Temporal sections: Explorations toward a movement-centered design method

Aaron Glenn Persen

Iowa State University

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Temporal sections: Explorations toward a movement-centered design method

by

Aaron Glenn Persen

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE

Major: Architecture

Program of Study Committee:
Jamie Horwitz, Major Professor
Clare Robinson
Heidi Hohmann

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Graduate College
Iowa State University

This is to certify that the master's thesis of
Aaron Glenn Persen

has met the thesis requirements of Iowa State University.

Signatures have been redacted for privacy.
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Chapter 1: Introduction

Figure 1: Piranesi Prison

"Architecture organizes and structures space for us, and its interiors and the objects enclosing and inhabiting its rooms can facilitate or inhibit our activities by the way they use this language. Because this language is not heard or seen directly, and certainly not written down, it gets little attention in a formal sense. However, we all make use of it throughout all of our lives as we move about in space and relate ourselves to others. Perhaps we tend only to notice this language when it is in some way abused."¹

The preceding quote delineates language that gives form to the relationship between architecture and movement exists. The work of designers and theorists who share such belief provides fractions of understanding – mostly through already conceived architectural spaces. Perhaps this approach is the most accessible means of obtaining such a language.

This paper intends to explore relationships between architecture and movement. Although many exist, three perspectives on movement-centered design have been singled out with hope for greater clarity and the potential for more intimate dissection. Proceeding with

these ideas in mind, a design proposal (on Lincoln Way, in Ames, Iowa) attempts to investigate and expand upon these relationships between movement and architecture. Finally, movement changes the perception of a space and the way one actually moves through it. Lynch states: “Spaces vary in effect by the way in which they are entered, passed through, and left behind, and by the related spaces that precede and follow them.”² Not only do these planned forces influence the movement, so do unplanned movements. Consider a busy city street at lunch hour – cars whizzing by, street vendors selling their goods, and people quickly pace the sidewalks and intersections. Conversely, late at night or on a national work holiday, the same street takes on a much different character – as do the movements on it.

The idea that some landscapes are almost always experienced while moving presents another challenge to the designer. The cumulative landscape equally rivals individual views. The designer must consider the tempos and sequences holistically and individually. “For example, a major view may at first only be hinted at, be succeeded by a more intimate view of something else, be repeated, but with a dominant foreground, disappear in a closely confined space, and finally repeat in a full sweep.”³ Adding complexity to the sequence, the occupant of the space changes speed periodically – making analysis of the progression more complicated.

³ Ibid. 80.
Chapter 2: History of the Lincoln Highway

This thesis asserts the merits of a movement-centered architectural and landscape design. A movement-centered strategy operates at multiple scales in this project. Considering the largest scale of this project – its context with the Lincoln Highway, history imbeds the design strategy. It is a history of movement – the movement of people, the movement of the automobile industry, and an epic point in America’s movement toward westward expansion.

Recognizing the Lincoln Highway as a significant landmark in the history of mobility in the United States makes one question the value of enhancing this historic highway. In this chapter, the needs and benefits of such action are divided into two sections: The first section acknowledges the Lincoln Highway’s connection to important eras and movements in the United States’ history and its links to significant, historical figures; The second section discusses some of the benefits (to communities) that highway preservation and enhancement provides – setting up the argument for improvement of a segment along Lincoln Way in Ames, Iowa – which is the focus of this project. A brief statement addressing funding and design recommendations for preservation and enhancement of the Lincoln Highway follows these discussions.

2.1: Representation of historical eras and movement

Historic preservation and enhancement benefits our communities. It allows communities to maintain and strengthen their historical roots while meeting the needs of their present society. Preservation not only improves the communities aesthetics, it helps create more livable communities. “Few people travel to just any place: they want to go someplace, and they want to enjoy the experience of getting there. Preserving buildings, landmarks, and
neighborhoods helps us maintain the special characters of our towns and cities.”

The preservation and enhancement of America’s historic transportation routes, like the Lincoln Highway, allows for more than attractive and efficient connections between America’s special places. It allows for recognition of historic pathways that aided in the settlement and development of America’s present-day communities.

The Lincoln Highway may be the beginning of cross-country automobile travel in the United States, but it is also part of America’s larger desire to expand into the western frontier. This movement, in the United States, began nearly 200 years before the Lincoln Highway’s conception – when future settlers from Western Europe, hoping for prosperity and a higher standard of living, crossed the Atlantic Ocean immigrating to America. Excitement to move westward only heightened during the early 19th century with the Louisiana Purchase and the Lewis and Clark expedition. Hearing about the rich farmland available, new settlers eagerly traveled passed the Mississippi River to make their claims on this great land. In 1850, the induction of California into statehood marked a huge feat in America’s expansion. Soon, “the nation’s land holdings had filled in most of what makes up the lower forty-eight states today. The nation had tripled in size in fifty years, and Americans who had looked westward from Kentucky found themselves standing on the far coast and looking westward out over the Pacific.”

The Lincoln Highway, part of this history, represents a great stride in America’s westward expansion. While construction of transcontinental railroads allowed for the first mass-settlement of land West of the Mississippi River, the construction of improved

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highways, like the Lincoln Highway, allowed for a second mass settlement. It also increased economic development in these areas – not only allowing goods to be transported to this region, but also allowing this region to market its products (primarily agricultural) to the rest of the United States and the world. The development of automotive transportation changed western land from a frontier to an accessible destination and a viable part of America’s economy.

![Lincoln Highway and Interstate 80](image)

**Figure 2: Map depicting 1915 original, later, and alternate sections of the Lincoln Highway and Interstate 80**

Conceived in 1912, the Lincoln Highway was America’s first trans-continental highway. Basically a straight line, the highway spans twelve states and provided a direct route across the country. Compared to the rugged, meandering routes earlier settlers traveled, the Lincoln Highway shaved 2700 miles from the cross-country journey. These earlier traveled roads, west of the Mississippi River, were unplanned dirt paths meandering from town to town and from farm to farm throughout the countryside. Little was done to maintain the roads – except by nearby farmers who “dragged” the dirt road smooth after each
rainfall. Such conditions made travel difficult and time consuming. A 10-mile trip was a long journey, and 20 miles was a full and hard day's work. Until the highway's completion in the 1920's, Iowans joked, "roads (here) are as deep as they are wide" – referring to the thick mud they had to traverse during their journeys.

Figures 3 and 4: Unimproved section of the Lincoln Highway, and Road grader

Two factors in the development of the Lincoln Highway played an important role in the development of our nation's roads. First, automobiles increased in popularity as their cost become more accessible to America's middle class. Secondly, the growing agricultural market in the West demanded better roads for bringing their crops from the farm to the market.

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8 Ibid. pg. 69.
“By annihilating distance, transportation made possible a more efficient distribution of goods in a highly mobile and productive society, created new markets, expanded old ones, transformed the organization and location of industry, encouraged settlement, created great cities, united the nation politically and strengthened national defense. Without its development, there would have been little progress in agriculture, manufacturing, or the lifestyles of the people. Its casual and residual forces in the march of civilization make the industry a complex, fascinating, yet sometimes frustrating subject for study as it mirrors the ever-changing tides and currents of economic, social and political trends in our history.”

2.2: Lincoln Highway’s supporters: Important people and organizations

Symbolizing a significant advance in America’s westward expansion and the development of automobile travel, the Lincoln Highway sets the stage for many important American people and organizations who contributed to public education about the need for a better transportation infrastructure. The “idea-man” for the Lincoln Highway was Carl Fisher, the manufacturer of Prest-O-Lite automobile systems and builder of the Indianapolis 500. Fisher used his connections in the automobile industry to support and build excitement for his dream. Most fervent of his supporters were Roy Chapin, president of the Hudson Motor Car Company and Henry Joy, president of the Packard Motor Car Company.

Fisher envisioned a transcontinental highway from the Atlantic to the Pacific coast, hard-surfaced and marked throughout its entire length. Because stone or rock were common surfacing materials, he first called it “The Coast to Coast Rock Highway.” After a few months of fundraising for the road, it was decided that the highway needed a little patriotic prestige to incite more and larger donations. In a letter to Fisher, Henry Joy suggested: “I think your Good Roads Committee, who is working up the ten million dollar fund ought to get up a protest to Congress on the expenditure of 1.7 million dollars in a monument in

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Washington to Abraham Lincoln.” Instead of the marble monument that Congress was planning, Joy wanted to see Lincoln memorialized for “…the good of all people in good roads. Let good roads be built in the name of Lincoln.” Fisher agreed that the highway would make an excellent tribute and changed its name to the *Lincoln Highway.*

The name change proved successful in building excitement. Fisher created *The Lincoln Highway Association* for supporters of the highway – where, for a minimum donation of five dollars, one received a certificate, membership card, and an enamel emblem for their car. President Woodrow Wilson was first to send in his check – and received membership #1. The funds gained through membership fees paid for promotional advertising to heighten excitement and educated Americans about the need for a better road infrastructure. Another part of the association’s advertising budget funded the construction of “seedling roads”. The association located approximately mile-long sections of road most of between of towns on the highway’s route – allowing the seedlings to grow in either direction and connect the towns to each other. Also, attempting to demonstrate the superiority of improved highways to existing dirt roads, the Association located most of the “seedlings” in low, muddy areas – where the road would normally be impassable after rainy weather.

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Fisher dreamed that the Lincoln Highway would be completed for the 1915 Panama-Pacific International Exposition located in San Francisco, California (the highway’s endpoint). Although his funds only created seedlings for the highway and few towns had resources to foster their growth, there was enough excitement to prompt Collier’s magazine to ask etiquette columnist Emily Post to make the journey and compose a series of articles about the highway for the magazine. In her writings, Post vividly described treacherous stretches between seedling roads and less than desirable accommodations offered by the
small towns in the Great Plains. Her description about a stay in Cedar Rapids, Iowa was so negative that reporters at the local paper called her a “dyspeptic authoress!”

Drivers who were more experienced with the Midwest’s “rough” conditions had fewer problems on their cross-country journeys – particularly if they were using the Goodyear Tire Company’s newly developed “pneumatic tire.” In 1918, the company demonstrated the tire’s superiority and durability by driving across the country on the Lincoln Highway – on four separate expeditions. Making their trips more noteworthy, the company offered this “trip of a lifetime” to East Coast Boy Scout troops – hauling them all the way to the Pacific and back.

