Rethinking the Industrial Landscape: The Future of the Ford Rouge Complex

by
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ABSTRACT

The growth and decline of manufacturing industries in the past century and the industrial landscape that this activity has produced has had profound physical, environmental, social and economic impact on the communities of which they are an integral part. Throughout the past century, industry has dominated the man-made environment in terms of its size, frequency of occurrence and highly prominent position in the community. In America this is particularly true, as the history of urban industrialism has shaped our nation and the character of our urban environment over the last one hundred years. Because industrial sites have played a significant role in the physical form, social composition and environmental-both natural and man-made-character of American communities - their obsolescence, whether creating a change in function or eliminating the function entirely, leaves a tremendous void, both physically and economically.

The obsolete industrial landscape,whether abandoned or underutilized, leaves the public and private sectors, as well as the community with the task of "reconstructing"-the reintegration of large scale environments through reuse and reprogramming-the site, architecture and infrastructure that is left as obsolete. Reconstruction of obsolete or redundant industrial sites occurs in various ways, though efforts are generally of a fairly singular focus, with the private sector making decisions based largely on market and financial considerations. While the private sector has made some effort to retrofit existing facilities with new technology and processes, the conventional approach has been to leave them behind and start fresh. Existing infrastructure, environmental quality and employee relations are generally deemed too difficult to retrofit, and so new plants are developed on green fields elsewhere, while older facilities are abandoned, demolished or sold to other parties for redevelopment. Reuse strategies have focused on the subdivision of older industrial structures to accommodate incubator industries which require less square footage than traditional heavy industries.

While examples of this conventional redevelopment approach dominate in the United States, a multidisciplinary, participatory approach has been used in both European countries and the United States. Over the last decade, increased interest in the industrial landscape and its reconstruction has spawned numerous efforts world wide. In Italy and France, private sector firms such as Fiat, Pirelli, and Schlumberger have joined forces with the public sector in order to develop planning and design directions for important pieces of the urban landscape. Programs range from institutional and mixed use development to industrial and commercial reuse. In the United States, planning efforts at the federal, state and local levels have produced various participatory approaches. In recent years, the Department of the Interior through the National Park

Service, has developed and implemented a program of "heritage areas", focused on the country's transportation and industrial heritage. The objectives of the cultural development strategy are to preserve industrial heritage while catalyzing economic development in the surrounding community.

A candidate for multidisciplinary reconstruction planning is the Ford Rouge Complex in Dearborn, Michigan. The Rouge Complex has served for its 75 years as the center piece of the regional automotive economy in Southeastern Michigan and the automotive manufacturing in the country as a whole. From its modest beginnings on remote farm and marshland in 1917, Henry Ford I and Albert Kahn's joint vision for the Rouge quickly eclipsed their revolutionary Highland Park facility, inherited its assembly line and grew to become the largest manufacturing complex in the world. Once, the self proclaimed "industrial city" was admired, imitated, portrayed and visited by industrialists, artists and designers and tourists from every corner of the world. Today, the complex is in a state of transition and uncertainty about the future. Poised for reconstruction, it is now at the center of an economy which has been wholly dependent on the cyclical nature of the automotive industry and tied to its convulsions, relocations and downsizing. The Rouge is also in the midst of the region's economic and social strife Based on these existing conditions, can a reconstruction approach for the site create new economic and social value? If a strategy which embraces a multidimensional notion of value, emphasizing "information value", is employed, the answer may be in the affirmative. Considered in this way, the Rouge represents a major redevelopment opportunity. Nowhere is there a more potent site for such a redevelopment; nowhere in the region does the confluence of these three notions of value occur in a more powerful way. The infrastructure that exists there could not be cost effectively reproduced today. There is no other location in the region which is better served by modal options or better positioned in relation to such options. Most importantly, there are few other sites in the world which are so charged with historic and cultural meaning which is of significance at a local, national and international level, and where the juxtaposition of 20th and 21st century industrial landscape and technology meet.

The thesis concludes with a recommended scenario for the reconstruction of the Rouge, focusing on a master planning approach and recommended development program which draw from examples of industrial reconstruction precedents in the the European Community and the United States. The recommended scenario advocates a multi-disciplinary, participatory master planning approach. The process identifies different notions of "value" that are inherent in the Rouge. The development concept consists of four development components, each embracing different notions of value, all of which hold economic potential: **infrastructure value**, which focuses on the value of the buildings and infrastructure to the market, **location value**, which focuses on the sites context, adjacencies and linkages; and the **information value**, which focuses on the symbolic, historic and cultural meaning of the site. In approaching the site with this combination, the results are enhanced economic value and a physical result which addresses the concerns and issues of the stakeholders in the process-the company, the union and the community.

Thesis Supervisor: Julian Beinart
Title: Professor of Architecture

ACKNOWLEDGEMENTS

This thesis marks the conclusion of my three year, dual masters degree program within the School of Architecture and Planning. During this time, I have had the opportunity to work with an outstanding group of professors, fellow students and professionals associated with MIT, and have been influenced, both academically and personally, by each of them. I will not name each here, though I would like to acknowledge, specifically, those individuals who have assisted me during my thesis process over the last three semesters. Firstly, I would like to thank my thesis committee. Each has stimulated ideas and given direction, not only through the thesis process, but through course work and extra curricular activities throughout my three years in the program. Thanks go firstly to my thesis supervisor, Julian Beinart, who has inspired me both intellectually and professionally with his primary interest in utilizing theory to inform professional practice. His own work in politically charged cities such as Jerusalem and Soweto has inspired my thinking about Detroit and approaches to large scale urban design opportunities. Most importantly, Julian was a supportive and rigorous advisor whose interest in my topic became a basis for expanding the exploration of reconstruction issues. I would also like to thank the readers on my thesis team. Dennis Frenchman, who has played a number of roles in my career at MIT-advisor, professor, employer. Dennis is a continual inspiration with his energy, creativity and philosophy toward the practice of urban design. His work in Lowell and his interest in America's industrial heritage was the catalyst for my historical and cultural examination of the Rouge and the region. Finally, Gary Hack, for his pragmatic guidance and focus on the logistical issues which guide such large scale interventions. His professional work in large metropolitan areas, including New York and Detroit, assisted me in formulating the framework for my recommendations. I would also like to thank those individuals who facilitated my thesis proposal efforts: Tunney Lee, who first suggested that my thesis should somehow address the issues of Detroit; and Lawrence Vale, who patiently and enthusiastically assisted me through the proposal process and who emphasized the contending ideologies which are imbedded in the Rouge, and their role in any future reconstruction process.

I would also like to thank those that supported my research effort. I have attempted to list all of the various archives, sources, and interviews under the Resources section at the end of the thesis, though I may have inadvertently omitted one. Specifically, I would like to acknowledge the assistance of the archives staff at the Henry Ford Museum Library and Archives, particularly Cynthia-Read Miller. In addition, thanks go to Darleen Flaherty, Archivist at the Ford Industrial Archives, who was most helpful in facilitating my research and creating a welcome atmosphere. Thanks also to those individuals within Ford Motor Company, particularly Joseph Derkowski at Ford Land Development, who assisted me in obtaining information and visual materials and granted feedback on my initial directions. Special thanks go to Joseph Bedway of Albert Kahn Associates whose knowledge of Kahn's work and generosity in access to materials in the firm's archives was of great assistance. Further support came from individuals who have devoted their careers to Detroit. Two in particular, Harriet Saperstein, President of HPDEVCO and Charles Hyde, Professor of History at Wayne State University, were insightful and generous with their time. These, and others like them, are the individuals that sustain my belief that the region has a hopeful future.

