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I, Joshua L. Fisher, hereby submit this original work as part of the requirements for the degree of Master of Architecture in Architecture.

It is entitled:
A Carpark for Urban Growth: Redefining the Role of the Parking Garage and its Potential to be more Integrated into the Urban Experience as to Foster and Improve Urbanism

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A Carpark for Urban Growth:
Redefining the role of the parking garage and its potential to be more integrated into the urban experience as to foster growth and development.

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Ever since the advent of the automobile, people started moving out to the suburbs to escape the dense and undesirable conditions of city life. The suburbs represented the American Dream; having your own house, white-picket-fenced yard, with a car and a couple of kids. In the United States, individualism and privacy are cherished qualities and the suburbs provide that. One setback to this dream was the nation would be heavily reliant on the personal automobile as a primary source of transportation. People were willing to commute between ten and thirty miles to and from work in order to have that American Dream; sprawl became the method for providing this type of lifestyle.

Over the following decades as automotive technology was increasing and the symbolism of the car carried over into garage design; parking garages began to transform. As automobile design improved and vehicles became operable in all weather conditions; garages’ concern to protect the automobile from the environment began to decrease, effecting parking garage design. Just as the car was an icon for freedom, people thought that parking garages should operate similarly. As the notion “to come and go” dominated, the concept of waiting for your vehicle via valet or elevator, clashed with that mindset. This led to self-park garages that have been dominant for the past half century. These garages have evolved into banal and sterile archetypes that only serve a function, and not how they interface with the context.

The intent of this thesis is to propose a new perspective toward the design of parking garages within the urban context to a capacity that promotes urban growth. This proposal will make assessments on the drawbacks to urban parking garages as well as identify obstacles that impede urban development. The idea is by bringing these drawbacks to the foreground; solutions may be
developed in a manner that not only improve qualities to both parking and urban progress, but also allows the parking garage archetype to transform from a **space** for storing your car into a **place** that becomes part of the urban experience. The downtown Market District of Roanoke, Virginia will be the backdrop to this thesis.

**Key Words**

Architecture, Automobile, Carpark, Garage, Urbanism
The lack of resources is no longer an excuse not to act. The idea that action should only be taken after all of the answers and the resources have been found is a sure recipe for paralysis. The planning of a city is a process that allows for corrections; it is supremely arrogant to believe that planning can be done only after every variable has been controlled.

--JAI MELNER

Architect, former mayor of Curitiba, Brazil

A Carpark for Urban Growth:
Redefining the role of the parking garage and its potential to be more integrated into the urban experience as to foster growth and development.
I would like to express a heavy gratitude to the professors and professionals that have helped me build a foundation in both architecture and construction.

To my father Chuck, thank you for the times we spent under the truck hood and on the jobsite. To my mother Linda, thank you for a cultured childhood and supporting my decisions and interests.

To the rest of my family, friends, and colleagues, thank you for being a part of my journey through this amazing experience!
My interest in the built environment was cultivated by the culture and people that surrounded my childhood. Being raised most of my life prior to the advent of mass household computer usage: I grew up a typical kid in the 1980s and 1990s. Most of my time spent as a kid was outdoors playing sports, exploring the city with a childhood friend named Ben and tinkering around on anything mechanical. Growing up the son of a mechanic and construction tradesman, I was raised with a “hands-on” approach to life. As a teenager, I would get my hands dirty working on equipment, automobiles, as well as assisting my father on some of his construction projects. I would help with installing roofs, framing up walls and helping with various repairs. My mother on the other hand, cultivated my passion for traveling and architecture design. I remember as a kid, she would tell me about having our own dream home and I would draw the floor plans to them. I recall one Christmas my mother bought me two, 500 piece Lego bucket sets. I would play with the legos for hours building things and spaces for my G.I Joe action figures.

Upon graduating high school and attending some college; I joined the United States Air Force at the age of nineteen and worked on aviation electronics also known as avionics. I worked on such airframes as the F-16 Fighting Falcon; A-10 Warthog; HH-60 Pave Hawk, and the C-130 Hercules. Although I enjoyed my work in the Air Force and advanced through the ranks, I always had a yearning to go back to college and get involved in architecture or construction or both! After my enlistment was over, I headed back to college and focused all my energy on getting an education in architecture design. I was fascinated with the education I was receiving in the architecture undergraduate program but realized something was missing; I was understanding how to design, but not how to build. That led me to pursue a
graduate degree in building construction, more so, construction management. I had the fortunate opportunity to work as an assistant and eventually a superintendent for a construction management firm. It was great to see firsthand all the things I learned in architecture but put into the context of construction. I was exposed to the notion of design-build while in architecture but got a better understanding of it while in the construction program. I have a fondness for the Design-Build (DB) delivery method as well as other Integrated Project Delivery (IPD) methods and hope to work in that type of environment upon graduating.

My interests in this thesis topic stem from my passion in both architecture and the experience of dense urban cities. I believe that the majority of parking garages in today’s society are uninspiring and promote no real value to the context they reside in other than their functional use of being a closet, if you will, for the automobile. I just find it to be a large disconnect between the amount of effort that goes into automotive design and the effort that goes into architecture for said automobile. My passion for the experience of city living stems from the fact I grew up in the suburbs. I remember as a kid in the late 80s and early 90s, when we would head downtown, I would always look up at the boarded-up windows of the upper levels of the downtown buildings and day-dream about living in them and being able to visit all the places downtown. This Thesis is a chance to explore the possibilities to improve a type of architecture that has the potential to improve the quality of living in downtown cities. Roanoke, Virginia is the city I was raised in, is a city I know a substantial amount about, and any opportunity to enhance my hometown is a challenge I enjoy accepting.
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**Archetype**