By 1927, most of the highway had been completed and connected to the United State’s developing highway infrastructure. Even though much of Fisher’s dream met fruition, many of the signs marking the original Lincoln Highway had weathered badly, were lost, or were stolen. The American Association of State Highways banned the maintenance or erection of signs for named highways – fearing they might be gaudy and distract drivers. The Lincoln Highway Association, however, saw the need to mark and remember this great road. They gained permission to place low-profile markers along the road – not to mark the road itself, but to serve as an ongoing memorial to President Lincoln. With the help of the Boy Scouts of America, they placed over three thousand markers along the road – each placed about a mile apart.

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13 Franzwa, Gregory M. *The Lincoln Highway: Iowa.* Tucson: The Patrice Press, 1995. pg. 21. Incidentally, Ms. Post did not complete the trip to San Francisco via automobile. She decided that “conditions” were too unbearable and stopped her trip in Cheyenne, WY. She proceeded to San Francisco via a luxury train coach.

Sixty years after the erection of these markers, Drake Hokanson documented the Lincoln Highway. He noted that the Lincoln Highway Association ceased shortly after the erection of the markers – and that many of the markers had been removed or lost – “their numbers dwindled to perhaps a dozen.” He also noted that, “Parts of the highway have disappeared under shopping malls and interstate clover-leafs or have been abandoned outright to fade beneath sagebrush and sumac. And the very memory of the road was buried under a world war, nostalgia for tailfins, and the energy crisis of the seventies.”

Figure 6: Photo of an abandoned portion of the Lincoln Highway, Cedar County, Iowa

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15 Hokanson, Drake. *The Lincoln Highway: Main Street across America*. Iowa City: University of Iowa Press, 1988. pg. xvii. Mr. Hokanson also noted that, 10 years after the first printing of his book, the road appeared better tended and that there was greater public knowledge and desire to preserve the legacy of the Lincoln Highway.
2.3: Historic preservation builds stronger communities

Preservation of historic buildings, sites, landmarks, and highways, like the Lincoln Highway, should be encouraged not only because of their historic value – but also because preservation fosters character and richer cultures within communities. “A community's historic resources provide cultural links to the past…and help educate communities about its history.”\(^{16}\) Such history should be considered and respected when planning or improving a community’s infrastructure.

*The review of the past, both what has disappeared and what remains is a critical step in the planning process. Below the surfaces of today’s built and social environments is a former pattern of community – physical, social, and economic. Traces of the past can be experienced as historic and cultural sites, or restored or preserved places. Some patterns exist today that have existed for hundreds, if not thousands of years – wildlife migration paths, undisturbed plant communities, old growth forests, mountains, vernal pools, public ritual, religious ceremonies and rites, language and so on.*\(^{17}\)

These paths are *ghost maps* that can guide designers trying to connect the present day needs of a community with its heritage. Close attention and preservation of such maps helps develop designs related both to present-day communities and their pasts. “Learning about these patterns, their importance, and the heritage they represent will contribute significantly to the meaning and resiliency of the community plan.”\(^{18}\) The Lincoln Highway is an example of such a pattern or path. Although not hundreds of years old, it represents a significant point in the America’s expansion, a former way of life, and part of an important pathway Americans still travel today. It should be preserved so that future generations might understand the highway’s excitement held by their ancestors.

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\(^{17}\) Ibid. pg. 137

\(^{18}\) Ibid. pg. 137.
In a series of forums held by the U.S. Department of Transportation, participants shared a common belief that the preservation and enhancement of historic roads “brings back a sense of place, a sense of pride, and a sense of purpose to neighborhoods.”

Representatives from New England’s Conservation Law Foundation spoke about how they have pursued traffic designs that respected original paths and made it possible to preserve neighborhood character while still improving street safety. Another representative, from the National Trust for Historic Preservation, cited how the rehabilitation of Connecticut’s Merritt Parkway has not only improved the aesthetics, but also preserved important parts of their community’s heritage. Additionally (in these forums), participants agreed that preservation enhancements served as a catalyst for an increase in tourism and economic development.

2.4: Preliminary recommendations

Preservation and enhancement of the Lincoln Highway presents planners, landscape architects, and architects with an interesting design challenges. While traditional preservation for buildings or landscapes might call for the “keeping” of what “is” or the “replacing” of what once “was”, the highway represents movement and a dynamic part of our nation’s growth. This spirit of this movement must be preserved and encouraged. The Lincoln Highway’s history, the development of the American automobile industry, and the public’s excitement for westward expansion should be driving forces in the design of improvements and interventions.

As compelling as the Lincoln Highway’s relationship to the history of movement and western settlement in the United States is, Peter Butler, lecturer in the Landscape

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20 Ibid. pg. 30.
Architecture Department of Iowa State University, believes that much of the fate for preservation and enhancement of the Lincoln Highway rests in its relationship to President Abraham Lincoln. Simply, his notoriety is more tangible and valuable to government officials and the general public.\textsuperscript{21} One sees examples of this mind-set in the preservation of signs and markers on the highway that recognize President Lincoln. At the same time, the transportation officials neglect abandoned seedlings, reroute the original road, and worse yet, raze original sections to make way for a more modern, wider roadway.

\textbf{Figure 7: Lincoln Highway marker}

Rather than letting the shortsighted interests of politicians hinder future preservation attempts, communities and designers should capitalize on the desire to commemorate Lincoln. New markers should replace lost ones. Their design should be different – but hold to the spirit of original marker – low in profile, constructed of monumental materials (like concrete and bronze), and their subject devoted to the great highway honoring Abraham

\textsuperscript{21} Butler, Peter. Personal Interview. 05. February 2004.
Lincoln. While the physical structure of the original road is slightly less important than Lincoln’s legacy, and because it would be extremely impractical, if not impossible to reconstruct the original Lincoln highway, only the seedlings should be preserved or reconstructed where possible. In their preservation, great attempts were made not to hinder the current traffic flow. Rather, they allow the preserved/reconstructed seedling to be visible and understood as an “original” seedling - accessible to motorists and pedestrians alike. (For example, each seedling could become a rest stop along the highway and in urban areas, could serve as pedestrian plazas.)

Communities planning interventions or preservation projects may want to follow Carl Fisher’s fundraising efforts. The solicitation of funds from private individuals and organizations will not only add to public funds, but also aid in part of the projects intent – public education about the history of the Lincoln Highway. These projects should improve both community’s transportation and social infrastructures. To achieve this, it is imperative that community members be involved throughout the project - from the schematic design to the construction processes. This involvement will heighten the level of design and create a stronger understanding and sense of ownership for the project and for the Lincoln Highway.

Funding for road enhancement may also come from the government. The Federal government created the Intermodal Surface Transportation Efficiency Act (ISTEA), in 1991 under the Bush Administration. Created, in part, to allocate funds for the improvement of our nation’s highways, ISTEA’s wording allows preservationists to make strong arguments for the improvement and preservation of historic highways. This innovative program includes the “Livable Communities Initiative”. “Livable Communities” is an effort to bring back downtowns, both in the suburbs and the central city, and to revitalize neighborhoods as
lively, safe, appealing centers, where people want to be, through improvements to streets and public transportation.\textsuperscript{22} It critiques many past transportation projects of “visual pollution, sprawl, and undermining America’s historic city cores and rural villages. ISTEA addresses these problems in several positive ways – through community-based planning, alternative design standards, and the funding of transportation enhancements.\textsuperscript{23} Citizen groups and local governments warmly endorsed innovative, community-oriented transportation enhancement programs and stated that without funds set aside by ISTEA for them, these projects could not successfully compete for funding against more traditional transportation projects.

\textsuperscript{22} United States, Dept. of Transportation. \textit{How to Keep America Moving: ISTEA}. Washington: GPO, 1997. pg. 30. ISTEA is now known as “TEA 3.”

\textsuperscript{23} Ibid. pg. 31.
For funding, Transportation Enhancement Activities (TEAs) must fall into one or more of the following categories:\textsuperscript{24}

1. Facilities for bicycles and pedestrians.
2. Acquisition of scenic easements and scenic or historic sites.
3. Scenic or Historic Highway Programs
4. Landscaping and other scenic beautification
5. Historic Preservation
6. Rehabilitation and operation of Historic Transportation Buildings, Structures, or other facilities
7. Preservation of abandoned railway corridors
8. Control and Removal of outdoor advertising
9. Archaeological planning and research
10. Mitigation of water pollution due to highway run off.

Design interventions and improvements for the Lincoln Highway could fall into many of these categories set by ISTEA – making them a very real possibility for communities along the road. However there is a significant amount of dissent regarding ISTEA. Randal O’Toole, of the Thoreau Institute published a paper, “ISTEA: A Poisonous Brew for American Cities,” summarizing most opponent’s views. Among views pertaining to the preservation and enhancement of historic roads, O’Toole believes that ISTEA promotes congestion by allocating funds to existing, outdated roads rather than to the construction of

new roads. He believes this is more expensive than new road construction and that automobile pollution increases with inflated congestion it supposedly promotes. He finds it problematic that ISTEA’s funding (gasoline tax) is used to support transportation projects like pedestrian and bicycle pathways – which do not depend on gasoline as a fuel source. Finally, he claims that ISTEA demolishes the average-American’s “preferred” low-density suburban lifestyle. Such arguments are subjective and easily refuted – but still threaten ISTEA and projects benefiting from its funding.25

2.5: Synopsis

Preservation of historic highways, especially the Lincoln Highway, is important to an understanding of the United States’ history, and the future development of communities. The Lincoln Highway represents an important infrastructural foundation for cross-country automobile travel. Many people and organizations contributed to its success or are associated with this road – including notable ones like Abraham Lincoln, Carl Fisher, Henry Joy, Emily Post, Packard and Hudson Motor Car Companies, the Goodyear Company, and the Boy Scouts of America. The Federal government recognizes and funds projects dedicated to the preservation and enhancement of historic roads like the Lincoln Highway through ISTEA. The American public must utilize these funds and support ISTEA’s reinstatement every six years (the next reinstatement is scheduled for 2009). Recognition and enhancement of Lincoln Highway is crucial for the continued appreciation of a great American legacy and for the strengthening communities along this great path.

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Chapter 3: Design strategies derived from spatial movement

This chapter considers “what” designers learn by directly experiencing a site and analyzing both the site’s movement and form. It begins with a critic’s emphasis on vehicular movements before considering writings and design methods prioritizing movement of both pedestrians and automobiles. A review of literature focuses on three texts: *Looking at Cities*, by urban planner Alan Jacobs; *The View From the Road*, by architects and environmental theorists Donald Applegate, Kevin Lynch, and John R. Myer; and *Rudolf Laban: A Vision of Dynamic Space* by Lisa Ullman – who compiled writings and sketches created by Rudolf Laban, preeminent choreographer and movement theorist of the 20th century. These authors’ work allows one to question the connections between movement and form and provides insight to the development of design methods sensitive to both human and automobile movement.

