INTERACTIVE URBAN ENVIRONMENTS

by

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A REPORT

submitted in partial fulfillment of the requirements for the degree

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Abstract

Interactive technology is rapidly affecting our society, extending opportunities for convenience, communication, function, and pleasure. Defined as electronic or computation-based entities that reciprocate human use or action, interactive technology allows people the opportunity to personalize how something looks, how it feels, what it does, and how it is perceived. Many physical objects, such as a home thermostat system or a motion-activated sculpture, are embedded with computation that allows them to detect certain environmental influences, and respond with a purposeful action. As suggested by Malcolm McCullough, interactive technologies will be implemented into the urban environment, grounding them to a specific place and reflecting the character and context. Interactive technology will be combined with traditional urban design practices to generate an interactive urban environment.

The Civic Room in Downtown St. Louis is prime for renewal. Underutilized and monotonous, the park space is seen as a tear in the urban fabric and lacks diverse program opportunities. The Civic Room will be used as a testing ground for an interactive urban environment, utilizing three dimensions of interactive technology, including information exchange, creative expression, and kinetics, as well as the specific elements of an effective urban open space (Whyte, 1980). Then, the existing site and resulting interactive urban environment will be evaluated on its potential to improve certain dimensions of performance (Lynch, 1981), and its impact on the identity and use of the space.

Engaging an interactive urban environment in the St. Louis Civic Room will promote an understanding of the effects that interactive technology can begin to have in a larger context. It will activate the space, promote social collaboration, and establish a dynamic atmosphere that reflects more closely the desired intent of all users. In turn, it can propel the opportunity to approach interactive urban environments as an alternative method of urban space design.

interactive urban environments

interactive urban environments

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01
introduction

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dilemma

Interactive technology is rapidly affecting our society, extending opportunities for convenience, communication, function, and pleasure. Ranging from personal touch screen devices to voice activated software and expressive media, interactive technology is defined as electronic or computation-based entities that reciprocate human use or action (Bullivant, 2007). In other words, people using interactive technologies can directly affect the way something looks, how it feels, what it does, and how it is perceived.

Most people can identify with a personal computer as an example of a basic level interactive technology. When using a computer you can input information by typing or clicking the mouse, expressing a certain action to the computer, and it responds with a reciprocal action. In addition, many physical objects are embedded with computation, which allows them to be programmed to respond to external factors. Embedded computation is commonly found in everyday objects such as home thermostat systems and traffic lights. These technologies detect conditions within their physical environment and adapt some aspect of the object or the space to meet specific human needs. They may have useful applications to everyday activities, but typically are limited in their scope and scale.

Mark Garcia, who wrote an article entitled *Otherwised Engaged: New Projects in Interactive Design* claims that interactive technology should be used in larger scale applications, moving into the urban realm. "Interactive technologies and design could best serve humanity and society through the design of interactive and public spaces that bore some relation to the specificity of the real places in which they were located." (Garcia, 2007, 44)

Therefore, the overall goal is to use interactive technology to enhance and activate public places, contributing to the creation of interactive urban environments (IUE).

However, an interactive urban environment requires more than simply positioning technologies into a place. Instead, we have to first understand the qualities that construct the physical space and setting, and fuse the two concepts to create a cohesive place. William Whyte, well renown urbanist and researcher, describes urban spaces as having certain key elements that contribute to their effectiveness, including attention given to sitting space, sun, wind, trees, water, food, the street, and triangulation (Whyte, 1980). These proven spatial design elements, when used in concert with interactive technologies, can augment a place's identity and use. A place that is considered interactive can promote human collaboration in the way space is formed, used, and perceived. The technologies found in these environments can allow people the ability to express themselves in a creative manner, manipulate physical elements of the space, and share information in a meaningful way.

The city of St. Louis, Missouri could benefit greatly from the creation of an interactive urban environment. It is a city rich in history and culture, yet recently has seen troubling financial times and a lack of urban energy. A steady decrease in population over the last several decades has left certain areas of the city bleak and inanimate. The Gateway Mall

is one such space that has been underutilized and seemingly forgotten by many. Originally designed as a grand linear green space that extends the length of downtown, the concept has since been fractured, and the Mall is viewed as a tear in the urban fabric rather than a unifying glue (Planning, 2009). There is a strong interest in redesigning the Mall to provide more program opportunities and activate the space on a regular basis. The section of the Gateway Mall known as the Civic Room is especially prime for transformation due to the rich adjacent context and centrality to downtown (Planning, 2009).

With consideration given to the above statements, the dilemma is this - how can the St. Louis Civic Room propel the concept of an interactive urban environment, creating a more dynamic and enjoyable experience for users?

thesis

The Civic Room in downtown St. Louis should be used to test a range of interactive technologies, that when combined with traditional urban space design principles, have the potential to create an interactive urban environment. By assessing the site's existing conditions and design proposal through specific dimensions of spatial performance, the interactive urban environment can be measured for its ability to activate the program and context of the space, and enhance the overall experience of specific user groups.

Figure 1.1 is a visual representation of the thesis statement.

interactive technology **+** **urban open space design** **=** **interactive urban environment**

(1.1) IUE hypothesis. anthony meyer.

site

Downtown St. Louis is located along the western edge of the Mississippi River in the state of Missouri, USA. The current population of downtown is roughly 12,000, and its physical area is slightly less than 2 square miles, making the population density about 9-10 people per acre. (Partnership, 2010) The downtown boundary is delineated in Figure 1.4, bordered by Chouteau Avenue on the southern edge, Jefferson Avenue on the west, Cole Street on the north, and the Mississippi River on the east.

The Gateway Mall is a linear park space that extends west from the Gateway Arch Grounds and Mississippi River, running through the heart of downtown. The project site, located within the Gateway Mall, is a 6 block park area referred to as the Civic Room. It was given its name by a commission led by Mayor Francis Slay in 2007 due to the high number of civic buildings directly surrounding the site.

city of st. louis
population = 360,000
area = 62 square miles
density = 5780 people/square mile

United States of America

illinois

State of Missouri

missouri

City of St. Louis

NORTH NTS

NORTH NTS

NORTH NTS

(1.2) world context. anthony meyer, source: google earth.

(1.3) state context. anthony meyer.
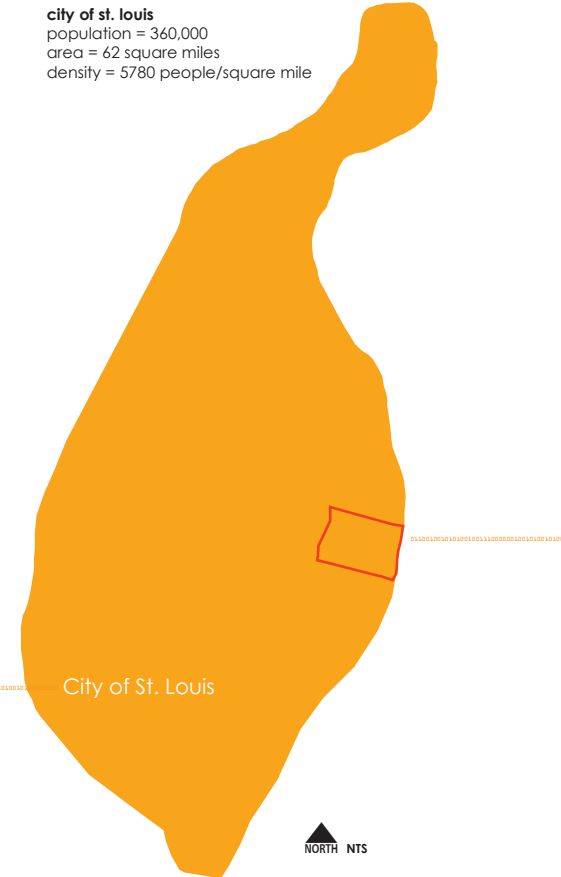
(1.4) city context. anthony meyer.

st. louis university
harris stowe state university

interstate 64

union station

scott trade center

civic room

gateway mall

busch stadium

america's center
edward jones dome

interstate 70

gateway arch
jefferson national expansion memorial

mississippi river

Downtown

0   2000   4000
ft

NORTH

(1.5) downtown context. anthony meyer, source: google earth.

existing conditions

The population of downtown St. Louis has been rapidly declining for decades. The beginning of the 21st Century has seen the city's lowest population for almost a century. Due in part to increased crime rates, elimination of housing options, and poor economy, the majority of urban residents have relocated to the suburbs. (CIN, 2010)

Despite a diminishing urban population, the city's historic, civic, and cultural structure remains intact. There are a variety of spaces and building types that maintain the strong urban form, including retail, office, residential, historic, entertainment, civic, and park space.

Though the city has tranformed over the last few years with the redevelopment of retail and loft space, many public spaces remain under utilized. The Gateway Mall Civic Room, similar to the majority of public spaces within downtown St. Louis, suffers from monotony and lacks program and daily activity. The latest design of the space, completed in the early 1990s, has evolved very little since its inception and needs to be redesigned.

(1.6) civic room boundary. anthony meyer, source: google earth.

civic room

gateway mall

busch stadium

old courthouse

edward jones dome

interstate 70

interstate 64

(1.7) view of downtown from gateway arch. source: www.localism.com

define

interactive technology
- information exchange
- creative expression
- kinetics

precedent study
- civic exchange
- bloomberg ICE
- schouwburgplein

+

urban open space design
- sitting space
- sun
- wind
- trees
- water
- food
- the street
- triangulation

analysis

- local
- regional
- visitor

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species." (Lynch, 121) Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

sense

"The clarity with which [a space] can be perceived and identified.... Sense depends on spatial form and quality, but also on the culture, temperament, status, experience, and current purpose of the observer." (Lynch, 131) Identity, structure, congruence, transparency, and legibility are all aspects of sense.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

design goals

- activate the space to attract diverse users
- augment the site program opportunities
- establish a spatial hierarchy to break up monotony
- implement all 3 IT groups to meet opportunity criteria
- reflect the adjacent context & building use
- create a unified design concept
- enhance social collaboration opportunities

opportunities

- public art (triangulation)
- water feature
- close interior streets to extend pedestrian space
- preserve mature tree canopy
- open flexible recreation space
- wider sidewalk along Market St
- adaptable seating
- flexible infrastructure
- intelligent bollards
- information kiosk
- interactive art (triangulation)
- adaptable seating with GPS tracking
- blank canvas
- awareness beacons

design solution

evaluation

(1.8) process diagram. anthony meyer.

control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

| vitality | sense | fit |
| access | control | efficiency |

Kevin Lynch's
Performance Dimensions
in *Good City Form*

methodology

Figure 1.8 delineates the process of methods used in the completion of this project. A multifaceted framework based on literature and research guides the exploration of interactive technology and the analysis, design, and evaluation of an urban space.

The definition of 3 distinct categories of interactive technology allows a critical investigation of certain precedent projects related to interactive environments.

In order to create an interactive urban environment, the IT must be combined with good principles of urban open space design. These principles are adopted from William Whyte's research on effective urban spaces and are used to analyze and design the site.

A framework was built on specific dimensions of performance in order to analyze and evaluate a site before and after design intervention. These performance dimenions were envisioned by the author Kevin Lynch is his book *Good City Form*.

project goals

o establish a framework with which to study and understand key concepts of interactive technology

o understand qualities of effective urban spaces

o create an interactive urban environment using interactive technology concepts urban open space design ideals

o activate and enhance the identity of the Civic Room in downtown St. Louis

o provide alternative and augmented program for local users, regional users, and visitors of the Civic Room

o evaluate the influence that interactive technology can have on the urban setting

project description + intent

project definition

research

process

precedent studies

literature review

inventory + analysis

program

conceptual design

document development

uli

portfolio development

august **september** **october** **november** **december** **january**

project description + intent
goals + objectives
project identification

project definition
revise dilemma and thesis
city selection
base materials

research
grasp related concepts
discover breadth & depth

process
design process diagram
time/task diagram

precedent studies
interactive environments
site context

literature review
literature map
annotated bibliography
glossary

(1.9) time + task diagram. anthony meyer.

february | march | april | may

design development

graphic production

final document

uli competition- finals

graduation
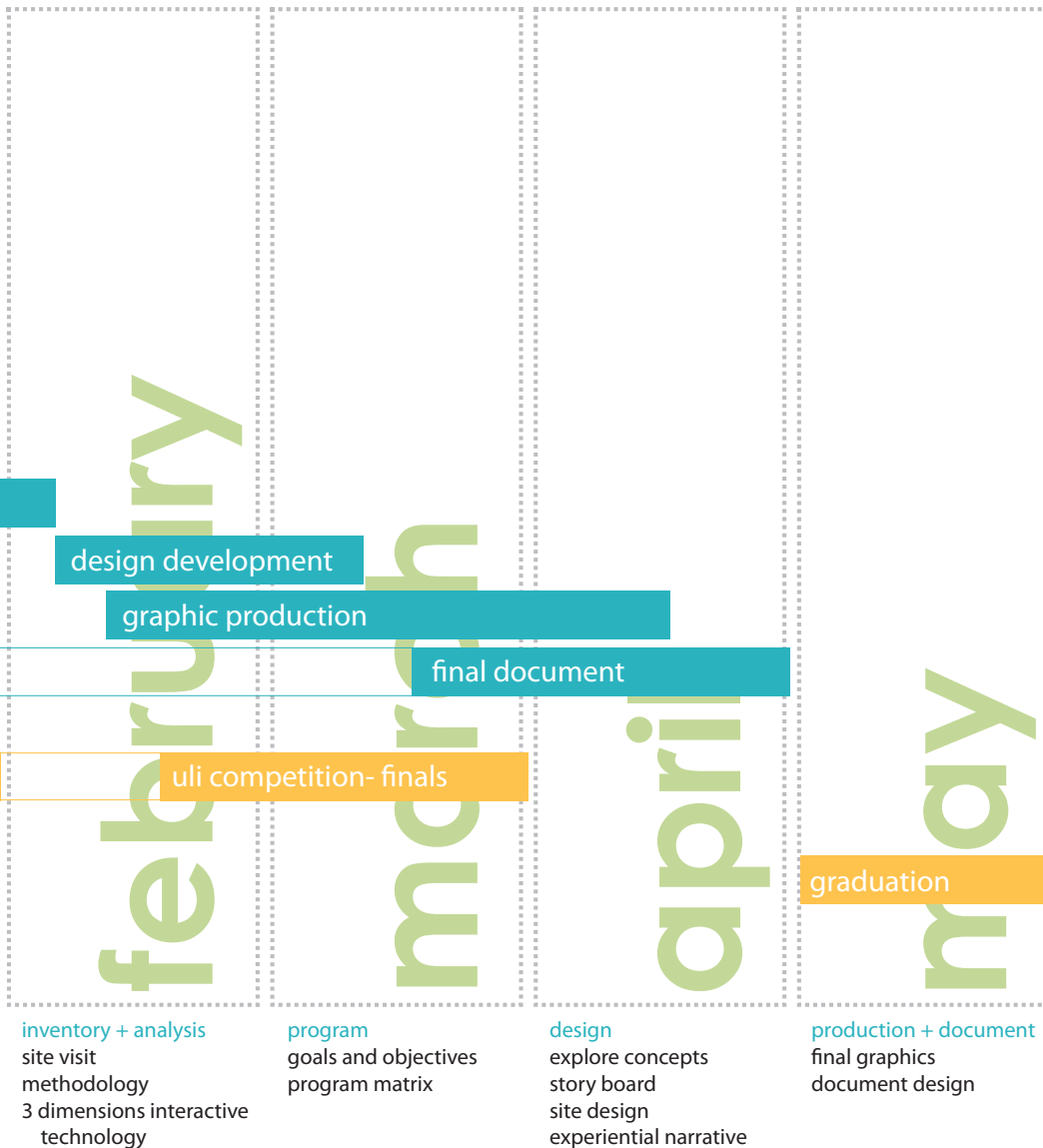
The Time and Task diagram seen in Figure 1.9 is an overview of the academic year, when specific project tasks are expected to be achieved. This provides a timeline that helps in staying on schedule. Most of the items listed are somewhat flexible, but staying close to schedule helped ensure there was enough time to complete the project.

inventory + analysis
site visit
methodology
3 dimensions interactive
   technology

program
goals and objectives
program matrix

design
explore concepts
story board
site design
experiential narrative

production + document
final graphics
document design

literature map

Figure 1.10 shows the collection of literature specific to certain aspects of the project. For the purpose of this study, literature from the topics of interactive technology, interactive design environments, Downtown St. Louis, and urban design were all helpful in forming necessary background and analysis information. The focus of this section is to provide reviews of key pieces of literature that were important in the formation of this project. In appendix a, there are more detailed reviews of some of the key books and articles researched to give a deeper understanding about the topics as well as provide some credibility to the authors.

Central categories:
- interactive technology
- downtown st. louis
- urban design
- interactive design environments

Entries:

Designing Interactions
Bill Moggridge

Serve City: Interactive Urbanism
Regina Sonnabend

Architecture, interaction, systems
Usman Haque

Community Information Network- City of St. Louis
www.stlouis.missouri.org

St. Louis Gateway Mall Master Plan
City of St. Louis Planning and Urban Design Agency

Downtown Next: 2020 Vision for Downtown St. Louis
The Partnership for Downtown St. Louis

City of St. Louis: Downtown Development Action Plan
St. Louis City Planning Commission

Good City Form
Kevin Lynch

The Social Life of Small Urban Spaces
William H. Whyte

Is There a Digital Future Landscape Terrain?
Landscape Architecture: Site/Non-Site

Digital Ground
Malcolm McCullough

Distinguishing Concepts: Lexicons of Interactive Art and Architecture
Usman Haque

Urban Interaction: A survey of interactive urban open space environments
Paul Anthony Bonaventura

ICE, Bloomberg Headquarters
Lucy Bullivant

Alice in Technoland
Lucy Bullivant

Interactive Architecture
Michael Fox and Miles Kemp

Playing with Art
Lucy Bullivant

Beyond the Kiosk and the Billboard
Lucy Bullivant

Otherwised Engaged: New Projects in Interactive Design
Mark Garcia

(1.10) literature map. anthony meyer.

02
define

100001000100000000100100100000100001001001111001000000100000010001100000101000110001000000100001010100000100001010100010000010101000000100001010100000100001000100000000100001010100100000100001000000010010000100000010001000000110001000000001010010000010101010001000110010000010101011000001001000000101001000000010101000010000010000001000001100010000000101001000001010101000110010000010101011000001001000000101001000000010101000010000010000010000011000100000001010010000010101010001100100000101010110000010010000001010010000000101010000100000100000100000110001000000010100100000101010100011001000001010101100000100100000010100100000001010100001000001000001000001100010000000101001000001010101000110010000010101011000001001000000101001000000010101000010000010000010

Is this how we view integrating technology into the St. Louis landscape?

(2.1) tree + lighting in the gateway mall. anthony meyer.

background

Technology, in different forms of the word, has been around since humans used rocks and sticks as tools. Technology is simply a word to describe the creation of new human artifacts that make difficult tasks easier and help improve quality of life, expanding societal goals and values to new heights that were previously unattainable (Haque, 2007). For instance, a basic example of technology is a shovel. The shovel is a physical object that improved the means with which to dig large amounts of earth. The power of the technology lies within the process by which a menial and heavy task is made easier.

Defined as electronic or computation-based entities that reciprocate human action and environmental response, interactive technology is a segment of the larger realm of technology. The overall goal of interactive technology (IT) is to enhance human experience, efficiency, and achievement (McCullough, 2004). Essentially, interactive technology reads, detects, and senses user and environmental activity, and responds with a reciprocal action or inquiry.

Perhaps the most pervasive and well known application of interactive technology is exhibited within the personal computer (McCullough, 2004). A computer allows humans to personally contribute and customize specific input data such as words, pictures, ideas, and expressions. When you type a sentence or click an icon on the computer interface, you are essentially communicating something to that machine. The computer has been programmed to respond to your action by completing a range of performances that assist your need or inquiry. In addition, personal computers are being affected by the field of interaction

(2.2) personal computer. source: andrew rassweiler.
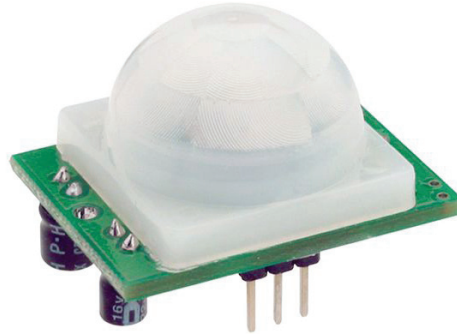
(2.3) motion/light sensor. source: parallax, inc.

(2.4) audio sensor. source: parallax, inc.

(2.5) embedded computation in thermostat. source: carrier corp.

design, which studies and improves human-computer interaction, or how technological interfaces communicate with human language and behavior (McCullough, 2004). The easier it is for us to understand and communicate with a computer interface, the more the computer can assist our needs.

Many objects in the physical world around us are embedded with computation that interact with the surrounding environment. Michael Fox and Miles Kemp, authors of *Interactive Architecture,* define embedded computation: "Embedded computation (EC), in the context of interactive architecture, is a system that is literally embedded into the building and that has the ability to gather information, process it, and use it to control the behavior of the actual physical architecture. In its physical manifestation, EC can be reduced to possessing a combination of both sensors (information gatherers) and processors (computational logic to interpret). EC is important not only in sensing change in the environment, but also in controlling the response to this change" (Fox & Kemp, 2009, 58). Figures 2.3 and 2.4 show examples of sensors that can be embedded into physical objects. These and other sensors are responsible for detecting environmental conditions such as temperature, humidity, air pressure, air quality, noise levels, light, and motion.

One simple and common example of a system that uses embedded computation is a thermostat system inside a building. Sensors detect the interior temperature and humidity, analyze the specific measurements, and respond by sending a signal to the furnace, air conditioner, or humidifier to adjust output levels in order to meet the pre-programmed conditions. This system promotes efficiency of energy as well as the added convenience of not needing to physically adjust the system. Comfortable conditions can be maintained throughout the day, season, and year.

Increasingly, interactive technology is being integrated into public art installations, taking the form of sculpture, displays, and museum installments. Artists who are incorporating IT into their artwork believe that it enables the audience to be active participants in how the piece is used and perceived (Bullivant, 2007).

One example of an interactive art piece is Daan Roosegaarde's Dune 4.0 (see Figure 2.6). An abstract representation of a field of tall grasses, the sculpture consists of rod-like units outfitted with embedded sensors, which detect the presence of people. Typically dormant and dark, the 'blades' light up when someone is standing near or passing by. Not only does the effect create a visual stimulus, it provides a means in which to feel as though they have played a role in the function of the art piece. The ultimate goal is for participants to feel emotionally energized and to improve a certain social collaboration. "Interactive design environments like Dune 4.0 promote the personalisation [sic] and customisation [sic] of not just architecture, but also of their wider physical public contexts. They assert an architecture of social relations that invites the visitor to spontaneously perform and thereby construct alternative physical, architectural, urban and social meanings" (Bullivant, 2007, 7).

Whether for personal comfort, enjoyable experience, or convenience and function, the current applications of interactive technology affect users within site specific, controlled contexts. However, Malcolm McCullough, a leading theorist of ubiquitous computing and intelligent environments, believes that "interaction design must now serve our basic human need for getting into place," claiming that computing needs to move beyond our desktop machines and into the spatial environment (McCullough, 2004, xiv). He suggests that IT can not only enhance the identity and aesthetics of a place, but that it can also help organize systems, movements of people, resources, and ideas (McCullough, 2004).

Within the past few decades, a handful of architects and designers have been implementing interactive objects into public space as a means of creating what is coined as 'interactive environments'. Their intentions are less about the object and more about the space, attempting to use IT to create dynamic, personable, and modifiable places (McCullough, 2004). Their theory is that if some level of control is given to the users of a space, it has the potential to elicit a positive experience among users and promote alternative opportunities for use. IT can facilitate the customizing of certain spatial attributes, and promote users to socially collaborate. Interactive urban environments (IUE) can allow space to flex, transforming through time as needs for public space shift.

define

interactive technology

information exchange

creative expression

kinetics

(2.7) process: define IT. anthony meyer.
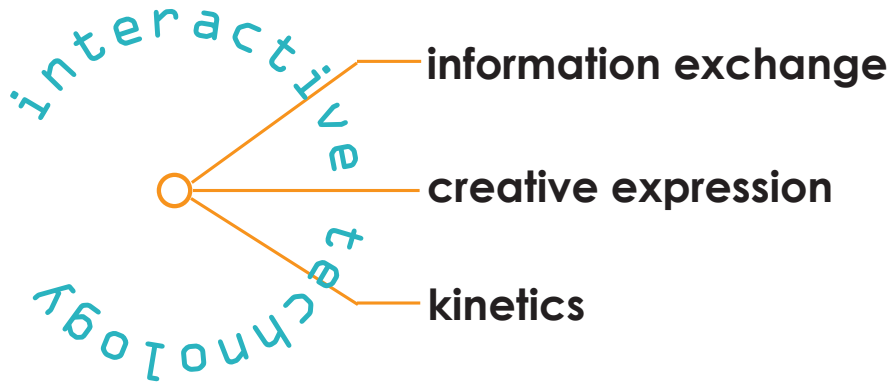
interactive technology

Based on literature specific to this topic, interactive technologies are grouped into 3 distinct categories, as shown in Figure 2.7. Information exchange, creative expression, and kinetics each provides an explicit function and application to an urban environment. In the following section, these three technologies will be defined and applied. How do information exchange, creative expression, and kinetic technologies enhance user experience and perception of an urban space?

define

information exchange

One of the most important and powerful applications of interactive technology is the sharing of information. Our society continues to grow and thrive on it, seeking knowledge about every topic, and trying to understand the people, systems, and world around us. Access of information is what allows us to be advised, connected, and prepared. We use different types of information to help us eat, sleep, travel, dress, learn, and live.

The concept of information exchange is built on a reciprocal communication between human and computer, or between computer and the external environment. The term computer is used to describe any digital or electronic interface, specifically one that allows an input and output of information. In this case, physical objects are embedded with computation that connect with the setting around them. In an interactive conversation, the technology perceives certain inputs from humans such as motion, voice, and touch, or gathers external information such as weather patterns, light, and noise. The embedded computation then processes the information in order to reciprocate a response. This response can take many different forms, all of which are an expression of information. A digital display can project information as text, or it can also illustrate more abstract, visualized data. Information can also be communicated by sound, either by spoken words or tones and beats.

In the public setting, this type of technology allows people to connect with a system that they can learn and contribute. Information exchange technologies can be used for giving/receiving directions, updating news, promoting events, educating, and socially interacting. Lucy Bullivant confirms this notion by saying, "Through the activation of embedded, custom-designed software and responses to its effects, the identity of public space itself goes beyond its constitution through generic formal givens, and becomes porous and responsive to specific information and communication conveyed to it" (Bullivant, 2007, 7).

Figure 2.8 shows an example of an information exchange technology in use. Designed by Electroland, a Los Angeles based company, this digital screen is fastened on the facade of a local retail building. Motion sensors embedded into the facade detect vehicular and pedestrian movement along the street. To mock their movement, the digital screen displays a sequence of modes including showing their vehicle speed, quoting famous Hollywood movie lines, and projecting abstract letterforms, all of which display bright red 'collisions' as the cars pass each other. This system is geared toward providing people an alternate way of perceiving their environment through the use of information (Seeley, 2011).

creative expression

Many current applications of interactive technology are focused on stimulating people's senses and promoting a positive emotional experience through interaction and expression (Bullivant, 2007). Sculpture, displays, and other physical objects can employ a broad range of media including light, sound, and images that react to human behavior in an expressive and artistic way. These objects allow participants to interact with elements of public art, architecture, spaces, and each other in new and exciting ways, potentially creating social interaction and collaboration. Expressive technology allows people the opportunity to feel as though they are directly contributing to the object and space around them, and impacting how others perceive the space as well.

Figure 2.9 depicts an example of a creative expression technology. ICE, or Interactive Communicative Experience, is a digital interactive wall within the Bloomberg Headquarters building in the Marunouchi District of Tokyo, Japan. Bloomberg wanted to establish an installation that permits staff and visitors to process and play with data in a very tangible and experiential way. When the wall

is in a static state, it projects up to date stock and financial information. When someone is close to the wall, "the data begins to interact with the individual's bodily movements... converting them into optical and acoustic signals, inputs that are relayed back as vibrant, ever-changing reflective patterns, like manipulable fire, that cast giant electronic shadows" (Bullivant, 2005, 12-13).

Infrared sensors behind the surface of the wall detect the visitor's presence and the data begins to interact with the individual's movements, the columns of numbers beginning to fluctuate. A menu scrolls down the screen, giving the visitor four digital play options - a harp, a shadow, a wave or a volleyball (Bullivant 2005). Users of ICE are able to personalize their own digital creation for enjoyment and for others to experience.

