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I am submitting herewith a thesis written by Erik Nathaniel Hall entitled "70 MPH: Place and Perception in the Automotive Landscape." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Architecture, with a major in Architecture.

Hansjoerg Goeritz, Major Professor

We have read this thesis and recommend its acceptance:

Mark M. Schimmenti, Scott Wall

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Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

70 MPH:
Place and Perception
In the Automotive Landscape

A Thesis Presented for the
Master of Architecture
Degree
The University of Tennessee, Knoxville

Erik Nathaniel Hall
December 2011

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DEDICATION

To my parents, Dr. Mark R. Hall and Peggy E. Jackson for their unfailing support in all of my endeavors, academic and otherwise.

To my grandmother, Mary Elizabeth Jackson for her deep belief in the inherent value of education.

To my committee, Hansjoerg Goeritz, Matt Hall, Mark Schimmenti and Scott Wall, who supported me along the way, and encouraged me on my journey down the rabbit hole.

To my friends and classmates, without whom this would have been a far more trying, and no doubt, less fulfilling process.

And finally, to Mrs. Cynthia Freeman, for trusting an 18 year old version of me to research “chairs” and thus setting me on the path which led me here.

ABSTRACT

This project explores the adverse impact of the automobile in regards to perception and the resultant disconnect from environment exhibited in the contemporary suburban landscape.

It posits that the way we move through the world affects the way we understand the world, both physiologically/sensually, and philosophically/ethically.

The automobile, and its landscape, prejudices vision as a means of cognition. Specifically, it is biased to the perceptual characteristics of vision at high speed- that is, a decreased cone of vision, with a consequent increase in the total area of the peripheral visual field. This peripheral field is characterized by flattened, monocular perception, a lack of visual clarity and muted coloration.

The automotive landscape has been constructed in acquiescence to this diminished mode of perception. The truck stop, as the apogee of this condition, presents an opportunity, if only momentarily, to reclaim the automotive landscape - to enhance the sense of place from both an automotive, and pedestrian perspective, accepting the automobile as a condition, but not its environment.

Situated at the physical and psychological perimeter of the community, the truck stop is ideally positioned as a threshold. In the same way that Juhani Pallasmaa refers to the door handle as the handshake of a building, so too should the truck stop be the handshake of place. It should speak, without words, to the particularity of that place, to its history, its people, its aspirations. It should locate you in space and time and most importantly, it should provide a momentary pause from the continuity of the road.

PREFACE

In order to understand the contemporary suburban American landscape, it is important to understand its history. More than any other country, the United States has been defined, culturally and aesthetically, by the road. As such, it is to the road, and its environs that we must first look if we seek a radical social and environmental-cultural transformation.

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CHAPTER ONE
BEFORE THE AUTOMOBILE

Suburban sprawl is often thought of as primarily a modern problem, having arisen in large part due to the arrival of the automobile. While this is partly true, it is a gross simplification as the shape of the built environment is the product of complex social, economic, historical, cultural, political and technological interactions. Throughout history however, two major factors - land ownership patterns and transportation networks - have influenced urban form in much more direct ways.

A Brief History

The Greek Polis, with its nautically dominated transportation network, augmented to a small degree by pedestrian traffic at the urban level and horse and ox drawn carts at the suburban level, were a series of small, dense communities, each dependent upon a harbor. The better the harbor and the closer its proximity to major shipping lanes, the greater the likelihood of that polis' success. Land ownership, restricted to citizens, was both a symbol of wealth and stability as well as being a key factor in determining the physical size of each city-state. The limited arability of land in the Greek Peloponnesus, combined with the difficulty and time constraints of bringing crops over land to urban commercial cores, put very real limits on the functional size of a polis. In combination with the biological requirements of human beings, the transportation networks and landownership patterns of the polis came to shape the culture, politics and history of this region (Mumford 126).

While the interactions of modern suburban development may be far more complex and far reaching than were those of the ancient Greeks, understanding land ownership patterns and transportation networks, and especially the economic factors and political policies that shaped them, remain key to understanding the shape of modern cities.

Rivers, lakes, wetlands, and oceans formed the backbone of transportation for the vast majority of the history of civilization. Consequently, until the advent of the railroad, nearly all cities were located strategically to take advantage of these shipping arteries, and the most successful were established at the confluence of two or more navigable bodies of water (Mumford 419). The great cities in pre-Industrial America -Charleston, New Orleans, New York and Boston - were all sited at the mouth of a navigable river where it formed a sheltered harbor on the ocean. The

physical city itself, characterized by narrow streets with short blocks, accommodating a minority of horse drawn carts, wagons and carriages, remained essentially unchanged, and pedestrian oriented, for five thousand years (Marshall 51).

Railroad Suburbs

The Industrial Revolution wrought tremendous economic, social, and technological changes in the city. Enormous numbers of unskilled laborers left the countryside in search of the relatively high wages of factory jobs and improved quality of life to be had in cities. Factories grew out of the existing fabric of pre-industrial cities, taking advantage of large pools of cheap labor, access to shipping, and the agglomeration of enterprise (Gillham 25). Based on economies of scale, huge, multistory factories grew up around dockyards and rail lines, in close proximity to related industries. Overcrowded and run down worker tenements grew up around these factories transforming cities into congested, polluted wastelands, the sole purpose of which was the facilitation of industry. Access to fresh air and sunlight was blocked both by the density of buildings and by the byproducts of manufacturing. In response to this degradation of city life, those who could afford it took advantage of the regular mobility afforded by trains and built the first modern suburban housing. Occupied exclusively by the rich, these first suburban developments were constructed well beyond the limits of the city-Oak Park near Chicago; Brookline outside of Boston; Forest Hills Gardens east of New York. The ideas of Frederick Law Olmstead, Calvert Vaux, and Andrew Jackson Downing were extremely influential in the shaping of these “cottages in a park”(Gillham 27). The essential characteristics of these rail suburbs - winding streets, generous lots, compatible architecture and sumptuous landscaping-were not only in keeping with the romanticizing of the rural as epitomized at the time by Thoreau in literature and the Hudson River Valley School in art, but also established the ideal standard for all future suburban developments. The exclusivity of these developments made them a symbol of success. One could only escape the city and move to the suburbs once they had become financially successful. In combination with the long standing predilection for land ownership- which dates back to post-Revolutionary state statutes which limited voting to adult, male landowners - the “American Dream” as we now know it was born (Kunstler 118).

Streetcar Suburbs

The second major transportation innovation that shaped the modern suburb was the arrival of the streetcar. The electric streetcar, successor to the horse-drawn streetcar, which was itself the successor to the omnibus, brought suburbia within reach of the middle and working class (Cullingworth 31). The railroad suburbs had essentially left the urban fabric intact, moving only a very small portion of the wealthiest part of the population out of the city. The railroads, by concentrating industry and commerce, had actually increased the density and vitality of the city by drawing population away from the country and into the city, so much so that by 1920, for the first time since the very earliest colonial days, more Americans lived in cities than in rural areas (Gillham 25). Unlike railroad suburbs which were essentially suburban nodes at the ends of spur lines, streetcar suburbs grew radially out of every city of any significant size. By 1903, more than 30,000 miles of electric streetcar lines were in operation in America (Ibid 28). Many of these lines were created by real estate developers in order to provide incentive for middle class families to move out of the city. Often operating at a loss from the outset, most were later annexed by city governments setting a precedent of transportation subsidization by government (Cullingworth 31). The growth of streetcar suburbs heralded the first major change to the fabric of American cities, as much as tripling the geographic size of some cities, and dramatically decreasing population density. Pedestrian, pre-Industrial cities generally expanded out to a two mile radius, allowing for a maximum walking time between most points of about thirty minutes (Gillham 22). Mixed industrial, commercial and housing of various income levels played a key role in this level of density. With the advent of the streetcar, that radius expanded to ten miles, making vehicular transit a necessity (Ibid 22). This decreased density also caused a shift in demographics, with the core becoming primarily commercial, industrial and lower class housing, surrounded by ever sparser and ever wealthier suburban developments (Ibid 26). Due to dependence on streetcars for daily commuting to and from the urban core, housing developments had to stay within walking distance of the streetcar line, which meant density was still relatively high at ten lots per acre, with many two and three family dwellings (Gillham 133). Most significantly, streetcar suburbs initiated the middle class exodus from the urban core of American cities.