3.1: A critique of the automobile’s presence in urban cities

“Today everyone who values cities is disturbed by automobiles. Traffic arteries, along with parking lots, filling stations, and drive-in movies, are powerful and insistent instruments of city destruction. To accommodate them, city streets are broken down into loose sprawls, incoherent and vacuous for anyone afoot. Downtowns and other neighborhoods that are marvels of close-grained intricacy and compact mutual support are casually disemboweled. Landmarks are crumbled or are so sundered from their contexts in city life as to become irrelevant trivialities. City character is blurred until every place becomes more like every other place, all adding up to No-place. And in the areas most defeated, uses that cannot stand functionally alone – shopping malls, or residences, or places of public assembly, or centers of work – are severed from one another.”

In her essay, “Erosion of Cities or Attrition of Automobiles,” Jane Jacobs discusses the disparity between automobiles and pedestrians. She believes, however, that the problems

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described above are attributed too much to the automobile. If the automobile’s existence ceased, the same situation – a mass scattering of No-places would still exist. This crisis of No-place arises when planners inappropriately or fail to accommodate the transport and communication necessary within a city. Jacobs states: “The multiplicity of choice and intensive city trading depend on immense concentrations of people, and on intricate mingling of uses and complex interweaving of paths.”

Many New Urbanism theorists voice a more critical response to transportation infrastructure, particularly in cities. “When the system of transportation becomes the center of a community’s vision for its future, the community is placing the primacy of its vision on the human relationship to mass movement from one place to another, which in turn determines where and how the population and open spaces will be situated.” Roads become more important than places, and soon, the open space so many city dwellers yearn for existing only on the road. As cities grow, their infrastructures multiply exponentially – connecting new places to old places, and new places to newer places, and so on.

As municipalities widen and build new roads to accommodate increased traffic, vehicular congestion grows rather than lessens. Silbertstein and Maser equate this phenomenon to an adage about people buying a new house: the potential homebuyers complain about having too little space, and too many things – justifying their need for a new house. After acquiring the new house, they fill it to capacity and are, again, in the same situation. They believe that the same happens with roads and support this conviction with statistics about the opposite scenario – showing that the closing of a road for a short period of time

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time can actually eliminate some of its traffic: “They found that a goodly portion of the traffic that once used the roads simply ‘evaporated.’ The cars and trucks were not simply rerouted on nearby streets, but disappeared altogether. On average, on fifth of the vehicular use, and in some cases as much as 60%, went away once a road was closed and the full volume of vehicles did not reappear once a road was reopened.”

Pragmatically, automobiles, roads, and new road construction will remain in cities; businesses depend on vehicles and roads to deliver goods for sale and to transport patrons to their shops. However, it is possible to create cities where “place” and pedestrian experience outrank the road and automobile. There can be a division of vehicles and pedestrians, not a complete separation, but rather, an orchestrated space allocation that allows delivery vehicles, mass transport, services for the disabled, etc. To successfully achieve this division, designers must reconsider the road as a pedestrian place. Too often, after the “street” is closed to vehicular traffic, the street still acts as a typical street – with pedestrians clinging to the sides and a large, vacuous corridor separating one side from the other. The center is filled only when huge masses of people are moving – like in a parade or demonstration or when there is a central attraction demanding such movement. The pedestrian gains little additional sense of place or space. The only new benefit is from the safer crossings from one side of the street to the other.

When viewed as a slice of “open” space remaining in today’s over-developed cities, roads are prime for pedestrian enhancement and rehabilitation projects that can create broader community uses and enjoyment. “Open space for communal use not only is central

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to the notion of community but is also increasingly becoming a premium of a community’s continued livability and stability of the value of its real estate. It can become a focal point around which to organize communities…”30 The potential for such improvement impels designers to reconsider these spaces and develop design interventions more sensitive to the needs of both pedestrians and automobiles.

3.2: Experiential foundations for design: Walking in cities

“*It is more than a personal value or preference that leads me to the conclusion that walking is by far the best way to look at cities. There are other acceptable modes of observation, which can be appropriate, depending on the size and type of area, and the purpose of looking. But nothing replaces looking while on foot. The speed of the other modes makes it difficult to see and explore details.*” 31

Urban planner, Allan Jacobs, in his book, *Looking at Cities*, impels designers to visit a site before designing. Existing data, like topographical maps, plot maps, zoning regulations and historical narratives, are valuable supplemental materials. Nonetheless, the greatest “document” a designer has to work with is the site itself. It must be experienced first hand – and with an open mind. This direct observation is a powerful design tool.

Jacobs sees observations skills, similar to those used in design, as important tools in other professions, like medicine, where observation is as important as taking a patient’s medical history. Observation encourages the learning of more than the recorded history. They begin to sense the site’s energy and gain greater understanding of its physical, social, and economic life – which allows them predict changes and find solutions that amend adverse circumstances.32

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32 Ibid. pg. 6.
After experiencing the site, the one gains a personal connection to its condition and requirements. This experience provides a glimpse into the lives of the people using the site. It helps the observer answer questions like: How old is this population? Are they rich? Are they poor? Are they happy? What do they need? “Seeing people and their environments is quite different from learning about them second hand...Planners tend to be more careful in deciding on policies and actions when they associate real people’s faces and images of real places with decisions.”  

Jacobs acknowledges that the opinions gained through experience on the site are subjective. There are many variables that influence the perceived picture – from the designer’s background and built-up expectations to weather conditions...“buildings tend to look less good on a cloudy day than on a sunny day.” Pre-recorded data may not reference (or even have noticed) present dangers and obstacles. Also, it probably didn’t convey the site’s splendor or excitement.

Because of the subjective nature of Jacob’s pre-design method and because of the uniqueness of each individual site, it’s difficult to categorize/delineate exactly what the designer should look for. He or she attempts to categorize the “basics” designers should observe:  

1. Buildings – Architecture Style, Purpose, Size, Material and Workmanship, Design Quality, Maintenance and Condition;

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34 Ibid. pg. 11.
35 Ibid. pgs. 30-98.
2. Land and Landscape; Use of Buildings and Land; Special-Purpose Buildings; Artifacts; People; Commercial Areas – Individual Units, Commercial Streets, Commercial Centers, Highway Strips, Downtowns;

3. The Public Environment – Street names, Street widths, Sidewalks, Curbs, Street Trees, Maintenance;

4. Street Patterns and Layouts – Regular and Irregular Patterns, Scale and Size of Blocks, Breaks Seams, and Cut-Throughs;

5. Building Arrangement; Topography; and Location within the Urban Area.

Alan Jacobs’ suggestions provide this project with a starting point for observation.

The following description of Lincoln Way in Ames, Iowa (a portion of the Lincoln Highway) forms a foundation for the design intervention presented in this thesis.

3.3: Experiencing Lincoln Way in Ames, Iowa

In the center of Ames, Iowa, along the Lincoln Highway, lies Iowa State University. Transversely bisecting the Ames community, Lincoln Way – part of the Lincoln Highway – acts as the primary artery for the University, Ames’ largest institution and one of the three Regent’s Universities in Iowa. Whether by circumstance or by design, Lincoln Way’s central nature appears conducive to a pedestrian community – almost all of the elements needed to sustain this community of University students, faculty and staff lie tangent to the road. One can find inexpensive fast food restaurants, grocery, convenience, and liquor stores, gas stations, automobile repair shops, in close proximity to schools, churches, apartments and single family homes. Although only a part of Ames, Lincoln Way truly is a community within itself.
In plan, Lincoln Way appears to be a community capable of sustaining a pedestrian lifestyle. However, the vehicular traffic along the road makes it more of a great divide than a connector linking various opportunities in the city. Walking near Iowa State Center, the pedestrian notices lonely sidewalks and overwhelming ebbs of speeding traffic. Alone, the he or she searches for human connections and for alternate paths that protect him or her from the cars and vast, open space. Crosswalks, few and far between, intensify this desire and occasionally impel the pedestrian to run across the street between waves of traffic. The pedestrian stops halfway, on the median, for protection from the next surge of traffic and recalls recent driving experiences at the same location and the fear brought forth by pedestrians darting across the roadway. Alas, even when near a crosswalk, the wait for a
departure signal is arduous. Only isolation drives movement. The pedestrian walks a path that corresponds to the road, toward a destination. Overwhelming exposure and "aloneness" engender a feeling of desperation to exit the site.

Figure 9: Recreational path along Lincoln Way (North of Iowa State Center)

Figure 10: Lawn North of Iowa State Center

Elevated above the floodplain, the sidewalk and road isolate the pedestrian and automobile traffic from the landscape. Only a 6" curb between the sidewalk and road
separate the dissimilar traffics. Wide sidewalks and an even wider roadway, a vast athletic practice field sitting to the North and a field of parking spaces lies to the south create an overpowering openness. The sidewalk and road are separated from Iowa State Center and its parking lot by a sea of grass dotted with insignificant trees. Small and sparsely planted, they do little to enhance the landscape – there are too few to create any recognizable mass and too many to appreciate their individual shapes. They create a low, gloomy cloud of shade that fences Iowa State Center from Lincoln Way. To the East, larger masses of trees rise from each side of the road – Is this a place to be? One doesn’t know – the park lies far below the elevated road, and when its entrance is in sight, one realizes that he or she must trek across the road yet again. Is it worth it?

Figure 11: Hilton Coliseum, Iowa State Center

Iowa State Center does not enthuse pedestrians or motorists. Its architecture intensifies loneliness here. The buildings, monolithic concrete masses, grow from a desolate
plain. They penetrate through the ground – cleaving the earth into berms around the buildings’ edges. Dark glass sealing the few windows on each building allows one little clue to inside activities. The building’s entrances shrink into postage stamp dwarfs compared to the enormous structures behind them.

Walking westward, it is easy to feel more optimistic. As the sidewalk ascends, the scale of the landscape, road, and buildings contracts and divides into more diverse, multilayered spaces. Landscaped boulevards replace the concrete meridian between opposing lanes of traffic – creating a visual rest for eyes scanning the road. Similar tree-lined boulevards also buffer the sidewalk from the traffic, wind, and sun. Landscape lawns, although sometimes too large, soften the noise and act as a buffer for the sidewalk. The smaller and regularly placed structures behind the lawns suggest a finer grain. Add-hoc sculptures, signs, and monuments built by the student residents of each building give further detail to the grain.

