AGGREGATING SUBURBIA: DIGITAL INFORMATION STORAGE AS CATALYST TO INTENSIFY URBANITY IN SUBURBAN IOWA

by

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ABSTRACT

America’s Midwest experienced its most rapid growth after the age of industrialization, stretching the suburban landscape beyond our wildest imagination, to a state of ubiquity. In the case of Iowa, this suburbanization comes at the sacrifice of the most valuable virgin agricultural land. In the midst of this vast expansion of suburban sprawl, we arrive at the critical moment to end this recklessness.

Simultaneously, the Internet’s pervasiveness perpetuates the gross expansion of the metropolis, appending the city with enormous big boxes to house the world’s digital information. Central Iowa is now home to enormous buildings by Google and Microsoft, consuming an exponentially growing amount of Iowa’s renewable energy as it exhausts the waste heat into Iowa’s rural flatlands.

This thesis offers a design proposal for an aggregated suburbia, augmenting the suburban landscape by capitalizing on the trend of enormous data center expansion and, simultaneously, subverting the trend of suburban sprawl. The synthesis of data centers and a new dense suburban center allows the reuse of otherwise wasted energy while calling awareness to the Internet’s monumental physical footprint and output of waste heat. The mile-long data center is used as a “microclimate platform” for cultural activities and space for the public collective, providing suburbs with a public identity and heralding a new age of industrialization.

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INTRODUCING DES MOINES IOWA
The suburbs and exurbs of Midwestern American cities are in a dire state of disrepair. Although brief, the history of suburban growth of the midwestern city of Des Moines Iowa can summarize the inadequate and unsustainable tendencies of the current model of development. In the past thirty years, the metropolitan population has experienced a steady expansion. Meanwhile, the surface area of the city has exploded (see Fig.1 & Fig.2). However rapid the metropolis grows, the land consumption is disproportionally out-measuring the population growth. The metropolis is divided into different municipalities that each compete for residential and corporate expansion. This imbalance of hierarchy and lack of comprehensive structure leads to chaotic and uncontrolled growth in each participating city. Outside of the historic city center, public space and urbanity has vanished without future promise to establish a collective public identity through the language of built objects. Built objects, especially those of the public and civic type have proven historically to embody powerful symbolism in regards to its era in time, political and economic situation, and relationship to its context.
For example, the catalytic growth and reinvestment in the city of Des Moines has a very clear and defined structure; it is happening around the existing and new public monuments that the city prides itself on. The most vibrant neighborhoods currently exist around the public monuments; the Iowa State Capital, the Polk County Courthouse, and the new Central Public Library.

Conversely, the erratic bursts of communities in suburban Des Moines rarely submit to any organization of the whole. The ease of acquiring cheap land, the lack of accessible and successful public transportation, and the tax incentives for developers allow them to devour virgin land surrounding the city and litter it with an overabundance of tract houses, chain retail stores, massive malls, and big boxes. However, these tendencies can be found around any American city that is experiencing any substantial growth. What makes Iowa unique?
The reputation of Iowa precedes it. Agriculture related industries drive the state’s economy, as well as recently emerging industries such as wind energy and data centers. These forces which drive Iowa’s economy are all competing for the valuable land in which it sits. Fortunately, wind farms are able to coexist with agricultural land, the benefit being the flat land which the wind is harvested and utilizing only a small footprint for it’s monumental vertical presence. The other agencies; suburban developers and corporations such as Google and Microsoft view Iowa’s agricultural lands as relatively cheap, consuming it at an exponential rate. The reasons for expanding the metropolis are all legitimate. Greater Des Moines is also in the business of capitalizing on the interests of developers, collecting taxes for each new acre utilized. The municipalities benefitting have every reason to appreciate the growth in the short term, especially since it is difficult to attract such profitable corporate interest. Minimal initial investments, such as new roads, utilities, and tax abatements make the return on investment seem financially lucrative.