This creative environment positively affects not only the employees at Bloomberg but also shoppers, kids, visitors, and passers-by. "ICE defies the boundaries between office interior and street, work and play, data and body." (Bullivant 2007, 13)

(2.9) ICE. source: klein-dytham.
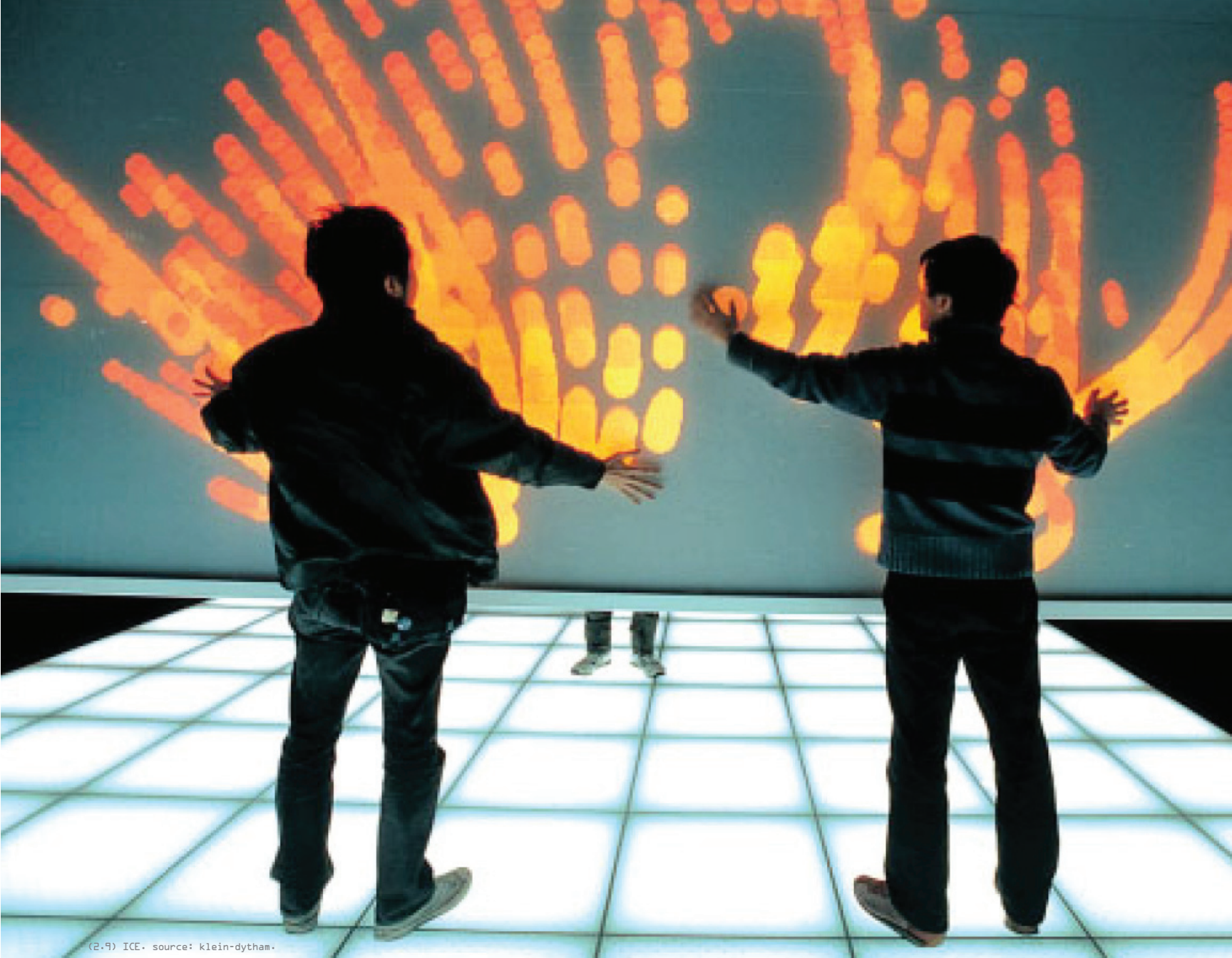
kinetics

"Kinetics... will be defined generally as either transformable objects that dynamically occupy predefined physical space, or moving physical objects that can share a common physical space to create adaptable spatial configurations" (Fox & Kemp, 2009, 27). Simply, kinetics allows physical entities to be moved or adapted in order to change some quality of the entity or of the space around it. "This understanding boils down to examining how architecture can extend the notion of enhancing our everyday activities by assisting users in accomplishing specific activities or possibly suggesting new ways to interact with space and other users to complete tasks" (Fox & Kemp, 2009, 27).

Kinetic technologies have typically been used in more architectural applications, improving interior space manipulation, energy efficiency, and building performance. Through the implementation of kinetic systems, buildings can now adapt to different external conditions and desired uses. For instance, when the hot summer sun shines brightly through the windows of a building, the interior space rises in temperature and the brightness of the sunlight

can be uncomfortable. Typically, we put up shades or curtains or even plant material to repress the harshness of the sunlight and maintain more moderate internal conditions. However, kinetic technology now allows the building to adapt to those external conditions and block or redirect the sunlight, or even allow natural wind patterns to help ventilate the interior space.

Figure 2.10 depicts an example of a kinetic technology that adapts for architectural needs. Emergent Surface, designed by Hoberman Associates, is the name of this interactive exhibit located in the Museum of Modern Art in New York City. The installation is a transformable wall with rotating panels that can transition from a closed to a porous surface. It is a model that represents a future building facade that can respond to a changing environment. Sun and wind patterns can be detected by embedded sensors and the facade can change to block or permit the elements from entering the interior space. The wall can also provide privacy, screen unwanted noise, or contribute an intriguing design element (QuickSilver, 2008)

(2.10) emergent surface. source: quicksilver controls.

define

urban open space design

○ 110100110010101001011010 1001 ○ sitting space
○ sun
○ wind
○ trees
○ water
○ food
○ the street
○ triangulation

(2.11) process: define urban open space design. anthony meyer.

urban open space design

In order to achieve Malcolm McCullough's argument that interactive technologies should be 'grounded into place', we have to understand the concept of place.

According to McCullough, there needs to be a stratification between space and place. We identify space as our physical surroundings, the specific area that we embody and move through. On the contrary, our idea of place is recognized as any setting that has an identity, familiarity, and distinction. A space is an ordering of understanding, while a place is an ordering of experience. We perceive the qualities of a place inside the boundaries that comprise physical space (McCullough, 2004).

Essentially, place is built on memories and impressions, thus it can be unique to each individual, even though the space remains constant. In order to imagine how interactive technologies can be grounded into a sense of place, we must also begin to understand the physical space in which these places are located. Urban space is comprised of many different elements and design principles that will be analyzed in order to augment the concept of an interactive urban environment.

William Whyte, well renown urbanist and researcher, wrote a book entitled *The Social Life of Small Urban Spaces*. The main focus of the book is to relay the data he researched using time-lapse cameras focused on urban spaces throughout New York City and other large American cities. The cameras were used to determine patterns and flows of people throughout urban space. Whyte looked at how people interacted, the routes they took, where they sat, how long they stayed, and what environmental factors affected their behavior within the space. Essentially, the book discusses the "study of spaces that work, don't work, and the reasons why" (Whyte, 1980, 8).

The information about urban spaces that is shared in this book will be discussed in order to provide an understanding of what elements and design principles should be approached for this project. The elements of design that will be analyzed are listed in Figure 2.11. They will be used to help ground interactive technologies into urban space, and ultimately create places known as interactive urban environments.

sitting space

William Whyte claims that one of the most important elements found in urban space is the presence of seating. Sitting space contributes to human comfort, providing an opportunity for people to rest, relax, and gather. There are many different applications of seating, each with a slightly different feel or comfort level. The majority of Whyte's discussion on seating is about the dimensions and uses of each seat type, and its effectiveness in specific applications (Whyte, 1980).

Whyte's original assumption was that there are good forms of seating and there are bad forms, based on sitting height and shape of the seat. Although this is true to a certain extent, he found out that "People tend to sit most where there are places to sit" (Whyte, 1980, 28). There are, however, key points to make about the success and usability of seating in urban space. First is the range of dimensions that makes seating comfortable. Based on his research, Whyte concludes that seating height is ideal when about 17" tall, but people are willing to sit on anything between 12" and 36". Another important consideration is the depth of seating, and its effect on sitting comfort. Seats should be a minimum of 30" across in order to provide maximum comfort for two people sitting back to back on the same seat.

One of Whyte's main conclusions about seating is that there should be present a range a seating options. He is quoted by saying "Choice should be built into the basic design" (Whyte, 1980, 28). The best way to provide options is to integrate seating into the overall desing forms such as walls, planters, and steps. These natural forming seats allow people to gather and sit in groups or grab a secluded spot in the space to relax.

In addition, benches and chairs provide different options for seating, and are used in many different applications. Whyte points out that chairs are especially useful because of their movability, and the free range of choice that they give users of the space. Movable chairs promote not just sitting for function, but also a type of social sitting where people can interact in groups or move to a secluded spot by themselves.

Moreover, seating should be considered as an integral part of designing an urban open space. Seating is crucial in order to make a space that is comfortable and inviting to users, and thought should be given to the provision of seating choices which fits the broad range of sitter's needs.

(2.12) adaptable seating 1. source: william whyte.

chairs provide sitting choice
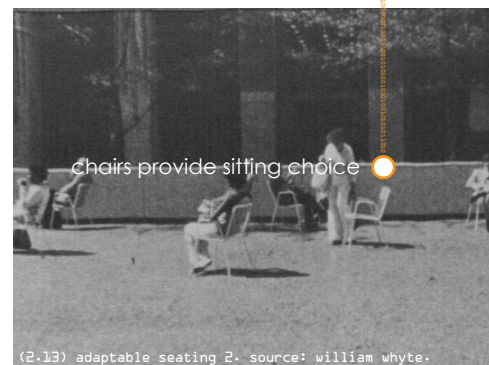
(2.13) adaptable seating 2. source: william whyte.
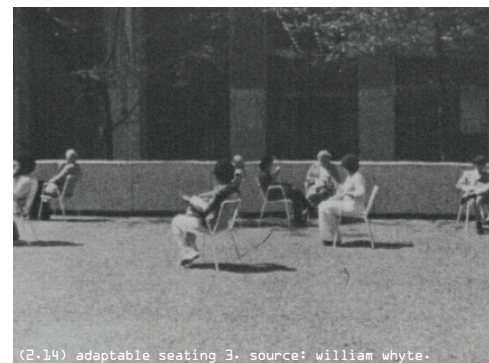
(2.14) adaptable seating 3. source: william whyte.

sun

There is a definitable power that the sun has over the use of urban spaces. William Whyte identifies that people tend to sit or gather where there is direct or indirect sunlight shining on a space (Whyte, 1980). The sun provides light that visually activates a space, or at least people's perception of it. It makes people feel emotionally energized, in addition to the positive biological effects that sunlight can have on the human psyche. Sunlight also provides warmth, and during most cold or moderate temperature months, people are drawn to the warmth of the sun.

Whyte analyzes that many urban plazas do not receive enough sunlight because they are blocked by tall buildings or are on the northern facade of a building (Whyte, 1980). He notices that many times these plazas are vacant, even though they may be very well designed and comfortable. Urban plazas should be designed to protect access to the sun by an awareness of the adjacent context.

The sun's effect on an urban plaza is relative, however. In the heart of the summer when temperatures are blistering, the sun is no longer a commodity, but a hindrance on comfort. People tend to escape the scorching sun by seeking shade from a tree or an overhead structure. If no relief is available, people will simply not use the space.

In summary, the sun can have a major impact on the success or use of an urban space. Attention should be given to providing space with a balance of access to and protection from sunlight.

access to sun

(2-15) sunny space. source: william whyte.

define

wind

space protected from wind

The wind plays a critical role in the design of urban spaces. Most cities have certain times when wind patterns are very strong, and this can create an uncomfortable space to sit, especially during cool temperatures. Designers should pay close attention to the effects of wind in regard to direction, intensity, and the available protection from it.

According to Whyte, urban spaces that are shielded from strong wind gusts by buildings, trees, or infrastructure are typically better suited for gathering (Whyte, 1980). However, wind is complementary to sunlight, as one can be used to offset the effects of the other. An urban space that is covered with sunlight and no shade can be relieved by a steady breeze that passes through the space, cooling people on a hot day. Additionally, strong winds can be offset by the strategic placement of trees or structures to block wind access to the space, as well as direct access to sunlight help warm the space.

(2.16) wind breaker building. source: william whyte.

trees provide comfort and shade

(2.17) shady space. source: william whyte.

trees

We are accustomed to seeing trees as a key feature to urban open space, as they provide aesthetic value and soften the atmosphere of the space. Most importantly, trees carry noticeable benefits to the microclimate of an urban space. They provide shade, comfort, and even health benefits to the space and the people using it.

William Whyte claims that trees are used too heavily in terms of beautification, and not enough in relation to sitting spaces (Whyte, 1980). Trees provide a strong sense of enclosure, and allow people to feel protected from the street or other busy places. Additionally, they can be used to enhance the form or design of a space. Trees should be considered primary design elements when designing an urban space.

water

Another key element to the design of urban spaces is the use of water. Plazas and parks in cities all over the world are using water in the form of "waterfalls, waterwalls, rapids, sluiceways, tranquil pools, water tunnels, meandering brooks, and fountains of all kinds" (Whyte, 1980, 47). Water brings an aspect of life to the space, providing an alternative look and feel for people to enjoy.

One of the most important aspects to the presence of water is the ability for people to touch. People inherently desire to be close to water, whether to run their hands through it, splash a friend, or cool off on a hot summer day. Children love to play in urban spaces that have a water feature, and adults love to sit and be calmed by its rushing sound.

Whyte contends that too many urban spaces separate people from the water, as if a fountain is only something to be viewed. Vast measures have been taken by cities to prevent people from touching or accessing water features in the name of safety or maintenance issues. However, minimal reports have been made that claim an urban water feature was responsible for any physical harm to users of the space (Whyte, 1980).

Water should be used strategically in urban spaces in order to stimulate activity, energy, and relief from heat. However, give people direct access to the water so they can enjoy the physical and social benefits it provides.
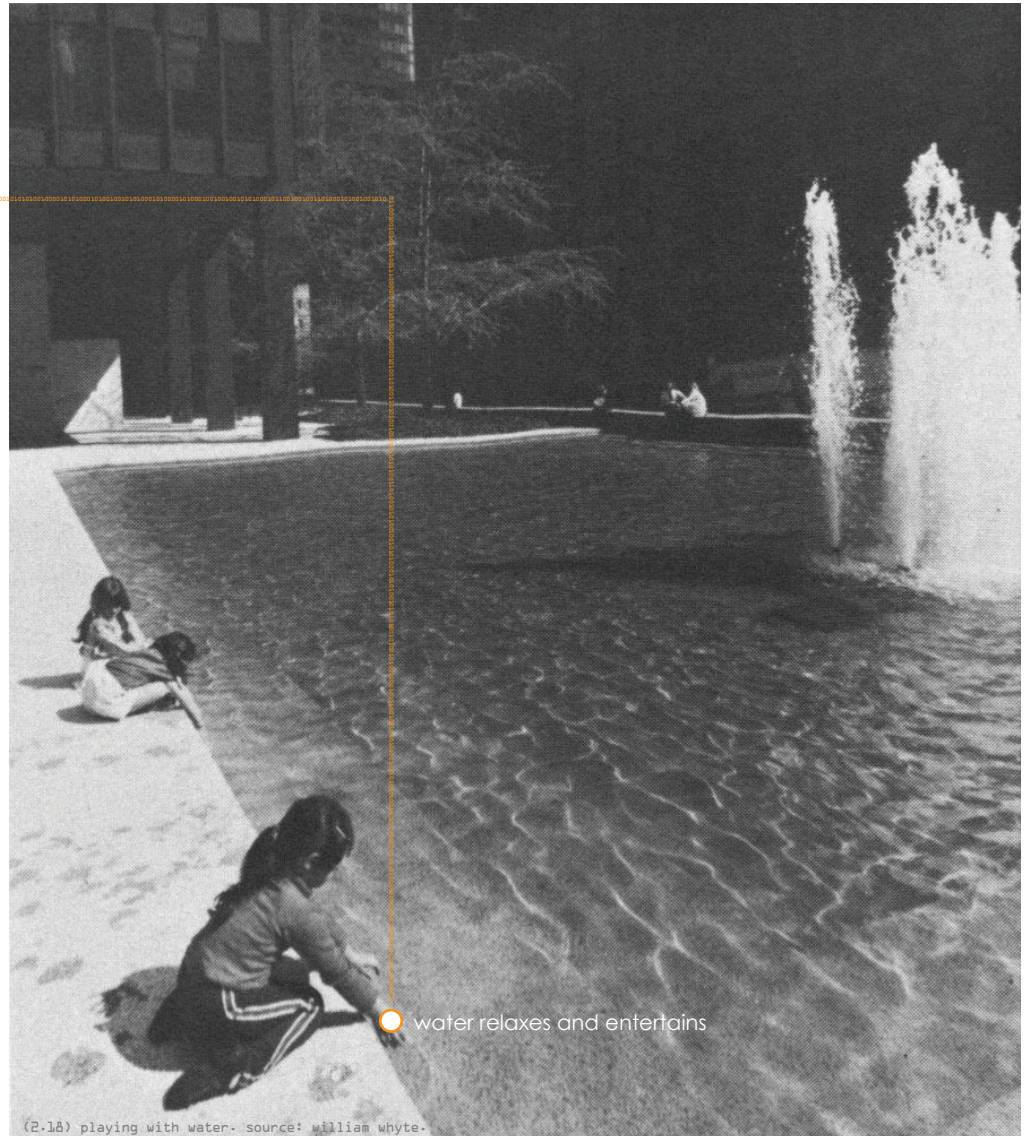
water relaxes and entertains

(2.18) playing with water. source: william whyte.

food attracts people who attract more people

(2.19) food vendors. source: william whyte.

food

One of the lesser realized aspects to a dynamic urban space is the presence of food. We typically do not think of food as a design guideline, but William Whyte claims that "If you want to seed a place with activity, put out food. In New York, at every plaza or set of steps with a lively social life, you will almost invariably find a food vendor at the corner and a knot of people around him- eating, shmoozing, or just standing" (Whyte, 1980, 50).

The reality is that people need to eat, and the presence of food attracts people who attract more people (Whyte, 1980). The convenience of a snack vendor, an ice cream stand, or a small cafe located in an urban plaza can create an automatic gathering of people and promote a social interaction that would otherwise not be achieved. If sets of table and chairs are also put into the space for people to eat and relax, there is an even greater reason for the gathering of people. Whyte's observation is that people, while fulfiling the most basic function of human life, are forced into meeting one another while standing in line or sitting and eating.

The provision of food in an urban open space should be seriously considered. It has great potential to attract people and activate a typically under utilized space.

the street

The most important element of urban open space is the street, and the relationship between the two. Not only do streets provide access to urban spaces, but street corners and sidewalks are often used as extensions of open space.

A good urban space starts at the corner, where the entry provides the prominant point of visibility and interaction. People gather at the corner of a space before they either continue moving on their way, or decide to commit to entering the space. The corner is someone's first impression of an urban space, as well as the adjacent streets. It should hardly be visible as its own space, and you should not be able to tell where one ends and the other begins.

Another key aspect of the street is retailing, which includes stores, windows with displays, signs to attract your attention, doorways, and people going in and out of them (Whyte, 1980). The more streetside shops and entries there are, the more people there are that will enter and exit, thus creating activity on the street. If the entry level of buildings is reduced to one door for a large office building and a long line of glass panes and concrete foundation, what gives people reason to stop and spend time some time in the area?

Sightlines and easy access to a park or a plaza from the street is of utmost importance. If people cannot see the space or get to it without toil, they will not use the space. Spaces that are fenced off by walls or shrubbery will become lifeless. In the same respect, William Whyte states that unless there is a very compelling reason, an urban space should not be sunk beneath the street level (Whyte, 1980). This creates a rift between the streetside

pedestrians and the plaza. Again, if people cannot easily access a space, it will not be used.

Essentially, the street is the lifeline of the urban plaza or park. There should be strong, easy, and intriguing connections between the two, and the space should feel like an extension of the street. Any feeling of visual or physical disconnection from the street will surely make a space lonesome and under utilized.

street and plaza are interconnected

(2.20) street/space interaction. source: william whyte.

socially connected by street band

(2.21) impromptu performance. source: william whyte.

triangulation

Everyone has experienced triangulation at some point in their time spent in urban places, but they may not know it, at least not by this name. Triangulation, as defined by Whyte, is the "process by which some external stimulus provides a linkage between people and prompts strangers to talk to each other as though they were not" (Whyte, 1980, 94). The external stimulus can be many things, including public art and sculpture, a street performer, and someone making a scene. People that are walking by or using the space take notice of the intriguing entity, and are prompted to share the moment together. They have both experienced something interesting, and will typically exchange some sort of communication.

According to Whyte, the concept of triangulation is not intended to make urban spaces a haven for gregarious entertainment, but instead to make places friendly, and provide an alternative social cue that emits a positive emotional response and connects people socially. Although triangulation should be approached strategically, there are many opportunities for urban spaces to be augmented with certain inspiring sights.

interactive technology

- information exchange
- creative expression
- kinetics

(2.22) process: IUE. anthony meyer.

+

urban open space design

- sitting space
- sun
- wind
- trees
- water
- food
- the street
- triangulation

= interactive urban environment

With a basic understanding of both interactive technology and urban open space design, we can now begin to combine each purpose and approach. As previously discussed, interactive technology is primarily geared toward improving user personalization, function, and enjoyment. At the most basic level, interactive technology expands the activities and qualities of a space that would otherwise not be achievable through traditional design practices. Interactive technology allows people to directly connect to their surroundings, whether they are sharing information, creatively expressing themselves, or moving physical elements of the space for specific needs. One of the main aspects of this technology lies in its ability to activate attention and promote continual use.

In order to ground these technologies into the public realm to enhance urban space, we had to establish a foundation of traditional practices in urban space design. We are now aware of the key elements used in urban parks and plazas that define space and promote an enhanced sense of place. People are inherently good perceivers. They can judge whether a space is comfortable, safe, healthy, and active enough to hold their interest. Sitting space, sun, wind, trees, water, food, triangulation, and the street-space interaction are all very important considerations for the design of an urban space. Ultimately, how these elements are applied can determine how well the space is used.

What we know as interactive technology cannot simply establish a place singularly, but must be used in concert with more traditional design practices. Interactive technology has the potential to augment a space by attracting people and creating a dynamic experience that stimulates an emotional response in the users of the space. This idea enhances William Whyte's concept of triangulation, using interactive technology to connect people in a physical and social way.

Finally, we can combine these concepts in order to approach the following ideal: "Interactive technologies and design could best serve humanity and society through the design of interactive and public spaces that bore some relation to the specificity of the real places in which they were located." (Garcia, 2007, 44) Using an urban space in St. Louis, we will test a certain range of interactive technologies, that when combined with the established elements of urban space design, have the potential to enhance the specific culture, context, and user activities of the space. The next chapter analyzes the specific issues of the under utilized Civic Room, and creates strategic goals for the design of an interactive urban environment.

precedent study

In order to understand how interactive technologies are being applied, two precedent studies are highlighted in this section. The precedent studies will be analyzed for their qualities related to an interactive urban environment, including discussion on their use of the three dimensions of interactive technology as well as good principles of urban space design.

The precedent projects will be analyzed critically as an interactive urban environment, establishing their impact on the physical and contextual space around them. The goal is to gain an understanding of how effective these spaces are, as well as what they are lacking. This study can lead to a better understanding of the relationship between IT and the physical environment.

civic exchange
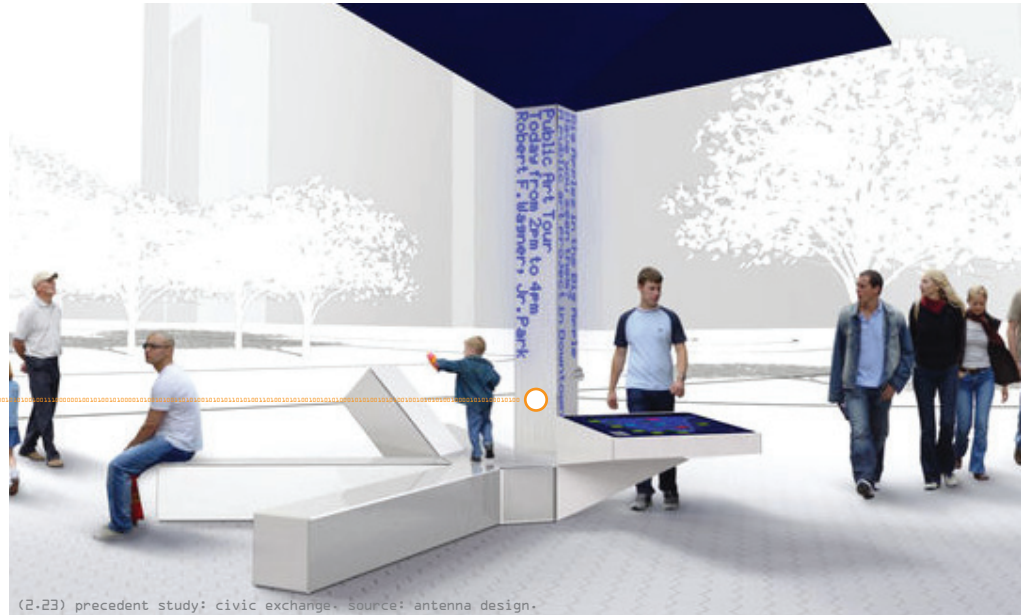
(2.23) precedent study: civic exchange. source: antenna design.

schouwburgplein

(2.24) precedent study: schouwburgplein. source: thomas rainer.

civic exchange

Location: Battery Park, NYC
Date: 2005
Designers: Antenna Design

Antenna Design co-founders Masamichi
Udagawa and Sigi Moeslinger won a design
competition held by the Van Alen Institute and
the Architectural League of New York with their
design solution for a Civic Exchange in Battery
Park City. Although simply a proposal at this
point, the design provided a "public information
installation for people who live, work or visit
Lower Manhattan to stimulate place-based
education" (Bullivant, 2007). The Civic Exchange
is an interactive kiosk that users can access and
input real-time information about the City of
New York. Designed as a model that can be
replicated in other parts of the city, the system
is intended to fosters social communication
among members of the community.

The text visible on the structure reads:

Public Art Tour
Today from 2pm to 4pm
Robert F. Wanner Jr. Park

information exchange

This model is rooted in the concept of information exchange. The installation is intended to foster communications between members of the community by providing news, events, and alerts in an interactive and personally modifiable way (Bullivant, 2007). A touchscreen keypad allows users, either visitors or locals, to annotate and place their own landmarks on the map. In addition, public and emergency announcements are relayed on the large LED display (Bullivant 2007).

creative expression

The Civic Exchange offers a slight amount of creative expression by allowing users to choose how the physical system is organized. This is limited, however, because modifying the position of elements is usually done for functional reasons rather than for aesthetics or expression.

kinetics

"Antenna's design was inspired by an image of people sitting around a tree, with a 'hub' and 'spokes' modular system clad in glass mosaic embodying this notion of a gathering space." (Bullivant 2007, 22) This system allows physical modification of its elements to create a destination for individuals and groups to rest and gather while accessing information. The legs of the kiosk are manipulable, as they can be rearranged, added, and changed.

interactive touch screen

(2.26) display screen example. source: antenna design.
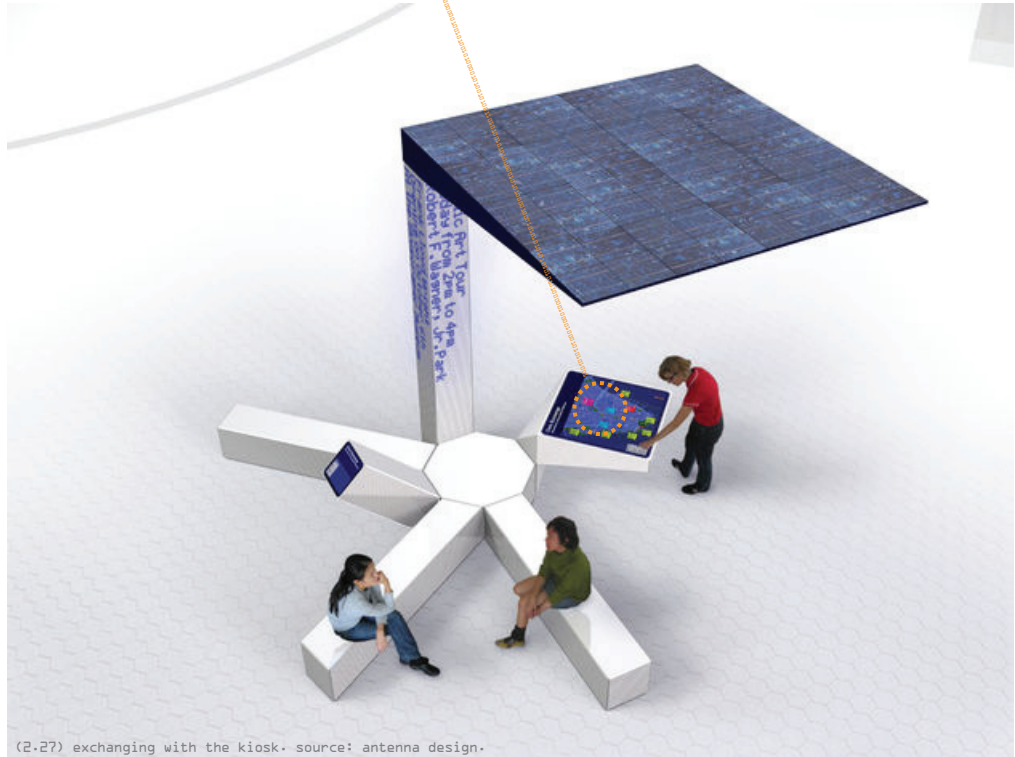
(2.27) exchanging with the kiosk. source: antenna design.

(2.28) beacon alert system. source: antenna design.

public alert beacon with LED lighting

kiosk can be adapted into many different
forms to accomodate seating needs
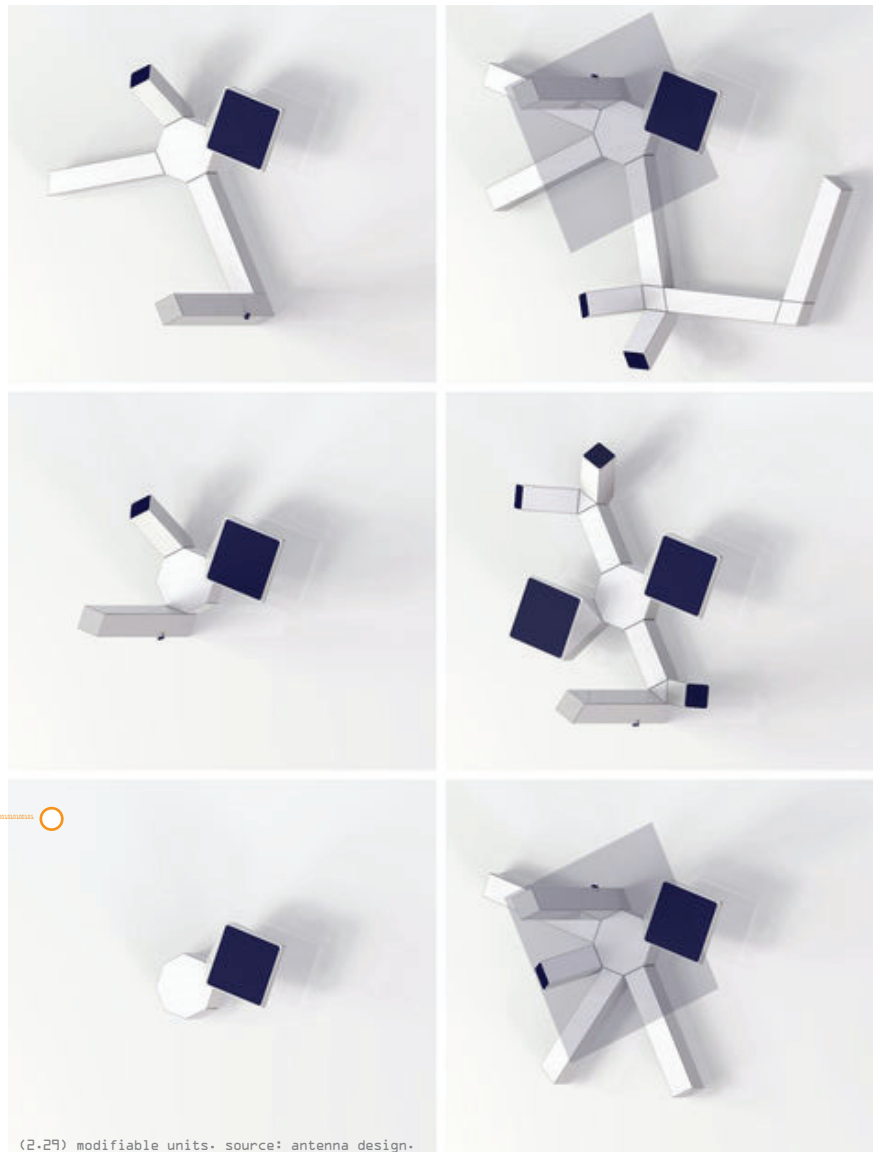
(2.29) modifiable units. source: antenna design.