CHAPTER TWO

RISE OF THE AUTOMOBILE

The first automobile was built in 1860, and they were first marketed in 1894. By 1898, there was one car for every eighteen thousand Americans. In just two years, the number of cars on American roadways more than doubled. However, it wasn't until 1914, when Henry Ford's assembly line in Dearborn started rolling that the American automobile age truly began. The cost of a shiny, black Model-T dropped from $950 in 1910 to $290 in 1924. As early as 1927, there were twenty-six million cars in America. In less than thirty years, the automobile had gone from plaything of the rich and self indulgent to middle class de rigueur (Gillham 29-31).

America's first automobile suburbs, built in the early 1920s, followed the pattern set by the railroad suburbs, essentially substituting paved roads for steel rails. Later developments, as exemplified by Radburn, in Fairlawn, New Jersey, built on the physical characteristics of railroad suburbs thereby creating the archetypal road network composed of winding arterial roads, narrowing into cul-de-sacs, designed to minimize traffic within the neighborhood. Paralleling the rapid adoption of the automobile, between 1922 and 1929, 883,000 new suburban homes were built every year, mostly in automobile suburbs (Gillham 30,33).

Subsidized Suburbs

While both the railroads and streetcar lines were privately funded ventures that eventually benefited from government subsidies, automobile subsidization began, indirectly, before the automobile was anything more than a novelty. As early as the 1880s bicyclists, organized under the banner of the League of American Wheelmen (LAW), sponsored by bicycle manufacturer Albert Pope, lobbied for what came to be known as the Good Roads Movement in response to roads that were "muddy, rutted, overgrown, and often washed out" (Gutfreund 9). LAW had marginal success promoting the Good Roads Movement until 1907, when Albert Pope, who had shifted the focus of his business from bicycles to automobiles, withdrew his financial support of the organization (Ibid 15). At that point, the Automobile Association of America (AAA), which was formed five years earlier, stepped in as the voice of the Good Roads Movement (Ibid 20). In 1914, the American Association of State Highway Officials (AASHO) was formed to present a unified front for civic and highway engineers in regards to highway issues (Ibid 20). The first official act of

this organization was to draft a piece of legislation that would come to define the American landscape (Ibid 15).

Highway Dogma

The Federal-Aid Highway Act of 1916 set many of the precedents in highway planning and funding that resulted in the rampant suburban sprawl we see today. The act required that any states receiving federal highway funding establish a state highway department that followed a detailed format set forth in *Rules and Regulations for Carrying Out the Federal-Aid Road Act,* and further, that those states with existing highway departments were required to reformat them to comply with the new standards (Gutfreund 20). Additionally, the 1916 act established a system of aid distribution wherein allotment was coordinated by the "nonpolitical" Bureau of Public Roads (BPR), engineers, and state highway departments (Ibid 20). The most influential document to come out of the act was *Standards Governing the Form and Arrangement of Plans, Specifications and Estimates for Federal Aid Projects.* Two major biases of the BPR and its philosophical predecessor, the Good Roads Movement, emerged as political mandates through this piece of legislation (Ibid 21). First, was a rigid opposition to toll roads, as they were strictly prohibited from receiving federal-aid matching. Second, was an anti-urban bias, the roots of which lay in the Good Roads Movement's support of both farm-to-market and postal Rural Free Delivery road improvement policies (Ibid 21-22). In support of this rural bias, the 1916 Federal-Aid Act limited aid to $10/mile, a move that essentially made all urban projects cost prohibitive due to higher construction costs which were the result of higher land values and construction standards(Ibid 22). The anti-urban bias of the 1916 Act went further to completely prohibit grants for roads within towns with populations of 2500, unless houses were more than 200 feet apart(Ibid 22). Additionally, the formula used for dispersing the initial allotment of $75 million over five years gave priority to less densely settled states and those with large percentages of federally held land, in an attempt to compensate for greater potential lost tax revenue due to land acquisition (Ibid 22). The Federal-Aid Highway Act of 1921, with a one year budget equal to five year budget of the 1916 Act, further bolstered the rural bias of its predecessor by requiring states to designate 7% of road mileage as "Federal-Aid Highways" (Ibid 25). This shift in focus laid the groundwork for a system

of primary interstate highways in addition to the farm-to-market routes which had been funded in the earlier act (Ibid 26).

Economic Boosterism

One of the major arguments for highway construction, from the very beginning of the Good Roads Movement, has been the notion that good roads increase the efficiency of shipping and thereby benefit the entire economy. A great deal of the impetus behind this idea lies in shipping problems encountered during World War I, when an overtaxed rail system lead to the increased use of trucks for shipping of non-war effort goods. Then U.S. Food Administrator, Herbert Hoover, estimated that nearly half of all farm produce spoiled en route to market due to poor shipping conditions (Gillham 23). Increased military convoys and commercial trucking simply overburdened roads that were at most designed to withstand the stresses of occasional, small automobiles. Immediately following the war, a convoy of brand new military vehicles set out on The First Transcontinental Motor Convoy, a trip which averaged six miles per hour (Ibid 24). Dwight Eisenhower was among the officers who made this grueling cross country journey. In the official military report for this expedition it was noted that an interstate highway system would be both a commercial and military asset (Ibid 24). In 1937, building on the momentum of the 1921 Federal-Aid Highway Act, with an eye towards creating work, President Franklin Delano Roosevelt and Congress directed the BPR to conduct feasibility studies with respect to a national system of interstate toll roads (Gutfreund 37). The BPR used this as an opportunity to create a pamphlet, *Toll Roads and Free Roads,* which claimed that an interstate toll road system would fail, while a toll free system would succeed (Ibid 38). This lead to the creation of the Federal-Aid Highway Act of 1944 which allotted $1.5 billion dollars to the construction of primary (interstate highways), secondary (farm-to-market) and for the first time, urban highway extensions (Ibid 39). The rural bias of early federal-aid acts again reared its head in the allotment of funds for this most recent legislation with a 45/30/25 distribution ratio (Ibid 39).

Rural Bias

While all of these legislative actions laid the groundwork, the Interstate Highway system as we know it is most often attributed to the 1956 Federal-Aid Highway Act, better known as the Eisenhower Interstate System, and perhaps rightly so. While each of the earlier acts provided

matching funds for the construction of primary and secondary highways throughout the country, the 1956 Act provided $1 billion a year, climbing to $2 billion by the third year, with a 9:1 matching ratio compared to the earlier ratio of 1:1 (Gutfreund 55). In some states, following the long established allotment formula that favored rural states, the matching ration was as much as 19:1 (Ibid 56). The astounding amount of money put forth, combined with huge matching ratios insured that for most states the only projects that made it into the budget were aid matched and thus rural (Ibid 56).

