FRANK LLOYD WRIGHT AND THE AUTOMOBILE:

DESIGNS FOR AUTOMOBILITY

by

DANIEL CARSON BRUECHERT

(Under the Direction of Wayde Brown)

ABSTRACT

Frank Lloyd Wright and the automobile appear on the American landscape at approximately the same time. Wright's work and his ideas show the importance he placed on the car and vision of an expanded roll in society. This thesis explores how Wright's architectural designs were impacted and influenced by the rise of the automobile. As a historic preservation thesis, it will also evaluate how the auto related components of these designs have stood up to almost a century of use and the changed role of automobiles in America. Finally, this thesis will try to determine the level of importance placed on preserving the automotive aspect of Wright's work.

INDEX WORDS: Frank Lloyd Wright, Architecture, Car Culture.

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CHAPTER 1

Introduction

Frank Lloyd Wright and the automobile appear on the American Landscape at approximately the same time. Throughout his career, Wright's work and ideas show the importance he placed on the car and his vision of its expanded role in society. But in what ways were his designs impacted by the rise of the automobile? Consequently, how have these designs stood up functionally to the expanded role of cars in American Society? Finally, what importance has been placed on preserving the automotive aspects of Wright's designs?

This thesis will try to answer these questions by evaluating the role that the automobile had in Wright's own life and his expectations for its expanded use. First, a study of the cars Wright owned will offer some insight as to what he believed an automobile says about its owner. Second, as residential buildings make up the majority of his work, this thesis will explore his innovations and designs for residential architecture. It will focus on the works that pre-date the Model-T, when automobiles were still a luxury in America. Third, Wright's proposed city planning projects are examined to determine his vision for fully integrating the automobile into the landscape. Fourth, this thesis will review and assess the buildings Wright designed specifically for the automobile or to take advantage of its more widespread use. Finally, an analysis of the preservation of residential buildings, with a specific focus on house museums, shows the perceived importance placed on the role of car culture in these designs.

Born in 1867, Frank Lloyd Wright's career spanned seven decades, encompassing some 500 projects and more than 1000 designs. Wright's mother, Anna Lloyd Jones, believed her son would be an architect and raised him to become one. Wright remembers the walls of his childhood bedroom covered with images of some of the world's great buildings including Notre Dame Cathedral and the Hagia Sofia. Wright also credited the Froebel blocks[1] he played with for helping him to better understand spatial relationships and structure within nature. After two semesters at the University of Wisconsin Wright leaves Wisconsin for Chicago and begins his apprenticeship with Joseph Silsbee, an architect who designed mainly in the Shingle Style. In 1887 Wright began his second apprenticeship with the firm of Adler and Sullivan, working on many of the firm's commercial projects including the Chicago Auditorium. After six years of work Sullivan discovered that Wright had been designing homes outside of the firm and, feeling betrayed, fired Wright. This may have been a blessing for Wright, who began his own firm the same year, operating out of a downtown office and his Oak Park, IL home. Much of the rest of Wright's career focused on designs that were aimed at creating a distinct American Architecture.

Frank Lloyd Wright's early career paralleled the development of the automobile in the United States. Many of his clients, were young entrepreneurs, some were even involved in the auto industry including clients like Frederick Robie and Burton Westcott. These clients had needs and desires beyond those of the typical architectural commission of the day and an architectural innovator, like Wright, was an ideal match.

[1] Froebel Blocks were the creation of the German education pioneer, Frederick Froebel, who is also credited for creating Kindergarten in the 1830s. The geometrically shaped blocks were to be used by the children to build and design in the belief that they would gain a better understanding of beauty and harmony in addition to basic math and geometry.

These clients also had the means to pay for the luxury a Wright house would offer. These clients' desires required innovations from their architect to better respond to technological requirements associated with integrating the automobile into their daily lives.

Through an evaluation of Wright's designs to accommodate automobiles, and the autos he owned, it is possible to understand the importance the car had on Frank Lloyd Wright's vision for an American Architecture. These buildings range from homes with stables to industrial complexes to buildings specifically designed to use the car in new ways. Some of these buildings designed with the car in mind are quickly approaching their centennial and an appraisal of their current utility and preservation is long past due.

Additionally, the city planning projects Wright proposed should be evaluated as part of his vision for the full integration of the automobile into American society, something which has long-since occurred. Much of what Wright designed from the 1930s on was done so within the context of his proposed city, Broadacre City. To evaluate the architecture of Wright's last three decades without a further understanding of what Wright thought the new American City should look like does not present a full picture.

Automotive History

When exactly the automobile was invented is still being debated. It largely depends on exactly what the definition of an automobile is; and to a lesser degree an element of global politics. Depending on politics and how wide the definition of the automobile is, the first automobile was introduced in France in 1868 or in Germany in

1885. The history in the United States is better documented. The first gasoline powered automobile was run in Springfield, Massachusetts in 1893.[2] During this time virtually every automobile was created as a one-of-a-kind design by an industrial-minded individual. Cars were a gentleman's pursuit and with mechanically un-reliable cars and bad roads, automobiles were more of a diversion then a true means of transportation. Ransom Olds, who started his company producing steam powered vehicles, established the first mass produced automotive company in America in 1899, the Olds Motor Vehicle Company of Detroit, later Oldsmobile.

Henry Ford, America's most famous automobile innovator, designed his first car, the Quadracycle, in 1896. Three years later he started his first auto manufacturing company, the Detroit Automobile Company. The company dissolved in 1901, but in 1903 Ford established the Ford Motor Company. The first car was shipped in July of that year.

It wasn't until 1913, with the perfection of the moveable assembly line, aided by the architectural designs of architect Albert Kahn that Ford was able market the Model-T to the middle class. From 1908 to 1927 the Ford Motor Company produced 15 million "Tin Lizzies," as the Model-T was known.[3] Other American automotive companies followed in Ford's footsteps to create an effective means of production and cars that were widely available to the public.

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[2] Library of Congress, *Who Invented the Automobile*(Library of Congress, 2004, accessed 2006); available from http://www.loc.gov/rr/scitech/mysteries/auto.html.
[3] Ford Motor Company, *Ford Motor Company: History*(2006, accessed 2006); available from http://www.ford.com/en/heritage/history/default.htm.

It was in 1901 that Frank Lloyd Wright began to expound on the importance of the technological advances of the last half century and how they could be truthfully applied to architecture. Wright believed in employment of "the Machine" as the distinction between the art of the new and the art of old.[4] While not speaking in the same terms, Eugene Emmanuel Violet-Le-Duc was also a proponent of integrating new technologies into his designs. The use of the machine, in this case, was focused on employing new technologies and materials. Integrating new machines and industries had a lasting impact on Wright's designs; and his designs had a lasting impact on American Architectural Heritage.

Wright believed, "Complete mobilization of our American people is one natural asset of the machine, fast approaching."[5] The car has changed the way man sees where he can go and what he can do,

> As a consequence of the motor car and collateral inventions, the horizon of the individual has immeasurably widened. It is significant that not only have space-values entirely changed with the new standard by that the new sense of spacing based upon the man in his motor car is now at work in spite of him upon the man himself… it is this new view of the horizon that gives him the desire to go. If he has the means to go he goes. And he has the means- his car. His horizon keeps widening as he goes. The physical release is at work upon character.[6]

[4] Wright, Frank Lloyd, "Truth Against the World." John Wiley & Sons, New York, 1987, pg 93. (edited by Patrick J. Meehan)
[5] Frank Lloyd Wright, *An Autobiography* (San Francisco: Pomegranate, 1943). 329.
[6] Frank Lloyd Wright, *The Industrial Revolution Runs Away* (New York: Horizon Press, 1969).

This is not the notion of "Go West Young Man!" but rather "Go wherever you please." There is freedom and a release to make the choices you desire; and very little holding the individual back with the car.

The only restriction on this freedom is the traffic problem. Wright saw the gridiron street pattern, constructed for the horse and buggy that had become a source of economic waste and a physical danger to motorists and pedestrians alike. This pattern, created by planners, has prohibited any type of organic development within the city and for that reason the city must be abandoned.[7] The response to the traffic mess was creating smaller centers within the city. Wright claimed that this was not a solution as growth would make these smaller centers the large messes that the abandoned centers had been. "Decentralization" is the term Wright favored and believed that this was the proper manner to alleviate many of the ills of society. Through his design for "Broadacre City" Wright tried to illustrate what his vision of an ideal city could be. While Broadacre City, as Wright envisioned it, was never constructed what has the impact of his philosophy of decentralization had on the American Landscape?

[7] Wright, *An Autobiography*, 322, 323.

CHAPTER 2

Wright's Own Cars and His Feelings About Them

Figure 1: Wright outside of Taliesin with a 1957 Mercedes sedan and a Gull Wing Roadster

The automobile was more than transportation for Frank Lloyd Wright, as is the case for most car owners. It was a status symbol, a source of personal pride, and an advertisement of good taste in design. A quality designed car told potential clients, "with taste enough for this car, why should I not design your building?" It offered a sense of freedom, and was eventually an escape from domestic life.

His first car was a yellow 1910 Stoddard Dayton sport roadster with body modification designed by Wright. The car was a "three-seater," where the driver and one passenger could sit in the front, with room for one additional passenger in the rear. When it arrived in the fall of 1909 it was one of only three cars in the Chicago suburb of Oak Park, where Wright's Home and Studio are located. Wright's son, John Lloyd Wright recalls the residents of Oak Park came to refer to the car as the "Yellow Devil" for its

speed and the maniacal manner it was driven.[8] His father was a notoriously bad driver; whether it was because he was reckless, careless, or just taken with going fast is unclear, but both John Lloyd Wright and Edgar Tafel, one of the members of the Fellowship, confirm that riding with Wright behind the wheel was an adventure. Wright's son recalls, with pride, that the speed limit in Chicago was only twenty-five miles an hour and the Stoddard could reach sixty.[9]

John Lloyd Wright also wondered in his book *My Father, Who Is On Earth* whether or not the car had anything to do with his father leaving the family. He wrote that it "added new values to his [father's] life;" and wondered if the car released some personal value that his domestic life had repressed. It is possible that this new-found freedom led him to begin an affair with a much younger woman and eventually leave his family in Oak Park for Europe with the 1910 release of the Wasmuth Portfolio. The Portfolio released as the, *Ausgeführte Bauten*, brought Wright's work to a European audience long before Wright had any international commissions.

During the teens and twenties Wright's practice flourished as did his own wealth. He owned a number of cars that were as progressive as his own architecture. He owned a Knox Roadster, a Cadillac, a Phaeton, a Packard, a Cord, a couple of Dodges, two Lincoln Continentals, and a Ford convertible all before the beginning of the Second World War.[10]

One of Wright's favorite cars even ended up with its own section in his Autobiography, the Auburn Cord. Wright wrote that the Cord was "the nearest thing to a well-designed car I had ever seen outside Europe. And right here the feeling comes to

[8] John Lloyd Wright, *My Father, Who Is on Earth* (New York: G. P. Putnam's Sons, 1946). Pg 51.
[9] Ibid, 51.
[10] Frank Lloyd Wright Foundation, "Frank Lloyd Wright's Automobiles," *Quarterly* 8, no. 2 (1997).

me that the Cord should be heroic in this autobiography somewhere."[11] Wright also appreciated the metaphor of a front-wheel drive engine, pulling rather then pushing. Wright's hope was that the car was pulling the rest of the American auto industry up to its quality. But the design was what was most appealing to Wright, it was "the best design from my 'streamline' standpoint ever put on the market… and it certainly looked becoming to my houses."[12]

Figure 2: Wright's 1929 Cord in his trademark Cherokee Red.[13]

In the 1930s Wright began to assign the driving duties to others, many of whom were terrified as passengers. At this point, Wright was approaching seventy years old and driving may have become more of a chore then a pleasure. In 1937, Wright was in his first, and by his own account, only accident. He was driving with a few members of

[11] Wright, *Autobiography*, 411.
[12] Ibid, 411.
[13] Photo, 2004, taken at the Auburn Cord Dusenberg Museum; Auburn, Indiana. http://www.nashnut.com/archives/cat_auburn_cord_dusenberg_museum_2004.html,

the Fellowship[14] to get groceries from a local wholesaler. Wright was passing a flower truck on the left at the same time the other driver tried to make a left turn; "over and over went the Madison florist, three times, and he was well on the way to the fourth turnover before the truck finally collapsed in a heap."[15] The other driver was unharmed, but his truck was in very bad shape. While Wright's Cord was not badly damaged it was at this time that he stopped driving altogether. And while he was not at the wheel, this did not mean that he was not in control. Edgar Tafel talks of a number of trips driving for Wright where he was encouraged to keep the car over 100 miles-per-hour.

Figure 3: Wright's accident with Frost Coles in 1937.

Just because he was no longer driving cars did not mean that he was not still collecting them. In the fall of 1939 Lincoln released the first Continental. Wright saw the model at the Chicago auto show and placed an order for the cabriolet model. The car was stock, with the exception of the Cherokee Red paint job Wright ordered, as it was

[14] Wright formally established a program of "Apprentices in Residence" at Taliesin in 1932. The members of the Taliesin Fellowship paid tuition and were to learn from Wright and learn by a "direct work-experience." The goal of the Fellowship was two-fold; first, it would provide Wright with additional income, as building projects were few during the Depression for Wright; and the Fellowship would provide Wright with the opportunity to have like minded individuals assist him in future architectural projects.
[15] Wright, *Autobiography, 412*.

becoming his signature color. This car has achieved a certain level of fame not because of its initial construction, but because of the way Wright modified it after a significant accident. After an argument with Wright his son-in-law, Wesley Peters, took the car and crashed it into a ditch. Peters was unharmed, but the car had massive structural damage. Rather than scrap the car or have the body panels replaced, Wright elected to redesign much of the car. The most dramatic change he made was to the roof structure with the addition of a rounded steel top over the back half. This transformed the car from a cabriolet, to more of a towncar. The steel top added to the rear had no rear window and half-round side windows. Because there was no rear window, side mirrors were added to the exterior of the car. Wright also widened and lowered the back seat to give the rear passengers a more relaxed seating arrangement. This would have suited Wright well, as it would have been him in the rear seat of this vehicle. The windshield was also lowered, which made for a much sleeker appearance. In order to protect the drivers from the elements a snap-on leather top could be installed from the steel top to the windshield. Wright's drivers commented that their heads often rubbed on the top whenever it was in use. This car became one of Wright's favorites and was often the car that drove Wright annually from Taliesin in Spring Green, Wisconsin to Taliesin West in Scottsdale, Arizona.[16]

[16] Cole, David Cole, "The Lincoln Continentals," *Quarterly* 8, no. 2 (1997).