This investigation, however, questions the long term investment for which the cities are making; infrastructural, economical, social, and architectural. The pressures under which cities operate to perpetuate sustainable growth, both residential and commercial are immense. This project, alternatively offers a comprehensive solution to substitute dense urban condensers in substitution for sprawl without sacrificing any elements on the city’s agenda. The thorough analysis of Iowa’s historical and existing condition has driven a critical mixed-use intervention within an otherwise low density typical suburban condition. The intervention stitches itself into the site, West Des Moine’s Civic Center, which is currently surrounded by low-density residential neighborhoods. The Civic Center squanders a square mile for a school, city hall, a football field, two churches, and a park. Although this project belongs to the Civic Center, Greater Des Moines exploding population calls for the design of a system in order to catalyze growth within any ring of the sprawling suburban condition in hopes of saving the state’s otherwise valuable and dissolving assets; the agricultural land.
SUBURBAN CATALYSTS
Among the few catalysts for development in suburban Des Moines, shopping malls and shopping centers disguised as faux-town centers have been the most evident since 1959. Single Use Zoning, the National Housing Act of 1934, and the Federal-Aid Highway Act of 1956 have amplified the expeditious growth around these ephemeral landmarks. However, the preferred method; Form-based Zoning has been recently developed to diverge from the out-dated Single Use or Euclidean Zoning codes.

Enormous parcels of land tend to develop in a very short period of time in Suburban Des Moines, oftentimes around Shopping Malls. For example, the first mall to be built in Des Moines was the Merle Hay Mall, opened in 1959. The city began to expand around the exciting new amenities of shops, restaurants, and conveniences built around this new anchor. Large parcels of land were quickly devoted to housing communities of people that wanted to live outside the deteriorating quality of building stock that surrounded the city center. The suburbs offered new roads, new shops, and new houses that possessed shiny appliances and carpet. During that time,

1 http://en.wikipedia.org/wiki/Merle_Hay_Mall
car companies were expanding, and lined the main arterial streets with dealerships, spreading the built footprint so far back from the road that the street could no longer be distinguished. Sidewalks were placed, but became a mere formality because they were no longer necessary. The occasional bus stop became sparse with occupants and mass transit in Iowa lost funding to the pervasive building of highways. However, what seemed like a bustling and successful new neighborhood was about to meet its demise. In 1976, the new Valley West Mall\(^2\) announced its opening date. Soon thereafter, this mall-centric neighborhood phenomenon repeated itself in a different part of the city; all of the excitement, development, attention, and the city's financial resources were refocused on the neighborhood around the new Valley West Mall. Once again, in 2004, General Growth Properties opened the doors of a development called Jordan Creek Town Center\(^3\), which they refer to as a “retail resort”. This was a more holistic model for a mall; a town center, which combined elements of enclosed malls and outdoor and non-retail components. Ironically, this happened at arguably

\[^2\] Valley West Mall is an enclosed regional shopping center in West Des Moines, IA; [http://en.wikipedia.org/wiki/Valley_West_Mall](http://en.wikipedia.org/wiki/Valley_West_Mall)

\[^3\] Jordan Creek Mall is a super-regional shopping mall and lifestyle center in the American city of West Des Moines, IA; [http://en.wikipedia.org/wiki/Jordan_Creek_Town_Center](http://en.wikipedia.org/wiki/Jordan_Creek_Town_Center)
the biggest housing market boom in the history of Greater Des Moines, and other developers took advantage of the new infrastructure which surrounded the mall; constructing single use developments that expanded vastly into the fields just west of the metropolis.

This model of growth is a symptom of Single Use Zoning, also known to planners as Euclidean Zoning. Euclidean Zoning is a product of a Supreme Court ruling in 1926 in favor of Euclid, Ohio. The Village of Euclid, Ohio succeeded in a United States Supreme Court case against Ambler Real Estate Co. over a zoning dispute to prevent Industrial Cleveland from growing into the village of Euclid. Eventually, single use zoning was born, which “is a practice of urban planning where everyday uses are separated from each other and where land uses of the same type are separated from each other and where land uses of the same type are grouped together”