I would also like to thank those who supported me personally through the unique life experience known as "thesis". Recognition goes first to my husband John, who lived through the thesis experience vicariously and was instrumental in helping me to keep things in perspective by reminding me that "life is good." On more than one occasion his unyielding faith in my abilities proved to be invaluable in sustaining my efforts. In addition, the 10-485 gang, especially Marsha Orent, whose support and assistance were essential for all my three years and MIT but especially so during the last year. My fellow classmates, Christina Chiu, Karen Tham, Anu Joshi, Soni Gupta, Jean Riesman, Suhair Al-Mosully, and many others who were always willing to give encouragement and support. Thanks also to my parents, George and Eleanor Bodurow, who served as an unofficial reading team, providing thorough editorial commentary, both on content and grammar, as well as a steady stream of newspaper clippings. Special acknowledgement goes to my Father, George Bodurow, who provided not only a wealth of information about the Rouge, (he may be the only individual who has a complete understanding of the facility and the economic, political and social issues surrounding it from 1950 to the present) but inspiration about its future. Most importantly, however, he has instilled in me an appreciation for those things that are essentially American. As a European born, naturalized citizen, he has a unique perspective on American culture. He is not only an incisive critic of its inherent weaknesses, but a staunch advocate of its strengths. I credit my initial interest and inquiries regarding industry, its place in the American vernacular and its cultural role, to his observations.

Certainly the choice of the Rouge as a topic of the thesis is due in no small part to the fact that the Rouge has been a part of my life-and psyche-for a long time. My father devoted his thirty seven year career with Ford to the Rouge, and my childhood was full of vicarious and direct contact with the complex. I had the opportunity to visit on a number of occasions and also worked there briefly in the summer of 1982. Each interaction with the complex provided a mix of visceral, aesthetic and intellectual stimulation. Until this point in my academic and professional life I have not had the opportunity to examine industry and the Rouge for the social, cultural, economic and political meaning each embodies. The thesis and the Rouge have allowed me to indulge my interests-both academic and professional-in art, industrial design, manufacturing and urban design and planning in a synthetic way which few other sites would allow. It has been a rigorous yet rewarding experience.

To my Father
and
a hopeful future for the Rouge

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Table of Contents

List of Illustrations

Photographs

Key to Photo Sources:

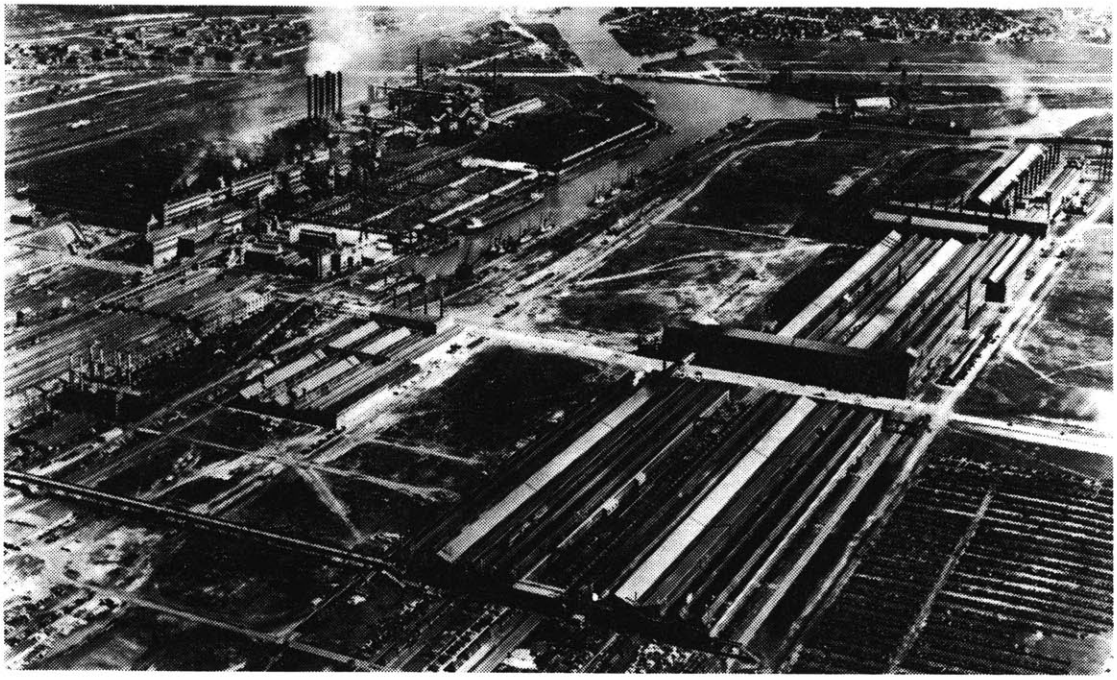
A: Albert Kahn Associates, Detroit, Michigan
B: Ford Motor Company Photographic Services, Dearborn, Michigan
C: Author
D: Henry Ford Museum Library and Archives, Dearborn, Michigan
E: Walter P. Reuther Archives at Wayne State University, Detroit, Michigan
F: Eaton, Dearborn: A Pictoral History
G: Lewandowski
H: Downs, The Rouge
I: Collection of George R. Bodurow
J: Detroit Institute of Arts Gallery Sheet

Chapter I: Introduction

"It was the automobile factory which introduced mass production, in its full scope and meaning, to the world; and mass production has changed the lineaments of our economic and social life more profoundly than any other single element in the recent history of civilization."[1]

Alan Nevins

[1]Alan Nevins and Frank Ernest Hill, Ford: The Times, the Man, the Company, New York: Charles Scribner's Sons, 1954, p. vii.



The growth and decline of manufacturing industries in the past century and the industrial landscape that this activity has produced has had profound physical, environmental, social and economic impact on the communities of which they are an integral part. Throughout the past century, industry has dominated the man-made environment in terms of its size, frequency of occurrence and highly prominent position in the community. In America this is particularly true, as the history of urban industrialism has shaped our nation and the character of our urban environment over the last one hundred years. In the beginnings, expansion of industry focused on natural resources, extractive industries, and the rail and industrial infrastructure that sustained them. In the early 20th century, the birth of "mass production" and the factories which became its driving force characterized the industrial landscape. As Nevins observes, mass production did and continues to affect our economic and social life as no other event in recent history. As we approach the end of the 20th century, the replacement of mass production and the industrial landscape which houses it, with new production technologies and processes, will also profoundly impact society. While such progress will bring positive impacts, it holds negative implications for the industrial landscape that it will leave obsolete. Because industrial sites have played a significant role in the

physical form, social composition and environmental-both natural and man-made-character of American communities - their obsolescence, whether creating a change in function or eliminating the function entirely, leaves a tremendous void, both physically and economically.

The end of the century has brought yet another paradigm break in manufacturing technique and the way in which it manifests itself physically and geographically in the world. This paradigm break brings with it an accelerating obsolescence of the 20th century industrial landscape. The entire industrialized world is experiencing similar effects of the restructuring of the global economy, the automation of production processes, and the relocation of industry to areas characterized by low production costs, whether it be Singapore in the Pacific Rim, Spain in the European Community, or Mexico in North America. The traditional dominance of the manufacturing sector is diminishing in industrialized countries and transferring to other sectors. Currently, approximately 65% of U.S. GNP and 70% of employment derive from the service sector. Experts such as Peter Drucker predict that by the year 2000, only 5 to 10% of the U.S. population will be employed in manufacturing activity, and that this manufacturing activity will be located largely in southern and western states, not the industrialized northeast and Midwest. For this reason, vast amounts of the 20th century industrial landscape are becoming obsolete, threatening to end their original productive social and economic roles in the communities in which they are located. While this phenomenon encompasses all categories of manufacturing in all parts of the world, my general focus is on the industrial landscapes produced at the beginning of the 20th century, during the American Machine Age, which have had significant social and physical impacts on the evolution of contemporary American society and urban landscape. This impact can be characterized as possessing both beneficial and adverse ramifications. Such sites, consuming large tracts of land, currently underutilized, obsolete or abandoned, and located in economically depressed areas not characterized by strong market demand for redevelopment, present a dramatic challenge to current and future generations. This situation is of immediate importance in the domestic automobile industry. For this reason my specific focus will be the future of perhaps its most famous, or infamous, plant of the Machine Age- the Ford Rouge Complex-located in Dearborn, Michigan, a suburb of Detroit. The Rouge is particularly fascinating as a

paradox. The vertically integrated industrial colossus of the machine age, it represents the rise to power of mass production and the American automobile industry, as well as the recent decline of both. It is also potent as a potential symbol for the way in which our society responds to such decline.