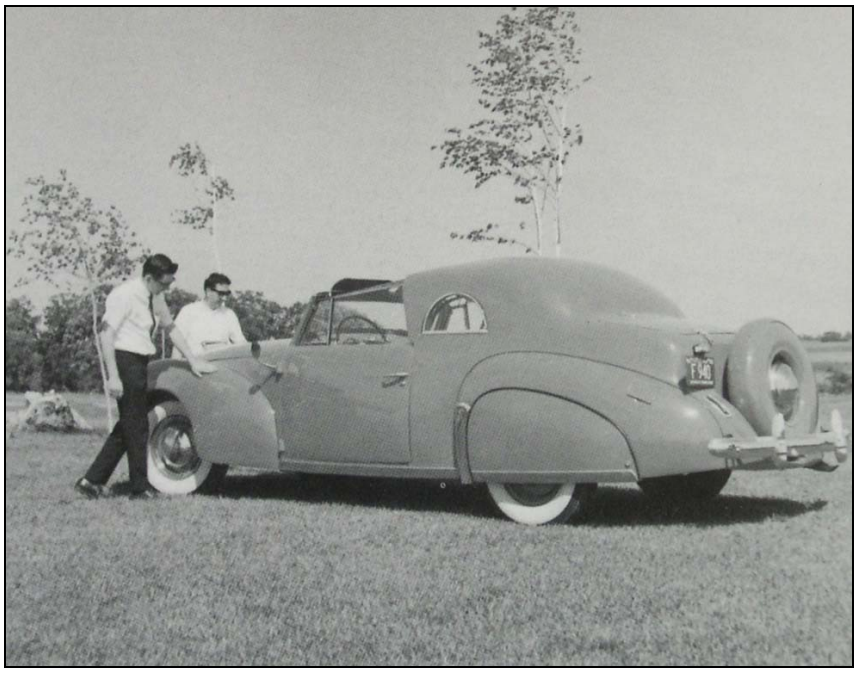

Figure 4: The 1940 Lincoln Continental after Wright's Modifications

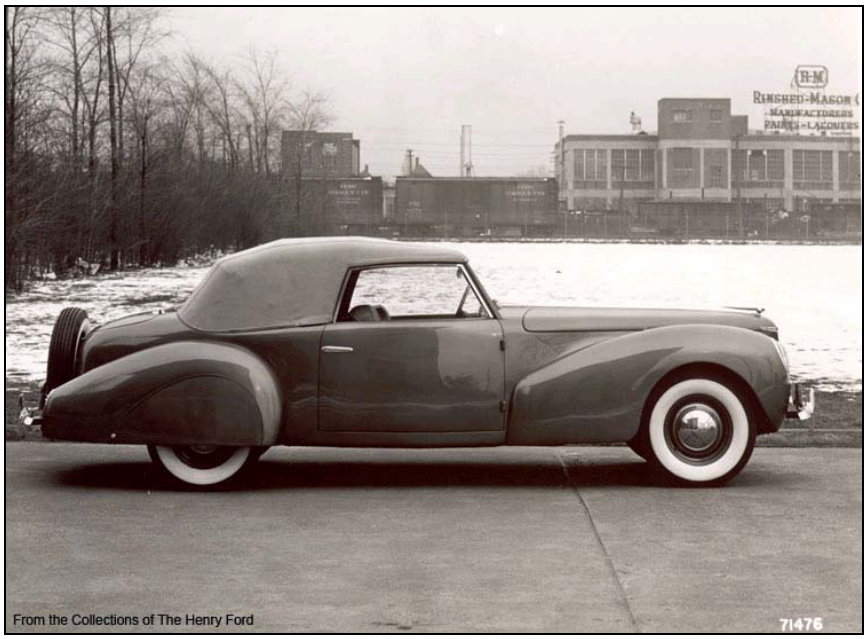

Figure 5: A stock 1940 Lincoln Continental Cabriolet

A year of ownership convinced Wright that the Continental was the car for him; when he purchased a 1941 Continental Coup. This car was also ordered in Cherokee Red. Over the years Wright had some body modifications done to the car, but nothing as

dramatic as what he did to the 1940 Continental. He added separate rear turn signals and wider lower body moldings, but the real changes were done to the interior. Wright had the entire interior redone in Cherokee Red; a job that was reported to have cost more than $2,000, a significant sum of money in 1940. Wright continued to use both of the Lincoln Continentals until his death in 1959.[17]

After the Second World War, with his career again flourishing, Wright continued collecting cars including a Bentley, a Riley, a Mercedes, a number of Crosleys, a Hillman, an Acedes, and a Jaguar.[18] Wright's cars had gone from all American to exclusively European designs. By 1957 Wright had become very critical of American auto design; this being the era of big fins on even bigger cars. He issued this scathing critique while speaking before the Michigan Society of Architects at Ford Auditorium in Detroit, "If ever there was an evidence of bad design, they are the present motorcars. I think in my life I have never seen such an ignorance of the nature of anything existing carried so far."[19] As he saw it, the relationship between architecture and automobile design was one and the same, "The car is architecture…I am interested in buildings, in the quiet beauty of environment. You drive one of these things and it shrieks to heaven and it gives the house the back of the hand. It has no respect for anything."[20]

After the speech the audience asks some questions, including, "What type of car do you drive?" He acknowledged that he did not own an American car rather; he drove a Mercedes that was given to him by Max Hoffman, the distributor of Mercedes in

[17]Cole.
[18] Frank Lloyd Wright Foundation, 9.
[19] Frank Lloyd Wright, "Frank Lloyd Wright Townhall Lecture, Ford Auditorium, Detroit, October 21, 1957," *Michigan Society of Architects Monthly Bulletin* 31 (1957). 25.
[20] Ibid., 27.

America, after completing the design and construction of a showroom for his dealership in New York.

Wright's Car Designs

Wright's modification of his Lincoln Continentals was not his only foray into automotive design. In 1920 Wright developed the design for an automobile with a cantilevered top. The car is considerably boxy and Wright does not include much in the way of mechanical specifications. The real innovation is the use of a cantilevered top, which allows for an unobstructed view for the driver and removes any side curtains. It is possible that this design was nothing more then an exercise, because Wright did not revisit the idea.

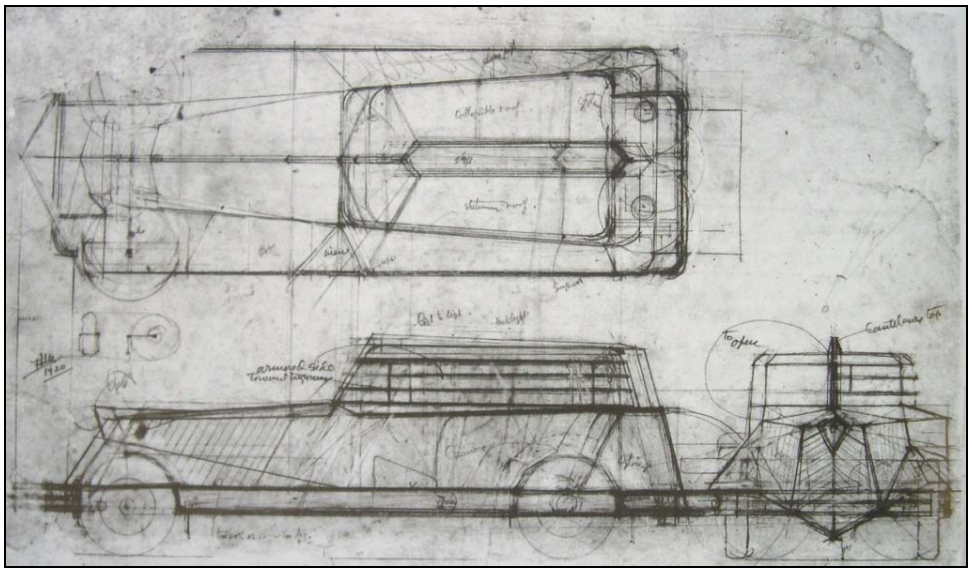

Figure 6: Automobile with a Cantilevered top

Inspired by the families' International Harvester tractor, Wright designed a vehicle he described as a "road machine." The vehicle was intended to be used more as a taxi, than a family car. The road machine had two large wheels in the rear and one small

wheel in the front for steering. The driver would sit high in the rear, in a separate compartment, and passengers would sit in one of three seats in the front. The goal of this vehicle was to have more flexibility in traffic; and while Wright toyed with the design late in his life. The design is often seen in some of Wright's more fanciful drawings for Broadacre City.

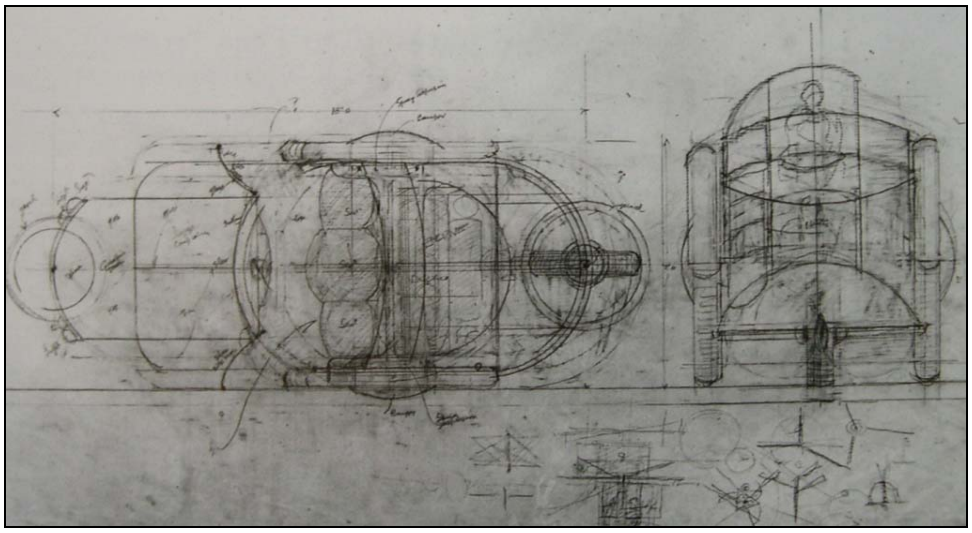

Figure 7: The Road Machine

CHAPTER 3

Residential Architecture

In Wright's earliest designs, cars were not anything to be concerned with. City dwellers may have had a horse, if they were wealthy. To be able to hire an architect to design a home meant some thing about the social status of the family involved. Most of Wright's clients were from the upper-middle class, they were better educated then most of the population, and had an interest, at some level, in the arts.[21]

The Robie House

In 1908 Wright began the design for a house for Frederick Robie and his family. Robie, who was working for his father in the sewing machine business, was dabbling in his own business as well, namely the bicycle and automobile industries. By 1906 Robie had even developed his own experimental car, the Robie Cycle Car.[22] For Wright, Robie would was an ideal client; he was young, a progressive thinker, and he knew what he wanted in a house. Wright described their early meetings as Robie talking about what he wanted in mechanical terms and Wright being able to interpret them architecturally.

The building that Wright constructed for Robie is considered the ultimate expression of the Prairie style. The house was constructed low to the ground with the horizontal nature of the prairie emphasized. Wright described the building in *Ausgeführte Bauten* as:

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[21] Eugene R Streich, "An Original-Owner Interview Survey of Frank Lloyd Wright's Residential Architecture," in *Writings on Wright*, ed. H. Allen Brooks (Cambridge, MA: MIT Press, 1972), 38, 39.
[22] Hoffman, Donald, "Frank Lloyd Wright's Robie House." Dover Publications, 1984, New York, p. 3.

A city dwelling with a south front, built of slender brown bricks, with stone trimmings. Roofs tiled with copper cornices.

A single room type, similar to Tomek, Coonley and Thomas houses, well open to the south, with balcony and enclosed garden. Sleeping-rooms added in belvedere. Garage connection to house, with servants-rooms over. No excavation except for heater and coal.

A highly developed working out of organic relation between exterior and interior-clean, sweeping lines and low proportions preserving openness and airiness of feature and arrangement throughout.

Because of the long narrow urban lot size, Wright could not use his typical pinwheel pattern. The metaphor most commonly used to describe the Robie House is that of two ships passing one another. The two rectangular wings are slightly off-set with a central staircase. The Germans called this Dampfer or "steamship" architecture. One of the wings contained all of the living space for the family, with the other wing containing the servants' quarters and kitchen above the attached garage.

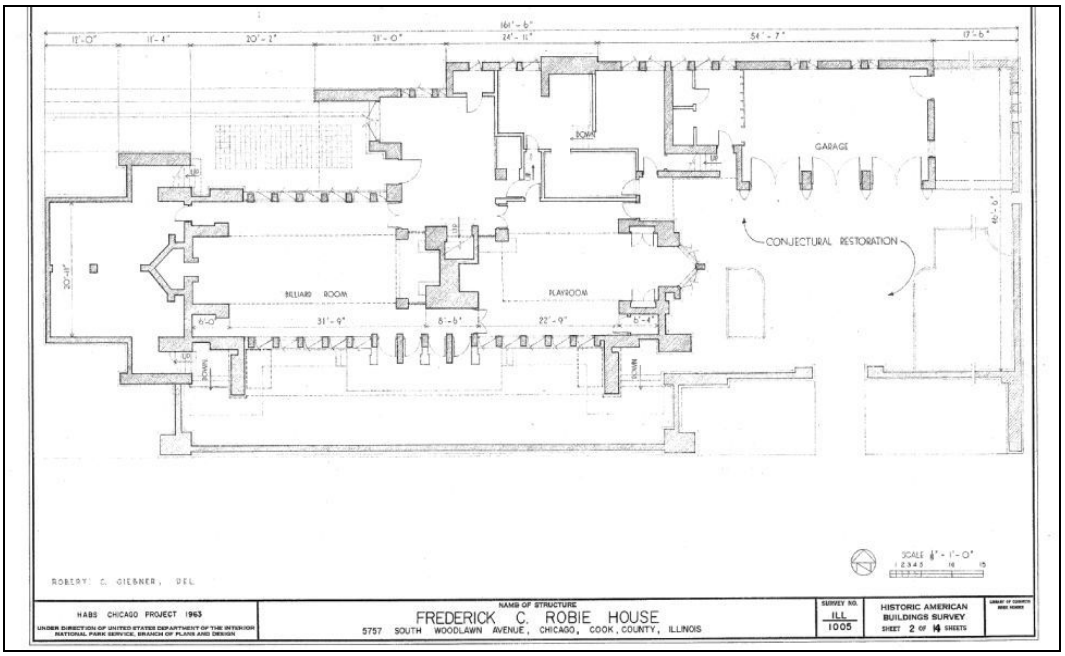

Figure 8: The ground floor of the Robie House

The house is constructed using long narrow Roman brick, with limestone balcony caps. The ground floor is hidden by a low garden wall. The second story has a balcony surrounding the living space with a wall of art glass allowing for maximum light with a high degree of privacy. Either end of the main wings of the house ends in a pointed form that is likened to the prow of a ship. A low-pitched hip roof extends 20 feet from the main mass of the building, emphasizing the horizontality of the building. Above the second floor is a small third story that houses the family's bedrooms. This area also has a low-pitched hip roof with the main chimney rising above.

It is due directly to Robie's interest in mechanical endeavors that Wright elected to use an attached garage, rather then the typical stable styled garage, to store Robie's Cars.[23] The Robie House brought the "garage inside the house" for the first time, as the earliest documented use of an attached garage. As a point of comparison Wright's

[23] Robie, Fred C., Jr., *Mr. Robie Knew What He Wanted,* Architectural forum 1958 Oct., v. 109, p. 127.