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Thesis Statement

Although automotive design has evolved greatly ever since the first Ford Model T rolled off the assembly line, the same attention has not been applied to the design of the facilities that house these iconic machines; especially in the downtown urban context. This was mainly due to the culture and mentality that the automobile has spawned into other aspects of daily life which is now conflicting with the current social shift where people now favor urban living to that of suburban life. This proposal will address concerns that affect both parking garage design and urban renewal measures to establish a connection or synergy that can help the carpark interface better with the urban context while fostering urban renewal practices. This strategy will be applied to the design of a multi-level, multi-programmed carpark that will be positioned in the Market District of downtown Roanoke, Virginia; an urban fabric, like many secondary cities around the nation, that is a combination of architecture from the Colonial Revival Movement (1880-1940) and the Brutalism architecture of the 1950s through 1970s. Strategies will be presented through research; discussions, reviewed literature, drawings and models to help illustrated the experience of the proposed carpark and its integration into the urban experience. Ideally, the information and strategies produced from this study could be used as a springboard for other cities to explore the potential of this archetype adding to the urban experience while fitting within the vernacular context.
Problem

The automobile has allowed humans to expand their national and even global reach. With the automobile, people were able to leave the overly-dense and undesirable conditions of city life for the suburbs where families enjoyed the luxury of their own individual home and parcel of land. This trend started at the beginning of the Twentieth Century in direct correlation with the introduction of the automobile and is a contributing reason why suburban growth percentages have always been of a higher value than urban growth percentages. According to the Census Bureau, this trend has maintained for nearly a hundred years. As society ushered in a new millennium, the people also ushered in a new perspective toward urban living or urbanism.

After the 2010 United States Census Survey, it was reported in 2013, that for the first time in a hundred years, the rate of urban population growth outpaced suburban growth. This ‘return back to the city’ is the development of several factors. One factor is a result of millennials graduating from college and entering the work force. These young professionals are taking a more different approach to adulthood than the previous generations. There is, of course, the other well-documented trend of young people getting married and delaying starting families, two major life events that usually prompt a move to suburban life. ¹Another factor is that older adults, who have retired or whose kids have grown-up and moved out, are trading a home in the suburbs

for the walkability and other conveniences of city life. This lifestyle is working in what this thesis refers to as primary cities, cites which are significant economic, political, and cultural centers for the country or region. Secondary cities on the other hand, are experiencing urban growth but not at a comparable rate. So what is impeding urbanism in the secondary cities? This thesis looks at several issues, each one a passage to the next problem, and together impeding the growth of cities.
Urban Amenities

Urban amenities are defined as desirable or useful features of a space within a building or place that exist in the core of the city. Examples of urban amenities include but are not limited to restaurants, retail, fitness, grocery store, hospital, museums, galleries, etc. The problem is that when people started migrating to the suburbs, most of these amenities left with them leaving the city life a bit more stressful to be a part of because one needed transportation to reach all the required services to sustain daily living. As the automobile became more dominant so did the trend of leaving the city for the suburbs. This may not seem to be a problem but now we are seeing a culture shift were people are finding city life more desirable because of the walkability to services and the pleasure of not dealing with the hassles of owning a personal vehicle. But is this entirely true? No, it is not, because most secondary cities in the nation do not have grocery stores and pharmacies in their downtown locale; that is the situation for the city of Roanoke, Virginia, the context for this thesis.

The lack of amenities such as a grocery store and pharmacy in downtown Roanoke takes away from the urban experience and its absence is quite noticeable. When asking local patrons, business owners and visitors “Downtown Roanoke needs_____?”, the two biggest responses received was needs more places and people to live here and the other was need places like grocery stores that promote city living. Looking around the city at potential buildings or structures to renovate; it was hard to find places because most of the buildings that have been vacant for the past decades were left to fall in disrepair. This is a common problem around the nation were buildings are so far beyond repair, most owners have the building destroyed and replaced with a
A simple surface paid-parking lot because it is the easiest way for that property to generate income. This concept of the surface parking lot sets the transition to the next underlying problem impeding urban growth and the urban experience.

Figure 3.) An urban Target store on State Street in Chicago, Illinois.

Figure 4.) An urban scale Wal-Mart in Washington D.C., with residential living in the upper levels.

Figure 5.) A Whole Food in Boston, Massachusetts.
Parking Craters

According to Angie Schmitt, editor of Streetsblog USA and the inventor of the term, defines a ‘parking crater’ as a depression in the middle of an urban area formed by the absence of buildings. These large areas of absent buildings are typically used as parking lots. These voids in the urban fabric are a result of sprawl, dissolution of manufacturing, and leftover parcels from built highways. Another contribution to the existence of parking craters was due to planning events that took place in decades past. The list of cities that bit into the 1950s hook known as Urban Renewal is long. The federal bulldozer as it is called today is seen as one of the great errors in modern U.S. history. This process involved cities tearing down whole blocks of buildings in commitment for a nation-wide massive rebuilding effort that was not manifested as planned. Unfortunately, there are so many cities that suffer from the excessive use of parking craters that there is a game called Parking Madness, which is derived from the tournament process used by collegiate basketball referred to as March Madness. Besides being an eyesore, parking craters have an effect on urbanism.

These surface lots cause great trouble to urban growth and the urban experience. Regarding urban growth, the very fact that a parking crater is a ‘depression’ or better yet, a reduction in the urban context is in direct opposition to urban growth. In fact, these surface lots are not only impeding growth in the city but are costing the city because of the potential tax revenue that could be

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3 Lefkowitz (as above)
4 http://usa.streetsblog.org/category/special-reports/parking-madness-2015/
collected on the buildings (it is important to note that many cities offer tax incentives on parking-based properties).

A study from University of Connecticut compared three cities with modest parking and three cities with triple-digit parking growth at their centers. It found that state capital, Hartford, is losing an estimated $1,200 per spot annually, for a total loss of $50 million. The reason that Hartford lost money while parking increased 158 percent at the center can be found in the city’s policy of tax breaks for parking lot operators.⁵

No one is arguing for elimination of automobile parking in the city, just eliminating inefficient approaches to providing parking in the city. Parking downtown should be just as integrated into the urban experience as the public square. Parking should be done in a dense manner which alludes to the use of architecture to provide this amenity. The need to provide parking to visitors and commuters, but in a manner that fosters urbanism leads the discussion into the next and final underlying problem; the role of the parking garage.