For the better part of the 20th century, Detroit, and the industry located there, dominated the automobile industry-an industry which is still, today, the world's largest manufacturing activity with 50 million vehicles produced internationally each year.[1] The automobile industry, whose product has changed the very nature and form of 20th century life, has also brought the country to the greatest economic crisis of the century. As David Halberstam observes, "the postwar years, the immense material strength and physical might, two generations of unrivalled prosperity--it all lulled Americans into thinking it had attained an economic utopia, a kind of guaranteed national prosperity." He goes on to quote Felix Rohatyn, who said of the situation: "In just twenty-five years, we have gone from the American century to the American crisis. That is an astounding turnaround-perhaps the shortest parabola in history."[2] During this time period, American heavy industry, mainly automobile and steel production, had become large and uncompetitive and unprepared for economic rivalry. The industrial base itself-machines and productive facilities-had gotten older, labor costs were high, management was bloated and had moved away from engineering and production skills, and quality had eroded.

In 1980, the auto industry experienced an economic decline unparalleled since the great depression. Economic recession, rising energy prices, increased foreign competition, particularly from Japan, and a saturated market for large cars forced the big three automakers-General Motors, Ford and Chrysler- into massive corporate restructuring which included product, labor and international production strategies, shifting blue collar production work abroad and automating operations at home. The auto companies lost $3.5 billion, 250,000 workers were laid off and an additional 450,000 lost their jobs in supplier industries. These positions have yet to be recaptured. Plants closed,

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[1]James P. Womack, Daniel T. Jones and Daniel Roos, The Machine that Changed the World, Cambridge, Massachusetts: MIT Press, 1990, p. 11.

[2]David Halberstam, The Reckoning, New York: William Morrow and Company, Inc., 1986, p. 62-63

moved to the suburbs, other states or other countries, gutting the industrial base of the city. Industrial decentralization decisions in Detroit were private sector decisions, upon which the municipalities could wield limited influence. By the time American industry came out of the incredible setbacks of the 1980s, the attitudes towards large scale domestic manufacturing capacity had drastically changed. Plants were being built in foreign markets, such as Mexico and Korea, with lower labor rates and better engineering technology. Corporations had cemented the trend of subcontracting manufacturing operations, on a large scale, to other domestic and foreign suppliers.[3] In the country, the trend was toward building smaller specialized manufacturing units and stocking them with high technology, highly automated equipment and production operations.[4] As a result, the new center of automotive manufacturing in the United States lies not in and around Detroit but down the I-75 corridor which begins just south of Detroit and extends through Ohio, Kentucky and Tennessee. This corridor has yielded eleven factories built by Japanese firms such as Honda, Toyota and Nissan. These "greenfield" factories-built from scratch for higher productivity- are sited in rural, non-union areas, which have eagerly offered tax and infrastructure incentives to the companies who located there.[5]

The auto industry that has dictated the health of the national economy recouped somewhat during the 1980s, but is still going through extensive restructuring. Once again, the trends of the time were reflected in the situation of the Ford Rouge Complex which had been the symbol of 20th century industrialism. International competition had forced the industry to downsize, retool and become global in its operations. The Rouge had become a burden, an anachronism, the last vestige of the excessive industrial capacity which had meant strength in the early 20th century now meant an impediment to competitiveness in the late 20th century. Today, a much downscaled Rouge in still a viable part of Ford's manufacturing operations. The Ford Rouge Complex has served for its 75 years as the world's largest single site manufacturing facility and the center piece of the regional automotive economy in Southeastern

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[3]Barry Bluestone and Bennett Harrison, The Deindustrialization of America, New York: Basic Books, 1982.

[4]Cynthia G. Wagner and Daniel M. Fields, "Insight into the Future of Manufacturing Facilities Given", Architectural Record, Vol. 173, September 1985, p.

[5]"The Right Stuff", Time Magazine, October 29, 1990, p. 81.

Michigan and the automotive manufacturing in the country as a whole. The history and statistics of the Rouge are impressive. From its modest beginnings on remote farm and marshland in 1917, Henry Ford I and Albert Kahn's joint vision for the Rouge quickly eclipsed their revolutionary Highland Park facility. The Rouge inherited its assembly line and grew to cover more land (1200 acres), possess more buildings and infrastructure (close to 17 million square feet of floor space, 90 miles of railroad tracks, 35 miles of roadways and 110 acres of parking), employ more people (100, 000 at its peak and after 1941 featured the world's largest union-UAW Local 600) convert more raw materials and produce more finished goods than any other manufacturing facility in the world. Concerned about the influence of outside suppliers and unions, Ford created the Rouge out of his own obsession with industrial self sufficiency and control of process. Once, the self proclaimed "industrial city" was admired, imitated, portrayed and visited by industrialists, artists and designers and tourists from every corner of the world. Today, the complex is in a state of transition and uncertainty about the future. From its original role of the central "feeder" plant for the entire company, producing steel and providing parts to Ford operations across the country, the prominence of the Rouge first began to fade after World War II when Henry Ford II became president and began decentralizing operations. The Rouge survived the automotive and industrial recessions of the seventies and eighties, with selective reinvestment in key operations, such as Steel, Engine and Glass, and a greatly downsized union workforce. But in 1989, an historic and integral piece of the vertical operation, the Steel Division, was finally sold after ten years of solicitation and $800 million in reinvestment, effectively halving the Rouge operation and land area owned and operated exclusively by Ford. The latest Ford-UAW contract guaranteed assembly plant operations through 1993, though rumors of the shut down of Assembly, which has produced Ford automobiles from the Model A to the Mustang, as well as the Frame plant and the Stamping plant, have been rampant for the last decade and are reinforced with regular lay-offs and temporary plant shutdowns at the complex.

As much as the Rouge became the model for 20th century industry it became a symbol of its restructuring by the end of the century. The obsessively vertically integrated, self sufficient facility became an albatross to industry as early as Post World War II, when the company began decentralizing its operations. At the Rouge, a shutdown, material

shortage, or strike in one part of the facility threatened to shut down the entire operation. As a recent MIT study on the automobile industry observes about the Rouge, "the synergy among industries, which industrialists repeatedly seek and seldom find, were never there."[6] The Japanese began, very soon after the second World War, to pioneer a production technique called "Lean Production" which would restructure the economy and the way in which manufacturing was accomplished at the global level. Ironically enough, the inspiration for this concept came from the Rouge. In 1950 a young Japanese engineer named Eiji Toyoda, a member of the founding family of Toyota, visited the Rouge for three months. The Toyota Motor Company in 1950 had only produced 2,685 vehicles, a rather small amount in comparison to the 7,000 a day that the Rouge was producing at the time. Eiji Toyoda carefully study every inch of the Rouge, then wrote back to headquarters that he "thought there were some possibilities to improve the production system."[7] From these beginnings came the Toyota production system, and ultimately, lean production, a concept which marries the activities of labor and management and provides incredible flexibility in the design, production and delivery of product which is market appropriate. Lean production, according to the recent MIT five year study of the world-wide auto industry, will likely replace the credo of Ford and the Rouge: that of mass production. Not since the onslaught of mass production would an industrial shift have national and global implications about the way in which we produce and the way in which we live.