Multiple layers of space and a finer grain make this area easier to “be” in. The surrounding activity of this area’s residents energize the pedestrian and tension felt in front of Iowa State Center lessens. There is an order to this space defined by subtle boundaries – usually in the landscape and a variety of activities give the streetscape a steady pulse. At the crest of this hill, one looks westward to more layers of space – and even more diverse buildings. One senses constant change – fraternities stand next to churches, and across from bookstores and parking ramps. Apartments sit above shops. In the distance, the Campanile towers over trees and building tops. Finally, this is a place to “be.”
3.4: The driver’s experience

The experiential emphasis in design method is found across several generations of environmental designers and urban theorists. Donald Appleyard, Kevin Lynch, and John Myer voice similar views about “experience,” in *The View from the Road*, which focuses on the perspective from within an automobile. They provide a detailed portrayal of their experiences – illustrating them through a series of drawings and diagrams that describe the site’s conditions.

*The View from the Road* “deals with the esthetics of highways: the way they look to the driver and his passengers, and what this implies for their design.” Rather than taking the position that the road is some sort of monster that must be obliterated to achieve a world where everyone can walk or bike to work, the authors take the position that the road should be a delightful design element integrated with its surroundings and an element that enhances the communication between place and people. Recalling the great American tradition of “pleasure-driving,” for which scenic byways, pedestrian and carriage promenades were built, Appleyard, Lynch, and Laban believe that all roads, even those built for practical reasons, should consider visual form in the landscape and its potential to heighten the driving experience.

The authors realize that their position elevates the road, an extremely practical element of infrastructure, to something greater – perhaps even art; they ask the question, “If the highway is a work of art, what are the raw materials of that art, and what are its

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37 Ibid. pg. 3.
principles?” 38 Their answer, not surprisingly, deals with the same sensory qualities other, more traditional, art forms deal with. Because of the closed nature of the automobile, vision becomes the primary sense, over sound and smell. The kinesthetic nature of the experience, the personal and the automobile’s encounters with various materials, directions and topographical changes make “touch” a secondary contributor to the experience. The combination of these sensory experiences shares qualities with music, dance and theater. By considering the road’s rhythms, sequences, continuity, and temporal flow, the designer elevates himself from planner to artist.

In The View from the Road, design analysis is parallel to Alan Jacobs’ emphasis on site experience. However, rather than identifying the “site’s” social and economic attributes, they focus on formal elements – and their relationship to one another and to the road. The View from the Road’s descriptions of drives into, through, and around cities emphasizing the temporal experience has a narrower focus than Jacob’s narrative walks. This is largely because, inside an automobile moving through space, different formal elements capture the driver’s attention. These forms fall within the driver’s cone of vision – projecting out from his or her mobile capsule far into the distance (but not far from the road’s edges). “Certain elements will attract the mover’s attention. Most objects sighted will be straight ahead of the viewer or concentrated on the immediate surroundings – other moving objects on the road. The color and texture of the road surface, the shape and rhythm of the objects at the shoulder set the visual tone.” 39

39 Ibid. pg. 6.
From Appleyard’s, Lynch’s and Myer’s work, one assumes that, for those traveling in an automobile, objects placed close to the road and objects whose site lines are in line with the road will receive most attention. Only when movement stops or suddenly changes direction (as in a sharply curved or steeply sloped road) does the driver’s attention move outward. It is at these points, he or she is forced to make a decision and use the information provided by more distant objects to determine how to progress.

“Attention is concentrated at the points of decision, such as the beginning of an off-ramp. The details of the object dividing the ramp from the main roadway will loom very large in the driver’s total impression. So will distant landmarks, particularly if they are sharply silhouetted. Similar points of concentrated attention occur when the space is sharply constricted. No one fails to remark structures which approach the road closely enough to make an apparent sidewall, canyon, or tunnel, nor does he miss any overhead structure, such as a bridge, however, momentary its appearance.”

3.5: Form and rhythm

Form and rhythm are perceived in relation to velocity. Driving on highways, vertical forms in the landscape create visual rhythms. Considering these rhythms allows designers insight on form’s shape and placement. Too often, “the view from the road” is not considered – leaving the driver alone on a straight, open road with no clues or suggestion of forward progression or destination. The experience becomes aimless and tiring. “Our superhighways induce sleep, frustration, or excessive speed, simply because of this long-continued visual torpor, this apparent inability to reach a goal.”

Figure 12: North elevation, Lincoln Way

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Closely spaced prominent objects appear to be linked together to create a rhythm that heightens the driver’s sense of speed. It is not the objects (usually buildings) themselves that create the rhythm, but their formal differences and the distances between them.
For example, Appleyard, Lynch, and Myer’s analysis suggests that a residential street lined by similar houses spaced evenly apart gives the driver very little sense of rhythm – but rather a steady tempo. When coupled next to a large open field, a highway intersection, and a monstrous event center, a very dramatic (perhaps even unsettling) rhythm is composed.
Now imagine the lawn north of Iowa State Center where grass surrounds the visitor and massive concrete structures rise up in the distance – some connected by bridges and walkways – while others are less tangible and separated by a busy street, earth berms, or roadblocks. Is the visual rhythm so chaotic that the visitor’s movement must nearly halt before the visitor knows how to proceed?
Perceived form enables the designer to understand the architecture of the road. Appleyard, Lynch, and Myer attempt to bring the designer into an understanding of formal elements – to create a stimulating roadscape and a continuous pathway where vehicular movement and the understanding of one’s path and destination occurs both freely and beautifully.
3.6: Temporal experience

Although one can learn from and appreciate the “still” landscape, it is limited for purposes of design research where the road is best understood “not as a single view, but in sequence over an extended period of time while the observer is in motion.”\textsuperscript{42} By breaking the road into sequences, it becomes possible to be analytic with regard to temporal dimensions: the sequence’s tempo, rhythm, and continuity, while still considering the sequence’s place in the greater whole. “Using all these elements, the basic artistic problem of the highway is the shaping of its sequential form. In such form, the principal aim is to preserve continuity while developing, embellishing, and contrasting the material. The road itself furnishes an essential thread of continuity, but it must be supported by successions of space, motion, orientation, and meaning which seem to be parts of a connected whole.”\textsuperscript{43}

The description of the temporal is difficult: so many senses contribute to the experience. Sometimes, one just has to “feel” it. “Tempo” can be thought of as the regular beat or pulse of a sequence. At the same time it also represents the speed of perception. It can be sensed in many ways. The driver subtly feels regularly spaced cuts or changes in the road’s surfaces. Telephone, utility poles, mile markers, and even trees planted on either side of the road delicately pulsate, marking the speed of movement. The distance between intersection, lots, and buildings thump in the background of the road’s composition.

“Rhythm” works within a tempo. One senses rhythm when one of the regular “beats” or “pulses” of the tempo is accentuated by stronger presence, its absence, or occurrence between beats – “off beat.” Form plays a large role in rhythm, often dominating,

\textsuperscript{43} Appleyard, Donald, Kevin Lynch, and John R. Myer. \textit{The View from the Road}. Boston: Massachusetts Institute of Technology, 1964. pg. 17.
obliterating, or framing views. Sudden changes in topography not only change one’s view, but can also create a brief stir in one’s stomach. These changes are the rhythm of the road.

Driving west on Lincoln Way, (around Hazel Avenue) one can perceive a sustained tempo reinforced by evenly spaced houses, all of similar size. Intersections evenly “beat” at the end of each block. When Lincoln Way intersects Elwood Drive, the regular beat stops – first with a bridge surrounded by a stand of trees and then with the sight of the vast open space surrounding Iowa State Center. Driving onward, the regular grain resumes as evenly spaced fraternity and sorority houses line the south side of Lincoln Way. Larger, less frequently spaced dormitories on the north side of the road add syncopation to the regularity of the houses on the south side of Lincoln Way.

Analyzing the three-part sequence just described, one begins to understand the link between tempo and rhythm and unfolding experience of time and space on the road. “Tempo and rhythm are the primitive essence of any sequence. The tempo of attention appears to be a sensitive index of the quality of the road.” 44 In The View from the Road, the authors recorded their perceptions at places with explicitly different tempos. “Where this tempo was rapid, attention was concentrated on near objects straight ahead in the road; where this tempo was slow, observers were scanning right to left, giving more attention to far objects.” 45 They commented that while brief periods of concentration made the drive more interesting, long, sustained periods of concentration were oppressive and brought feelings of tension, anxiety, or boredom, One is left questioning: Do short sudden rhythms – as one experiences approaching Elwood Drive and Iowa State Center from the east cause strain and confusion?

Do long intervals bring about boredom? Is there an optimal combination of tempos and rhythms that can compose a roadscape where the driver is both alert and relaxed, enjoying the driving experience? The authors believe such a design is possible. However, they are vague in their solution. Design is not a mathematical formula – there are multitudes of possibilities. Answering the questions about an ideal roadscape and driving experience, they posit: “Where this is true, it would be that a roadscape should have a basic beat, a regular frequency with which decisions and interesting visual impressions are presented. This beat could be varied, but the variation should be coherent and within the optimum range.”

The following diagram represents the rhythm perceived while traveling on Lincoln Way (East to West) through Ames. Placed in relation to a scaled street map, one gains a sense of its relationship to its surging tempo. (Highlighted vertical lines depict major intersections.)

Figure 18: Rhythm diagram superimposed on map of Ames, Iowa

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3.7: Continuity

Continuity is the perceived physical, sensory, and temporal connections between places. These connections allow people moving through space to understand the link from one space or event to the next. While designers address continuity in many ways, Appleyard, Lynch, and Myer suggest the following guidelines for continuity on the roadway: “The traditional way of managing a sustained temporal continuity is to set in motion a drive toward a final goal. This drive may be interrupted, prolonged, and embellished at rhythmic intervals, but it never entirely loses forward momentum, and it achieves its destination at the climax, subsiding then to a conclusion with tension resolved. Climax should not be too long delayed, nor should tension, once developed, be thrown away in anticlimax.”

Guided by these criteria, one sees breaks in continuity on Lincoln Way in Ames, Iowa. First, there is little sense of destination. One almost constantly moves forward to a narrowing road in the horizon. There are few strong landmarks to spark the driver’s attention or bends in the roadway that elicit new views. The road needs to be broken into smaller sequences, each with its own small destination that marks the completion of another leg in the greater journey.

