

Corporate Icons in the Suburban Landscape

by

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ABSTRACT

The image of the modern workplace in the American suburb has long been a contentious topic of discussion among academics, planning and development professionals, and the public. Today, the critics of office parks in the low-density neighborhoods are applauding the idea of reverse migration back to the city. It is no doubt a trend for large competitive corporations and one that this thesis will explore. But in their day, the suburban corporate centers represented the epitome of advanced thinking about corporate organization, productivity, innovation, marketing, and architecture. This thesis will focus on how these large centers came into being, how they functioned and their continuing legacy.

The principal cases and relevant examples discussed were designed by renowned 20th century architects and are of an iconic architectural value. The classic examples examined include: General Motors Technical Center, Deere and Company, PepsiCo, and Union Carbide.

The hypothesis is that the day of suburban corporate centers is not over, that despite the changes in corporate culture and work-life, the lure of the isolated center in the landscape is so powerful that it will continue to be valuable to companies – but in new ways: as amenity locations for workers, and with new kinds of uses and activities incorporated into the centers.

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Figure 01: Deere & Company World Headquarters. Moline. IL. Source: <http://architecture.about.com>

Introduction

The image of the modern workplace in the American suburb has been a contentious topic of discussion among academics, planning and development professionals, and the public since they first emerged. In the period following World War II, along with massive development of suburban homes came office, business, science, and industrial parks, research and technology campuses, corporate centers for administration and research. (Mozingo 2011) These represented a new genre of workplace, accessible by car, with an extensive amount of parking, often surrounded by landscape, and set within a context of low density, single and, at times, multi-family residential development. Today, the critics of office parks in the low-density neighborhoods are applauding the idea of reverse migration back to the city. It is no doubt a trend for large competitive corporations and one that this thesis will explore. But in their day, the suburban corporate center represented an epitome of advanced thinking, about corporate organization, productivity, innovation, marketing, and architecture. How these large centers came into being, how they functioned and their continuing legacy is the focus of this thesis. It will explore the topic by examining individual cases of forward thinking corporations and their buildings, followed by a reflection on the paradigm and its role in the future.

The thesis will explore a small subset of the genre, what I call the suburban “corporate icons”: Corporate centers that were developed starting 1950’s to represent the apex of industrial production. Corporate icons are office and research facilities that have throughout the years maintained a strong visual connection among their buildings, the needs of their employees, and corporate identity. The principal cases and relevant examples discussed were designed by renown 20th century architects and are of an iconic architectural value that will be discussed in great detail in the following chapters. These cases will examine how the location for those corporate offices were chosen and how design of the building and landscape were aligned with the corporate identity.

The classic examples examined include: GM Technical Center, Deere and Company, PepsiCo, and Union Carbide. These companies and their corporate centers are iconic both for their contributions to the local and global economies, and for their influence on the architectural heritage of workplaces in the American suburb. (Chandler 1962, Mozingo 2011) These are exceptions and do not represent the majority of suburban office structures, however as pioneers in business these corporations and their leaders defined an era of de-urbanization of office work

and influenced the decision of smaller industries to follow. Therefore, it is important to explore the parameters under which these corporate icons were established.

The changes in corporate structure in the mid 1950's allowed management to work at locations distant from manufacturing plants and to oversee multiple production facilities at a time. The flight of corporate administration, research, and development activities from cities was fueled mainly by these changes. (Mozingo 2011) Companies saw a suburban landscape that was expanding due to the post-war housing boom as a platform for growing their operations. Talent followed the corporations. The suburban corporate icons represented not only an attractive place to work, but also a clear hierarchical organization, in which the "best and the brightest" could see themselves growing with the corporation. (Mozingo 2011) They were also seen as places where innovation happened. The image of suburban living and return to nature would fuel intellectual capacities, an attractive to the men and women of the 1950's. Finally, the suburban context provided a quiet and a safe place to raise a family. (Mozingo 2011)

Taken together, the location, the iconic architecture, the landscape, and the workforce were all manifestations of a new corporate agenda and changing organizational structures. The iconic buildings discussed in this thesis are products of a vision of corporate leadership that was closely tied to the image that each company wanted to portray to the public and their employees.

For as long as there have been corporations, they have recognized that the architecture of their headquarters represents them in the local and global market, and that the quality of their work space affects the performance of their employees. (Broehl 1984, Florida 2005, Sloan 1963) Beginning at the turn of the 20th century however, the modern movement gave new emphasis to these relationships among architecture, image, and performance. Taking the corporate headquarters as an icon, modern architects from Frank Lloyd Wright to Albert Kahn invented a new generation of factories and office buildings that at the same time would lend confidence to investors, efficiency to workers, and an identity to their products and customers.

These early examples were characterized by innovation in administrative office space design that is informed by the use of the space by people that work and not by the machines as was commonplace in industrial era. One such early precedent is Larkin Company Administration Building in Buffalo, New York, designed by Frank Lloyd Wright in 1903. Larkin company structured their business model on mail-order sales of home goods. (Quinan 1987, 44) Buffalo



Figure 2: Larkin Administration Building, light court. Source: Quinan 1987.

based Larkin Company was progressive for its time in treatment of their employees. Entertainment, profit sharing, and educational incentives were some of the benefits to the employees. Therefore two considerations were at the center of the design of Larkin Administration Building - well being of the office staff and business activity of the company. (Quinan 1987, 44) In response to a program that had to accommodate 1,800 office workers who processed thousands of customer letters a day, Wright designed “a six-story, light-courted main block as the principal work space and a lesser appended annex for the entrance lobby and many personnel-support spaces.” (Quinan 1987, 27)

An early innovation of Wright’s was placing the stairwells in four corners of the building, thus breaking the rules of the box-like structures of the time, and creating Larkin’s signature exterior. (Quinan 1987, 30) “The relocation of the stairs benefited the design of the building inside and out - it freed the light court as a pure work space and the new towers broke out of the corners of the original conventional block in dramatic fashion. (Quinan 1987, 33) The importance of Larkin Building is in that its form was driven by its function and was representative of the new industrial era. In An Autobiography Wright wrote: “Rebellious and protestant as I was when the Larkin Building came from me, I was conscious also that the only way to succeed, either as rebel or as protestant, was to make architecture genuine and constructive affirmation of the new Order of this Machine Age.” (Quinan 1987, 33)



Figure 3: Larkin Administration Building, exterior. Source: Quinan 1987.

The Classic Suburban Corporate Icon

Beginning in the 1950's corporations shifted their philosophy. Parallel with suburbanization and globalization, they began to see corporate centers as ways to be associated with places of innovation and forward thinking environments.(Fishman 1987) A new genre arose with iconic complexes that changed the quality of the corporate image, nature of work and architectural expression at an unheard of scale. In competing to craft the most advanced and symbolic center, that would be published and recognized for its sophistication and quality, they employed the best design talent they could find.

This thesis stems from an appreciation for these symbolic places of work, their pristine beauty in the landscape, relationship between form and function, and powerful modern images. Almost all survive, but many are no longer associated with their original corporations, the organizations for which they were built, some of which no longer exist. Others continue to function in a changing environment and have remarkably adapted to the changing nature of work.

As opposed to the suburban office trend of the 1960's, today we are witnessing a reverse trend. Fortune 500 companies today are tending to locate in dynamic urban environments in close proximity to universities and the knowledge workforce. (Florida 2005) The technology and service companies today are seeking proximity to their competition and other urban happenings. (Castells 1994)

In this context, how have the iconic corporate centers fared? What is the future of corporate headquarters and research and development centers in the suburban landscape? Is the typology dead? And what of the old iconic corporate estates that survive? Can they be converted to other uses, or can we find value in the existing architecture and the surrounding landscape? Finally, are there new examples of corporate icons being built today? How do they differ from the classic examples? These are the questions this thesis seeks to answer.

To shed light on the questions there will be a discussion of two classical primary cases or corporate office: General Motors Technical Center and Deere and Company Administrative Center as well as two relevant examples from the 1970's and 80's. These classical cases and examples will then be compared with new corporate centers being built by companies such as Google, Genzyme, and Apple. In addition to case studies, a number of corporate office managers and real estate professionals were interviewed for this thesis, in order to get a perspective

on corporate work environments today. And finally, numerous academic discussions and real estate lunches and conferences have contributed to the discussions of the underlying trends in today's office market.

The underlying aim is to gain an understanding of how forward thinking corporate environments come to be, how their design relates to identity and function, and what they may be like in the future. The hypothesis is that the day of suburban corporate centers is not over, that despite the changes in corporate culture and work-life, the lure of the isolated center in the landscape is so powerful that it will continue to be valuable to companies – but in new ways: as amenity locations for workers, and with new kinds of uses and activities incorporated into the center.

CHAPTER 1: Emergence of the 20th Century Corporation

Corporate Organizations and De-urbanization in the 1950's

Early 20th century examples of corporate icons like the Larkin Building were widely published and admired. However by in large, major corporations remained headquartered in their traditional locations: downtown or close to the factories; and run by traditional management organizations: dominated by wealthy stockholders.

With the advent of World War II, and the high level of organization and efficiency that it demanded, the nature of corporations changed dramatically. Once run by oligarchs based on ownership, by the late 1940's management had shifted to professionals rewarded for their merit and initiative. Leading companies had started experimenting with 'managerial capitalism' in the 1920's but following the war it became the norm. (Mozingo 2011) Management authority rested with a cadre of salaried professionals who rose up the corporate hierarchy based on their performance. This professionalization of management became crucial as the corporations expanded nationally and eventually globally, establishing branches and various independently functioning divisions within the company. These were scattered geographically but could function efficiently due to the executive system that allowed American companies to dominate the world economy. (Mozingo 2011, 3)

By the dawn of the 1950's, after nearly two decades of depression and World War II, corporate culture had changed. The new culture was based on a clear form of organizational hierarchy. The first tier was top management that coordinated the activities of the middle management, allocated resources, and established competitive strategies. The second tier represented middle management who were responsible for providing operational resources for production through finance, sales, and research departments. The lowest tier was directly responsible for overseeing production and sales. Most important for our discussion, the different tiers of employees were distributed in various facilities: the lowest worked directly in factories and sales offices, the middle in division offices, and top management worked in corporate headquarters. (Mozingo 2011, 3)

Leading corporations also reshaped industrial production and as the scale grew, so did their staff and factories. The corporate hierarchy allowed for a clear line of command and efficiency that further enabled corporations to grow and expand so that by late 1940's, American

firms controlled 60% of the world's industrial production.(Mozingo 2011, 4) Managerial capitalism became the model for industrial capitalism around the world. Following the expansion of factories, the corporate offices expanded as well, and their scale grew enormously to accommodate the structure of hierarchical management. (Mozingo 2011, 4)

Efficiency became as important to corporations as rational production, and they looked to attract the new kind of workers. At their top, they sought experts, strategists, and thinkers. This separation of executive management from production lead to physical separation from factories. As the corporate management expanded, they moved from urban offices to suburban landscapes, closer to nature and the educated worker that could lead the strategic corporation.

Historically, middle management research divisions were located on factory sites that were located in the cities. However, the factories and the cities that housed them became viewed as noxious. (Fogelson 2001, Mozingo 2011) With the advent of personal automobile, and the desire for more space middle class Americans started moving to the suburbs. In this arena corporations wanted to move their research divisions away from production but couldn't accommodate them in the corporate offices downtown due to space limitations for the large equipment. Therefore, the first people to be housed in the suburban office parks were the middle managerial staff that did research and product development for the corporations. Top management of the corporations followed, wanting to distance the corporate image from the physical and social implication of the factories. (Mozingo 2011)

In addition to restructuring the image of the corporate top there were political, economic, and physical factors affecting the corporate decision to relocate to suburbia. With the change in corporate structure the size of the managerial cadre and their support staff grew, and companies such as AT&T, General Electric, Deere & Company among others were pioneers in relocating their staff to the suburban offices. (Mozingo 2011)

As the United States started its rapid economic recovery post World War II the central cities declined in their population and economic activity. The growth in both population and industry happened primarily in the suburbs. Between 1950 and 1970 cities in the United States grew by ten million people, while their suburbs by eighty-five million. Suburbs also accounted for 75% of all new manufacturing and retail jobs created during the twenty-year post-war period. By 1970 37.6% of Americans lived in the suburbs, while only 31.4% lived in the cities, and 31% in rural areas. (Fishman 1987, 182) Federal mortgage programs to house the soldiers returning

from war and tax incentives increased the availability of housing on the urban fringe. With the growth of housing the federal spending on schools, infrastructure, and other public services in the suburbs also increased. The urban centers at the same time experienced urban renewal, public housing, and highway programs that often destroyed vibrant and multicultural urban communities. The cities were hurting economically while the suburbs were flourishing. This economic and spatial separation between suburbs and the cities created a divided nation with haves and have-nots. (Kruse, Sugrue 2006, 12) The new patterns of living were blamed for the increased uniformity of the American suburban landscape; the suburban residential development boom of the 1950's and 60's was responsible for increased segregation and poverty in urban environment. (Fishman 1987, 183)

Housing programs alone cannot account for the increased flights of population from the cities. The driver for such flight from the cities asserts Robert Fishman was “simultaneous decentralization of housing, industry, specialized services, and office jobs; the consequent breakaway of the urban periphery from a central city it no longer needs; and the creation of a decentralized environment that nevertheless possesses all the economic and technological dynamism we associate with the city.” (Fishman 1987, 184) Fishman further argues that post-war suburbanization was nothing like the suburbanization at the turn of the 20th century where the streetcar suburbs were driven by increased separation of work and life and suburbs were mere bedroom communities offering individualized living within commuting distance of traditional downtown workplaces. Fishman's argues that the post-WWII economic development boom in the urban periphery in effect created a new kind of city. He labels such places as “technoburbs,” defined as a large area that acts as an independent “socioeconomic unit” providing public services, work opportunities, shopping, and various forms of housing spread across the landscape. In describing the “technoburb” Fishman writes: “Its residents look to their immediate surroundings rather than to the city for their jobs and other needs; and its industries find not only employees they need but also the specialized services.” (Fishman 1987, 184)

An important aspect of Fishman's argument is the automobile, the availability of which created an automobile suburb rather than a streetcar suburb of the late 19th century and early 20th century. The car and availability of services and work by car from one's home became the measure of American family life in the 1950's and 60's.

Finally, the shrinking of affordable office space market in the U.S. cities, due to a lack

of affordable land, and tax incentives from suburban towns with ample space all contributed to the relocation efforts of the corporate top to the suburbs. At first, relocation was met with an air of skepticism from within the companies but the big selling point was the “park-like” setting. (Mozingo 2011, 27) Marketing of these new research centers and headquarters played an important role in forming public perceptions of the modern corporation and recruitment of new talent.

New Forms of Corporate Organization and Place-making

The strength of the corporation from early 20th century till the development of internet in the 1990's lay in the efficiency of their management and production, as well as the breadth and depth of their research. However, with the digital technology boom and development of the Internet the nature and scale of innovation and management has changed, and the innovation could happen in disaggregated locations at a much smaller scale. This, in turn has led to a new form of physical organization.