Role of the Parking Garage

The role of the parking garage has changed since its inception and is due for an overhaul to meet the demands of current society. Parking in the urban context is an interesting situation because it demands the interdisciplinary approach using both urban planning and architecture to achieve the desired result. In the first decades of the parking garage, this archetype was treated like a motor club because people would leave their vehicle at the club then inform them of an upcoming use and the garage would maintain, fuel, and wash the automobile just before the owner walked in ready for the trip ahead. By the end of World War II (WWII), the role of the parking garage was changing and this was due to the culture of the times and the culture surrounding the automobile. 6

The Post-WWII saw immediate prosperity that resulted in people able to afford more than one vehicle per household and saw a majority of whatever population left in the city drifting out to the suburbs. Both trends resulted in the exponential growth of the automobile and therefore an increase concentration of cars in the city. By 1946, just one year after WWII ended, downtown off-street parking was recognized as the number-one need in almost every city. 7 This need for parking garages was considered a larger priority than maintaining historic buildings and preserving the urban core. This resulted in cities demolishing older structures to make way for parking needed by visitors and commuters. In Dallas, for example, a 1916 church was demolished to make room for a parking facility, creating resentment among citizens and

6 Henley, 35
7 McDonald, 59
changing life in downtown Dallas forever. Although the culture of Post-WWII involved to accumulation of millions of cars that now needed to find parking; the mindset that surrounded the automobile seeped into the way society looked and therefore designed this parking-based archetype.

The very notion of the automobile invokes the spirit of power, wealth, and freedom. It is this very notion of freedom and the ability to move as one pleases that got embedded into the function and design of the parking garage. In the beginning, parking garages had various functions. They operated as part social club and part full-service garage. The function of the parking garage quickly changed as the nation was booming following the end of WWII. With so many cars being purchased and showing up in the city, the function of the garage took on the function of a place to stow your car and go to work or shop. There became no intent to integrate the parking garage into the urban context and allowing the garage to provide any other services other than parking. This isolated the garage from the urban experience because the only times people engaged with the garage was when they were entering and exiting. This new functionality of the garage resulted in the design being altered. Parking facilities were once built using the same vernacular construction methods as other surrounding types of architecture. Then with the advent of modernist ideals of ‘pure’ functionality, the garage was gradually transformed into a simple, low-tech, concrete: designed for self-parking; functional (at least for the auto) on the inside; and not especially appealing on the outside. Although garage designs are gradually accounting for their context, the archetype is still far

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8 Ben-Joseph, 76
9 McDonald, 116
from integrating itself into the urban fabric in a manner that fosters urban growth and becomes a part of the urban experience.

Figure 11.) Miami Parking Garage, 1949, Designed by Robert Law Weed and Associates

**Revealing a problem**

By identifying the previously mentioned concerns associated with urban growth and its experience, the problem this thesis intends to resolve comes into focus. To promote urban growth and build the urban experience, cities need to look at ways to bring all types of amenities, including grocery stores, back into the urban fabric to create a full-service downtown. To do this though, will requires cities to eliminate the practice and tax breaks of surface parking lots, and encourage parking to be integrated more into the built environment i.e. integrating architecture, automobile, and man. The answer is just not another parking garage; even the term itself invokes a negative emotion. The problem reveals itself as how can a carpark be designed and programmed for both man and machine in a manner that champions positive urbanism and nurtures the urban experience.
Urbanism

History

Before discussing the current urbanization trends going on in the nation, it is important to briefly review the history of urbanism to gain a deeper understanding of today’s landscape. At the beginning of the twentieth century, the nation was experiencing an industrial revolution and a majority of the population lived in the cities. The urban perspective was much different than today. Cities were overpopulated and unsanitary due to the fact that the horse was the only alternative transportation through the city other than walking. Shortly thereafter the automobile was invented and offered the opportunity to clean up the city by eliminating the use of horses. This did in fact prove to help the city become more sanitary but it also had a side effect by offering city dwellers the choice to live just outside the city in the rural areas and commute to work. At first, this trend was really applicable to the affluent, but after WWII, the automobile became more affordable and this trend became the standard for living in the United States. Since the cities could not meet the needs of all the returning veterans but they all could purchase a car; people grabbed their cars and headed to the suburbs that were ushering in unprecedented growth.

This trend continued for the next forty to fifty years to an extent that most residents ended up moving to the suburbs with most business following. The result is a ‘dough-nut’ city where in the very core of the city is absolutely barren and left to decay. A prime example of this is the rise and fall of Detroit, Michigan. As early as the gas crisis of the 1970s, critics were raising concerns about an automobile dependent society built on sprawl. Although there were raising concerns, by the late 1980s and early 1990s, suburbanism had reached its pinnacle with the establishment of...
very large shopping centers called ‘malls’. This solidified the society as a car culture to a level that reversing this trend will take longer than it took to establish.  

There is hope though; starting at the forefront of the twentieth-first century, new approaches to urbanism have been developing. One approach is called combinatorial urbanism; looking at urbanism through a mutual perspective of both planning and architecture. The architect, Thom Mayne coined this term and uses this approach in his designs. The second approach to urbanism which is a fairly recent is called tactical urbanism; a strategy to neighborhood building and activation using shorter, low-cost, and scalable interventions and policies. A great example of this is Time Square; by rerouting traffic and closing off the street for pedestrian use, the square actually feels like a public space and not just a congested intersection. Now to see the current social direction society is taking regarding urban growth.
Existing Condition

As mentioned earlier, both young professionals and the older generation of retirees and empty-nesters are looking to move back into the city. For the retirees, it comes down making life less stressful. The city becomes desirable to seniors because all the amenities to life are within a walkable distance as well as the burden of maintaining a large suburban house, and the upkeep of personal transportation. By eliminating these burdens and downsizing into a smaller place, seniors are living in a manner that allows them extra time to enjoy or follow their interests. “You’re gaining a lifestyle. Part of the increase you’re paying is the walkability … the decrease in stress.” 12 Young professionals on the other hand, have different reason for moving into the city. Speaking from personal experience, one reason stems from a psychological factor; trying a different lifestyle. This comment is made based on the presumption that most young professionals grew up in the suburbs. Millennials know what it is like to live in the suburbs and yearn for a different way of life as they graduate and move in the work sector. Personally, when remembering life in the suburbs, there was always a sense of boredom and the need to experience something new. Frankly, most of the mischief that suburban kids get into can be contributed to being bored and not being stimulated enough in the suburban context. There are not many, if any, museums, galleries, and live theatres in the suburbs so it becomes a cultural wasteland 13 and a type of homogenous lifestyle. This psychological occurrence compounded with the

13 Term used by Angie Schmitt, Streetblog.org
notion that everything is in walking distance which frees up time allowing for a better balance work-life relationship.