Martin House, a sprawling complex of five different buildings, completed in 1907 in Buffalo, New York, had only a stable for the families' horses.

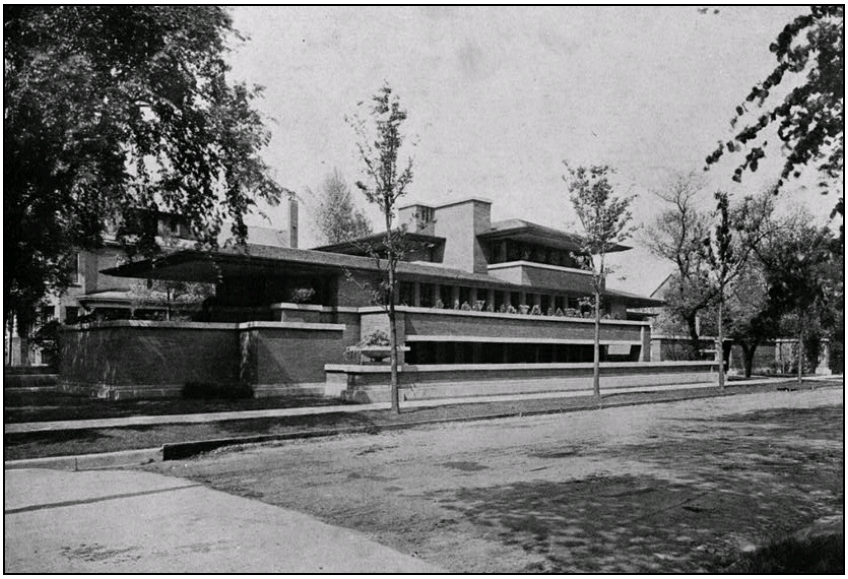

Figure 9: The Robie House, circa 1910

Usonian Homes

After World War II the United States experienced a construction boom on a scale the country had never seen. Tens of thousands of GI's were returning from Europe with the opportunity to purchase homes with very favorable mortgage rates. The houses constructed for these people were quickly constructed, and produced inexpensively; but upset Wright's design sensibilities; "To me such houses are stupid makeshifts, putting on some style or other, really having no integrity. Style *is* important. *A* style is not."[24] Wright insisted that the small home could be constructed with a simplified form, quickly and affordably.

Wright believed his creation of a Usonian form of architecture could be employed to construct the house cheaply while maintaining an organic aesthetic that was agreeable

[24] Wright, *An Autobiography*.

to Wright. Virtually all of the houses Wright designs after the SC Johnson Building are Usonian homes.

Wright listed nine building elements that could be eliminated from the house to reduce cost. Along with removing visible roofs and calling interior trim unnecessary Wright proposes the eradication of the garage and is credited with creating the term "carport." "A carport will do, with liberal overhead shelter and walls on two sides. Detroit still has the livery-stable mind. It believes that the car is a horse and must be stabled."[25] The carport, in most of its forms, could be expanded to accommodate more then one car if necessary.

As opposed to being disjointed, Wright believes that the "inevitable car" will seem a part of the whole house. The form of the carport does change through the development of the Usonian house. In its earliest form it is a simple cantilever, like in the Jacobs House in Madison, Wisconsin (1936).

[25] *Autobiography*, 491.

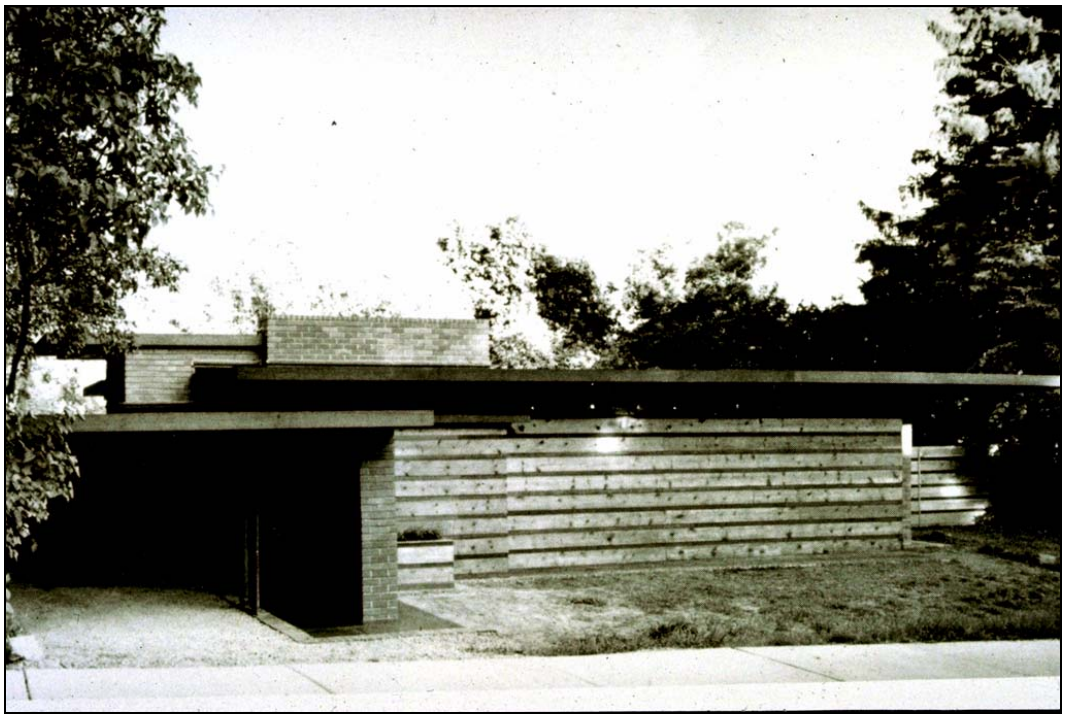

Figure 10: The Herbert Jacobs House, with carport visible to the left

In later Usonian homes Wright would employ different methods of integrating the carport into the house, like in Broad Margin, a 1956 Usonian home in Greenville, South Carolina.

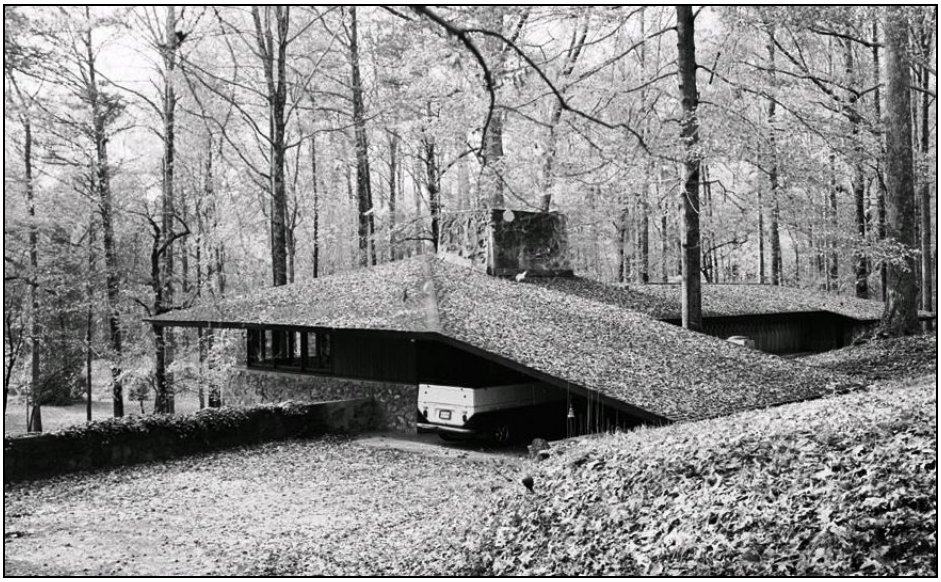

Figure 11: Broad Margin, one of Wright's last Usonian Homes

While significantly more opulent then the standard Usonian homes, Fallingwater was designed with many of the same construction ideals, most notably a flat roof, no gutters, and the inclusion of a carport. In 1939 Wright designed Fallingwater, a building the American Institute of Architects called "the best all-time work of architecture in America." The house was designed as a weekend and vacation home for the Kauffman family of Pittsburgh, Pennsylvania. A weekend house in the Western Pennsylvania mountains was not possible until the decent roads and a reliable automobile could be utilized.

The house was constructed over a waterfall along Bear Run, a small creek. The house was constructed in three cantilevers extending over the waterfall. The house is constructed out of native stone, glass, and concrete; all materials that were suitable in Usonian construction.

Wright decided to do away with the garage for auto storage and opted for a carport instead. The cars would be sheltered from the elements, but would no longer be completely shut out of the elements. Rather than integrate the carport into the main house, Wright elected to place the carport in the guest house, located up the hill in a separate building. The guest house is a two story building that was given the same exterior treatment as the main building. There was a four-bay carport included in the guest house.

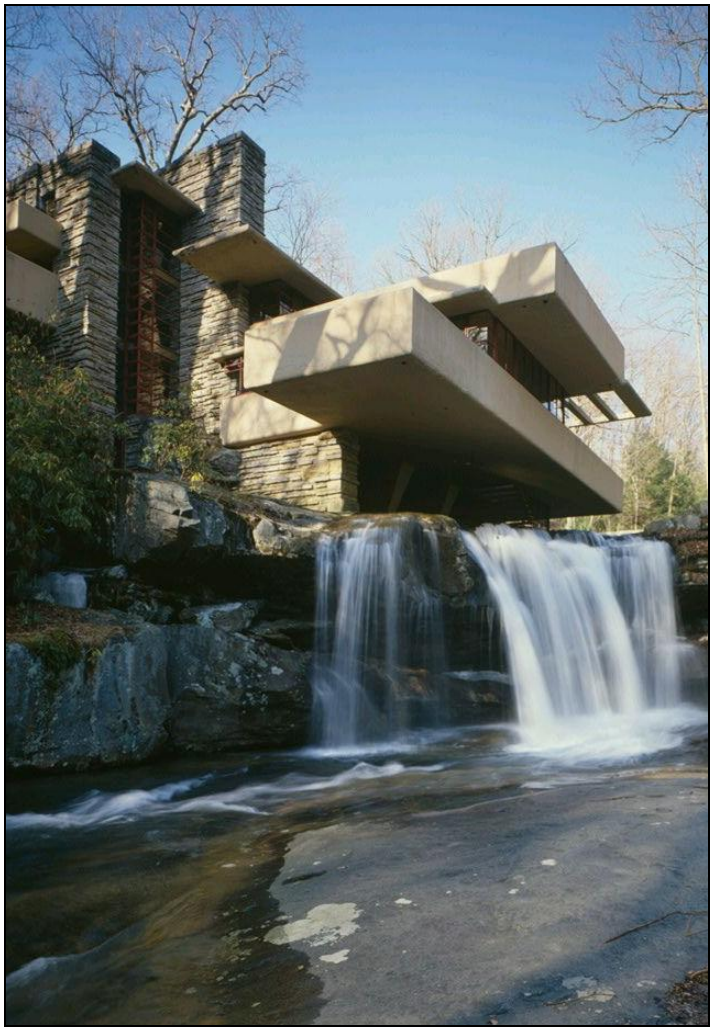

Figure 12: The Kaufmann’s weekend home, Fallingwater

CHAPTER 4

City Planning for the Automotive Age

Bitter Root, Montana

Wright's first attempt at city planning bears mentioning, not for what it included or its level of completion, but the lack of influence the automobile had. In 1908, the Montana's Bitter Root Valley Irrigation Company commissioned Wright to design a collection of houses surrounding a lodge for a group of university professors from the University of Chicago who were interested in owning and operating orchards in a newly irrigated section of the Bitter Root Valley. This land would serve as an additional source of income for the professors; and would offer them the opportunity to pursue any number of outdoor activities. Additionally, Wright was commissioned to design a town along the railroad tracks that would help to establish a more permanent settlement in the Valley.

The plan Wright developed is most notable the fact that it included almost everything that he would come to rail against later in his career. It was designed as a gridiron pattern with two major axes. The east-west axis was the rail line running into the newly formed city. The north-south axis terminated with a hotel at the north end of town. At the intersection of the major axes was the train station. The train station was the nucleus for this fledgling city. Without it the city would never have been able to exist. The city plan is otherwise nothing especially innovative. The commercial buildings were arranged in square blocks with one entrance to an interior courtyard for deliveries.

The plan for Bitter Root was never realized as the company fell deep into debt in the 1910s and went into foreclosure. The two buildings in the city Wright designed and saw through to construction were the hotel and the company office. Both of these buildings were abandoned and subsequently destroyed by fire. Wright's plan for Bitter Root is an interesting contrast to his later plans, because it was developed at a time when the automobile made traveling large distances slow and difficult. His later forays into city planning are all reliant on the widespread use of the automobile and employ a much lower density, if for no other reason than they can.

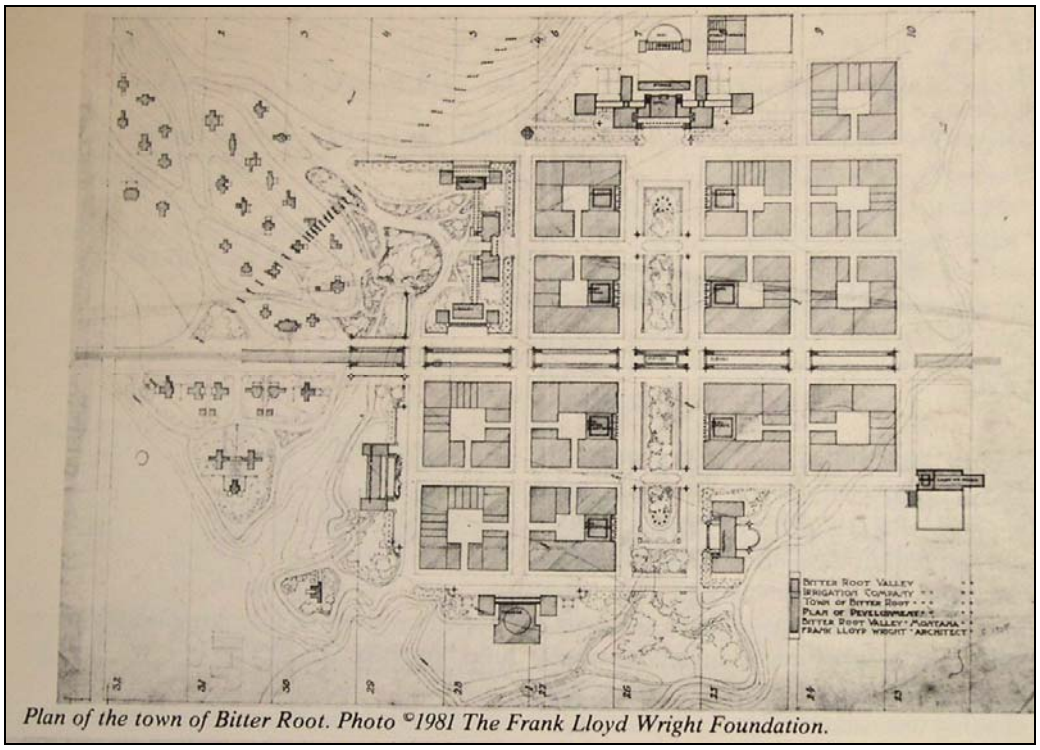

Figure 12: Plan for the town of Bitter Root, MO

Broadacre City

During the Great Depression Wright saw his commissions disappear. Between 1929 and 1936 he only completed two buildings, both were private residences, which did carry large commissions.[26] This was a challenge and an opportunity for Wright; he started his fellowship, created a number of new ideas that he would employ in later projects, and experimented with many new concepts. It was during this time that he came up with the concept for the dendriform column, which would be employed in the S.C. Johnson administrative building, and the "taproot" that would create the foundation for the S.C. Johnson Research Tower.