Below: Illustrating single-use zoning in the western suburbs of Metropolitan Des Moines. The white represents undeveloped open areas which can be inserted with multi-use programs to stitch the single use areas together.
Shops are concentrated in one area, housing in another area, industry in another. Critics argue that putting everyday uses out of walking distance of each other leads to an increase in traffic since people have to get in their cars and drive to meet their needs throughout the day. Due to this critical turn of events, West Des Moines began to grow in accordance with the aforementioned ‘Euclidean Zoning codes’. Further exacerbating and propagating this problem was the creation of the Federal Housing Administration and the Federal Highway Act. The Federal Housing Administration promoted home building and home buying by stabilizing the mortgage market by providing an adequate home financing system through insurance of mortgage loans, while the Federal-Aid Highway Act of 1956 which subsidized 25 billion dollars for 41,000 miles of highway system.

Unfortunately, the Highway Act heavily subsidized the proliferation of suburban highways, making commutes between the suburbs and urban centers much quicker. In the case of Des Moines, a recently completed interstate highways.

5 http://en.wikipedia.org/wiki/National_Housing_Act_of_1934
13.83 mile, $429 Million stretch of interstate expansion now connects the suburb of West Des Moines with downtown Des Moines\(^6\).

A relatively new, non-traditional, and preferred method of zoning is Form-based Zoning “which is a means of regulating development to achieve a specific urban form”\(^7\). This was developed in response to the modern challenges of suburban and exurban sprawl and a tool to address the deficiencies of Single-use Zoning and provide the local governments the regulatory means to achieve development objectives with greater certainty. Form based zoning provides an opportunity to deviate from the unsustainable patterns of development, and to catalyze a new city form for suburban growth. Over the past thirty years, many architects and urban designers have attempted to reconcile suburban sprawl with different strategies, but these models have failed to gain a stronghold on the majority of the current development. In conclusion, through the understanding of ineffective policy, unsuccessful form, and current catalysts for expanding suburbs, a

\(^6\) http://www.iowadot.gov/i-235/factoids.pdf
\(^7\) http://en.wikipedia.org/wiki/Form-based_code
DES MOINES’ SUBURBAN CONDITION
The realization of the suburbs; the once imaginary expression of individualism, liberation from the cramped city, and withdrawal from strangers and neighbors to remain undisturbed has caused one of the most disastrous social ripple effects. The dramatic effects can be seen most apparently through increasing isolation in the current suburban social situation, specifically in automobile travel. “Nine out of ten people travel to work by car, and of those, eighty-eight percent drive alone. Commuting makes people unhappy, or so many studies have shown. ‘I was shocked to find how robust a predictor of social isolation commuting is’, says Robert Putnam, a Harvard political scientist says, ‘Every ten minutes of commuting results in ten percent fewer social connections. Commuting is connected with social isolation, which causes unhappiness.’”

“On the train or bus, one can experience an illusion of fellowship, even if you disdain your fellow-passengers or are revolted by them. Perhaps there’s succor in inadvertent eye contact, the presence of a pretty woman, 1 “Annals of Transport: There and Back Again: The New Yorker.” Web. 23 Nov. 2010.
shared disgruntlement (over a delay or a spilled Pepsi), or the shuffle through the doors, which requires, on a subconscious level, an array of social compromises and collaborations.” With the advent of separated functions and social isolation, the automobile amplified the fall of public domain.

In “The Fall of Public Man”, Richard Sennett defines “public” as to mean “a life passed outside the life of family and close friends; in the public region diverse, complex social groups were to be brought into ineluctable contact. The focus of this public life was the capital city.”

The deterioration of public life happened in the 19th century when industrialization led to the homogenization of public expression. It was a unique shift from the bourgeoisie enjoying all amenities of public life to a form of ‘sociability independent of direct royal control, places where strangers might regularly meet up’. Sennett goes on to explain this era associated with a diverse urban public, or “cosmopolitan”, coined in 1738, where man begins to feel comfortable in situations that have no links to him. It was an era in which enormous parks were built and coffeehouses, theaters, and other forms of urban amenities opened up from the elite to many parts of society.