The focus of the thesis is not, however, the restructuring of the global economy, nor the role of the auto industry in that restructuring. The thesis will examine the issues surrounding the resultant obsolescence of the industrial landscape and current approaches to the reconstruction[8] of industrial landscapes both domestically and internationally. A thesis which attempts to address this issue must ask, and attempt to answer, at minimum, essential questions about the industrial landscape. What are the origins of the 20th century industrial landscape? How did it evolve and proliferate? What are the causes and impacts of its obsolescence? Is this obsolescence a domestic

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[6]James P. Womack, et al, The Machine that Changed the World, p. 39.

[7]Ibid, p. 49.

[8]**Reconstruction**, as I use it in the thesis, has been suggested by Julian Beinart as a composite approach to the "reintegration of large scale environments through reuse and reprogramming."

issue or are there international implications for the industrialized world? Why is it important to reconstruct such landscapes? How is the obsolete industrial landscape viewed and approached? Is it perceived as a problem, an economic and social albatross, or is it viewed as an opportunity, with hidden value, waiting to be tapped? What sorts of efforts have been attempted for approaching and reconstructing the industrial landscape? Which are successful, and by what criteria? Which constituencies are involved in the process-the company, the property owner, the employees, the community? Volumes could, and probably should, be produced on each of these questions. This thesis will make a modest attempt to address each, along with the issues that each generate. Finally, the thesis will attempt to synthesize the issues into a proposed master planning approach and programmatic recommendations for the Rouge Complex.

The thesis takes the basic position that the reconstruction of the industrial landscape is a critical issue representing both a problem and an opportunity worthy of devotion of society's resources. The disposition of the industrial landscape and its associated architecture and infrastructures is of considerable importance for several reasons:

- Industry and the formal results of its proliferation have left an indelible mark on the American consciousness, identity, heritage and landscape.

- The acceleration of obsolescence and abandonment of the industrial landscape and the size and frequency of industrial uses in the urban and suburban landscape, force society to face the issue of reuse or reconstruction in the future simply in regard to availability of developable land.

- The industrial landscape represents a well spring of memory and, therefore, a powerful force for change. The heritage of such sites, and their associated architecture and infrastructure, can be utilized as a basis for reconstruction, in a physical and economic sense, so as to regain valid meaning for contemporary society.

- The industrial landscape occupies strategic sites in urban areas, at the confluence of natural, man-made, and labor resources, and are a resource for future generations.

- The scale of industrial facilities implies that the solutions for reconstruction will have impact on the urban and regional context-both physically and economically.

The issue of obsolescence in the industrial landscape is not of recent vintage. Industrial landscapes have been becoming obsolete since the turn of the century, when the rise of mass production and resultant architectural forms rendered the Mill and eventually the Multi-story factory obsolete. Much reconstruction activity has occurred over the past two decades, involving the industrial building types of the late 19th century. These factories, warehouses and mill structures have proven to lend themselves well to adaptive reuse and conversion to office, retail and condominiums, and an entire architectural and planning specialty has built up around their renovation and reuse. The modern industrial landscape, that which was built post 1900, is just now beginning to garner such attention. The third industrial revolution-the information age-has begun to render obsolete the factories of the second industrial revolution-the age of mass production. Until recently, the mentality and approach to the reconstruction of the 20th century industrial landscape has been less than commendable. Too often, the decisions about the future disposition of the industrial landscape are left to private property owners, whose decisions are driven solely by economic considerations and do not necessarily represent a broad interest or constituency. This issue involves not only the disposition of land and buildings, but decisions which have social and economic consequences for workers and the surrounding community. Conventional approaches, practiced by the private sector, include either demolition and abandonment, though subdivision is gaining popularity as an economically viable reuse approach.

Such practices are utilized and reinforced for several reasons. There is accelerating obsolescence of structures and processes, as manufacturing technologies move into the 21st century. Current manufacturing strategy favors smaller, highly efficient facilities that lend themselves to automation of process and production. Factories and infrastructure are viewed as parts of the production machine, and business, which is

justifiably progress and profit oriented, view them as secondary and expendable in the quest for achieving more efficient and profitable production. Supporting this practice, is the private sector view that it is more cost effective to build new facilities than to renovate existing, older facilities, and that older structures raise questions of liability for environmental hazards, and higher costs to operate due to higher insurance and utility costs. Further, the availability and economy of green fields in the suburbs for development fuels such new construction. America still offers vast tracts of undeveloped land in close proximity to infrastructure, ready for commercial and industrial development.

But strategies which consider the industrial landscape as disposable may prove to be unachievable in the near future. Issues of job retention, reinvestment, community involvement, private sector responsibilities, environmental responsibility, and a prevailing national ethic for conservation and reuse--will force the consideration of a new approach. Countries of the European Community (EC) such as Italy, France and Great Britain, as well as some states in this country, have begun to embrace the notion that the industrial landscape offers unique opportunities, viewing their value to society in a broad way. It is not surprising that this activity has proliferated in the EC. Europe is densely built, with little vacant or underutilized land, so reuse of industrial sites is of necessity. In addition, the social and political climate in the EC is conducive to such activity. This climate regards the place of the union, the cooperation between the public and private sectors and the responsibility of industry to society in a different way. This climate has produced a synthetic, participatory approach which is applied to the task of reconstructing the industrial landscape. Such approaches are emerging in the United States as well. Because of industry's prominent cultural and economic role, the decisions about the redevelopment of the industrial landscape merit a multi-disciplinary, participatory planning approach. Such an approach is one of conservation-the wise use of resources-which perceives the industrial landscape as a resource and its reconstruction as an opportunity. The process should also examining different notions of "value" that are inherent in these landscapes.

Such a synthetic approach to the reconstruction of the industrial landscape in the urban context hopes to expand the discourse outside the traditional private facilities and

operations planning realm, or even that of economic consultants, and integrate more disciplines, expertise and perspective. In order to facilitate a multidisciplinary, participatory approach in the reconstruction of the industrial landscape, property owners should take a proactive stance to reconstruction, and the disciplines of Urban Design and City Planning[9] should play a central role in such a process. This approach assumes that the industrial site is more than simply an asset on the corporation's balance sheet--it is, and has always been, an important and integral part of the community or metropolitan area in which it resides, and is therefore a multivariant asset, with value beyond the traditional economic interpretation. However, it is to the advantage of both the property owner and the community to increase the economic value of the industrial landscape, especially if that increased value benefits the broader constituency of the site. In order to accomplish this, an industrial site must be perceived as possessing multidimensional value-beyond simple economic value. Emphasizing one notion of value exclusively yields a specific result, while this multidimensional concept of value can then generate urban form options which will generate greater economic value. Multidimensional value is comprised of three broad categories of value:

1) **Infrastructure Value**--which focuses on the value of the existing architecture and infrastructure of the site, and considers renovation and reuse for other industrial use in order to enhance economic value. This is a perception of the site as a machine, focusing on it as a productive asset.

2) **Locational Value**--which focuses on the location of the site, its adjacencies, proximity, and place in the larger urban context, and considers the economic and market conditions of the site in order to enhance economic value. This is a perception of the site as a piece of real estate, focusing on its location and adjacencies in a larger urban network.

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[9]**Urban Design and City Planning,** as I intend them in the thesis, are the profesional disciplines engaged in the activity of simultaneously and equitably reconciling formal, aesthetic, economic and social values in a context of limited development resources.