The years from the 1970's through the 1990's went into history as a time of great technological advancement. In his book *Technopoles of the World*, Manuel Castells describes technopoles (French for science park) as planned developments, the basic function of which are to generate product of information economy. Castells argues that information economy, “is characterized by the fact that productivity and competitiveness are increasingly based on the generation of new knowledge and on the access to, and processing of, appropriate information.” (Castells 1994, 4) The last half of the 20th century economy depended for its economic growth on “inputs from science, technology, and the management of information in the production process. It is this recombination of factors, rather than the addition of factors, that appears to be critical for the generation of wealth in our economy.” (Castells 1994, 4) Information economy also introduces a new form of organizational structure, which is more horizontally integrated than the top-down vertical structure in the agrarian and industrial economies. The large companies, as will be discussed in greater detail later, changed their structures into networks of decentralized independent units to increase the flexibility of their production. Further information economy is characterized by networks between large and small firms, public and private enterprises, and between multiple small firms. (Castells 1994, 4)

One such example of networked technopoles is Silicon Valley in California. With expan-

sion of military in the late 1950's and 60' the demand for electronic devices grew and so did the investment into their research in Silicon Valley companies. By 1976, when Steve Wozniak and Steve Jobs invented Apple Personal Computer, Silicon Valley had fully developed its social network, supporting financial services, and professional organizations. In other words, Silicon Valley was a self-sustained environment that had labor, capital, and knowledge. Neighboring universities such as Stanford, Santa Clara, and San Jose State supplied the labor of well-trained electrical engineers. The building in the business understood the potential for inventions and supplied the necessary capital to fund the new inventions. Universities, in particular Stanford, supplied scientific knowledge and research in electronics. Castells explains this network with an example from Apple's success, "It is important to notice that Jobs and Wozniak were only able to start the company because a former Intel executive, Mike Markkula, came into the project as a third partner, lending them \$91,000. It is this high-risk funding by the individuals who were knowledgeable about the trade, and who shared and understood the culture of the innovators, that made possible the endless birth of new firms in Silicon Valley." (Castells 1994, 20)

Another example of information economy networks is Boston's Route 128, which was completed in 1951 and links 20 suburban towns in the Greater Boston area. Most of those towns were manufacturing hubs from industrial era of late 1800's and early 1900's. In the 1950's and early 1960, the area saw a revival of manufacturing with incentives from military and space programs, but with reduction in military budget post-Vietnam War, Route 128 area lost 252,000 jobs between 1968 – 1975. Remarkably, between 1975 and 1980, the abandoned manufacturing plants found new tenants in the form of high-tech industries, and the area gained 225,000 new manufacturing jobs. In the 1960's Wang Laboratories, then just a start-up company established its headquarters in Lowell and soon other companies followed. Between 1970-76 the computer industry grew at 9% per year, exploding in the late 1970's to an astounding 43% growth rate. Most of the firms locating along Route 128 were start-up companies that consequently grew into giants such as Data General and Wang Laboratories. In 1980 Boston had 900 high-tech manufacturing firms, and 700 more firms did work associated with those companies. Castells credits this phenomena to its proximity to MIT, "Indeed, a study showed that during the 1960's 175 new Massachusetts firms were created by former employees of MIT laboratories." (Castells 1994, 29) Location surveys in Boston showed that the reason for high-tech companies to maintain their location in the area was "the largest concentration of academic, scientific, and

engineering talent in the world...This factor is critical for high-technology industries, since college graduates represent 33 percent of all employees in the computer industry.” (Castells 1994, 32) Route 128 has similar characteristics to Silicon Valley, in that it provides an abundance of talent, scientific knowledge from universities and other technology industries, and entrepreneurial spirit from years of manufacturing. (Castells 1994, 32) MIT had the most distinguished electrical engineering department, and because it didn't have as much money as the Ivy League schools it was common practice for MIT to enter into contractual cooperation with the government. Cooperation with the government in corporations still is a common practice at MIT, as well as it is common to have company 'spin-offs' from the research started under the MIT roof. (Castells 1994)

Castells further argues that technology centers such as Silicon Valley and Route 128 gave a start to a new corporate subculture, where the fierceness of the competition between individuals and among companies gave rise to extreme individualism, resulting in single, well-educated people earned high rewards in return to hard work. “Such individualistic pattern has direct consequences on housing markets on the school system, on traffic behavior, on leisure, and on politics, governments of all kind being universally distrusted and taxes being considered a crude assault on the individual citizen,” (Castells 1994, 23) writes Castells. This is an important argument to understanding the nature of the workplace today. Part of this subculture was establishing a great loyalty to the company one worked for, these feelings of membership were stimulated by recreational activities and team building, as well as flexible work schedules, and wildly informal interactions between the coworkers. (Castells 1994, 23)

In the fall of 2012 at the ULI conference on the future of workplace, Peter Carty, global director of asset management for a European pharmaceutical corporation Sanofi, discussed the development of their new headquarters in Paris. He also spoke about Sanofi's recent acquisition of Cambridge based biotech company Genzyme. Carty, who was an asset manager to Genzyme prior acquisition discussed how Genzyme headquarters - an iconic structure in Kendall Square in Cambridge, MA now has to accommodate the needs of a much larger company. This is one of the many acquisitions that happen daily in today's competitive market as the growth of a corporation is no longer as linear as it was in mid-20th century. (ULI Boston 2012)

Corporations today strive to grow and expand their presence in the global market through acquisitions of other companies. The reasons for acquisition vary often it is to acquire

talent that comes with the company, other times it is a product the company developed that could endanger the financial success of the main company, and perhaps it could be a company's desire to have presence in a certain location and market crucial for their growth. But where do large corporations find funds to acquire the companies, sometimes of just a few people, and other times of a few thousand employees like with the case of Genzyme, or other large profile acquisitions like Google's acquisition of YouTube? One of the ways is reduction in research and development budget. In other words, instead of hiring people to do research the way it was done in the 1950's through 1990's, the companies use their funds to acquire the smaller, innovative research companies that could contribute to the growth and the success of the financially more dominant corporation.

The difference in growth through acquisition versus incremental growth is that when a smaller company is acquired it has its own workplace culture and identity. Jon Frisch, VP of T3 Advisors - an office brokerage company focused on technology start-ups in the Boston area discussed the space needs of those companies. He shared that the smaller "start-ups" are usually anti-establishment, and promote the culture of casual innovation, academic research, or even play. (Frisch 2012) This culture is often promoted and encouraged in academia and further enforced by the start-up incubators that recently have sprung in urban environments to accommodate the growing number of small innovative companies that may have the resources of technology and talent, but no funds for renting office space in a fluctuating real estate market that is still heavily based on large floor plates that don't work as well for smaller companies. (Frisch 2012) As these smaller companies become acquired, they may bring their company culture to the larger corporation, sometimes even recreating the way they worked in their start-up incubator. Other times similarly to the case of YouTube acquisition by Google, the companies are so large when acquired that they remain in their own space and maintain their own company identity independent of that of their parent company. (Carty 2012)

Similarly to Castell's idea of importance of being able to be a part of the network, Richard Florida in his book *Cities and the Creative Class* argues that the move of workforce back to the cities is fueled by 3Ts; talent, tolerance, and technology. He speaks of the urban centers as being "talent attractors" and the idea that cities are places for the creative class. (Florida 2005) His theory of three T's of successful economy is Talent-Technology-Tolerance, and as cities and universities in those cities provide talent and technology, and urban environments have naturally

developed tolerance for diversity then the cities are natural attractors of new start-ups and talent despite the high rents and limited office space. (Florida 2005)

The move of workforce to the city and the exponential growth of corporations such as Google cannot be explained by simply stating that corporations follow talent. Competition, collaboration, workforce, growth, profitability, and innovation are all important factors in informing the location, architecture, and nature of corporate centers. These ideas of people, location, architecture, and nature will be at the center of discussion in evaluating case studies. There will be established as measurable characteristics in comparing the various cases.

Lifestyle and flexibility of space use and time matters to today's highly skilled workforce. The quality of life today demands a greater range of flexibility and amenities than it did in mid-20th century. People that work hard and are driven by innovation and development of new ideas prefer to be surrounded by active, stimulating environments that are usually found in urban settings. (Florida 2005) Moreover when the efficiency of living where you work takes upper hand combined with a lack of urgency to start a family, it generates an urban environment conducive to young professionals that are trying to become established professionally. The importance of ability to make a difference being a small group or an individual cannot be overstated and is unique to Generation Y. The nature of the technology, importance of social aspects and presence of public life both digital and physical, dominates the economic market. For the 20 and 30-somethings amenities and being able to connect to their social circles are more important. Starting a family and buying a house is taking a backseat to entrepreneurship, and therefore the start-ups primarily locate in the cities. (ULI Boston 2012)

Richard Florida argues that: "The companies follow the people – or, in many cases, are started by them. Creative Centers provide the integrated eco-system or habitat where all forms of creativity – artistic and cultural, technological and economic – can take root and flourish." (Florida 2005, 35) So as companies follow people, large corporations want to locate near start-ups for knowledge spill-over and growth through acquisitions of these companies and the talent and culture that they (start-ups) possess. It also means that cities are ahead of the suburban environments in nurturing small-scale entrepreneurs – a move that inevitably attracts larger corporations and raises tax revenues for the cities.

With the change in one of the main aspects of organizational structure, which is growth and research does the choice of location, architecture, and nature change in the eyes of the

corporate leadership? Do corporate headquarters still house all the research and top management? The role the corporate headquarters play in the public eye, global market, and more importantly talent recruitment, even during acquisitions is different from the role corporate headquarters played in the 1950's and 1960's.

To examine what drove corporations to their location, to the choice of people, architecture, and nature I will examine four cases of classical corporate icons. These companies are considered pioneers of relocation of the managerial top to the suburbs and have the most architecturally sophisticated centers in the suburban landscape. This thesis examines four classical cases of corporate icons:

- General Motors Technical Center, Warren, MI (Primary Case)
- Deere and Company World Headquarters, Moline, IL (Primary Case)
- PepsiCo World Headquarters, Purchase, Harrison, NY (Secondary Case)
- Union Carbide, Danbury, CT. (Secondary Case)

These cases represent various industries: car, agricultural technology, food production, and chemical industry, all of these corporations but one are still standing and thus will serve as great examples to be examined as to where these iconic corporate estates are today, and where will they be tomorrow. These cases evaluated by four criteria: location, people, architecture, and nature. Those cases are then compared to three current examples of corporate icons:

- Google Inc. Corporate Headquarters, Mountain View, CA
- Genzyme Corporate Headquarters, Cambridge, MA
- Apple Campus 2 proposal, Cupertino, CA



Figure 4: Promotional material cover "Where today meets tomorrow." Source: GM Public Relations 1956



Figure 5: Engineers working in Styling Center. Source: GM Public Relations 1956

General Motors Technical Center (Warren, MI)
Architect: Eero Saarinen
Landscape: Thomas D. Church
Date Completed: 1955
Site area: 320 acres
President of GM: Alfred Sloan

CHAPTER 2: Cases of classical 'corporate estates'

The cases discussed in this chapter aim to explore how various organizational structures of the most prominent corporations in the 1950's drove their decision on location of their corporate centers, helped them identify the architects for their iconic buildings, and informed them on the overall image their estates would convey to their clients, their competitors, future and current employees.

General Motors Technical Center (Warren, MI)

People

The case of General Motors (GM) is of a remarkable significance in the study of managerial structure of the corporation. Alfred Chandler in his book *Strategy and Structure* outlines the historic development of GM's organizational structure. A company, founded by entrepreneurial William C. Durant in 1908 built GM on strategy of "expansion through combination and integration" (Chandler 1962, 115) of independent operating divisions. GM was established as a holding company, which owned stock in Buick, Oldsmobile, and other manufacturing companies. The acquisition of stock in companies was largely through exchange of GM stock for the stock in the production companies. In other words, Durant's strategy was to grow GM by combining under one name various scattered facilities that produced automobile parts, accessories, and various models of cars. By 1919 GM became the fifth largest industrial enterprise in the United States. (Chandler 1962, 115) Durant's strategy of combining multiple manufacturers' under one roof for more efficient operation and quicker growth was the recipe for his personal success, however he was not interested in organizational structure of the company. By 1920, Durant struggled to coordinate and integrate the various divisions of GM that produced multiple parts and various vehicle models, lacking a rational way of organizing them.

In 1920, as the stock market was slowly crumbling in combination with the postwar recession, Durant found GM to be in financial trouble. Durant stepped down from the presidency on November 20th, 1920 and was replaced by Pierre du Pont. The financial crisis of GM fueled the development of GM's current organizational structure. Shortly after being appointed a president of GM, Pierre du Pont and the Board of Directors of GM approved on organizational plan designed by Alfred Sloan. Unlike Durant who was regarded as an accomplished salesman,

Sloan, a graduate of Massachusetts Institute of Technology, found organizational structure to be the most important aspect of a successful enterprise. Sloan analyzed organizational needs of GM and found that operating divisions had to retain their autonomy in order to promote innovation and initiative. The desire to promote innovation is a frequently reoccurring theme in the early development of many corporate organizational structures.

Sloan's structure was based on two principles; first, each division in GM would have its own chief executive that would have unlimited decision making power and flexibility, and second that some organizational structures, such as financial and legal branch would be centralized. This structure allowed for centralization of research and marketing, and by the 1940's the research division grew out of its space in GM's headquarters in downtown Detroit and was spread out among multiple buildings around the city. Alfred Chandler described the success of Sloan's organizational structure: "The structure it created remains today as the corporation's basic organization. It lasted because it transformed GM from an agglomeration of many business units, largely automotive, into a single, coordinated enterprise." (Chandler 1979)

As GM grew Sloan and Charles F. Kettering, who from 1920 led GM Research Corporation, found that their cramped space in downtown Detroit was increasingly inadequate for research. In 1942 they started to discuss that research, engineering, and styling staff should be housed in the same facility. Kettering suggested a separate facility outside of city center but physically close to it.

At the end of 1944, as the World War II was drawing to a close, GM acquired 320 acres of land in Warren town, half an hour drive north of Detroit, where their headquarters building had been housed since 1923. (Mozingo 2011, 74) From the beginning Sloan wanted to focus on the center to be aesthetically pleasing. The GM's headquarters was designed by Albert Kahn, so Sloan saw the importance of aesthetically sophisticated design as a sign of innovation and a forward thinking company. GM's cars were known for their styling, so Sloan thought its Technical Center for research and styling should be distinctive and convey the corporation's focus on design. Sloan was met with objections from the GM Board of directors that found little utility in good design and wanted GM engineers to design the facility, however Sloan persuaded them that an architect would add value without costing more money and the Board reluctantly approved. (Sloan 1964, 304-305) GM would have chosen architect Albert Kahn for the design of their center but hired Eliel Saarinen as Kahn passed away in 1942. Saarinen, a well renowned

FIFTEEN CENTS

TIME

The Weekly News-Magazine



Vol. VIII, No. 26

ALFRED FRITCHARD SLOAN JR.