The Civic Exchange is located between Battery Park and Robert Wagner Park in South Manhattan. This site is in the heart of the New York financial district and is typically very active during the daytime hours. With multiple transit stations adjacent to the site and many key destinations nearby, the access of information is very helpful to navigate through the city. Since it is interactive, there are no restrictions for access.

robert wagner park

transit station

civic exchange

transit station

city pier a

battery park

(2.30) civic exchange aerial map. source: google earth.

schouwburgplein

Location: Rotterdam, The Netherlands
Date: Completed 1996
Designers: West 8

This project was an urban plaza reconstruction in the heart of a very active city. The design portrays the context of its surroundings, reflecting Rotterdam as the world's largest sea port. "The harbor front with its huge cranes and ships and vast views over open sea overtly resonates in the design of the plaza." (Van Asperdt, 2000)

"Situated in the heart of the city and surrounded by shops and theatres, the design emphasizes the importance of a void, which opens a panorama towards the city skyline. The square is designed as an interactive public space, flexible in use, and changing during day and seasons."

kiosk can be adapted into many different
forms to accomodate seating needs

(2.31) schouwburgplein. source: thomas rainer.
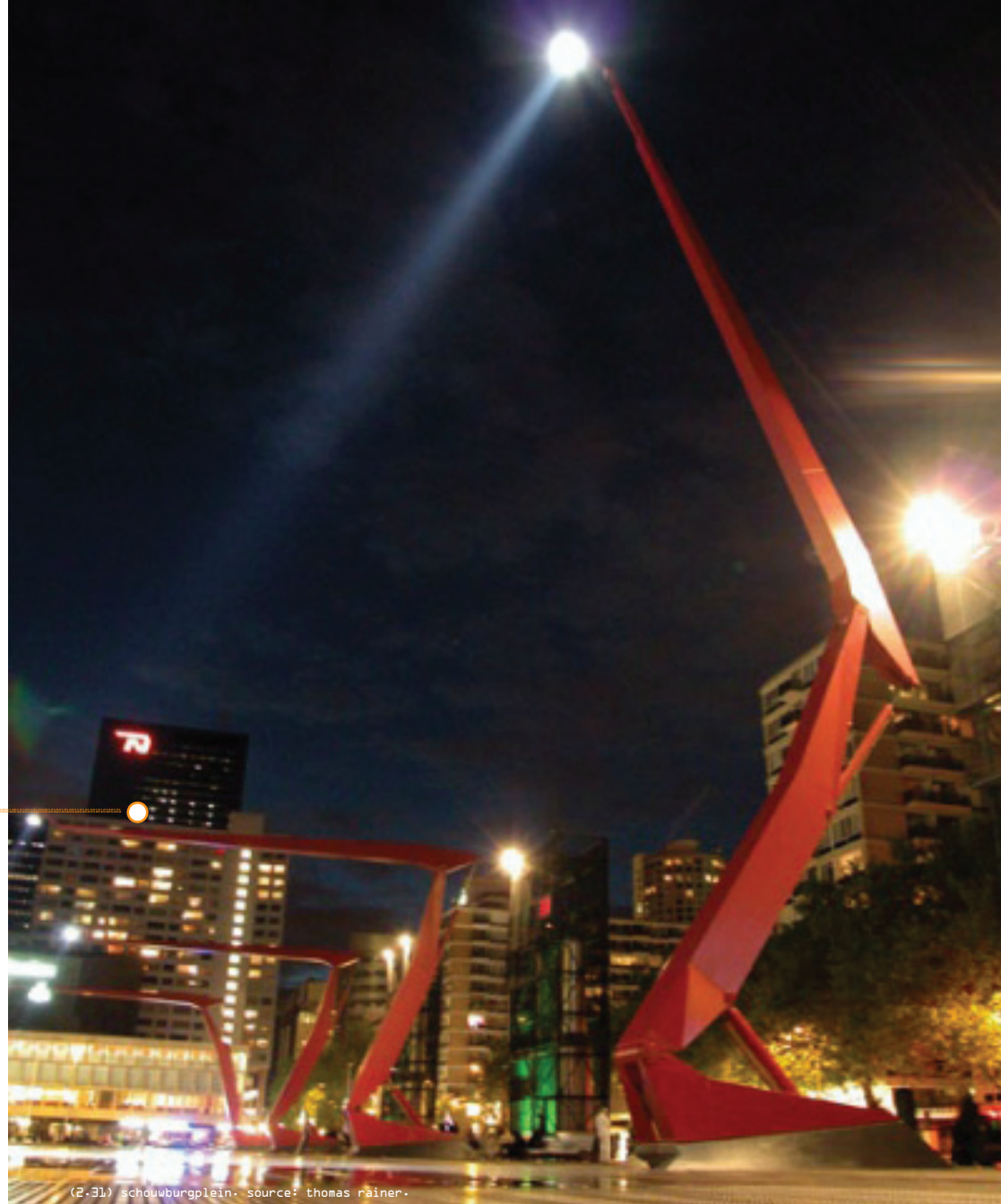
information exchange

Besides the occasional digital advertisement on the adjacent building facades, this space does not offer much in the realm of information that is interactive.

creative expression

Due to the physically modifiable nature of the lighting structures, users of this space can express a certain limited amount of creative control by moving the lights to their liking, bringing the space to life, in a sense.

kinetics

Schouwburgplein features "four 105 foot high, hydraulically movable, steel lightpoles." The lightpoles are a literal resemblance to the cranes found at the many sea ports in the city of Rotterdam. "By throwing a coin in a slot, individuals can control the lights and direct them to one of the tall office buildings surrounding the plaza" (Van Asperdt, 2000). This allows users to feel some control over the physical make-up of the space, however the range of motion for the lightpoles is limited.

(2.32) control view. source: netzspannung.org.

(2.33) film event. source: flickr.

lighting masts represent sea port cranes
rotterdam has the world's largest sea port
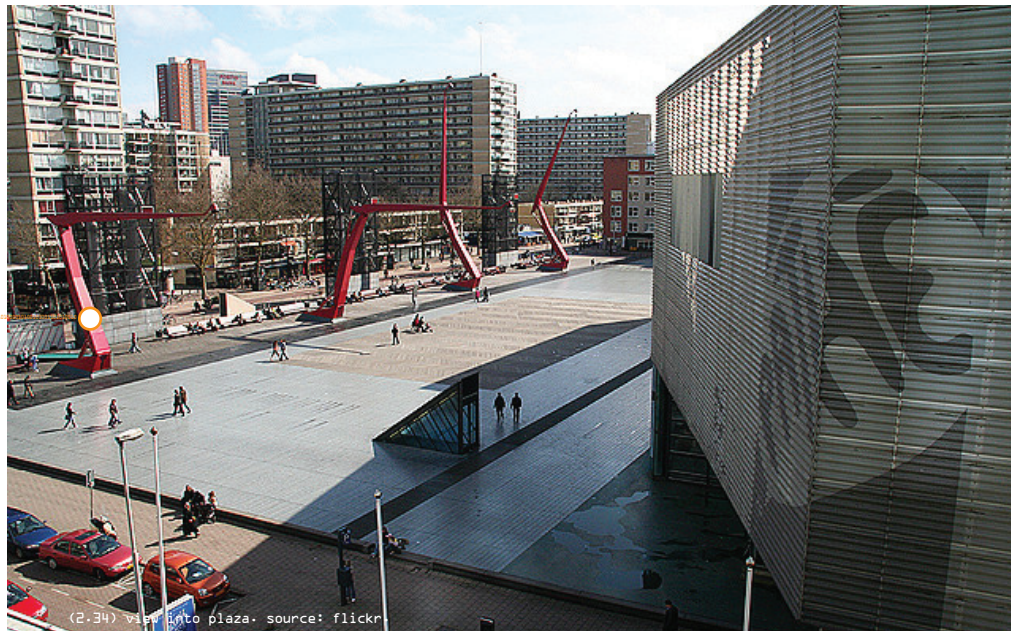
(2.34) view into plaza. source: flickr.
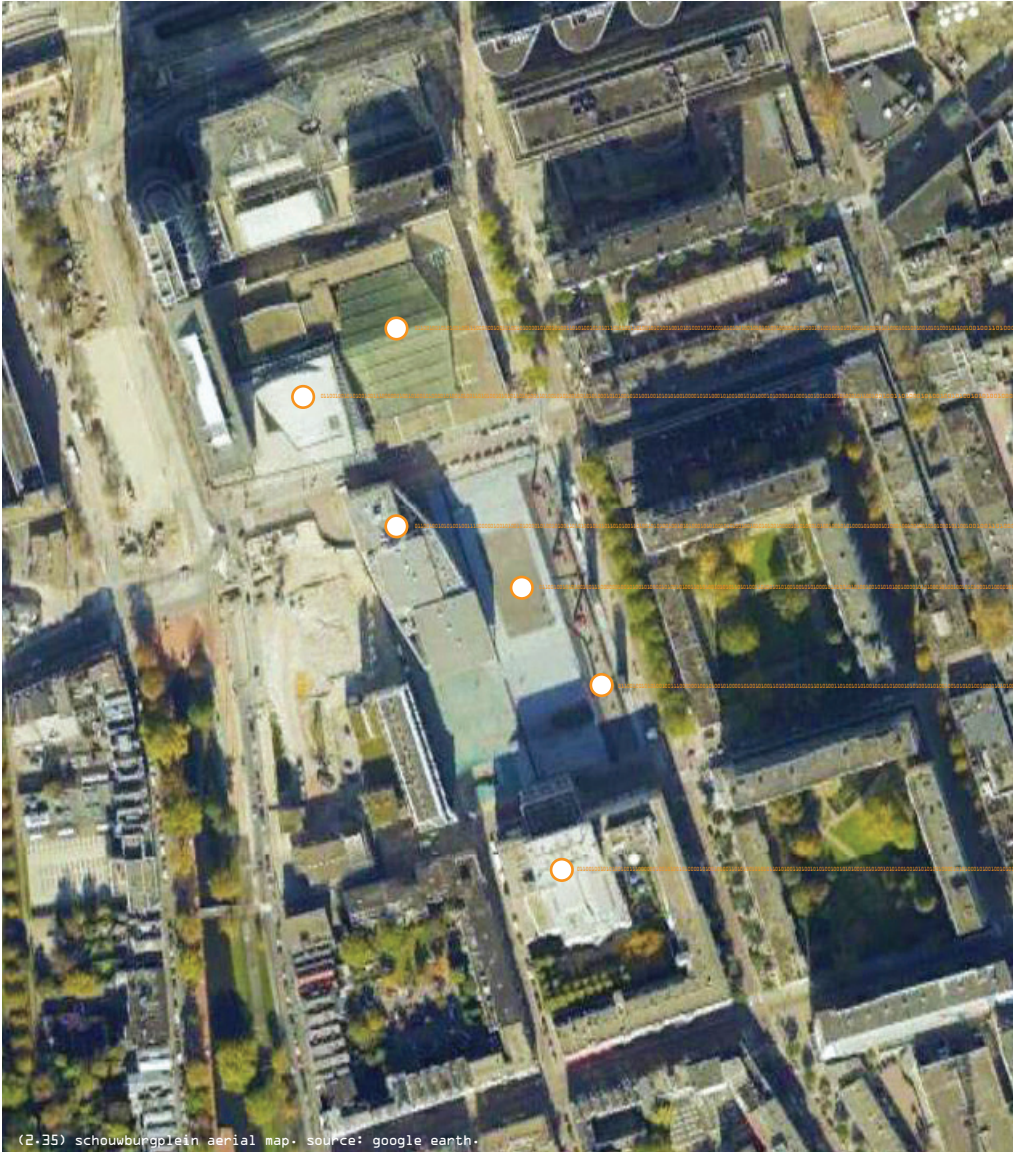
Surrounded by many dynamic entertainment uses such as theatres and casinos, the Schouwburgplein acts as a 'stage' for the adjacent context.

casino/entertainment

theatre

casino/entertainment

schouwburgplein
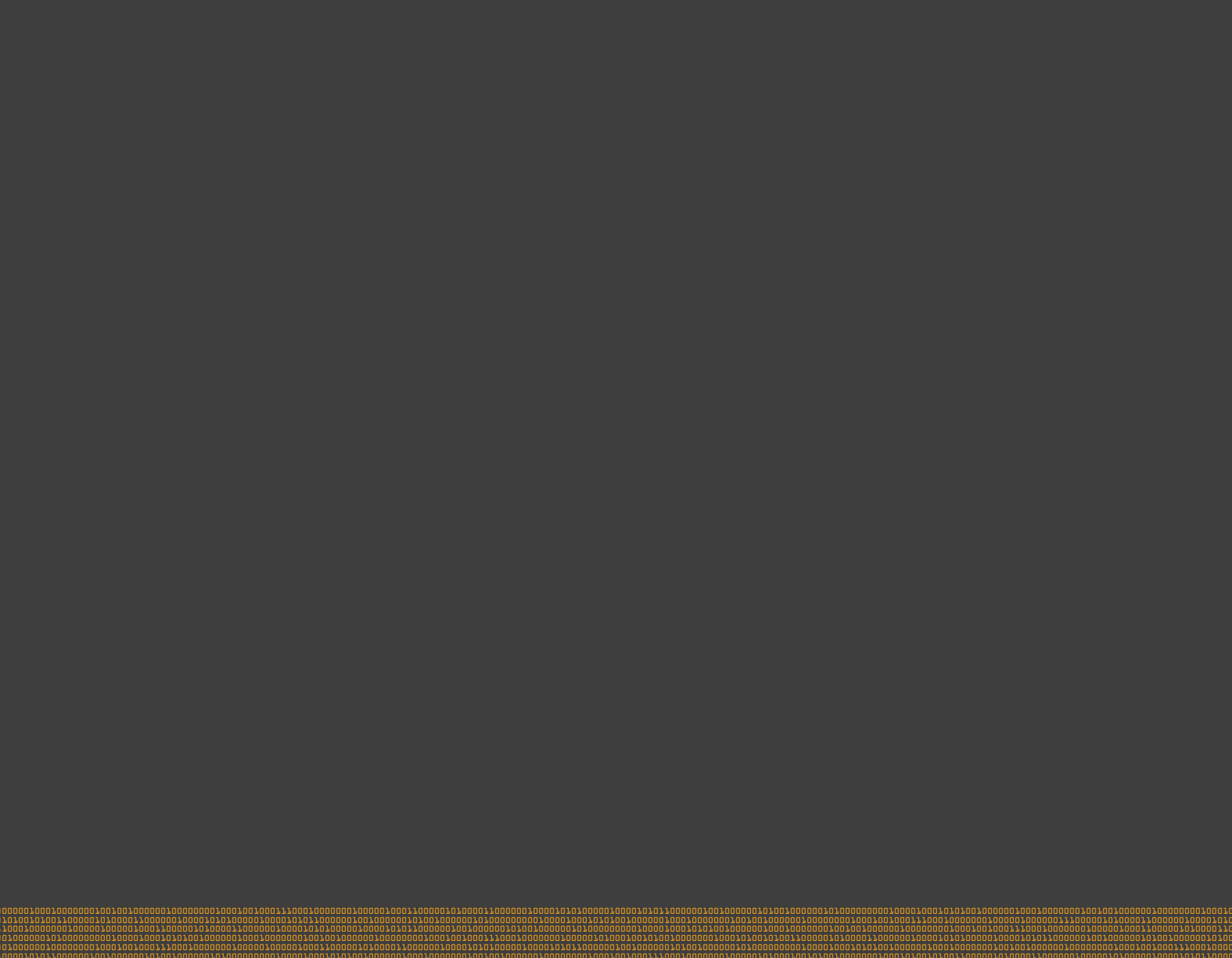
interactive lighting masts

theatre

(2.35) schouwburgplein aerial map. source: google earth.

03

analyze

00000010001000000001001001000000100010010001110010000001000001000110000001010001110000001000010010100010000010101110000001001000000010101001000000101010000001000010000010001000101000010000010001000000010010010000000100010010000000000010010010001000100111001000000100000100011000000101000111000000100001001010001000001010111000000100100000001010100100000010101000000100001000001000100010100001000001000100000001001001000000010001001000000000001001001000100010011100100000010000010001100000010100011100000010000100101000100000101011100000010010000000101010010000000101010

In order to effectively transition from the theoretical framework of an IUE to a design inception, an in-depth inquiry of the existing site conditions is important. Figure 3.1 shows an aerial map of the project site as well as the surrounding downtown area.

This chapter is divided into 5 main sections, each contributing a different technique to discover the existing site, its issues, constraints, and opportunities.

Downtown Inventory locates information about people, places, and systems from a larger scale, focusing on how the Civic Room relates to the rest of the downtown area.

Site Inventory includes history, context, and specific information related to the Civic Room function and components of urban space defined by William Whyte.

User Analysis breaks down the unique aspects of three distinct user groups and how they typically use the space. The user groups are local, regional, and visitors.

Site Analysis uses specific dimensions of spatial performance, as defined by Kevin Lynch, to analyze the site for its effect on the different groups that use it.

Site Synthesis
After analyzing the site, a series of design goals are formed to guide decisions about the formation of an interactive environment in the St. Louis Civic Room.

civic room

st. louis climate data

average seasonal temperatures
winter:	**33.6 F**
spring:	**55.6 F**
summer:	**77.5 F**
fall:	**58.1 F**

average annual precipitation: **37.37 inches**

(3.1) downtown st louis aerial map. anthony meyer. source: google earth.

NORTH NTS

downtown inventory

buildings

Figure 3.2 shows the mass/void of downtown, where buildings are located versus streets, open space, and vacant lots. The eastern half of downtown, or Central Business District, has a tight urban structure with buildings defining a strong street edge. As you proceed further west, the buildings are much smaller and there is more vacant space or area dedicated to surface parking or utility service, which creates a less defined urban form.

civic room

buildings

NORTH NTS   (3.2) urban mass/void. anthony meyer, source: stl planning agency.

urban grid

Street labels (left to right / top to bottom):

jefferson ave · 23th st · 22th st · 21th st · 20th st · 19th st · 18th st · 17th st · 16th st · 15th st · 14th st · 13th st · tucker blvd

delmar blvd · lucas ave · washington ave · st charles st · locust st · olive st · pine st · chestnut st · market st · walnut st · clark st · spruce st · interstate 64/40

11th st · 10th st · 9th st · 8th st · 7th st · 6th st · broadway · 4th st

laclede landing blvd · morgan st · lucas ave · washington ave · 1st st

interstate 70 · leonor k sullivan blvd

■ civic room
▬ streets

▲ NORTH NTS

(3.3) urban grid. anthony meyer, source: stl planning agency.

(3.4) jefferson national expansion memorial. source: www.reference.findtarget.com.

open space

Downtown St. Louis has a variety of parks and plazas that provide opportunities to gather, rest, and recreate. The main system of park space is highlighted by the Jefferson National Expansion Memorial on the western edge of the Mississippi River. As shown in Figure 3.4, this park features pastoral grassy hills with tree-lined walks and ponds, and houses the famous Gateway Arch. Extending westward from the Memorial is the Gateway Mall. The Mall is sectioned into different spaces including City Garden, Kiener Plaza, Aloe Plaza, and the Civic Room. Some spaces are dedicated to sculpture and art, while others are geared toward larger scale events, festivals, and gatherings. Smaller scale hardscape plazas are also found scattered throughout the city. They serve as entries to buildings as well as for smaller scale events.

parks

plazas

NORTH NTS

(3.5) open space. anthony meyer, source: stl planning agency.

density

Figure 3.6 shows the location of residents and employees in downtown St. Louis.

Downtown is home to many large companies, as well as medium and small businesses. Among the list of large corporations that provide thousands of jobs to local and regional residents are Ameren, AT&T, Bank of America, HOK, NestlePurina, Peabody Energy, US Bank, and Wells Fargo Advisors. In addition, other largely employed places include Union Station, Busch Stadium, Scott Trade Center, and the Court and Civic Buildings. Small businesses, however, combine to form a large job market as roughly 80% of downtown offices have 25 employees or fewer.

Downtown Employees: ~88,000

An interactive design environment is most effective as a place for gathering and social interaction when it is highly visible and accessible to people. Therefore, the more downtown residents that live in close proximity to the space, the larger the percentage of people that may be more inclined to use it. Figure 3.6 shows the location of local residents to provide an overview of the distribution and density throughout downtown.

Downtown Population: ~12,000

- ■ civic room
- ● = 10 employees
- ● = 10 residents

NORTH NTS   (3.6) density. anthony meyer, source: stl planning agency.

(3.7) metrolink. source: www.fta.dot.gov.
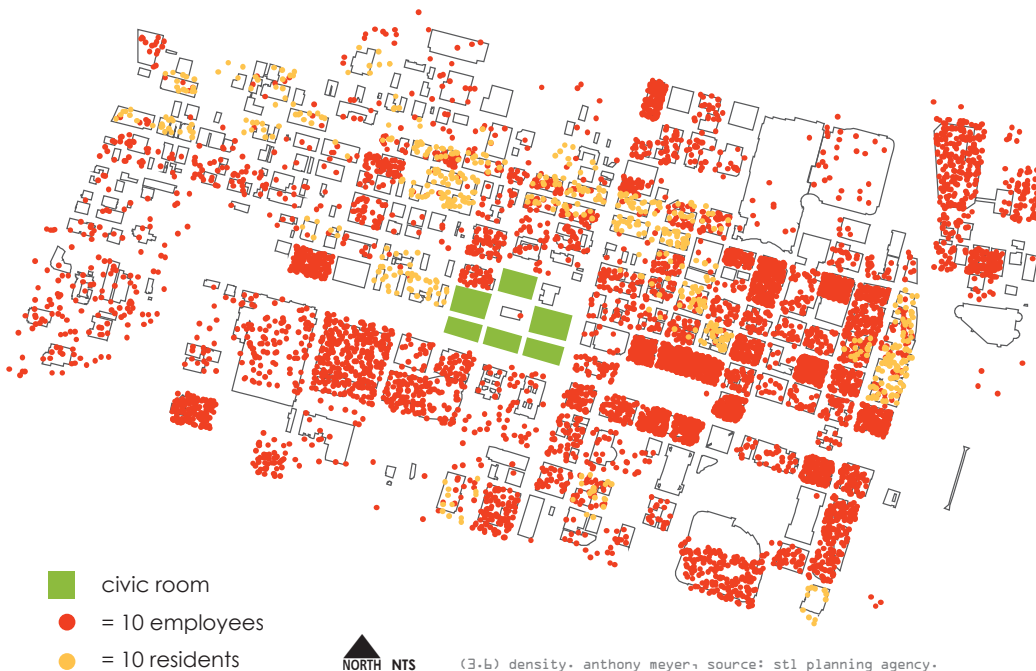
transit

Metrolink and MetroBus- St. Louis' public transit systems- provide over 50 million trips to both residents and visitors in St. Louis City and St. Louis County. Many of these trips are made to and from Downtown. Whether for work, running errands, or attending a ball game, people use public transit for convenience and feasibilty. Transit stops can be a hub of activity as nearby businesses, parks, and destinations get prime exposure to the extensive flow of riders.

civic room

metrolink stop

metrolink route

bus route

NORTH NTS

(3.8) transit. anthony meyer. source. stl planning agency.

vehicular circulation

Figure 3.9 displays the vehicular traffic patterns of streets in downtown. The Civic Room is located near the crossing of multiple principal and minor arterial streets, which support a large number of vehicle trips per day and provide a high visibility of the space. Likewise, a number of less-traveled collector roads surround the space. They typically are more pedestrian friendly and slightly less active.

Legend:
- civic room
- interstate highway
- principal arterial
- minor arterial
- collector

NORTH NTS   (3.9) vehicular circulation. anthony meyer, source: stl planning agency.

land use

Figure 3.10 shows the uses for the buildings and spaces in downtown. Downtown is predominantly comprised of commercial uses including offices, businesses, and warehouses. There are many apartment, loft, and mixed-use buildings too, which are typically located in the northern half of downtown. In addition, the large number of civic use buildings near the center of downtown is how the Civic Room gets its name.

civic
commercial
residential
mixed-use
institution
P   parking
green space

NORTH NTS

(3.10) land use. anthony meyer, source: stl planning agency.

gateway arch

edward jones dome

city museum

america's center

lumiere place casino

central library

aloe plaza

union station

peabody opera house

city garden

scott trade center

historic courthouse

gateway arch

busch stadium

civic room

key destinations

NORTH NTS
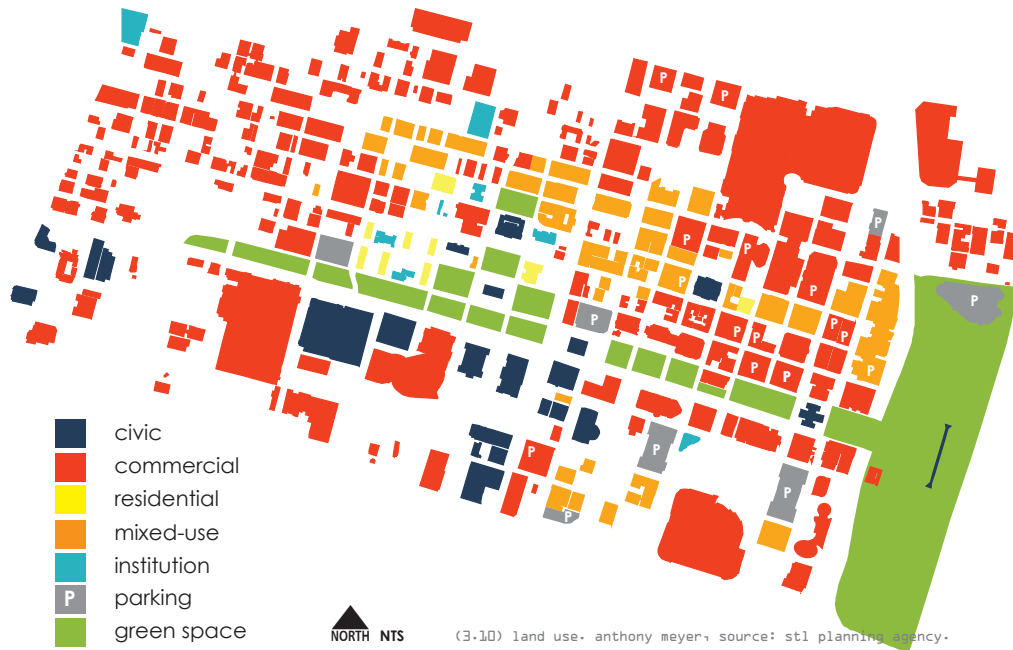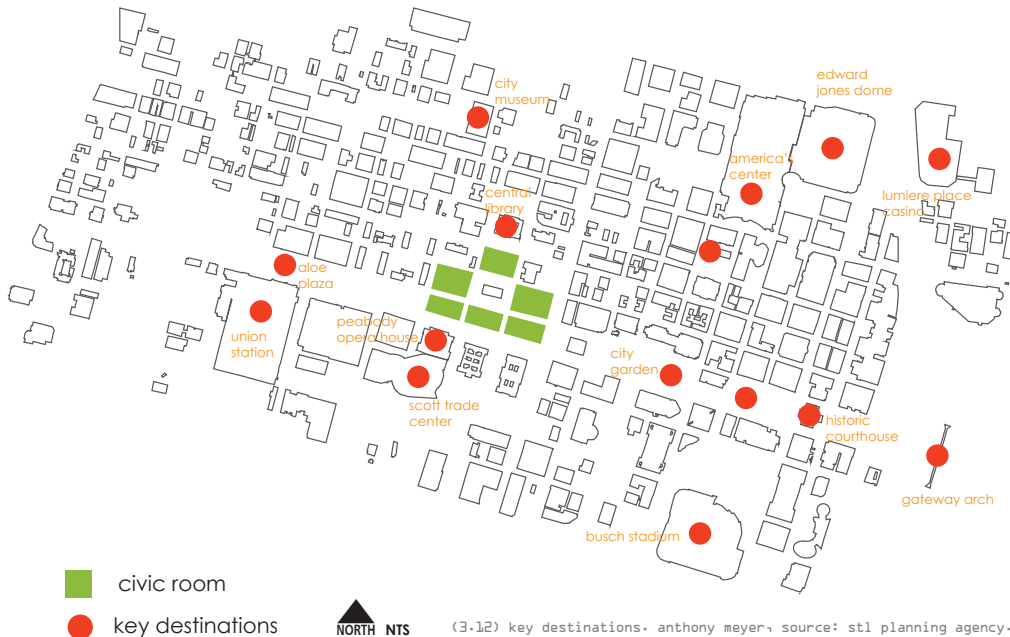
(3.12) key destinations. anthony meyer, source: stl planning agency.

key destinations

Downtown St. Louis has many key destinations that appeal to the entertainment and intrigue of visitors, as well as local and regional residents. These popular places attract pedestrian movement, and are considered the downtown's active and dynamic spots. Many of these places hold civic activities such as museums, architecture, and theatres, and others are popular restaurant districts or shopping centers. St. Louis is home to several professional sports teams, and their stadiums and venues provide entertainment attractions.