All told, from the first allotment of $500,000 to the U.S. Postal Service for road improvements to benefit the Rural Free Delivery system to the present day, federal spending on highways has cost the United States $4.5 trillion dollars - more than a dozen times the cost of the Great Wall of China and more than nine times the projected national deficit for 2009 (Gillham 36). Some economists estimate that construction and maintenance of roads may amount to as little as three percent of the total societal cost of roads, which would mean that America has invested more than $150 trillion dollars in the automobile (Ibid 37). The important question then, from an economic standpoint is where did this vast sum of money come from?

The Paper Trail

Again, by looking at the Federal-Aid Act of 1916, much insight is gained into the root of many lasting precedents. That first federal highway act established a trend that persists in federal highway legislation today. No federal user fees, toll charges or federal gas taxes were included in the 1916 Act, following the philosophy of AASHO and the various concerned highway lobby groups (Gutfreund 26-27). This policy essentially amounted to a federal subsidization of automobile use. The entirety of the country paid for roads that a minority used, based on the notion that good roads were a “general benefit” to the entire populace. This idea, used to combat toll roads, was based in the farm-to-market promotions of the Good Roads movement. Basically, they claimed that improving roads decreased shipping costs by shortening shipping times, which in turn decreased spoilage and increased general efficiency of industry. However, an important point that was dismissed, and was proven out by a University of Colorado study done at the time, that showed that switching from dirt roads to paved reduced operating costs by more than fifty percent, a savings that would have more than compensated for the minor expenditure of tolls (Ibid, 29). The Good Roads motto that “free highways are the ideal of a free people” then became entrenched in

both highway planning and legislative dogma (Ibid 20). By the mid 1920s $1.5 billion a year went into construction of new roads and highways each year in the United States. Considering that a grand total of $472 million in user fees were collected at all levels of government, that amounts to a $1 billion a year "stimulus package" for the automotive industry (Ibid 27). This subsidization was integral to the growth of America as an industrial power house. As early as 1923, the automotive industry accounted for 10% of U.S. steel and iron output, 10% of tin, 12% of lead, 14% of lumber, 53% of plate glass, and 80% of rubber (Ibid 28).

Anciliary Subsidization

Not only did the government subsidize the passenger automobile, but consequently, the commercial trucking industry as well. From 1915 to 1930 the number of trucks in America jumped from just 158,000 to more than 3.5 million, a number that would climb to 72 million by 1995 (Gillham 34). Free public roads amounted to a de facto subsidy favoring trucking over railroads. Due to the fact that railroad lines were, and still are, privately owned, track maintenance in addition to that of the rail yards, and machines themselves, was an industry cost. Trucking on the other hand, basically utilizes publicly maintained "rails" in the form of free highways. This subsidy bore out an obvious consequence: while rail carried 75% of freight traffic in 1930, that number dropped to less than 25% by 1997 (Gutfreund 34). This subsidization would eventually lead to the bankruptcies of most northeastern railroads during the 1970s.

The City-Country Schism

While the federal government had an enormous pool of tax dollars from which to draw, most states had a much harder time coming up with the funds to subsidize roads. One of the earliest measures was to levy a gas tax, logically, to charge those who were using roads for there upkeep. By 1925 every state in the union was collecting gas taxes of between $0.01 and $0.06 per gallon (Gillham 28). As mentioned before, the federal allotment of aid was from the beginning, biased towards rural areas, and this was also true at the state level. Urban residents paid 75% of gas taxes, while on average only 5% of state funds were spent on city roads (Gutfreund 29). The Great Depression and FDR's New Deal would result in the expenditure of a further $5 billion of federal money on road projects, but the economy put a strain on states abilities to fund and match federal funding of roads (Ibid 30). Yet in 1937, the automotive industry launched a "consumer

safety advocacy group", the Automotive Safety Foundation(ASF) which universally promoted more, better and wider highways as a means to increase the safety of motorists (Ibid 30). This ceaseless call for more roads resulted in an AASHO announcement that 100,000 miles of primary highways failed to meet ASF standards. The cost of relocating or rebuilding these roads would exceed all federal aid since 1916(Ibid 31). In response to the unending escalation of road costs, a senior highway official made the observation that "In spite of the prodigious efforts and the expenditure of vast sums of money, the work has never caught up with the actual requirements and needs of the motoring public" (Ibid 31). Note should be taken of the words "motoring public", because this statement is indicative of the general sentiment of highway planners throughout the major part of the history of the automobile in the U.S. While Europeans had no problem with taxing motor vehicle users fully for the upkeep of roads, and further for the general revenue, American motor lobbyists fought increases in taxation and institution of user fees, along with toll roads, at every turn. Despite the fact that national studies showed that "automotive vehicles do not bear their full burden of taxes", and that construction standards, in conjunction with inflation, resulted in ever greater highway construction costs, gas taxes remained so low that they barely covered 40% of state expenditures on highway projects (Gillham 37).

CHAPTER THREE
THE RISE OF THE WHITE PICKET FENCE

Incidentally, while the government was subsidizing a vast interstate highway network that would come to form the "lattice work" over which suburban sprawl would grow, it was simultaneously subsidizing the housing industry- the "vine" to the highway networks "lattice".

Streetcar Suburbs

In 1934 President Roosevelt signed into law the National Housing Act, which in turn created the Federal Housing Administration (FHA). This bill, unlike much of Roosevelt's Depression-era legislation, was designed to use federal economic stability to bolster the housing industry indirectly, rather than through direct monetary subsidization. The FHA basically defined the modern mortgage, extending loan periods from the standard 5-10 years to a minimum of 30. The FHA also decreased down payments from 50% to 10% and required that home loans be self-amortizing (Gillham 37). By insuring loans, the FHA made loans safer for banks, which caused

interest rates to fall, which in turn made it cheaper for most Americans to buy their own home than it was to rent (Kunstler 94). The net effect of these changes was that housing starts jumped by 500% within six years. Following World War II, the United States passed the Servicemen's Readjustment Act, commonly known as the G.I. Bill of Rights, or simply the G.I. Bill, which in turn created the Veterans Administration (VA) Loan Program - aimed at helping veterans buy homes (Gillham 37). The rating system used by banks making both FHA insured and VA loans would come to shape not only the type of housing most Americans bought, but also its style.

A National Standard

Following the precedents of the earliest automotive suburbs, the FHA set min standards for new construction that included setbacks, lot sizes, and even overall width of houses (Gillham 37). They went so far as to define the characteristics of neighborhoods that were eligible for loans. "Good" neighborhoods had wide streets and deep setbacks, while traditional pedestrian scaled neighborhoods with shallow, or no setbacks and small lots were deemed poor investments and generally restricted from receiving FHA insured loans (Ibid 37). The rating system instituted by the FHA for use by banks was also heavily biased towards single family dwellings, with the result that by 1972 more than 11 million families had purchased homes as a result of FHA insured loans, while only 1.8 million multifamily units benefited from FHA loans (Ibid 37). In essence, FHA and VA policies amplified the exodus of middle class families from urban areas by "redlining" dense, older neighborhoods and discouraging loans to these areas (Kunstler 145). The FHA even went so far as to define preferred architectural styles for homes receiving federally insured loans, so not only was a homogeneous neighborhood form spread across the country, but the houses in those generic neighborhoods were uniformly "New England Colonial" (Gillham 38).