First/first
(See Page 26)

DECEMBER 27, 1926

Figure 7: Alfred Sloan. Source: Time Magazine Vol VIII, No. 26

modernist architect was recognized for functional design and rationalist planning. (Mozingo 2011, 75)

In their announcement of the Technical Center in New York in 1945, both Sloan and Kettering focused on the idea of more jobs through research and promoted the Center as the place where the most theoretical engineers would be housed, research would be performed undisturbed by the urban factors, and where innovation would happen. Total office and lab area in the Technical Center is about 560,000 SF, and estimated at 20 million dollars was a substantial investment into an office research center. Widely published in architectural magazines such as *Architectural Record* and *Architectural Forum*, the project was promised to be one of remarkable scale and architectural importance. Sloan was quoted as saying that, "The ultimate objective is more and better things at lower prices, thus expanding job opportunities and contributing to an advanced standard of living." (Pierce 1945, 23) Sloan described the vision for the Technical Center to be uniting the various research departments under one roof in order "to see a little farther into the unknown and to convert our knowledge into practical products more quickly." (Pierce 1945, 23) Kettering, the director of research at GM, added that the new center would expedite the flow of the newest goods to the public. He further introduced the idea of collaborative work foreshadowing what is now common practice: "Here General Motors technicians of every type, from the most theoretical scientist to the most practical workmen, can work undisturbed on their developments with the benefit of the most advanced facilities and counsel of their associates." (Pierce 1945, 23) It is important to note that the idea of freedom to collaborate was often intertwined with a conversation of Cold War and the competition from the Soviet Union, implying that freedom is what differentiates American engineers from Soviet engineers, and therefore if fostered, this freedom of collaboration will bring fruit of technological innovation. (Mozingo 2011)

Location

The location for the Technical Center was chosen so that it would be no more than half an hour away from the GM's headquarters by car. Saarinen's site plan promoted exterior uniformity while emphasizing interior flexibility; a feature that has become increasingly important in today's office architecture. When Eliel Saarinen died in 1950, his son Eero Saarinen took over the team and simplified both the building design and the site plan. A revised site plan proposed a 22 acre central pool surrounded by five clusters of buildings each housing a separate division of

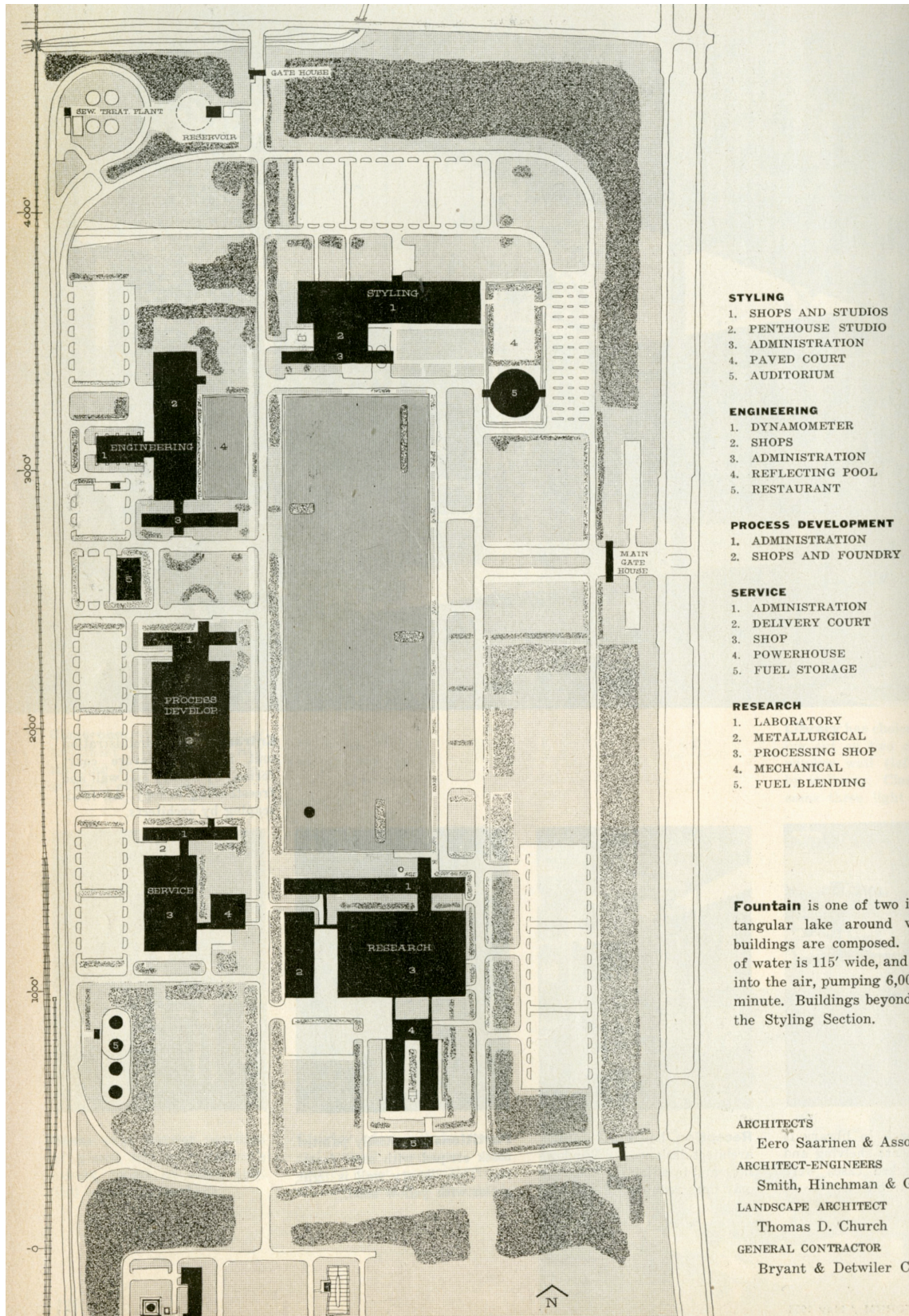


Figure 8: GM Technical Center Site Plan: Source: Architectural Forum, May 1956.

the Technical Center: research, styling, manufacturing development, engineering, and services. The system of roads were central to the site design concept and represented functionality over beauty; the pure utility of site organization made the Technical Center an icon for mass production, reason, and innovation.

The vast master plan with landscape design by Saarinen and landscape architect Thomas Church was designed on one square mile of land. The man-made lake with four floating islands and the fountains provides a visual amenity and serves as the focal point for the Technical Center, the scale of it is perhaps one of the most impressive aspects of the master plan and suggests that the site was designed to be enjoyed from a moving vehicle. The scale of this project, the distance between buildings, and the horizontal disposition of building clusters around the 1780 foot long central lake were designed for moving vehicle, an idea inspired more by city design of the Industrial world rather than by architecture for corporate headquarters. "The Technical Center site module is a speedometer," wrote Architectural Forum in reviewing the Technical Center still under construction.

Architecture

Saarinen followed a clear modernist aesthetic architecturally, using modular system of five feet units, he not only emphasized the language of repeated logic and stream line production of architectural elements, he allowed for a flexibility in the interior building that allowed the Center to be updated as needed throughout the years. The simple module panels were varied with glass to produce maximum light exposure to the interiors of the buildings. Each building was no more than three stories in height and constructed of steel structure with aluminum framed glass and porcelain enameled fillers. The end walls are brick for all of the buildings each colored a bright color thus being used as an index for a building cluster avoiding suggesting what is housed inside each structure. The only structure with a different identity is a domed auditorium of the Styling center, used for displays, movies, and other large gatherings.

The Architectural Forum magazine in 1954 described the GM master plan in a feature article, stating that it housed mostly identical rectangular buildings, true to the modernist aesthetic in order to stress that function dominates the image, and what happens inside the walls of each building cluster can change over time, therefore function is a temporary tenant and not a defining one. The Styling Center and the water tower were the only structures that were not

rectangular. (Architectural Forum 1954, 100-119) This early idea of flexibility in architecture is important and is often used today to add value to the building, allow for a variety of uses, and extend building's lifespan.

There was, however, architectural variation in the fenestration that varied depending on the interior use of the space, in the administrative building the windowsills were at desk level, while in the lab space the window sills were higher at the lab table space. This variety of use was of course manifested in the elevation of otherwise uniform buildings.

In answering a question of the purpose of this project and the scale of the Architectural Forum argued that the Technical Center was a true manifestation of the GM as a company: "It was that the focus of the corporation's interior energy should remain where it began, in the steady improvement of its technological product, and never wander away in the more sophisticated mazes of finance and sales, that GM is a great manufacturing company first and anything else second." (GM Nears Completion 1954, 119)



Figure 9: Executive Office. Source: Mozingo 2011.

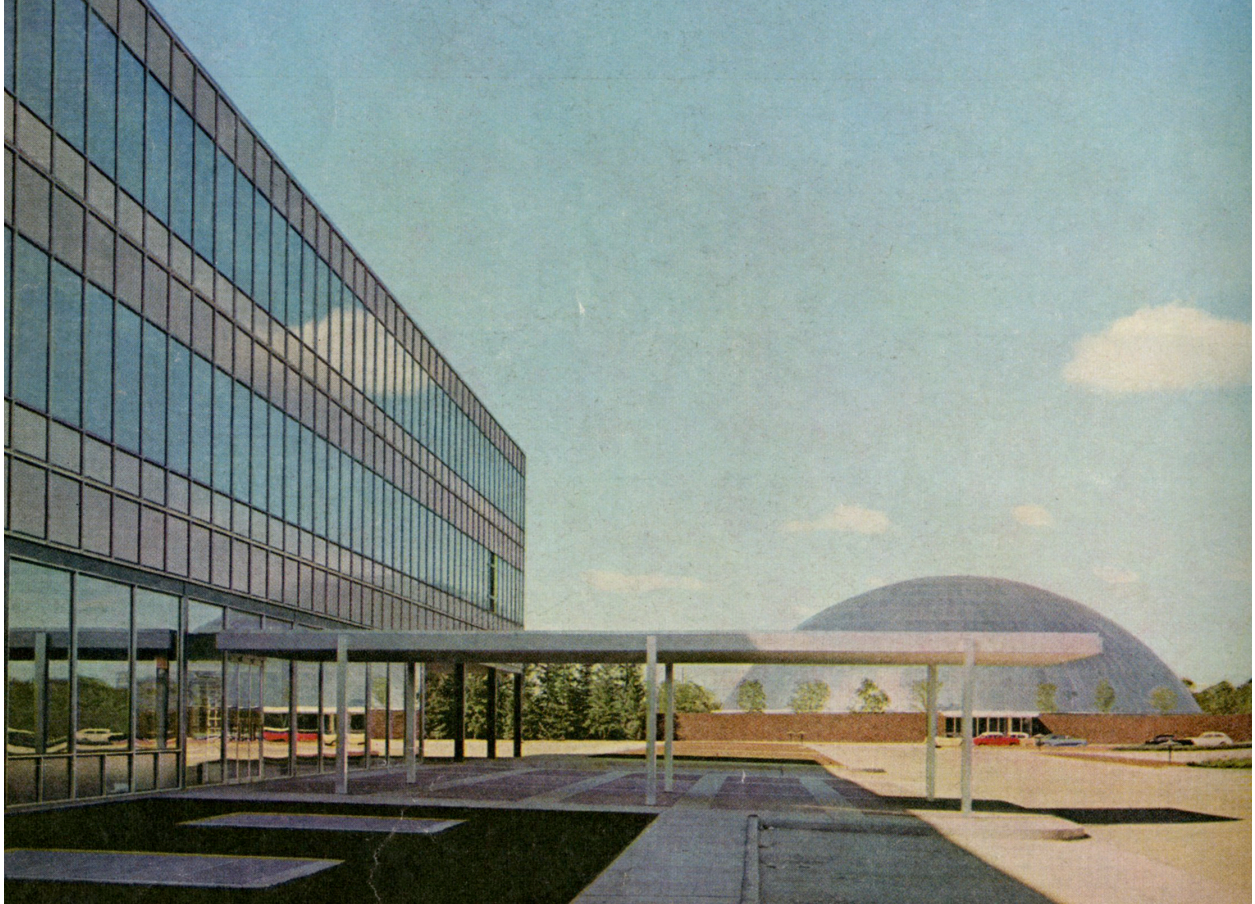


Figure 10: Administration Building for the Styling Division Source: Architectural Forum 1956.



Figure 11: Cafeteria Building. Source: Architectural Forum 1956.



Figure 12: Water Tower. Source: Architectural Forum 1956.

Nature

The unassuming and very minimal landscape served as a backdrop for the enjoyment of the simple modular architecture. The interior was weaved in with exterior in an intricate and minimal way. The loop road links the multiple building clusters on the site, and the spaces in between the buildings and the road are carefully designed to link the interior of the buildings to a network of outdoor courtyards. Before designing these landscaped areas, Saarinen made a trip to Europe to explore Europe's Renaissance squares and spaces. As the result the buildings are punctuated by small paved courts, water pools, lawns to create an intricate linkage between the interior of the innovation spaces and the exterior of those spaces. Everything about this master plan from the scale of it to the choice of the 138' tall water tower to be the tallest structure of this industrial complex speaks of the importance of the innovation and celebration of engineering by GM. In addition to landscape amenities, the site housed a significant area of parking and a restaurant building for its employees.

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
<ul style="list-style-type: none"> - A place for innovation and <i>tomorrow</i> - Engineers - Car styling 	<ul style="list-style-type: none"> - Suburban - 30 minutes driving distance from GM headquarters 	<ul style="list-style-type: none"> - Scaled for a car - Modern - Filled with light - Logical 	<ul style="list-style-type: none"> - Private 320 acres - Experienced from a car - European Renaissance inspired squares - Large central pond 	<ul style="list-style-type: none"> - Restaurant - Pond - Fountains - Courtyards

Figure 13: Deere Characteristic Matrix. Source: Original



Figure 14: Exterior glass facade of the office building. Source: Architectural Forum, 1956, p 122

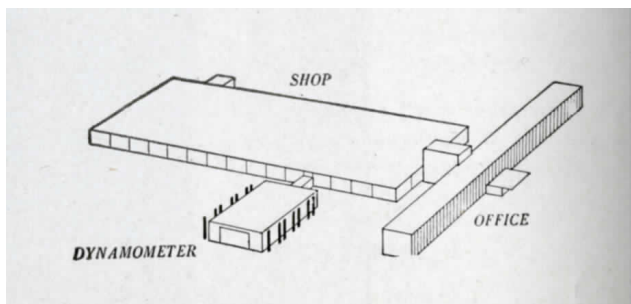


Figure 15: Diagram showing relationship between office, shop, and dynamometer. Source: Architectural Forum, 1956, p 122



Figure 16: Deere & Company World Headquarters ,front facade. Source: DeLong 2008.

Deere and Company World Headquarters (Moline, Illinois)
Architect: Eero Saarinen
Landscape: Hideo Sasaki
Date Completed: 1964
Site area: 720 acres
President of Deere & Company: William A. Hewitt

Deere and Company World Headquarters (Moline, Illinois)

John Deere, a leading agriculture machinery manufacturer in the world, started their operations in 1838 with the development of the steel plow that replaced the cast iron plow. This steel plow became a corner stone for development of Deere and Company (Deere.)