Many of the key destinations are located along the Gateway Mall and near the Civic Room. The Peabody Opera House and Scott Trade Center are two buildings adjacent to the Civic Room that primarily focus on entertainment through shows, concerts, and sports.

analyze

67

site inventory

An inventory of the site was conducted in order to understand background information and specific condition issues and opportunities. A detailed history of the Gateway Mall is provided to set the stage for the current conditions of the site. In addition, there is a summary of adjacent building use and a look into the existing spatial elements including tree cover, hardscape vs. softscape, seating, memorials, spatial dimensions, and adjacent streets. This site information will lead to a detailed analysis of how these elements of urban space affect the site's performance for specific user groups. Figure 3.13 shows an aerial map of the Civic Room and its adjacent context.

civic room

history of the gateway mall

- the Gateway Mall was envisioned as a grand, Beaux-Arts inspired design by landscape architect and planner George Kessler
- envisioned Market and Chestnut Streets as large boulevards extending to Grand Avenue with a generous green space separating them
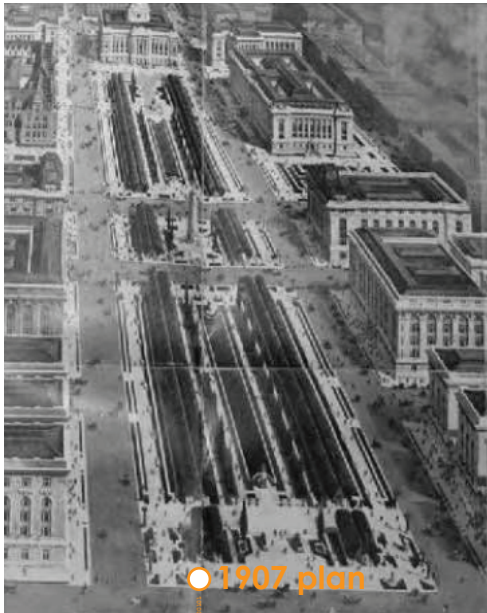
(3.14) 1907 plan. source: stl planning agency.

- the original plan was never fully supported or implemented. Throughout these years, the Mall was a piecemeal process as certain buildings between Chestnut and Market were demolished to add park space
- most of the blocks between Market and Chestnut were covered with warehouses and offices, as St. Louis was rapidly expanding its economic core

(3.15) 1920s. source: stl planning agency.

- in the early 1950s, St. Louis began a harsh downturn as people starting moving to the suburbs, and financial woes hit
- at least once every decade the St. Louis City Commission would make a new plan for the Gateway Mall. However, nothing was ever achieved in a unified fashion, only block by block

(3.16) 1960 plan. source: stl planning agency.

(3.17) 1960s. source: stl planning agency.

1900   1910   1920   1930   1940   1950

- a public-private partnership called the Pride Redevelopment Corporation was formed in 1982 to remove the remaining buildings between Chestnut and Market Streets in order to carry out something similar to the original Gateway Mall concept
- citizens were in disagreement about the Mall plan. Some wanted a linear green space with no buildings interrupting it, others thought that it was too much park space, and that it disconnected the city

- the final blocks between Market and Chestnut were demolished in 1994 to create what we now know as the Gateway Mall
- design of the Mall had been left open as a flexible urban space
- for years, most of the mall has been underutilized and rundown with a bland, monotonous design
- a master plan for the Mall was commissioned by Mayor Francis Slay in 2007
- the plan broke up the Mall into a series of 'rooms' based on the functions of the adjacent buildings and the program of the open space
- this plan has been used to guide the design and implementation of two of the Mall blocks called CityGarden, a world-class sculpture park that is highly celebrated by residents and visitors

1970

(3.18) 1970. source: flickr.
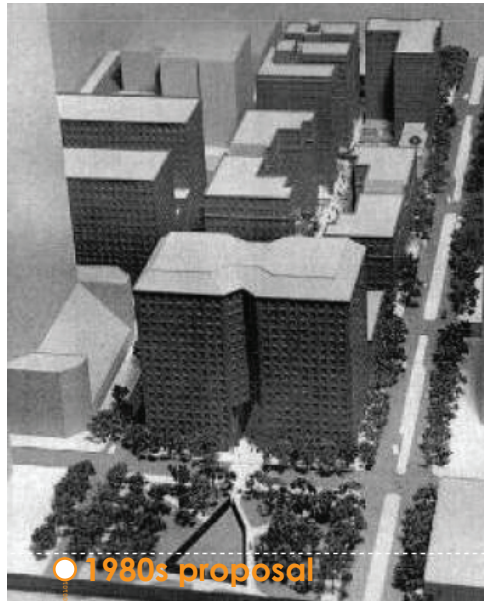
1980s proposal

(3.19) 1980s proposal. source: stl planning agency.
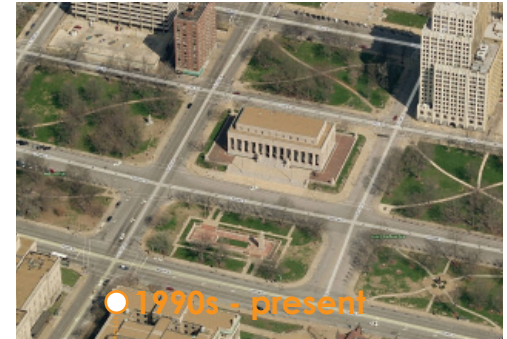
1990s - present

(3.20) 1990s - present. source: bing maps.

1960   1970   1980   1990   2000   2010

adjacent buildings

(3.21) adjacent buildings diagram. anthony meyer, source: stl planning agency.

central public library

The Central Library, shown in Figure 3.22, is well known for its iconic, classic style architecture and importance to the preservation of St. Louis culture and history.

peabody opera house

The Peabody Opera House is made of several theatres and stage venues that show concerts and Broadway Musicals. The building has been closed since the early 1990s due to financial struggles, but it is now being redeveloped to its former glory.

apartments

There are many high-rise apartment buildings similar to the one shown in Figure 3.24 that are located north and west of the Civic Room. These apartments house a very wide array of people, including some devoted to government assistance as well as an elderly community. Other buildings with loft style apartments contain a vibrant group of young adults and families.

(3.22) public library. anthony meyer.

(3.23) peabody opera house. anthony meyer.

(3.24) apartments. anthony meyer.

(3.25) city hall. anthony meyer.

(3.26) soldier's memorial museum. anthony meyer.

(3.27) civil courts/offices. anthony meyer.

city hall

The St. Louis City Hall, shown in Figure 3.25, is an iconic civic structure that is home to the city's elected officials and overall governing body, including Mayor Francis Slay.
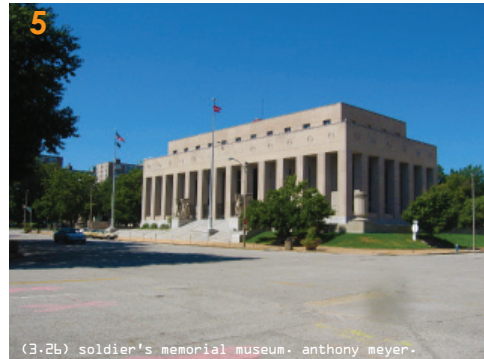
soldier's memorial museum

Figure 3.26 depicts a memorial devoted to the preservation of military paraphenalia and information. The classic-style architecture gives evidence of the building's civic program.
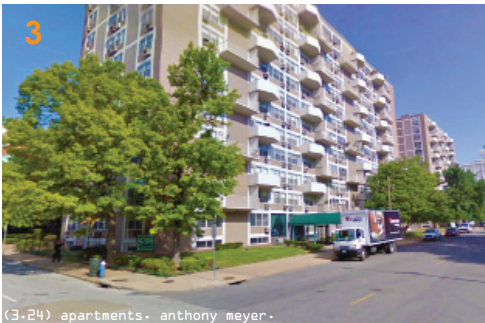
civil courts/offices

There are many judicial buildings located adjacent to the Civic Room. They include municipal, state, and civil courts, and reflect the classic-style architecture of their civic uses.

tree cover

The Civic Room currently has an extensive canopy of mature trees that cover each park block, shown in Figure 3.28. Oak, maple, and sweetgum trees provide great shade to the space, and help define an overhead enclosure. Trees are planted informally around the edges of each block, and some trees extend into the middle of each space. Trees on site are generally in great condition and create a soft, peaceful atmosphere within the space.
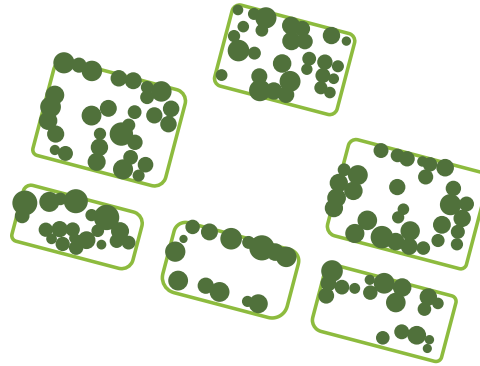
(3.28) existing trees. anthony meyer.

hardscape vs. softscape

There are a number of pedestrian paths that provide a circulation system to each block of the Civic Room, as shown in Figure 3.29. In addition to the sidewalks around the perimeter of each block, there are curvilinear paths that wind through the space in a somewhat uniform fashion. The existing paths tend to dissect the space into sections of turf grass and trees. There is also a war memorial plaza on the southern edge of the site that feels disconnected from the rest of the space because it is sunk a few feet down and walled off on most sides.
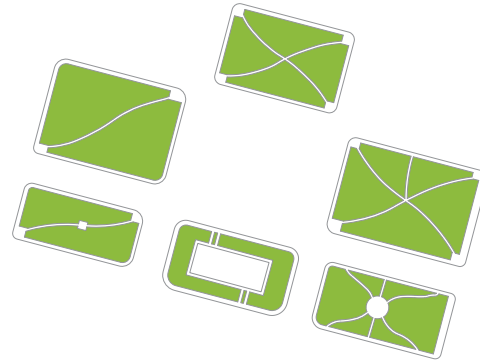
(3.29) existing sidewalks. anthony meyer.

seating

Figure 3.30 shows the many benches that are positioned in place around each block, usually around the edges facing outward from the space. There are a few seats in the southern couple of blocks that help define sidewalk edges interior to the space. Benches are typically constructed of simple concrete and wood materials. Unfortunately, each bench is too small for any more than two people to gather there, and the benches are spread so far apart with no option of manipulability.
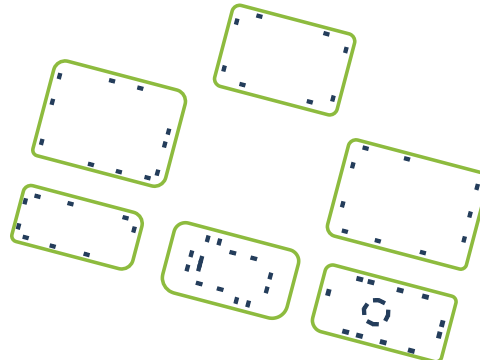
(3.30) existing seating. anthony meyer.
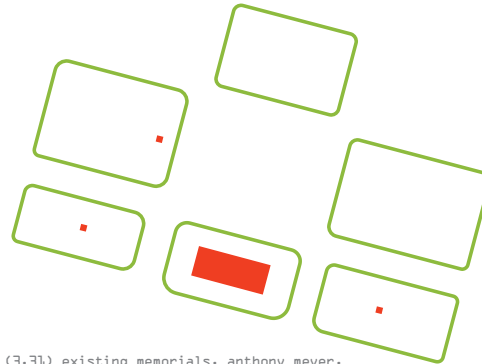
(3.31) existing memorials. anthony meyer.

memorials

Figure 3.31 depicts the locations of 4 distinct memorials situated in the Civic Room. As a civic space, these memorials celebrate and remember certain people or events important to the history of St. Louis such as the Fireman's Memorial, Schiller Memorial, and War Memorial. These memorials hold special interest to the space and are well regarded by the city and citizens.

total block area= **11.9 acres**
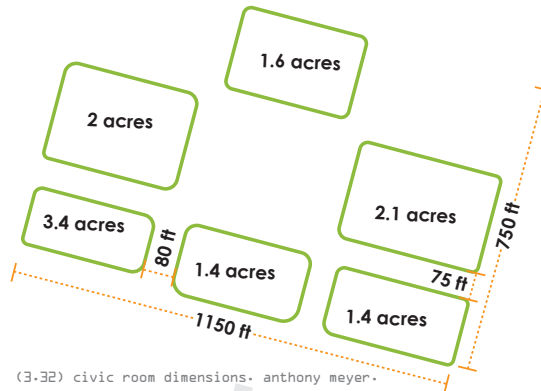
(3.32) civic room dimensions. anthony meyer.

dimensions

The general area and linear dimensions of the Civic Room are provided in Figure 3.32.

(3.33) civic room streets. anthony meyer.

the streets

The Civic Room is dissected by a grid of streets that vary in size and volume of vehicular traffic. Market Street and Tucker Boulevard are two of the busiest streets in downtown, which makes the southeast corner of the site crucial for visibility and access. Market Street and Chestnut Street border the extent of the Gateway Mall in both the east and west directions.

define

interactive technology

- **information exchange**
- **creative expression**
- **kinetics**

precedent study

- civic exchange
- bloomberg ICE
- schouwburgplein

+

urban open space design

- sitting space
- sun
- wind
- trees
- water
- food
- the street
- triangulation

analysis

local

regional

visitor

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species." (Lynch, 121) Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

sense

"The clarity with which [a space] can be perceived and identified.... Sense depends on spatial form and quality, but also on the culture, temperament, status, experience, and current purpose of the observer." (Lynch, 131) Identity, structure, congruence, transparency, and legibility are all aspects of sense.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

(3.34) process: analysis. anthony meyer.

control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

The Civic Room will be analyzed based on its current performance for 3 distinct user groups: local, regional, and visitors. Using Kevin Lynch's book *Good City Form* as a framework for analysis of the site, the space will be judged on 6 distinct dimensions of performance, as shown in Figure 3.34. The dimensions are vitality, sense, fit, access, and control, as well as efficiency, which acts as a metacriteria for all dimensions.

user analysis

local

downtown residents and employees
- daily use
- typically daytime/evening
- activities include dog-walking, exercise, resting, sun tanning, lunch, recreation

civic room

(3.35) local user map. anthony meyer, source: google earth.

picnic/rest

(3.36) picnic/rest. anthony meyer.

dog walking

(3.37) dog walking. ed merritt.

recreation

(3.38) recreation. anthony meyer.

regional

st. louis metro area residents
* periodic use- seasonal, weekly, monthly, yearly
* attract hundreds or thousands of people
* centered around large-scale events such as festivals, concerts, and parades
        -Taste of St. Louis
        -RibAmerica
        -Parades & Rallies
        -Sporting Events

downtown st. louis
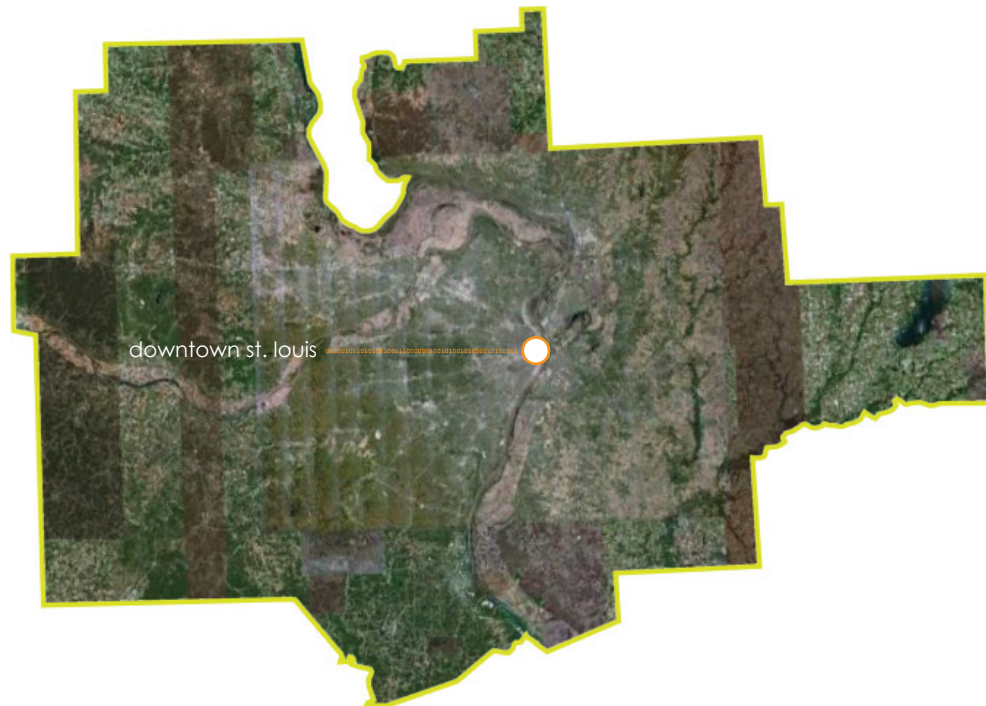
(3.39) regional user map. anthony meyer. source: google earth.

parades 01110100100110100100100100100100010101

(3.40) parades. source: flickr.

concerts 01110100100110100100100100100100010101

(3.41) concerts. source: flickr.

festivals 01110100100110100100100100100100010101

(3.42) festivals. source: flickr.

visitor

visitors and tourists from across the world
- first time using the space, or very seldomly
- goal is to experience St. Louis, visit adjacent buildings or uses
- typically looking for something exciting to be involved in, something to grab their attention, make memories

st. louis

(3.43) visitor user map. anthony meyer, source: google earth.

picture taking

(3.44) picture taking. source: flickr.

entertainment

(3.45) entertainment. anthony meyer.

wayfinding

(3.46) wayfinding. source: flickr.

site analysis

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species" (Lynch, 121). Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

local

Local residents and employees typically use the Civic Room to retreat to an accessible version of nature. The impact of trees and park space on the urban environment is substantial in regards to improving air quality, water quality, and overall mental and emotional health. This space does provide a certain quality of retreat and comfort with the tree canopy and soft turf area. Some people frequent this space to walk their dogs, read a book, sun tan, or catch some fresh air.

Opportunity for design principle:
Trees can help form and enclose space and provide a comfortable environment and healthy atmoshphere.

Opportunity for IT:
Since locals potentially use this space everyday, they should be made aware of the quality of air they are breathing. An information exchange about air quality can help improve consciousness about individual health.

regional

During large events, the number of people within the Civic Room can be impressive with thousands attending concerts and festivals. When this many people gather in one place, there can be safety and comfort concerns including crammed space, riot control, and fire prevention. There is currently no tangible way that these things can be improved except by allowing more space to fit more people. Closing down interior streets during large events allows for the space to be less crowded and easier to maintain safety and security.

Opportunity for design principle:
The delineation between street and space can be blurred to provide extension and transition for pedestrians.

Opportunity for IT:
Kinetic technology can provide and restrict access to interior streets.

visitor

Most people have the sense to judge the vitality of a place, whether the conditions are safe and comfortable. However, they cannot tell the exact conditions of a microclimate, from the temperature, amount of rainfall, or quality of air they are breathing. Typically, people will avoid areas lacking a certain level of vitality and will enjoy the flourishing spaces. For instance, the air quality of the Civic Room is assumed to be higher than that of other blocks with buildings because of the amount of plant material that can sequester carbon. However, users of the space would never know the specific vitality of the space without something that detects and communicates the current conditions.

Opportunity for IT:
An information exchange about air quality can help improve consciousness about individual health.

tree canopy 011101001001101001010101010101010101

(3.47) tree canopy. anthony meyer.

safety concerns 011101001001101001010101010101010101

(3.48) safety concerns. anthony meyer.

sense

"The clarity with which [a space] can be perceived and identified.... Sense depends on spatial form and quality, but also on the culture, temperament, status, experience, and current purpose of the observer" (Lynch, 131). Identity, structure, congruence, transparency, and legibility are all aspects of sense.

local

Some locals view this space as a pleasant place to walk their dogs, take a lunchtime walk, or catch a breath of fresh air. The Mall was originally designed with the intent that locals could retreat to this space to take relief from the surrounding hard urban infrastructure. The mature canopy of trees and large areas of turf grass provide a pleasant, aesthetic, and comfortable atmosphere.

Opportunity for design principle:
Trees can help form and enclose space and provide a comfortable environment and healthy atmoshphere.

The space should provide additional options for seating to create places for gathering and relaxing.

Opportunity for IT:
Seating can have kinetic opportunities that allow them to be adaptable.

regional

For many of the regional residents that come to the Civic Room for occasional large events, this is potentially the only time they use this space. They perceive the space as it is filled with crowds, culture, and commotion. How can this space provide more than just a large, relatively open area for people to enjoy an event? There could be an element to the space that enhances the gatherers' experience or enriches the selected programming of the space.

Opportunity for IT:
Kinetics can help shape space and adapt spatial uses.

visitor

The Civic Room currently has little sense of identity with nothing that makes this place stand out from other urban parks. Would visitors or tourists even remember this place, or desire to come back again? Also, the presence of many homeless people gives visitors the perception that this park is abandoned or unsafe. Due to its location and adjacent context, this park has the potential to provide visitors with a strong perception of the Gateway Mall, and view it as one of the many treasures of Downtown St. Louis. Public art or sculpture is a key way to attract public attention and beautify the public realm, but besides a few memorials, the Civic Room has no sculpture to speak of.

Opportunity for design principle:
Features can be used to employ triangulation within the space to attract people and entertain them or socially connect.

Opportunity for IT:
Creative expression can be used to attract people to the space and provide a unique, enjoyable experience.

natural character

(3.49) natural character. anthony meyer.

deteriorating

(3.50) deteriorating. anthony meyer.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

local

Overall, the Civic Room is large enough to provide many locals different opportunities for use of the space. However, all six park blocks have virtually the same character, with no hierarchy of space. Each block is surfaced with a mat of turf grass and a system of curvilinear sidewalks that dissect the space. This forms a good circulation network but separates the space into a series of smaller areas. What results is no large continuous area of turf grass to use for recreational purposes. There is also no other significant field space for recreation downtown, and as the population continues to grow, there will be a need for a space in which residents can kick a soccer ball or play an impromptu game of football.

Opportunity for design principle:
Trees can help form and enclose space and provide a comfortable environment and healthy atmoshphere.

regional

As thousands of people flood into the Civic Room for the many concerts and festivals that are held here, the interior streets are closed to vehicle traffic to allow more people to fit in the space and create a more holistic atmosphere dedicated to the current use. Police barricades are set up on streets prior to an event and are taken away shortly after. Since the performance of fit is closely related to efficiency, the temporary barricades are inefficient. They take time and money whenever they are placed and taken away. Also, the barricades create a visual eyesore that doesn't relate aesthetically to the rest of the space.

Opportunity for design principle:
The delineation between street and space can be blurred to provide extension and transition for pedestrians.

Opportunity for IT:
Kinetic technology can provide and restrict access to interior streets. It can also help shape space and adapt spatial uses.

visitor

The key ideal to the performance of fit is competence, or the ability to do something well or sufficient (Lynch, 151). From a visitors' perspective, the Civic Room is large enough in size to fit most activities. However, the more important measure is the compatibility of a visitor's interests and perception with what activities or program the space offers. Does this space fit the interests of visitors to St. Louis? Why would they want to use this space? Due to the Civic Room's monotony and lack of energy or activity, visitors may view this space as simply passive. Typically, tourists are interested in sight-seeing and experiencing the culture of a place. This space doesn't provide activity or use that stimulates excitement and reflects the adjacent land uses and community culture.

Opportunity for design principle:
Features can be used to employ triangulation within the space to attract people and entertain them or socially connect.

Opportunity for IT:
Creative expression can be used to attract people to the space and provide a unique, enjoyable experience.

divided ₀₁₁₁₀₁₀₀₁₀₀₁₁₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₁₀₀₁₀₀₁₀₀

(3.51) divided. anthony meyer.

temporary infrastructure ₀₁₁₁₀₁₀₀₁₀₀₁₁₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₁₀₀₁₀₀₁₀₁

(3.52) temporary infrastructure. anthony meyer.

inactive ₀₁₁₁₀₁₀₀₁₀₀₁₁₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₀₁₀₁₀₀₁₀₀₁₀₁

(3.53) inactive. anthony meyer.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

local

The east-west connection of downtown has always been important for vehicular and pedestrian circulation, as well as a symbol and design expression. Since St. Louis has been termed "The Gateway to the West", the original concept of the Gateway Mall was to act as a visual and metaphorical hallway facing west. Market Street, which is adjacent to the Mall's southern edge, serves the high volume of vehicular traffic flow into and out of downtown. One main purpose of the Gateway Mall is to act as a pedestrian corridor running the length of downtown. Currently, this important connection is weak. Relatively narrow sidewalks run along the southern and northern edges of the Mall, with no aesthetic emphasis, amenities, or separation from the busy Market and Chestnut Streets. East-west access along the Mall is tight, busy, and unappealing.

regional

If the interior streets of the Civic Room are closed to vehicle traffic during times of large event programming, this places significant importance on the needs of the pedestrian and how they access the space. If interior streets are closed, the whole Civic Room area feels connected. A considerable amount of on street parking is eliminated during these times, but there are plenty of other parking structures and lots accessible in the surrounding downtown area to accommodate the influx of people for the event.

Opportunity for design principle:
The delineation between street and space can be blurred to provide extension and transition for pedestrians.

Opportunity for IT:
Kinetic technology can provide and restrict access to interior streets.

visitor

People visiting a city, including St. Louis, often go to the public library, city hall, or information kiosk in order to access information about tourist attractions, history, or sponsored events. The St. Louis City Hall, which is just south of the Civic Room at the corner of Market St. and Tucker Blvd, provides this type of public information. Could public information such as transit schedules, current events, historical data, climate conditions, and even social media be easily accessible to all people in the public realm?

The Mall, which is supposed to be a literal and symbolic view to the west, currently doesn't live up to the intended concept. Visitors that are experiencing St. Louis for the first time can not perceive the strong east-west move through downtown.

Opportunity for IT:
Information exchange could allow visitors to access directions, history, and culture information.

narrow

(3.54) narrow. anthony meyer.

disconnection

(3.55) disconnection. anthony meyer.

signage

(3.56) signage. anthony meyer.

control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

local

As a public open space, the Gateway Mall allows people the right of presence. Anyone may use the space how they please as long as they are acting within the confines of the law. One of the common daily uses of the Civic Room is to retreat from the hard, busy urban fabric and relax among the canopy of trees and soft turf area. Benches in the Civic Room are typically singular and fixed in place around the edges of each block. They are run down, poorly maintained, and uncomfortable. A stand alone bench provides a place to sit and relax, but only for two or 3 people. This doesn't allow for any group gathering or modification of the how seating is situated.

Opportunity for design principle:
The space should provide additional options for seating to create places for gathering and relaxing.

Opportunity for IT:
Seating can have kinetic opportunities that allow them to be adaptable.

regional

Since the Mall is owned by the municipality of St. Louis, they ultimately have control over how the space is designed, used, and maintained. The city is responsible for planning and allowing the frequent large events that are held in the Civic Room. As part of their responsibility, they have to provide all of the infrastructure and amenities for the particular program, including concert stage, covered pavilion, etc. None of this infrastructure is fixed on site, so the proper materials must be constructed and destructed every time the program is changed. This is inefficient because of the time and money costs involved.

Opportunity for IT:
Kinetics can help shape space and adapt spatial uses.

visitor

Typically, tourists or visitors use public open space if there is some activity that draws them there. A visitor has to be attracted or intrigued to the space in order to participate. The Civic Room lacks an element of user involvement or interaction that allows the participant to feel like they are affecting the space or others in it.

Opportunity for design principle:
Features can be used to employ triangulation within the space to attract people and entertain them or socially connect.

Opportunity for IT:
Creative expression can be used to attract people to the space and provide a unique, enjoyable experience.

Information exchange could allow visitors to access and contribute important city data.

seating

(3.57) seating. anthony meyer.

temporary structure

(3.58) temporary structure. anthony meyer.

efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

local

Maintenance within the space is typically reduced to mowing the lawn, trimming the trees, and cleaning up trash after a large event. This costs the city money, but this is a typical amount of maintenance that is to be expected from any urban park. Local users appreciate the tidy atmosphere as this space is a daily visit for many residents in downtown.

regional

Every time there is a scheduled event within the Civic Room, temporary infrastructure has to be erected to meet the program and user needs. This includes blockades that are put up to block vehicular access to the interior streets of the Mall, as well as tents, pavilions, and stages put up to serve festivals and concerts.

Opportunity for design principle:
The delineation between street and space can be blurred to provide extension and transition for pedestrians.

Opportunity for IT:
Kinetic technology can provide and restrict access to interior streets.

Kinetics can help shape space and adapt spatial uses.

visitor

Maintenance within the space is typically reduced to mowing the lawn, trimming the trees, and cleaning up trash after a large event. This costs the city money, but this is a typical amount of maintenance that is to be expected from any urban park. Visitors appreciate the ongoing money spent on maintenance, because it the space was not taken care of, visitors would have a negative perpection of the space.

maintenance

(3.59) maintenance. anthony meyer.

costs

(3.60) costs. anthony meyer.

site synthesis

design goals

○ activate the space to attract diverse users

○ augment the site program opportunities

○ establish a spatial hierarchy to break up monotony

○ implement all 3 IT groups to meet opportunity criteria

○ reflect the adjacent context & building use

○ create a unified design concept

○ enhance social collaboration opportunities

specific goals for user groups

local

○ passive uses should be maintained
○ mature tree canopy should be preserved as much as possible
○ provide amenities that promote residents and employees to use space on a regular basis

regional

○ close interior Civic Room streets during times of large events
○ enhance large event program by providing a structure that can serve multiple uses including concerts, festivals, movies

visitor

○ provide activities for entertaining, enjoyment
○ encourage available information to visitors
○ accentuate linear concept of Gateway Mall

urban design program matrix
based on identified opportunities

	Local	Regional	Visitor
Vitality	preserve mature tree canopy	close interior streets to extend pedestrian space	n/a
Sense	preserve mature tree canopy adaptable seating	n/a	public art (triangulation) water feature
Fit	open flexible recreation space	close interior streets to extend pedestrian space	public art (triangulation)
Access	n/a	close interior streets to extend pedestrian space	n/a
Control	adaptable seating	n/a	public art (triangulation)
Efficiency	n/a	flexible infrastructure	n/a

(3.61) urban design program matrix. anthony meyer.

interactive technology program matrix
based on identified opportunities

	Local	Regional	Visitor
Vitality	awareness beacons	intelligent bollards	awareness beacons
Sense	adaptable seating	adaptable event structure	interactive art (triangulation) water feature
Fit	n/a	electronic bollards adaptable event structure	interactive art (triangulation)
Access	n/a	electronic bollards	information kiosk
Control	adaptable seating with GPS tracking	adaptable event structure	interactive art (triangulation) information kiosk
Efficiency	n/a	electronic bollards adaptable event structure	n/a

(3.62) interactive technology program matrix. anthony meyer.

analyze

04
design

1000001000100000000010010010000010000100010000111001000000010000010001110000010100011000000010000010101001000010000101011000001001000000010101001000000101000100001010010000001010000010000100011100010000010101010100100010001000100010101011000000100000000100100001000000010000000100100100000001000000001000
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110000010010010000001010010000001000010001000011100100000001000001000111000001010001100000001000001010100100001000010101100000100100000001010100100000010100010000101001000000101000001000010001110001000001010101010010001000100010001010101100000010000000010010010000001000000010010010010000000100000000100100101

define

interactive technology

- interactive information
- creative expression
- kinetics

- civic exchange
- bloomberg ICE
- schouwburgplein

+

urban open space design

- sitting space
- sun
- wind
- trees
- water
- food
- the street
- triangulation

analysis

- local
- regional
- visitor

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species." (Lynch, 121) Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

sense

"The clarity with which [a space] can be perceived and identified.... Sense depends on spatial form and quality, but also on the culture, temperament, status, experience, and current purpose of the observer." (Lynch, 131) Identity, structure, congruence, transparency, and legibility are all aspects of sense.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

design goals

- activate the space to attract diverse users
- augment the site program opportunities
- establish a spatial hierarchy to break up monotony
- implement all 3 IT groups to meet opportunity criteria
- reflect the adjacent context & building use
- create a unified design concept
- enhance social collaboration opportunities

opportunities

- public art (triangulation)
- water feature
- close interior streets to extend pedestrian space
- preserve mature tree canopy
- open flexible recreation space
- wider sidewalk along Market St
- adaptable seating
- flexible infrastructure
- intelligent bollards
- information kiosk
- interactive art (triangulation)
- adaptable seating with GPS tracking
- blank canvas
- awareness beacons

design solution

(4.1) process: design solution. anthony meyer.

control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

design concept

The design concept for the Civic Room in Downtown St. Louis is based on the significance of a beacon. As shown in Figure 4.2, a beacon is a light or signal that extends outward from a fixed place in order to guide, alert, or send a message. The goal is that when the signal is detected, people are attracted and drawn to the beacon or inspired to take action. This concept is used to enhance the original design of the Gateway Mall, which was viewed as a type of beacon extending westward, sending off from St. Louis, the Gateway to the West.