The argument that both demographics can agree on about the city is that everything is in a walkable distance. But is that true? Research finds that several primary cities and most secondary cities do not actually contain some of the amenities that are important to a full-service downtown.\(^{14}\) The thesis takes a stance that the most important amenities for urban living are a grocery market, pharmacy, hospital, fitness center, and retail, assuming civic-based amenities (i.e. museums, galleries, parks, and plazas) already exists. All of these amenities together create an urban setting that can sustain living. But this is not the case with many downtown areas. An example to help illustrate this is the context of downtown Roanoke, Virginia, the setting for this thesis. The downtown area saw an initial increase in residences but as the case with other secondary cities, population growth looks to have peaked with the most recent figures showing a growth in urban living but not at the rates of the previous years. If one were to live in downtown Roanoke, one would be hard pressed to find certain amenities within a walkable distance. The closet grocery store, Kroger, is over two and half miles away from the heart of downtown, Market Square. Another amenity, a pharmacy, is located two and half miles way which is interesting because it is near the previously mentioned Kroger. The closest gym or fitness center to downtown Roanoke is just less than two miles away in an adjacent neighborhood. Although downtown district of Roanoke contains a hospital, clubs for nightlife, local retail, and various restaurants, the residents here have to travel to adjacent

neighborhoods to purchase groceries and prescriptions, as well as a place to exercise. So why are these amenities vacant from the urban context?

After investigating why certain amenities are not located in many cities around the nation, an article from the Cincinnati Enquirer help shed light on the dilemma. The author of the article talks with several business consultants including a Kroger spokesperson regarding the lack of grocery markets in the downtown area (It should be noted that there is a Kroger around downtown Cincinnati in the Over-The-Rhine (OTR) District, but it too comes under constant criticism for its current condition and the fact Kroger has not invested much funding to improving the store that has been there for over fifty years while Kroger in the suburban context is renovated every twenty to thirty years. ¹⁵ The lack of interests on behalf of the companies providing these amenities comes down to population density, right location, store concept, and of course, financing. The article does not allude to this, but it should be acknowledged that grocery stores in general do not make a large profit due to product loss and damage prior to customer purchase. ¹⁶

A very important factor to companies during a feasibility survey to see the best place to build another store is how dense the population is in the immediate area. For example, people may wonder why they see a Walgreens pharmacy across the street from a CVS pharmacy. The answer is simple, density! Most areas that one sees with this type of condition are in neighborhoods where the population density is fairly larger than the 30,000 required residents that validate the need for the store but is impractical for

¹⁵ Knowledge gained by working for architecture firm that did Kroger renovations.
¹⁶ Tweh, Bodeya
Walgreens to put two stores in the same locale. This explains why some of these amenities only exist in the residential suburbs and not within the city where most of the population is only there during work hours. Retailers can’t afford to open a store and wait a few years for business to get better. Although this data may not hold true to many chain-stores currently operating, but Kroger sets a three-mile radius between stores unless the required population density is met and confirms the need for a new location. This becomes a situation of the “chicken and the egg”, which came first? To apply this to the situation, certain amenities will not open up downtown because the lack of population density, but people do not want to move downtown because not all of the features of a full-service downtown are present. This leads into the next setback for companies and that is choosing the right location and business model.

For retailers planning to settle on the right location, concerns toward logistics, parking needs, product options, and complimentary services are considered. In the article, Kroger talks through the process of putting the store in downtown area or the adjacent neighborhood of OTR. Neither downtown nor OTR contain the required population density for a new store but the two areas together do. If the store is placed downtown, people from the adjacent community will less likely shop at the store because it is outside the standard Transit Oriented Development (TOD) walking distances. The opposite is implied if the store is placed in the adjacent neighborhood so Kroger is looking for an area in between the two districts. Along with location, retailers will also need to change the store’s operating concept based on the locale. The first

17 Knowledge gained after having a presentation of feasibility by Walgreens representative.
18 Knowledge gained by working for architecture firm that did Kroger renovations.
19 McDonald, 206
thing will be the need to format smaller stores because there is not enough room downtown to place a big-box retail grocery store. This means that retailers will see a shift from customers who spend a hundred dollars during one visit compared to someone in the city who will visit ten times spending ten dollars each time. Another aspect that retailers need to considered when operating downtown is to create spaces for meetings or programmed events. “A smart retailer is going to position themselves not just where shoppers can go and buy things, even if I don’t buy anything, it’s a fun place to go. It’s an emotional experience to check things out.”

Another factor to the feasibility of establishing grocery chain in the downtown area is the finances. One of the biggest drawbacks for urban intervention is the cost of the parcels of land downtown are extremely expensive. The cost for some parcels downtown can cost close to what it cost to purchase the land and build the retail store in the suburban locations. On top of the cost, city ordinances have restrictions on the verticality of buildings downtown and building a one story building in a dense urban setting is frowned upon. Buildings downtown need to be loaded with program and rise upward since outward is not an option. This loading of program refers to co-tenancy or having several businesses or programs occurring within the same facility. In the article, a local business consultant suggests that Kroger looks at attaching the store to other forms of program like residential apartments, hotel, other various retail stores, and paid-parking garages. The author discussed this situation with residents of Cincinnati and the common view was if we want young professional to come downtown, and if families we are going to get

20 Brierley, 24
21 Jakle, 36
families to stay, having a grocery market downtown is really important.  

Figure 15. A graphic re-illustration why grocery markets are not sold on moving back to the city, citing issues with population density, location, operating model, and financial procurement.
Parking Garage