When William Hewitt became a president of Deere in 1955, he had a vision for the company to become global with an iconic building to show for it. He also wanted to unite the multiple office buildings spread around Moline under one roof. Within the first decade of his leadership Hewitt managed to turn Deere into a multinational industry leader and changed the management philosophy within his company. When Hewitt assumed leadership, Deere was profitable but was showing signs of inflexibility, as the management was mostly senior and lacked the ability to move towards innovation. (Broehl 1984, 614) Hewitt surprised the board of directors by requesting an outside consulting firm to evaluate the management structure of the company. Reluctantly, the board approved the firm of Booz, Allen & Hamilton to perform analysis of the organizational and compensation structure of the top management. (Broehl 1984, 615)

People

The goal of Hewitt was to turn Deere into a multinational corporation and within months of assuming his presidency he was on the way of accomplishing it. In 1955 he wrote a memo stating that Deere has to be an industry leader in six key areas, sales, profit ratios, new design, quality, safety and excellence in employee, stockholder, and public relations. (Broehl 1984, 615) At the time International Harvester was an industry leader in agricultural machinery and Hewitt made it clear in his public announcement that the goal of Deere is to be a leader not a close #2. The biggest issue in the company stemmed from the marketing sector in Hewitt's opinion; marketing didn't drive the sales department and was too disconcerted from design decisions. Hewitt also observed that the sales department was heavily driven by the production department, which meant that the pricing and design decisions were driven by the production department. Hewitt asked, "How do we decide to build a machine?" and should marketing be included in such decisions instead of just factories? (Broehl 1984, 616) These sort of questions informed Hewitt's overall belief that there needed to be an improved level of communication between various departments, greater market analysis, and a more educated executive management to push the company forward. In order to improve communications between the departments Hewitt in

proposed to build a new administrative office that should be housed on 'campus'. (Broehl 1984, 616) Finally, Hewitt wanted to expand market operations abroad.

In early 1956, the consulting firm Booz, Allen & Hamilton concluded the initial recommendation on the organizational structure at Deere. The report proposed for Hewitt's presidency to signal a new shift in management structure by bringing a new generation of management into policy making of Deere.

The issue both consultants and Hewitt were concerned about was that the top management would interpret decentralization of the company as a complete autonomy. Hewitt wanted to stress that decentralization asks for more coordination instead of more autonomy by stating that as more authority is given to the top management they should distribute such authority to the men under them. (Broehl 1984, 623) Consultants proposed that structure gave more power to the general company to give direction to decentralized factories and branches that formerly often refused to coordinate with each other and viewed decentralization structure as a power for autonomy. The consultants proposed to develop a new 'policy committee' at the top-management level whose sole purpose would be to develop objectives, define policies, and conduct special studies. This committee would report to the president and would not have direct authority, the president in turn would have a say in issuing orders to the line of organization. This level of organizational structure obviously asked for much more coordination, a function that would be much easier performed had all the stockholders been housed under the same roof. (Broehl 1984, 622, 623)

Although this policy committee idea proposed a more advanced level of decentralized corporate structure, Hewitt adopted a more cautious approach by appointing two key top managers; Murphy and Kennedy to the first vice-presidential roles - positions that for policy advisor role. (Broehl 1984, 623)

As the result of the Booz Allen recommendations, Hewitt was able to tighten the organizational structure in the top management positions of Deere, improve communications channels, and put greater emphasis on marketing and finance by assigning vice presidents for those branches of the company. By 1957, there was no question about Hewitt's ability to lead a company and he had his own management team in place to help him. He was particularly good in general management, public relations, and marketing. (Broehl 1984, 623)

Location

Hewitt's legacy lies in his expansion of Deere abroad along with that his manifestation of the unified organizational structure through the office building on the exquisitely landscaped estate in Moline, Illinois. The headquarters at the time Hewitt became president was located in a three-story structure in the business district of Moline adjacent to the Deere factory. Originally the board wanted the headquarters to be located in a large city like Chicago or New York, but Hewitt insisted that locating where people know about the land and work with land is crucial, so the headquarters stayed in Moline. (Mack, McConaghy 2012)

Hewitt was seeking to create a destination for the company headquarters that would attract top executives and talent. He was seeking to remove his top management from the noisy and crowded Moline business district, so Hewitt approached Henry Dreyfuss, a long time product designer for the GM who recommended Eero Saarinen as an architect for the job citing two of his recent works – MIT Auditorium and the GM Technical Center. (Mozingo 2011, 120) Hewitt, known for his refined taste, passion for travel, and European culture, visited both projects and ended up meeting with Saarinen at the GM Technical Center. After visiting the GM Technical Center, Hewitt was so impressed he decided the Saarinen was the perfect man for the job. (Broehl 1984, 638)

In August 1956, Saarinen met with Hewitt in Moline to pick a site for the new headquarters. At the time Deere owned a large swath of land along the Mississippi river, which was the original location for the Deere factory in 1847. However, Saarinen found that the site was not pristine enough, surrounded by warehouses, factories, and other industrial buildings Saarinen thought it defeated the purpose of relocating top management away from the noisy polluted city center. During the search, Saarinen observed that: "He had never seen a community that offered so many problems in regard to having potential sites marred by the nearness of shacks, trailer camps, cemeteries, cheap commercial buildings and other unattractive blight." (Broehl 1984, 638) In their search, the architect and Hewitt found a 720-acre site comprised of four agricultural farms south of East Moline, the site's topography, existing landscape, and the views of the valley carried a potential for the vision Hewitt shared with Saarinen.

In his announcement of the Administrative center, Hewitt was quoted as saying: "The new administrative center will increase efficiency of the many departments now operating with space and communication problems. Moreover the existing parking problem will be eliminated

and land will be available for future expansion.” (Mozingo 2011, 121) The idea for expansion and growth was prevalent at the time, when production dominated the economy in the United States and companies looked for ways to grow into global leaders in their field.



Figure 17: Historic Deere & Co Headquarters. Source: Mozingo 2011.

Architecture

The board didn't share Hewitt's enthusiasm for contemporary architecture but Hewitt was able to 'sell' the idea of the headquarters as a symbol of Deere as the leading international corporation. He presented the merit of Saarinen, talked about his buildings world-wide and his recognition among other architect. Hewitt asked a rhetorical question: "Is he too "fancy" for us?" - his answer was "No." (Broehl 1984, 639) With this rhetoric Hewitt was partially seeking approval for the expenses associated with hiring a world renowned architect but more importantly he wanted to 'sell' a vision of Deere to the board of a corporation that is a nationally important

company that is striving to become an important player in the international arena in the agricultural machinery industry. In this meeting, Hewitt succeeded in turning a Midwestern farm on a path to become a multinational corporation with corporate headquarters globally known as one of the architecturally finest administrative centers in the world. (Broehl 1984, 639)

After Saarinen's approval by the board in 1957, Hewitt wrote a letter of intent to Saarinen describing his vision. He made it clear that he wants the building design to be reflective of the function of the company and be indicative of his vision for the company's future. Hewitt proceeded to make an analogy between the "rugged, honest, and close to soil" men who put emphasis on integrity and quality of product. He further proceeded to state that "as the farmer wants and needs the most efficient and durable tractors" the company needs the best architectural concepts for its headquarters building. (Broehl 1984, 680) "The several buildings should be thoroughly modern in concept but should not give the effect of being especially sophisticated or glossy. Instead they should be more 'down to earth' and rugged." (Broehl 1984, 680) Hewitt was close to the farm and lived on a large farm himself, so in communicating his vision to Saarinen, Hewitt asked for a modern concept that is grounded. With that he, also addressed the concern of many board members that worried that farmers may find a sophisticated modernist building to be too urban.

When Deere headquarters moved to the new center in April of 1964, Hewitt declared his hopes that new center would serve "as additional inspiration to all of us to be bold, ingenious and creative, to use our imagination in new ways to keep John Deere out in front as a leader." (Mozingo 2011, 128) The rave reviews of the new office space were immediate and continued for years to come. An employee survey five years after the first occupancy revealed that employees most valued the site and the landscape, attracting new personnel became easier, and ads that contained images of the administrative center had higher response rates. There were complaints about climate control in an all glass building, which now has become the well known drawback of the modernist architecture, as well as occasional gripes about out-of town location of the site.

The design and the assignment of interior spaces also concerned the board. These decisions on interior were not seen as mere placement decisions but would become reflective of the organizational restructuring of the company that was underway at the same time. Therefore, the board assigned Cook to work closely with Hewitt in rationalizing building design with

management concept in mind. Over the following eight years Cook maintained this advisory role throughout the Deere Administrative Center project. (Broehl 1984, 640) The concern over the interior layout of building, that would reflect the seniority and relative position of the employees resulted in an executive floor with the individual offices on the perimeter and secretaries supporting the executives in the middle. On the other floors, such as engineering, the closed offices were on the interior of the floor plate, with open office structure on the exterior allowing for light and views for everyone standing at the core of the building. (Mack, McConaghy 2012) This organization of space manifests the corporation's concern of the internal organizational structure, and in a way one can argue that interior design became a road map to the organizational changes in Deere.

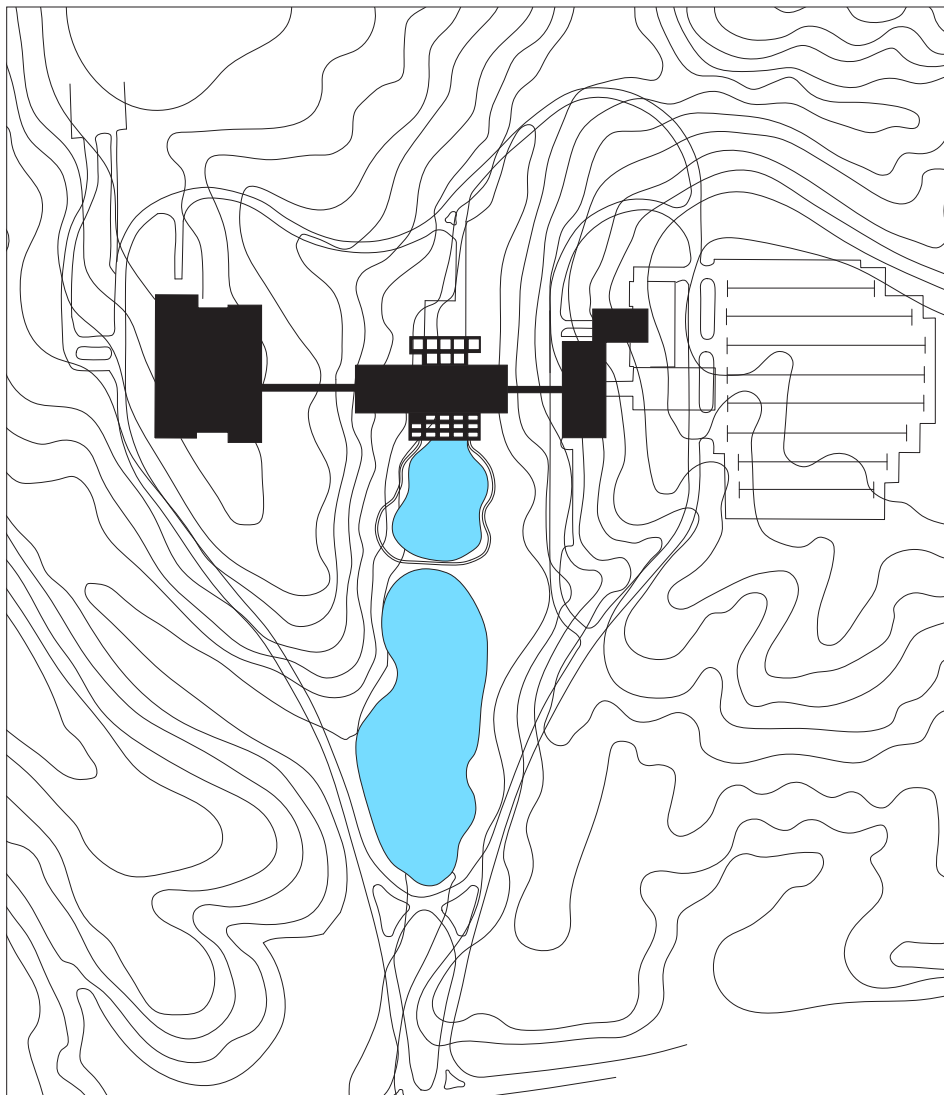


Figure 18: Site plan. Source: Original, redrawn from Mozingo 2011.



Figure 19: Deere & Co. front facade with upper pond. Source: architectureweek.com

After completing GM's Technical Center Eero Saarinen had ambition of his own. He was looking to leave a mark on twentieth-century architecture. He focused on the message of rugged modernism and proposed to use steel that rusts from weathering to provide texture and weight to the façade of the building. Saarinen described his design concept as follows: "Farm machinery is not slick, shiny metal but forged iron and steel in big, forceful, functional shapes. The proper character for the headquarters' architecture should likewise not be slick, precise glittering glass and spindly metal building, but a building which is bold and direct, using metal in a strong, basic way." (Mozingo 2011, 123)

The program requirements for the Administrative Center were to house 800 - 1000 people, an executive dining room, a cafeteria, a 400 seat auditorium, and a large product display area. This product display would be visited by over 700,000 people a year. Hewitt also stressed the importance of the building to have a capacity for future expansion. (Mozingo 2011, 122) The original concept proposed to include laboratory research and development building so that the prototype machinery could be tested on the site, but was found to be too dirty of a use for the administrative center and was never incorporated into the final design.

Nature

The aesthetics of landscape were crucial to Hewitt in establishing Deere as the world leader in agricultural machinery production. (Mozingo 2011, 121) Dawson, a principal at Sasaki, envisioned the landscape to have the primary function of smoothing Saarinen's industrial materiality of his building and serve as a complimentary element to the architecture that went beyond its modernism architecture in the roughness and scale. Saarinen proposed an eight story building to take full advantage of the views of the site, so in a way the architect and Dawson worked together to mitigate the cost of interior experience of a large imposing building in the landscape by designing a site that both enhances ones view from within and softens one's views from outside. The landscape design helped to envelop the building's materiality by becoming a part of the finished structure and enhancing the visual experience from the inside of the Center. After presenting a preliminary design in 1958 Saarinen invited Hideo Sasaki to come up with a landscape architecture concept for the 700 acre site. (Mozingo 2011, 124) Sasaki articulated Saarinen's site plan concept by grading, planting, and forming two water pools to achieve intimacy between the building and its landscape. Although the building is eight stories high, its position in the valley divided the site's hilly portion from the flat lying area adjacent to Rock River.

