15%

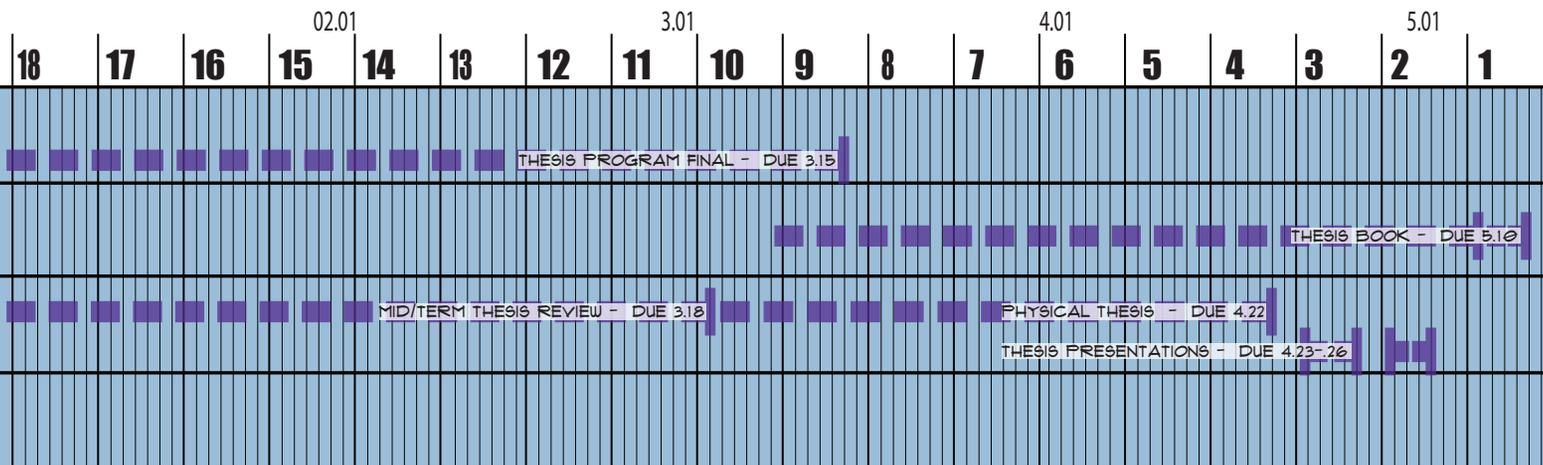


Plan for Proceeding

The direction of my research will focus on generating a new archetype for infill design of old mall sites. This archetype will focus on maximizing circulation and exchange opportunities in the infill design of generalized mall aesthetics. This archetype will be achieved with the aid of a two-dimensional network analysis software. A generic site will need to be generated to be used as a template, initial site components will need to be identified and located, and lastly, precedent examples of network analysis software application will need to be collected.

The literature review will be the most crucial component of the research process as it will influence and dictate the basic setup components for the research to proceed. The site model used as a test subject will need to be generic in character to represent the vast majority of sites with a mall in danger of decline. The generality of this site base will include components from literature pertaining to necessary mall amenities, entrance location and hierarchy, and necessary service access point. Literature review will also give insights as to past attempts at network analysis utilized for as a design component and subsequent results.

Once the preliminary information is collected and a suitable base model is produced, the network analysis software will be applied. Different parameters will be applied to the software analysis to generate different parametric network patterns. These network patterns will be compared to identify areas of correlation, generating the best network connections and identifying the most suitable locations for open spaces, corridors and nodes. The least engaged areas identified in the network pattern, will be allocated for infill structures.