History

As with urbanism, it is important to review the origins of the parking garage to understand its current position in society. Since the automobile was beginning to replace the horse and carriage system, some of the first garages were converted horse stables and barns. Since the earliest urban garages were infill buildings, the use of a ramp was not possible and therefore the car elevator was the standard. The first vehicles to roam streets did not protect the driver from the elements and would not operate properly unless conditions were ideal. This required that the earliest parking garages required heat and lighting; very similar and integrated into the immediate surroundings. Although the Model T rolled off the assembly line in 1908, by 1909—the peak year for travel by horsepower—the ascendance of the gasoline-powered automobile was already well underway, and thousands of automobile garages had been built in the United States. The earliest parking garages were more like motor clubs that not only stored your vehicle but also maintained, fueled, and washed whenever needed. These full-service garages were only around for a couple of decades and by the end of World War II, the parking garage did away with full-service and focused solely on function.

At the same time the nation was declaring victory in WWII, there was a modernist movement underway in societal landscape that focused on pure functionality. This mindset along with the increasing population of both man and automobile had a heavy influence in the parking garage design. The automobile had drastically improved its ability to keep the driver safe from the...
weather as well as the engine’s ability to operate in all weather. Because of this, keeping the car in a controlled environment was no longer necessary which resulted in a dematerialization of the parking garage archetype. Many thick walls that once served to protect the automobile from the environment were being replaced with walls of glass panels to bring in more natural lighting or replace with no walls at all. Another design component that changed was how cars moved through the levels. There were two options; the elevator or the ramp. The elevator appealed to technology while the ramp appealed to a number of historical and emotional grounds: it was linked to the landscape; it was a familiar structure that had already been used in barns and stables; it was in keeping with the sense of individual freedom that had become associated with auto travel; and it met drivers’ increasingly strong demands to move rapidly and independently through the garage.  

Parking garages just became this ultra-functional piece of architecture that’s design was influenced by the automobile with no regards for the surrounding urban context. The decades following the designs of the 1940s and 50s, parking garages were strip of their connectivity to the city and all that was left were parking plates and vertical structure; almost similar to the Dom-Ino House by the Swiss/French architect Le Corbusier. It is important to identify that since the United States was fairly young and not developed to the extent of their European counterparts; the automobile allowed for rapid development and therefore affected the design of American cities. 

Figure 16.) An uninspiring parking garage in Austin, Texas.

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25 McDonald, 21
26 Ben-Joseph, 18
Existing Condition

As society is looking at new and more efficient approaches to urbanism through strategies such as TOD, smart growth, new urbanism, transit villages, and multimodal hubs; the parking garage also needs to reapply new strategies to its existence so it can disregard pure functionalism and connect back to the urban experience. During this thesis research, a concept that continues to appear in many of the texts is that any new architecture for transportation must incorporate planning at its earliest stages of design. A recent strategy for urban development called smart growth discourages growth beyond the boundaries of current development until all the places and spaces that exist within the boundaries are fully utilized.  

Another approach to redevelopment is new urbanism. In this approach, urban design embraces participatory planning; walkable, mixed-use, and transit-oriented developments. This approach identifies the automobile as a crucial component to the success of any new-urbanist approach. New urbanism’s uses the automobile in various ways. Around the residential areas of the development, cars are masked by buildings. Civic areas where man and machine cross paths more frequently, on-street parking is encouraged and is positioned to protect the pedestrian from moving vehicles. Whether that is looked at as a good or bad practice, it is important to see that these machines can perform as elements in the city and not just as types of transportation. Another parking strategy associate with new urbanism is shared parking. This provides to be successful in areas where large

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27 Mc, Donald, 233
28 Mc, Donald, 235
numbers of people congregate but at different times of the day. This allows the parking space to be used around the clock which integrates it more into the experience.

The last kind of approach to urbanization that is being currently used with past success is transit villages. This refers to an environment that links transit and mixed-use development. The programming in this type of development incorporates working, living, retail, and transportation. In the transit village approach, the parking garage is incorporated into the design, but where it gets placed is also important regarding its integration into the rest of the mixed-use complex. The current popular solution of hiding parking structures in the interior of a block is by no means a cure: because this strategy encourages people to go directly from their cars to their destination, it often undermines the pedestrian-friendly environment that planners are currently attempting to create.

These three types of development have a common thread and that is an interest in place making; creating livable urban environments. Parking is of course, one of the fundamental building blocks in place making. 29 In the past decade, new discussions about the parking garage has emerged and cities are realizing that parking facilities have the capacity to provide civil functions, operate environmentally friendly, link parking and the community, and finally improving the pedestrian experience.

29 McDonald, 271
Combinatory Urbanism: The Complex Behavior of Collective Form

In this text, the author, Thom Mayne establishes a strong position regarding architecture design in the urban context. He mentions that any architecture design in the city, ultimately requires the interdisciplinary communication with planning. Since any architecture within the city will have an effect on activities and operations of adjacent building and people; planning and architecture should not be exclusive of another but integrated. He calls out three main issues of combinatory urbanism starting with style which is derived by the distinctiveness of analyzing the uniqueness embedded in the precise conditions of each project’s program, site, and time. The second issue is the relationship of urban architecture to existing landscapes. Parts of a greater whole, architecture can employ a codependent engine of creative tension. The last issue he explains is the need for a poetic approach to urban architecture regarding material, intellectual, and emotional energies. This text is very applicable to the design of a carpark; because the design deals with transportation which will effect everything happening around the site of the proposed thesis design so looking a planning while designing is beneficial.