Wire Nails and Balloon Frames

Perhaps of equal significance to the federal subsidization of suburban housing, were the technological innovations in the building industry. Two major innovations, balloon framing and wire nails, contributed greatly to the boom of commercial real estate speculation that started with the streetcar suburbs and has continued into the present day. Pre-manufactured construction elements, from windows and doors to plywood and drywall also significantly aided the evolution of construction from a craft to an industry. Following World War II, with the expansion and

subsidization of highways, and consequently private automobile ownership, along with FHA and VA loan programs and the formal specifications therein, the stage for rapid, and previously unimaginable suburban expansion was set.

The promise of "a chicken in every pot and a car in every garage" is attributed to Herbert Hoover's 1928 Presidential campaign, and while it bears little resemblance to any actual campaign rhetoric, it is perhaps more important in its garbled form. In that one simple promise we see the essential elements of both the "American Dream" and the post-War economy. "A car in every garage" presupposes that the majority of Americans live in suburban, single family homes, and the persistence of this quotation in the collective memory of Americans shows just how important the ideal of automotive independence and suburban home ownership is in the American psyche. While the federal subsidization of highway construction built the framework for suburban sprawl, it was a revolution in home building, born of war time innovation, which would plant the seed of sprawl's growth.

Wartime Efficiency

Before the end of World War II, the typical American contractor built less than five homes per year (Gillham 38). In 1947, residential contractor Levitt and Sons, completely transformed the way homes were built and consequently how they were viewed. Utilizing mass production techniques, Levitt and Sons built more than 17,000 homes at a rate of nearly 30 per day (Ibid 38). The sheer quantity and speed of production, along with the affordability provided by FHA and VA loans changed the very nature of housing and residential construction. Houses were now purely commodities to be built, bought and sold, just like any other product of industry so much so that home kits could even be bought from the ubiquitous Sears-Roebuck Catalog. Industrialization of the construction process, where trades are fully separated and move from one partially completed house to the next, in effect, substituting moving workers for the moving conveyor belt of the assembly line, brought construction fully into the industrial age.

CHAPTER FOUR
SUBURBIA: THE NEW NORMAL

The boom in suburban living that resulted from the confluence of highway and housing subsidization did not however, immediately translate into a fully suburban existence. For the most

part, business and industry remained in the dense urban core, along with the poor, while middle-class breadwinners commuted from the pristine new suburbs to work in the city.

Urban Decline

One consequence of this exodus was the erosion of the urban tax base. Cities, which already suffered from the stigma of poor schools and high crime rates, began to suffer from a self-fulfilling prophecy. The middle-class tax-base fled to the suburbs, leaving the poor to pay for the accumulated infrastructure of previously densely populated urban cores. Physical degradation of cities, as a result of the industrial revolution and differed maintenance during the Great Depression, was exacerbated by this erosion of the urban tax base, and cities fell into ever greater levels of disrepair. In response, the Housing Act of 1937 authorized federal money to raze "blighted" areas and construct one new unit of housing for each one destroyed (Gillham 41). However, as the disparity between urban and suburban population levels increased following World War II, the level of physical degradation within cities also increased.

Urban Renewal

The 1949 Housing Act, under the guise of improving living conditions for those within the inner city, would produce even worse economic conditions. Urban renewal, the popular name for the policy created under the 1949 Housing Act, was intended to improve blighted areas through the utilization of imminent domain to acquire and raze these areas, and then redevelop them. The end result however was often that local governments received sufficient federal aid to begin acquisition and demolition phases of the processes, but never made it all the way to redevelopment. Consequently, entire city blocks were razed, and then simply paved and used as parking lots, opening up gaping holes in the urban fabric of cities throughout the country. Combined with single use zoning, which had been instituted at the turn of the century in response to juxtaposition of non-compatible uses and a need to create stability in the real estate market by insuring against such juxtaposition, cities that had once been vital urban cores of mixed use and great density, became degraded, slightly more dense versions of suburban development (Gillham 44).

The New Normal

Jane Jacobs, in her seminal work, The Death and Life of Great American Cities argues that single use zoning is one of the most detrimental regulations to the vitality of cities. While there is a great deal of truth to this argument, the reality is far more complex. The interleaving of highway and housing subsidization over the last one hundred years has resulted in a wholesale reshaping of the modern, American landscape. Chasing cheap land, and lower tax burdens, business, aided by federally subsidized shipping in the form of the trucking industry, has followed its workers to suburbia, to such a high degree that by 1990 more than 62% of jobs were located in suburban or exurban areas (Gutfreund 31). Leapfrogging, not simply of parcels of land, but of whole towns, counties and regions has resulted in an increasingly spread out pattern of land use. The interwoven economic and social characteristics of the housing and automotive industries, which is a direct result of a century of subsidization, investment, and ill-considered regulations, has perhaps finally reached its full fruition in the current economic meltdown.

The rise of the modern suburb has been characterized primarily by radical shifts in transportation networks and corresponding shifts in settlement patterns, both of which are the result of the dynamic interplay between private enterprise, government subsidization and regulation. Major shifts in transportation technology occurred nearly once a generation from the advent of the steam engine to the beginnings of air travel. Since then however, with the exception of space travel which shows little hope of altering settlement patterns any time in the foreseeable future, no great leaps have been made in the way we travel, much less in the physical consequences to our environment of those modes of travel. On the other hand, the pace of development and advancement in communication technologies over the last fifty years has matched or exceeded that of transportation technology in the last century.

A reevaluation of growth rates and patterns, and how government regulations affect them is long overdue. America has spent a century pumping tax dollars into roads in order to satisfy an artificial demand created by the automotive industry and its dependents. At the same time, regulations and simple economic incentives have encouraged the construction of a sprawling suburban landscape intrinsically tied to the “lattice work” of these highways. Where all previous development patterns have been essentially tied to the form of transportation networks, the

possibility now exists that communication technologies may be the new “lattice work” that shapes the built landscape.

CHAPTER FIVE
SUBURBAN DISCONNECT

In the suburban context, a number of factors converge with the result of a near total disjuncture between human inhabitant and environment. In order to clarify what is meant by this statement it is important to understand the key terms used.

> *connect* |kəˈnekt|
> • bring together or into contact so that a real or notional link is established
> join together so as to provide access and communication
> • think of as being linked or related
> • [intrans.] form a relationship or feel an affinity
> ORIGIN late Middle English (in the sense [be united physically] ; rare before the 18th cent.): from Latin connectere, from con- ‘together’ + nectere ‘bind.’

So when I use the term disconnect I mean an elemental rift. That is, more than simply a lack of cognitive engagement, suburbia engenders an experiential, notional disjuncture.

> *environment* |enˈvīrənmənt; -ˈvī(ə)rn-|
> noun
> 1 the surroundings or conditions in which a person, animal, or plant lives or operates.
> 2 (the environment) the natural world, as a whole or in a particular geographical area, esp. as affected by human activity.

In short, everything, from people and cars, to trees and radio waves. Thus when I claim that suburbia represents a disconnect with environment, I mean that the suburban cultural condition, through various ways and means, has caused a deep separation between its inhabitants and their environment. I intentionally use the term “environment” rather than “the environment” in order to make the point that any differentiation between the impact of human processes and that of non-human processes - what is commonly referred to as “nature” - is an artificial delineation which only serves to further conflate this disconnect. That is to say, that by putting nature, and “the environment”, as something apart from humanity, one is guilty both of reinforcing that disconnect and acting within that disjunctive cultural condition. We commonly hold nature as something other than humanity, and this state of cognitive dissonance, wherein we understand simultaneously that human beings are impacted by and have an impact upon environment, and yet continue to hold

ourselves as being somehow apart from that mutualistic relationship manifests itself in a series of cyclical reactions against each side of that relationship. That is, the vacillation between romanticizing nature and its seeming counterpoint industry, is a symptom of our cultural disconnect with environment. In essence, the "noble savage" and the "heroic industrialist" are two sides of the same coin. Veneration of a people living in concert with nature is a reaction to a perception of being out of sync with nature - being negatively apart from it. Conversely, exaltation of industry is a celebration of the domination of nature, being positively apart from it.