The design proposal that will be discussed in this chapter is an expression of the beacon concept. Interactive technologies, when grounded into the Civic Room site, will radiate outward into the rest of the space and serve as beacons that attract interest and light up an otherwise mundane, under utilized urban space.

beacon 01100100101010010011100000010010100101001001010100 01 01

(4.2) concept: beacon. anthony meyer.

site plan

peabody opera house **1**

scott trade center **2**

municipal courts **3**

city hall **4**

magistrate courts **5**

offices/facade display **6**

apartments **7**

central public library **8**

soldier's memorial museum **9**

city courts **10**

apartments **11**

existing memorials **12**

reading room

event space

recreation space

music collaboration plaza

pedestrian avenue

information plaza

interactive urban environments

8

10

11

7

12

9

6

12

12

12

1

5

3

2

4

(4.3) site plan. anthony meyer.

0   200   400
ft

NORTH
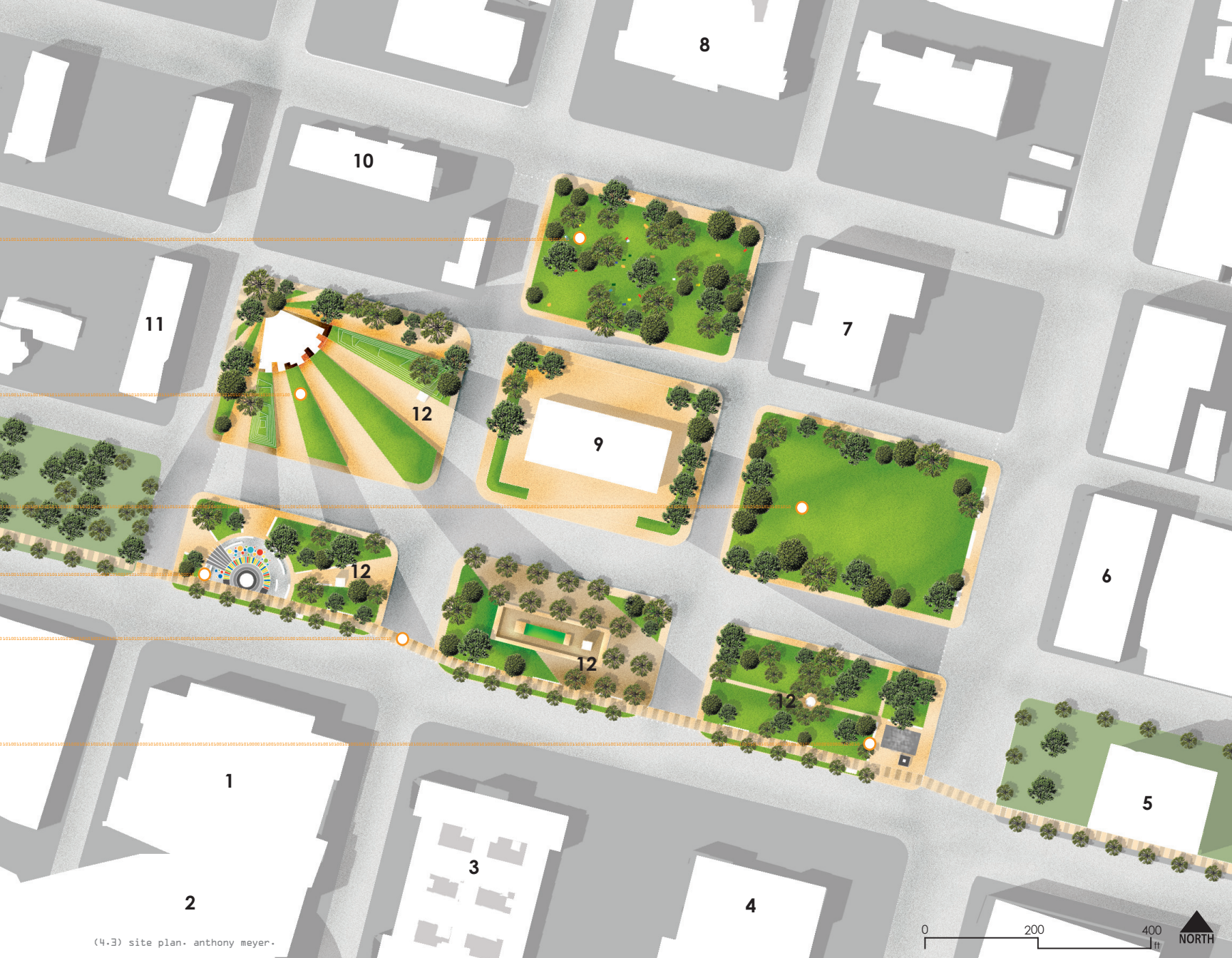
spatial adjacency

Figure 4.4 shows the location of certain design decisions and their relation to adjacent context that is similar in use or highly visible and available.

The **Pedestrian Avenue** strenthens the east-west connection of the Gateway Mall, and runs parallel to the busy Market Street.

The **Information Plaza** is sited near the St. Louis City Hall and at the corner of two of the busiest streets in downtown: Market Street. and Tucker Boulevard. The intersection provides maximum visibility for the access of information.

The **Music Collaboration Plaza** serves as the southwest entrance into the Civic Room and relates to the artistic and musical nature of the Peabody Opera House across Market Street.

The passive nature of the **Reading Room** relates to the Central Public Library and residential buildings north of the site.

The office building across Tucker Boulevard from the **Recreation Space** is a bland, flat surface that is ideal for a digital display on the facade.

central
library

reading room

event space

recreation space

music
collaboration

pedestrian avenue

information
plaza

office facade

tucker blvd

market st

peabody
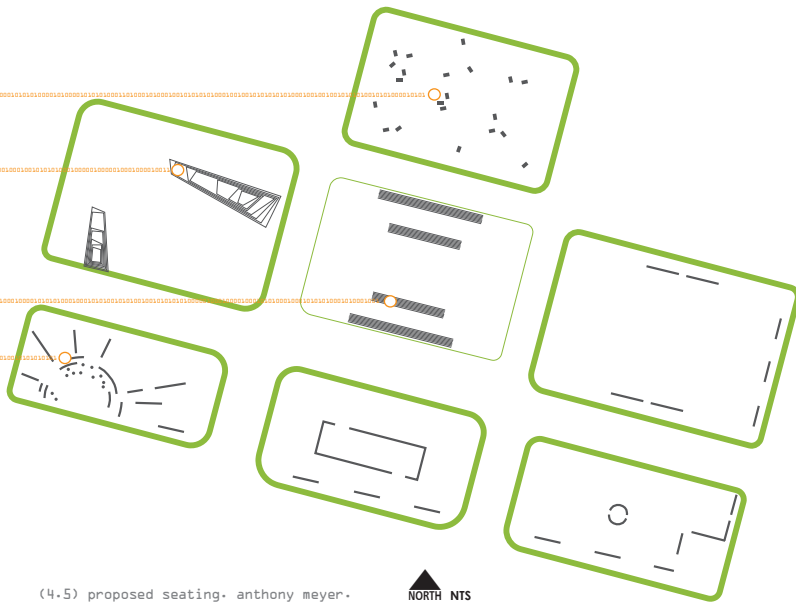opera house

city hall

design

107

sitting space

movable chairs

terrace step seating

step seating

bench seating

(4.5) proposed seating. anthony meyer.
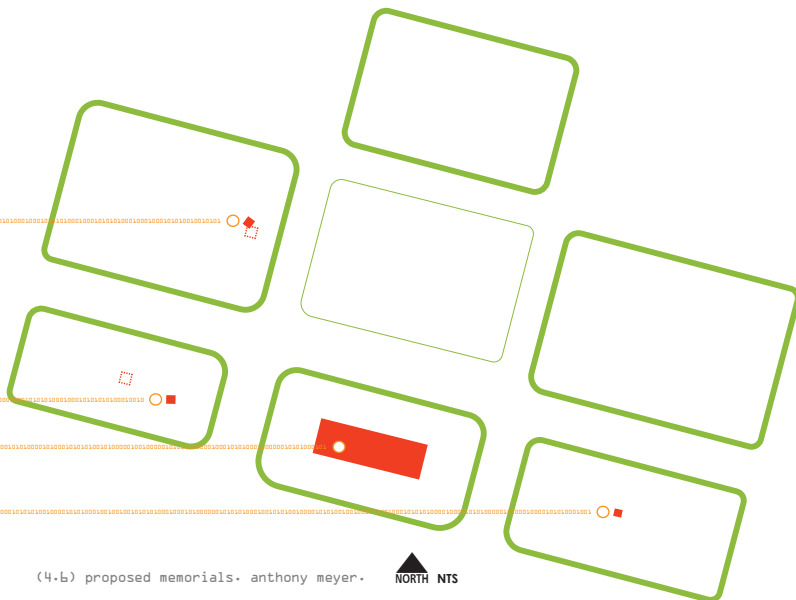
NORTH NTS

memorials

saints memorial moved to follow design form

schiller memorial moved to follow design form

war memorial

fireman's memorial

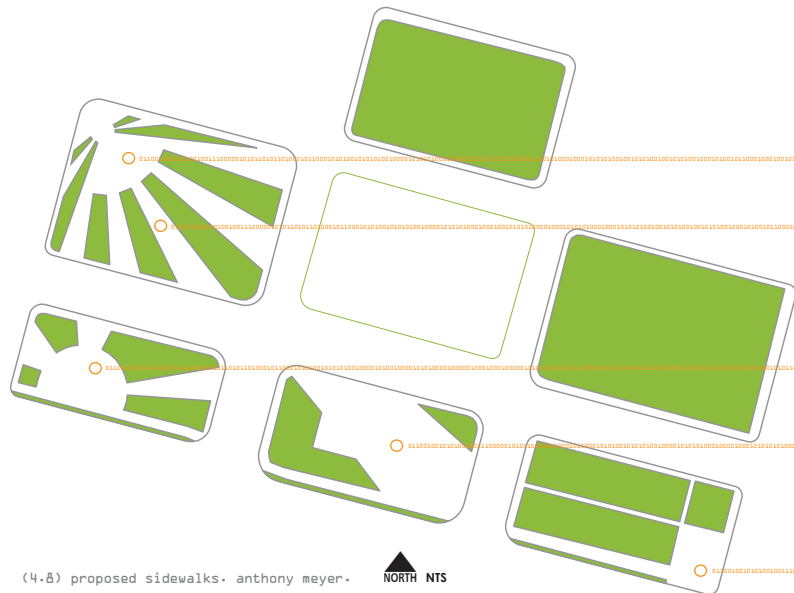(4.6) proposed memorials. anthony meyer.

NORTH NTS

trees

canopy preserved for shade and enclosure

backdrop for event space

border and frame recreation space

bosque in plaza

line pedestrian avenue

(4.7) proposed trees. anthony meyer.

NORTH NTS

hardscape vs. softscape

event plaza

radial sidewalks

music collaboration plaza

memorial plaza

information plaza

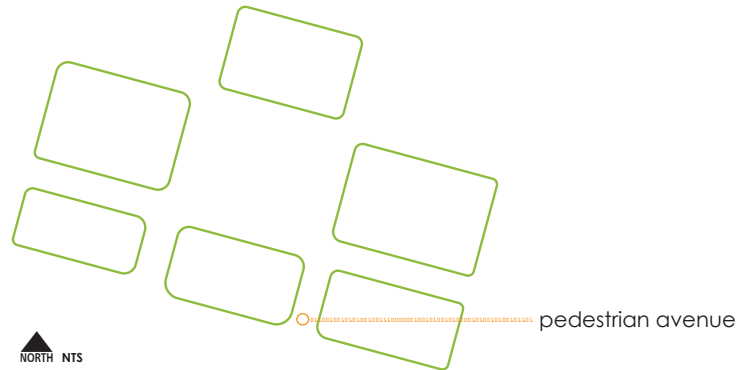(4.8) proposed sidewalks. anthony meyer.

NORTH NTS

pedestrian avenue

The main purpose of the Pedestrian Avenue is to accentuate and connect the east-west orientation of the Gateway Mall, which is conceptually based on the ideal that the City of St. Louis is the 'Gateway to the West'. The Avenue provides a wider, more pronounced path for local and visitor pedestrians. Not only does the Avenue have a strong visual presence, it also connects both ends of the Mall together. The Pedestrian Avenue is lined with certain site elements such as seat walls, street trees, and lighting that help make it a pleasant pedestrian experience.

Due to the highly visible location and potential volume of people, the lighting along the avenue provides an opportunity for interaction. There are sensors embedded into each fixture that read and record specific environmental conditions such as microclimate, temperature, air quality, and humidity. This information can be useful to researchers and to the city in order to help identify patterns within the space, but more importantly, this information can be readily accessible to the people using the space. This type of awareness technology has the power to promote a certain condition within the immediate environment that may affect people in some way, hopefully eliciting a positive and productive response. For instance, if this area of the city is struck with poor air quality on a given day due to high carbon levels, a light on the top of the fixture will show red, alerting passersby of the condition. This coincides with current alert systems for air quality, but this system is more subtle and ethereal in nature. To the

average passerby, the lights on the top of the fixtures may not have any significance, except that they change colors from time to time. They may perceive the changing colors as a random act or set on a timing system. However, people are able to access the meaning of the air quality alerts in two ways: by using their personal mobile devices and using the information kiosk found on the corner of Market Street and Tucker Boulevard.

The usefulness of this system is in the capacity for people to respond to the given information. If people know that their health is potentially affected by the quality of air within the city of St. Louis, they might be more inclined to make decisions that would improve the condition, such as walking instead of driving their car.

NORTH NTS

pedestrian avenue

(4.9) pedestrian avenue location map. anthony meyer.

On the phone screen:

unhealthy

air quality

Hjdiohz uag hsiapiqao pdfj gha uced guyf tgikag udjk dji. ahwcoughfjuuuyq. Aiu euayuyyagaoagduuyuhg hfjuhsudhwayalo fjjmhndfhhh. Akluzyhyaq hfjztadzy eutaio akjzhq jdui uudiog.

music collaboration plaza

existing memorial (reoriented)

pedestrian avenue

existing memorial

existing memorial

information plaza

market st

13th st

a

a'

(4.11) pedestrian avenue plan. anthony meyer.

NORTH NTS

seat wall

1.5 ft

16 ft

9 ft

bollards at 13th street

a-a'

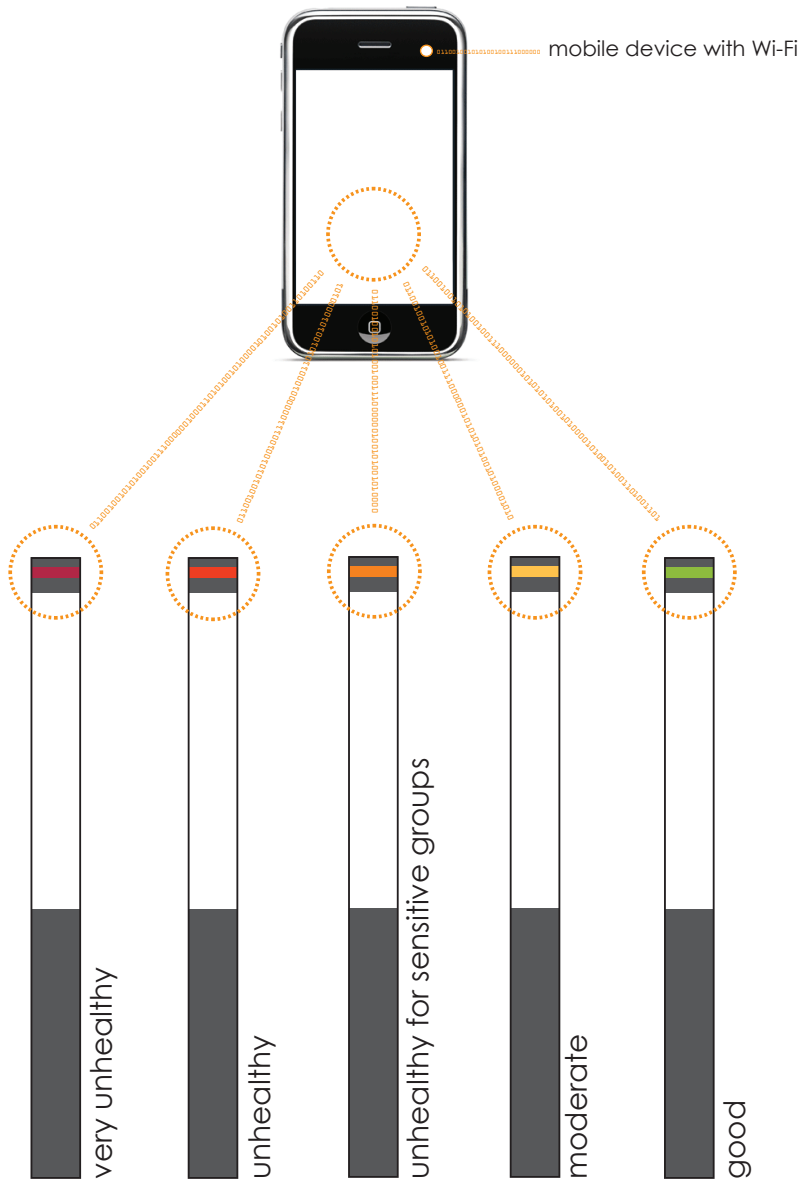lawn area

pedestrian avenue
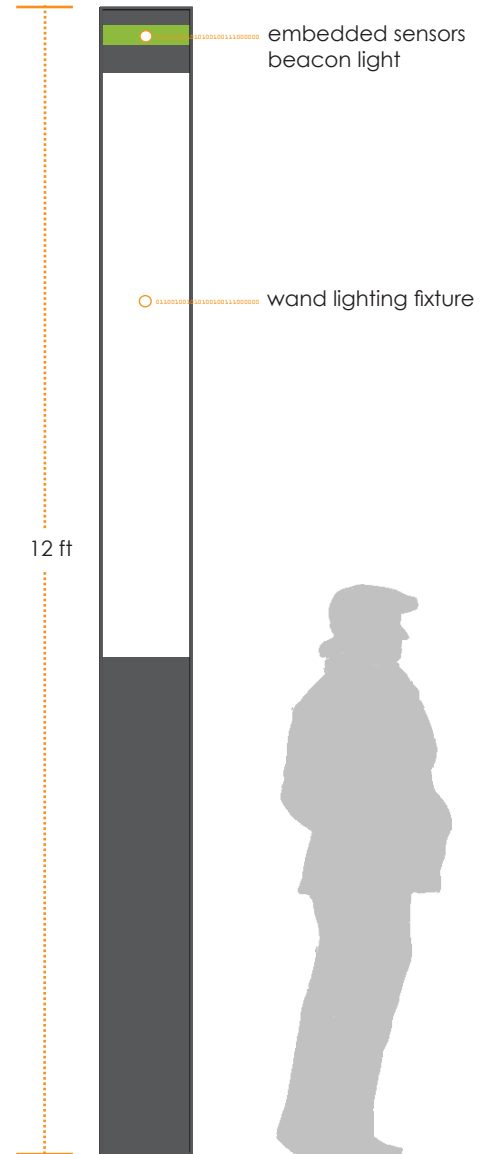
buffer strip

market street
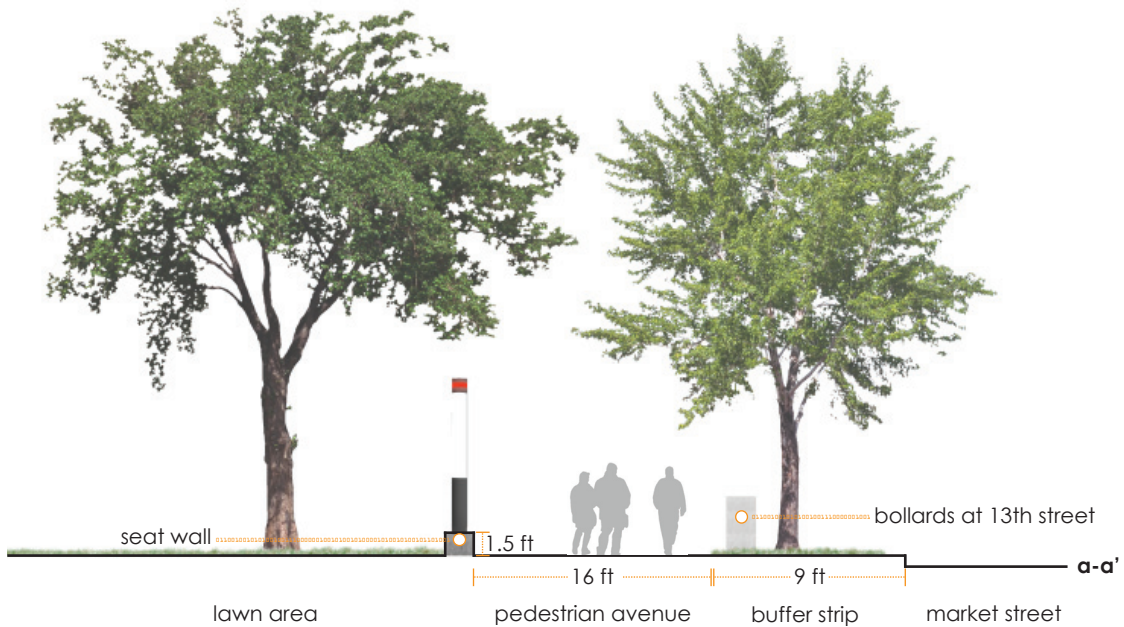
Using a mobile device with a Wi-Fi connection, the information about specific environmental conditions can be accessed. This allows the beacon lights to move away from simply an aesthetic detail, and provide real time information that affects the health and welfare of individuals in downtown. In addition, if the air quality is unhealthy, the information displayed on the mobile device gives recommendations for how to moderate the condition, such as not driving a motor vehicle and walking instead. This component gives people applicable, important information and promotes them to respond.

air quality index	guidelines to protect your health	care for the air
code purple very unhealthy	everyone: avoid all exertion.	• conserve energy: drive less and use less electricity
code red unhealthy	children, active people, older adults, and those with heart or lung disease (like asthma): avoid prolonged or heavy exertion. everyone else: limit prolonged or heavy exertion.	• carpool, use public transportation, bike or walk whenever possible
code orange unhealthy for sensitive groups	children, active people, older adults, and those with heart or lung disease (like asthma): limit prolonged or heavy exertion.	• keep your car, boat, lawnmover and other engines tuned and maintained
code yellow moderate	unusually sensitive people: consider limiting prolonged or heavy exertion.	• keep tires properly inflated and wheels aligned
code green good	no health effects expected.	• never burn your trash. this is illegal and releases toxic chemicals

(4.13) air quality color guide. anthony meyer, source: department of environmental and natural resources.

mobile device with Wi-Fi

embedded sensors
beacon light

wand lighting fixture

12 ft

very unhealthy

unhealthy

unhealthy for sensitive groups

moderate

good

(4.14) alert system meanings. anthony meyer.

(4.15) fixture detail. anthony meyer.

information plaza

This interactive entity serves as a kiosk for public information, allowing users to retrieve and input data through an interactive display responding to human touch and motion. The kiosk creates a central database for many different kinds of information to be accessed in one place. The following are examples of information that are available at this station:

- city maps- routes, destinations, directions
- historic data
- news/current events
- program information- events, shows, parties
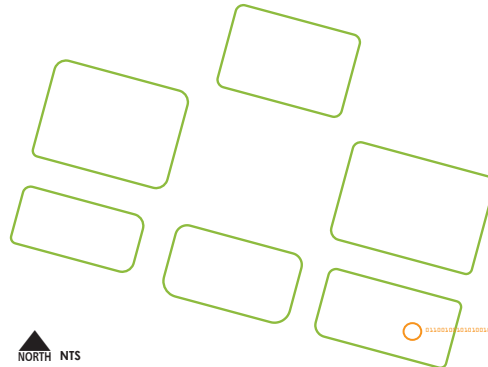- environmental conditions- weather, traffic, emergencies

This information is useful to all different types of users, whether locals or visitors. The display also allows people the opportunity to input their own information or opinions. The station acts as an open wiki network that incorporates user personalization of restaurant reviews, public announcements, and can also serve as a form of social networking. This technology primarily promotes efficiency and easy access to a wide range of information within the public realm.

A vertical structure on the information kiosk acts like a beacon, projecting the input and output information from the interactive display. This beacon can warn of a traffic accident, alert recent news updates, or broadcast event information.

 In addition, user interaction with the information station animates an interactive fountain in the surrounding space. The fountain is typically dormant and non-active, except when someone is retrieving or inputting information through the display. During these times, water is propelled from the ground in a random pattern upwards, creating a playful and cooling environment. This interaction gives users a certain level of control over how others perceive or use the space.

This station is sited due to its adjacency to the City Hall of St. Louis, which is located on the southwest corner of Market Street and Tucker Boulevard. The intersection is one of the busiest downtown for vehicles and pedestrians, so this location provides maximum amount of visibility and exposure.

information plaza

NORTH NTS

(4.16) information plaza location map. anthony meyer.

Alert!
Traffic at
Market &
Broadway

(4.17) information plaza. anthony meyer.

public alert beacon

**Alert!
Traffic at
Market &
Broadway**

interactive mapping

Sports Venues

Edward Jones Dome

Scott Trade Center

Busch Stadium

Interactive Mapping

weather/news

89°   78°   64°

Interactive Mapping

education of history/culture

City of St. Louis - History
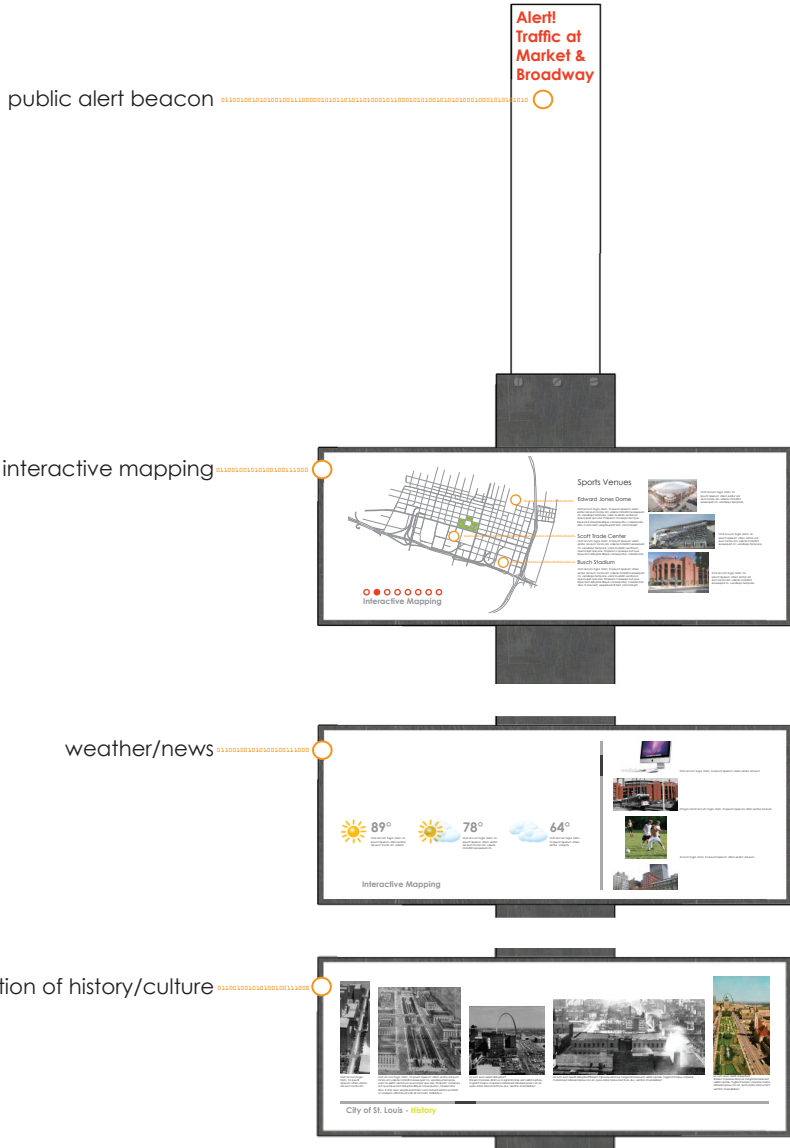
(4.18) information kiosk display details. anthony meyer.

market st

city hall

NORTH NTS

(4.19) information plaza plan. anthony meyer.

using the interactive kiosk activates the
fountain in the plaza for others to use
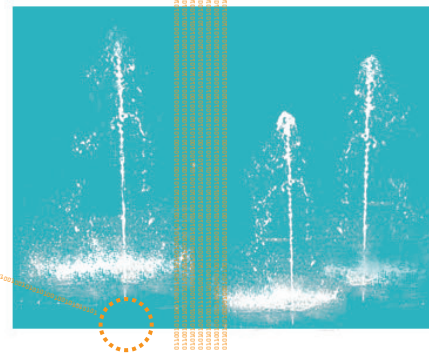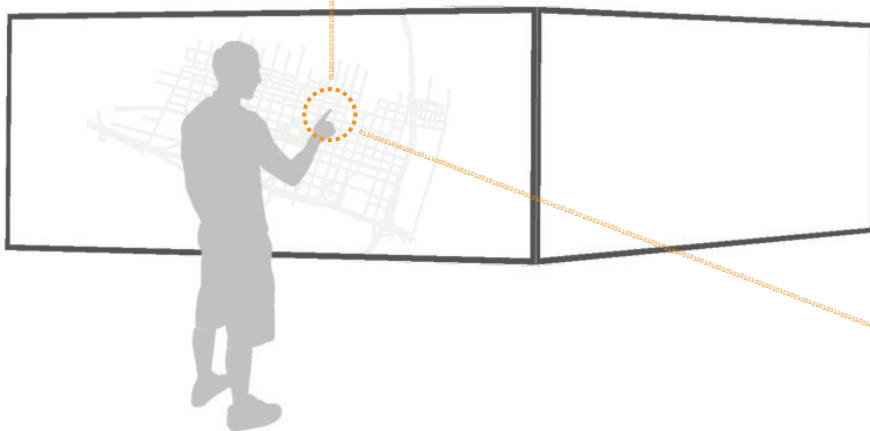
(4.20) fountain responsive to kiosk interaction. anthony meyer.

music collaboration plaza

The concept of this space is to provide an outdoor musical experience that stimulates people's senses and provides a playful, expressive atmosphere. As an interactive art piece, the space and objects correspond with human action. Users have the ability to elicit sound and light responses when they step on weight and motion detected sensors located throughout the space. This sculpture is built on an abstract representation of musical instruments including piano, drums, and guitar. Specific tones and colors are assigned to each instrument, and are activated when someone steps on the corresponding sensor pad.