The unique topography of the site allowed for the tall structure to blend in with the landscape. Sasaki and his project manager Stuart Dawson reformed Saarinen's proposed central pool structure to include exquisite ponds. The upper pond facing the building was carefully manicured and was experienced from the executive meeting, office, and dining rooms. (Mozingo 2011, 125) The lower pond is a retention pool that collects both the water from the upper ravine that flows past the building and the water from the upper pond. In addition, the lower pond served as a cooler for air-conditioning system for the Administrative Center and serves to emphasize the entry into the premises from the main gate. (Mack, McConaghy 2012)

Equally important as the architecture of the building, was the way you approach the building. The heart-shaped driveway, renamed John Deere Expressway, functions to present the entire landscape in a uniform and winding way. It is an "active element in the experience of the landscape, orchestrating the views to maximum effect." (Mozingo 2011, 126) Sasaki designed the road to allow for the experience of both the building and the landscape. He envisioned the majority of the landscape to be left to its natural state of woodlands. With the onset of elm disease, the site lost a lot of its trees and the landscape architects proceeded by planting an



Figure 20: Deere & Company facade. Source: DeLong 2008.

unprecedented number of trees to create the desired woodlands. The trees, unmanned grass, and shrubs were contrasted by 30 acres of carefully manicured landscape adjacent directly to the Administrative Center. (Mozingo 2011, 126) This concept was partially abandoned with the invention of tractor mower by Deere and their property was used to show the power of automated machinery, which resulted in a larger portion of the landscape to be mowed rather than kept untouched in the pristine way envisioned by Sasaki. (Mack, McConaghy 2012)

Architectural critic Walter McQuade argued that the “depth of feeling in Deere which makes it much more transitory than most modern architecture...a symbol of industrialism, enriching rather than destroying the landscape by contrast.” (McQuade 1965) In 1993, Deere headquarters building won the AIA twenty-five year award for design that endured the test of time. With the Administrative Center, Hewitt and his design team were able to accomplish all of their goals, he turned skeptical and frugal Deere customers into believers of his vision, gaining approval from architectural and cultural critics as well as “hard-headed capitalists.” (Mozingo 2011) The initial idea of Hewitt was to use the sophisticated architecture of the center as an icon for the forward thinking, global industry leader with a focus on quality and safety manifested itself on this vast site in Moline, Illinois. “The Administrative Center was simultaneously elite and populist, exclusive and community minded, luxurious and efficient, imposing and welcoming.” (Mozingo 2011, 136)

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
<ul style="list-style-type: none"> - Improve communication between departments to promote collaboration - Tighter organization structure at the top 	<ul style="list-style-type: none"> - Rural - Where people know about the land - A place where 'we' work. 	<ul style="list-style-type: none"> - Rugged/Grounded - Modern - Timeless - Cultured interior/Art Gallery 	<ul style="list-style-type: none"> - Public & private 720 acres - Landscaped surroundings - Pristine - Untouched - Vast Views 	<ul style="list-style-type: none"> - Restaurant - Cafe - Ponds - Views

Figure 21: Deere & Co. Characteristic Matrix. Source: Original 2013



Figure 22: Deere & Co. interior view. Source: architectureweek.com

Today as the company has become increasingly global what Deere facilities group found is that their office space is occupied at 60% and sometimes as low as 40% of its capacity; the occupancy varies as employees travel for meetings, do consulting work off site, and work from home. (Mack, McConaghy 2012) To accommodate the needs of today's workforce and to maximize the use of space in the headquarters, Deere launched a pilot program, which rethinks the use of workspace on one floor of the building. The plan to retrofit the third floor of their twelve story administrative headquarters includes a variety of spaces: the lounge, the coffee shop, individual work spaces, the team collaboration room - an idea of work style similar to the university environment that Google headquarters today institutes in their work space in Mountain View, CA. Offering the variety of spaces on the engineering floor and the concept of "free address" - when you arrive you choose the space that you want to work in.

With the change in ratios - the space now offers a variety of work environments: col-

laboration rooms, a coffee shops, library, and individual work environments. The two main reasons for this pilot program were to increase the utilization of the existing space thus avoiding the need to build more space and to provide choice in where and when an employee will do work. (Mack, McConaghy 2012) This flexibility on space use speaks to the value placed on the employee today, and the employee's needs in flexibility in time and work environment. Overall today the building serves the company well to recruit and retain talent.

In addition to the pilot program, the company underwent a number of changes in the interior layout, reverting back to the original open floor plan. The original interior design of the space was an open floor plan, with closed offices on the interior of the building allowing the views and light for the entire office; the idea was to be able to see from the core of the building all the way out into the vast landscape. Over the years, people kept using flexible partitions to create more and more private offices and eventually the private offices blocked the views to the exterior. Therefore Deere four years ago decided to reduce the number of private offices and go back to Saarinen's original design of an open floor plan. As a result, some employees with a personal office felt that their achievement in the company is being taken away: "Well, I worked with the company all these years to get this office, and now you are taking it away." (Mack, McConaghy 2012) There had to be a conversation educating people how the open floor plan is better for work and performance and overall collaboration of the staff, which with time worked and people were happy with a more open space.

In addition they adapted the executive dining room to a conference room that occasionally will host dinners, and changing a large cafeteria into more of a Starbucks-type café, that employees often use for meetings. Among changes that were made the café is used all the time unlike the old style dining hall that was used for lunch only and is seen as a more informal meeting and work environment. Again, there had to be a change in shifting the thinking of what work is. Older management had to adjust to understand that an employee didn't have to be at his desk to be able to do work. When you go to the cafe you often see people working on their laptops, collaborating with their coworkers. It is interesting because we often think of Starbucks as an urban work environment phenomenon. However, Moline is a suburban environment and it seems that these accidental work environments can be programmed to accommodate the need of the workforce for a flexible space.

Coincidentally, Moline is a great place to raise a family and as baby boomers are retir-

ing, younger leadership is taking its place, resulting in a more international firm in terms of its culture. The majority of the 1,500 people that work at the Center live within 15-30 minute driving distance. Thirty-five years ago, people used to stay in the office for the entirety of the work day, however, today the employees will leave the office for lunch or to go see their kid's play at school and will return to work without needing to take half a day off. This flexibility is welcomed by many employees and helps in recruitment of new talent. This allows the company to recruit and retain younger and more global talent.

The headquarters is an excellent representation of company's focus on quality. Saarinen's building proved to be timeless and has served Deere well. It is evidenced by Deere's decision to rethink the utilization of their space instead of expanding their headquarters or building a new ones. The success of a company like Deere lies in their ability to adjust their policies to respond to the needs of their people, their desire to have choice in the space they work, and the time of day that they work. A company that is capable of respecting the individuality of their employees is capable of recruiting and retaining talent that makes the company a success.



Figure 23: Deere & Company facade. Source: Mozingo 2011.

In addition to these two primary cases there are many other examples that are worth mentioning in particular PepsiCo and Union Carbide.



Figure 24: View of Alexander Calder's "Hats Off." Source: <http://blog.ohny.org>

PepsiCo World Headquarters (Purchase, Harrison, NY)
Architect: Edward Durrell Stone Sr.
Landscape: Edward Durrell Stone Jr.
Date Completed: 1970
Site area: 112 acres
President of PepsiCo: Donald Kendall

Pepsi Co World Headquarters (Purchase, Harrison, NY)

Donald Kendall co-founded PepsiCo in 1965 by merging Pepsi-Cola, which was founded in the late 1890's, and Frito-Lay, which became part of the company through a merger in 1961. When Kendall becomes the president and a chief executive officer of PepsiCo, the reported sales that year were 510 million dollars and the company employed 19,000 people. By 1970, sales exceeded one billion dollar mark and PepsiCo employs almost doubled its headcount at 36,000. That same year, PepsiCo made an important move from their headquarters at 500 Park Avenue in Midtown Manhattan, New York City to a wealthy suburb of Purchase, NY. (PepsiCo 2013) The move to Purchase, NY represented "the era's fears and aspirations for safety, stability, and beauty." (Martin 2011, 114)

Deere set a precedent for corporations to establish headquarters surrounded by landscape. They showed that sophisticated architecture set into lush landscapes can become an icon for progress and positive public image. PepsiCo most closely followed the Deere site concept by placing a "building in the garden," and hiding the parking lot from view from both the headquarters and the sculpture garden.

PepsiCo employees are surrounded by nature in a secure and affluent New York City suburb. Their day starts and ends with a thousand foot walk from the parking lot through a sculpture garden filled with global masterpieces. The site originally provided the stability and security for it's employees that the 1970's New York City no longer possessed. Today the gardens remain a perfectly maintained amenity alongside a cafeteria with outdoor seating that is the only part of the outdoors that is closed to the public. (Martin 2011, 118)

The new world headquarters, designed by Edward Durell Stone Sr. is set on 152 acres of former polo club land. (Martin 2011, 114) Completed in 1970, PepsiCo headquarters consisted of seven white three-story buildings. The height of the buildings were restricted by local zoning code thus leading to small sunken courtyard that allowed additional basement walk-out levels. The collection of seven square buildings was designed to represent seven international divisions of PepsiCo. (Martin 2011, 116) Connected at the corners to one another the buildings follow checkerboard pattern thus forming a crucifix courtyard. PepsiCo brochure describes the buildings as "inverted ziggurats" that are symmetrically arranged. The square buildings radiate outwards from a courtyard providing a typology that is easy to expand should a company need extra space. The building arrangement also provides maximum exposure to light and views of



Figure 25: E.D. Stone's early site plan. Source: Martin 2011.

the garden to its inhabitants.

The buildings are surrounded by an elaborate landscape designed by Durell's son Edward Durell Stone Jr. Visitors can freely walk around the site and even come into the arrival court. The arrival court consists of three sunken courtyards that display the smaller sculptures. An asset that is rare for the suburban corporate office and a very urbane concept, something that can be compared to the public nature of Rockefeller Plaza in New York City where the public can access privately owned public space.

The site plan surrounds the set of buildings with a great lawn complete with over 6000 planted trees and shrubs, water streams, and gardens that are encased by woodlands and a driveway that provides access to two parking lots hidden in the trees. Similarly to Deere World Headquarters, parking is hidden from view from the visitors and the employees.

After Stone completed initial site design, British garden designer Russell Page was invited to design a holistic experience of the sculpture garden that today is named after its founder and long term contributor Donald Kendall. The garden started out with only eight sculptures but today it features forty-five sculptures from such modernist sculptors as Auguste Rodin, Alexander Calder, and Alberto Giacometti. Russell designed a 'golden path' that led a visitor to



Figure 26: Birdseye view of PepsiCo. Source: Martin 2011.

experience sculptures through the garden complete with lili-ponds, weaving paths, and elaborate landscaping. Kendall was seeking for the garden to “imagine and atmosphere of stability, creativity and experimentation that would reflect his vision of the company.”(Mozingo 2011, 138) He started collecting modern sculptures in 1965 when he conceived of his company headquarters to be set into a sculpture garden that would welcome visitors to the campus. The garden was designed and still remains as a public park on a corporate campus: a feature unique in its generosity and corporate presence in the suburban public realm.



Figure 27: Central fountain by David Wynne “Girl with a Dolphin.” Source: unknown.

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
<ul style="list-style-type: none"> - Focus on safety and stability - Rapidly growing global enterprise 	<ul style="list-style-type: none"> - Suburban - Away from New York City - Surrounded by art and nature 	<ul style="list-style-type: none"> - Minimal checkerboard pattern - Easy to expand - representing 7 company divisions - Focus on light 	<ul style="list-style-type: none"> - Public 112 acres - Safe - Beautiful - sculpture garden 	<ul style="list-style-type: none"> - Sculpture garden - Views - Dining

Figure 28: PepsiCo Characteristic Matrix. Source: Original 2013.

Union Carbide World Headquarters (Danbury, CT)

Union Carbide World Headquarters in Danbury, Connecticut took the idea of an office in the landscape to the extreme, designing a structure that is entirely embedded into the woods. Union Carbide was a chemical manufacturer that developed chemicals for everyday consumer products. Designed by Kevin Roche John Dinkeloo and Associates, the building is set in a 670-acre site surrounded by wooded landscape. The headquarters is entered through a multi-story garage at the core of the building that is surrounded by individual offices 182 square feet in size. (KRJDA 2012)

Completed in 1982, Union Carbide Headquarters was unique in its focus on each individual worker's happiness. Union Carbide made a move from New York City with over three thousand employees. The corporation found homes for all of its employees and guaranteed mortgages to ensure that everyone who left New York City was able to find a home near Danbury location of the office. (Union Carbide Corporation 2013)

The self-containing structure consists of fifteen four-story office buildings on the perimeter with two parking structures in the center that are accessible by ramps from north and south. Placing parking at the core prevented large swath of land being used for parking the vehicles of 2300 employees. The interior parking garage with ten ramps allowed the worker to arrive right to his office level by car and make a trip of no more than 150 feet. (KRJDA 2013)

More than two thousand individual offices, each with a view of the outdoors was a result of more than 200 hours of interviews they conducted. During the interviews architects found that open floor plan with the moving partitions costs the corporation an average of 1.5 million dollars annually in the company's New York City office to make the changes to accommodate status changes within the office. (KRJDA 2013) The architects found that the flexibility of the open floor plan was more of a liability to the company. Therefore, they proposed a standard private office unit 182 square feet in size. Conference rooms requiring audiovisual systems and service rooms were located on the interior of the building. Resource centers within the building that house copy machines and such are on the interior. (Matrix 2013)

Each office is identical in area but they change in shape. Employees were given fifteen styles of office furniture and each office has it's own heat and air conditioning system. Conference rooms are conveniently placed within each section. Each office section is supported by administrative support center that assists in mail processing, copying and provides cold and hot



Figure 29: Birdseye view of Union Carbide. Source: Mozingo 2011

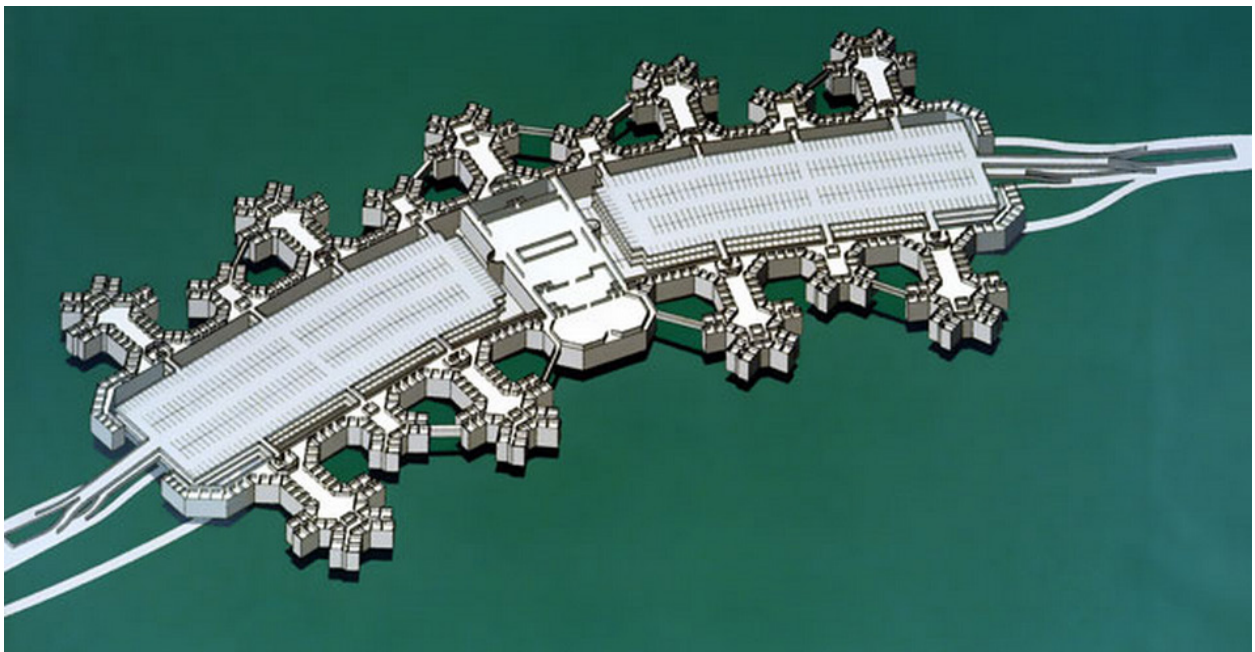


Figure 30: Axonometric diagram showing parking, individual offices, and center core. Source: KRJDA 2013.