3) Information and Cultural Value--which focuses on the embedded historic and cultural value of the site and its architecture and infrastructure. Such value is found in the cultural significance of the facility and its importance to the collective consciousness and memory of the area, region, country or world. A synthetic approach can identify and utilize this value when the facility ceases to serve its original function and recommend program for form and use which can emphasize this value, transforming the site in order to create economic value. This is a perception of the site as a symbol, focusing on its cultural meaning.

A strategy for the reconstruction of an industrial landscape which seeks to interpret the value of the site in this multidimensional way enhances economic value for both the property owner and the community. It also implies a participatory process which addresses the concerns and issues of the property owner and the community and a certain pluralism in the the urban form options that are a result of that process. A reconstruction strategy which uses as a basis these notions of value can begin to consider the future disposition of this important piece of the urban context-the industrial landscape. A piece of the urban context, which, as Spiro Kostof speculates, seems destined to a life cycle of innovation, obsolescence, and reconstruction.

"Will we see large-scale commercial and industrial buildings become obsolete? Will the steady growth of white-collar industries-health, service, entertainment-fashion settings to rival those of the golden age of industry? Will textile mills and automobile plants come to share the landscape of memory with the Silicon Valleys of the future? Whatever may lie ahead, the American workplace has left its lasting mark in the history of monumental architecture. The Wainwright and the Johnson Wax, the Amoskeag and River Rouge--these and others of their class we can properly recite, along with the pyramids, and the Gothic Cathedrals, and the palaces of European autocracies, as benchmarks of excelling vision."[10]

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[10]Spiro Kostof, America By Design, New York, Oxford: Oxford University Press, 1987, p. 134.

Chapter II: Current Approaches in the Reconstruction of the Industrial Landscape

"Industry, the source of every evil and every good,
becomes the true protagonist in the transformation of the city."[1]

Aldo Rossi

[1] Aldo Rossi, The Architecture of the City, Cambridge, Massachusetts: MIT Press, 1982, p. 158.

A. THE STATUS OF THE INDUSTRIAL LANDSCAPE

The issues facing the industrialized world in regard to the reconstruction of the industrial landscape are multidimensional, involving cultural, social and economic ramifications. The way in which the world's industrial infrastructure produces the goods and services which international consumers demand has changed dramatically in the last two decades, which in turn has changed the form, location and function of the industrial landscape and in turn has changed the urban fabric in total. The formal products of the modernist movement have become obsolete, forcing this generation to decide on the disposition of the last generation's industrial environment. The modernist movement created many large scale urban projects which are contrary to the smaller scale urban fabric of the pre-industrial city. These large scale projects range from military bases, public housing projects to industrial landscapes. As these environments become obsolete or undesirable for a variety of economic, social and functional reasons, it is the charge of contemporary society to contemplate their futures.

The current international industrial climate, which some have termed the "third industrial revolution"[1], with its focus on service rather than production and profound advances in information transfer, production technology, process, plant architecture and layout and materials handling, has rendered obsolete the industrial structures, technologies and processes of the early twentieth century. This shift in manufacturing technologies and industrial architecture has had a profound impact on the economy and landscape of the entire industrialized world. Countries whose industrial infrastructure was built up pre and post World War II must now deal with the repercussion of the revolution: redundant, obsolete, derelict and often abandoned industrial structures, and the void in the economy that they leave and the resultant effects on the loss of jobs, the erosion of community fabric and the tax base of the area, and the eventual decline and deterioration of entire urban areas. The Soviet Union and the Eastern European countries, as they begin to deal with the issues of privatization, find their industrial infrastructure obsolete. After the recent reunification of Germany, the west found thousands of East Germany industrial facilities which were deemed too obsolete to

[1]Leopoldo Pirelli, quoted in "Concorso a inviti Progetto Bicocca Milano", Domus 673, Giugno 1986, p. 78.

reuse or renovate with new production technologies. The Germans must now grapple with the resultant issues of massive unemployment and what to do with this portion of the built environment.

As Robert Johnson observes, "private disinvestment is a significant theme of the economic landscape in the United States."[2] In the United States, the objective of being competitive in a world market has encouraged increased disinvestment. Disinvestment has been defined as the shift of capital among regions of the country and to other foreign countries. Bluestone and Harrison have outlined many of the problems and policy options concerning disinvestment.[3] This situation has left the disposition of industrial sites up to the private sector, which has favored, in general, abandoning older structures and the building of new efficient facilities in "greenfield" development. An example of this phenomenon is the I-75 corridor, which houses most of the newly built automobile factories over the last decade. These factories, mostly Japanese manufactures, have sited there for a variety of reasons, including lower operating costs and tax incentives. Production is becoming more efficient, with less emphasis on enormous capacity, both for production and inventory. The future trend in the auto industry is projected as "niche factories", plants which produce 25-50,000 autos per year as compared to the traditional capacity of 250,000 autos per year.[4] This strategy, while probably cost effective in most cases, leaves the old industrial infrastructure of the country unrenovated and un- or underused and as Johnson observes, It can take decades and substantial public investment before some cities recover from the closing of large factories. The cost of this recovery is never accounted for in the original decision to shut down."[5]

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[2]Robert E. Johnson, "Strategic Planning Issues in the Revitalization of Industrial Buildings", 1989 CIB-UIA Symposium on Industrial Architecture and Engineering Design. Stockholm and Gothenburg, Sweden. August, 1989. Abstract p. 1.
[3]Barry Bluestone and Bennett Harrison, The Causes and Consequences of Private Disinvestment. Washington D. C.:The Progressive Alliance, 1980.
[4]Conversation with David L. Lewis, October, 1990.
[5]Robert E. Johnson, Strategic Planning, p. 1

A 1985 survey by *Building Design and Construction* indicated that "there are more than 450,000 "professionally owned" industrial buildings in the United States."[6] A large percentage of these facilities have lost their original functions and are candidates for reuse. A University of Michigan Study states that "in the last ten years, manufacturing plants in the industrial regions of the U. S. have been closing at a rate of 3,000 per year."[7] Generally, it is the community that is directly effected that is left to deal with the remaining sites and infrastructure. Domestic public policy regarding this issue is fragmented, though there are numerous laws that affect the sites. Federal state and local legislation regarding the abandonment of industrial sites is minimal. In the early 1980's, the U.S. Department of Labor published a brochure entitled "Plant Closing Checklist: A Guide to Best Practice", which stated that "more than 13,000 plants were closed between 1975 and 1981 as a result of foreign competition alone."[8] It goes on to state that the booklet was "prepared to assist local leaders and organizations in communities faced with plant closings or major layoffs of workers by suggesting various actions that can be taken to prevent or reduce the impact of worker dislocation and identifying key sources of support."[9] Although the booklet presents fairly extensive advice regarding community formation of economic development strategies, not once does the publication address the issue of reuse or revitalization of the closed plant and its infrastructure. Recently, Congress passed plant closing legislation called the Worker Adjustment and Retraining Notification Act (WARN) which took effect February 4, 1989.[10] The legislation requires employers to notify workers and the community 60 days prior to a plant closing or major layoff. Similarly, national unions, especially the UAW, have negotiated salary compensation and job retraining programs in the event of layoffs or closings, sometimes granting employees 95% of their salaries and benefits for an extended period. However, these policies do not address the issue of what the community and state is to do with the remaining infrastructure-the land and

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[6]John Morris Dixon, "P/A Inquiry: Reusing Industrial Buildings/New Products from Old Mills", Progressive Architecture, November 1985, p. 94.

[7]Revitalization of Older Industrial Facilities, Organization for the Reuse of Industrial Facilities (ORIF) conference brochure, 1986.