30 Mayne, 35
31 Mayne, 16
Tactical Urbanism

If the term “tactical urbanism” doesn’t exactly resonate, its examples might: parklets, farmers markets, guerrilla gardening, amateur wayfinding, Dumpster swimming pools, food trucks, little free libraries, temporary plazas, semi-disposable outdoor furniture, street vendors, and the rest. This text serve as a how-to guide for individuals or groups who are actively interested in engaging the community and resolving issue the municipalities have a tendency to respond to. The book includes a historical account of what streets used to be — places for movement, for sure, but also for interaction. Since tactical urbanism is more of a mindset than any particular intervention, with an infinite range of possible interventions for an infinite array of places, Tactical Urbanism relies on case studies to illustrate some of the possibilities:

- Mobile tea houses and plazas made of sidewalk chalk in Portland
- “Intersection repair” in Hamilton, Ont., with cones to create bulb-outs
- Guerrilla wayfinding in Raleigh, NC
- “Build a Better Block” movements in Dallas and Memphis
- Pop-up parks and parklets in San Francisco, courtesy of National Park(ing) Day
- Pavement to Plazas in New York

Although this text is not really discussing architecture it provides ways in which designers can get people to engage with architecture.

32 Lydon, 22
The Architecture of Parking

The author of this text, Simon Henley, describes architecture in the principles of aesthetic influence, matter, elevation, light, and obliquity. He comments that the challenge of housing a maximum number of cars in a well-designed space is one of the most overlooked aspects of twentieth-century architecture, and yet it has attracted a stellar array of architects throughout the history of its development. The format the author follows is: breaking up these principles into different chapters; starts with a theoretical approach to way this principle is necessary for the carpark; and then providing real case studies that support the position he is making. Some of these examples includes a car park that achieved stardom by appearing in Get Carter (Trinity Square, Gateshead) and another by stararchitect; Zaha Hadid.

This text is very applicable toward thesis because the author provides a better and rich theoretical approach on how to think about these strategies then past designers have alluded to. The chapter on light was the most significant part of this research for the literature review. We wonder what lurks in the shadows and become prey to imaginations fuelled by all-too-void scenes in book and movies that use car park as the setting for illicit exchanges or violence. To overcome this psychological challenge, the various ‘varibles’ the author focuses on is the depth of the floor plan, and the type of patterns or arrangement of apertures in the façade of the garage. The information revealed in the texts provides what variables to consider during the design process.

33 Henley, 8
34 Henley, 154
The Parking Garage: Design and Evolution of a Modern Urban Form

The Parking Garage: Design and Evolution of a Modern Form by Shannon McDonald, an architecture practitioner in Georgia and Illinois that frequently hold discussions on the topics of parking and transportation within the discourse of architecture. The authors is straight forward when mentioning that the parking garage archetype has to be more integrated into the urban landscape at a capacity that enriches the experience of being-in-the-city. To back her position, McDonald provides countless examples why ‘surface lots’ need to be brought together in a dense manner to compliment the density of the urban fabric; a parking-based architecture, but one that fosters urbanization.

There are two major sides in the battle of parking strategies. One is pushing the parking to the periphery of cities; the “protection” strategy, and relying on public transit for movement within cities while the other is integrating parking into the core or the “integration” strategy by occupying what would otherwise be unused land through urban infill resulting in a centralized distribution point for all movement to begin. The author agrees that in order to make a stronger sense of ‘placemaking’ that the strategy of pushing parking to the periphery is the best choice. I agree, but that can really only occur in cities with great public transit systems and newly forming ‘new urbanism’ communities.

Most second class cities do not have a strong enough public transit system so pushing parking to the edge of downtown makes ne sense if there is no way to transport them into the city core.

35 McDonald, 26
This car park is successful in the terms that it is handling the issue of limited ‘floor’ space at the ground level and the need to meet parking demands in the city. One of the areas in the design that helps people transition from the car to the city is the glassed enclosed lobby that has a vertical height as tall as the entire structure. Another beneficial strategy is that at the street level, parking is removed and the allotment of commercial retail stores that help promote the experience of the city.

One of the most interesting components of this facility is the polycarbonate material used on the exterior surface. The external part was coated with violet color, and the internal part with white color. Additionally the external part was made with IR Coating and Coating surface treatment, which exerted such a feeling as the reflective surface of glass or metal depending on the angle of light. In the morning with the sun rising, it receives direct ray whose color of outer cover minutely appears to be white, and at noon indirect one whose color purely violet. In the afternoon with the sun setting, it reflects the evening glow and turns to be golden, while in the evening it reflects the internal lighting and external neon sign and directs unusual scenes.
1111 Lincoln Garage

Architects: Herzog & De Meuron
Location: Miami, Florida
Project Year: 2010
Client: SunTrust Bank

1111 Lincoln Road Garage has become the epitome of how to design a successful garage. It is its unconventional approach that has the world’s designers looking at it as the way to make a rather banal archetype into a place that has become a destination in Miami. In this beautiful composition, the floors that contain shops, or are areas that promote man’s social interactions are raised while levels strictly reserved for parking are compressed. By ‘opening up the floors’ it allows natural light to reach further into the floor plan space which also sets the ambience of the environment. The garage is packed with program with everything from street-level and raised-level retail, to a roof garden that also contains a residential condo space.

One of the biggest successes to this garage and for future garages in incorporating the human scale at every possible turn so people do not feel alienating in a building designed for the larger scaled automobile. By incorporating small scale artwork and holding tactical-urbanism activities like mass morning yoga, Halloween parties as well as hosting formal events on the upper levels become a great example to use as a precedent and is an example this thesis will try to integrate into its design.

Figure 28.) An image series showing the layout and various activities that occur in the parking garage.

Figure 29.) Analysis identifying the levels that are programmed for human activities are expanded and levels strictly for parking are compressed.
The proposed design is not just merely a piece of architecture for parking cars. This composition intends to provide man with a richer transition from the automobile to the city, by intertwining the experiences of both man and machine together. Incorporating the human scale and strategies of urbanism into this automotive-based landscape will require the concept of combinatorial urbanism; considering both planning and architecture practices together in the design process. This type of ‘carscape’ will consist of multiple levels both above and below the street datum as way to provide more space to incorporate amenities for both automobiles and people. Although there will be moments where man and machine will have to address the presence of one another, other moments will be just focus on the man or the machine. Regardless, if the moment is solely focused on people or cars, these instances will provide a visual connect to the other entity. This connection is important to successfully integrate the carscape into the urban context and therefore establishing a successful transition from car-life to city-life. The best description for this intervention based on what its intent is an ‘urban carscape’.
Archetype