Pneumatic Tires and the Nuclear Family

Suburbia is inefficient, objectively in terms of land use patterns and resource consumption, and subjectively in terms of human connectivity to environment. It is my opinion that both of these stem from the same source, the personal automobile. It would be easy to blame all of suburbia on the automobile, but it is not as simple as that, as was discussed at length in the preface. It is, however, the major culprit in maintaining that condition. The automobile, more now than ever before, with its ergonomic, heated seats, surround sound entertainment systems, air conditioning, efficient, powerful engines, safety mechanisms and finely tuned suspensions riding on pneumatic tires, creates an almost perfect disconnect with environment. Combined with the overstimulated, hyper-segregated conditions within the suburban house, and similar conditions within work and recreational spaces, it is little wonder that Americans, who account for 5% of the world's population, use nearly one quarter of all the energy consumed. Moreover, the average American spends 32% of their income on transportation, as compared to just 28% on housing. Regardless of any claims by oil companies, or the artificial fluctuations and manipulations of oil prices, we have reached peak oil and from this point forward, energy, in all its many forms, is going to increase in cost. In light of the fact that between 40-50% of the energy consumed in the US is used by buildings and a further 25% is expended by transportation, we have an obligation to ourselves, from an economic standpoint if nothing else, to reduce our total energy consumption.

Reconnecting To Environment

We have to stop spending money on simply expanding the normative infrastructure of the automobile. That does not, however mean that we abandon all of that embodied energy, nor do we forsake that icon of the American independent spirit, the car, and its partner, the open road. We

need to adapt it to the current and forthcoming reality. The car, in its current usage defines the American landscape- urban, suburban, rural and wild. It has so impacted the built environment that car ownership is a requirement, not a luxury. This is an unacceptable condition. Transportation networks, and the built environment they serve, should be shaped first and foremost around the pedestrian. All forms of transportation should be in service, and ancillary to foot traffic. This more than a purely economic or ecological argument, is an issue of environmental connectivity. Walking, followed closely by bicycling, is the means to the most holistic connection with environment we can achieve. It allows us to see, smell, hear, and feel, to fully apprehend the environment, and thus to establish both "real and notional links" to our surroundings. Without this connection - the fundamental understanding that it requires vastly more energy to travel uphill than down, that summer means blazing sun and sweltering heat and humidity, that plants and animals live all around us, that our sidewalks and buildings tell the history of our community, that we are but a small part of that vast community - we lose sight of our ability to participate in, and have an impact upon our environment.

CHAPTER SIX
THE PROBLEM OF THE CAR

Among the list of contributors to the disjunctive condition of contemporary culture, the automobile ranks as perhaps the single most influential. While all forms of transportation influence the way in which a person perceives and understands the world, the personal automobile has had the most radically transformative effect on the contemporary understanding of environment and our role within it.

Sensual Apprehension

The automobile, more so than any other form of transportation, prejudices vision as a means of engaging the broader environment. In and of itself, this is not a negative. Vision is the primary means by which humans apprehend their surroundings. Auditory, olfactory, and tactile perception - and to a much lesser extent, the sense of taste - play secondary roles in our immediate cognition of place. Thus, the automotive isolation of vision can be seen as merely the logical result of human physiology.

The problem then is not the prejudice of vision, but rather the particular way in which the automobile affects our visual perception of place. The physiological effects of speed on vision dramatically transform the way we apprehend our surroundings, both natural and constructed. Visual perception can be broken down into three primary components: clarity, dimensionality and color. The speed of the automobile, as opposed to that of the pedestrian or bicyclist radically affects all three. Essentially, increasing speed decreases the cone of vision. This imaginary cone is the zone within the visual field that has the greatest clarity, dimensionality and color saturation. Everything outside the cone of vision is peripheral, that is blurred/unfocused, flattened and desaturated. Thus, the increased speed of the automobile, particularly on the highway, has the effect of transforming our perception of place from a focused and highly saturated sculptural realm into a series of hazy, washed out snapshots of place.

The automotive landscape, built and unbuilt has been transformed in response to the perceptual shift caused by the speed of the automobile. Buildings and signs have been simplified and flattened. Colors have become hyper-saturated. The landscape has been de-contoured and stripped of both plant-life and buildings, anything which might affect the line of sight of the automobile.

CHAPTER SEVEN
THE PROLIFERATION OF SUBURBIA

The suburban landscape has been, and continues to be the site of most construction in America. It is also the place where most of the population lives and prefers to live for a number of good reasons.

Thanks to the confluence of government subsidization of both the private housing and automotive industries, suburban development, and its icon, the single family home, is cheap. In fact, most families find it cheaper to buy a newly built suburban house than to rent an equivalent domicile. Historically, thanks to cheap oil, the combined cost of buying a house and maintaining a private automobile was lower than renting or buying an apartment within the historic urban fabric. Increased oil prices, along with inflation have conspired to reverse this trend to the point that the average American family now spends approximately 32% of its income on transportation as compared with 28% on housing.

“Land!”

Property ownership is deeply ingrained in the American psyche as not merely a universal good, but a right as can be seen in key documents in the nation’s history. The first continental congress’s Declaration of Colonial Rights in 1774 includes a claim of protection for “life, liberty and property”, an idea which was echoed in the second sentence of the Declaration of Independence,

> We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.

which substitutes the pursuit of happiness for property, and is in turn an adaptation of the Virginia Declaration of Rights statement,

> That all men are by nature equally free and independent, and have certain inherent rights... namely, the enjoyment of life and liberty, with the means of acquiring and possessing property, and pursuing and obtaining happiness and safety.

which is in turn derived from John Locke’s statement in "A Letter Concerning Toleration",

> Civil interest I call life, liberty, health, and indolency of body; and the possession of outward things...

Moreover, the fifth and fourteenth amendments protect “life, liberty, [and] property”. Property ownership, in the form of land is also seen as a stabilizing factor in society. Tracing its roots to Greek and Roman notions, the early definition of citizenship in the United States applied only to white, landholding males. Thus, the predilection for landholding in America has a long and multi-faceted history.

The Anti-Urban Bias

Americans are fundamentally anti-urban. Whether you trace this to a basic distrust of public institutions, both governmental and religious, or to the independent agrarian mentality as championed by Thomas Jefferson, the average American has a deep and abiding disdain for, and fear of cities. At the same time though, the modern American has no desire to farm for a living.

Thence the basic contradiction of America, and the suburbanite arises. Farming is a hard and unstable life, but it provides an idyllic setting. The city is perceived as a den of crime and vice, but it is the greatest source of economic and cultural opportunity. Suburbia, sited between the two, promises the best of both worlds.

Economics

Homeownership, and building, are seen as economic engines and investments. The building industry is a standard and oft cited gauge of economic growth and stability. If housing starts are up, then the economy is up. Similarly, to the average American, buying a house, or other real estate, is seen as one aspect of having "made it". The house acts as both investment and savings, a notion which is reinforced through the mortgage and lending industry. If you do not own a house, it is extremely difficult to get any kind of significant credit. Thus homeownership is key to general success and stability.