Wright's view of the city changes dramatically with the addition of the automobile. In his vision man is "like a bird born in captivity, which finds the door opened. Soon he will learn that he can fly; and when he learns that he is free, he is gone."[27] It is this sense of freedom that will lead citizens away from the urban city to a place where they can be better citizens in better designed cities.

It was Wright's creation of a model city during that time which may have had a direct impact on the suburban landscape. Wright saw the city as the source of many of the ills of society that didn't offer individuals the opportunity to better themselves. In his vision the city was a repressive, shadowy, unhealthy location and if people had somewhere else to go they would happily abandon urban life.

In the past man needed cities for goods and services. Additionally, cities were necessary for monarchs to have most of their citizens centrally located as a way of

[26] Wright, *An Autobiography*, 469.
[27] Wright, *The Industrial Revolution Runs Away*.

controlling them. In those days it worked, but with the evolution of technology and the social evolution to a democratic form of government cities were obsolete.

Wright was not interested in what the city was. His vision was what the city would become if allowed to evolve properly: "a general decentralization and architectural reintegration of all units into one fabric."[28] Wright goes on to describe it as, "no mere back-to-the land idea but is, rather, a breaking down of the artificial divisions set up between urban and rural life. By a more intelligent use of our developed scientific powers we establish a practical way of life that will bring the arts, agriculture, and industry into a harmonious whole."[29]

Broadacre City was built on three inherent rights of man:

1. His social right to a direct medium of exchange in place of gold as a commodity: some form of social credit.
2. His social right to his place on the ground as he has had it in the sun and air: land to be held only by use and improvement.
3. His social right to the ideas by which and for which he lives: public ownership of invention and scientific discoveries that concern the life of the people.[30]

"In the City of Yesterday ground space was reckoned by the square foot. In the City of Tomorrow ground space will be reckoned by the acre: an acre to the family. This seems like a most minimum if we consider that if all the inhabitants of the world were to stand upright together they would scarcely occupy the island of Bermuda. And reflect

[28] Frank Lloyd Wright, "Broadacre City: A New Community Plan," *Architectural Record* 77 (1935): 243.
[29] Truth Against the World, pg 345.
[30] Wright, "Broadacre City: A New Community Plan," 245.

that in these United States there are more than 57 acres of land, each, for every man, woman and child within its borders."[31]

Imagine spacious landscaped highways, grade crossings eliminated, "bypassing" living areas, devoid of the already archaic telegraph and telephone poles and wires, free of blaring bill boards and obsolete construction. Imagine these great highways, safe in width and grade, bright with wayside flowers, cool with shade trees, joined at intervals with fields from which the safe, noiseless transport planes take off and land. Giant roads, themselves great architecture, pass public service stations, no longer eyesores, expanded to include all kinds of service and comfort. They unite and separate- separate and unite the series of diversified units, the farm units, the factory units, the roadside markets, the garden schools, the dwelling places (each on its acre of individually adorned and cultivated ground), the places for pleasure and leisure. And all of these units arranged and integrated so that each citizen of the future will have all forms of production, distribution, self-improvement, enjoyment, within a radius of a hundred and fifty miles of his home now easily and speedily available by means of his car or his plane. This integral whole composes the great city that I see embracing all of this country – the Broadacre City of Tomorrow.[32]

[31] Wright, *The Industrial Revolution Runs Away*, 93.
[32] Ibid., 95.

Figure 13: One of the four sections in the Broadacre City Model

As Wright sees it the Broadacre city could not be achieved without three advances in technology:

1. The automobile, as transportation
2. The radio and telephone, as communication
3. Standardized machine-shop production

Wright believes these inventions have already begun to build Broadacres, as they are not always compatible with dense "over-built" old cities.[33]

In order to make Broadacre City work properly a new social and commercial order would need to be established. Whether it was directly related to Wright's personal hardships or his own beliefs many of the proposed policies could be viewed as Socialist. The county would control almost all government functions, with the national government

[33] "Broadacre City, 244.

responsible only for national defense and control over natural resources. The plots would be owned individually by the residents, with the county determining the amount of land for which each family would be eligible for. The public utilities would be controlled by the county government, as would banking, police protection, and licensing and records.

Wright sees other parts of the social order changing through Broadacre City:

- Total employment
- Greater efficiency of goods
- The car, as one of the three essential pieces of technology, figures prominently into the layout of Broadacre.

Wright proposes a new superhighway that includes the integration of rail traffic, monorail, truck, and car traffic:

> So we have taken the railroad right-of-way… and we have made architecture out of its double-track, central speedway from coast to coast express traffic- a great triple- lane, two-way automobile highway, paralleled on either side by county highways connecting every half-mile with the countryside. Cars go one way only, in one portion; trucks go two ways lower down, one way in one portion but can take on or off every half-mile.[34]

[34] Truth Against the World, 351.

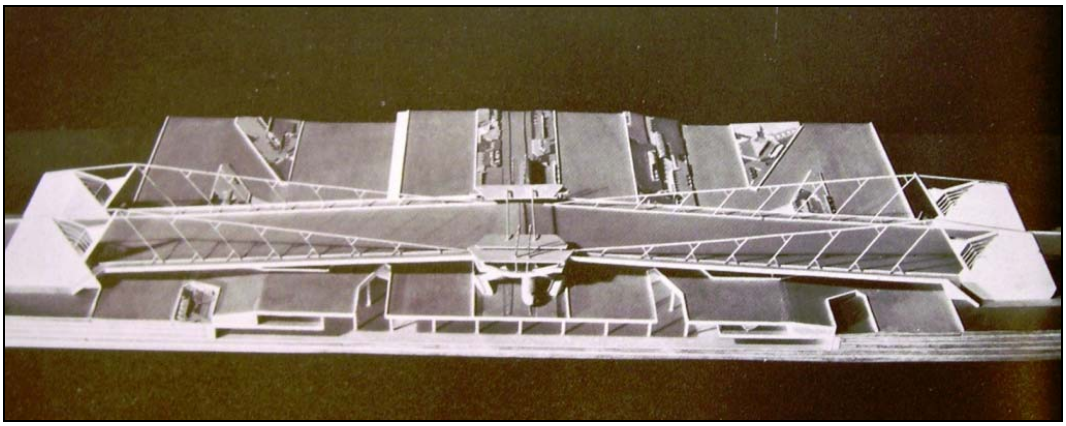

Figure 14: A section of Wright's model for a Superhighway

Wright goes on to propose that there be a storage space below the main arteries to be used for the storage of vital materials for building and fuel. This is a road that would have a total of six lanes of dedicated car traffic on the highway, four lanes of truck traffic, two rail lines, in addition to the two-lane county roads. A road this large seems like a very inefficient use of space, and it may be however, I-66 in suburban Washington, DC has an eight-lane highway, with two rail lines in the center, with a three-lane service drive on either side, totaling sixteen lanes of traffic.

These large roads would be works of architecture in themselves, "The Romans built great roads that remain to this day. But with reinforced concrete as we now practice it and with modern machine, we could build better and more lasting roads, and we could make them noble modern architecture. What greater, nobler, agent has culture or civilization than the safe, open road made beautiful?"[35]

Wright's proposal for Broadacre City sees a dramatic paradigm shift in his scale. His earlier designs were constructed with the scale of man in mind. The homes in Broadacre were to be designed for both man and the auto, as every home would have at

[35] Wright, Frank Lloyd, *The Industrial Revolution Runs Away*. Horizon Press, New York, 1969, p. 107.

least one. Houses were to be one-car, two-car, etc. but that focus changed the way houses were laid out for individuals, as well as how they were to be placed within their lot.[36]

Wright talked about Broadacre City, as he often spoke, in paradoxes; the city "would be nowhere, yet everywhere" is one example of how Wright could spin his vision to evade criticism. Even though Broadacres would have been agrarian and low in population density, they could include "tall buildings." The paradox here is that Broadacre City is supposed to be decentralized and yet this would have to be a central point and a draw for all of the population. Any skyscraper would have a higher occupancy than what Wright envisioned for all of the Broadacres.

The Broadacre City model was first displayed at Rockefeller Center in New York City in 1935 with a significant amount of press coverage, including articles written by Wright in both Architectural Forum and Architectural Record. After this initial flurry of attention, there was very little attention paid to the project. It is possible that with the success of the SC Johnson Administration building and Fallingwater, people began focusing on his constructed works rather then a hypothetical project, or that people took the model to be a literal interpretation of Broadacre and simply dismissed it as an impossible idea. Many of Wright's later drawings of Broadacre City are almost fanciful, with futuristic designs for helicopters and other transportation means. Wright was more interested in presenting what the city could look like some day in the future.

[36] Ibid, 351.

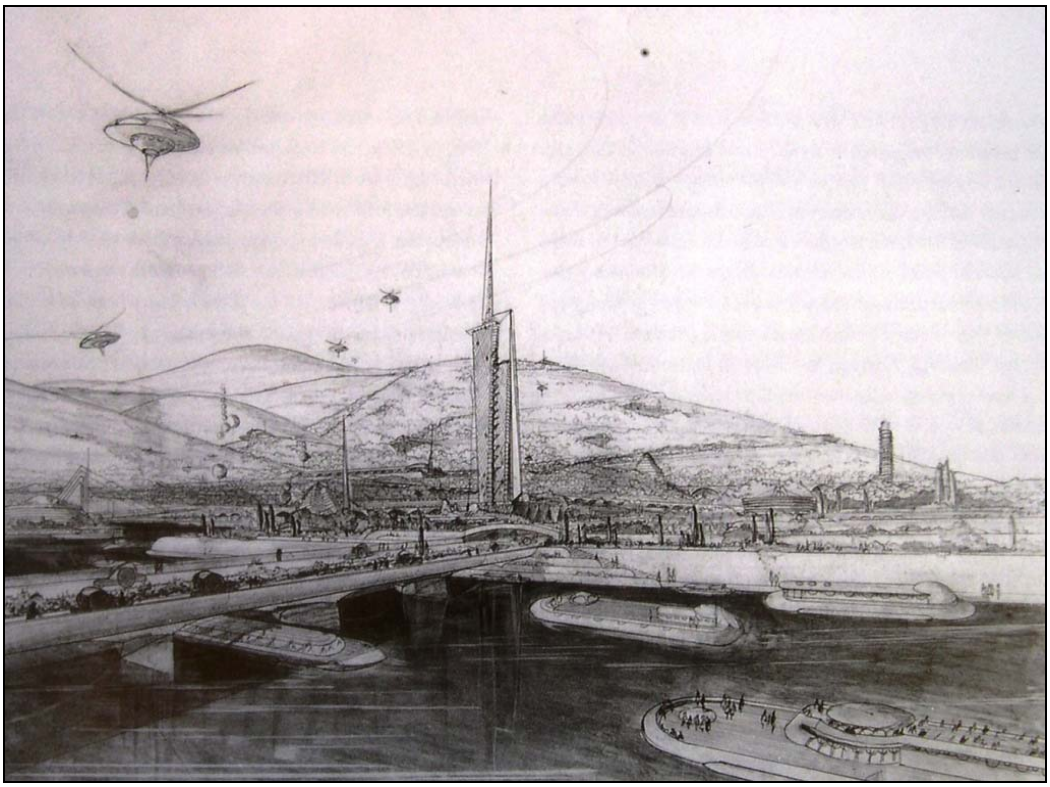

Figure 15: Wright's vision of Broadacre City

Further Residential Planning

Wright promoted the idea of a Broadacre inspired development for much of the remainder of his career. In 1937, Wright was approached by a group of seven professors from Michigan State College (now Michigan State University).

The 40 acre tract of land would include housing for each family and a centrally located "farm unit." Each of the lots includes some land that can be farmed by the families or act as additional acreage for the farm, including orchards and open fields. This development was not built, not because the participants grew sour, as was often the case, but because they could not get the required support to secure a loan. This group of buildings was to be constructed using Wright's Usonian style, not something more conventional. The government was wary because in their opinion, "the walls will not

support the roof; floor-heating is impractical; the unusual design makes subsequent sales a hazard."[37]

At the request of a Federal Housing Administrator, Wright submitted a proposal for a one hundred acre, one hundred unit housing development in Pittsfield, Massachusetts. Wright's solution to the development was to group four houses together each, sharing a common wall, grouped in a four-leaf clover shape. Each house would look onto its own yard and no house would look directly into another's yard. As these designs were all Usonian, the individual houses could be constructed with larger carports to accommodate multiple cars. Wright was very proud of the design he had created calling it, "one of the best shots in our locker;" but this design too would never exist beyond Wright's renderings. The proposed project had been limited to in-state architects and Wright was disqualified. The government did offer to buy the design, but Wright declined, fearing that his loss of control would lead to the creation of a distorted vision.[38]

While more closely related to the principles of Usonia, Wright did work with a group of auto industry workers in Detroit in 1947. The homes would all be constructed by the residents themselves, as a way of keeping cost low, using a berm construction method. The plan contained a combination of natural plantings and agricultural plantings. Wright claims the main reason that this development did not move forward was because of a lack of cooperation with the potential residents, but also notes that drainage and landscape were a problem with the development.[39]

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[37] Frank Lloyd Wright, "For the Second Time an Issue Devoted to the Work of Frank Lloyd Wright," *Architectural Forum* 88, no. 1 (1948): 79.
[38] Ibid.: 80, 81.
[39] Ibid.: 82, 83.

It is important to note that all of these developments were purely residential. None of the mixed uses proposed in Broadacre City were included in any of these design schemes. That is understandable in a design for only seven families, but a development of one hundred families could have certainly supported a school or some type of commerce. There is no indication as to why Wright chose to do this, perhaps he felt it would have been better to give each family an acre of land, over the opportunity to work and shop where they lived. It is also entirely likely that because the two larger proposals were made during World War II, that commerce was not high on Wright's list of priorities.

Wright made one final attempt to get the government to help him create Broadacre City in 1947 during the post World War II building boom. Wright circulated a petition that was signed by former members of the Bauhaus, Albert Einstein, Albert Kahn, Jane Adams, Georgia O'Keefe, and a number of other architects, social activists, and other intellectuals; proposing that he be given authority to construct a Broadacre City with the funding of the Federal Housing Authority. The Federal Government ignored the petition and the design has remained on the drawing board.