Not only does this art piece affect how individuals perceive and use the space, it also promotes collaboration among different people by combining specific tones to make collective melodies. Colored lights representing the musical instruments are displayed on the tall centerpiece known as the digital conductor, and act similarly to a musical scale. This display shows people which pads of the instruments to step on in order to make a certain series of tones. Essentially, as more people interact with the art piece, more complicated songs can be composed. The instruments, as well as the conductor, create a brightly colored sculpture that animates this corner of the Civic Room. Additionally, users can view up into the hollow center display and view an alternative expression of the sounds and lights created. On the interior wall, pulses of light and color are emitted when the instruments are played.

This expressive space is sited due to its proximity to the Peabody Opera House across Market Street. The Opera House holds concerts and shows that draw thousands of people year round. The musical nature of the collaboration space unifies the building with the public landscape.

music collaboration plaza

NORTH NTS
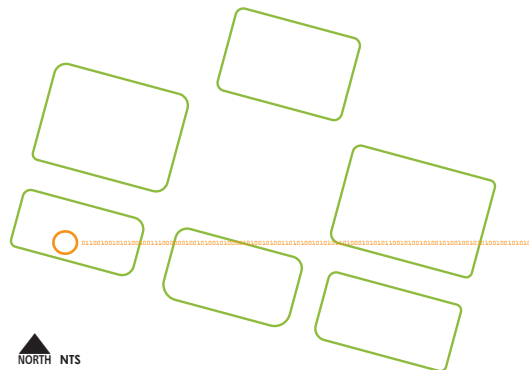
(4.21) music collaboration plaza location map. anthony meyer.
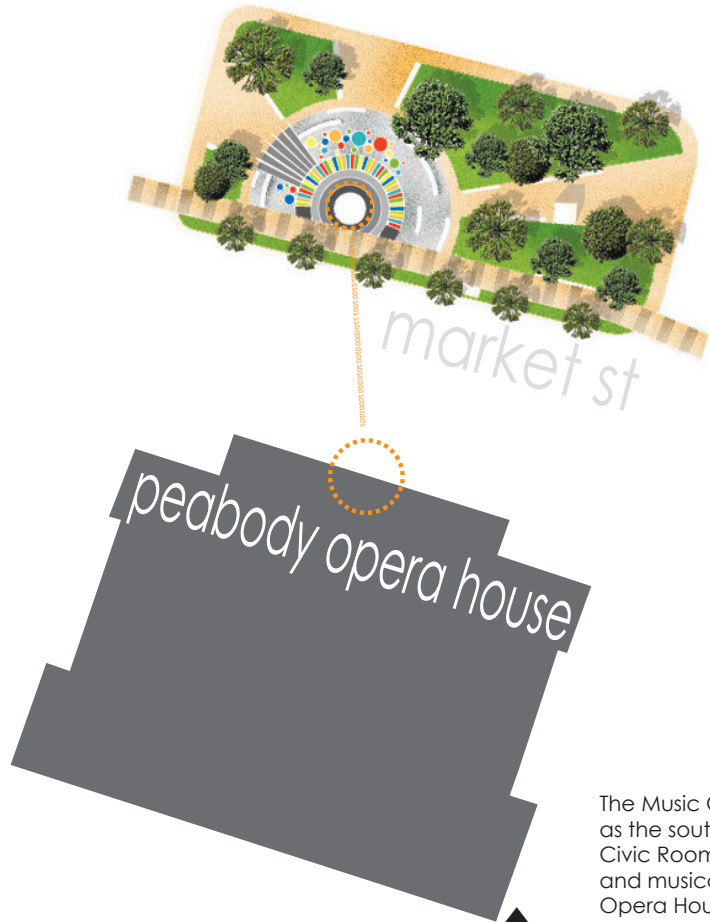
(4.22) music collaboration plaza. anthony meyer.

market st

peabody opera house

The Music Collaboration Plaza serves as the southwest entrance into the Civic Room and relates to the artistic and musical nature of the Peabody Opera House across Market Street.

(4.23) music collaboration plaza plan. anthony meyer.

NORTH NTS

music collaboration plaza seating

(4.24) seating. anthony meyer. NORTH NTS

drums
guitar
pianopianopianopiano
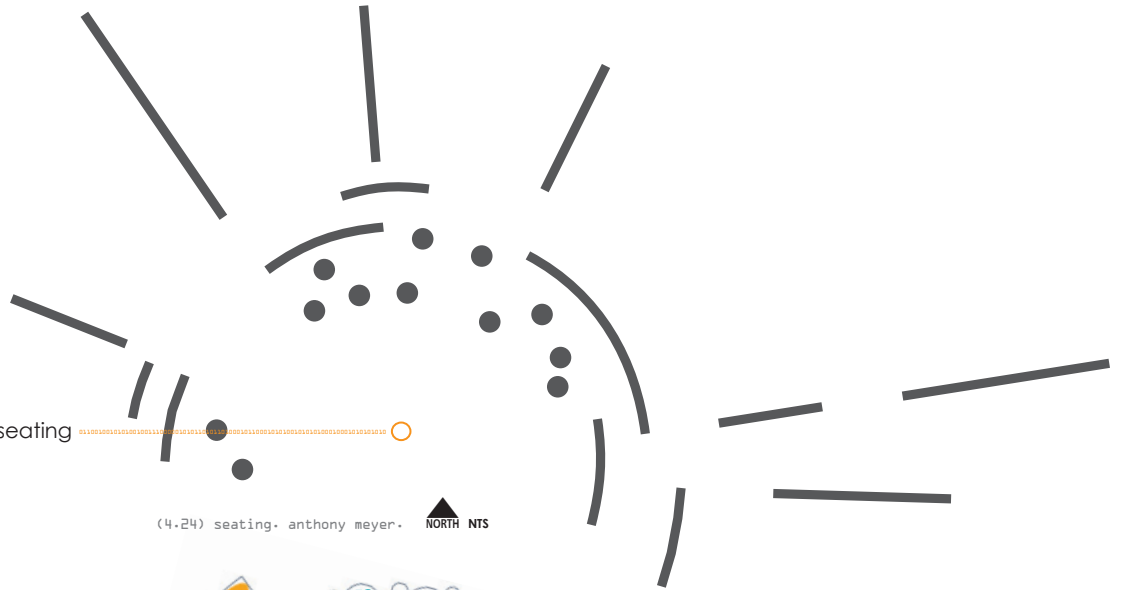
instruments
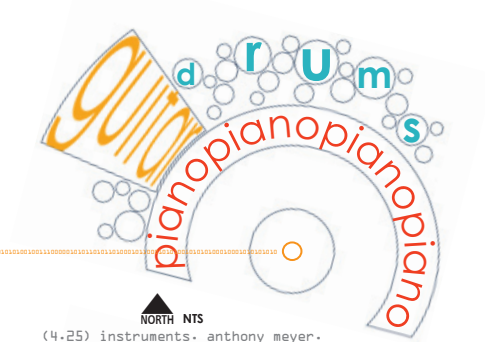
NORTH NTS
(4.25) instruments. anthony meyer.

music collaboration plan
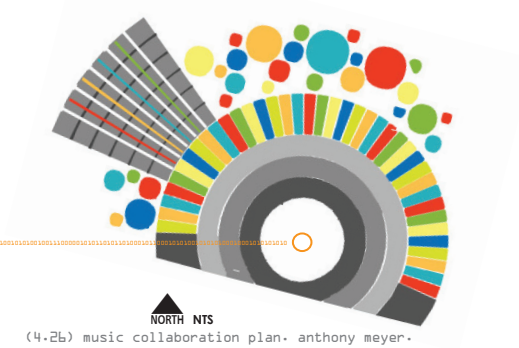
NORTH NTS
(4.26) music collaboration plan. anthony meyer.

users follow digital conductor and step on
corresponding pads to create tones and lights

digital conductor

This large tubular screen instructs users on the
location and sequence of which notes to
play in order to compose a specific song. As
the difficulty of songs increase, more people
will have to collaborate in order to create a
succint melody.

(4.27) digital conductor. anthony meyer.

instrument sensor pads
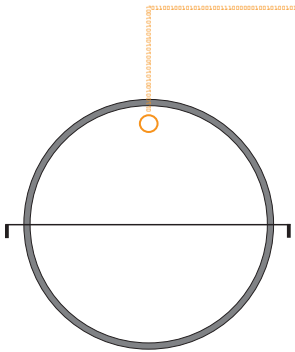
top view of digital conductor
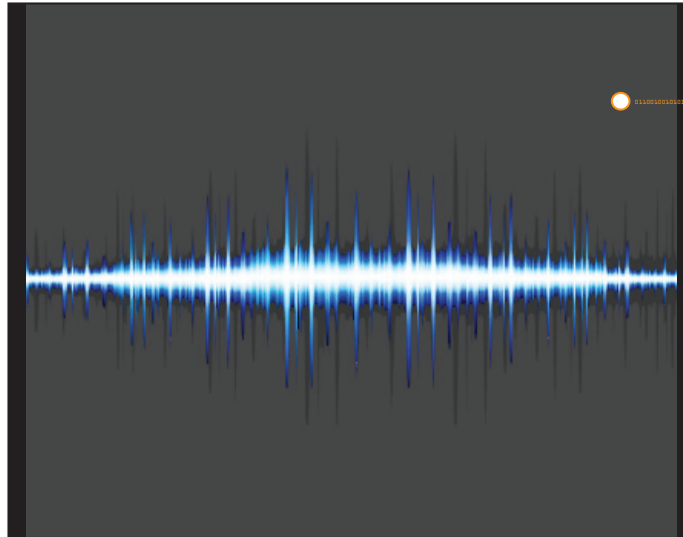
The inside of the digital conductor is hollow and people can walk under and look up to see an alternative expression of the music. Displayed as dynamic pulses of light, the digital display on the inside wall of the conductor responds directly to the beat and tones that are created with the instruments. This provides another way to experience the art and music, as well as perceive interactivity.

(4.28) interior view of digital conductor. anthony meyer.

event space

The Event Space fulfills the Civic Room's need for large, occasional gatherings of regional residents. This space is open and large enough to fit thousands of people attending a concert, movie, or festival. An iconic, adaptable structure sits at the northwest corner of the site, which can be moved up or down to meet different program needs. Typically, the structure is in the down position serving users as a pavilion where they can gather, picnic, and escape the sun or rain. During such times as a concert or a movie, the face of the structure can be rotated upwards to act as a concert stage backdrop or movie screen. Not only does this have a very functional purpose, it also gives this space an iconic image that people will be able to identify as the Civic Room.

Also contributing to the event space is a system of bollards located on the streets interior to the Civic Room park blocks. These bollards can raise and lower from the ground to increase/decrease access for vehicles. Embedded computation in the bollards can help identify when the event space can no longer accommodate the amount of people filling the space. The bollards will raise so the event space can now be extended out into the street space. This also helps people to perceive the Civic Room as one large, unified area as opposed to 7 disconnected blocks.

event space

NORTH NTS
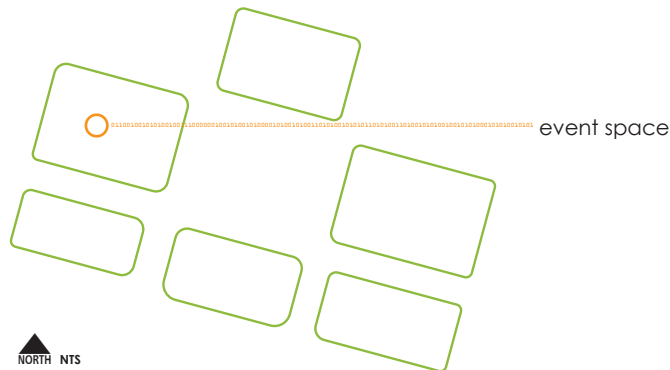
(4.29) event space location map. anthony meyer.

(4.30) concert. anthony meyer.
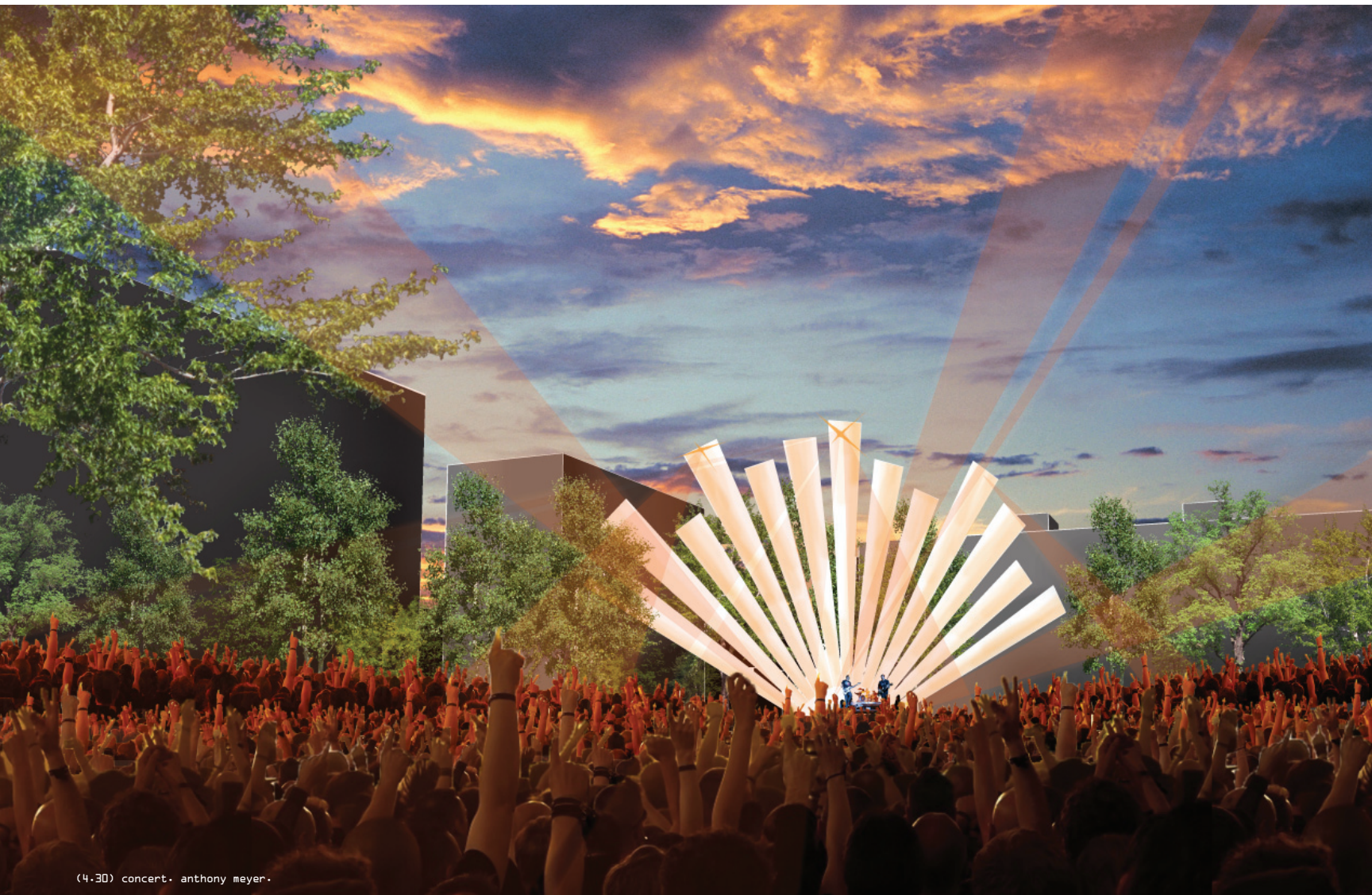
event structure

terrace seating
frames space and directs views toward event structure

grass mounds
slopes down toward event structure
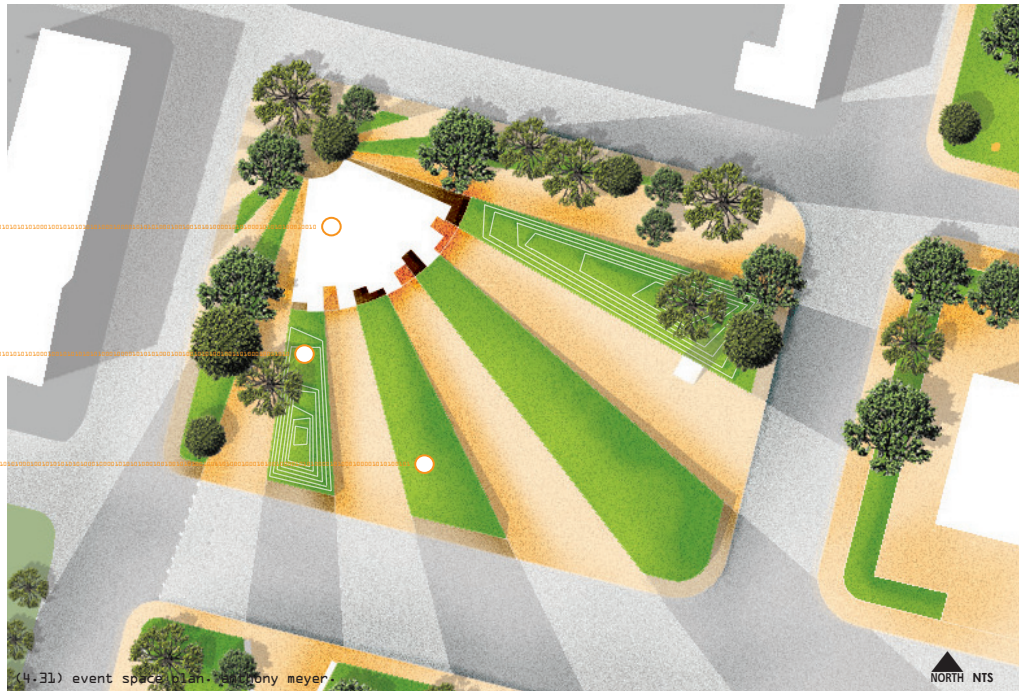
(4.31) event space plan. anthony meyer.

NORTH NTS
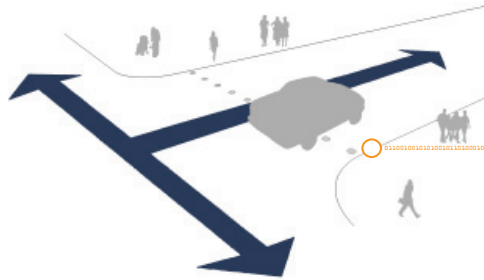
bollards down

interior streets are open to vehicular traffic during rush hour to alleviate congestion on adajcent streets
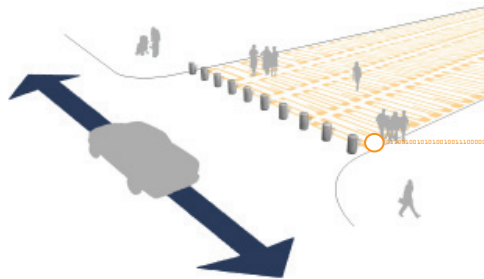
bollards up

interior streets are typically closed to vehicular traffic in order to create more pedestrian accessible space

(4.32) bollard effect. anthony meyer.

bollards

street= **6.7 acres**

total park area= **11.9 acres**

1.6 acres

2 acres

1.8 acres

2.1 acres

1.1 acres

1.4 acres

1.4 acres
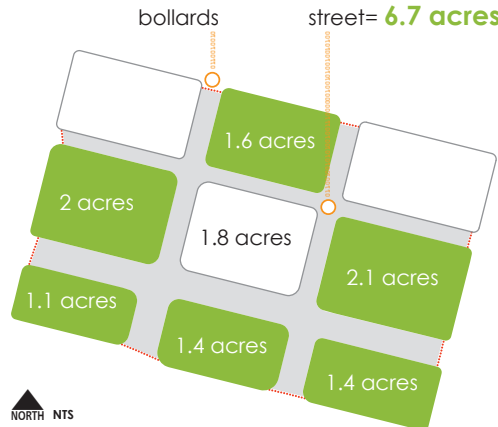
When the interior streets are closed, the street becomes an extension of the park, adding over 50% more space to be used for large events.

NORTH NTS

(4.33) addition of space by bollards. anthony meyer.

The event structure can rotate upwards
to a vertical position in order to serve as a
backdrop for concerts and outdoor movies.
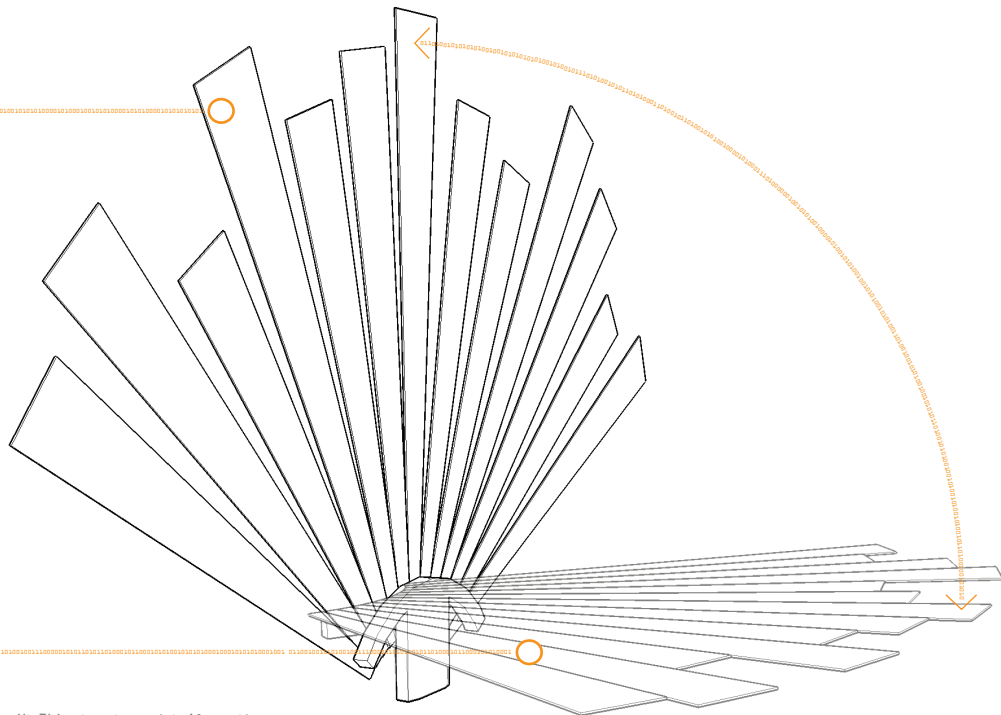
When in the down position, the event structure
serves as a pavilion and shade structure for
festivals, picnics, and gatherings.

(4.34) structure detail. anthony meyer.

activity diagrams
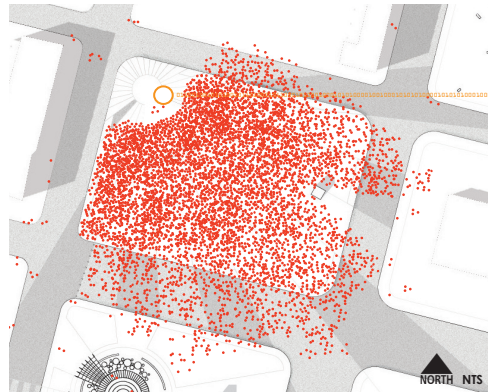
concert/movie

event space is extended by bollards closing
interior Civic Room streets

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festival

NORTH NTS

(4.35) activity diagrams. anthony meyer.

reading room

As prescribed in the program potential, the northern most block in the Civic Room is designed as a passive space devoted to uses such as sitting, reading, tanning, and gathering. This space is sited for its distance from the busy intersection of Market Street and Tucker Boulevard, as well as its proximity to the public library and many residential buildings north of the site. One of the key concepts of this space is preserving and enhancing the mature tree canopy to provide shade, aesthetics, and comfort.

Lawn chairs are distributed in this space to replace the stationary, static, and rundown benches previously found along the outside edge of the block. The chairs are movable and dynamic, allowing users to manipulate their position and arrangement according to their current needs. The chairs can be arranged in a large circle or congregation for groups of people to gather and talk, or they can move a single chair to a secluded spot under a grand oak tree to relax and read a book. This manipulability gives users of the space direct control of how the space is formed and perceived by others.

In this application, the technology plays an intangible role, ethereal to the actual users of the space. The lawn chairs are embedded with sensors that have GPS technology, that detect and record the direct location of each chair within the space. This allows city planners, architects, and designers the ability to research and analyze data on patterns and positions that the chairs take. In addition, the embedded sensors gather information about specific microclimates. For instance, environmental conditions such as temperature, sun exposure, wind speed/direction, humidity, and air quality are recorded. All of this data

can be analyzed to better understand the psychology of social interaction within a public space. Analysis and assumptions from this research can help designers in the future create spaces that better meet user needs and expectations.

As the chairs are moved throughout the space over time, a digital display is created that artistically represents the chairs locations and movements through time. This display is a creative opportunity to visualize data in an alternative way than is usually perceived by users of the space. The visualized data can be projected on the large screen attached to the building facade across Tucker Boulevard from the Recreation Space as well as at the Information Station. Many alternative sets of data can be projected based on different time increments: daily, weekly, monthly, seasonally, and yearly.

Another advantage to the embedded computation is a feature that prevents theft and vandalism of the chairs. Designers and municipalities always face concerns about these two issues whenever elements in the landscape can be moved. If one of the chairs exits the perimeter of the reading room block, the police are notified. The sensors in the chairs can be easily tracked, found, and returned to the space.

reading room

NORTH NTS
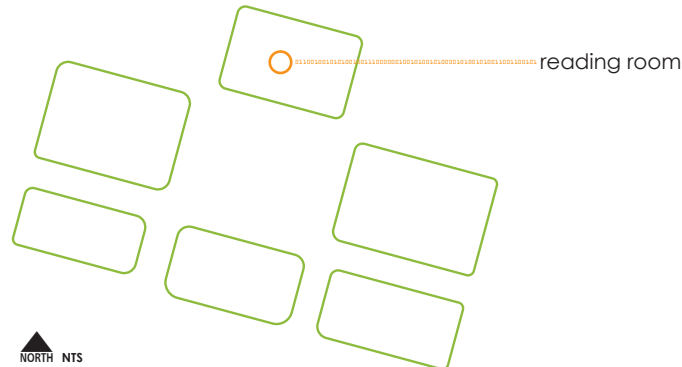
(4.36) reading room location map. anthony meyer.

(4.37) reading room. anthony meyer.

central library

olive st

(4.38) reading room plan. anthony meyer.

NORTH NTS

chair positions are recorded over select periods of
time and are presented as abstract visualized data

GPS enabled sensor embedded
into chair to record patterns of
movement in space through time

(4.39) lawn chair detail. anthony meyer.
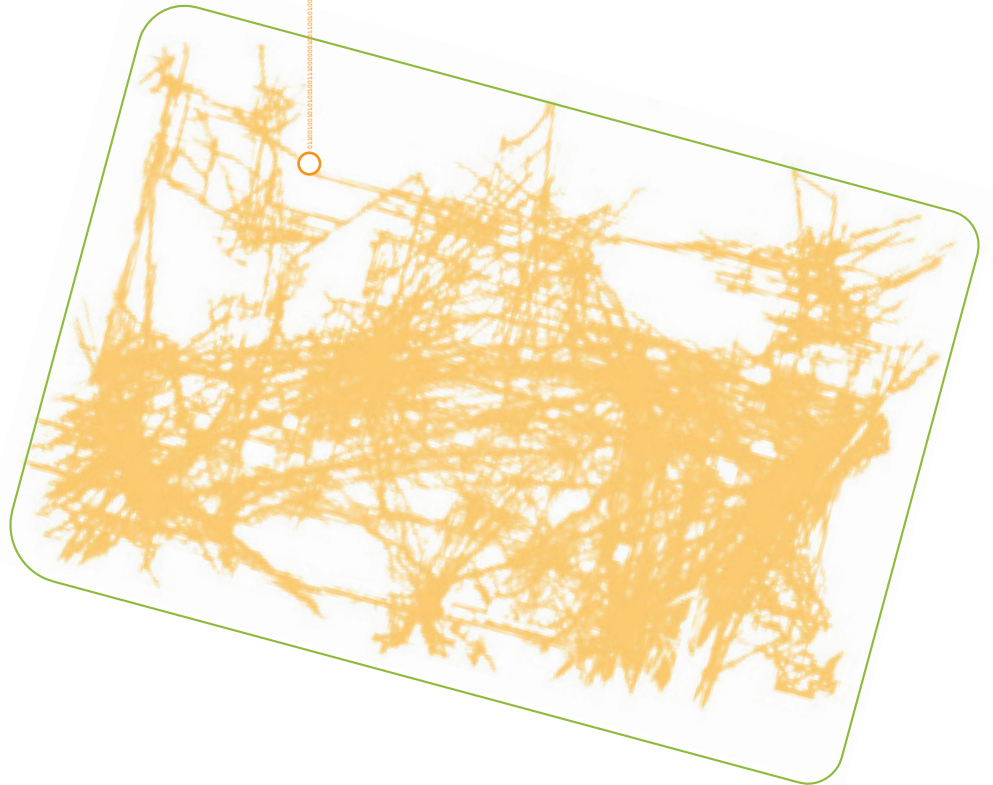
(4.40) visualizing seat mobility. anthony meyer.

recreation space

The recreation space provides a large, flexible turf grass area to use for sports, games, and large activities. Simple as it is, the concept for this space is built on an open program, available for a large variety of uses.