It requires the full understanding of vibrant public life since the intention is to recreate dynamic publicness in the suburbs of the 21st century. The aforementioned cosmopolitan public life has a direct relationship with the form of the city we are speaking of. A dense urban condition, as seen on the right in the case of Downtown Des Moines, allows the “cosmopolitan” interaction and tension between social and cultural class structures.

In contrast, we can now understand the deteriorated social situation that exists in suburban America, specifically in Des Moines’ suburbs. The sprawl of the city demands the absoluteness of automobile use and discourages walking and bicycling. The separation of programs by land use further exacerbates this problem by stretching out the landscape between the buildings and requiring enormous investments into infrastructure.

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RETAIL PARK, WEST DES MOINES
DENSITY 20% (FAR 0.2)

MULTI-FAMILY HOUSING, WEST DES MOINES
DENSITY 14% (FAR 0.14)

OFFICE PARK, WEST DES MOINES
DENSITY 12% (FAR 0.12)

OFFICE PARK, WEST DES MOINES
DENSITY 20% (FAR 0.2)

SUBURBAN HOUSING, WEST DES MOINES
DENSITY 19% (FAR 0.19)

DOWNTOWN, DES MOINES
DENSITY 240% (FAR 2.4)
and parking for each different use, which reduces tension and chance for multi-cultural exchange. In the suburb’s relationship to public life, this problem is two-fold; it promotes individuality and homogeneous neighborhoods, and reduces public empathy. In contradiction, it creates uniformity and loss of identity.

“In the mass movement into suburban areas a new kind of community was produced, which caricatured both the historic city and the archetypical suburban refuge; a multitude of uniform, unidentifiable houses, lined up inflexibly, at uniform distances, on uniform roads, in a treeless communal waste, inhabited by people of the same class, the same income, the same age group, witnessing the same television performances, eating the same tasteless pre-fabricated foods, from the same freezers, conforming in every outward and inward respect to a common mold, manufactured in the central metropolis. Thus, the ultimate effect of the suburban escape in our time is, ironically, a low-grade uniform environment from which escape is impossible…”

This loss of identity and loss of social consciousness that Mumford describes manifests itself in the suburban built environment; an undistinguished and apologetic sea of buildings, insulating themselves from the public with expansive parking lots and banal green space, linked by a disorganized network of asphalt roadways. The lack of social interaction between classes further segregates them and the gap widens; an interesting phenomenon, which is a direct result of city form.

Interestingly, this circumstance is evident by examining the desirability of home ownership in certain parts of the metropolis, as seen on the right. In the current situation, the dynamic and dense city center sees a 150% increase in median home value in just ten years⁴. Meanwhile, the low-density suburbs of West Des Moines see very little increase in home value (oftentimes around 4%), which has a direct relationship with the density of people per square mile. The comparison of Greater Des Moines to other

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⁴ All density and median home value data courtesy of US Census 2010
CURRENT: this map documents the relationship that density has to change in median home value over the past 10 years.

EXPECTED: this map alludes to what may happen if sprawl were continue at its current density, effectively flat-lining the change in home value within the ubiquitous sea of tract homes.

PROPOSED: this is a possible outcome if the suburbs were to create dense centers or pockets within the existing low-density, single use zones.
West Des Moines, Iowa  | Paris, France  | Des Moines, Iowa Metropolis  | Chicago, Illinois  | New York, New York (5 boroughs)  | Berlin, Germany  | Los Angeles, California
771  | 52,590  | 898  | 11,864  | 27,532  | 10,021  | 8,205

City data collected from Wikipedia
Images Courtesy of Google Earth
cities of various densities suggests that promoting density is certainly reasonable, and in addition could change the entire home value structure within the suburbs of West Des Moines. The dense insertions are an opportunity to simultaneously affect existing home owners and augment the social, economic, and infrastructural organization of the entire metropolis. The Greater Des Moines population is expected to keep inflating throughout at least the next 30 years. For over 150 years, Des Moines has developed to a surface area of just over 200 square miles. If the metropolis continues to grow at 750 people per square mile\(^5\), the metropolis would more than double the surface area of the city within 30 years, which would be equivalent to 9 Manhattan islands. The shear investment into construction and maintenance of infrastructure would cripple the city's tax resources, as well as engulf adjacent agricultural lands.