While little attention was paid to Broadacre City in the last half century, planners, especially the New Urbanists, look back to Broadacre as a source of many of the ills they are currently battling. Many of the new developments are constructed with a low density, similar to what Wright proposed. In these new developments the automobile is not a luxury, but a necessity. This is a level of significance that may be beyond what Wright had envisioned. And while low density is one of many elements Broadacre City and exurban sprawl share there are two differences. First, sprawl may be the very essence of

decentralization, but it is reliant on an urban core to provide jobs and services. Sprawl does not exist in the middle of nowhere. Rather, it begins on the fringes of most cities in America. It was only when this center was abandoned that new developments could become both city and country. A network of collection roads leading to a superhighway, feeding a major city was not what Wright was proposing. Communities that combine residential, industrial, commercial, and even agricultural are most closely linked with Broadacre City. These cities usually have a higher population density then what Wright proposed, but they are considered some of the most livable places. The reliance on the automobile is lessened in these communities, but American Society is more reliant on the car today then it has ever been.

It is entirely possible that America is still evolving toward something similar to Wright's Broadacres. More Americans are finding different ways to work. People are telecommuting or operating offices out of their own homes, rather then having an office in a central location, they are creating new ways to avoid the central locations.

CHAPTER 5

Buildings designed to accommodate cars

An Automobile Objective

Like many of Wright's more fanciful designs the Gordon Strong "Automobile Objective" is a design that exists only on paper. Commissioned in 1924 by business man Gordon Strong, the "automobile objective" was to serve as a commercial tourist attraction at Sugarloaf Mountain in Dickerson, Maryland; forty miles outside of Washington, DC. In Strong's analysis of prospective visitors there was one striking similarity, they would all be arriving via automobiles, which is why the first requirement for the objective was, "to provide maximum facility for motor access to and into the structure itself."[40] The building was also to add to the "element of thrill" and expand the enjoyment and beauty of the mountain itself.[41] When it was completed the automobile objective would contain open air terraces, covered galleries, enclosed rooms for picnickers, indoor and outdoor dance floors with a shared band shell; and bedrooms for guest and employees. Wright was also given leeway to add any elements that "may occur to you as desirable."

[40] Mark Reinberger, "The Sugarloaf Mountain Project and Frank Lloyd Wright's Vision of a New World," *The Journal of the Society of Architectural Historians* 43, no. 1 (1984): 38, 39.
[41] The Library of Congress, "Frank Lloyd Wright: Designs for an American Landscape, 1922-1932," (1996).

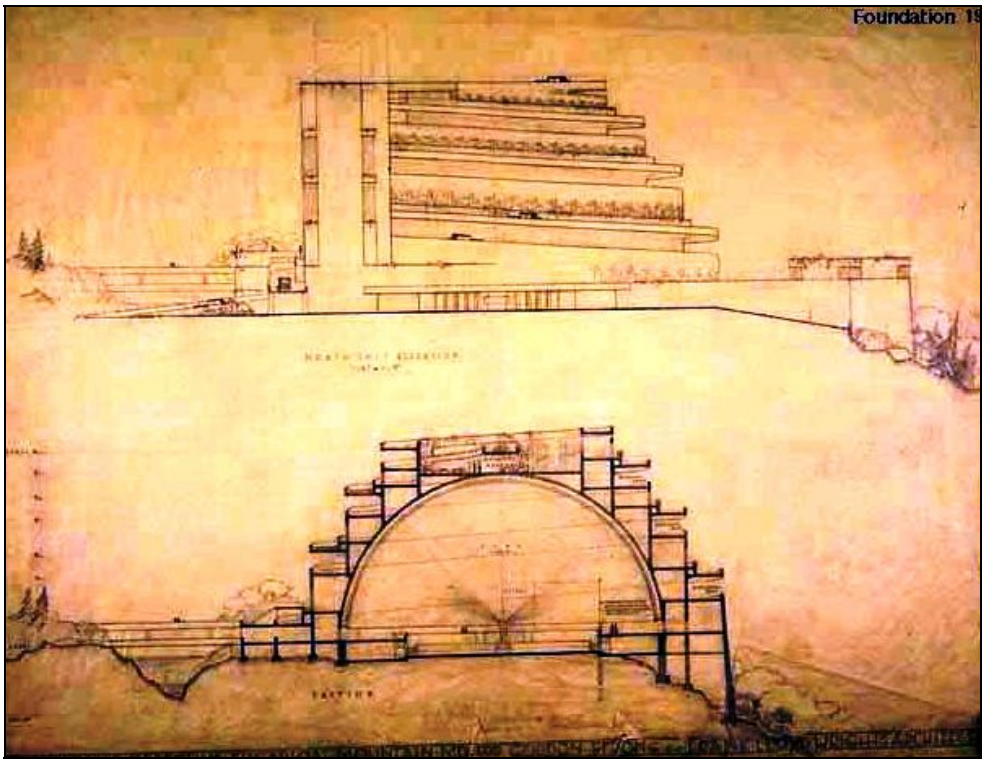

Figure 17: The Automobile Objective as Wright proposed it in 1925

Wright may have previously created the design concept, waiting for a project that could employ his design. The building would have the form of a circular ziggurat with a ramp that would enable cars to ascend the building from the exterior. Wright created a number of schemes that would allow for the uses Strong desired and place parking within the structure. It was at this time that Wright proposed using Luxfer Prism Glass as the ramp surface as a way of allowing maximum natural light into the interior. This would have been a dramatic new use for prismatic glass, but the concept was discarded in later plan proposals. Wright first considered a centrally placed theater, but then altered the design in favor of a installing a large domed planetarium. By making this change Wright eliminated all of the interior parking and required a change in the internal structure.

Strong mocked the design when he saw it, calling it the Tower of Babel.[42] Wright responded to Strong's criticism, trying to explain how he created his concept and the importance the auto had on the project and his desire to not have visitors, "leaving the automobile in which they both and now really live and have their beings , still 'parked' aside, - betrayed and abandoned as usual."[43] The split between Wright and Strong led to the abandonment of the project.

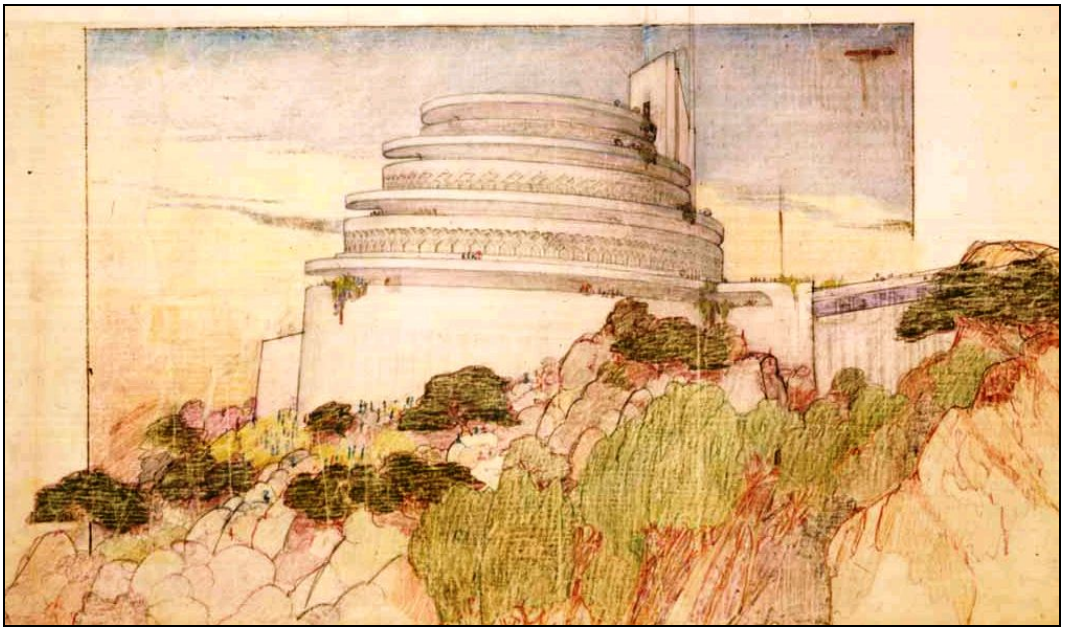

Figure 17: The Gordon Strong Automobile Objective

For Wright the entire concept of an "automobile objective" is about the car and that it should, "make a novel entertainment out of the machine in normal use." The double spiraling ramp that Wright proposed for the automobile objective was a design that had already become common in parking garages, and was used in the Fiat Factory in Turin, Italy.

[42] Reinberger: 46.
[43] Ibid.

Gordon Strong made no additional changes to Sugarloaf Mountain: he retired there in 1935, setting up a trust, Stronghold, Inc. which manages and maintains the mountain and surrounding natural area.[44]

While this design was never realized it did have an influence on a number of other Wright buildings including, his proposal for the Baghdad Opera House, the Pittsburgh Point Civic Center, and the Guggenheim Museum. The design for the Guggenheim, which was built thirty years later, takes the design for the Automobile Objective and turns it upside-down and inside-out.

A Gas Station

In his proposal for Broadacre City, Wright describes the roadside service station as a potential "embryo" for future city service distribution. The gas stations occupied the best lands both inside the city and outside of the city along the major routes and highways. It was because of their location along major transportation routes, Wright believed the gas station could be the impetus for decentralized development. The gas station could offer not just gasoline, but could be a "meeting place, restaurant, restroom, or whatever else will be needed."[45] Wright's original filling station dates from the 1920s, but wasn't fully developed until it was integrated into the Broadacre City project.

The major goal of this project was to raise the filling station, as a building type to Architecture, not merely a utilitarian design. The station was designed to have a large cantilevered roof extending over the pump area. There were multiple bays for both car washing and repair. Additionally, the gas station would have a restaurant, or at the very

[44] Stronghold Inc., "Sugarloaf Mountain," (2003).
[45] Wright, *An Autobiography*.328.

least, a lounge for customers which would offer motorists an opportunity to rest. The station was to be constructed using common building materials, concrete block and steel. An individual building would be more expensive than most contemporary gas stations, but Wright envisioned this as a mass produced building with cost coming down in large scale production. It was this reason that the design was relegated to paper for the better part of a quarter of a century.

In 1958, Wright found an owner who was willing to build a gas station using Wright's design.[46] Had Wright not designed the house for Ray Lindholm four years earlier, the service station would probably never have been constructed. Having worked with Wright earlier Lindholm decided he was willing to "experiment to see if a little beauty can't be incorporated in something as commonplace as a service station."[47] Mr. Lindholm was willing to take a chance on a forward design and bring the small town of Cloquet, Minnesota a Frank Lloyd Wright designed gas station.

The final design had to be modified from what Wright had originally proposed. Wright envisioned the gas being delivered from overhead pumps, which would free up the space below for freer vehicular movement; additionally it would reduce the chance that the pumps could be destroyed by careless driving. However, building codes in Minnesota required that all gasoline tanks be located below ground and Wright was forced to install traditional pumps.[48] The other modification was an obelisk Wright designed for the top of the roof which extend 60 feet in the air and illuminated the

[46] Robert C. Wheeler, "Frank Lloyd Wright Filling Station," *The Journal of the Society of Architectural Historians* 19, no. 4 (1960).175.
[47] Wheeler, 175.
[48] Wheeler 175.

"Phillips '66" logo. The total cost of the project was $75,000, about three times the cost of a typical gas station in the late 1950's.[49]

Figure 18: Lindholm Oil Company Service Station, Cloquet, MN

The gas station operated without any serious modification for forty-five years. The pumps were replaced, but the building retained its integrity. In 1985 the building was placed on the National Register of Historic Places for its architectural significance, but lacks a façade easement or any local designation that would ensure its survival. The building has sat vacant since 2003 and is currently for sale. It is a source of civic pride and the community has tried to find some way to ensure the building's survival. Some members of the community have suggested that the city should use it as an area welcome center. However, the city has said that they cannot raise the necessary $725,000 to purchase the property, not including the additional cost of restoration and repair from more than forty years of use and another three of abandonment.

The rear of the gas station has been expanded with a simple concrete block addition that includes a dry cleaners and the local Greyhound bus station. The addition is easily reversible, which is in keeping with the Secretary of the Interiors Standards for

[49] Rachael Adams, "Frank Lloyd Wright Gas Station for Sale," *Preservation*, Nov. 4, 2004 2003.

Rehabilitation. With the expanded number of uses taking place, the gas station is closer to Wright's vision of the multi-use locale he had proposed in Broadacre City.

Figure 19: The Lindholm Oil Service Station, 2001

The Gas Station That Wasn't Built

Wright designed another gas station, which was not built. However, in 2005 the New York State General Assembly made $100 million available for the restoration, reconstruction, and new construction of Wright designed buildings within the state. Along with the Martin House carriage house, a restoration of Graycliff, and the construction of a new boathouse, a filling station is being constructed as part of the Pierce Arrow Museum in Buffalo. The design for the gas station is much closer to Wright's original 1927 vision than what he constructed in Cloquet, Minnesota. This gas station won't be operational, but will be used to interpret both Wright and the influence the automobile has had on the American Landscape.[50]

[50] Russell Boniface, *Buffalo Spreads Its Restoration Wings: Frank Lloyd Wright's Works to Be Renovated, Reconstructed* [website] (AIA, March 24, 2006, accessed 2006); available from http://www.aia.org/aiarchitect/thisweek06/0324/0324buffalo.cfm.

Two areas of concern need to be considered in the construction of this building. First, the design was based on preliminary studies and the intent of the design has been interpreted by Patrick Mahoney, the lead architect on the project. For that reason, can the museum be considered a Frank Lloyd Wright building? This construction is also contradictory to the nature of Organic Architecture, whereby a design would be created with a specific site in mind. While it is true that this building was intended to be mass produced to fit anywhere in the country, the design was never finished and only inferences can direct the outcome of the design. The other issue is that this building is being billed as a Frank Lloyd Wright filling station, when in reality, it never was. The original intention of this building was to serve cars on America's roadsides, but it will not. Rather, it is a museum piece billed as something that it never was.