Union Carbide World Headquarters (Danbury, CT)
Architect: Kevin Roche, John Dinkeloo and Associates
Date Completed: 1982
Site area: 674 acres
Building size: 2,100,000 SF
President: Patrick E. Gottschalk

beverage rooms.

North and south wings are connected by Center Core structure that housed all of the amenities for the employees. (Matrix 2013) Center Core serves the entire headquarters; it supports both the business and the people it contained a fitness center, television room, video for business communications, mailroom, medical center, and a grocery store. (Matrix 2013) Interior corridors connected private offices to the Center Core that housed services such as shopping, medical, dining and meeting rooms, small department sore, executive offices and boardrooms. Choice of foods and six distinctly designed dining rooms provided a choice to the employees so that they never had to leave the headquarters. The central building also contained visitor center that was accessible by a 30-foot wide roadway that provided a buffer between the office building and the parking and provided ventilation and fire protection. The amenities provided to the employees made for an easy transition from working in the city with amenities at everyone's fingertips to working in the suburban Danbury. (KRJDA 2013) In addition to interior amenities, architects designed a fitness trail that runs through the woods surrounding the building - an amenity favored by many employees. (Matrix 2013)



Figure 31: Union Carbide elevation view. Source: KRJDA 2013.



Figure 32: 182 SF private offices with the view the surrounding trees. Source:

The curve of the building comes from the architects' response to the location of the site, and its unique siting in the landscape allows for a very limited visibility of the building from the road, therefore most of the documentation of the site is from birds-eye view. (KRJDA 2013)

Kevin Roche discussed the result of the employee interviews, stating that a widely expressed view was to have fewer interior offices, because everyone likes outside view, more conference rooms large and small with better equipment. Ideally everybody would like to “Less institutional building, one that is warm, friendly and uses a wide variety of colors and materials.” (Matrix 2013) Buildings radiating from the center rather than formed in the campus environment fit closer with the organizational structure of the company. But they realized that radiating from one central code would create an excessive amount of parking, hence they made a decision to house parking at the code of the building. (Matrix 2013)

The building was at the forefront of the use of technologies. “The location is Danbury, CT but the thinking is world wide.” (Matrix 2013) In the words of Kevin Roche: “The principles were kept in mind that the corporation is composed of people we tried to create a building that would be orderly, sensible, friendly, and useful...really forward looking technologically because we thought that would be the best way to express what Union Carbide really is.” “Forward looking,

that is the thrust of this building. Union Carbide’s World Headquarters in Danbury Connecticut – the building is finished, the future begins.”

In 1984, a chemical disaster happened at the Union Carbide pesticide plant in Bhopal, India. Methyl isocyanate gas (MIC) was accidentally released from the plant killing three thousand people, and injured more than 400,000. (BBC 2013) This disaster was critical for Union Carbide, as it soon started to struggle financially. A year after the accident, the company sold off most of its divisions in an attempt to resist a hostile acquisition from GAF Chemicals. Union Carbide also lost a lot of its workforce and had to vacate the offices. Dow Chemical Company acquired Union Carbide in 2001. In the short period of occupying Union Carbide Headquarters the workers felt appreciated by the company with the amenities and views. (Miller 2010)

Today the building is managed by Matrix Realty Group, who renamed the headquarters to Matrix Corporate Center, and is advertised as affordable “Class A” offices on the border of New York and Connecticut. It currently houses two major tenants with over 50% of the building remaining vacant despite the 10 million dollar renovations.

The headquarters was constructed of reinforced concrete, with a long span slab system. This building structure allowed the developer to demolish interior partitions to create open floor plan configuration for today’s tenant needs. The updated building also provides amenities for its tenants: a game room, fitness center, dry cleaners, and a Starbucks. (Matrix 2013)

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
- Focus on individual's happiness	- Suburban - Set in the landscape - Accessible by car	- Anti-flexibility of space in order to save on cost - Convenient - Private/Secure - Elevated into tree canopies - Individual offices	- Private 650 acres - woodlands	- Shopping - Dry-cleaning - Medical - Indoor parking - Views

Figure 33: Characteristic Matrix. Source: Original 2013.

CHAPTER 3: The changing nature of corporate work, corporate headquarters today

Criteria for corporate headquarters today

In today's market, real estate professionals will often tell you that the square footage of office space is shrinking per worker, that urban location dominates over the suburban office market, and the employees are more willing to share space in return for other shared amenities such as restaurants, child care facilities, public transit, and health facilities. (ULI Boston 2012) In other words, it seems that the location is more important than the space. This chapter examines whether this trend is evidenced in recent corporate headquarters examples and whether there are other factors that drive the location, architecture, and nature in today's corporate centers. To examine the trends in today's corporations let us briefly outline four criteria in analyzing examples of corporate icons today.

Location

The importance of location in today's market cannot be underestimated, as witnessed in the case of Silicon Valley and Boston's Route 128 the trend is to locate in close proximity to other industry leaders, universities, and related corporations in order to create clustering of talent and become a member of the networked community. In essence one cannot argue that locating corporate headquarters in an urban environment is the trend today. It is more accurate to say that location is determined by the proximity of the corporation to other elements. Mostly because the nature of work has become more collaborative and companies depend on symbiotic relationships with others: outside consultants, international collaborators and clients, as well as academic partnerships between corporations and universities. Work can no longer be isolated the way it used to be in the mid-20th century and therefore resources surrounding it today inform location. Clustering of activities and programs that are mutually supportive is key in choosing a location for companies.

Another aspect of importance of location is corporate presence in a particular market that is in line with company's agenda. For instance, a biotech company may choose to build their headquarters in a city which is known for research and forward thinking environments in their field. (Carty, Frisch 2012)

People

People are perhaps the most variable characteristic of the corporation's decision-making in regards to location and architecture. Corporations seek highly educated and entrepreneurial people to join their companies, promoting collaboration over subordination. Highly skilled workers create a more linear and collaborative work environment thus diffusing the hierarchical structure of corporations. That is an important distinction from the 1950's, and as such it informs the change in attitude from corporations - not only do companies need to recruit talent, they also need to ensure that they retain it.

The talent today has a greater demand for amenities and social interactions. The digital technology has allowed people of all age groups to stay connected with their network, so the environments that people work in need to provide enough public private interplay to satisfy our desire for social interaction and knowledge spillover. The increasing awareness about health and the environment also creates a generation of workers that prefer to be connected to multiple options for transportation to and from work, so alternative modes of transportation to a car are an important factor.

The knowledge worker is trained to work in a collaborative environment the way engineers at GM did, the talent in particular coming from more innovative sectors expects to be in a space where they will be aware of other undergoing projects that they could draw inspiration from and perhaps inform their own work. Furthermore, people want to locate in places where they have more than one work opportunity, as exit strategy is an important driver in choosing a place to work.

Architecture

To promote human desire for connectivity and community, architecture of the office has become a complex interplay of leisure and work, public and private spaces, advanced technologies, and service amenities. The current architecture of corporate office is both an icon of the corporate identity and a servant to the talent it houses. People a company employs have become central in promoting a forward thinking corporation, and architecture must support this environment.

The environmental aspects of architecture are important in providing clean air and daylight, as well as providing programs within the building for comfort, such as dining and coffee shops where people can interact with each other. Meeting rooms and spaces for collaboration dominate today's corporations; however, it is driven by the fact that individual work doesn't always happen in headquarters but rather in satellite make-shift offices such as Starbucks' coffee shops, airports, and home. The flexibility of office architecture is also very important; especially as the company growth is often driven by acquisitions making management a complex task. Flexibility in space use implies not only division of where teams will work but also lease structures that allow subleasing company offices to smaller related services. (Frisch 2012)

Nature/Lifestyle

The surroundings in which the corporations are housed are no longer elaborate landscapes providing scenic views as with Deere, the landscape today is of high networked environments that allow the companies and the talent they foster to find the connections within their professional community through the use of amenities, gathering spaces, and sophisticated physical networks



Figure 34: Aerial view of Googleplex. Source: Google Earth 2012.

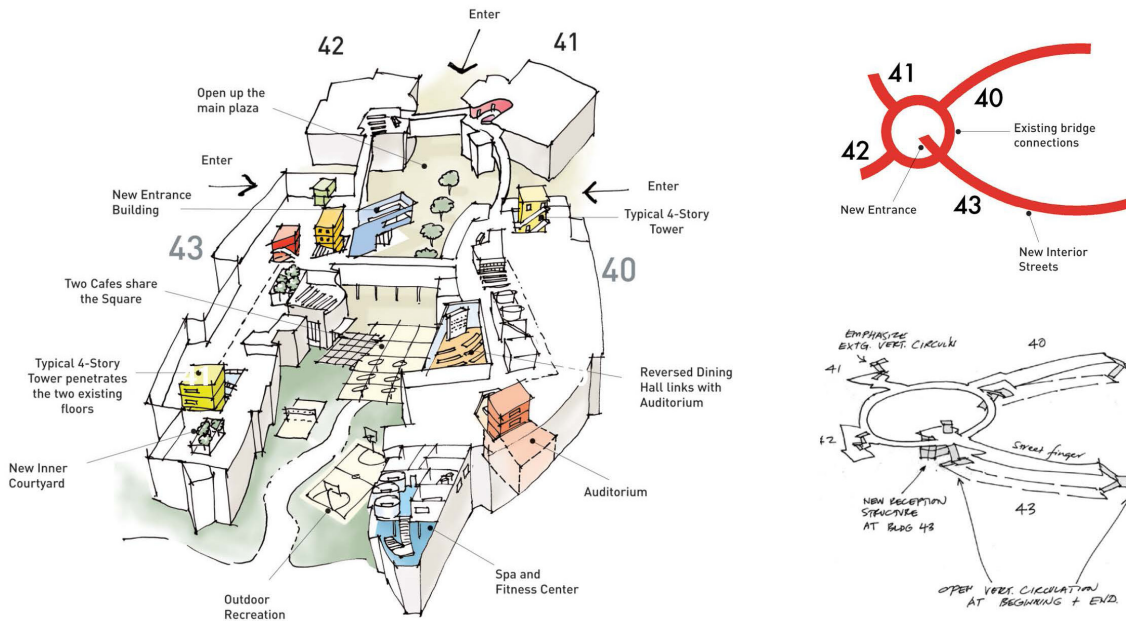


Figure 35: Campus View from East (left.) 4 buildings joined diagram (right.) Source: Meachem 2013.

Google Inc. Corporate Headquarters, "Googleplex" (Mountain View, CA)
 Completed: 1998
 Interior renovations Completed: 2005
 Architects: SWA Group and STUDIO Architects
 Google Renovation Architect: Clive Wilkinson Architects
 Total SF: 500,000 SF
 Area: 26 acres
 President/CEO: Eric Schmidt

Examples of 21 Century Corporate Headquarters

Google Inc. Corporate Headquarters, “Googleplex” (Mountain View, CA)

Googleplex is located adjacent to Shoreline Park Wetlands and is surrounded by prominent neighbors such as Microsoft Research laboratory, Shoreline Amphitheater, and Computer Museum. Originally designed for Silicon Graphics in 1998 by SWA group in collaboration with the City of Mountain View, the site was a brownfields redevelopment project. It was designed to merge privately owned corporate land with the publicly owned adjoining green space. An important decision of the site planning was to place over 2000 parking spaces underneath the four-building complex, thus opening it up to a series of open courtyards and gathering spaces.

In 2003, Google leased the office space from Silicon Graphics and became a single tenant in what now is known as Googleplex. Consequently, Google acquired a number of properties from Silicon Graphics in 2006, including the current headquarters in Mountain View, CA.

In 2004, Google was undergoing extensive expansion plans and announced their Initial Public Offering. That year after evaluating their space needs, Google held a re-design competition for their Mountain View campus, which was won by Clive Wilkinson Architects (CWA) in collaboration with workplace strategy firm DEGW. CWA proposed to create a “diversified campus environment, integrating highly focused software engineering workspace within a support system of learning, collaboration, recreation, and food facilities” (Meachem, 2013) The proposal responded to existing conditions of open courtyards and building shell. The series of open central spaces were relabeled Main Street and the activities were organized around this central circulation artery.

CWA analyzed the existing site conditions in order to determine opportunities to connect four buildings and the prominent outdoor space into one community. The extensive study of circulation networks, time of particular space use, structural analysis, as well as the greatest potential for shared meeting spaces and individualized work spaces, and “public” and “private” connections analysis yielded a proposal that focused on creating a unified community focused on education at the workplace. (Meachem, 2013) The unified center of the campus proposed outdoor sports activities, food, a commons, and a park.

The main concept of the master plan for Googleplex was to create a university-like environment, where the employees could perform self directed work through collaboration or



Figure 36: 'Main Street' artery for public space use. Source: unknown

independent work. CWA argued that a typical campus offers 'self containment' so within the immediate area of work all of one's work/life needs can be met. The idea of 'casual encounters' also penetrates the campus environment thus allowing for knowledge spillover within the same company. At Googleplex, the design aims to satisfy each employee's personal interests similar to those found in and university campus, and when those interests of many individuals converge, a powerful work environment emerges.

This concept was implemented through design of thirteen individual spaces, inspired by environments found on campus such as bakery/coffee shop, library, open meeting, huddle room, workroom, and many others. Those environments were integrated into the design of each building differentiating between more public/active areas and more secluded/private areas. (Meachem, 2013)

Sustainable energy-conserving environment was a high priority to Google so most of the building materials used in the renovation project contained high-recycled content. An impressive

number of solar panels deliver 30% of Google's daily energy consumption. The final site design distributed work clusters along the 'Main Street' circulation plan. Shared resources are located along this central street. Those clusters range from tech-talk spaces and meeting rooms, to micro-kitchens, and spa and fitness center.

Inspired by the way engineers work at Stanford University the aim to satisfy the needs of both the individual and the collective is perhaps the most successful aspect of Googleplex project.



Figure 37: Workspace. Source: Chang, 2006.