To reflect this concept, a large digital display is erected on the facade of the office building directly across Tucker Boulevard. This display serves as a blank canvas that users of the space can change and personalize. People can manipulate the display, using their mobile device to sync to sensors that are embedded into the facade. The digital display can be used as a scoreboard for sports matches, a digital painting, and even a bulletin board to post photos and comments. In addition, you can project and visualize the different sets of data recorded by the lawn chairs in the Reading Room as well as the activated instrument pads in the Music Collaboration. The concept of a blank canvas is used to promote a freedom of expression among the users of this space.

recreation space

NORTH NTS

(4.41) recreation space location map. anthony meyer.

(4.42) recreation space. anthony meyer.

Using a mobile device with a Wi-Fi connection, users can personally adapt the specific information displayed on the facade screen. This technology promotes a positive emotional impulse for users because it allows them to express themselves or contribute to how others are perceiving the space.

The recreation space is sited for its proximity to the tall office building with the bland facade across Tucker Boulevard. The facade offers a great place to put the large display screen.

tucker blvd

facade display

(4.43) recreation space plan. anthony meyer.

NORTH NTS
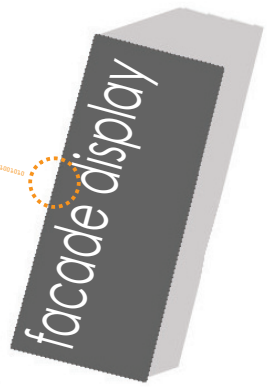
scoreboard

The facade screen can be used as a digital scoreboard, in order to keep track of a soccer game's progress. This action makes the broader area in view of the screen knowledgeable about what is happening in the space, and hopefully attract them to spectate or join.
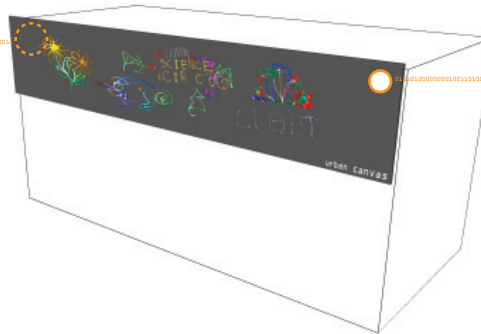
digital artwork

Users can display drawings and paintings that they doodle on their mobile devices. The facade screen can be an ever changing public display of art for Downtown St. Louis.

photo sharing

The facade screen can be used as a digital bulletin board for photos. Users can upload photos to share like an action shot from the soccer game being played in the Civic Room. This action allows the broader downtown area in view of the screen to be included in the activities of the space and promote a social interaction.

design

....
139

(4.44) blank canvas details. anthony meyer.

05

evaluate

10000010001000000000100100100000010000100010010001110001000000100000100011000000010100011000000100100000010100100000010100100000100100000010100100000010010000001000100000000010010001000010000100000001000
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evaluation

interactive technology

interactive

information exchange

creative expression

kinetics

(5.1) evaluate IT. anthony meyer.

IT design applications

- ○ public alert beacons
- ○ information kiosk
- ○ music collaboration
- ○ event structure
- ○ intelligent bollards
- ○ seating data visualization
- ○ facade screen

evaluation of IT

This section evaluates each interactive technology utilized in the proposed design. The focus is to break down each element into the three categories of IT, and identify its role in increasing functional activities within the site, as well as activating and enhancing the space and experience for users. Each technology that was tested in the Civic Room has different attributes and effects that space and its users in different ways.

public alert beacons

information exchange

The beacon lighting positioned along the Pedestrian Avenue gathers real-time information about the quality of air within the space, and projects the information as simply a colored light on top of the fixture. This information is shown abstractly, and may not be clearly evident to the typical passerby. However, when accessed using a mobile Wi-Fi capable device, the information is presented to users to inform about a health-related issue. This technology has the potential to make otherwise ethereal environmental information known, and leaves the user of the space with the choice of how they will respond to that information.
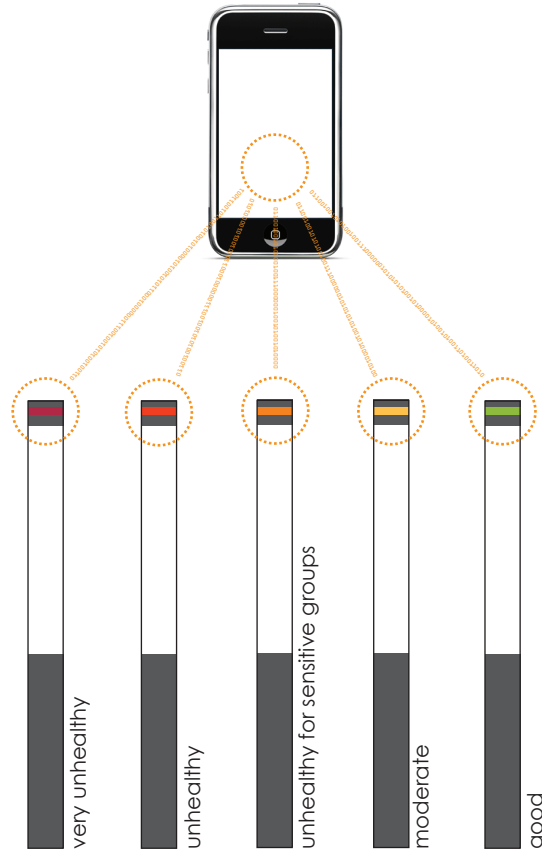
very unhealthy

unhealthy

unhealthy for sensitive groups

moderate

good
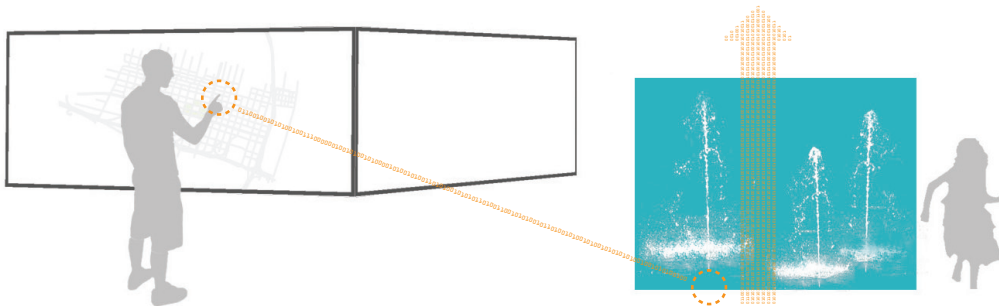
(5.2) alert system meanings. anthony meyer.

information kiosk

information exchange

The information kiosk presents a large database of information that is very applicable to local users and visitors to downtown St. Louis. When users are able to personalize, retrieve, and input information into the system, it gives them a sense of distinction, or contribution to the system. The information can make visitors knowledgeable about the city of St. Louis, but also update the general public with current event information through the beacon display.

creative expression

In addition to allowing a personal expression of how information is displayed on the screen, the information kiosk, when interacted with, promotes expression throughout the rest of the plaza through the activation of the water fountain. This concept promotes a certain level of social interaction because a few people are directly responsible for how others are able to use and perceive the space. User control is exercised as an expression throughout the space.

evaluate

(5.3) fountain responsive to kiosk interaction. anthony meyer.

music collaboration

creative expression

The Music Collaboration interactive art installment provides users with an opportunity to participate in the artwork and create light, sounds, and music that radiates into the space for others to hear. People are able to express different combinations of tones and ultimately combine them into cohesive songs. The goal is that this bright and attractive space will activate the space and allow all user groups to experience a playful, personal atmosphere.
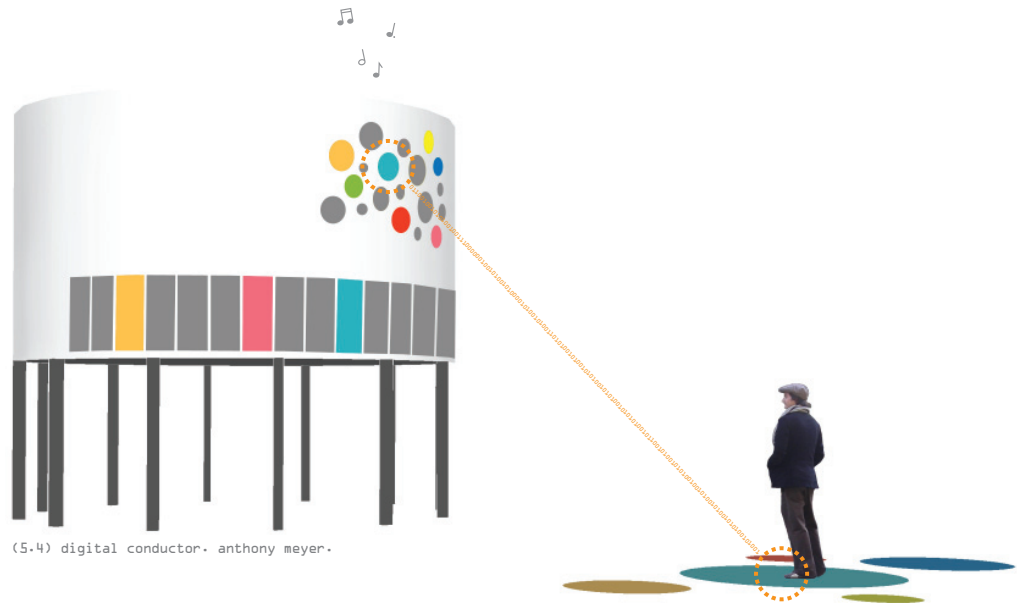
(5.4) digital conductor. anthony meyer.
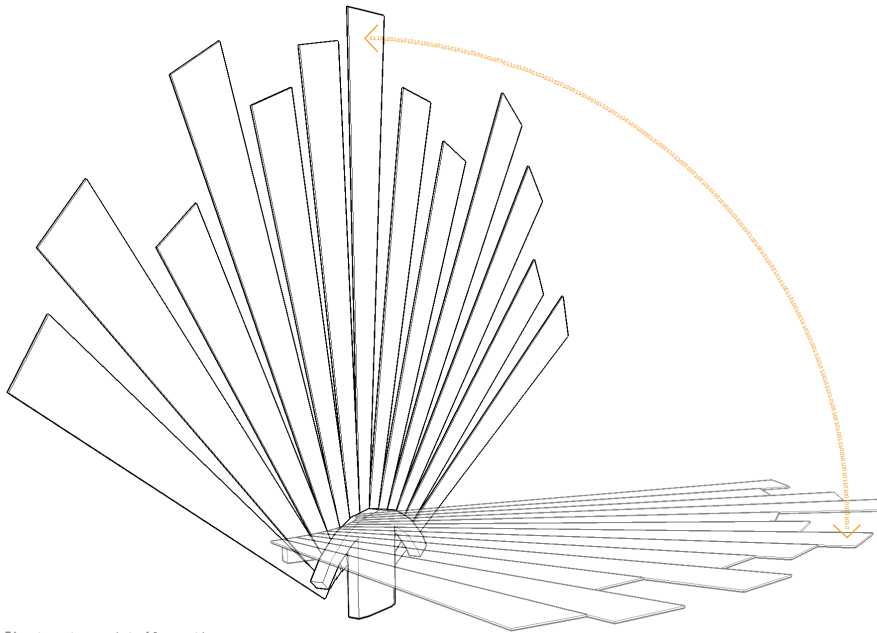
event structure

kinetics

The adaptable event structure is a kinetic object and system that promotes an efficient use of infrastructure to meet the expectations of specific large events. The structure rotates up and down on a foundation as it is needed for different uses.

(5.5) structure detail. anthony meyer.

intelligent bollards

kinetics

The intelligent bollards are electronically movable, and respond to specific external factors including volume of vehicular traffic on adjacent streets and number of pedestrians using the space. The bollards will raise during large events when there is a high amount of people within the space. This kinetic technology is a purely functional system that replaces the traditional practice of moving temporary police barricades to block interior streets.
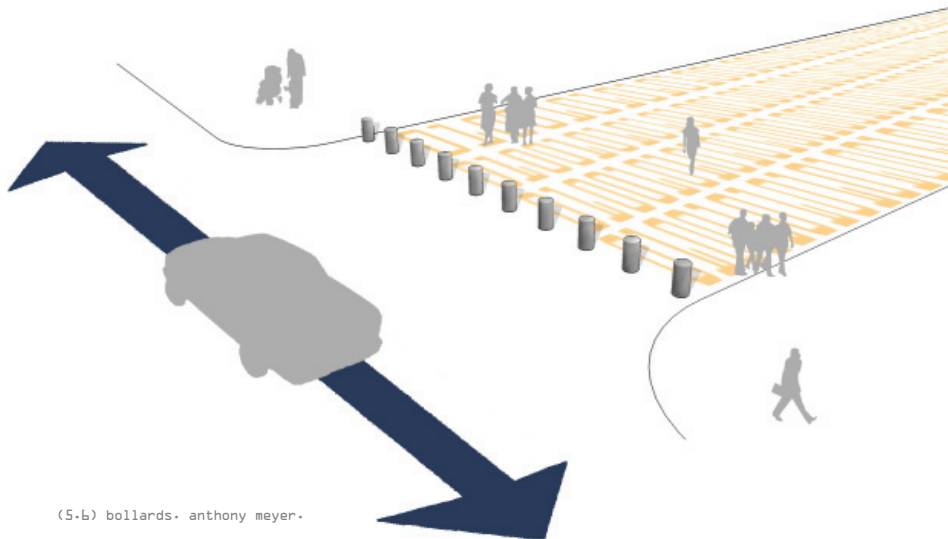
(5.6) bollards. anthony meyer.

seating data visualization

information exchange

Embedded sensors in the Reading Room lawn chairs track their movement and position over time, and the GPS data is collected and stored. This information can show researchers and designers how people moved chairs within the space, and identify patterns of how chairs were grouped or isolated and their relation to tree cover, sun accessibility, wind flows, temperature, and time.

creative expression

The data collected by the chair sensors can be visualized as a temporal dependent graphic that displays the location and movement of chairs throughout the space. This is an indirect form of expression in the sense that users are responsible for the digital composition.
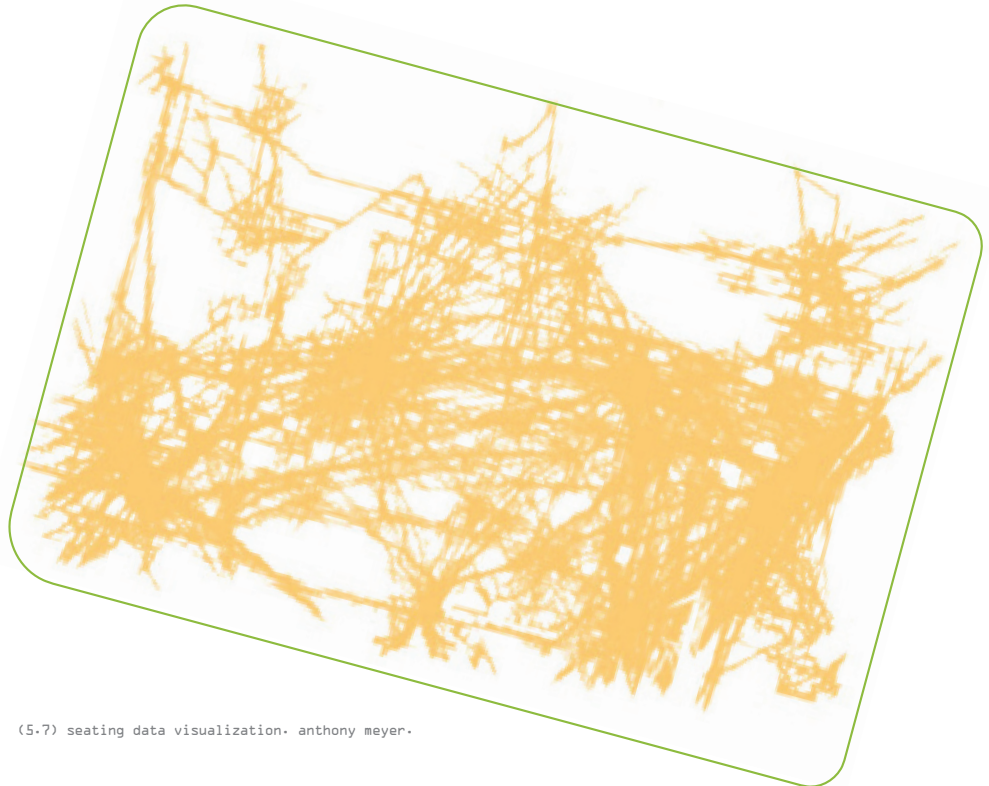
(5.7) seating data visualization. anthony meyer.

facade screen

information exchange

A range of information can be displayed on the facade screen including a time clock, scoreboard for a game or match, personal photos, or a digital data visualization of the chair movement in the Reading Room. These are different types of information that people can affect and manipulate in order to change the perception of the building and Recreation Space.

creative expression

The large facade screen allows complete manipulability of the content that is projected. This creates opportunities for people to compose digital paintings or display personal images and other data. As people express themselves through interacting with the screen, they can feel a positive emotional experience from personal control.

(5.8) facade screen. anthony meyer.

evaluation

urban open space design

- ○ sitting space
- ○ sun
- ○ wind
- ○ trees
- ○ water
- ○ food
- ○ the street
- ○ triangulation
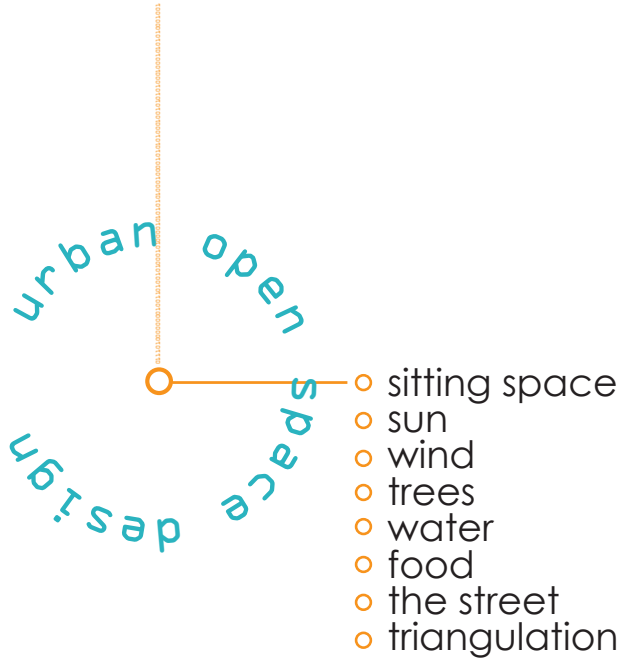
(5.9) evaluate urban open space design. anthony meyer.

evaluation of urban open space design

This section evaluates the Civic Room design proposal on the use and application of William Whyte's elements of urban space design. Some elements were used very specifically, forming space and creating a better place to gather. Other elements were not as applicable to this site, but are still key ideals in the design of the space.

evaluate

sitting space

The existing seating opportunities in the Civic Room were scattered and singular. They were benches that were fixed in place and only sat a few people, offering no opportunity for people to gather. In the design proposal, different seating options were established in each space. As William Whyte suggests, seating should be integrated into the natural design of the space, and should be continuous, clustered, or movable in order to allow people a range of sitting space. The proposed Civic Room design offers seating in the form of steps, continuous seat walls, terraced level seating, and movable lawn chairs. The new seating options create a more dynamic and socially comfortable space.
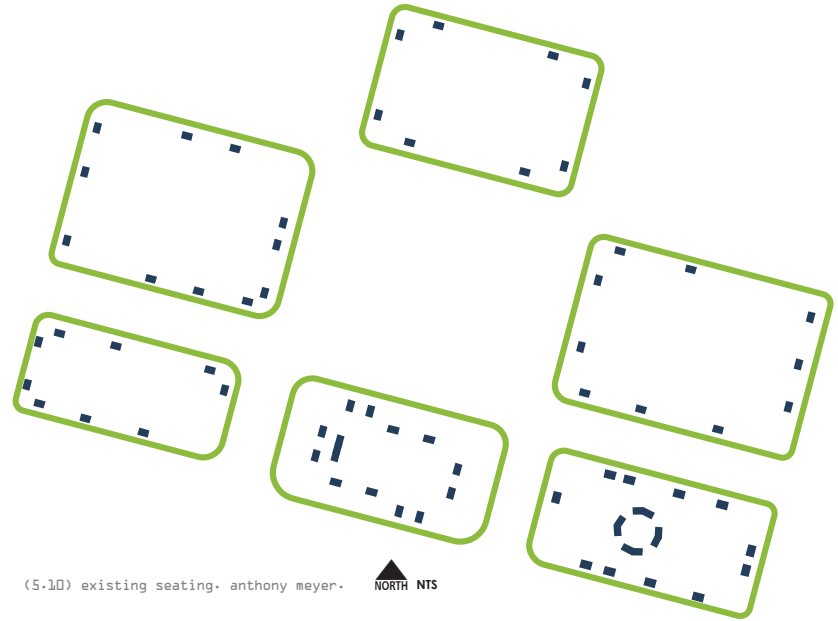
trees

The existing tree canopy in the Civic Room was very mature, and provided a great aethetic and comfort level within the space. However, the trees were planted in a random fashion, scattered over the park blocks in no specific design form. The proposed design strategically removes trees in order to frame new spaces. Also, trees were planted in line along the Pedestrian Avenue in order to augment the linear concept of the Gateway Mall and improve the street-space interaction. A bosque of trees was planted around the war memorial plaza to enhance the more formal geometry. Overall, the proposed design used plant material to accentuate specific design decisions and provides ample tree cover near places of sitting and gathering.
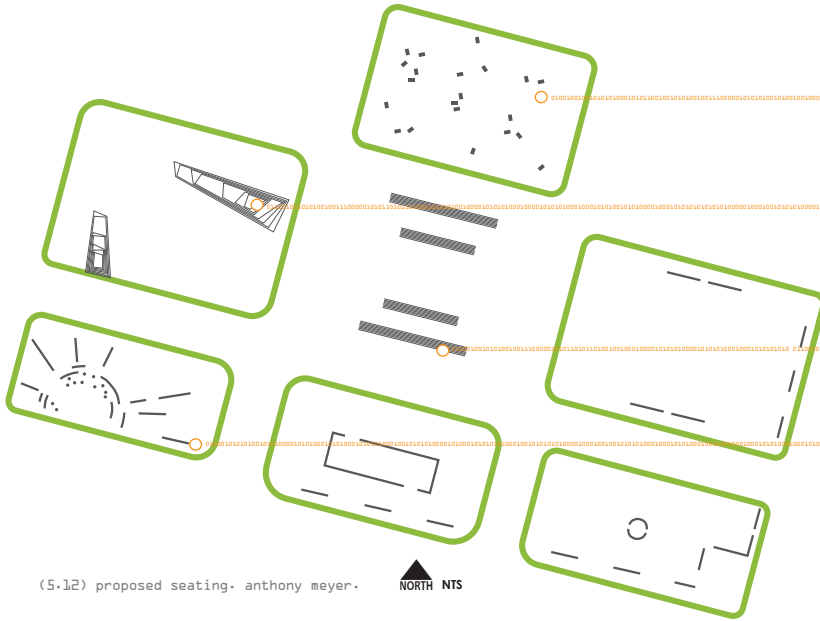
existing

(5.10) existing seating. anthony meyer.   NORTH NTS

(5.11) existing trees. anthony meyer.   NORTH NTS

movable chairs

terrace step seating

step seating

bench seating

(5.12) proposed seating. anthony meyer.

NORTH NTS

canopy preserved for shade and enclosure

backdrop for event space

border and frame recreation space

bosque in plaza

line pedestrian avenue

(5.13) proposed trees. anthony meyer.

NORTH NTS

hardscape vs. softscape

This is not an element of urban space design that is directly discussed by Whyte, but for the purposes of this design proposal, it is an important design feature. The existing hardscape area was mostly narrow sidewalks that wound through each park block and a small, sunken plaza that sits the existing war memorial. The proposed design utilizes hardscape area to provide larger and more dynamic plaza spaces as well as wider and more pronounced walkways. The wide sidewalks are formed from the geometry that radiates from the event structure and the Music Collaboration, extending out into the rest of the space. Now, there are a series of different plaza spaces that accompany the large areas of softscape, and each of them serves different uses.

water, food, & triangulation

As discussed in the site analysis, the existing Civic Room was monotonous, mundane, and under utilized. Quite simply, there was nothing to attract people to the space and users of the site have no reason to socialize with others. Through the implementation of strategic interactive technologies, there are certain elements of the design that have the potential to create a sense of triangulation, or connecting people together on a social level. The blank canvas facade screen and the music collaboration space are two interactive pieces of art that attract people and make them connect on a deeper level. In addition, the information plaza creates a social interaction because the people accessing the kiosk are activating the water feature for others to use. Finally, the proposed design creates a larger plaza around the war memorial that serves as a place for gathering, but also is a great place for vendors to set up a food stand, attracting even more people to the space.

(5.14) existing hardscape. anthony meyer.

NORTH NTS
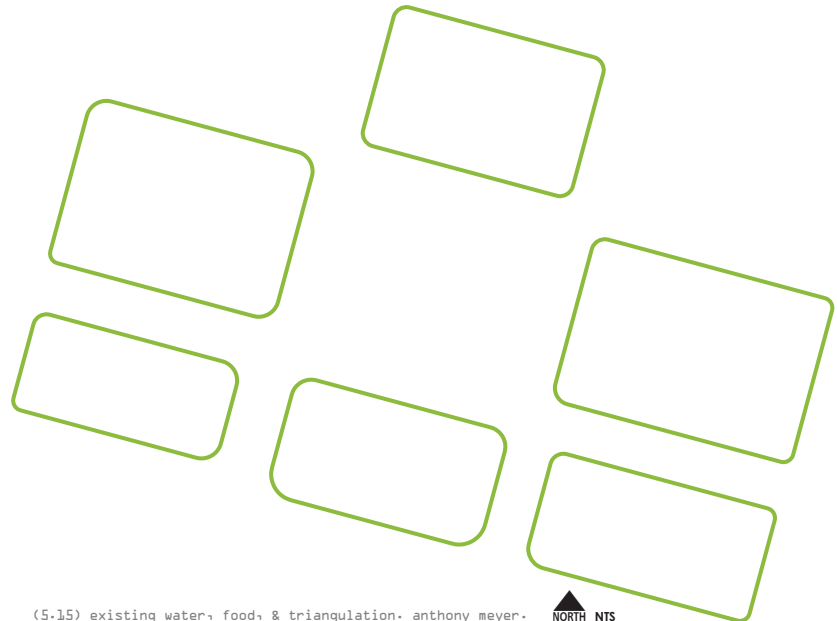
(5.15) existing water, food, & triangulation. anthony meyer.

NORTH NTS

reading room

event plaza

radial sidewalks

open recreation space

music collaboration plaza

memorial plaza

information plaza

(5.16) proposed hardscape. anthony meyer.   NORTH NTS

digital canvas

interactive artwork

vendor plaza

interactive fountain

alert beacon
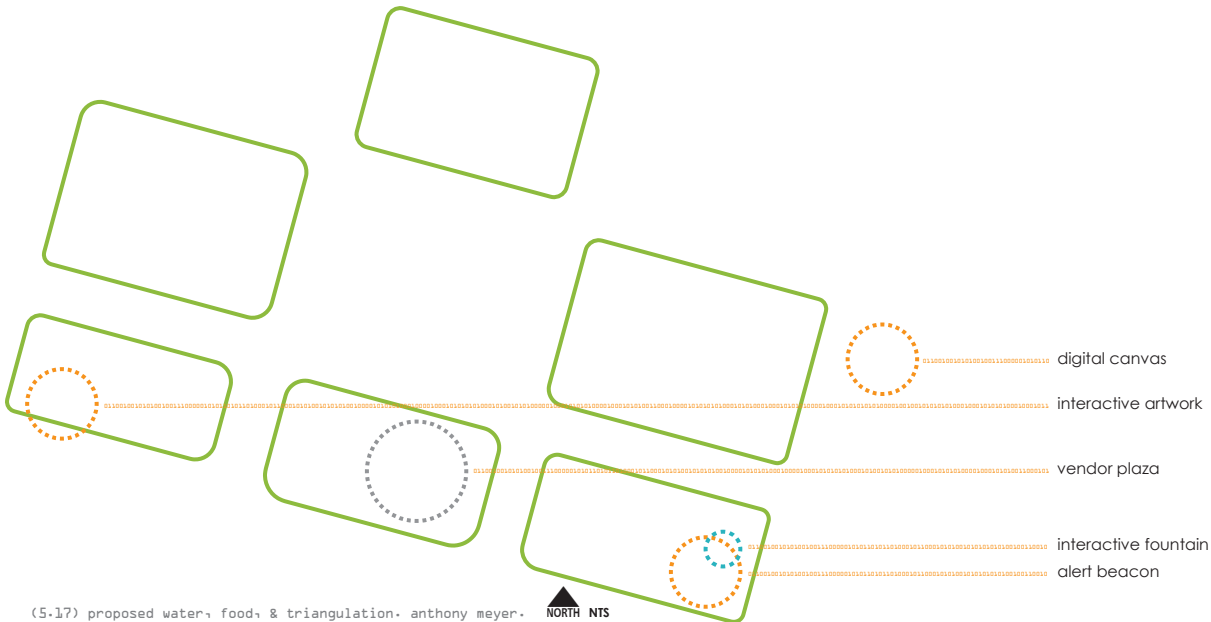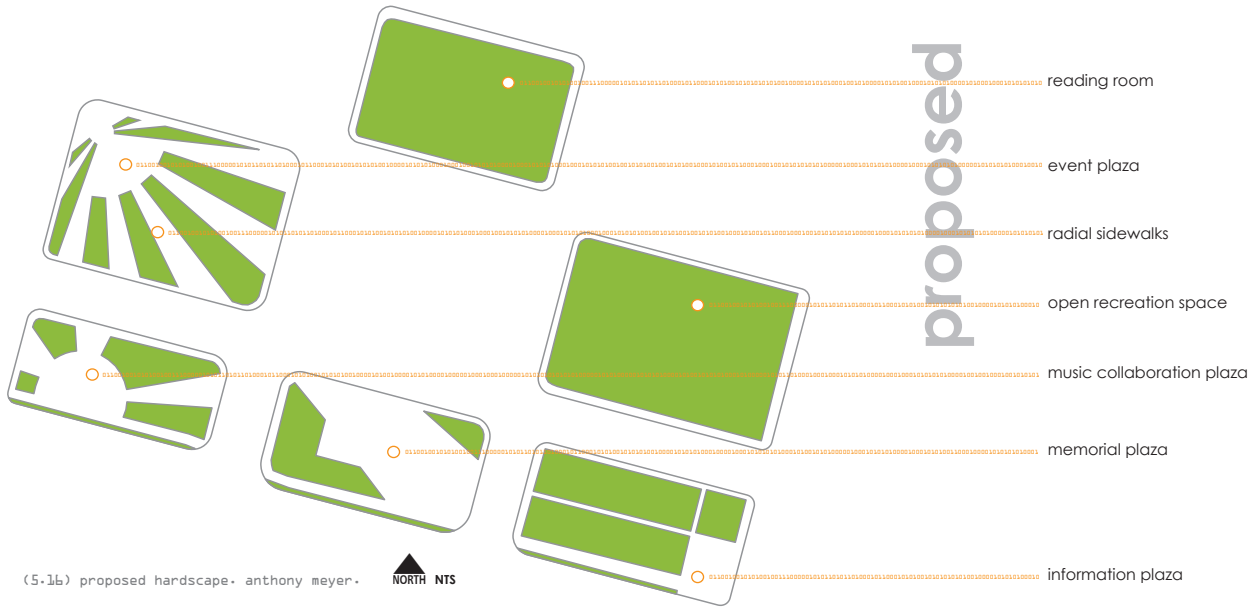
triangulation

food

water

(5.17) proposed water, food, & triangulation. anthony meyer.   NORTH NTS

define

interactive technology

- information exchange
- creative expression
- kinetics

precedent study

- civic exchange
- bloomberg ICE
- schouwburgplein

+

urban open space design

- sitting space
- sun
- wind
- trees
- water
- food
- the street
- triangulation

analysis

- local
- regional
- visitor

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species." (Lynch, 121) Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

sense

"The clarity with which [a space] can be perceived and identified.... Sense depends on spatial form and quality, but also on the culture, temperament, status, experience, and current purpose of the observer." (Lynch, 131) Identity, structure, congruence, transparency, and legibility are all aspects of sense.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

design goals

- activate the space to attract diverse users
- augment the site program opportunities
- establish a spatial hierarchy to break up monotony
- implement all 3 IT groups to meet opportunity criteria
- reflect the adjacent context & building use
- create a unified design concept
- enhance social collaboration opportunities

opportunities

- public art (triangulation)
- water feature
- close interior streets to extend pedestrian space
- preserve mature tree canopy
- open flexible recreation space
- wider sidewalk along Market St
- adaptable seating
- flexible infrastructure
- intelligent bollards
- information kiosk
- interactive art (triangulation)
- adaptable seating with GPS tracking
- blank canvas
- awareness beacons

design solution

evaluation

interactive urban environments

156

(5.18) process: evaluation. anthony meyer.

control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

| vitality | sense | fit |
| access | control | efficiency |

Kevin Lynch's
Performance Dimensions
in *Good City Form*

The proposed design of the Civic Room will be evaluated based on its effectiveness as an interactive urban environment, and how well it increases spatial performance and program for distinct user groups. This section uses the Kevin Lynch framework to evaluate each aspect, or space, of the design according to its vitality, sense, fit, access, control, and efficiency for locals, regionals, and visitors.

evaluation of interactive urban environment

Figure 5.19 displays the specific design strategies that help improve each dimension of performance for the St. Louis Civic Room. In this section, each design strategy will be evaluated for its impact on the vitality, sense, fit, access, control, and efficiency of local users, regional users, and visitors.