At the intersection of Lincoln Way and Elwood – at Iowa State Center – momentum abruptly halts. The contrast between the narrow, tree-lined corridor and this wide-open space brings more confusion to the driver than interest. At this confusing point, the driver wonders where to go, and is presented with options that lead him/her off the path. A bridge is needed to span the gap in continuity here.

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Finally, the lack of “destination” on the path creates a tension that never quite resolves. Instead, it gradually builds. Where one might anticipate a climax, the road continues and this small anti-climax adds to the driver’s tension. Leaving Ames, the driver is not confronted with a final gesture – a wave good-bye. Instead, he/she realizes that the road continues westward and merely hopes for a relief in tension – somewhere – on the road ahead.

In *The View from the Road*, Appleyard, Lynch and Myer present many diagrams that document the driving experience, perceived rhythms and tempos, and the continuity among sequences. Their diagrams aid them in creating a symbolic picture of the road that emphasizes problems or locations that need changing interventions. The following diagrams do not emulate Appleyard’s, Lynch’s, and Myer’s diagrams. Rather, they elaborate and combine their vocabulary and intentions to meet the design analysis requirements suggested by Lincoln Way.

### 3.8: Recording the Driving Experience

The following diagrams were inspired by the diagramming methods suggested in *The View From the Road*, by Donald Applegate, Kevin Lynch, and John Myer. The photos (left) document a drive on Lincoln Way, traveling from the Eastern city limits to the Western city limits. After the drive, the photos informed preliminary diagrammatic sketches. The diagrams were modified and enhanced during subsequent drives on Lincoln Way.

Text, interspersed among the images, explains the diagramming method. The images, however, are in chronological order – fully documenting the westward drive.
Figures 19 –22: Photos of “drive” on Lincoln Way and corresponding diagrams

Playing with Applegate’s, Lynch’s, and Myer’s diagrams, the process of creating each “scene” begins with a vertical line. The line designates forward motion. Solid lines indicate a “goal” – a destination on one’s drive to a final destination. Dashed (or broken) lines represent the absence of such destination. Observing the diagrams above, one sees such absence.

Continuing on the drive, one begins to sense a goal – stoplights at an intersection. Not entirely solid, the line indicates some uncertainty about the destination. The lights are green...but will they stay that way? The starburst at the top of the diagram emphasizes this destination – which offers opportunities – a place to stop, turn, or assess one’s progress. The starburst’s size, observably, emphasizes the presence of the destination. At times, the road
compels the driver to consider a change in his or her path – or to turn and stop completely.

Representing these occasions, the diagrams shows curved gestures and hatched fill (see bottom diagram of the set below).

Figures 23 –26: Photos of “drive” on Lincoln Way and corresponding diagrams

Viewing the road ahead (and sometimes looking back), the driver’s eyes move right and left. However, the path of vision is not regular. Points of interest along the road choreograph the driver’s vision. Arrows show this sight path and triangular flags designate points of interest – signs, landmarks, etc. – that sway the path.
Figures 27–31: Photos of “drive” on Lincoln Way and corresponding diagrams

Rectangular marks on the right and left sides of the diagrams indicate robust, man-made forms. These forms are not limited to buildings; for example, the parking lot is emphasized by a large rectangle in the 5th diagram of the above sequence.
Figures 32 –33: Photos of “drive” on Lincoln Way and corresponding diagrams

The drive stops at a stoplight causing very little change in the above images. The cactus-like form makes “Taco Time’s” sign prominent compared to other rectangular signs and billboards.

The following sequence shows an abrupt change in the road’s character, from commercial to residential. The driver’s speed makes the change appear more dramatic.

Figures 34 –36: Photos of “drive” on Lincoln Way and corresponding diagrams
Trees lining either side of the road add to this section's residential character. They screen views to the houses and apartments behind – providing the residences' a layer of privacy and protection from the busy street. The tall masses of deciduous trees also eliminate the delicate rhythm established by utility poles and streetlights – as seen in previous sequences.

Figures 37–38: Photos of “drive” on Lincoln Way and corresponding diagrams

In the diagrams, shaded forms represent the driver’s “blocked” view – in this case, the trees on either side of the road. The shading’s intensity indicates the perceived density of the obstruction. The tree’s forms guide the diagram shape – helping to create a diagrammatic picture of the road.
Figures 39–45: Photos of “drive” on Lincoln Way and corresponding diagrams
Unlike many other stoplights shown in these sequences, this intersection does not have the “destination” characteristics discussed earlier. Even though the stoplight is green — allowing traffic to race through the intersection, the space feels vacuous and empty. The drive changes from a thread of rapidly changing spaces filled with diverse events to a void — an air pocket in the lifeline feeding the city of Ames.

This pocket’s character is not completely abysmal. The driver sees potential for activity in the foreground.
Figure 50: Photos of “drive” on Lincoln Way and corresponding diagrams

The driver anticipates a new sense of place. The tree-lined streets recall the previous residential section of Lincoln Way. However, where trees once towered over small bungalows, the massive, masonry structures ahead reach out above the trees.

Figures 51–53: Photos of “drive” on Lincoln Way and corresponding diagrams

Replacing the concrete median, more trees and landscaping fill a lush central boulevard, creating a dignified and formal entrance to Iowa State University. It also lessens the tension between automobile traffic traveling in opposing directions. The boulevards, in the center and on each side – create walls of protection for each lane of traffic, both pedestrian and vehicular. The drive gains a leisurely characteristic.
Figures 54–57: Photos of “drive” on Lincoln Way and corresponding diagrams

The rising horizon briefly hides all destinations from the driver. At the crest of the hill, a far-stretching view allows the driver to survey the path.

Figures 58–60: Photos of “drive” on Lincoln Way and corresponding diagrams
Figures 62–68: Photos of “drive” on Lincoln Way and corresponding diagrams
Figures 69–74: Photos of “drive” on Lincoln Way and corresponding diagrams
A five-foot concrete retaining wall nicely buffers Friley Residence Hall from pedestrian and vehicular traffic. However, it pushes pedestrians closer to the speeding vehicles.

Figure 75: Photos of “drive” on Lincoln Way and corresponding diagrams

An apartment building acts like the retaining wall in the previous image. With only a curb to separate pedestrians and automobiles, automobiles dominate the street’s corridor.

Figures 76–79: Photos of “drive” on Lincoln Way and corresponding diagrams
Figures 80–86: Photos of “drive” on Lincoln Way and corresponding diagrams
Figures 87–92: Photos of “drive” on Lincoln Way and corresponding diagrams
3.9: Movement’s form

Thus far, this chapter has considered “what” one can learn by moving through and experiencing a site and how the experience of the perceived character of the road by both pedestrians and motorists as people whose movements in space and time have been, in a sense, choreographed. When seen in this light, Rudolf Laban, the preeminent choreographer and movement analyst of the twentieth century, contributes a fresh perspective to open space design research.

Laban believes that movement has its own form (although invisible to the eye of many) and that objects surrounding movement (often architecture), influence its form. When the designer considers the forms he or she places in an environment and their effect on movers in that environment, both the form’s functional and artistic value increases. The space is not only more usable, but the designer has created a stage, becoming a choreographer of the every day life of the space’s inhabitants. The people become players and dancers, and as participants, they gain a greater (subconscious) understanding of the designed form and its “place.”

Equating movement to a solid form may be unfamiliar to many designers, but for Laban, there is an instinctive knowledge about space, movement, and form with which humans are born, and that is “lost or at least weakened through the exaggerated cultivation of time.” 48 Society, through its enculturation and education systems, limits people to a geometrical perception of space that hinders their ability to fully experience “space”.

The design of open spaces that considers sequences of spaces and movements is compatible with Laban’s notion of the value of reading forms not only as one line, a single

arabesque or curve, but as heaps of "jewels or precious stones" pouring out of each other "vehemently, glistening, jumping, breaking." 49 His image of form captures the shape of each movement, connects and overlaps it with the next, and uses principles of gravity and biology to suggest a connectivity that supports each part and the movement as a whole.

The space or form that movement occupies enriches and describes the greater surroundings – the environment designers are responsible for shaping. The physical forms they create perform with human movement to inspire the liveliness that influence human’s perception of the space. For example, a beautiful commercial street is successful when it is filled with the movement of automobiles, people walking, people stopping or crossing to see points of interest, or people remaining still to simply enjoy the space. Laban represents this liveliness or energy with movement’s trace forms. “Trace-forms can be taken as the temporal and transient unfolding of energies in space. The projection of trace-forms on to the surface of a limited or personal space is dance. The doing and dancing of our bodies becomes therefore the symbol of a happening in space." 50

50 Ibid. pg. 37.
Figures 93 and 94: Laban’s trace forms created by movement

Movement’s shapes share meanings similar to the more literal formal spaces discussed above, and the choreographer’s goal, just like the street/road designer’s goal, involves the creation of an artistic continuum made with contrasting, repeating, and balanced forms. Laban believes that humans desire both balance and contrast in their environment. “If something occurs repeatedly, we feel the moment of repetition as a point of rest in the flux of appearances.” Repetition creates balance, which adds to the feeling of stability. Varying repetitions avoids the torpor felt by experiencing the “same” over and over again; the moving experience becomes interesting, surprising, and pleasing – without becoming unsettling.

Movement’s flow and forms are organizing concepts for choreographers of movement. Laban writes: “Flow is in its primary form the sensation of nearness versus

remoteness (the distance) in time as well as in space.” In architectural design of landscapes, flow is the combination of tempo, rhythm, and continuity and can be determined by the spacing of forms (Appleyard, Lynch, Myer). For example, the succession of similar structural forms on Lincoln Way between Hazel Avenue and Elwood Drive evokes a steady flow – monotonous both to movers and viewers. There are few, if any, points of interest where one’s eyes might rest. Generally, the movement forms on Lincoln Way are almost completely linear. The flow races forward in attempt to find the next form where movement may rest and breathe. The tension created by the constant desire to move forward to find a destination is the exact tension Appleyard, Lynch and Myer describe.

Figures 95 and 96: “Traditional” street elevation and home, Lincoln Way

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Laban describes the desired destinations as points of rest and believes that they most often occur within or between symmetrical forms. “Symmetry presupposes disparity of form while retaining a common measure. This most simple kind of harmonic relation has the effect of being immobile; it is a symbol of rest, of rigidity.”  