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
- University-like work environment	- Suburban - Adjacent to other technology companies	- Serving the user - Varying individual and group spaces - Green architecture	- Private 26 acres - Open courtyard - 'Main Street' concept - Underground parking - Campus environment	- Restaurant - Cafe - Services - Playrooms - Gym

Figure 38: Googleplex Characteristic Matrix. Source: Original 2013

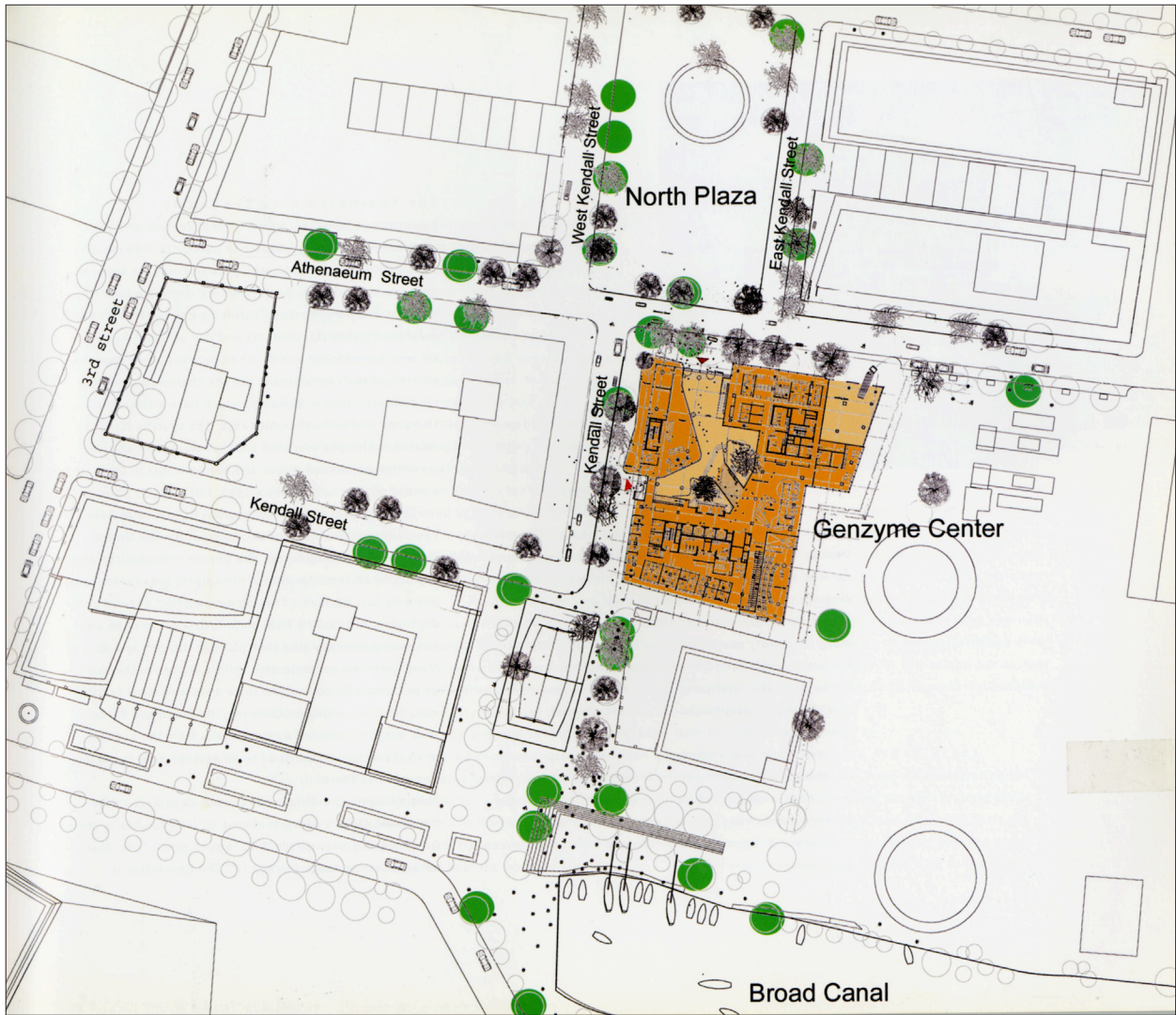


Figure 39: Genzyme development site plan. Source: Steele 2004.

Genzyme Corporate Headquarters (Cambridge, MA)
Architect: Behnisch, Behnisch & Partner
Landscape:
Date Completed: 2004
Total building area: 350,000 SF
Site Area: 10 acres
CEO of Genzyme at the time of completion: Henri Termeer

Genzyme Corporate Headquarters (Cambridge, MA)

Designed on a 10 acre site adjacent to MIT campus Genzyme headquarters was one of the first redevelopment sites in now a vibrant Kendall Square development and the first building to be built as part of a seven building development on this brownfields site. It is unique in that it was designed for a developer and not the corporation, which speaks of the new trend in current real estate market where sophisticated developers build buildings to meet the needs of corporations. The Lyme Properties LLC, developer and Genzyme a probable tenant at the time were two of the jurors on selecting an architect. (Davey 2004, 60)

The proposal called for a green building focusing on delivering natural light to the maximum number of individual spaces. This twelve-story structure was the largest LEED Platinum certified building at the time. Each of the twelve floors has a shared gathering space, kitchen, conference room, and small gardens. The cubicles are flexible and can be converted into a shared meeting space or a more individualized work environment. (Davey 2004, 60)



Figure 40: Genzyme headquarters front facade. Source: Steele 2004.

The architectural uniqueness of the building is its central atrium with a chandelier that delivers reflected light to all of the office spaces on the interior of the building. The lighting on the exterior of the building is controlled by automated louvered blinds that are controlled by roof-top sun tracking devices. (Davey 2004, 64) The workspaces are individualized and organized around the perimeter of the building; as a result 75% of employees receive natural daylight. (Behnisch 2013)

The central atrium is not only a light shaft but also an important element in climate control. It acts as a large waste-air chimney; pressure drives warm “used” air up where it is expelled at roof level through exhaust fans. Fresh air reaches workspaces through ceiling grilles and operable windows. These windows are automatically controlled by the changes in external temperature and can be opened during cooler summer months to reduce the overall temperature of the space. (Steele, 2004) When a user changes individual space it affects the exterior appearance of the building. This external display of individual activity inside shows the building is an agglomeration of individuals under one roof and company’s appreciation of the individual needs of each user. (Davey 2004, 64)

Genzyme’s former CEO Henry Termeer was one of the jury members on the competition for this building and was inspired by Behnisch’s approach to the building as a living organism, which is fitting for a biotech company which studies living organisms.”(Gould 2004, 85)

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
- Healthy environment to work in	- Urban - dynamic environment - TOD - close proximity to MIT - adjacent to other office	- Green building - Innovative - Responsive to the environment, just like the company	- Public 10 acres - Active - Dynamic - TOD development	- City - Skating rink - Transit - Atrium - future performing arts

Figure 41: Genzyme characteristic matrix. Source: Original 2013.



Figure 42: Interior atrium with a chandelier for daylight distribution. Source: Steele 2004.



Figure 43: Apple campus 2 birds-eye view rendering. Source: Foster + Partners. 2011.



Figure 44: Apple Campus 2 facade rendering. Source: Foster + Partners. 2011.

Apple 2 Campus Proposal (Cupertino, CA)
Architect: Foster and Partners
Landscape and Engineering: Arup
Date Completed: 2015
Site area: 175 acres
President/CEO: Steve Jobs

Apple 2 Campus Proposal (Cupertino, CA)

Apple 2, also nicknamed Mothership, is a proposal for what promises to be an iconic building for Apple Corporation headquarters in Cupertino, California. The proposal, designed by Foster + Partners is a doughnut shaped four-story building on a 175 acre site that currently houses the old Hewlett-Packard campus. Apple acquired this property from Hewlett-Packard because they ran out of space in their current headquarters; Hewlett-Packard, on the other hand, was reducing their operations and no longer needed the large campus. The vicinity map shows the close proximity of Apple's current campus, that is comprised of six buildings and that houses 2,600 of Apple's employees.

In his presentation of the proposal to Cupertino City Council, Steve Jobs explained the need for bigger headquarters, by stating that they want to keep all of the 13,000 of Apple's employees in the Cupertino neighborhood "under one roof." An idea not dissimilar to the thinking of GM in the 1950's, and at first appears as a logical move. To accommodate 13,000 employees, the program calls for 2.8 million square feet of space, 1,000 seat auditorium, a 300,000 square foot research facility, a central power plant that would provide all of the power to the campus using the city's electrical grid as a back-up, a corporate fitness center, and underground parking.

Foster's proposal for Apple's headquarters is not dissimilar in its scale and symbolism to GM Research Center. The idea of housing all of the employees under one roof is also one that was applied to GM completed in 1956. The problem with Foster's proposal is that we are in 2012, and forward thinking environments can be informed by the past, but not entirely driven by the language of the past iconic buildings. As seen with the case studies, iconic architecture happens in the spaces where building design and the choice of location respond to the nature of the company's structure and the people that it represents. Placing everybody under the same roof the proposal disregards the individual needs of each worker.

The circular shape of the campus is supposed to help with security. In a way, Apple is struggling with the same issue as GM did in the 1950's as it has grown rapidly over the last 10 years and employees are scattered in multiple buildings around Cupertino, California. The headquarters building today houses only some 2,600 employees. Hence, this bold proposal revealed by late and legendary Steve Jobs proposes a single facility to house 13,000 employees in one place; creating a community. (Jobs 2011) However, this community will be very different from the

one at Googleplex as Google's campus provides a Main Street concept with variety of spaces versus the uniformity of the circular form of the Apple's proposal. The exterior of the building is a uniform, continuous surface that will not provide the variety of interior spaces desired by today's workforce.

The building form is rigid, and in a way unwelcoming as its circular façade provides no entrance and acts more as a buffer between the public and the corporation. Contrary to John Deere, PepsiCo, and even Union Carbide that you could drive straight into, Apple headquarters portrays a level of privacy concern that is unwelcoming to the public. In a letter to the Cupertino site abutters, Peter Oppenheimer the current CFO of Apple, wrote: "Apple Campus 2 will also include a restaurant, a fitness center, and other amenities to serve Apple employees and reduce automobile trips. As with the current site, Apple Campus 2 will not be open to the public. Infinite Loop will remain our corporate headquarters, and we will continue to occupy many of our existing buildings in Cupertino." (Engadget 2012)

VICINITY MAP (NTS)

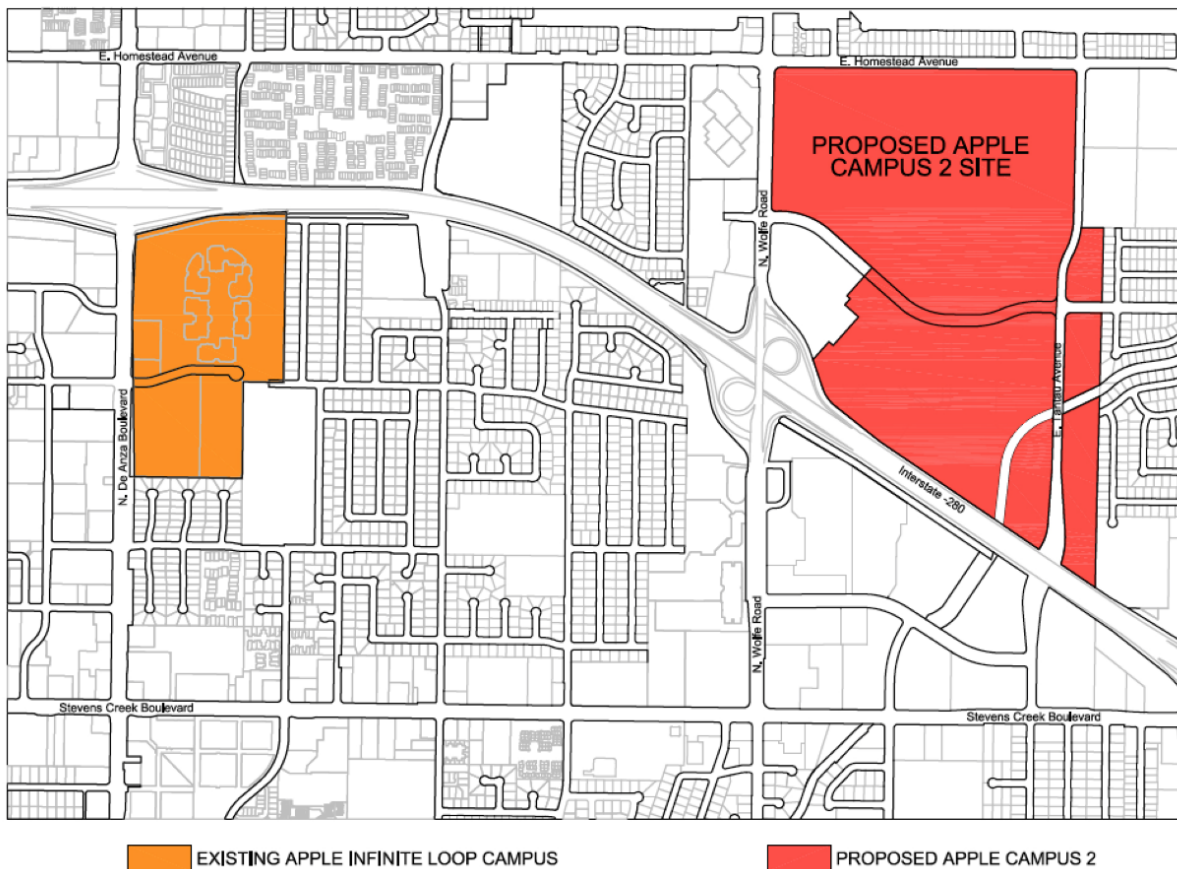


Figure 45: Vicinity Map. Source: Foster + Partners 2011.



Figure 46: Apple campus 2, site plan. Source: Foster + Partners 2011.



Figure 47: Apple campus 2, view of dining room. Source: Foster + Partners 2011.



Figure 48: Apple campus 2, view of the private park. Source: Foster + Partners 2011.

The landscape is perhaps the most impressive undertaking. The Apple 2 master plan proposes to increase landscape by 350% of the current coverage, reduce surface parking by 90%, and plant additional 2,700 trees. Steve Jobs described hiring a Stanford University senior arborist that specializes in native trees, to develop a plan for planting on the site, including apricot orchards. (Jobs 2011)

In his presentation to Cupertino City Council, Jobs described the building as, “It’s a pretty amazing building. It’s a little like a spaceship landed. It’s got this gorgeous courtyard in the middle... It’s a circle. It’s curved all the way around. As you know if you build things, it’s not the cheapest way to build things.” (Jobs 2011) The idea of introducing cost as a way to represent the building’s value shows the greatest weakness of the proposal. This project doesn’t produce amenities for the city it is housed in and has entirely internalized all of the benefits of the project. For example, when asked about the benefits of this new development to the community, Steve Jobs responded: “Number one, we pay taxes and number two we employ a lot of smart people that want to live in Cupertino, they live here. Influx of tax base, and influx of talent that would be affluent...plus a whole lot of trees.” (Jobs 2011)

Overall, this development has a strong focus on the environment; it proposes a substantial increase in landscaping and reduction of surface parking, an independent power plant that uses natural gas, amenities within the development to reduce employee car trips during the day, and transportation services that would provide access to the Apple 2 campus for their employees thus reducing individual car trips from San Francisco and other employee residences.

People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
- Everyone under one roof	- Suburban - Close to HQ	- Iconic - Dominant - Expensive - Off-the grid - Inflexible	- Private 175 Acres - Secure covered in trees - Exclusive	- Dining - Gym - Courtyard and premises

Figure 49: Apple campus 2 characteristic matrix. Source: Original 2013.