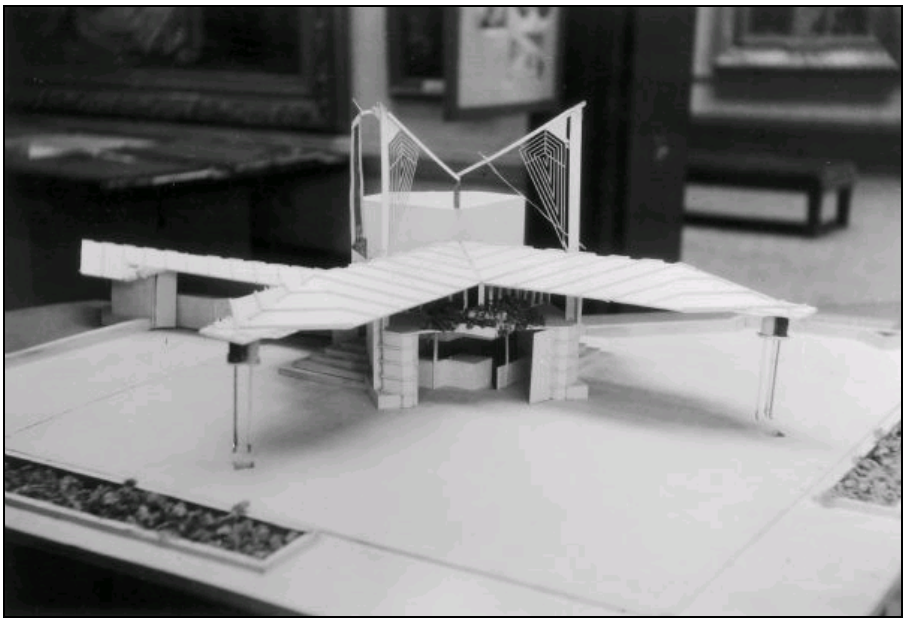

Figure 21: Wright's 1930 model gas station, a design very similar to the design of the 1927 version being constructed in Buffalo

SC Johnson Buildings

The buildings Wright designed for the SC Johnson company are seen as some of the most important of his career. In the mid 1930's the Johnson Company was looking to construct a new administrative headquarters for their rapidly growing company in Racine, Wisconsin (nine years later Wright would design a research building for the company). After an initial Beaux Arts plan was rejected the Johnson Company sought out Wright. This was during a time in Wright's career when commissions were few and far between, in fact, between 1929 and 1936 he completed only two projects, both of them residences that did not carry the large commissions associated with the institutional projects he had designed earlier. The opportunity to work on this project was a "release of pent up creative energy-the making of those plans. Ideas came tumbling up and out onto paper to be thrown back in heaps…But at once, I knew the scheme I wanted to try."[51]

The basic design for the Administration building was a hybrid of the Larkin building in Buffalo, New York and an un-built design Wright proposed for the Capital Journal newspaper in Salem, Oregon. The building's plan had a central workspace with management offices placed on levels above, overlooking the workroom. In his *Autobiography* Wright called the SC Johnson Administration building the "daughter of the Larkin building," designed on the same idea, but refined and much more feminine. Wright had even tried to get Johnson to move the headquarters outside of Racine, into a decentralized location as he proposed in Broadacre city, rather then its current location, just east of downtown Racine. Johnson refused and Wright relented, but held his belief that decentralization was the way of the future.

[51] Wright, *An Autobiography*, 469.

A number of innovations went into the construction of the SC Johnson Administration building. The most important innovation was Wright's creation of dendriform columns. Wright called the columns "dendriform," because he said the open spaces would be like a "pine forest." While the column design follows the design for the Capital Journal, this is the first constructed application of the design. Wright wrote that he saw the columns as trees (or more accurately flowers) with three distinct segments: stem, petal and Calyx. The stem makes up the majority of the column, with the calyx as the capping section of ringed bands, and the petal as the large pad that rest on the calyx. By constructing the columns in this manner, Wright would be able to construct with thinner columns to create a much more open feel in the workroom.

During the first quarter of the twentieth century reinforced concrete had become a common building material. Reinforced concrete was created by laying a formwork for the concrete to be poured in, with a network of reinforcement bars in place to improve the tensile strength of the concrete. For typical reinforced concrete to work these columns would have to be much thicker then what Wright had envisioned. A steel manufacture's representative approached Wright proposing the use of steel mesh in place of the reinforcing bar. The mesh would allow the concrete to bond with the metal better, creating a material that could be thinner with a higher tensile strength than typical reinforced concrete.[52] Wright, who always took inspiration from nature, compared the two reinforcement methods to two species of cacti; the saguaro with its long vertical supports was the reinforcement bar; and the staghorn cactus had a slimmer, more efficient

[52] Jonathon Lipman, *Frank Lloyd Wright and the Johnson Wax Buildings* (Mineola, New York: Dover, 1986; reprint, 2003), 59.

mesh structure. Wright was convinced that the steel mesh would produce the desired results.

The construction of the columns also benefit from a new type of concrete developed by the Marquette Portland Cement company. The new method, called Pumpcrete, allowed large amounts of concrete to be mixed in a central location and pumped to its needed location. This method created a much more uniform mix and did not allow the aggregate to settle. Between the mesh reinforcement and the Portland cement, the walls of the stem only had to be three and one-half inches thick, and remarkably strong, completing Wright's aesthetic vision.

In part because of the innovation of these "unknown" materials the Wisconsin Industrial Commission denied permission to build the columns. What follows is a very well known story of Frank Lloyd Wright lore. In order to prove to the commission that the column can hold the weight Wright decided to build one test column and test it for its load capabilities. The column was cross-braced with wooden beams to keep it from tipping over. With witnesses on hand from the Industrial Commission, the city building inspector, and media, workmen began loading the column with sandbags. After the columns had successfully supported twelve tons both the Commission and the inspector were satisfied; Wright was not. After the workmen ran out of sandbags, loose sand was dumped, and the columns still stood. Finally, pig iron was loaded onto the column and it still held. By the time the column was holding sixty tons, a few cracks were noticeable on the calyx, and the decision was made to remove the cross-bracing and the column

snapped directly at the calyx. The 'stem' of the column remained completely intact. The Industrial Commission relented and construction proceeded. [53]

Figure 21: The column collapsing, Mr. Wright in the foreground

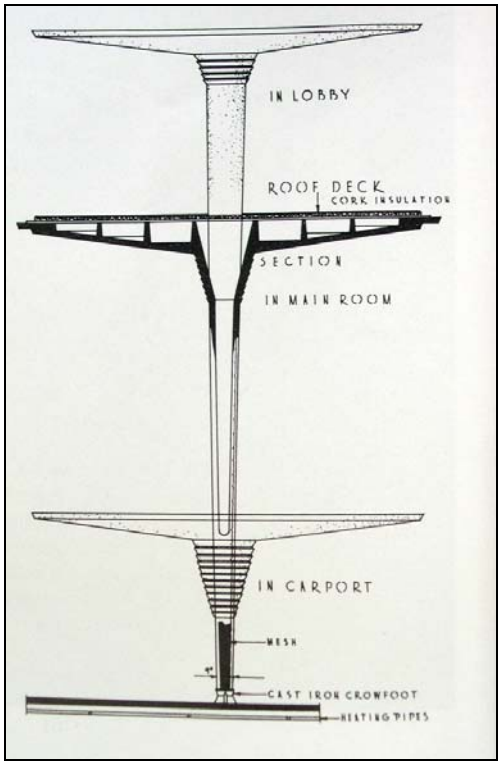

Figure 22: Section of the dendriform column based on its location

[53]Ibid., 62.

With the columns meeting the requirement for size and strength Wright was able to move forward with construction. The site plan called for the headquarters to be constructed in two sections. The main building contained the workroom and the management offices. The other building would serve as recreation space, with a squash court for the executives and a carport on the ground level. The carport would be a luxury to the employees, but it was also Wright's expression of the importance of the automobile and was in keeping with his plan for Broadacre City.

Figure 23: The Carport in the SC Johnson Building (Note the shorter dendriform column)

The Administration building was one of two buildings that Wright designed for the SC Johnson Headquarters. In 1943 Johnson Company decided that it needed to expand its research capabilities. Johnson wrote to Wright and asked him to submit a bid, stressing the need to keep cost low. Wright's solution to the needs of the SC Johnson Company was to go "up in the air" by constructing a tower, completing his earlier vision of the complex. His plan was for an eighteen-story tower with the floors cantilevering from a central shaft. This building would be the campanile to the cathedral of the

Administration Building. Jonathon Lipman compared the Johnson Headquarters to a Japanese temple complex or an Islamic Mosque.

Wright described the building as an interpretation of one of the dendriform columns used in the administration building, with a hollow core that would support all of ductwork and elevators, leaving the floors open for research. When it was completed, the 153 foot tower was the tallest building ever built without the foundation directly under the side walls. Wright dug an extra deep foundation, calling it a "taproot," like the structure of a carrot that gains its stability from a singularly deep shaft.

The floors alternated shape, whereby one floor is round, while the floor below and above are square. This allowed the laboratories to have a much more open feel then what was typical.

The research tower also included a section labeled "garage," which is a large one story wall with a deck surrounding. This area has some covered parking on the ground floor using the same dendriform columns employed in the Administration Building. Unfortunately, as the company has grown the parking Wright included has proven woefully inadequate.

In 1957, the S.C. Johnson Company, with Wright's approval, enclosed the ground floor wings round the research tower of the carport for expanded research space. The enclosed area decided to forgo the Pyrex tubing in favor of much cheaper plate glass windows. This expansion enabled the organic chemistry division to go on the ground floor, which provided better ventilation for the toxic fumes produced in the laboratory.[54] By using the carport as laboratory space the integrated parking was gone and the parking was moved to a much larger surface lot.

[54] Lipman.

Figure 24: The S.C. Johnson Headquarters with larger surface lot

Around the same time the SC Johnson company wanted to create more space for administration purposes. The plan called for adding a two story conference room on top of the carport connected to the Administration Building. In 1960 the SC Johnson company decided to go ahead with the proposed expansion, which had been designed by Taliesin Architects.[55] This addition effectively removed virtually all of the parking that had been integrated into the two buildings. The two buildings now sit at the edge of a large surface parking lot at the SC Johnson complex, which has expanded significantly in the years since the partnership with Wright. The buildings almost have the appearance of a streamlined suburban shopping mall sitting in a sea of parked cars. The two buildings were designed to be progressive monuments to the SC Johnson Company and unfortunately, the company hasn't been as careful in preserving the setting of the buildings.

[55] Taliesin Associated Architects were the successor to Wright and was composed of architects who were actively involved in the Taliesin Fellowship.

Buildings for Selling Automobiles

In 1947 Wright proposed a Packard dealership for Roy Wetmore. The building was to be rectangular with glass walls to display the cars. What makes this design stand out is the roof was designed as a large shed roof that created a ramp where one car could be parked as both display and advertising. Little scholarship has been done on the building, aside from the basic design, as it was never constructed.

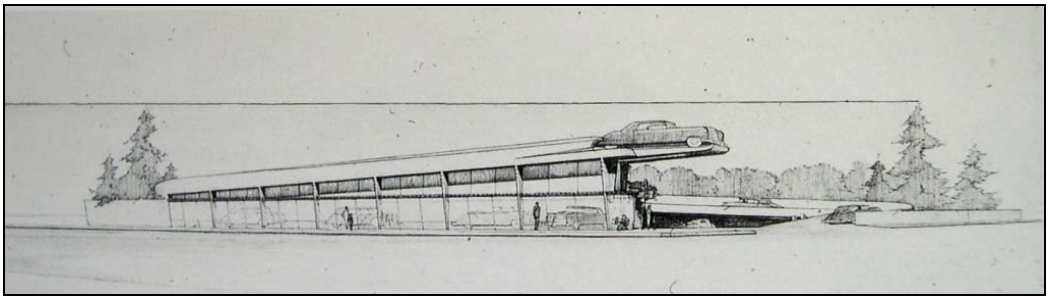

Figure 25: Roy Wetmore Dealership, 1947

Hoffman Auto Showroom

Wright's first project in New York City wasn't the Guggenheim Museum; but it was rather a small showroom for the Hoffman auto dealership. Unlike most of Wright's projects which were placed within a natural setting, Max Hoffman's dealership was to be located on the ground floor of an eighteen-story office building on Park Avenue.[56] This is hardly the decentralized view Wright proposed in Broadacre City. Nevertheless, Wright took on the small commission.

The 3300 square foot showroom did give Wright the opportunity to work with the spiral on a small scale. That spiral would be expanded dramatically thirty blocks to the north three years later in the final form of the Guggenheim Museum. In the showroom, the spiral is used as a ramp that can display, at most, three cars, with three more on a

[56] "Automobile Agency Leases on Park Ave.," *New York Times*, April 6, 1954.

turntable on the showroom floor. When the showroom opened *Architectural Forum* commented that because the first cars a potential buyer sees are moving, their instinct is not to venture closer until approached by a salesperson. By emphasizing the movement of the cars the room has the atmosphere of a garage, "congested, but flattering to the cars."[57] Some architectural critics have said that the because of the building's size it was not really worth the effort that Wright put forth in it.[58] The other touch designed by Wright, but not fully realized until 1981, is a circular mirror with the Mercedes Benz emblem installed in the ceiling. Wright had envisioned a mirrored floor and ceiling, but the practicality of keeping a mirrored floor clean won out and that part of the original vision was never included.

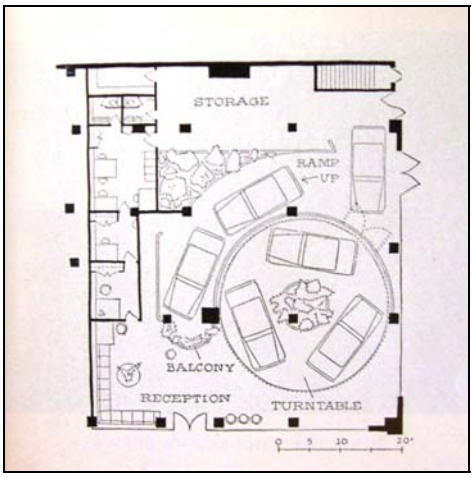

Figure 26: The Interior of the Showroom, 1955

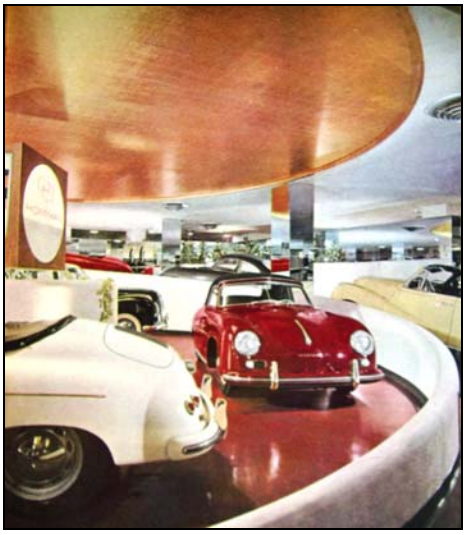
Figure27: The Grand Opening of the Showroom, 1955

The showroom operated from its construction in 1956 until the end of 2001. It was at this time that the Hoffman's lease ran out and Mercedes-Benz, the current owner

[57] "Frank Lloyd Wright Designs a Small Commercial Installation: A Showroom in New York for Sport Cars," *Architectural Forum* 103, no. 1 (1955).
[58] Michael Luo, "New in the Showroom: Wright Revisited; before the Guggenheim, a Spiral Ramp for a Manhattan Car Dealer," *New York Times*, October 29, 2003.

of the showroom, was considering operating exclusively out of their more conventional showroom in midtown Manhattan. Rather then close the showroom Mercedes decided to expand their Park Ave. location, leaving the Wright designed section intact for the most part. The showroom lights had to be replaced and/or repositioned to better display the cars, with designs that are *Wrightian* in appearance, but not authentic. The other changes that were made to the interior were mostly cosmetic, replacing the cracked portions of terrazzo floor, repainting the walls, and fixing the mechanics under the turntable.[59] Randolph H. Gerner, the architect who undertook the rehabilitation noted that work done was not a restoration, but was intended to protect much of what Wright designed. The building is not listed as a historic landmark nor had the building's owner donated an interior easement on the space, so any materials retained were done out of a sense of stewardship and pride.