Pedestrians experience this symmetry everyday. The “traditional” home’s central entrance has equal numbers of windows and landscaping flanking its single front door. The symmetry asks the mover to stop and consider his/her next course of action. On the road, drivers experience less of this symmetry. One could assume that the symmetry on city streets brings similar points of rest. Intersections are defined by signs and light posts on each side, hanging lights act like a pediment over a door, and symmetrical paths lead both to the right and to the left. The symmetry pauses the flow and allows one to discern his/her place in the flow and whether or not he or she wants to continue in that flow. However, the road’s symmetry occurs mostly in plan – a vantage never experienced while moving on the street. The driver experiences the “section” of the road – not the head-on elevations of buildings. Furthermore, in comparison to their surrounding environment, poles, lights, and signs do not have a mass substantial enough to give movers the sense of enclosure and balance created in the house example. Thus, mass and proportionality work with symmetry to create resting points in the flow of movement.

The proportion of a human being to a building is much greater than the proportion of the vehicle to the road. The building potentially overbears the visitor by enveloping him or her many times over. Movement halts. Because the car acts as an extension of the driver’s body and provides him or her with superhuman movement capabilities, the proportions at the

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intersection of Elwood and Lincoln Way provide little rest. “Proportionality (of form) distinguishes itself from symmetry by an increasing mobility... Symmetry and proportionality can work together and create nuances of movement ranging from an almost complete stillness to a most lively stir, while the identity of the external form of the single parts gradually disappears more and more.”

“One of the strongest visual sensations is a relation of scale between an observer and a large environment, a feeling of adequacy when confronted by a vast space: that even in the midst of such a world one is big enough, powerful enough, identifiable enough. In this regard, the automobile, with its speed and personal control, may be a way of establishing such a sense at a new level. At the very least, it begins to neutralize the disparity in size between a man and a city. The reverse sensation occurs when a car breaks down, and the driver must move on foot over the vast hills and endless tangents of the modern highway. The scale relation is gone.”

Laban’s writings and drawings speak to the connections between form and movement. They suggest that movement has power to define space and form and that form has potential to choreograph movement. This insight provides designers with another avenue to create magical places for people and provides a framework in which to choreograph a dance of people throughout space.

“The primary pleasure of dancing is the contact with space pure and simple. The essence of pleasure is touch, and beauty arises when the soul is able to return to its first contact with the silent space. It is a homecoming in which the dance contacts space. Space loses its shapelessness; it finds its embodiment in shape. The hands caress a shape in writing it in the air.”

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This thesis considers “movement” as a tool in the architectural design process. Unlike many paintings or sculpture, which sit or hang stationary in the climate-controlled environments of galleries, architecture is both an object and a path, indoor, outdoor, and experienced in fragments over time. People move through architecture and around it, viewing it from different paths and through landscapes that change along with the site and contexts. While perception constantly changes, movement remains a constant modifier of the experience of architecture. It is only logical, then, that architectural design considers movement as a design strategy.
4.1: The site

The previous chapter documents the experience of Lincoln Way to demonstrate perceiving movement as a central feature of the site, a segment of the Lincoln Highway, north of Iowa State Center, in Ames Iowa. In the following design intervention, the experience of moving through the site is addressed in addition to the problems considered in earlier chapters.

Figure 98: Ames Zoning Map (design intervention site designated by a star)

Before beginning a design project, it is typical that landscape and architectural design project, designers gather site data, such as the image seen above. Viewing this image, the diverse land uses on Lincoln Way suggest an exciting, ever-changing environment for both
vehicles and pedestrians. For the most part, this is true. The road appears richly diverse, with low-density residential housing, apartments, commercial areas, and agricultural zones. However, after experiencing the site, the designer realizes that there are places where movement nearly halts, is uncomfortable, or dangerous. The most dramatic of these sections is in front of Iowa State Center (in the "blue" University zone, and designated with a gold star).

The intervention proposed in this thesis is located on the segment of Lincoln Way in front of Iowa State Center (see figures in chapter 3). This area’s barren landscape breaks the any sense of tempo and rhythm; pedestrian paths need physical improvement and shelter from the weather and vehicular traffic; and both road and path need better consideration of the architecture and events here. To the designer’s advantage, Iowa State Center hosts many activities. These activities provide both a physical context for site improvement and social context that guides and informs the design. This proposal to improve the circulation path and the journey for those traveling along or crossing Lincoln Way is a large gesture toward improving the Iowa State University and the Ames communities.

4.2: Goals

Considering the site’s history and insight gained by experiencing the site, the design intervention has chosen to address the following goals:

1. The intervention should improve the areas aesthetic qualities
2. The intervention should offer greater protection to pedestrians and bicyclists – both from the vehicular traffic and weather.
3. The intervention should maintain wide pathways – so that both pedestrians and bicycles can comfortably travel along side each other.
4. The intervention should create easier and safer crossings for pedestrians. These crossings should go over the road and beneath it, through the Lincoln Highway Dance and Movement Center at Iowa State University, thoroughly integrating the proposed building into the area’s circulation system.

5. The intervention should link Iowa State Center to the main campus.

6. The intervention should preserve the soccer fields and offer spectators better views of games and practice on these fields.

7. The intervention should link “rhythms” and “tempos” suggested by adjacent Eastern and Western segments of Lincoln Way – thereby establishing continuity on the road. The forms linking the two segments should not be limited only to the proposed built form; they should also include trees and landscaping as key formal elements.

8. While addressing current traffic needs, the design intervention should also be sensitive to future needs – i.e.: expanded parking, lanes for alternative modes of transportation, etc.

9. The design intervention should a monumental architectural form that welcomes people to the university and establishes a greater sense of place for this segment of Lincoln Way.

10. The design intervention should be sensitive to its greater context – the community of Ames and the Lincoln Highway.
4.3: Connecting Activities

The goals listed above revolve around a host of connections: physical, environmental, visual, and social. Connecting physical objects and human activities is critical to the success of the site’s re-design and to understanding it as a part of a larger circulation system. This design method is grounded in studying movement with the site and beyond, and gives designers “access to external facilities, persons – schools, supplies, or outlets – plus the relation of the site to the general circulation system.”

Iowa State Center hosts numerous activities, from sporting events to symphonic concerts. At times, its buildings well together, they lack relationship to adjacent civic and University communities. The Center needs a more direct and a more defined system of pedestrian paths that physically connect it to activities in Ames and at Iowa State University. Creating paths and forms to establish these relationships will help mitigate the awkward transition on Lincoln Way between the residential neighborhood east of the Center and the University to the West. Located on the edge of campus, the site has potential to bridge existing pedestrian zones and comfortably transition their contexts.

The first portion of this design intervention involves establishing the important paths and activities. As seen in the following image, direct walking paths from Iowa State Center to Maple-Willow-Larch Residence Halls and to the soccer fields adjacent to the residence halls take the shortest form between two points and are identified through changes in the pavement’s surface.

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The walkways ascend from Iowa State Center, cross Lincoln Way, and terminate at the residence halls and at the soccer fields. They sculpt the once vast, empty lawn into more personable "rooms." Small trees break through the paving and canopy over the paths; their tops rise above low retaining walls on either side of the paths and add to the definition of the lawns between paths. Although dividing the space into smaller areas, each is still large enough for a game of Frisbee or tag, but small enough to maintain a sense of enclosure and place.
4.4: Recreational pathways

Figure 100: Site plan / land use diagram

The previous image diagrams the land-use for this design intervention. One sees the bold gesture connecting Iowa State Center with activities across the road and then notices numerous intersections of both vehicular and pedestrian lanes. The pedestrian paths connect to an existing set of sidewalks the City of Ames has designated as "Recreational Pathways."
By publishing a map of recreational paths (available on the city’s website), it is clear that the city of Ames values a non-automotive infrastructure. This map designates the section of Lincoln Way in front of the Iowa State Center as a “recreational path”. In plan, the path appears to have great potential; numerous secondary paths intersect it, and even though the recreational path ends at Beach Street, the sidewalk continues westward as a “widened sidewalk facility.”

Closer inspection reveals problems with the path as designated. There are no direct links from the path to nearby activities, nor to the university’s main campus. Despite being advertised as a recreational path, the sidewalk in front of Iowa State Center has few recreational qualities. This eight-foot wide sidewalk (which may contribute to its designation as a recreational path) does not enhance the pedestrian’s experience. Moreover, the extra width is completely unnecessary because people choose to walk where the paths are more appealing, safe, and have more direct connections to their destinations on Campus. This analysis presents two options. Connect the existing recreational paths system to frequently

Figure 101: Recreational Paths in Ames, Iowa, enlarged portion.
traveled pedestrian routes or make the existing path friendlier to pedestrians. This proposal chooses the latter approach.

4.5: Defined pathways and corridors

The design criteria set in this project requires a gesture of direct connections between Iowa State Center, Maple-Willow-Larch, and the soccer fields. But, it requires something more, as well. The path must become a desirable route for both pedestrians and vehicles alike. Currently dominated by vehicles, this area needs a physical and visual separation between pedestrian and vehicular traffic – as well as protection from weather. Also, although paths are wide enough for pedestrians, there is little room for cyclists. This intervention widens paths (from eight feet) to twelve feet in order to accommodate more diverse non-automotive traffic modes. A twelve-foot boulevard creates a physical and visual buffer between pedestrian and vehicular traffic. A line of trees, planted down the middle of the boulevard, strengthens this buffer. Additionally, twelve-foot sections of illuminated, glass block “fences,” spaced about twenty feet apart, provide additional spatial definition and a low-level illumination across the road and sidewalk – making the path safer for those traveling at night.

Figure 102: Road Section
The above images show how vertical elements between pathways create a sense of enclosure for drivers and pedestrians alike. Trees become walls that filter traffic, but still allow ample views of the entire space. In the section, the trees’ verticality divides the space into smaller, human-scaled “rooms.”
The following images illustrate designed “separations” of vehicular and pedestrian traffic. However, the scale of Iowa State Center calls for a much more substantial intervention. This intervention calls for a twelve-foot wide boulevard studded with towering deciduous trees; their scale better fits and defines the corridor. The intervention also allows for future landscape and public works projects in the boulevard space, and suggests that this area be used for pedestrian facilities and services – like benches, public phones, street vendors, newspaper stands, bicycle racks, and bus stops.