Inefficiency

Suburban land use patterns are essentially inefficient. Developers argue that efficiency in land use is a product of economics, that is, the appraiser's distinction of "highest and best use". Basically, if a piece of farmland is worth more as a group of subdivided housing tracts, then it is not being put to its highest and best use. In an economy where the construction and purchase of single family occupancy (SFO's) dwellings is subsidized at the federal level, this makes sound financial sense. However, this pattern tends to leapfrog, that is, jump from area to area chasing limited development restrictions, low taxes, and low property values. In essence, developers are always looking for the next "hotspot" where land is cheap and demand is high. The seedy underbelly of this pattern lies in the investments required to make these sorts of development feasible, namely infrastructure. Highway and home loan subsidization aside, the construction and funding of schools, fire departments, hospitals, police stations, water treatment and delivery facilities, that is the fulfillment of the states' obligation of police power- "to regulate behavior and enforce order for the betterment of the general health, welfare, morals and safety", represents a very real investment at the community level.

Developers and business boosters often cite this type of growth as a positive good, arguing that it increases the tax base in a very real way. Residential development however

represents a net loss in tax revenue. Commercial development, which does create a positive revenue stream - a tax burden which it in turn passes on to customers - rarely matches the pace of residential development, and is increasingly being outstripped by internet commerce. Thus, by creating new developments that require new infrastructure, instead of densifying and utilizing existing assets, suburbanites, increase municipal budgetary requirements and thus the general tax burden.

The term "highest and best use" essentially means the highest immediate sales value of real estate. It has almost nothing to do with use, except in so far as it concerns the legal zoning of a piece of property, and to what uses it is thereby restricted. There is little attention paid by developers to land use issues such as arability, riparian/watershed ecology, solar access, etc. Consequently, the most agriculturally productive land is often converted to nonproductive uses. Moreover, watersheds are negatively impacted and creeks often become little more than drainage ditches.

Pre-Modern to Modern

In his book Vernacular Architecture, Henry Glassie posits the notion that vernacular building, at the household and community scales, follows a predictable trend from pre-Modern to Modern typologies, and that this is the ramification of broader cultural shifts. The theory essentially states that the shift from pre-Modern to Modern is a transition from openness and heterogeneity to enclosure and homogeneity, and that this transition occurs at times of cultural conflict in which existing social orders are being overtaken by new and drastically different social mores. The cultural shift from open, communal life to a more isolated and insular one is reflected in the broad organization of landscape, that is from shared pasturage or undivided cropland and compact, heterogeneous villages composed of mixed use live/work arrangements interspersed throughout, to fenced and divided pastures and fields and sprawling communities of starkly segregated, homogeneous uses.

J. B. Jackson makes similar observations in his analysis of southwestern cultures. According to Jackson, the Puebloan peoples, up through contemporary mestizo communities, were characterized by a pre-Modern tendency toward generalization of function within architectural space and a concurrent trend toward open, communal organizations of broader land usage. Witold

Rybczynski in his book Home: a Short History of an Idea observes analogous trends in the outfitting of the home and our understanding of the dialogue between built work, furnishing and occupants. In his analysis the tendency of interiors is again one moving from general utility, the "hall" where essentially all activity took place, to a specificity of purpose for a given room, i.e. bedrooms for sleeping, hallways for circulation, kitchens for cooking. Corresponding to this specialization of rooms came a consequent specialization of furnishing therein.

Thus, historically, there has been a trend, across cultures that moves away from maximum utility and efficiency of both architectural space and land usage patterns towards ever greater specialization. The trend toward differentiation of space marks a shift in concepts of efficiency, namely one in which labor and craft have become increasingly expensive, while access to materials and energy has dramatically increased. Put simply, the vernacular house, with its single room wherein all activity took place was both the most energy efficient in terms of consumption - cooking helped heat the space, as did the combined heat output of all residents - and in terms of construction - one room requires less materials than many smaller, individual ones. Further, the pre-Modern mode had the effect of reinforcing a set of cultural mores that valued toleration and cooperation. People lived together in an open space with little privacy, so they developed a system of manners that allowed them to do so with minimal conflict. This system also extended out to the broader community, wherein pasturage was held in common and fields were divided at most by low earthen berms at. People and labor were cheap, materials and energy were not, so a fence which needs to be built and then maintained is cost prohibitive in terms of the wood or stone required to build it. In short, open living requires open spaces, and vice versa.

Monofunction and the Industrialized Environment

Suburbia, on the other hand, can be seen as the apogee of this process of modernization which Glassie describes. The suburbs, and the way they interact with the countryside, wilderness and the urban realm, essentially represent the industrialization of landscape. Industrial manufacturing depends on cheap, unskilled, yet highly specialized labor and utilizes cheap energy and technology to maximize product output with minimum material input. Each step in an industrial process is segregated and essentially independent of those before and after it. Think of the "I Love Lucy" Candy Factory episode in which Lucy's role is independent of those before her, thus when

she can't keep up, the product piles up. In a globalized market, this means that a capacitor might be most efficiently, and cheaply produced in Malaysia, but the stereo it goes into is assembled in China, and then sold in Muncie. Thus, at the global level modernization means that different countries fit different niches as producers and consumers of goods and energy.

Narrowing the scope to a single country, this system of industrial-modernization continues to hold sway over the development of regional economies. Access to resources, such as Tennessee marble, hardwood lumber or cheap labor, mean that some states and regions provide raw materials, which are shipped to other places to be made into products, which are shipped to yet other places to be consumed. Again, it is important to consider the role that cheap energy plays in this economic system. The transport chain for a single log to be turned into a sheet of paper represents an enormous investment in non-renewable energy- a tree is cut with a gas-powered chainsaw, dragged out of the woods with a gas-powered winch, loaded onto a diesel-powered truck via a diesel-powered log loader, taken to a mill where it is shredded and made into paper by electric machines powered, probably, by a coal-fired power plant. That paper is then packaged and shipped, by some combination of diesel powered trucks, trains and ships to a store, which is probably air-conditioned and lit with energy from a coal-fired power plant, to which a customer must drive in a gas powered vehicle in order to purchase said ream of paper. Finally, in all likelihood, after the internet directions to some chic new boutique store are printed out, and used once, that piece of paper will go into the trash, which will be collected by a diesel powered truck, taken to a landfill and covered over with dirt by a diesel powered bulldozer. All of this requires cheap energy to be economically viable. If that resource is not available that simple set of directions would become exponentially more expensive.

Which returns us to the point at hand. Each of those segregated processes is connected by a transportation network which reinforces that system of specialization. Suburban commercial districts, residential areas, office parks and industrial areas are all segregated from each other and connected by energy dependent transportation and telecommunication networks.

Commercial

The process of industrial-modernization, filters further down into those wider zones of segregated use. Take for example the standard suburban shopping mall. It is surrounded by a

dead-zone of parking, that is designed to meet a maximum capacity, which it reaches exactly one day every year. Approaching the mall, one is confronted with a series of monumental entrances, each to a different department store, wherein types of consumable goods are yet further segregated. Passing yet deeper into this mega-structure one encounters a circulation network of wide internal corridors, flanked by shops selling clothing, and knickknacks. Within the corridors are booths selling watches, calendars and Asian massages. Somewhere, hidden at the heart of the mall is a food court, filled lunch counters that serve specialist "cuisine" ranging from hotdogs to Szechuan chicken.