Mercedes also instituted a new plan for the placement of cars in the newly expanded showroom. The high-end models will all be located within the Wright designed space, with the mass-market cars being sold in the newly built addition to the showroom. When the showroom re-opened it had a $305,500 Maybach sedan placed on the front turntable, the first car a potential shopper would see. The general manager of Mercedes of Manhattan, Ralph Fisher, said that the Frank Lloyd Wright design added, "Some mystique to the space and the design of our product." [60]

[59] Luo, B3.
[60] Ibid.

Drive-up Services

Wright designed two customer service buildings that could take advantage of drive-up service, however, neither was built. In 1945 Wright proposed a drive-up laundry for Benjamin Adelman in Milwaukee, Wisconsin. It was designed so that quick curb-side service could be offered to the customers. The dry cleaning would be done in a separate wing of the building near the street with its own vent stack. Wright commented that the street was very busy, which would add to the amount of traffic the location saw. Additionally, the customers would appreciate the integrated covered parking if they chose to leave their cars. There is no evidence to indicate why the dry cleaners building was not constructed.[61]

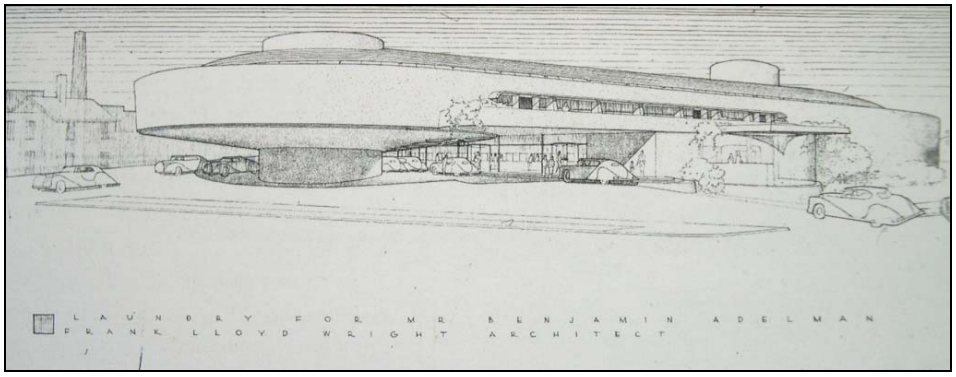

Figure 28: Drive up Laundry for Benjamin Adelman

In 1947 Walter Bimson, president of Valley National Bank in Phoenix, Arizona commissioned Frank Lloyd Wright to design two banks. Wright called his design the "Daylight Bank" because of its large central dome, which would allow diffused light to illuminate the bank. Wright included a curved rear wall with six windows for drive-up banking in the rear. Bimson and the bank officials claimed that people would never conduct their banking without a face-to-face transaction. Perhaps because of Wright's

[61] Wright, "For the Second Time an Issue Devoted to the Work of Frank Lloyd Wright," 107-109.

belief in the drive-up stations, relations degraded and neither of the banks was constructed.[62]

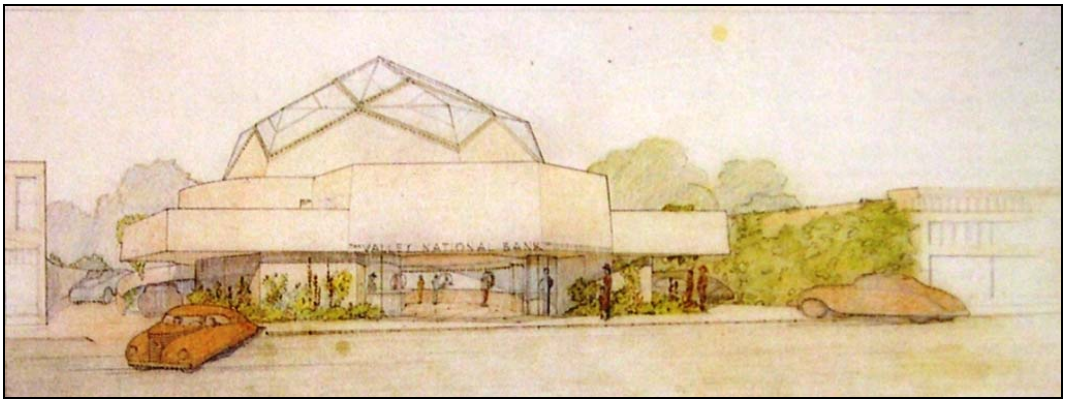

Figure 30: Wright's Design for the Valley National Bank

It could have been the conservative nature of the small business owner or a lack of imagination that resulted in these designs never being enacted. With the benefit of hindsight it is clear to see that Wright's vision of the future was accurate and these entrepreneurs would have been seen as visionaries.

[62] Pfeiffer, Bruce Brooks Pfeiffer, "The Drive-in Bank," *Quarterly* 8, no. 2 (1997).

CHAPTER 6

Preservation of Automotive Aspects in Residential Buildings

There are a number of Wright designed homes open to the public as house museums. These sites are open to the public primarily for their artistic merit and their architectural innovation. This isn't the case for the majority of house museums in America, which interpret either the person (or people) that lived there or the building as an artifact of the time it was constructed. Because of the specific topics stressed in the interpretation of these Wright designed buildings; how the buildings are preserved and presented to the public required some additional consideration. For this reason, a discussion of these buildings should be presented separate from the earlier section on Wright's designs for residential architecture. Virtually every building's interpretation date is the date Wright completed it, or in the case of his own homes, when he vacated them. But operating a museum without altering the integrity of the building poses a number of logistical challenges that have required a certain level of creativity.

Home and Studio Garage/Bookshop

When Wright's family vacated the Oak Park home, Wright retained ownership and used the property as a rental. As the automobile was becoming much more commonplace in Oak Park, Wright realized that he would have to expand the stable in the rear of the house. He expanded the one bay stable to a three-bay garage, complete with gasoline pumps and added loft space above.

After Wright sold the house it was divided into a multi-unit rental property. The Home and Studio were in this condition when the move to preserve the house was started by the National Trust for Historic Preservation.

When the National Trust purchased the property in 1973 they presented it to the Frank Lloyd Wright Home and Studio Foundation (now the Frank Lloyd Wright Preservation Trust) to undertake restoration and operation. The interpretation date chosen for the house is 1909, the last year that Wright and his family lived and worked in the building. After a ten-year restoration the building was fully opened to the public. The only thing that was not taken back to its 1909 appearance is the expanded garage. The site was chosen as the location for ticket sales and the museum bookstore; the loft above was converted into an apartment for the building and grounds caretaker.

Figure 31: Home and Studio garage, converted into the bookshop.

The garage building is, and always was; separate from the home and studio space. While it is true that the garage does not have the same interpretation date as the rest of the house, the Home and Studio Foundation retained a remarkable amount of historic fabric, while adapting the space for its current use. During the rehabilitation the underground gasoline tanks were filled in with sand (as required by law) rather then removed, retaining the gas pumps as a reminder of the building's past use.

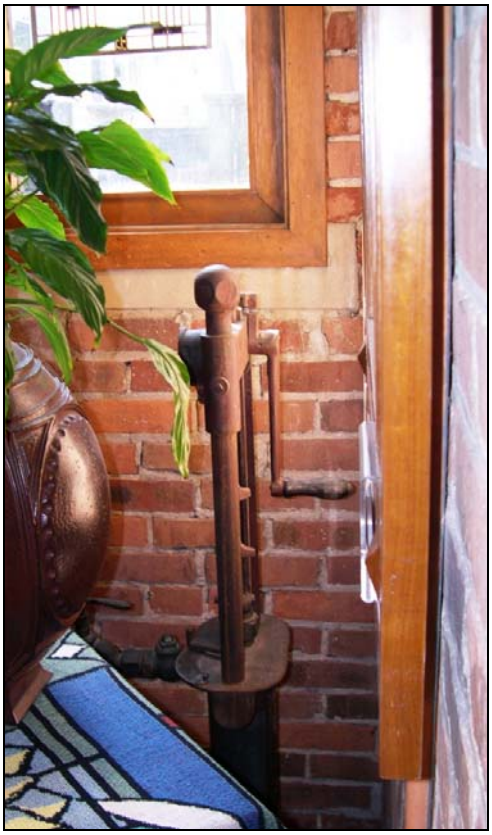

Figure 32: One of the two gas pumps in the Home and Studio Garage.

During the rehabilitation some of the interior treatments were preserved. The bathrooms have retained the white tile wall that was the original interior surface treatment. This surface treatment stands in contrast with the rest of the garage, which has been stripped back to exposed brick, as can be seen in the photo above.

Robie House History and Preservation Efforts

Frederick Robie had to sell his house in 1911 in order to pay off the debt his father had left him. The subsequent owners of the Robie House were like-minded in their passion for the automobile. The attached garage was likely a positive selling point for these owners. Marshall Dodge Wilber, who became the third owner of the house in 1912, employed a hired cook, a "2nd girl," and a lawn man, but did not hire a chauffeur, because he enjoyed driving himself.. His wife also owned and drove her electric car; this was in the days before the internal combustion engine had become the industry standard.

In 1924 the Wilbers sold the house to the Chicago Theological Seminary, who used the house for married housing. In 1941 the Seminary planned on demolishing the Robie House and constructing a larger dorm on the site.

In 1941 Wright, with many proponents of modern architecture and former members of the Bauhaus, including Mies Van der Rohe and Walter Gropius, established the Committee for the Preservation of Frank Lloyd Wright's Robie House. It is difficult to determine what impact this group had on the preservation, because the United States involvement in World War II began seven months after the first meeting. However, the group's involvement likely delayed demolition long enough that the new building could not have been built, because of wartime shortages.

After the War the Seminary did little with the house, continuing to use it as a conference center and administrative office. In 1957 the Seminary again moved to demolish the Robie House and construct a much larger dormitory in its place. Shortly after the Seminary's announcement, local citizens organized to try and save the building.

In addition to a letter writing campaign, the citizens' group[63] organized a Commission on Chicago Architectural Landmarks, whose first order of business was to grant landmark status on the Robie House. While the Commission had no authority until the city passed a historic preservation ordinance in 1968, it brought attention to the issue of historic preservation in Chicago. The citizens' group also brought Wright to the Robie House, which, if nothing else, was good for a few newspaper articles, including one with the headline, "Raze Robie House? Wright Furious."[64]

The University of Chicago, the Theological Seminary, and the architectural firm Webb and Knapp were able to come up with an alternative plan to destroying the building. The head of the firm, William Zeckendorf, agreed to buy the house for $125,000 and use it as offices while the firm oversaw the urban renewal of 55th St.[65] When the renewal project had been completed, the firm would then donate the Robie House to the University of Chicago, after they gave the Seminary the lot to the north of Robie House. This proposal seemed agreeable to everyone involved, and the Seminary built their four-story dorm next to the Robie House (the dorm building can be seen in the photo below). Webb and Knapp finished the redevelopment project in 1963 and held a formal ceremony to hand over the deed to the University. From 1963 to 1997 the Robie House was used as offices by the Adlai Stevenson Institute for International Peace and the University's Alumni Association with tours offered on a regular basis. During this time period the main living area was interpreted as such, but the servants' area and the

[63] The citizen's group formed in 1957 for the preservation of the Robie House is now part of the larger Hyde Park-Kenwood Community Conference, a group that is still involved in the preservation of the neighborhood's architectural heritage.

[65] Special to the New York Times, "Wright Building Saved: Zeckendorf Will Pay $125,000 for Doomed Robie House," *New York Times*, Dec. 21, 1957 1957, 22.

garage had been converted into the offices with plate glass windows and window air conditioning units. The garage doors were removed and fixed windows were installed in their place.

Figure 31: Robie House, 2006. Note the Seminary dorm in the background.

In 1997 the University agreed to hand the operation of the Robie House over to the Frank Lloyd Wright Preservation Trust and the National Trust for Historic Preservation, provided they restore the building. The Preservation Trust has been responsible for raising the $8 million for a complete interior and exterior restoration.[66]

The toll that seventy years of institutional use had on the Robie House was significant. By the end of 2007 the interior and exterior of the house will appear as they did the day the Robies moved into the house in 1910.

[66] To date the Frank Lloyd Wright Foundation has completed the exterior restoration, which included: stabilizing the building by preventing further water infiltration and repairing termite-damaged areas. Major projects included repairing damage caused by water penetration, installation of a historical clay tile roof, replastering of deteriorated soffits, extensive masonry repairs, replacement of damaged bricks and limestone, stabilization or rebuilding of balconies, and conservation of 22 art glass doors and windows. All internal electrical wiring was updated and new water service was introduced. A climate management system, interlocking aspirating fire detection system, and a dry sprinkler system were installed. Work has begun on the interior restoration, with the hopes of completing the restoration by the end of 2007.

The only part of the house that has not been restored to its 1910 appearance is the garage. Replica doors were found and installed, but the use has changed dramatically. The house has one significant change; the garage has been changed from office space to a bookstore and ticket office. The garage, a key design element, lacks any type of interpretation as to how the space was used, aside from a mention that it served as the garage and was the first documented instance of an attached garage.[67]

Figure 34: The garage doors have been replaced, but the use has changed dramatically.

During the restoration a non-original floor was removed in the garage to install new heating and water pipes. Under the floor the restorers discovered a mechanics pit Robie had asked to be installed. The Frank Lloyd Preservation Trust notes that in the restoration the pipes were moved as to have no impact on the mechanics pit.[68] The

[67] These observations were made on site visit to the Robie House, March 15, 2006.
[68] Frank Lloyd Wright Preservation Trust, *Robie House Restoration Project* [Website] (2004, accessed 2006); available from http://www.wrightplus.com/robiehouse/restoration/restoration.html.

restoration plan also calls for the eventual restoration and interpretation of the garage. A noble goal, however the master plan also calls for accurately recreating the landscaping on this small urban lot; which means there won't be any way to establish a permanent structure on the lot for ticket or book sales, which make a very large percentage of the site's operating budget. When asked how the Robie House could achieve the goal of interpreting the garage and operating a bookshop and ticket sales, representatives of the Frank Lloyd Wright Preservation Trust indicated that no decision had been made regarding their future location.

Figure 35: The mechanics pit, Robie House Garage, 2004.

This garage is too important a design element to be ignored. Additionally, on rainy or snowy days visitors must enter the gift shop, then walk outside the house before beginning the tour, bringing in dirt and salt and other materials that will have a negative impact on the fabric of the building. A possible alternative is to rent space in one of the adjacent buildings, many of which are owned by the University of Chicago, and use it for

these purposes. This additional space could also provide room for educational programs to provide either pre or post-visit lessons. Admittedly, this is not a cost effective strategy, but the University and the Robie House have had a cordial relationship, which could extend further. If the space had enough space the main offices of the Frank Lloyd Wright Preservation Trust could be moved from the Oak Park building adjacent to the Home and Studio and operate out of a separate office. This would allow the bookstore at the Home and Studio to move into the former offices and the garage could then be interpreted as a garage. Additionally, the space could be used to interpret both the influence the automobile had on the house, and the restoration of the buildings.