METRO DES MOINES 2010

METRO DES MOINES ADDITIONAL GROWTH BY 2040 AT CURRENT DENSITY: 750 PEOPLE PER SQ. MI.

METRO DES MOINES ADDITIONAL GROWTH BY 2040 WOULD EQUATE TO THE SURFACE AREA OF 9 MANHATTANS.

DES MOINES METROPOLITAN PLANNING PROJECTIONS (2011-2040)
Woods & Poole Economies Inc.
Wash. DC
LANDSCAPES OF
AGRICULTURE, ENERGY, & DATA CENTERS
Iowa is quickly and carelessly consuming their most precious non-renewable resource; its virgin agricultural land. While not all agricultural land is of equal value, Iowa's farmland is increasing exponentially in price, specifically in the last ten years. Additionally, Iowa has been referred to as the "food capital of the world". For example, it has recently recorded producing 19% of the United States corn, which produces 39% of the world's corn. Recently, the New York Times published an article regarding the alarming farmland prices in Iowa, noting, "In parts of Iowa, prices for good farmland rose as much as 23 percent last year, according to the Federal Reserve Bank of Chicago." Unfortunately, in just the past ten years, Iowa has lost 5% of the farmland. Comparatively, the previous 5% loss extended over a 50 year period, between 1950 and 2000. Given this information, and the global trend of ever-increasing population, it is clear that Iowa's virgin farmland is a commodity worth preserving in its current condition.

In addition to the booming agricultural industry, Iowa is seeing an influx

1 http://en.wikipedia.org/wiki/Iowa
of wind energy investment due to its relatively flat land and desire to increase its use of renewables as an overall percentage of energy use. Although Texas leads the United States in overall wind energy production, Iowa has installed over one third of the capacity of Texas and leads the nation in 'wind energy as percentage of state energy use'. This emergence and abundance of renewable energy has gained attention from corporations on the coasts. For example, Google recently signed a twenty year contract to buy 114 MegaWatts from NextEra Energy Resources in Iowa, which is just one of its many approaches it is taking to become a carbon neutral company. Interestingly enough, Google also recently constructed a $600 million data center near Council Bluffs, IA. This is just the first of a movement of data centers to the region. In 2008, Iowa houses two of the top five locations for data centers in the entire country, according to the following sources:

19% OF US CORN PRODUCTION

17% OF US SOYBEAN PRODUCTION

#1 DATA CENTER LOCATION

#1 WIND ENERGY (AS PERCENT OF STATE ENERGY USE)
Boyd Co., who compared data center locations based on annual operating costs. The most recent developments is a data center park outside of West Des Moines, which is where Microsoft is building a new facility. The facility is the first of many within a data center park being created outside of the metropolis of Des Moines. The infrastructure for the data center park is being funded by the municipality of West Des Moines, funded with the intention of other incoming corporations adding to Microsoft’s initial investment. The only energy conserving techniques involved in the new park will be its connection to Iowa’s renewable energy, specifically the wind energy.

The energy consumptive nature of servers requires inventive ideas on the part of engineers and architects globally to minimize the monumental costs that corporations are incurring each year from data centers. The first priority is to site the data center within a region or near a city that produces or has an abundance of energy available to offer. Other strategies, such as naturally ventilated cooling, chilled water cooling from nearby lakes,
and even LEED certified projects are recently being constructed around the world. Most of these projects which aspire to stringent energy efficiency standards, however, are mostly in Europe where the costs to acquire energy are greater, as well as stricter enforcement of energy use. For example, the above chart lays out a taxonomy of data centers, each of which pride itself on either environmentally friendly standards or high technology. The two most notable projects which have caught attention were the Academica data center in Helsinki, Finland and the Telehouse West London Docklands data center in London, England. Each of these projects uses innovative solutions to reduce the amount of energy they consume. Initially, they both utilize nearby bodies of water for cooling the data center, but most extraordinarily extract the heat produced by the servers to power the surrounding neighborhoods. Because district heating already exists in Helsinki, implementing such a method took no infrastructural investment. “Together with Helsingin Energia, an energy company owned by the city of Helsinki, they have designed a system to use the chilly waters of the Baltic sea to cool the servers. The heat is transferred by a separate pipe system of desalinated water and then sent through the city’s vast underground tunnel network to the district heating system, for which
the tunnels were originally built." Academica has already been contracted to build another data center as part of the network to heat homes in Helsinki, but this one will be ten times larger, which is more similar in size to the project just assembled in the London Docklands area. The Telehouse West London Docklands data center uses its waste heat to produce 9 MW of electricity for the surrounding neighborhood.