Figures 106 and 107:


In addition to creating corridors, the trees frame views for both pedestrians and automobile travelers. In the above image, trees frame the view from Iowa State Center to Maple-Willow-Larch Residence Halls. The path is continuous and crossing "feels" more accessible to pedestrians. Cutting through the tree lines, drivers also gain framed views to either side and become more aware of the space’s pedestrian activity.
4.6: Form, tempo and continuity

Forms visible from the path add to the landscape’s continuity and tempo. After considering pathways and existing patterns in the environment, the designer gains insight toward the addition of built forms that complement and/or improves the path’s continuity and tempo.

At the intersection of Lincoln Way and Elwood Drive, two very different tempos collide. East of Elwood, a slow – but very regular tempo defines the driver’s pace. However, when encountering Iowa State Center, the driver halts. Multiple views and decisions confront the driver, bringing about confusion and stress. The tree-studded boulevard moderates this tempo change. Regularly placed trees reference previously experienced rhythms and tempos and establish an order to Iowa State Center’s dissonant architectural forms by referencing existing patterns on Lincoln Way. The trees’ form creates a similar enclosure, and their regular spacing references the tighter grain directly to the east and west.

Figure 109: Photographs of Iowa State Center (Scheman Building and CY Stephens)
Figure 110: Photograph of lawn north of Iowa State Center

Figure 111: Photograph of soccer fields across Lincoln Way from Iowa State Center

Figure 112: Iowa State Center, Hilton Coliseum
4.7: Patterns

Figure 113:

Architects: Ingrid Haukeland, Axel Nitter Somme, and Arne Saelen.

The image above demonstrates how subtle changes in the sizes and colors of paving tiles define individual areas within large open spaces. This thesis suggests that a similar scheme should be used in the design intervention on Lincoln Way. Multiple sizes of concrete pavers cover the pathways, providing contrast to solid parking and driving surfaces and further distinction between pedestrian and automotive zones.

The size of the pavers also reflects the activity on the pathway; small tiles cover pedestrian paths; and, where pedestrian and automobile paths intersect, the scale jumps. As
the path visually continues across the road to its destination, the surface change alerts the pedestrian to passing vehicles and, it signals to drivers crossing the path of the area’s intense pedestrian activity.

4.8: Bringing traffic closer to activity

If the soccer field and the lawn in front of Iowa State Center were not already vast, the road’s “openness” alone may overwhelmingly emphasize the buildings’ forms. The road’s distance, from sidewalk to sidewalk, is about seventy feet. In addition to making the buildings’ forms more prominent, the road’s size makes crossing difficult for movement-impaired people, those guiding pets or small children, or carrying heavy loads. At best,
crossing is unpleasant for those without challenges. This design intervention halves the crossing distance by enlarging the road’s median so that it can accommodate pedestrians who need to rest while crossing or for those who cannot cross in the time allowed by the traffic lights. Also, this large, oval-shaped, central median nudges traffic pathways closer to the activities on either side of the road to facilitate communication between vehicular and pedestrian traffic.

4.9: Landmark and entrance

This space presents a great opportunity for a landmark that welcomes people to the university. Its central location on the road, its proximity to Iowa State Center – already an activity hub on campus, and its position at the “entrance” to the main campus make the location ideal for a welcoming landmark.

This idea of “landmark” informed the structure’s design. Although the building’s activities are held underground, the glass and steel roof penetrates the center of the road for all to see. It glistens during the day and glows at night. Such drama slows vehicular traffic and brings drivers an awareness of where they are – the Lincoln Highway Dance and Movement Center at Iowa State University. The roof’s evenly spaced, exposed beams ascend into the sky and taper to the horizon. Their spacing adds a concentrated tempo in counterpoint with the boulevards and echoes the pedestrian movement sheltered behind the boulevards on either side of the road. Midway through the building, a mid-road pedestrian plaza syncopates the rhythm. The plaza, a resting point for pedestrians crossing Lincoln Way, is yet another signal of pedestrian presence to drivers passing by.

The building’s form carefully considers the diagrams presented in the last chapter (which were based on those in The View from the Road). These diagrams provide the
designer with direction regarding the driver's experience of moving through the site. From them, one senses this proposal's dynamic effect on the driver's experience in front of Iowa State Center. Instead of an endless road, the driver locates a destination along his or her journey – adding a sense of *place* to a once barren space.

Figure 115: Diagrams integrating the proposed building into the roadscape
Figure 116: View from soccer fields

Figure 117: Enlarged Plan showing where the building is cut by the pedestrian path.
One can enter The Lincoln Highway Dance and Movement Center at Iowa State University via staircases descending from the plaza to the building’s interior below the road grade. However, descending ramps extending from the parking area in front of Iowa State Center and from the plaza in front of Maple-Willow-Larch into the Dance and Movement Center function the building’s primary entrances. In addition to providing an entrance to the building, the ramps also allow pedestrians another safe crossing of Lincoln Way. The building becomes a part of the path and a node that welcomes “passing-by” visitors to stop, rest, watch, and participate in the building’s activities.

A sculpted wetland lies to the left of pedestrians entering from Iowa State Center. As their path descends into the wetland and underneath the road ahead, a path to the right ascends to the road’s grade. Now inside, an intense light at the end of the corridor draws visitors forward. Large screens on either side play video feeds from the most recent movement class or dance performance in the building. In addition to preparing visitors for
experiences inside the building, the screens transform the corridor into an area of exhibition and performance – making the space feel less like a tunnel and more like a "place."

Figure 119: Section through corridor

Figure 120: Enlarged building plan

At the end of the corridor, one reaches the "building" portion of the Dance and Movement Center. Light filtering through a glass block ceiling welcomes people into the central entrance space; the movement and shadows of pedestrians crossing overhead mottle the light.
The room is large and intended to be used as an overflow for activities in the building. Crossing the pathway through the building, a hallway leading to other spaces in the building sits on the building's east-west axis. To the west, there are locker rooms, classrooms, and a large practice and performance space. To the east, two more changing rooms serve another practice and performance space. Both Iowa State University and the Ames community use the space. On weekdays, dance and movement classes enliven the space. At night and on weekends, the space is used for community dances, world-culture exchanges, large events like weddings, etc.

Continuing on the pathway through the building, pedestrians ascend a ramp leading to Maple-Willow-Larch. More screens with video feeds stimulate the corridor and a beacon of light from the outside draws movers onward.

Figure 121: View ascending and descending ramps from Iowa State Center Plaza
4.11: Considering context to the Lincoln Highway

Early in the twentieth century, Carl Fisher conceived the Lincoln Highway. He connected two places in the United States separated by a vast fissure of untamed land. In his process of connecting these two places, New York City and San Francisco, he looked at existing paths – and how they might relate to the line that would one day connect America as its first transcontinental highway. The design intervention respects this history by continuing to connect “places” and existing pathways on this line. Albeit a very small 1000-foot segment of the 3000-foot line, it nonetheless bridges two disparate pieces and aims for fluid movement from East to West.

Fisher sought to expand the nation’s automobile industry, recognizing the car’s growing presence in society. This design intervention acknowledges present day, site-specific, transportation needs for a multi-modal infrastructure that accommodates automobiles and other, non-vehicular transportation modes. Where fields of wheat and sloughs of mud once thwarted cars from crossing the Great Plains, an overdeveloped roadway in Ames, Iowa, Lincoln Way, now prevents students from crossing from their residence halls to attend cultural events at Iowa State Center and community members from commuting across town on their bicycles. This intervention, attempts to meet present-day traffic needs while keeping mindful eyes on the future.

Many important Americans contributed to the success of the Lincoln Highway – and their work should not be forgotten! The Lincoln Highway needs more signs and markers designating its importance to the development of our highway system. The Lincoln Highway Association needs more support in order to continue educating citizens about the contributions their ancestors made to our nation’s growth. By continuing to establish (or re-
establish) connections along Fisher's route, and by maintaining enthusiasm for the highway - be it by names inscribed in bridges, as in Tama Iowa, by plaques designating historic landmarks along the route, or by communities and private individuals naming their buildings after the great road - the people who labored over this road will not be forgotten.

At the same time, this intervention does not pretend to be the historic landmark of the Lincoln Highway. It does not concentrate all the important facts of this 3000-mile highway’s history into one small section. It is one small piece of a vast and constantly changing image. But - this one small piece - like every other piece of the picture is important to the understanding and appreciation of one of our nation’s greatest roads.

Figure 122: Mid-road plaza, looking South to Iowa State Center
Figure 123: Lincoln Highway Dance and Movement Center at Iowa State University
Figure 124: Site Model (photo taken from an aerial position above CY Stephens)
Figure 125: Aerial view depicting dramatic shadows cast by the roof beams onto the building’s floor (photo taken directly above building)
Figure 126: Site Model
Appendix A: Commentary on *Body, Memory, and Architecture*

This thesis was fueled by a love of dance and the appreciation and enjoyment of moving. Interests in Movement Analysis and Architecture can be found in Charles Moore’s and Kent Bloomer’s book *Body, Memory, and Architecture*. Although not focused on in this thesis, it deserves attention.

Moore and Bloomer attach many of the relationships between movement and architecture to their thesis about the relationships between architecture and the human body and psyche. They (M & B) consequently believe that these relationships are highly subjective to one’s memory and emotions. Bloomer and Moore cite the philosopher Robert Vischer (who coined the term “empathy”) to better illustrate this relationship:

> “He sensed an almost mystic quality in empathy and spoke of a person forming an emotional union with an external object. Observing that feelings may be aroused by experiencing totally abstract objects, he surmised that we might empathize with objects by projecting our personal emotions into them. For our purposes, the objects would be architectural settings with or without explicit functional or symbolic content.” ⁵⁸

They go on to quote twentieth century aesthetic theorists, who attempted to identify formal relationships between objects and movement:

> “You see a mountain on the horizon...you actually raise your eyes and strain your head and neck upwards, and this fills you with a feeling of an effort of exaltation...you always, in contemplating objects, especially systems of lines and shapes, experience bodily tensions and impulses relative to the forms you apprehend, the rising and sinking, rushing, colliding, reciprocal checking of shapes.” ⁵⁹

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Bloomer and Moore connect human movement to architecture through both unconscious and conscious beliefs embedded in humans. They show this through development of space based on movement rituals, the perceptions of space inherent in humans or learned at very young ages, visual perception, and the theories about the body and its relation to form. Each element contributes to a rich sensibility regarding the relationships between form or architecture and human movement.