The building type or archetype being proposed for this thesis is a multi-level complex, within the urban context, that provides commuters, visitor, and residents with amenities. The amenities provided by the composition are follows:

Car Amenities
- Mechanic services (4,000 square feet)
- Wash/wax services (1,500 square feet)
- Plenty of space to hold car shows / auto exhibits (over 300,000 square feet)

People Amenities
- Grocery Market (15,000 square feet)
- Pharmacy (5,000 square feet)
- Multi-functional Hall (4,000 square feet)
- Fitness Center (3,500 square feet)
- Welcome Center (1,500)
- Double height parking level for social events (over 40,000 square feet)

The urban carscape is composed of seven parking levels and a transitional level with no parking to navigate through the double height parking level. There are two levels below the main street level of the city so patrons passing by realistically see what looks to be a 5 story building which will appear to fit into the surrounding urban context of low-rise and high-rise buildings. The second level above the street level (3rd floor) will have a double height ceiling of 24 feet which will be used to house social functions like food-truck festivals, massive morning yoga, or hybrid type of block parties.
The overall composition is approximately 305,000 square feet. Although, this is a large composition, proximately a third of the footprint is used to provide services to both man and machine (approximately 100,000 square feet). Breaking up large portions of the parking garage by introducing human scale provides this type of interface that helps blur the line between car and city and fosters the urban experience. Services provided to the automobile in this urban carscape pays tribute to the original motor clubs that were full-service garages as well as places for social connection and shared interests. Amenities for the people such as a grocery market, pharmacy, and fitness center allows this garage to become a pivotal component in the urban environment. These services along with the existing amenities of downtown Roanoke create a full-service downtown where residents do have to travel to the suburbs for items like food and prescription medicine. The grocery market is positioned close to the main thoroughfare called Williamson Road which looks out to the elevated Interstate 581 a few hundred yards to the east to grab the attention to those passing by the site a various rates. The pharmacy will be place toward the portion the urban carscape that is border by Campbell Street in order to maintain the existing urban wall of the context. The fitness center will reside toward the interior of the carscape design but positioned in a manner that registers with a direct view of Elmwood Park/Amphitheatre two blocks south of the design.

The total amount of parking spaces provided is considerably close to the sum of all parking spaces that exist on every paid-parking surface lot within a quarter-mile radius of this intervention. The intent behind this is to have the cars parking on those lots to start parking in the proposed design so those lots can stop being parking-craters and can be transformed into more housing to support the recent urbanization movement. The
carscape will provide various parking for various users. There will be areas of shared parking, assigned parking, and event parking when required.
Context
Roanoke, Virginia & Market District

Roanoke, Virginia is an independent city and the largest one west of Richmond, Virginia. Although the population within Roanoke city limits is registered at 97,032, the Metropolitan Statistical Area (MSA) recorded a population of 308,707. Roanoke is regarded as the commercial and cultural hub of much of southwest Virginia as well as areas of southern West Virginia. The city Roanoke and Roanoke County are situated within the Roanoke Valley, one of the state’s largest valleys and contains the lowest point above sea level in the mountains of southwest Virginia. The city is bisected by both natural and man-made conditions. The Roanoke River runs from west to east, bisecting the city into northern and southern areas. This is complimented by a man-made condition; the Roanoke Rail line which also runs east and west. Roanoke is a significant railroad hub of the mid-Atlantic and for the Norfolk & Southern Railroad Company. Its importance was noteworthy enough to be one of the potential bombing targets for Nazi, Germany.\(^{36}\) This rail line along with Interstate 581 that runs north and south through the middle of the city are the elements that are used to divide the city into regions called Northwest-, Northeast-, Southwest-, and Southeast Roanoke. Roanoke lies within the humid subtropical climate zone and is characterized with four distinct, but generally mild, seasons. The fact that the city and the downtown district is set at the lowest elevation within the valley creates a ‘bowl-like’ condition which can generate microclimates on the valley floor.

\(^{36}\) 11th grade teacher, Mr. Robertson – Virginia History, shared that with my class and I never forgot it.
The downtown Market District is located in the southwest part of the city but within close proximity to the parcel of land that indicate the intersection of the rail line and Interstate 582; essential at the focal or intersecting point of the four regions. The context or make-up of the Market District is an urban fabric that is comprised of architecture from the Colonial Revival Movement (1880-1940) and the Brutalism architecture of the 1950s through 1970s. The market district is oldest section of the city which is evident by its immediate adjacency to the rail line north of the market. In 1983, it was listed on the National Register of Historic Places. The Market District is ‘roughly’ bounded by Norfolk Avenue to the north; Church Avenue to the south; Williamson Road to the east; and Jefferson Street to the west. The focal point in the district is a node that encompasses the City Market Building and Market Square; an open plaza which is adjacent to the west the market building. The district is also home to some important pieces of architecture in the city both old and recent. In the district, passers by can visit pieces such as Fire Station No. 1, a firehouse built in 1907, but then can stop by the district’s newest and most unconventional piece of architecture; the Taubman Museum of Art. Most of the city’s events and festivals held downtown are held in the Market District. It is the epicenter of the city as well as the region of Virginia that Roanoke serves.

Figure 33.) A series of Roanoke City plans identifying districts, nodes, green-space, and pathways.
Site

The site of the proposed intervention currently exists as two separate surface paid-parking lots; do you remember the term parking-craters? The two parcels are different in size; the smaller parcel having a footprint of 15,008 square feet with the larger footprint being 50,805 square feet; bringing the overall footprint at the street level to 65,813 sq. ft. At upper levels of the project, the composition will bridge over the thoroughfare running in between the adjacent surface lots; this road is called Kirk Avenue. The two parcels also have different qualities due to their relationship with the context. The smaller parcel is an infill lot within the row of older vernacular architecture that together form a low-rise urban wall. This lot is separated from the Market Square to the west by one building, and across the street from the City Market Building. Campbell Street is the north border of the lot with Kirk Avenue acting as the southern border; existing building to either side set the east/west boundaries. It will be important for the proposed urban carscape to address the issue of how to maintain the existing urban wall in the design process. Campbell Street is the most adorn thoroughfare in downtown because it contains the social focal points of downtown and really epitomizes the experience of being-in-the-Market-District.