[8]Robert L. Johnson, et al, Plant Closing Checklist: A Guide to Best Practice, U.S. Department of Labor, Raymond J. Donovan, Secretary, Labor-Management Services Administration Ronald J. St. Cyr, Deputy Assistant Secretary for Labor-Management Relations, undated, p. 1.

[9]Ibid, p. 1.

[10]Robert E. Johnson, Strategic Planning, p. 5.

the buildings, nor how the economic engine that is lost with the closing is going to be replaced.

Federal environmental policy has some, but minimal effect in regard to the physical remnants of disinvestment decisions. In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund", which authorized the Federal government to respond directly to the releases, or threatened releases, of hazardous substances that may endanger public health, welfare or the environment. CERCLA also established a five year, $1.6 billion fund made up of taxes on crude oil and other commercially produced chemicals. In 1986, Congress updated and improved CERCLA through The Superfund Amendments and Reauthorization Act (SARA), extending authority for another five years. and adding an additional $8.5 billion in funding. Both CERCLA and SARA are available for conducting long-term cleanup at the worst sites in the country, those which on placed on the National Priorities List (NPL). Superfund legislation is the nation's environmental program for cleaning up abandoned and uncontrolled hazardous waste sites which is administered at a Federal, Regional, State, local and private levels. Portions of active sites are also covered. The process begins with discovery and then study and clean-up, though a complex ranking system identifies the worst sites and puts them on the National Priorities List (NPL). As of October, 1990, the NPL comprised 1,246 sites. At this time, only 28 had been formally "deleted" from the list, meaning that clean-up had occurred and effectiveness had been verified.[11] Though things seem to be improving, due largely to strict programs implemented at the State level, most blame the ineffectiveness of the program on the Reagan administration, during which only 20% of CERCLA/SARA funding was spent on site clean-up. When Superfund expired in 1985, Time magazine reported that the funding was "dribbled away.....on a mismanaged effort that served only to reveal the almost unimaginable enormity of the task ahead."[12] Although the parties responsible for contamination can lead the process, there is no restriction on the abandonment or transfer of toxic sites, though some states, such as Connecticut and New Jersey, have environmental

[11]United States Environmental Protection Agency, Office of Emergency and Remedial Response, Catalog of Superfund Program Publications, October, 1990, p. 1.

[12]Reported in Forrest Wilson, "Cleansing the Land We Build Upon", Architecture, August 1989, p. 97

protection laws requiring the clean-up of toxic waste on sites before the transfer of property. New Jersey's Environmental Cleanup Responsibility Act (ECRA) has particularly tough property transfer laws, who some feel has brought sale of industrial property to a halt. Such measures generally either inhibit reuse or encourage "greenfield" development, making it easier for the private sector to pollute new virgin land rather than reclaiming existing, polluted sites.

Some federal programs have been developed to address, either directly or indirectly, the issue of the obsolete industrial landscape. It is estimated that 3.2 million acres of land are unusable due to strip mining activities.[13] Efforts to reclaim these vast tracts of land devoted to surface and sub-surface mineral mining were spurred by the 1977 Federal Surface Mining Control and Reclamation Act. The Act generated funds to be used for reclamation by levying a surcharge on current coal mining operations. Historic preservationists have made attempts over the past two decades to gain National Landmark registration status for many industrial sites in the country. However, diminishing investment tax credits and revisions in the depreciation schedule for such activity have made the designations, and renovation activity, less attractive to the private sector.[14] The fact that most of this infrastructure is in private ownership, not involving federal dollars for reuse, render the protective designations, generally, a moot point. Another recent federal program for the creation of national heritage areas which focus on transportation and industrial heritage, administered through the Department of the Interior and the National Park Service, has been heavily funded over the last decade. This approach will be addressed in the following section.

As Robert Johnson states, "there is a substantial amount of literature dealing with why plants close. However, other than a few exceptions, there is much less literature that investigated systematically and in depth why and how plants are revitalized."[15]

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[13]Kevin Lynch, What Time is this Place, Cambridge, Massachusetts: MIT Press, 1972, p. 190.
[14]The Tax Reform Act of 1986 reduced the Rehabilitation investment Tax Credit (RTC) to 20% of the cost of the rehab and the depreciation period increased from 19 years to 27.5 years for residential and 31.5 years for non-residential historic structures. See G. Timothy Haight, "After-Tax Rates of Return of Historic Rehabilitation", The Journal of Real Estate Development, Vol. 4, No. 1, Summer 1988, p. 57-63.
[15]Robert E. Johnson, Strategic Planning, p.3.

However, there have been substantial renovation and reuse efforts of redundant industrial structures in the United States over the past two decades. It is important, however, to distinguish that these efforts have largely involved industrial buildings and infrastructure of the nineteenth century and have been initiated and accomplished outside the realm of the original private sector owners (the manufacturers) and mounted largely by new private owners or by community based efforts. Motivation for this increased interest and "affection" for industrial structures is difficult to pinpoint, though it can be traced to the planning in the early seventies. Efforts which focused on preservation and conservation as a strategy for economic revitalization were motivated by two major national occurrences. Firstly, a violent reaction against the Urban Renewal policies of the 1950's and 60's which not only decimated the historic cores of every major city in the country, but also failed miserably in achieving the social and economic goals it purported. Urban renewal, the extreme of modernist expression in form and theory, ironically brought about the ultimate crisis for Modernity.[16] The second occurrence was that of the nation's bicentennial, which probably had some effect on the mentality and sentiment of the nation and especially its planners and architects. In 1976 the National Trust for Historic Preservation in the United States published *America's Forgotten Architecture*, a book which chronicled the variety and state of repair of America's industrial past. I do not intend to trivialize this phenomenon, as it is vast and complex and in need of greater illumination. The phenomenon represents a paradigm break in the preservation/reuse movement not only in terms of the *type* of architectural artifact that has been designated for preservation, but also the *way* in which the preservation is approached as well as the motivations behind both activities. As Randolph Langenbach said, "until recently, historic preservation has usually meant the conscious selection of a few outstanding historic landmarks to be preserved as museums or institutional structures within areas which continue to change rapidly around them."[17] For purposes of this study, it is relevant to emphasize that at some point during the 1970's we, as a nation, changed our view and attitudes toward older industrial structures and sites: once considered blighted elements

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[16]See discussion in Donald Appleyard, The Conservation of European Cities, Cambridge, Massachusetts: MIT Press, 1979, p. 19

[17]Randolph Langenbach, A Future from the Past: The case for conservation and reuse of old buildings in Industrial Communities, U.S. Department of Housing and Urban Development and the Massachusetts Department of Community Affairs, 1977, p. 3.

in an urban area, derelict, undesirable or redundant. We discovered and recognized that they embodied alternative physical and economic opportunities. One advocate of this attitude reinforces this: "Reusing redundant buildings is more than just a romantic idea. Old buildings are a potential resource, which if rehabilitated can often provide cheaper and more appropriate premises for new and growing firms. By finding fresh uses decay can be halted and whole neighborhoods rejuvenated while at the same time maintaining a sense of time and place."[18]

The reconstruction plans and efforts that resulted from this new national consciousness manifested themselves in numerous ways, though two broad categories of focus have emerged. These two categories include efforts to reuse 19th century Mill buildings and efforts to rejuvenate formerly industrial waterfront areas across the country. There are extensive studies and publications regarding the conversion of Mill buildings. Particularly in the Northeastern United States, where the loss of the primary industries, especially the textile industry, had devastated the regional economy resulting in massive unemployment and excess capacity of industrial square footage. In 1977, the U.S. Department of Housing and Urban Development, in conjunction with the Massachusetts Department of Community Affairs, commissioned a study by Randolph Langenbach which presented case histories of Northeastern Mill towns and made a case for the economic and social benefits of reuse strategies. Langenbach presents detailed accounts of four industrial cities, those of Fall River, Lawrence, Lowell and North Adams, Massachusetts and Manchester and Harrisville, New Hampshire, as well as presenting a cost benefit analysis of preservation and conservation guidelines.[19] Since the early 70's, much renovation activity has been accomplished in each of those cities and throughout the northeast. The National Trust for Historic Preservation recently published "The Millworks Handbook" which outlines process and procedures for the revitalization of Mill buildings. Though the conversion of an industrial facility presents a large set of considerations and problems, the construction (generally brick with high ceilings and expansive floor areas) and typology of the Mill building, and other small

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[18]Peter Eley and John Worthington, Industrial Rehabilitation, London: The Architectural Press, 1984, p. 3.