A.1: The development of space based on movement ritual

Perhaps the most obvious example of such relationships exists in architecture defined by movement rituals. These rituals centralize and model the space around the body’s movement. Bloomer and Moore describe this through ancient Greek civilization, which based architecture on the primordial acts (movements) of founding heroes or civilizations.

"Columns were surely celebrations of a special human upright stance even before they were pressed into service to hold up roofs over human bodies. Walls had been invented to describe human territoriality (to stiffen a boundary just beyond the body itself) even before they were joined into whole systems to make rooms and buildings. And rooftops overhead, however urgent the requirement that they keep out the rain, served also to crown a building, like the human head."

Spaces created by columns holding up roofs became centerpieces for daily activities, and create an area where rituals could comfortably take place. Multiplied, or placed in groups, columns symbolized power: the more columns, the greater the event’s (the movement’s) importance. Placing walls behind the columns allowed for further demonstration of the buildings activities. Windows framed indoor activities – or when filled, framed depictions of them – through inscriptions, or figurative imagery carved in stone or set

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in stained glass. Finally, the roof received the greatest attention. Triangular pediments and towering domes increased the structure’s visibility – and thus its significance was heightened. The greater the importance of the movement within a structure, the higher it soared.

**A.2: Initial spatial perception**

Contrasting an architecture defined by movement, Bloomer and Moore delve into the human psyche to examine human perception of form and its effect on movement. They begin and centralize this analysis with a discussion about beliefs and values, acquired early in life, on the subject of space.

Objectively, one could assume that experiences early in life influencing our beliefs also lead to an unconscious understanding of the Cartesian grid. Bloomer and Moore, however, suggest that the grid is only simple application learned later in life and that the “system” learned by babies and young children is much more subjective. This system applies meaning, or at least connotation, to the direction, volume, and orientation of space. Humans learn this subjective system through tactile, visual, and movement experiences and, subconsciously or consciously, hold these perceptions of space throughout their lives.

“At the very beginning of our individual lives we measure and order the world out from our bodies: the world opens up in front of us and closes behind. Front thus becomes quite different from back, and we give an attention to our fronts, as we face the world, which is quite different from the care we give to our backs and what lies behind us.”

In early human development, babies and young children first (begin to) understand the spatial implications of top/up and front/forward. These directions carry positive

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connotations: a mother lifts her child up to her breast for nourishment; the child looks up to his caregiver’s face; he or she looks forward to understand space and is unaware of what lies behind.

The home, perhaps the first large space a child understands, also elicits many characteristics that define special perception.

"The most important place on the house façade is the front door, to which, almost always, there is a special stepping up. On larger houses, the entrance might be under a protective roofed porch, or below a fanlight or a dormer window projecting from the attic, all of which draw connotations of ‘upness’ to the passage in. The rear, meanwhile, is not at all like the front. It is unlikely that symmetry will have been sought after, or any formal array of windows or doors. The attention, with all the expected anal implications, is to service, trash removal, and privacy."

The notions of “back” and “rear” symbolize more than trash removal. Consider a toddler who makes tiring attempts to walk like adults. Humans celebrate “standing up and stepping forward,” whereas, falling down on one’s rear represents failure. This letdown (often repeated thousands of times) gives the toddler negative associations with the posterior directions.

Even before the young child masters walking, exploration is of key interest. As the child’s movement ability increases, more spaces become accessible – and the desire to explore them increases. Consider areas that were once physically off limits to the child. The child still recognizes boundaries learned earlier in life, but now has the ability to explore beyond them, although not always with a parent’s permission. The attic and basement become areas of fantasy. Adding the child’s perceptions of up and down, top and bottom, the

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63 Ibid. pg. 1.
attic becomes a place to dream and escape, while the basement signifies darker and hidden fantasies.\footnote{Bloomer, Kent and Charles Moore. \textit{Body, Memory, and Architecture}. New Haven: Yale University Press, 1977. pg. 3.}

**A.3: Early learning experienced in adult life**

Later in life, the perceptions gained as a baby and young child still permeate one’s perception of space and the way one moves through it. Bloomer and Moore exemplify these values using an adult’s experience moving through the Christian worship space. Although memories of past worship experiences may influence movement in the space, basic reactions and perceptions still trace back to experiences early in life.

One usually enters the church (or any public building for that matter) at the front façade, a large, relatively flat expanse of space intended to humble those who enter. Moving cautiously through the doors, the space shrinks. The narthex of the church has a low ceiling, (a choir loft usually sits above). This dramatic change in verticality brings the visitor ease. Once accustomed to the space, the visitor notices that this low ceiling stops – and is beckoned forward into knave. The sudden change in volume and height enlarge the his or their kinesphere, inducing an erect posture and spiraling gestures in attempt to survey the space.\footnote{Ibid. pg. 11.}

Moving through the worship space, one experiences a shift sudden shift in direction. The façade the visitor entered suddenly becomes the rear of the inner space. The altar and cross become the new “front.” What caused this sudden shift? One could attribute this to a hierarchy of importance – the church’s façade dominated the street. Inside, the altar space governs the sanctuary. Symmetry around the altar adds to its importance. The altar and
cross sit in the center, flanked on each side by evenly spaced candles and matching windows. Decorations and ornamentation all point to the center. Such a powerful image draws the mover toward it.

An invisible barrier exists just a few feet from the altar. A lectern or pulpit stands to the side of the altar – breaking the sacred symmetry. It is a bright red stoplight – stopping most – and warning those passing it to do so with extreme caution and reverence. Reaching this destination point, the visitor must make a choice: explore the sides of the space or turn around and exit.

Going back to experiences gained early in life, the act of exiting suggests the “rear” – as waste exits our bodies from the rear. There are formal implications to the “rear” as well. Although the symmetry might be present, the decoration and ornamentation are not. There is no mystery or enticement; the rear is clearly defined by an aperture with light coming from it, whether from the letters on an exit sign or from sunlight spewing in from the outdoors.

Rather than exit, the visitor can continue on a journey of exploration in the side aisles of the space. The situation closely resembles movement patterns made in everyday life. Like the church visitor reaching the altar, humans travel to their destination on a main thoroughfare. At the end of each journey (or part of that journey), they encounter different choices, usually to the side of the destination demanding more finely tuned motor activity.

A.4: Visual perception – patterns and tendencies

Furthering their thesis about the relationship between memory and architecture, Bloomer and Moore cite the findings of the Berlin school of Gestalt psychology. They were particularly interested in information gathered about visual perception. The school found consistent patterns in the way humans perceive data. “For example, events in the visual field
were simplified by a phenomenon they called closure (a tendency to reduce a complicated pattern to a more recognizable and simpler pattern)." They noted that simplified patterns tended to be horizontal and vertical, rather than skewed; symmetrical rather than asymmetric; and akin to basic geometries rather than the random or less precise.

Bloomer and Moore relate this work to the development of Modernism’s and the International Style’s simple forms and regular geometries. This information also aids the designer who desires fluid movement in the spaces he creates. To obtain such movement, the space must be easily read and understood. Because people perceive destinations and landmarks in line with each other, or at right angles, the designer should allow for the perception of linear movement to the destination – or the pathway to the destination should include simple visual patterns and sequences that direct the mover. Humans better understand the symmetric and confronted with a choice between two destinations, they move toward the more symmetrical destination. In cases where neither is symmetrical, but the mover is part of a recognizable sequence of events, he or she understands it to be the "correct" destination.

The “pattern” and “sequence” just mentioned allude to the third tenet to the findings cited by Bloomer and Moore. The desired space should be part of a basic geometrical system rather than random. Patterns and sequences in a space make it readable. At first, the irregular geometry confuses; when seen as part of a larger pattern, it is accepted and understood by the mover.

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A.5: The body-image theory

“All experiences in life, especially experiences of movement and settlement in three-dimensional space, are dependent on the unique form of the ever-present body. It appears that individuals possess and unconscious and changing image of their bodies that is quite separate from and what they know objectively and quantifiably about their physicality. If we can understand more about how we acquire and modify this psychic image of our own bodies, we may possibly obtain a better grasp of the way in which we perceive objects and settings around us.”

Applying the body-image theory, Bloomer and Moore consider the heart as a landmark of our body and thus, they consider landmarks as the heart of architectural spaces. Because humans feel and hear their heart beating, and because it sends blood to every part of the body, the heart is often thought of as the body’s “center,” giving the idea of centrality great importance.

As expected, other organs sensed by the body also gain importance and significance in one’s perception of space. They link the spine with the human sense of orientation and as an indicator of mood.

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“Up/down, our most basic orientation, is the most unstable and yet the most splendid. Its origin is as elementary as a child’s struggle to stand up and walk and the desire to grow up...Upward, which in the body image means upward from the center of the body indicates striving, fantasy, and aloofness. Downward is depressing, but also realistic.”

Bloomer and Moore go on to describe the symbolism attached to our body and its sense of orientation. They assign adjectives like strength and virtue to our fronts, while “private, earthy and defenseless” characterize the back. As most human bodies are stronger on their right sides, the “right” symbolizes control, power, dexterity, rationality, and self-assertion, leaving the left regarded as weaker and less rational.

Body image influences the human perception architecture. Again, Bloomer and Moore tie this to memory. One moves through space and learns from it - receiving information at all sensory levels. The haptic experience combined with visual images induces memories, which in turn are communicated through the brain to the body’s expression. Each past experience remembered influences perception of the next experience.

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Appendix B: Temporal sections and further research

Image 128: Diagrams integrating the proposed intervention into the roadscape

Of the work presented in this thesis, diagrams, like the ones shown above, present the greatest potential and interest in developing a movement-centered design method. They begin to capture the driver’s perception of the surrounding landscape and forms within it. Also, they show progressive movement – movement of the eyes, the body/vehicle, and, possibly, of the driver’s intent. One can also gain insight on the pedestrian experience by looking at how the sidewalk relates to the road and to other forms in the diagram. Although not presented in this thesis, a similar method could apply to the pedestrian’s journey – carefully cutting through and analyzing progressive sections of their experience moving through space.

This process of cutting sections through the journey – rather than through the building or the landscape provides designers great insight. It begins to capture the haptic nature of architecture and landscape. Considering movement’s relationship to time, it also touches on temporal experiences.

The word “diagram” does not seem appropriate for these images. They present information about movement, image, and experience. With further refinement and the
layering of additional information (i.e. time of day, weather, presence of other humans), these diagrams have potential to become temporal sections. This method improves the traditional three-dimension perception of space with the added dimensions of time and experience. These temporal sections will provide designers with a five-dimensional model in which to base design decisions.
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