These two projects exemplify intelligent synthesis of light industrial use with existing urban conditions. The other projects shown, while exemplary

7 "Helsinki Data Centre to Heat Homes. The Guardian UK." Web. 10 May 2011
in their strategies to both utilize green energy as well as use energy conserving techniques to reduce their carbon footprint, still emit vast amounts of heat into the environment which could otherwise be harvested and reused.

On average, each 100,000 square foot data center consumes about 12 MegaWatts of energy, which is the equivalent of what 3600 homes in Iowa consumes. As the diagram illustrates below, if waste heat was harvested and reused as a system in the new data center park being constructed in Greater Des Moines, the savings in energy would be immense. These calculations are based upon the reuse strategies implemented in the aforementioned case studies. Unfortunately, due to single use zoning, which is addressed in the previous chapter, this strategy is not achievable with the current mode of development within the West Des Moines suburban condition. However, after investigating global data center ingenuity in regards to energy use, as well as the value of Iowa farmland, priority should be the integration of data centers within the low-density suburban fabric.

The graphs on the right emphasize the severity of data center energy consumption, and with the exponential growth in internet innovation and proliferation, there is no clear sign of a plateau of energy use in the near future. As a matter of fact, GreenPeace has just published a paper regarding this very issue titled, “Dirty Data Report”9, which brings to light the enormous consumption of energy and lack of transparency in which the corporations are exhibiting. The publication provides recommendations for renewable energy sources, and effectively distributes letter grades to

9 "How Dirty is your Data?" Greenpeace. Published April 2011.
AGGREGATING SUBURBIA: THE PROJECT
The skeleton of Des Moines downtown district is slowly being refueled and refilled by an attempt to recreate a romantic city that we remember from the early 20th century. A romantic city that once had men in suits, women in dresses, streetcars, public spaces, strong monumental public buildings as a result of the “City Beautiful” movement, and a thick fabric of brick and stone buildings. The city was alive. As the automobile and suburbs gained steam, the city couldn’t maintain its growth and became a victim to the rampant suburban and exurban development. As most of America, the inescapable exodus from the city to the rapidly developing and alluring utopia known as the suburbs was in full effect. The freedom from public transportation and pervasiveness of fast automobiles liberated city planners and developers to alienate all traditional principles of city form and segregate the different programs of the city. Living in the beautiful green landscape of the suburbs and commuting to the city for work was the civilized and respected thing to do. The seemingly endless fields around Des Moines were rich with opportunity, irresistibly cheap, and a safe haven for wealthy families. As the radius of suburbs expanded, so
did the scale of developments. It soon became a disjointed agglomeration of autonomous forms that were separated by wide roads and fields. The development expanded based on the availability and price of cheap land and not by any comprehensive plan, laying the groundwork for chaos. This now results in a patchwork of unorganized fragments with no consideration of hierarchy or programs, scales, or social order.

These large-scale autonomous developments oftentimes prided themselves on uniformity, and not diversity, so the resulting social fabric became more segregated than ever before. Size of property, scale of house, and cost of car declared the value of one’s social status, not the proximity to any other part of the city, because proximity was no longer critical. The car eliminated any concern about travel times, so the diluted abstract of a city that is left of Greater Des Moines is clearly defined by its enormous streets and occasional shopping malls, sprinkled in between with unoriginal housing developments.
With the notable growth that Greater Des Moines will experience in the next 30 years, bold urban and architectural interventions will be the only attempt at saving this rapidly expanding metropolis. Unfortunately, Iowans are currently unaware that each new urbanized acre is laying a path to an unsustainable future; significantly less valuable farmland to cultivate, a permanent commitment to automobile transportation, social segregation, and lack of public identity.