IUE matrix

	local	regional	visitor
vitality	Reading Room Pedestrian Avenue Recreation Space	Bollards	n/a
sense	Reading Room Music Collaboration	Event Space	Music Collaboration Event Space Pedestrian Avenue
fit	Reading Room Recreation Space	Event Space Bollards Pedestrian Avenue	Music Collaboration Information Plaza
access	Pedestrian Avenue	Bollards Pedestrian Avenue	Information Plaza Pedestrian Avenue
control	Music Collaboration Reading Room Information Plaza Recreation Space	Music Collaboration Information Plaza	Music Collaboration Information Plaza
efficiency	Reading Room	Event Space Bollards	Information Plaza

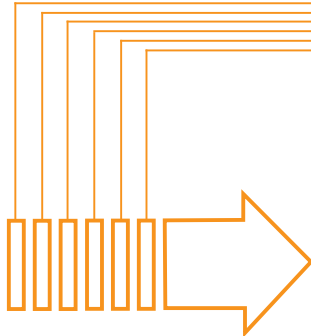(5.19) IUE matrix. anthony meyer.

vitality

"An environment is a good habitat if it supports the health and biological well-functioning of the individual and the survival of the species." (Lynch, 121) Therefore, the vitality of a space is based on how the space affects health. There are three principal features of the environment that are conducive to health: sustenance, safety, and consonance.

local

Reading Room

The Reading Room preserves all of the existing mature trees that enclose the space and make it comfortable. Designed as a passive space for relaxation, it promotes a sense of mental health and the trees help to maintain a microclimate that is consonant with user comfort.

Pedestrian Avenue

The alert beacons on the lighting fixtures provide information about air quality levels that is crucial to the health of local users that are potentially using the space on a daily basis. If people are made aware of poor air qualities on a given day, they are equipped with information that allows them to respond. If a group of people know that the air quality is consistently poor, then they might be inclined to help improve the condition by walking instead of driving, which contributes to carbon levels in the atmosphere.

Recreation Space

Exercise is a large part of maintaining a healthy lifestyle, and the addition of a large, open space for recreational purposes is a plus for downtown St. Louis. People can run, play sports games, fly a kite, and participate in many other activities. The promotion of a space for exercise increases the vitality of the space, encouraging a healthy lifestyle for residents downtown.

regional

Bollards

The intelligent bollards close the Civic Room interior streets during times of large events, and turns them over as an extension of the park space. This prevents safety conflict between vehicles and pedestrians within the space.

visitor

n/a

sense

"The clarity with which [a space] can be
perceived and identified.... Sense depends
on spatial form and quality, but also on the
culture, temperament, status, experience, and
current purpose of the observer." (Lynch, 131)
Identity, structure, congruence, transparency,
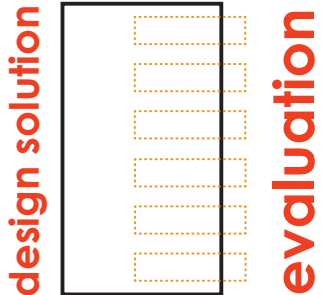and legibility are all aspects of sense.

local

Reading Room

The mature tree canopy that is maintained in the Reading Room is a key commodity for the locals of St. Louis. They identify the Civic Room as a place of retreat to something soft, natural, and comfortable. Now, people will be able to relax in the movable chairs located in the Reading Room.

Music Collaboration

The Music Collaboration animates the space, breaking up the monotony that plagued the existing Civic Room. It gives locals an opportunity to play and express themselves. This art piece provides the space with a new sense of identity and stimulates people's senses and emotions. Also, locals that are familiar with the Peabody Opera House and the part it plays in music and art, will sense the extension of that use into the public landscape.

regional

Event Space

People that come to the Civic Room for occasional large events are accustomed to seeing stage structures and festival tents raised in the space. They are used to seeing the atmosphere of thousands of people lining the blocks. The adaptable structure in the Event Space enhances the regional residents' perception of the place, and it augments the identity of this space accommodating large events. Instead of temporary, uninspiring tent and stage structures, this single structure serves both purposes and is an architectural icon.

visitor

Music Collaboration

The Music Collaboration animates the space, breaking up the monotony that plagued the existing Civic Room. It gives visitors an opportunity to play and express themselves. This art piece provides the space with a new sense of identity and stimulates people's senses and emotions. People that are visiting the St. Louis area and the Civic Room for the first time now perceive this space as full of life and activity.

Event Space

The adaptable structure is an iconic piece of sculpture for visitors to view and remember. The sculpture helps give the Civic Room a vibrant identity.

Pedestrian Avenue

The Pedestrian Avenue helps define the main concept of the Gateway Mall, which is to serve as an urban glue that links all parts of the downtown together. The linear form of the Mall is a strong move through the city, and the Pedestrian Avenue accentuates that form. Also, the indeterminate nature of the colored lights on top of the lighting fixtures gives a peculiar visual cue. It triggers the passerby to wonder about the reason for these lights.

fit

"The fit of a [space] refers to how well its spatial and temporal pattern matches the customary behavior of its inhabitants." (Lynch, 151) "The measure of present fit is the degree of congruence between daily behavior... and the spatial setting." (Lynch, 185) Most important in this performance is the ability for the space to be flexible, manipulable, and resilient.

local

Reading Room

The lawn chairs in the Reading Room match and improve the customary behavior of the people using the space. The chairs are movable, which allows people to situate the chairs in ways that they want to use them. They can gather the chairs in a group to talk or sit alone and read a book. This is contrary to the existing benches in the space, which were situated in place and awkwardly spread around the outside of the block. Locals can now gather in a group setting to talk or sit alone and read a book.

Recreation Space

By clearing some trees and removing some sidewalks that previously disconnected the space, this block was opened up to use for recreational purposes. Locals now have enough room to play a soccer game or similar activity. The flexibility of the space fits just about any type of use that locals intend.

regional

Event Space

The Event Space is geared toward fitting the occasional large event that is held in the Civic Room. With the addition of the adaptable structure, the space not only better fits the programmed use, but also makes transition of the space more efficient.

Pedestrian Avenue

The existing sidewalk along the south edge of the Civic Room was not wide enough to accommodate the large number of pedestrians that use it during large events. The sidewalk was made much wider and was pronounced by trees, lighting fixtures, and benches lining the Avenue. This linear space now fits more pedestrians who are both walking to an adjacent space, or who are watching one of the many parades that run along Market Street.

Bollards

Intelligent bollards block the interior streets of the Civic Room during large events. Many times, concerts and festivals have people that overflow into the streets, so these bollards help the space fit the programmatic needs. In addition, if adjacent streets are jammed with vehicular traffic, the bollards lower to allow these interior streets to open back up for vehicular use. Thus, the bollards are able to fit any specific user intent for the space.

visitor

Music Collaboration

Monotonous and inanimate, the existing Civic Room lacked any activity for visitors. The Music Collaboration piece provides an enjoyable, sensual experience that attracts visitors and lets them express themselves. This space more closely fits the type of use that visitors would like to see in public open space.

Information Plaza

This space fits a visitor's need to acquire certain information about the city of St. Louis. Whether getting directions to a certain place or learning about the history of St. Louis, visitors can now acquire information that otherwise would have to be gathered from numerous different sources, all in different locations.

access

Access is a measure of how easily people and goods can get from one place to another, with freedom from restriction. Typically, transportation and communication have been viewed as the central components to urban areas. Access to people, to certain human activities, to material resources, to places, and to information are all classifications of this performance dimension.

local

Pedestrian Avenue

The Avenue serves as a connector and a pedestrian expressway. Many people will use this route to access the Civic Room as well as other adjacent spaces. The Pedestrian Avenue now allows for better access because of the increased width and the location along Market Street.

regional

Bollards

The interactive bollards increase and decrease access for different users, depending on the necessary use of the space. Through cause and effect, if the bollards are up, better access is given to the pedestrians while access for vehicles is restricted. Likewise, if the volume of vehicles is too high on adjacent streets, the bollards will be lowered to increase street access for the vehicles, also reducing easy access for the pedestrian.

Pedestrian Avenue

The Avenue serves as a connector and a pedestrian expressway. Many people will use this route to access the Civic Room as well as other adjacent spaces. The Pedestrian Avenue now allows for better access because of the increased width and the location along Market Street.

visitor

Information Plaza

Visitors of St. Louis are interested in knowing certain information that might help them learn about the city, how to navigate it, and what they should be seeing while they are there. The Information Station provides a one-stop kiosk for people to access a large database of such information.

Pedestrian Avenue

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control

Control addresses spatial ownership and responsibility. "One primary dimension is surely the congruence of use and control, that is, the extent to which the actual users or inhabitants of a space control it, in proportion to the degree or permanence of their stake in it." (Lynch, 208) Certain rights are involved when determining control of a public space. These include the rights of presence, action, appropriation, modification, and disposition.

local

Music Collaboration

This space provides an opportunity for people to control the tones and lights that can be emitted from this interactive artwork. The purpose of the piece is to allow people to express themselves and affect not only the object, but also their own experience and other's perception of the space. This space has the potential to elicit a positive emotional response from its users.

Reading Room

The movable lawn chairs in the Reading Room allow people to change their location according to their individual needs. The users have control of where they sit within the space. Instead of singular, situated benches that people have to adapt to sitting there, people can now make the seating adapt to their own needs.

Information Plaza

The digital screen allows people to control the information that is displayed depending on the type of information they need. Additionally, users of the information display are directly responsible for activating the plaza fountain. This gives users control over how others use and perceive the space.

Recreation Space

The Recreation Space is kept open and flexible for any type of use, depending on each user's preference. Likewise,
the digital screen on the building facade
can be changed by individuals in the space. Whether users are posting pictures, producing digital artwork, or keeping score of a ball game, they have control over how the screen space is used, and how others perceive it.

regional

Music Collaboration

This space provides an opportunity for people to control the tones and lights that can be emitted from this interactive artwork. The purpose of the piece is to allow people to express themselves and affect not only the object, but also their own experience and other's perception of the space. This space has the potential to elicit a positive emotional response from its users.

Information Plaza

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visitor

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Information Plaza

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efficiency

"Efficiency is the balancing criterion: it relates the level of achievement in some performance to a loss in some other." (Lynch, 221) Essentially, a space is efficient if it performs positively on all values: vitality, sense, fit, access, and control. Efficiency also deals with external factors such as costs and maintenance. An efficient space balances short-term and long-term costs with equivalent benefits.

local

n/a

regional

Event Space

To have one large structure that serves multiple program purposes by physically adapting makes the Event Space much more efficient than erecting temporary structures for every large event. Costs are cut as the structure can serve as a movie screen, concert stage, picnic pavilion, and festival structure.

Bollards

An intelligent bollards system would be very helpful to close interior streets of the Civic Room, and it will eliminate the need for police to bring out temporary barricades, which costs time and money. The bollards would make the system much more efficient.

visitor

Information Plaza

People can access a very large database of information through the kiosk. Instead of having to go to multiple sources to get different kinds of information, they can access all of the same information more efficiently.

06

conclusion

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project summary

The main focus of this project was to use the concepts and knowledge gained from research of interactive technologies to create an interactive urban environment, specifically in downtown St. Louis. The research helped establish a framework in which to analyze the site, create a conceptual design, and evaluate the design proposal.

By grouping interactive technology into 3 categories (information exchange, creative expression, and kinetics), there was an understanding of the function of these technologies, what they are used for, and how they affect people and the space in which they comprise. Through a broad range of research, these 3 dimensions of IT were obvious as the most influential in their use. They provide tangible applications for implementing into an urban environment.

However, in order to ground these technologies into a specific place, there had to first be an understanding of urban spaces. William Whyte's research proved helpful in understanding the elements that comprise an effective urban space. Sitting space, sun, wind, trees, water, food, the street, and triangulation are the key entities that impact how people perceive an urban space.

By combining the abstract ideals of IT with proven principles of urban design, there can exist an interactive urban environment that activates an urban space and enhances the identity and program of that place. This

model can be used in any urban place, but was specifically used to create an IUE in the St. Louis Civic Room. An addition was made to the framework by utilizing specific spatial performance dimensions, highlighted in Kevin Lynch's book *Good City Form*. These dimensions of vitality, sense, fit, access, control, and efficiency were used to analyze how the Civic Room in downtown St. Louis currently performs for the users of the space. The 3 distinct user groups of the Civic Room are local users, regional users, and visitors. Due to its monotonous character and underutilization on a daily basis, this space is lacking in certain elements of performance. The site issues that were identified were organized into a collection of urban design and IT opportunities for the site. Finally, a group of design goals were created in order to guide effective and useful design strategies.

Using the IUE framework, a design proposal was made to express the opportunities that these technologies have to activate a space. The specific design interventions fulfilled the program needs for the Civic Room. The design proposal was then evaluated on the same performance criteria as before. Improvements of the space's vitality, sense, fit, access, control and efficiency were all improved in identifiable ways. The Civic Room has the potential to provide many programmatic opportunities for multiple user groups. It could be a vibrant public space for people to gather, play, learn, and entertain.

considerations for IUEs

Interactive technology has powerful potential to aid in redesigning and activating public spaces. Technology opens up a whole new realm of programming and activities that an urban space can provide. Opportunities for learning, playing, sensing, moving, and interacting are some of the many key improvements. Technology also allows open space to be more flexible in its use, providing alternative functions for different people at particular times.

However, in future studies or designs of interactive urban environments, technology should be viewed as a supplement to more grounded methods of design. The model of an IUE that was established can potentially be an effective tool for the redesign of under utilized urban spaces, but much more emphasis should be placed on the establishment of a strong physical urban design. Interactive technologies are best served as a layer to the design process, but only to enhance a design that is rooted in a strong concept and context of a place.

For this particular project, the underlying approach was established early on to study interactive technologies and the effect they can have on the urban public realm. The IUE framework was created to help strengthen the design and siting of certain technologies, but the main focus was still to test the integration of multiple methods into a real place with critical needs. What resulted was a design for the Civic Room site that was very focused on the technologies as objects and interventions. The tested technologies tended to appear placed in the site, as the rest of the space formed to the function and position of the IT. While certain traditional elements of urban space design were effectively used to define space, they were viewed as auxiliary elements to the studied IT.

Moreover, a future approach to the creation of interactive urban environments could focus first on the design of a holistic, integrated urban space with regard to Whyte's elements of sitting space, sun, wind, trees, water, food, street, and triangulation. Then, infusing information, expression, and kinetic technologies into the design of the space could enhance specific functional activities, augment user experience, and strengthen perception of the design concept.

limitations

One of the main limitations of this project is that the available literature on the topic of interactive urban environments is not extensive. Much of the literature is theoretical, projected as opportunities or ideas but less grounded in application to the field of landscape architecture. Many projects have been temporary installments that are geared toward research or art, and are focused on the phenomonology behind the technology. This type of information was difficult to draw concepts that are directly applicable to urban environments.

The design concept and strategies that were created for this project are intended to explore options of user involvement and social collaboration in public space. The focus is not on details of how the technology would work, but simply what the technology can do for the built environment. There is a major gap in the learning curve in regard to the technical information about computing, programming, and overall technological language. In order to explore the actual implementation of an interactive environment, there needs to be a communication among several different disciplines.

An ongoing concern about utilizing technology in the landscape is the fear that it will become outdated, because the realm of technology is expanding and evolving at such a rapid pace. This is something that is difficult to foresee, but the designers of an IUE should think in terms of how the space can survive and thrive even if the technology does not work. In order to combat this potential issue, programmers should work with other designers to create technology as systems, or software, that can be updated over time, instead of objects that would have to be replaced.

further research

As the public realm is inevitably infused with more interactive technology, we must begin to understand the effects that it will have on people, resources, and systems. An interactive urban environment cannot simply continue to be a testing ground for IT, it must truly embody the essence of a place.

How can interactive environments begin to be so responsive to human needs and actions, that walls are moved and materials are changed?

Instead of simply using urban space as it was prescribed, can we pervasively alter our built environments to accomodate every individual's needs?

How do people perceive ubiquitous computing? Are they intimidated by it or feel violated in some way?

There are many questions that are raised about the role that interactive environments can play in the future. The realm of possibility seems endless and fast-paced, but we must gauge our progress as we continue. Extensive research needs to be done in order to provide interaction designers, architects, landscape architects, artists, and many other professionals an understanding of how we communicate with technology and computer interfaces. We have to seek answers to the simplest question regarding technology in general: 'How can this make difficult tasks easier'?

appendix a: literature

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Beyond the Kiosk and the Billboard, 4dsocial: Interactive Design Environments
Lucy Bullivant (2007)

"Streets as public spaces are potent arenas for interactive installations, but art is often overtaken by commercial concerns. The other drawback is that the location potentially becomes irrelevant, something that art as well as advertising can perpetuate." (15)

In this article, Lucy Bullivant questions the effect of digital installations used as advertisements. In recent years, some of New York City's famed commercial districts, such as Times Square, have been cluttered with interactive installations that serve companies like Nike and Yahoo!. These advertisements have allowed people to use their mobile phones to design shoes and play video games, but the opportunities for creative expression are limited to a few predefined choices. Bullivant states that "it is far less common for [these interactive installations] to be educational and place-based, with a social instrumentality". (15)

The author highlights a few projects that do more than simply advertise. The prototype design of Civic Exchange, a competition entry by Antenna Design, is a public installment that allows transformable seating and gathering opportunities while providing an interactive map touch-screen. The physical 'hub and spokes' design of the system forms a unique arrangement of site furniture within the overall space, creating a destination for people. Users of the map screen can input and retrieve useful information including train schedules, event alerts, advertisements, historical facts, public information, and local and global news. Another key project is Chinatown WORK,

which is a digital display on the HSBC building facade in New York City. There are camera sensors on the building that take a picture of people walking on the adjacent sidewalk and display a silhouette of their bodies, with images of local restaurants, food markets, factories, and stores inside the projected silhouettes. The goal is that people can gain a greater experience of Chinatown because they are being visually projected into those places, as if they were really there.

Both featured projects contribute to the idea of interactive environments because they foster modification of physical elements, information exchange, and expression of individual creativity. They create a stronger 'sense of place' as well as an enjoyable experience in an otherwise ordinary space. "Whether these new hybrid civic places of information are termed art or design becomes less important than the unique experience to be gained from the engagement process, which is not wholly preprogrammed, but involves participation as a means to enlarge each individual's sense of cultural context."(23)

interactive environments

Interactive Architecture
Michael Fox and Miles Kemp (2009)

Michael Fox and Miles Kemp outline the existing context and history of interactive technologies in architecture, and project a vision for the future of its relevance. The concept behind interactive architecture is to design physical and computational systems in buildings that adapt over time based on human use and interaction. "The driving force behind the renewed interest in adaptable architecture is the technologically influenced and changing patterns of human interaction with the built environment... In this book, interactive architecture is positioned as a transitional phenomenon with respect to a movement from a mechanical paradigm to a biological paradigm." (18-20) This book's innovative approach to interactive technology seeks to establish buildings that learn and adapt through interaction with humans and the larger environment.

This book discusses the nature of physical change in architecture and how embedded computation, or intelligent systems, can allow for an ongoing conversation between humans and the surrounding built environment. This can be compared to a conversation between two people, where each person emits a response to the other, forming a mutual exchange of crucial information and a continual update of each other's needs, desires, thoughts, emotions, and actions. Fox and Kemp also give many examples of interactive technologies and explain their relevance to intelligent architecture. The final emphasis of the book is placed on the potential new horizons of interactive architecture, or where the field is headed.

There seems to be endless opportunities for the application of intelligent design in architecture, but the real challenge is harnessing the sometimes abstract concepts into efficient, functional, and convenient means.

Interactive Architecture's relevance to my project is found in the emphasis placed on human interaction with digital technologies in the built environment. Some of the concepts related specifically to buildings will be used to form a landscape or public open space application.

Downtown Next: 2020 Vision for Downtown St. Louis
The Partnership for Downtown St. Louis (2010)

Downtown Next is a publication specified to continue a dramatic alteration of the structure and appearance of downtown St. Louis. It is a continuation of the work outlined in the previous vision called Downtown Now!. As the creators of this publication, The Partnership for Downtown St. Louis recognizes the importance of Downtown St. Louis as a "vital, authentic hub of activity, providing an essential core of energy that radiates across the region". (3)

This vision first highlights the goals, objectives, and successes of the initial Downtown Now! Plan. Downtown Now! was realized in 1999 as a master plan using creative, innovative and strategic goals for the advancement of downtown over a ten year period. It recognizes the complex issues that St. Louis faces in regards to economic crisis, dying commerce, and a waning cultural diversity. The vision targets specific areas for revitalization and highlights opportunities for investment and return. In effect, Downtown Now! had a huge impact on the revitalization of Downtown because it brought residents back, created jobs, encouraged private and public investment, and made a safer and better looking community. The success of this visions' impact led way to the creation of another master plan in 2010 that would further the regeneration: Downtown Next.

The Partnership for Downtown St. Louis recognized that the city is now met with almost endless opportunities for growth, but the resources to grow are very limited. Thus, Downtown Next is broader in scope then

Downtown Now!, providing more strategy than prescription. The new vision engaged the public in a process of discovering where new investment opportunities were the most efficient and effective. Residents of the area gave feedback about their personal interests, concerns, and ideas for the further growth of Downtown. The document groups public comment into 7 sections and then gives general goals, objectives, and strategies for how to improve each area. Finally, this vision makes priorities based on the broad range of strategies and creates a guide for implementation of programs, buildings, and public improvements.

Downtown Next is useful to my project because it provides key inventory details as well as recognition of the key public spaces downtown and how they relate to the overall community. This document defines specific locations of density in residency as well as employee distribution. It also displays current transportation trends, routes, and stops, both vehicular as well as public transit. Also, I was able to get a further understanding of Downtown St. Louis, how it's structured physically and socially. Since my project is an innovative approach to enhancing the realm of public space in Downtown St. Louis, this document gives a good outline to how others are approaching the improvement of the future city.

Alice in Technoland, 4dsocial: Interactive Design Environments
Lucy Bullivant (2007)

Lucy Bullivant discusses interactive design environments metaphorically representing the rabbit in Alice in Wonderland, beckoning us to enter and participate in another world. She argues that these environments can be transformative, allowing participants to actively engage the environment. "Interactive design environments… promote the personalization and customization of… their wider physical public contexts." (7)

This article presents several innovative installments of interactive design and highlights how they specifically provide user participation. It touches on the importance of the design environments to stimulate the users' senses and create a playful atmosphere. Constructed as an introduction to the rest of 4dsocial, this article sets the tone for the purpose of interactive design environments: play and participation.

Alice in Technoland helped form the goals and program of my specific project. If public contexts are infused with technologies that engage user interaction, the participants are encouraged to individually customize the elements around them. This can create a more lively public environment where people's emotions can be positively affected through play.

appendix a: literature

ICE: Bloomberg Headquarters, 4dsocial: Interactive Design Environments
Lucy Bullivant (2005)

Lucy Bullivant discusses the interactive installation ICE at the Bloomberg Headquarters in the Marunouchi District in Tokyo, Japan. Since Bloomberg is a company devoted to news and communication, it seemed only fitting that they would want to create an 'interactive communicative experience' (ICE) for their staff and visitors. Designed by Klein Dytham Architecture and interaction designer Toshio Iwai, this interactive digital screen is a 5 by 3.5 meter glass wall suspended from the ceiling just inside the first floor, directly visible from the street.

ICE displays stock and financial data, representing electronic ticker tape, that swells and shrinks depending on if stocks are up or down. Sensors behind the screen detect human presence from 500 millimeters away, and the digital data begins to interact with the individual's body movements. The screen will then give the user four options of digital play: a harp, a shadow, a wave, or a volleyball. Each option emits different sounds, colors, and motions as the participants move within the space in front of the screen.

This interactive element acts as a beacon within this interior space, attracting people from the sidewalk outside. It successfully blends the sharing of information with the opportunity for individuals to creatively express themselves. The installment promotes a heightened social interaction among all staff, visitors, and passers-by.

"An innocent yet knowing design, ICE defies the boundaries between office interior and street, work and play, data and body." (13)

Digital Ground
Malcolm McCullough (2004)

Digital Ground is a theoretical exploration of technology and interaction in design, as well as a vision for the potential future use of interactive technology. Malcolm McCullough recognizes the impact that technology has had on our world through computers, electronics, digital systems, etc. For instance, technology allows us to access a wealth of information in a short amount of time and effort, as well as create virtual worlds and social networks that seem almost like science fiction. However, he carefully presents this question: "Who could want computers everywhere?" (xii) McCullough understands that there are some people who are leery of electronics, technology, and media, claiming that their privacy is in jeopardy and their lives are being complicated and cluttered. His goals for this book are to identify the current expectations of interactive design, highlight specific technologies related to interaction, and project future practices for interaction in design.

McCullough attempts to ground the abstract concepts of interactive technology into a spatial application. "In sum, my essential claim is that interaction design must now serve our basic human need for getting into place." (xiv)

"The contextual design of information technologies must now reach beyond the scale of individual tasks to embrace architecture, urbanism, and cultural geography."

"There is no escaping the fact that the world around us is being layered with digital systems. There is no denying our dismay at surveillance, saturation marketing, autonomous annoyances, and relentless entertainment. Whatever our desire for a "sense of place," we seem destined to gket "places with sense." In more and more kinds of sites, the base background of our lives somehow becomes active. Smart spaces recognize at least something about what is going on in them, and then they respond." (172)

appendix b: glossary

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creative expression
positive emotional experience for users of a space through individual artistic expression (Anthony Meyer)

embedded computation
Embedded computation, in the context of interactive architecture, is a system that is literally embedded into the building and that has the ability to gather information, process it, and use it to control the behavior of the actual physical architecture (Fox & Kemp, 2009, 58)

gps (global positioning system)
a satellite utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment (www.gps.gov)

interactive architecture
the convergence of embedded computation (intelligence) and a physical counterpart (kinetics) that satisfies adaptation within the contextual framework or human and environmental interaction (Fox & Kemp, 12)

interactive urban environment (IUE)
spaces in which computation is seamlessly used to enhance ordinary activity. (Fox & Kemp, 16)

Interactive design environments like Dune 4.0 promote the personalisation [sic] and customisation [sic] of not just architecture, but also of their wider physical public contexts (Bullivant, 2007, 7)

information exchange
digital display of information on/within elements of a space that encourage communication and reciprocation (Anthony Meyer)

interactive technology
electronic or computation-based models that reciprocate human use or action (Bullivant, 2007)

kinetics
transformable objects that dynamically occupy predefined physical space, or moving physical objects that can share a common physical space to create adaptable spatial configurations (Fox and Kemp, 2009)

public space
a gathering spot or part of a neighborhood, downtown, special district, waterfront or other area within the public realm that helps promote social interaction and a sense of community. Possible examples may include such spaces as plazas, town squares, parks, marketplaces, public commons and malls, public greens, piers, and special areas within convention centers or grounds (www.planning.org)

technology
the development of new human artefacts [sic] (Bullivant, 2007, 30)

to work explicitly with technology is to concentrate on those artefacts [sic] that are not yet available to all (Haque, 2007, 31)

ubiquitous computing
computation thoroughly integrated into everyday objects and activities (Fox & Kemp, 17)

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