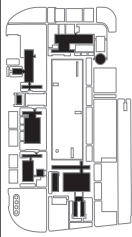
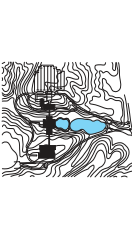
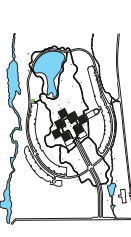
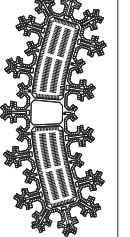



Site Plan	Company	People & Organizational structure	Location	Architecture	Nature & Environment	Amenities
	General Motors Technical Center 1955	- A place for innovation and <i>tomorrow</i> - Engineers - Car styling	- Suburban - 30 minutes driving distance from GM headquarters	- Scaled for a car - Modern - Filled with light - Logical	- Private 320 acres - Experienced from a car - European Renaissance inspired squares - Large central pond	- Restaurant - Pond - Fountains - Courtyards
	Deer & Company 1964	- Improve communication between departments to promote collaboration - Tighter organization structure at the top	- Rural - Where people know about the land - A place where 'we' work.	- Rugged/Grounded - Modern - Timeless - Cultured interior/Art Gallery	- Public & private 720 acres - Landscaped surroundings - Pristine - Untouched - Vast Views	- Restaurant - Cafe - Ponds - Views
	PepsiCo World Headquarters 1970	- Focus on safety and stability - Rapidly growing global enterprise	- Suburban - Away from New York City - Surrounded by art and nature	- Minimal - Easy to expand - representing 7 company divisions - Focus on light	- Public 112 acres - Safe - Beautiful - sculpture garden	- Sculpture garden - Views - Dining
	Union Carbide 1982	- Focus on individual's happiness	- Suburban - Set in the landscape - Accessible by car	- Anti-flexibility of space in order to save on cost - Convenient - Elevated into tree canopies - Individual offices	- Private 650 acres - woodlands - secure	- Shopping - Dry-cleaning - Medical - Indoor parking - Views
	Googleplex 2005	- University-like work environment	- Suburban - Adjacent to other technology companies	- Serving the user - Varying individual and group spaces - Green architecture	- Private 26 acres - Open courtyard - 'Main Street' concept - Underground parking - Campus environment	- Restaurant - Cafe - Services - Playrooms - Gym
	Genzyme 2004	- Healthy environment to work in	- Urban - dynamic environment - TOD - close proximity to MIT - adjacent to other office	- Green building - Innovative - Responsive to the environment, just like the company	- Public 10 acres - Active - Dynamic - TOD development	- City - Skating rink - Transit - Atrium - future performing arts
	Apple Campus 2 2014	- Everyone under one roof	- Suburban - Close to HQ	- Iconic - Dominant - Expensive - Off-the grid - Inflexible	- Private 175 Acres - Secure covered in trees - Exclusive	- Dining - Gym - Courtyard and premises

Figure 50: Case Matrix. Source: Original. 2013.

CHAPTER 4: Prototype for the Future

Value of this typology and the corporate manifestation through physical space

This chapter will answer the question posed at the onset of this thesis: What is the future of corporate headquarters in the suburban landscape and what is the future of this typology? Should we forget the typology of old iconic corporate estates and convert them to other uses, or can we find value in the existing architecture and the surrounding landscape?

The cases and examples analyzed in this thesis depicted a broad spectrum of corporate icons and attempted to shed light on “What were these forward thinking environments then and what they are today?” The future for these icons I will discuss here.

As I set out to explore this topic I was under the impression that work environment is a typology that cannot be rendered timeless and that although celebrated by architectural critics even the most iconic of the buildings will fade into the landscape and will have to be rethought into new uses. What I found instead is that not only are the classic centers iconic to architectural critics, their setting carries a tremendous value to the company both in their legacy and the corporate image today. All of the cases discussed with the exception of Union Carbide who’s bankruptcy was caused by an environmental accident, are still occupying their original space and it doesn’t appear that this will change in the near future. The matrix below summarizes the key features of each case and example discussed in this thesis followed by a conversation of what the future of these environments is.

From the matrix, we can extract that over the years organizational structure shifted from being focused on the company needs for growth and production to the greater focus on individual’s needs. People have always been an important aspect of the success of the company, however, in recent years company’s focus is on promoting individual’s happiness within the larger network of a corporation. Another significant aspect of organizational structure is a change in growth strategy, where acquisitions have become a new way of expanding companies. As discussed, these acquisition are driven by various company interests, but often they are driven by acquiring talent that comes with the company. The extreme individualism started with the dot-com boom in Silicon Valley but has translated today to the company’s focus on satisfying the individual demands of the workforce providing maximum flexibility and perks to the employee, as talent is a primary asset of today’s corporations.

Location in the cases discussed is primarily suburban. In the case of Deere, Moline is a city, however the scale of Deere Administrative Center is so vast that it can hardly be classified as even suburban as their property has expanded to over 1000 acres and hosts four working farms. In the early cases when the land in close proximity to urban centers with an extensive access to infrastructure allowed for companies to expand the scale of their operations, to provide the secluded environment for privacy and accessibility by car for their employees. In more recent examples, the availability of land for development and redevelopment has shrunk, which is evidenced in the smaller footprint of newer developments. The location in more recent cases is also focused on networked environments, where Googleplex found its space in Silicon Valley, Genzyme chose to be next to MIT, and Apple Campus 2 is seeking to locate near their existing campus in Cupertino, CA, which is in close proximity to the Bay Area tech companies and top universities.

Architecture is key in retaining talent as well as shaping the public image of a company. Through case studies discussed in Chapter 2, I found that interior of the space be it exclusive top management offices at Deere or the open floor plan at the GM's styling complex, is reflective of the corporate structure and meets the needs of the people that are housed in those structures. The way engineers may have a need to collaborate to solve problems today, so did top management need their private office to make deals and delineate their space in the company's organizational structure giving them the respect and importance needed to lead the company at the time as well as provide a clear structure for aspiring managers, as the private office was a measure of success. Today, the interior must reflect the organizational structure of the company that has become more linear - as collaboration and knowledge take upper hand over seniority.

On the other hand, the exterior of the corporate headquarters speaks of the image of the company to the public to that of people from outside of the company. The iconic nature of the building is important for the recruitment of new talent and as we saw in Deere the architecture and the landscape surrounding it are important tools in conveying a corporate image to the people both nationally and abroad. What's more, in this global market the location of the offices has become as important as its architectural manifestation.

Nature primarily was provided for private use of the company employees with a rare exception of Deere & Company and PepsiCo that allowed their vast landscaped premises to be visited by the public. The characteristic of the nature varied from designed 'pristine' environment

of Deere and renaissance inspired courtyards at the GM Technical Center to an urban 'Main Street' environment in Googolplex. Whichever the strategy, these examples show that whatever the company chose, nature played an important role in providing an environment for the creative mind of their employees. The primary role of nature and landscape in the cases discussed was to foster innovation by providing the people with a site that stimulates one's intellectual capacity.

Key components for future corporate centers

Organizational structure of the companies has to focus on the people as a key resource to ensure growth and profitability in the future. It is not to say that companies need to follow people, but rather that they need to recognize the ever changing nature of workforce needs and a persistent desire of people to have a choice in both the environment they work in and the people they are surrounded by. Furthermore, to recruit talent, one has to provide a choice for a place to work, as people will continue to live in both urban and the suburban environments. So the convenience of office space within a reasonable travel time from one's home is an important criteria to meet the needs of today's workforce.

Location of the future is not exclusively urban, in fact, it is defined by the area where a company can have the greatest level of symbiotic relationships with other companies and services. Building networks both within a company along with the greater community of collaborators, consultants, and clients is crucial. Although many will argue that in this decade of digital communication location takes a secondary place as companies become increasingly global in recruitment of talent, I argue that the location is still of the utmost importance in recruiting talent. It is also key in attracting knowledge, so locating in close proximity to a university or an networked community similar to Silicon Valley is important in building networks for growth and profitability.

Another aspect of location and proximity to other companies is creating knowledge spillover. This means that talent is more likely to locate within the environment where they have more than one employment opportunity. For instance, clustering of pharmaceutical companies or technology companies makes sense because those regions will attract talent that wants to have options and is mobile in terms of his company choices but who is not as mobile in terms of actually moving to a different state for a new job. So close proximity to companies that do similar

line of work is important in providing your talent with exit strategies, which at first may not be viewed as favorable for companies, but is important in recruiting the best talent there is.

If location is key for recruiting talent, architecture is key for retaining it. As seen in the case of Genzyme and the iconic proposal for Apple's campus, the importance of an iconic building has not diminished. The role of architecture for the future corporate centers will remain similar of the recent past; it will be key for retaining talent, as the quality of work environment and flexibility of space, wealth of amenities within the office, and availability of technology at the workplace will remain important driver. Architecture will also continue to play an iconic role in the formation of public image and reputation of the company. A building that is respectful of the environment and using the latest technologies portrays a forward thinking company, which is important both in marketing to the clients and to the general public.

Finally, what is the nature and the environment of the surroundings for future projects? We saw that in classic examples and primary cases, landscape was viewed as the main amenity for providing views from one's office and on the drive up to the building set in the landscape. However today, the nature's role is to provide sustainable environments that facilitate productivity and address sustainability as seen in the case of Genzyme and Google. As we saw with the cases most of them promote a private environment surrounding the building in the landscape. However, in the future the nature of the corporate centers will become increasingly public, as sharing will be promoted as a strategy for fostering innovation. This is not to say that proprietary information will be willingly shared as the cost of research and innovation will still be a burden carried by the company. I argue that the nature of corporate centers will be such that people can share their space and interest with the surrounding talent from within the company and adjacent companies. This shared nature is the strength of the urban environments however, it is not exclusive to the cities.

In essence, the cases sustain the hypothesis that suburban corporate centers will continue to play a valuable role in the future despite the changes in corporate organizational structure and the way we work today. There are several reasons for this. First, the lure of an iconic building in the landscape is so powerful that it will continue to be valuable to the identity of their companies and to attracting talent. Amazingly, the GM Tech Center is as compelling an image today as it was in the 1950's. The suburban landscapes will continue to change and there will of course be an adjustment to the scale of these developments and the variety of amenities

provided to the employees. It is difficult to imagine that in the future a company would choose to locate on a site the size of Central Park in New York City, the way Deere did in Moline, however it doesn't render the Deere's Administrative Center obsolete, in fact as discussed in the case study, the company's headquarter is a global icon for Deere products.

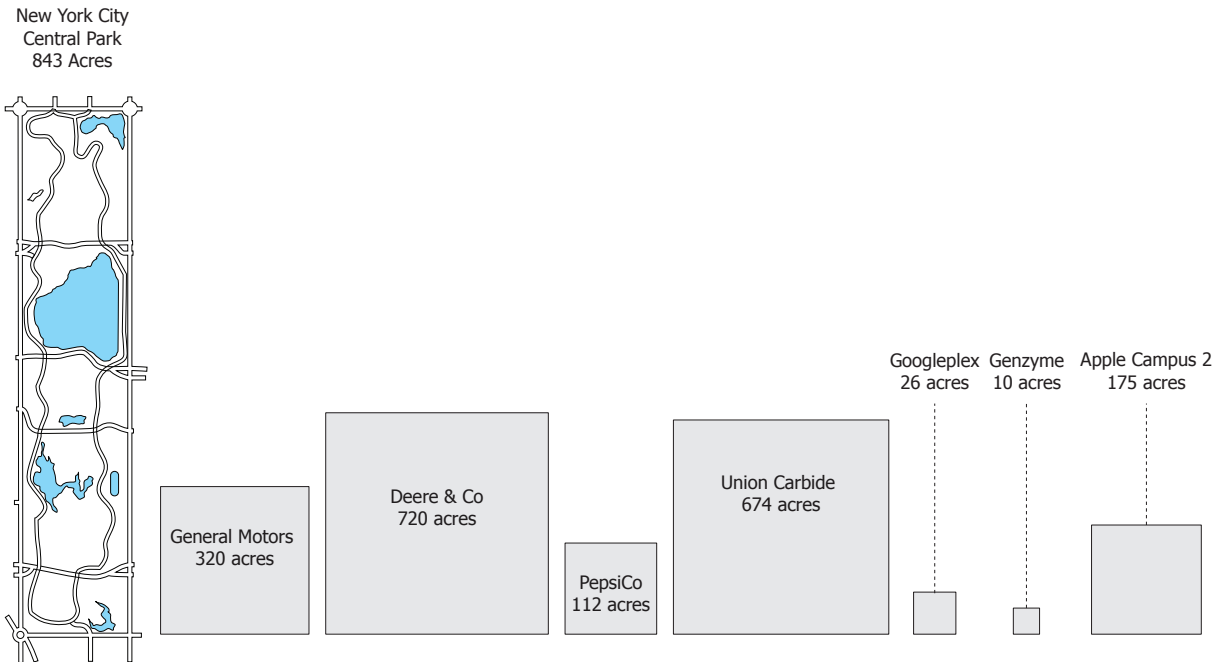


Figure 51: Case site area scale comparison to New York City's Central Park: Original. 2013.

Secondly, the flexibility of the suburban campus model, with large open floor plates and views has remained remarkably adaptable to new ways of work. Once host to hierarchically organized corporate structures they now have adjusted to a diversity of employee types who stay for different periods of time and share spaces in different ways. This is due in large part to the vision of Saarinen who pioneered the open office concept in the original iconic corporate centers. And so Deere found a way to adapt to the changing nature of work by changing their interior policies and not the building or campus itself.

Finally, the once isolated corporate centers now find themselves in the middle of suburbs which are becoming more dense with diverse mix of uses. Amenities and services are more readily available and can easily be incorporated into the corporate center complex, including, in the Google example, places for short term stays, restaurants, performance centers, educational facilities, and a host of recreation opportunities. These amenities are increasingly shared with the public, providing for a new type of open campus environment. In short, the suburban campus ideal is becoming more urban.

What's next?

If you accept the reasons above why the corporate center in the suburban landscape is still alive and well then these below are points of elaboration.

The future employee is a self starter, a person with a highly developed understanding of their needs, and perhaps a person that is both running his own company, or doing research at a university, while contributing to the work and research of a corporation. This employee wants flexibility in the times of days they work, extensive vacation times, dining and childcare facilities, as well as other amenities within a center.

The future is location neutral. It will be convenient to its employees, with potentially a few satellite offices within a region to support the various locations of their workforce. Those secondary offices may be a result of acquisitions. The location can be accessed by multiple modes of transportation including by foot, as workability will become an important component of future urban and suburban design. The suburban center becomes one node in a network of corporate work centers – that people may cycle through in search for the best professional fit.

Despite the diversity and flexibility the iconic image of the architecture and site remain important as seen Apple Campus 2 example. Apple, a company known for its iconic product development proposed a building that represents them in with a powerful architectural statement. The long term implications of such proposal were debated in the case discussion earlier however the impact of this powerful image for Apple Campus 2 globally cannot be questioned. Apple proposed an iconic form with diversity and flexibility in a high amenity setting and a dense “suburb” that can hardly be called rural anymore. So the “corporate campus as icon” will continue to play an important role in office design.

Architecture is both friendly to the environment and to the people working in it. It is designed to cater to ever growing individualism while providing an iconic image of the company for the global colleagues and clients. The design of these places will respond to its user's needs, and manifest to the public the image of the company. The building systems will be developed to provide large shared environments that can be controlled to each individual's needs thus making them extremely efficient. It will provide amenities not only to the people working for the company but also to the public at large. It will be focused on the individual but have the flexibility for expansion and growth.

The nature of these centers are forward thinking environments for sharing and the exchange of ideas. They are public, as the cities and suburban groups will no longer tolerate private estates without sharing them with the community. Not only does the public encourage a publicly accessible premises the employees want their environment filled with shared amenities, where they can interact with people of different backgrounds but similar interests. Nature will be a hybrid of landscape, environmental systems for climate control, art, and technology.

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