This thesis attempts to refocus the current mode of development to avoid the ubiquitous continuation of sprawl, and instead insert new public centers at the intersection of multiple low-density neighborhoods. With this proposition, each new adjacent neighborhood finally has hope of public transportation access, collective identity, and every day shopping and working within walking distance. Since the development will happen at a scale that is unprecedented regardless, this project addresses the given program and scale of development, but reinterprets the fashion in which they are assembled. As we’ve seen in the case of shopping malls, corporate office buildings, and large highways, tax dollars are being distributed
to fuel economic growth. It should be noted that the current strategies are being rewarded, as Des Moines was recently named Forbes Magazine #1 place for business and careers in 2010\(^1\). Unfortunately, the same survey simultaneously listed Des Moines as #108 for culture. The affirmation of economic growth gives the city every reason to continue their current trends, but unfortunately to ignore issues of cultural erosion. The most obvious solution would be to distribute public monies for synchronous solutions. For example, data center growth is inevitable in Iowa since it has been recently named #1 placement for data center placement. (footnote) Large corporations, such as Google and Microsoft are assembling enormous buildings to process

intermodal transit hub

neighborhood connects to existing fabric

existing through avenue

residential neighborhood

existing through avenue

monumental public square with public bath heated by data center waste heat tower which creates visual relationship with downtown and constructs new suburban identity with skyline

residential neighborhood connects to existing civic center and green beltway park

preserved land is framed with row houses and transformed to a dense interior forest

residential neighborhood has possibility of creating new connections to the east and west

existing through avenue

membrane: framed and transformed into a monumental relic which pays tribute to the luxurious suburbia that once existed

tower: suburban condenser
the world’s digital information and to consume Iowa’s relatively cheap land and abundant renewable energy resources. This project promotes, simultaneously, the expeditious construction of data centers, as well as re-centralized public platform, and an office & residential development. With the savings the city may anticipate from infrastructural growth and maintenance, the advent of public space in the suburbs will be possible. This solution promotes a polycentric metropolis, in which the entire two hundred and nine thousand inhabitants expected to move to Greater Des Moines in the next 30 years could be absorbed by the new sub-centers, both supporting and creating a relationship with the historic city center.

Within the platform, there are a series of objects, operations, and events. Most notably, the platform which sits atop the massive data center will act as a heated sidewalk in the winter, promoting the further connection of adjacent neighborhoods. Similarly, the waste heat also heats a public bath, acting simultaneously as a leisure activity and social catalyst in the winter. The dense environment, particularly the courtyard housing typologies, will maintain the heat and create a unique heated outdoor space in the winter. The project’s strong figure in the landscape allows it to be autonomous and
yet catalyze growth around it in the aforementioned undeveloped areas. The project aspires to effectively augment the suburban landscape by capitalizing on the trend of enormous data center expansion, and simultaneously, subvert the trend of suburban sprawl. The mile-long data center is used as a “microclimate platform” for cultural activities and space for the public collective, providing suburbs with a public identity and heralding a new age of industrialization.
Type 1a
FAR: 2.2
COURTYARD & RETAIL

Type 2a
FAR: 2.6
OPEN COURTYARD & RESIDENTIAL

Type 1b
FAR: 3.1
ROOFTOP COURTYARD & RESIDENTIAL

Type 2b
FAR: 2.5
ROOFTOP & RETAIL

Type 3a
FAR: 1.9
COURTYARD & RETAIL

Type 4a
FAR: 3.4
PRIVATE COURTYARD & RESIDENTIAL

Type 3b
FAR: 2.9
ROOFTOP COURTYARD RETAIL & RESIDENTIAL

Type 4b
FAR: 3.6
OPEN COURTYARD & RESIDENTIAL
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