Fall Semester 2018

- 8.21 First Full Day of Classes
- 8.21 1st meeting ARCH 763/LA 563/763 Course
- 9.3 Labor Day Holiday
- 9.13 1st Draft of Thesis Proposal due to ARCH 763
LA 563/763 Instructor
- 9.27 Draft of Thesis Proposal Narrative returned to
students
- 10.11 Thesis Proposal due
- 10.15-.19 Midterms for ARCH 771
- 11.12 Veterans' Day Holiday
- 11.22-.23 Thanksgiving Holiday
- 12.7 Last day of classes
- 12.12 Final Thesis Program due to ARCH 763/LA
563/763 Instructor
- 12.10-.14 Final Examinations

Spring Semester 2019

- 1.8 First Full Day of Classes
- 1.21 Martin Luther King, Jr. Holiday
- 2.19 President's Day Holiday
- 3.4-.8 Mid-semester Thesis Reviews (only for
Architecture)
- 3.11-.15 Spring Break
- 3.18 4th year Introduction to Thesis Process
- 4.19-.22 Apr Holiday Recess
- 4.19 Thesis Project Final Exhibits in digital form
due to thesis advisors at 5:00 p.m.
- 4.22 All physical exhibits for the Thesis Project
due at 9:00 am on the 5th floor downtown
- 4.23-.26 Annual Thesis Exhibit opens on the 5th
floor downtown
- 4.29-5.2 Final Thesis Reviews
- 5.3 Last day of classes, Awards Ceremony
- 5.6 Digital copy of Final Thesis Documentation
due to Thesis Instructors
- 5.6-.10 Final examinations, Thesis Awards Finalist
show in the Flakoll Gallery downtown
- 5.10 Final Thesis Document due at 5:00pm in
the Institutional Repository
- 5.11 Commencement at Fargo Dome

APPENDIX

REFERENCES

Filion, P., & Hammond, K. (n.d.). When Planning Fails: Downtown Malls in Mid-Size Cities. *Canadian Journal of Urban Research*, 17(2), 1–27. Retrieved from <http://search.proquest.com/docview/208741807/>

Tachieva, G. (2010). *Sprawl repair manual*. Island Press.

Brambilla, R., Longo, G., & Rudofsky, B. (1977). *For pedestrians only: Planning, design, and management of traffic-free zones*. New York: Whitney Library of Design.

Carmona, M. (2010). *Public places, urban spaces: The dimensions of urban design*. Oxford, UK: Architectural Press.

Fruin, J. J. (1987). *Pedestrian: Planning and design*. Mobile: Elevator world.

Lang, J., & Marshall, N. (2017). *Urban squares as places, links and displays: Successes and failures*. New York: Routledge.

Monteleone, M. F., Veraart, N., Chough, S., & Aviles, W. (2008). *Pedestrian Simulation Modeling Study for World Trade Center Memorial*.

Transportation Research Record: Journal of the Transportation Research Board, 2073(1), 49-57. doi:10.3141/2073-06

Newman, G. D., Smith, A. L., & Brody, S. D. (2017). Repurposing Vacant Land through Landscape Connectivity. *Landscape Journal*, 36(1), 37-57. doi:10.3368/lj.36.1.37

Perkl, R. M. (2016). Modeling Connectivity of the Whole: A Graph Theoretic Application in Conservation Planning Prioritization. *Landscape Journal*, 35(1), 79-96. doi:10.3368/lj.35.1.79

STUDIO EXPERIENCE

Second Year

Fall 2015|**Pepple, Kathleen**| LA 271 *Intro to LA Studio*

Spring 2016|**Fischer, Dominic**|LA 272 *Park + Open Space Studio*

Third Year

Fall 2016|**Kirkwood, Matthew**|LA 371 *Site Planning + Design Studio*

Spring 2017|**Pepple, Kathleen**|LA 372 *Community Planning + Design Studio*

Fourth Year

Fall 2017|**Kost, Jason**|LA 471 *Urban Design Studio*

Spring 2018|**Dr. Song, Yang**|LA 472 *Remediation + Planting Studio*

Fifth Year

Fall 2018|**Dr. Song, Yang**|LA 771 *Performance Based Design Studio*

CARLOS MONTOYA

Mailing Address: 415 7th St S
Fargo, ND 58103

Phone Number: (701) 500-1637

Email: krlosm1990@gmail.com

Hometown: Lima, Peru
Angels Camp, CA

Quote: The Greatest Education in the World is
Watching the Masters at Work