Residential

Moving to the residential zones, and focusing ever closer, one comes to the suburban house. Regardless of scale, be it a "McMansion" or a "starter home", these dwellings tend so share a number of characteristics of the industrial-modernizing process. Just as the mall, and any other suburban commercial enterprise, is surrounded by parking, so to is one's first encounter of the suburban house with parking. Driveways, ranging from a single space to a veritable parking lot, carports and garages - attached, semi-detached and fully detached- characterize the entrance of most suburban houses. These are in turn flanked by a front yard, which while carefully maintained to appear as though it's grass has been neatly cropped by some flock of obsessive compulsive sheep walking in alternating, checkerboard rows, serves a purely ornamental role. Similarly, there is usually a prominent front entrance, which is used a handful of times in a given year, mostly holidays. The true entrance to the house is usually contained within, or adjacent to, the garage. Once inside, there is a bewildering array of hyper-specialized spaces, from breakfast nooks, to media rooms; home offices to powder rooms; dens and family rooms; bedrooms, bathrooms, lavatories, laundry rooms, living rooms, dining rooms (both formal and informal), mud rooms, hallways, sunrooms, ad nausea. In fact, the greater number, variety and degree of specialization of these rooms is seen as an indication of wealth and stature, as so often evidenced in the show "Cribs" on that scion of popular culture MTV.

Objects

The objects used to fill this pantheistic array of spaces show yet another level of specialization, symptomatic of industrial-modern culture. An ever changing milieu of mass-

produced objects evidences the temporality incumbent upon this lifestyle. Wallpaper, fabrics, furniture, paintings, picture frames, dishes, and appliances rotate in and out, at best lasting a decade or so before falling hopelessly out of fashion, only to come back into fashion a decade later. Electric knives and deep fat fryers, hair products in a dozen varieties, a host of different forms of entertainment from video games to Tivo define luxury in the modern interior. The less function and greater specialization any given object has, the greater its value, and consequently, its ability to demonstrate the owners worth.

As the apogee of both automotive culture and the automotive landscape, the truck stop represents the essence of non-place in contemporary culture. The intersection of Watt Rd and I-40/75 is essentially one giant truck stop. It is a landscape wholly dedicated to the automobile. As such, it presents an opportunity for positive transformation, a chance to restructure one piece of the automotive landscape in reaction rather than acquiescence to the perceptual shift of the automobile.

The Site

Knoxville serves as an ideal case study because of its existing transportation infrastructure in the form of railroads, interstates, and regulated aquatic corridors/dam controlled rivers, an infrastructure that is the direct result of the particular geography of the Tennessee Valley. The geological variation of the region creates stark disparities in the productive capacity among different landforms, with low valleys being highly agriculturally productive, while higher climes tend to be more suited to timber and wildlife management strategies. These geological variations have also shaped notions of community within the region, created a distinctly southern Appalachian culture. The prototypical land-use patterns in post-industrial Knoxville serve as an ideal case study as they represent the totality of strategies which have come to shape the American suburban landscape.

Historical and Geographic Overview

Knoxville proper, the area currently referred to as “Downtown”, was built on a prominent rise at the navigable extreme of the Tennessee River beginning with James White’s Fort in 1786. The Tennessee Valley, in which Knoxville serves as a sort of regional capital, is composed of a series of parallel low foothills at the western base of the Appalachian Mountains, running roughly

north-south. Thanks to its location, Knoxville served as a major shipping hub in the pre-railroad economy of the South. Goods from the region were shipped on flatboats, down the Tennessee to the Mississippi River, as far as New Orleans. Conversely, imports were brought up the Tennessee, on steam powered paddle boats. With the construction of the East Tennessee and Georgia Railroad in 1855, Knoxville gained yet more importance in both North-South and East-West shipping routes.

Throughout this early period in Knoxville, historic development patterns persisted. The downtown area maintained a dense, grid-iron pattern, with outlying areas in the eastern foothills dominated by small, self-sufficient valley farms and upland logging. The wide river valleys were reserved for larger, plantation type agricultural concerns. Circulation patterns followed the easiest routes, typically following the course of streams and rivers and only occasionally crossing from valley to valley through gaps, and over saddles.

The first major shift in these patterns occurred with the growth of hydro-electric power in the early 1900s. Initiated by private companies such as the Aluminum Company of America (ALCOA), steep river valleys were dammed to create reservoirs for the generation of cheap electricity. Under Roosevelt, the Tennessee Valley Authority pushed damming as a universal solution to the problems of the region. Rural electrification and flood control were the primary goals of this New Deal organization. Consequently, much of the most productive, arable land in the region was permanently flooded.

The second major shift in land-use patterns occurred, as it did all over the country, with the construction of the interstate system. Paralleling the rail lines that had facilitated Knoxville's growth, Interstate 40 and Interstate 75 promised to maintain Knoxville's position as a major shipping hub. The overlaying of this crossroads had the unintended effect of severely segmenting Knoxville, often along racial and economic boundaries. Further, it created major economic and physical boundaries that have directly affected the way in which the city has since grown.

CHAPTER EIGHT
THE SURREAL SOLUTION

As the apogee of both automotive culture and the automotive landscape, the truck stop represents the essence of non-place in contemporary culture. The intersection of Watt Rd and I-40/75 in Knoxville is essentially one giant truck stop. It is a landscape wholly dedicated to the automobile.

As such, it presents an opportunity for positive transformation, a chance to restructure one piece of the automotive landscape in reaction rather than acquiescence to the perceptual shift of the automobile. To that end, this project seeks to create an environment in which the participant, be they truck driver, automotive tourist or pedestrian, can garner a greater understanding of place at the local, regional, national and global levels through meaningful interaction with the site and program.

Program

The standard program for a truck stop in the United States includes the typical functions of a fuel station – fuel islands, convenience stores, fast-food restaurants, car washes and restrooms- with the addition of showers and lounge facilities intended for the use of truck drivers, as well as truck repair facilities and overnight parking. A key component which was added to this standard program was an agricultural component in the form of a pig farm. This unlikeliest of programmatic elements was added for a number of reasons. First, and perhaps most important, the injection of a quintessentially pastoral and serene program such as a pig farm, acts as a direct counterpoint to the typically auto-centric and mono-functional nature of the truck stop. Secondly, the particular form of this pig farm is intended to functionally recall the free range agricultural practices of the early Appalachian settlers. In that system, pigs would be reared and then set loose in the spring, and allowed to roam the hills, more or less unimpeded until the fall. In the truck stop pig farm, a 150 acre orchard consisting of various local tree species as well as apple trees is intended to be the primary food source for the pigs raised on site. The orchard is designed to be segmented into four quadrants, allowing the pigs to be rotated seasonally from one segment to the next, in order to minimize the possibility of damaging the trees and to mitigate the smell of manure. This system acts as a sort of constructed ecosystem whereby the trees benefit from the nutrients made accessible by the pigs digestive systems, as well as the aeration resulting from the pigs rooting of the soil. Additionally, the pigs eliminate the need for any sort of grounds maintenance, as they will consume most of the low-lying grasses and shrubs that would normally need to be mowed or trimmed back. Thus the pig farm transforms the ecological wasteland that is a typical highway interchange into a productive and ecologically vital environment. Additionally, the onsite processing of the pigs - that is slaughtering and then smoking the meat through traditional, regional techniques – acts to contradict the prevailing cognitive dissonance within the general public as to the source of

their food and in particular, meat. Moreover, the pig farm is intended to add a richness of experience through smells - of apple blossoms and pig dung – sounds – rooting pigs and squealing piglets- and eventually taste – smoked hams, bacon and barbque. In all other senses, the program is that of a typical truck stop.