The larger parcel has will have to consider different aspects of the context but is equally significant as the infill parcel. Unlike the other parcel, this parcel is somewhat of an ‘end cap’ to an existing block because it is bounded by roads on the north, east and south side; with the backend of the buildings on Market Street providing the western border. The eastern border of the site is Williamson Road, one of few major roads that provide the way in/out of downtown Roanoke. Due to this importance, Williamson
Road is one of the most traveled roads in the city. Also to the east of the site a few blocks away is the elevated condition of Interstate 581. These roadway conditions adjacent to the site really plants the importance that whatever is on this part of the site becomes a place of destination that people will see and notice regardless of what speed they are traveling. The southeast corner of that lot is a particular area to consider in the design process because it overlooks the intersection of two major roads used to enter and exit the city center; Williamson and Franklin Road. The design challenge here will be to see how well the architecture ‘turns-the-corner’.

Figure 35.) View looking SE at the proposed site’s infill condition.

Figure 36.) View looking NW of the site’s prominent corner.

Figure 37.) Overhead view of the Market District in Roanoke, Virginia with the red area as the proposed site.
**Desired Goal**

The desired goal this thesis would like to achieve can be as complex as the series issues that generated the overall problem. The first and foremost goal is for this design to be successful in drawing people in general back to the urban fabric regardless if one is visiting, commuting, or living. The Market District would greatly benefit by an influx in people being there. Another goal is hoping that by providing all this paid-parking, and promoting its use while eliminating surface lots, that enough revenue can be generated to be able to offer these amenity spaces within the composition at a rate that a small scale grocery chain like Trader Joes finds it financially feasible. The affordability of these spaces will rely on how the level of occupancy rate the carscape can average. The higher the average occupied rate, the more revenue is being generated which allows the carscape to offer a subsidized rate for the space. Another secondary goal of this design proposal is can this large urban carscape park the intended amount of vehicles that allows the other six surface lots look to be put out of business where that land can be sold to a developer interested in turning these lots into housing that could draw more people into the city, and why not? Downtown Roanoke is now full-service; providing everything needed for urban living and fostering urbanization. Another desired goal is hoping by just being able to find a way to bring a grocery store back into the downtown setting, it becomes the catalyst that people were waiting for to migrate back into the city core. And finally bringing all these underlying goals to a culminating point, it is a desired goal of the author to see emerge an archetype, conscious of past similar architecture, that becomes a gateway or place of transition and awareness between humans and automobiles. Hopefully, this design is not looked at
as a space to store your machine and quickly get to the city street, but rather a place of urban character that as one leaves their automobile, wonders through this carscape transition while engaging with elements of urbanism until without knowing, finds themselves at the street level.

Figure 38.) Schematic model of the proposed design; views are from the prominent corner and the infill condition respectively.
It is important to review some ideologies that have been discussed before making any closing statements. The nation is coming to the realization the sprawl is reaching the tipping point. Since it is cheaper to build on Greenfields instead of demolishing and renovating parts of deteriorating cities, developments are moving further and further to rural parts requiring an insurmountable amount of funds to cover building entire infrastructure to accommodate this type of living. Hearing reports of commuters around the nation spending between two and three hours in their vehicles for a daily commute is just ridiculous. Cities and policy makers need to make migrating back to city a less arduous task because urbanization is the preferred method of young professionals and seniors looking to downsize.

The problem is that many cities do not have full-service downtowns that can provide all the amenities for urban living. Certain services like grocery markets are not sold on moving back into the city, citing issues with population density, location in the city, the right business model, and finding the right financing opportunities. This is amplified by the fact that most cities have removed older buildings that could have been reused but were torn down and allowed to create parking craters; I mean flat surface lots. It was this practice of producing flat surface lots in the second half of the twentieth century that really started ‘thinning’ out the once dense urban fabric; Dallas, Texas is a great example of this. Cities however cannot just eliminate surface parking unless providing an alternative, which leads to the next setback but one that has potential to reveal a solution; a parking facility.

The answer to resolve parking and promote urban growth has to be designed better than the parking garages of the modernist period that still drives aspects of garage design. The modernist approach to pure functionalism may have been the quick answer
but fifty years later they are no examples of what not to do because garages disconnect entirely to the urban experience. Out of this emerges a new archetype, the urban carscape, which becomes the pinnacle for transitioning people from the car to the city. By integrating program for both the automobile and the people in the urban context, the urban carscape becomes much more than a piece of architecture, it become a place that man and machine both engage in the urban experience.

The successful placement and design of urban carscapes requires attention to the entire pedestrian experience—including where, how, and why pedestrians travel after they leave their cars.

In closing, parking-based architecture needs to be regarded not as a transient experience, but a permanent feature of everyday life and has the potential to contribute to the quality of life. To give communities what they need, designer need to enlist the concepts of combinatory urbanism and the success of tactical urbanism. The bottom line is that parking-based architecture is one of the last archetypes in the city that needs a major overhaul and before society looks for the next quick fix (resulting in long-term problems); designers should look at what is missing in the urban environment and use a type of synergistic approach where parking can be achieved but the archetype becomes important due to the amenities it provides not only to automobile owner but to urban dwellers as well.
**Context** - The interrelated conditions in which something exists or occurs.

**Threshold** – A moment of transition.

**Urban** – Referring to the conditions of downtown cities.

**Carpark** – A term from the mid-20\(^{th}\) Century for parking garage.

**Carscape** – A built environment where man and machine interact.

**Transit Oriented Development (TOD)** - mixed-use residential and commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership.

**Empty-nesters** – Older adults whose kids have moved out of their house.

**Full-service** - Offering all the necessary or expected services.

**Urban amenities** - Desirable or useful features of city life.

**Archetype** – Very typical example of a certain architecture.

**Vernacular** - the means and methods of designing and building by the ordinary people in a particular country or region.

**Parcel** – A piece of land, also known as a lot.

**Urbanism** – Lifestyle of city dwellers.


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