Westcott House and the Use of a Garage as a Garage, Sort of

The Westcott House, located in Springfield, Ohio, was completely restored after years of neglect. The Westcott House was constructed in 1909 for automotive executive Burton Westcott and his wife, Orpha. It is not clear why the Westcotts chose Wright to design their home, but like many of Wright's early clients they were involved in a field that was tied to the technological advances of the early twentieth century. The Westcott Foundation speculates that it was either because of the couple's frequent trips to Chicago or Orpha Westcott was inspired by Wright's *Home in a Prairie Town*, in Ladies' Home Journal. In fact, Wright made two house designs for the Westcotts. The Prairie design Wright came up with for the Westcott House was heavily influenced by his earlier trip to Japan, and is one of a very small number of symmetrical homes Wright ever constructed.[69] The two-story house has a rectangular shape with banks of casement

[69] Westcott Foundation, *The Westcott House*(2002-2005, accessed 2006); available from http://www.westcotthouse.org/indexNorm.html.

windows on both the ground and second floors. At either end of the house on the ground floor is an enclosed sunroom. The second floor has sleeping porches at either end of the building, above the sunrooms. The roof is a low-pitched hip roof, with a stuccoed central chimney.

Figure 36: The 1909 Westcott House

The Westcott Motor Car Company was established in 1916 as an expansion of the Westcott Carriage Company. Burton Westcott's relationship to these two companies and his progressive nature led to the garage constructed with both stables for horses and sufficient room for at least one automobile. The garage, while not integrated into the house, like it was for the Robie House, was connected by a pergola and a series of terraces.

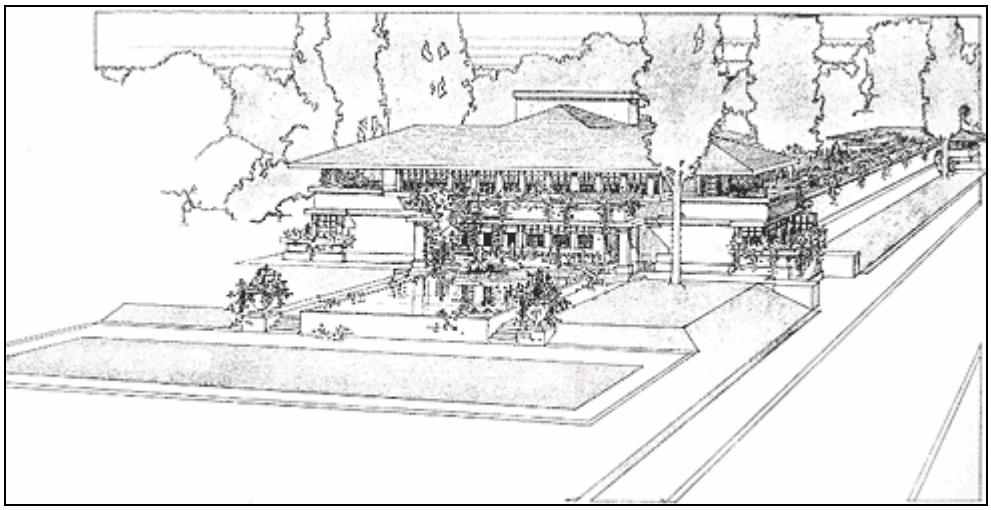

Figure 37: The Westcott House with the garage visible to the upper right

Like many of the homes Wright designed, the Westcott House was adapted to a new use; in this case the house was divided into five apartments in the 1940's. In the 1980's a dedicated family, the Snyders, purchased the house and began to restore the house, beginning with the rehabilitation of the caretaker's residence. In 2000 the Synders sold the house to the Frank Lloyd Wright Conservancy; this was the first purchase the Conservancy made using its revolving fund. The Conservancy then sold the house to the recently formed Westcott House Foundation, who then started the four year, $5.8 million restoration.

What makes the preservation of the Westcott House different from many of the residential Wright buildings is that the Westcott House Foundation chose to interpret the Westcott family almost as much as the building. They felt the families' role in Springfield's history is as much a part of the house as the architecture. The Westcott House had its garage restored to the 1909 appearance. The decision was made at that point that the Garage would operate as the ticket and book shop and as an interpretation location. One or both of the horse stalls will be used for showing the Westcott House

restoration video. The large Westcott House garage will also have a 1920 Westcott Touring Car parked in the garage. This will help visitors get a visual idea of how the design of the car and the architecture used in the house relate to one another. The upper level of the garage is used as office space for the interpretation staff.

It seems as though the Westcott House will be a much more complete interpretation then many other Wright Houses, because of the focus placed on the family. This change in the way the house is interpreted offers a much fuller view of the building and relates it to its environment, rather then simply a single monumental work of architecture. The inclusion of the touring car is a successful aid to not only show the work Burton Westcott did, but helps the visitor better understand the context this progressive work of architecture fits into.

Figure 38: Westcott House Grand Re-Opening, with 1920 Westcott Touring Car

Pope-Leighey House

Only because Wright's Pope-Leighey House was moved from its original location was it able to be preserved and interpreted. The 1940 Usonian house was constructed in Falls Church, Virginia, a suburb of Washington, DC. In 1964 the house had to be moved to

accommodate the construction of I-66 in the western DC suburbs. Mrs. Marjorie Leighey donated the house to the National Trust, who moved it to its current location as part of the Woodlawn Plantation historic site.

The house was a simply designed 1200 square foot Usonian house, utilizing a carport, which was designed by cantilevering the roof for a space large enough for one car to fit. Even though the house has lost its integrity of location, the only alternative was demolition. The unique partnership the Pope-Leighey House has with the Georgian styled Woodlawn Plantation has allowed the Pope Leighey House to appear almost identical to its previous location. The ticket sales and bookshop are located in one of the wings of Woodlawn, so that the Pope-Leighey House can be fully interpreted. The wing of Woodlawn with the ticket and book sales also operates as a museum for the Plantation, so there isn't a further loss of interpreted space.

Figure 39: The Pope-Leighey House in its Original Setting

While many homes Frank Lloyd Wright designed are public house museums the overwhelming majority are still being used as private residences. It is much more

difficult to undertake a study of the privately held Wright designed buildings and how those owners have chosen to preserve or adapt their homes and landscapes to the automotive age. This is a potential area for further scholarship however, personal observations revealed some interesting adaptations and modifications.

Many of Wright's earliest designs, well before the automobile, when the horse was king, have made the necessary adaptations and additions to accommodate the cars. The majority of these houses were constructed in suburban Chicago, where Wright lived and worked until 1910. Private residences like the Heurtley House (1902) and the Frank Thomas House (1901) have chosen different paths to accommodate cars. It appears that the owners of the Heurtley House commissioned Wright to construct the garage; or at the very least, hired a new architect who copied the design motifs from the main house to make the garage fit aesthetically. And while the garage does fits aesthetically, the Lincoln Navigator parked in the backyard was incapable of fitting through the doors of the garage. In the case of the Frank Thomas House, it appears as though the owners elected to have a minimal two-car garage constructed and matched the houses exterior stucco. This garage is identical to the garage of the 1930 Dutch Colonial home the author was raised in.

Figure 40: The Frank Thomas House (1901) and modern garage (right)

Fallingwater

Fallingwater, arguably Wright's most famous work, is another example of how the automotive legacy of these houses can be lost. In the case of Fallingwater, space was not as much of an issue as convenience. Wright designed Fallingwater in 1936 and it was owned and used by the Edgar Kauffman family until 1964. In 1964 the Kauffman family donated Fallingwater to the Western Pennsylvania Conservatory, per the wishes of Edgar. The Western Pennsylvania Conservancy has worked very hard to maintain the house's 1936 appearance.

That isn't the case with the 1939 guest house and garage, located up the hill from the main house. In 1972 the Western Pennsylvania Conservancy decided to convert the four-car garage, located in the guest house, into a movie theater for visitors. The garage isn't a key design element, but there are a couple of factors that indicate how the automobile impacted the creation of Fallingwater. First, the building would never have been constructed had it not been for the auto. Bear Run, Pennsylvania is an hours drive outside of the Kauffmans' home in Pittsburgh; a distance that would not have been

traveled had the trip taken two days by horse. Second, the fact that the house includes a four-car garage speaks to how wealthy the Kauffmans were and their status within society.

Fallingwater, and its Guest House are listed together on the National Register of Historic Places, but have been documented separately by HABS. The documentation, done in 1985, includes 84 photos of the main house and another 22 of the Guest House. However, none of the 22 includes the main elevation, because the integrity of the space has been lost due to the integration of the theater in that space.

The bookstore and classroom are located a few hundred yards away from the house in a location that is not visible from the house. This location could have easily been enlarged or added onto to accommodate the theater. For whatever reason, the Western Pennsylvania Conservancy decided not to do this. In fact, the Guest House is not even mentioned in their Preservation Philosophy.[70]

Because so many of Wright's homes are regarded as artistic works often their functional spaces are relegated to alternative uses. When one considers the cantilevers and sublime nature of Fallingwater, where the cars were parked is often not seen as an issue. However, were it not for the automobile a house in this remote location would not be practical. The car not only made a weekend residence like this possible, it makes it practical for a family of the Kauffman's status.

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[70] A primary goal of Western Pennsylvania Conservancy's preservation efforts at Fallingwater is to maintain Frank Lloyd Wright's designed relationship of the house with the surrounding natural landscape. The most defining features of this relationship are the cantilevers and the pristine, smooth concrete finishes indicative of the Modernist Style. The results of Wright's innovative use of technology, however, can sometimes make traditional repair methods at Fallingwater difficult. Western Pennsylvania Conservancy makes every effort to maintain the structural integrity of the cantilevers and their relationship to the site as well as retain the smooth appearance of the concrete surfaces. In addition, the WPC makes every effort to make all conservation of the building as noninvasive as possible. No effort shall be made to revise or improve upon the original design for aesthetic purposes. However, changes to original building systems can be made if such changes contribute significantly to the long-term preservation of the building.

While Wright defended his designs, he wasn't averse to changing them. If a client desired more space or a different function Wright was usually agreeable to change the design.[71] Modifications, so long as they were his were acceptable, demolition was not. Wright was so keen on his own vision that he was often known to drop by the homes he had designed and rearrange the furniture to either the original layout or a new one he had devised to be more efficient.

[71] Streich, 44.

CHAPTER 7

Conclusion and Suggestions for Future Research

In the last century cars have evolved from carriages with motors to become luxury vehicles that contain many different computers operating at the same time to create what Lexus calls, “the ultimate driving experience.” An *Architectural Digest* article claims that residential architecture has actually devolved in the last 25 years, reaching into the past for design concepts, while the design of automobiles, for the most part, has continued to evolve and move forward. Corbusier’s design for Villa Stein still looks strikingly modern, yet with a 1927 automobile parked in front, it is the car that appears to be from a bygone era, not the house.

Figure 41: Corbusier’s Villa Stein after completion with a contemporary automobile parked in front

The same can be said for Wright’s designs. What car would appear complimentary in front of the Guggenheim Museum? The most advanced automobile today would seem to be out-dated within a decade. This could be as much a compliment to a timeless quality in the architecture as the progress in automotive design.

The relationship between cars and architecture can be carried further when one considers that, like a car, if regular maintenance is undertaken the building can last indefinitely. Many of the design concepts Wright created have been proven to be extremely practical, like the attached garage or drive up banking; while others are seen with disdain, the way most planners and landscape architects view the plan for Broadacre City.

In Wright's work the automobile was a consideration in almost every building he designed after the Robie House. In many of these designs the inclusion of a garage or carport was simply a response to the needs of the client. However, there are specific examples, where the innovation Wright employed needs to be recognized and preserved. The Robie House is the prime example of a distinct design element being largely ignored in the presentation of the house. These elements, while dissected separately for the purposes of this thesis, should be seen as integrated parts of the larger works. Wright's intention in the design of these homes was to create places that would be most accommodating to the families that lived there. In the case of the Usonian homes, employing the carport was an inexpensive way to protect the families' means of transportation.

The treatment of the living spaces and the automotive spaces of these buildings varies widely. The appearance of the living spaces, in most cases, has been achieved by applying the Secretary of the Interior's Standards for Restoration and in a few cases the Standards for Preservation. That is not the case with the automotive spaces. The overwhelming majority of these spaces are rehabilitated for their new use as the ticket

and book shop. The decision to undertake this particular combination of treatments seems to occur regardless of the building's ownership.

The economic pressure placed on the house museums today is unfortunate and often requires them to undertake fund raising in methods that may detract from the interpretation of the site. These museums are as reliant on book and gift sales as they are from donations or admissions. Only buildings with expansive landscapes have the option of constructing a separate building specifically for ticket and book sales. This is not an option for house museums that were built in traditional or urban neighborhoods. In an attempt to best preserve the majority of the living space the garage seems like the best alternative; that may be the case, but many of these garages saw the same attention to detail that the houses did and should not be short changed. In fact, by interpreting the garage visitors may better understand the context the house was developed in. The Westcott House was constructed in an era when cars did not even have a reverse gear. When Wright expanded the garage at his Home and Studio, there were not gas stations convenient to the general public in Oak Park, so he had gas pumps installed in the garage. The scholarship and archaeological evidence exist to accurately restore these buildings, but the financial pressure is too much of a burden.

As a progressive architect, many of Wright's designs to accommodate automobiles were a sign of things to come. For better or worse the overwhelming majority of banking is no longer done face to face. In fact, it is possible to withdraw money, pick up a prescription, have your car washed, get dry-cleaning, and get dinner all without having to leave your car. These designs, independent of one another, are artifacts

of the development of car culture in America. These early car culture elements are being lost rapidly. Road-side motels are vanishing, as are the restaurants that were associated with them. Streamlined gas stations are rare and are being lost despite efforts by groups like the Recent Past Preservation Network. Whether or not these designs were created by Frank Lloyd Wright they warrant preservation and proper interpretation as part of the evolution of the American Landscape.

Suggestions for Future Research

This study of the connection between Wright's designs and car culture has left some questions unanswered and some issues unresolved. These either fell outside the scope of this thesis or could build on the groundwork established by this thesis.

The majority of Wright's works were homes designed for individual families. Many of these buildings are still occupied and held privately. When these homes were built most families had only one car, but today most families have more than one; and many large SUV's are bigger then any car available. Have theses houses been adapted to the larger size and larger number of cars; and if so, how? This study could be done by questioning current owners and surveying these historic homes across America.

Wright's relationship with the automobile has been explored and explained through this thesis. Did other early modern architects, most of whom were European, have a similar relationship to the car? If the relationship was different was the difference cultural or was their something specific about the ideals of the individual architects. What were Mies van der Rohe, Walter Gropius and Le Corbusier designing with the car in mind?

Finally, in the last decade a number of Wright designed buildings have been constructed using un-built plans. These buildings include Monona Terrace in Madison, Wisconsin, three buildings in upstate New York; and additional planned buildings in Europe. The Frank Lloyd Wright Foundation has sold a number of these plans as a way of raising revenue. How have these designs been modified from Wright's original vision to meet today's more stringent building codes and newer, more cost effective, materials. Consequently, are these new buildings, philosophically, really Frank Lloyd Wright buildings? Wright designed buildings for a specific location and a specific client; and these buildings have lost the integrity of design. Or is this just a way for the Frank Lloyd Wright Foundation to make money?

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