Form and Function

The truck stop intentionally blurs the lines between infrastructure, architecture and landscape seeking to eradicate the formal distinctions between them in order to achieve a set of surreal experiences aimed at generating greater awareness of the component parts. The general shape of the project, a massive circle, more than 2700 feet in diameter, a distance which reflects the average size of a pedestrian city, is derived from a type of high speed interchange known as a Lofthouse interchange. The Lofthouse is essentially composed of an elevated roundabout above to crossing high speed motorways. In this instance, the roundabout function allows the Watt Road traffic, which now crosses the interstate via an overpass which runs due North-South and connects Hardin Valley to Farragut, to be circulated around what was the center the interchange. This ring then forms a perimeter wall of sorts, into which nearly all of the programmatic functions are inserted, with the exception of the orchard itself, which uses the ring road as an outer boundary. This is illustrated in a supplemental file which contains plans, sections and context maps (TruckStopImages.ErikNHall.pdf).

The truck stop functions are divided between two levels on the south side of the ring structure. The ground level contains the majority of functions, with the notable exceptions of truck parking and fueling. These two components are accommodated on the second level of the structure. The overall organizational system of the project consists of a spatial layering wherein the concentric layers decrease in speed as one moves toward the center. Thus, the outermost ring is occupied by the roundabout function and general automotive circulation. The next layer consists, on the ground level of a “pit row” style fueling island and automobile parking. The innermost ring consists of a pedestrian pathway nearly two miles in circumference. This path is augmented by a set of bisecting paths, which recall the Roman cardo and decumanus, one passing north-south along the previous route of Watt Road, and the other traversing east-west. This second path also acts as a pedestrian connection to the broader landscape, as it serves as the termini of two hillside trails, one to the South and one to the North, which lead to landscape pavilions. Each of these

pavilions occupies the highest points on the adjacent ridges, affording unimpeded views of the surrounding landscape. The northern, or Stone Pavilion, is designed to offer highly focused views, deliberately framing and juxtaposing images of pastoral agricultural landscape with those of the adjacent quarry operation. The pavilion to the south, or the Wood Pavilion, in contrast presents panoramic views, allowing the field of view to naturally vacillate between the residential sprawl of Farragut with the distant hills of the Great Smoky Mountain National Park. The pavilions are intended to draw the user out into the broader landscape, and thus to locate them within the broader regional context.

The structure itself is designed to confound expectations. As one approaches the structure from either east or west, they are presented with a monolithic concrete structure, which appears to be one, continuous unbroken wall circumscribing the space. There is a sense that the driver is about to pass beneath some massive infrastructural remnant, as if the interstate were occupying the dried channel of some extinct river which had at one time been dammed. Almost instantly though, the expectation of passing beneath some immensely thick mass of concrete is refuted as the viewer is presented with the lightness and serenity of a geometric glade, a giant gridiron orchard surrounded by a delicate ring of hovering slabs, held up by what appear to be impossibly thin columns. All about those rings is a constant whir of motion as cars and trucks and people and bicycles crisscross and overlap passing up and down from one level to the next. Amidst this silent cyclone of movement, the driver is caught, momentarily off-guard as they pass through the parallax orchard, catching momentary glimpses of the alleė̇s which define the cardo and decumanus. Gliding across the space on a dead straight and level bridge, there is a sense of timeless serenity, as if for a split second time stands still. Upon reaching the other side of the ring, the driver veers off and up to the right, passing into the ring itself. The impression of lightness is facilitated by the structure of the outer wall. What had appeared solid from the exterior is actually a continuous series of overlapped planes, which narrow to thinnest points, allowing the bright sunlight to penetrate and dissolve the wall and offering glaring glimpses of the world outside of the ring. As the car circles north, the pedestrian path climbs ever higher and ever closer until at once, the path surmounts the road just as the cars pass into a dark and rumbling tunnel. Disorienting seconds tick by as the driver circles round, shooting out of the darkness now at the eastern edge of the ring, passing over the interstate and into the parking area of the truck stop. Stepping out of the car, one

is confronted with the sweet stink of rotting apples and pig dung, the snuffling of distant pigs and the background rumble of circling cars, the chirping of birds and the caterwauling of rambunctious children, the subtle acrid scent of wood smoke and the pungent aroma of spilled gasoline. Walking into the store, one is reminded simultaneously of an old west mercantile and a Parisian café. Truck drivers sit sipping lattes, while frazzled soccer moms wrangle cleated Beckhams.

The truck stop seeks to bind in a tense equilibrium the disparate components of its program, wringing from them a dynamic serenity. It aims to use the surreality of its juxtapositions to evoke curiosity and a questioning of the status quo, to initiate a restructuring of the automotive landscape through a heightened awareness of its essential nature.

LIST OF REFERENCES

Barnett, Jonathan. Redesigning Cities: Principles, Practice, Implementation. Chicago: American Planning Association, 2003.

Cullingworth, Barry and Roger W. Caves. Planning in the USA: Policies, Issues and Processes. New York: Routledge, 2009. Levinson, David M. and Kevin J. Krizek. Planning for Place and Plexus: Metropolitan Land Use and Transport. New York: Routledge, 2008.

Dunphy, Robert T., et al. Moving Beyond Gridlock: Traffic and Development. Washington, D.C.: Urban Land Institute, 1997.

Flint, Anthony. This Land: the Battle Over Sprawl and the Future of America. Baltimore: Johns Hopkins UP, 2006.

Gillham, Oliver. The Limitless City: A primer on the Urban Sprawl Debate. Washington, D.C.: Island Press, 2002.

Glassie, Henry H. Vernacular Architecture. Bloomington: Indiana UP, 2000.

Gutfreund, Owen D. Twentieth-Century Sprawl: Highways and the Reshaping of the American Landscape. New York: Oxford UP, 2004.

Holl, Steven, Alberto Perez Gomez and Juhani Pallasmaa. Questions of Perception: Phenomenology of Architecture. Tokyo: E ando Yu, 1994.

Jackson, John Brinkerhoff. A Sense of Place, A Sense of Time. New Haven: Yale UP, 1996.

Jacobs, Jane. The Death and Life of Great American Cities. New York: Vintage, 1992.

Kunstler, James Howard. Geography of Nowhere.

Marshall, Alexander C. How Cities Work: Suburbs, Sprawl, and the Roads Not Taken. Austin: U of Texas Press, 2000.

Mumford, Lewis. The City in History: Its Origins, Its Transformations, and Its Prospects. New York: Harcourt, 1989.

Rybczynski, Witold. Home: A Short History of an Idea. New York: Penguin Books, 1986.

Stevenson, Angus and Christine A. Lindberg. New Oxford American Dictionary. Oxford: Oxford UP, 2011.

VITA

Erik N. Hall was born in Madison, Wisconsin in October of 1984. Early the following year his family moved back to East Tennessee, living first in Sevierville and then Maryville. After graduating from Maryville High School in 2003, Erik attended the College of Charleston in Charleston, South Carolina. In 2007, he received his Bachelor of Arts in Historic Preservation and Community Planning from that school. After a yearlong hiatus spent living in New Zealand, he enrolled in the Master of Architecture program at the University of Tennessee. His thesis project, *70 MPH: Place and Perception in the Automotive Landscape*, was completed in August of 2011.