[19]Langenbach, Future from the Past, 1977.

factories and warehouses, has lent itself to adaptive reuse and conversion to office, retail studio and condominium uses.

The growth of many waterfront cities was dependent upon trade. Waterborne trade functions and their associated industries, warehouses and railyards dominated the waterfront areas of many cities. When trade activity diminished or moved to the large container ports of the east and west coasts, the waterfront areas of many cities were left derelict. The phenomenon of revitalizing formerly industrial waterfronts and their associated warehouse structures began in the early 1970's with the Ghiradelli Square project in San Francisco, which converted a former Chocolate Factory into a retail complex. Quickly following that project was the Cannery in Monterey, which converted a former fish processing plant. By the end of the decade, what has come to be known as the Rouse Phenomenon-the festival marketplace on the waterfront, named after developer James Rouse, who, with architect Benjamin Thompson, invented the retail prototype-began to dominate as the reuse approach of choice. Numerous examples of the festival marketplace now exist, though Boston's Quincy Market is perhaps the most famous and most successful example. The festival marketplace design and programming approach has been implemented in New York City's South Street Seaport, Baltimore's Inner Harbor and even in Toledo, Ohio, and proposed in many other cities. The phenomenon has been so successful, it is being implemented in nonwaterfront locations, such as Washington DC's Union Station, and even being exported, with studies reportedly underway for waterfront festival marketplaces in cities of the Pacific Rim. In addition, many cities have mounted waterfront studies and redevelopment efforts borrowing on the festival marketplace approach to generate mixed use development in formerly industrial areas. Cleveland developed the Flats, a former warehouse district on the Cuyahoga River, revitalized as an entertainment and office district; Pittsburgh developed Union Station, the former rail station on the Allegheny River; and Detroit developed RiverPlace, the former Stroh's Brewery on the Detroit River.

Ongoingly, industrial buildings continue to lend themselves to adaptive reuse in other categories. Numerous former warehouses have been converted to lofts for artists studios and offices for design and architectural firms and even retrofitted with new

materials handling equipment for warehousing and light industry. Older industrial structures have also become attractive as design centers, housing showroom and office space. Examples of this are the Ice House in San Francisco, a former refrigeration factory, The DCDC in Washington, DC, which is a former refrigerated warehouse, IDCNY in Long Island City, NY, which is a cluster of former gum factories and warehouses, and Montgomery Park in Portland Oregon, a former Montgomery Ward Regional Distribution Center.

Obsolete industrial environments is not a topic which is exclusive to the United States. Much has been accomplished worldwide, over the last two decades, regarding the approach in the reconstruction of industrial environments. A complete and detailed accounting of international efforts for the reconstruction of industrial environments should, but has yet, to be written.[20] This accounting, however, is not the intent, nor the focus of the thesis. There are many efforts in the industrialized world which I will not address within the scope of this thesis. Certainly there are other efforts in Europe, such as the national efforts in the Netherlands and in Sweden sponsored by the Swedish Building Council; in Canada, which has quite a bit of public and private sector activity; and even efforts beginning in the Pacific Rim, such as Kawasaki's industrial waterfront in Japan. What follows is a selected group of such projects, both in Europe and in the United States, illustrating representative approaches to the reconstruction of the 20th century industrial environment. The examples have been chosen because they are of the 20th century, for their appropriateness to the situation at the Rouge, and for the lessons that they convey both in terms of process and program. I will begin in European Community (EC), where in Great Britain, Italy and France, numerous effort has been mounted over the last decade toward this end. In Britain, I will discuss two large scale projects which have been catalyzed by the government in the hopes of stimulating economic development in urban areas. The Italian examples involve the efforts of two private firms, Fiat and Pirelli, in conjunction with local governments. They are similar in their nationality and the technique of soliciting ideas for the futures

[20]One recently published book addresses the topic: Peter Eley and John Worthington, Industrial Rehabilitation, the Architecturela Press: London 1984. However, while the book does address reconstruction issues, it focuses on reuse techniques for late 19th century multi-story structures in the densely built central cities of the United Kingdom. Efforts which address 20th century industrial typology on suburban sites have been mounted internationally and deserve similar documentation.

of their sites, but the results of each process are different. In France, national policy in the past decade has lead to a variety of efforts from the renovation of buildings to the reclamation of toxic landscapes. I will present several examples of the creation of urban parks and suburban parklands on former industrial landscapes, and then describe a specific plant conversion, that of the Schlumberger Montrouge Plant in suburban Paris.

I will then turn to the United States to discuss three distinct approaches in evidence over the past two decades. Beginning with the more "conventional" approaches of abandonment and demolition, I will discuss the recent histories of two of Detroit's early automotive plants, the Ford Highland Park Plant, which was closed in 1972, and the Chrysler Dodge Main Plant, which was, after an extensive planning process, demolished to make way for the construction of a new facility-the General Motors Poletown Plant-on the same site. Secondly, I will describe a revitalization strategy for the industrial landscape which has gained momentum in the last decade-that of subdivision. These largely private redevelopment efforts focus on the reuse of industrial sites for other industrial purposes. This conversion approach will be illustrated by several examples. Thirdly, I will address federal level efforts to help catalyze industrial reuse, focusing on a strategy of cultural development to generate economic development in regions dramatically affected by the decline in manufacturing. The approach, catalyzed by federal, state and local efforts, attempts to preserve and interpret the nation's industrial and transportation heritage through site specific redevelopment and the stimulation of cultural tourism. The program has spawned numerous planning efforts, largely in the Northeastern states, and has been successfully implemented in Massachusetts, New York and Pennsylvania.

B. APPROACHES IN THE EUROPEAN COMMUNITY

1. Great Britain

Great Britain, the birthplace of the Industrial Revolution, is now faced with more than two hundred years of obsolete mines and declining manufacturing industrial sites. However, since the country is small and densely developed, reclaiming and recycling industrial land is well established. The 1947 Town and Country Planning Act was the first legislation to require restoration of a mining site after closure. In the 40 and 50's, Parliament introduced the Derelict Land Grants (DLG) program which offered financial grants to assist in both private and public sector reclamation activity, focusing on the dangers and eyesores of mining and quarrying. In 1981, the Department of the Environment , which administers the DLG program has begun awarding funds to projects which redevelop industrial, commercial and even residential uses. However, the law does not obligate property owners to reclaim land left derelict by factory closure. Though some companies, like the recently privatized British Steel have internal reclamation programs, most industrial uses do not. It is estimated that land in Britain is being reclaimed at about 3,000 acres per year, and between 1974 and 1982, approximately 42,000 acres of land was reclaimed in England. But the total area of abandoned and derelict land is increasing. In 1989 the total was 494,000 acres.[21] In addition to these efforts, Britain has, since the early 19th century, had a very well established preservationist movement. During the 1960's and 70's, a national effort was launched to focus on industrial sites, particularly those from the period of the Industrial Revolution.[22] It is from this time that British began pioneering efforts in the field of Industrial Archeology, which has since influenced the creation of Industrial Archaeological societies in other European Nations and the United States as well.

More recently, the government has focused on obsolete industrial landscapes located in urban areas in order to spur private-sector development. The primary example of this

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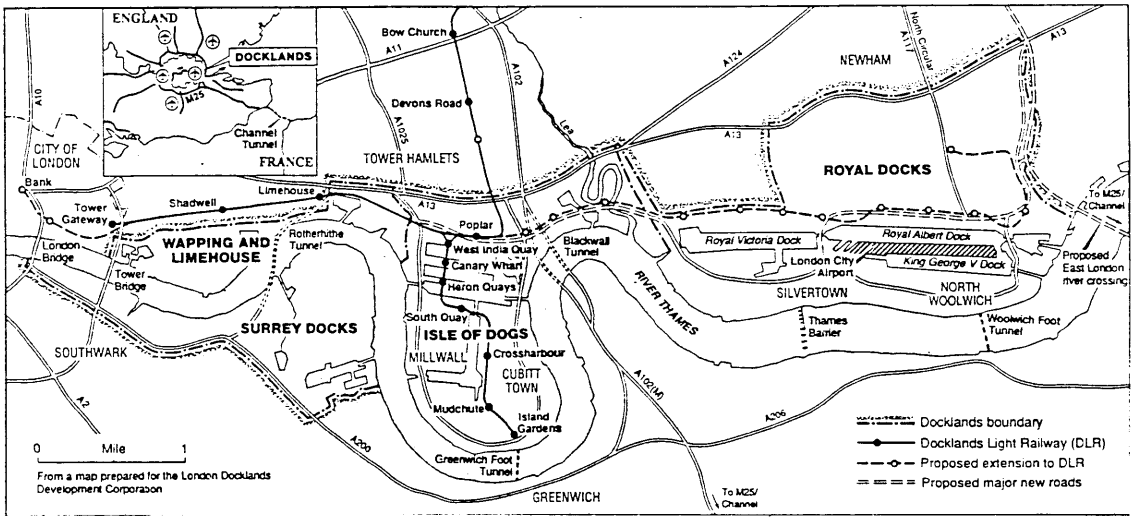
[21]Robert Holden, "Britian: New Lives for Derelict Lands", Landscape Architecture, June, 1989, p. 51.
[22]Robert M.Newcomb, Planning the Past, Hamden, Connecticut: Dawson /Archon Books, 1979, p. 161-170.

Figure 1: Docklands Site Plan



effort in Great Britain is that of *the Docklands*, the largest scale public redevelopment effort in Britain in the last century. The Docklands project encompasses eight square miles (approximately 5200 acres) of formerly industrial waterfront, with some facilities dating to the turn of the last century, on the Thames River to the east of central London. (**Figure 1** illustrates the extent of the project) The project has been highly controversial since its inception in 1981, though building and infrastructure development there has proceeded at a furious pace, with only a few sites uncommitted in 1990. In 1986, the *Architect's Journal* concluded that "the Docklands contains...the most appalling mismatches between sites and buildings, needs and means, money and quality, aspirations and achievements."[23] The original objectives of the Docklands effort were established to reverse the decline and dereliction which occurred when the technological revolution in cargo handling, which brought containerization and bulk shipping, rendered the docks obsolete in the 1960's. Planning has focused on the four designated regions comprising the area: Wapping, due east of the Tower of London; Surrey Docks, on the South Bank of the Thames; the Isle of Dogs, a peninsula in the river's deep bend; also the Royal Docks, furthest east yet still only five miles from the city. In addition, a $110 million elevated Docklands Light Railway (DLR) was planned in two phases, the first which connects the Isle of Dogs to the London Subway system (completed in 1989) and the planned second phase, which will extend the length of the

[23]Janet Abrams, "Docklands Demise?", Progressive Architecture, February 1986, p. 105.

development parallel to the Thames. The London Docklands Development Corporation (LDDC), the governmental body established to manage the Docklands development effort, has been accused of laissez-faire non planning policies which favor private interests, exclude public input and use by low and moderate income groups, and feature irresponsible design guidelines which have in turn produced architecture and urban design of poor quality.[24] As one article describes it, "never before in Britain in this century has so much development taken place so quickly, in such an unconstrained way and over such a large area."[25] Some of this attitude is attributed to the real estate development backgrounds of the original and current LDDC board chairmen.[26]

In order to accomplish the redevelopment, the LDDC was handed large tracts of land, previously owned by public bodies, such as the Port Authority of London, in order to lure the public sector. Most of the controversy centers on the Isle of Dogs, which houses the development's Enterprise Zone, the only one in London. The EZ lures private development with exemption from local and land development taxes for commercial and industrial uses until 1992, up to 100% capital allowances for new construction and a simplified planning process. and the Canary Wharf project. These incentives have been successful, but have also created negative externalities. The public sector investment in land acquisition, infrastructure and site preparation has exceeded projected levels, although new development has brought work to the area, the new firms employ relatively few local residents, and the displacement of former workplaces by luxury condominiums has increased unemployment in the neighboring areas from 20-30 percent.[27] Though some of the housing efforts have won architectural acclaim, the lack of design guidelines has produced, as Janet Abrams describes, "a motley collection of light industrial buildings, garish in their "high-tech" modernity, and distinguished only by a blatant insensitivity to either the waterside or each other."[28] By far the most controversial development on the Isle of Dogs is the Canary Wharf Financial Center development. The $4.3 billion, 70-acre, 10-million

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[24]See articles in Architectural Review Vol. 185, April 1989, p. 38-44, Town and Country Planning, February 1989, pp. 52-55, and Progressive Architecture, February 1986, p. 102-105.
[25]Abrams, "Docklands Demise?", February 1986, p. 103.
[26]Sir Nigel Broackes and Christopher Benson, Ibid, p. 103
[27]Ibid, p.103.
[28]Ibid, p. 104.

square foot financial center, which features three 790 foot towers and underwater parking for 20,000 cars, has been undertaken by a consortium of U.S. investment banks, led by First Boston Corporation. The concept anticipated the 1986 deregulation of the British Stock Exchange and hoped to create a second financial district in London. Original site and architectural design was completed in 1985 by Skidmore Owings & Merrill, Chicago, with I.M.Pei & Partners, New York, and the British architects YRM. The first tower was designed by Cesare Pelli (verify) and constructed in 1989, though occupancy has been slow. The *Architect's Journal* has called the scheme "Docklands Monster" and commented that the scheme "would have devastating effect on the scale and form of the area...and would introduce a building from which, while well suited to North America, is surely discredited in Britain."[29] A recent hopeful planning effort has, however, been mounted in the last large tract of the Docklands area, that of the Royal Docks. The LDDC realizing the scale and significance of the area hired Richard Rogers & Partners to draft a development framework for the area, which includes the Royal Victoria and Royal Albert Docks as well as the area further east to the Thames Barrier. The master plan contains no specific building designs but rather focuses on analysis of infrastructure needs and proposals for open spaces and utilizing the water resource.

Another British project, Kings Cross, is a recent effort sponsored by BritRail and its development partner, the London Regeneration Consortium (LRC) which consists of Rosehaugh-Stanhope and the National Freight Corporation, hopes to sell and redevelop a former railyard, a 40 hectare site (approximately 100 acres), behind Kings Cross station in central London. The redevelopment plan is linked to the renovation of Kings Cross station and the hope of building a second terminal for the Chunnel-the newly constructed tunnel which link Britain with the continent. Architect Norman Foster (Foster Associates) was commissioned to produce an architectural and urban design scheme for the site. Foster's proposal features a mix of commercial and residential uses and is most strongly characterized by a large central parkland which is delineated by the former rail rights of ways. (**Figure 2** illustrates Foster's proposed scheme)

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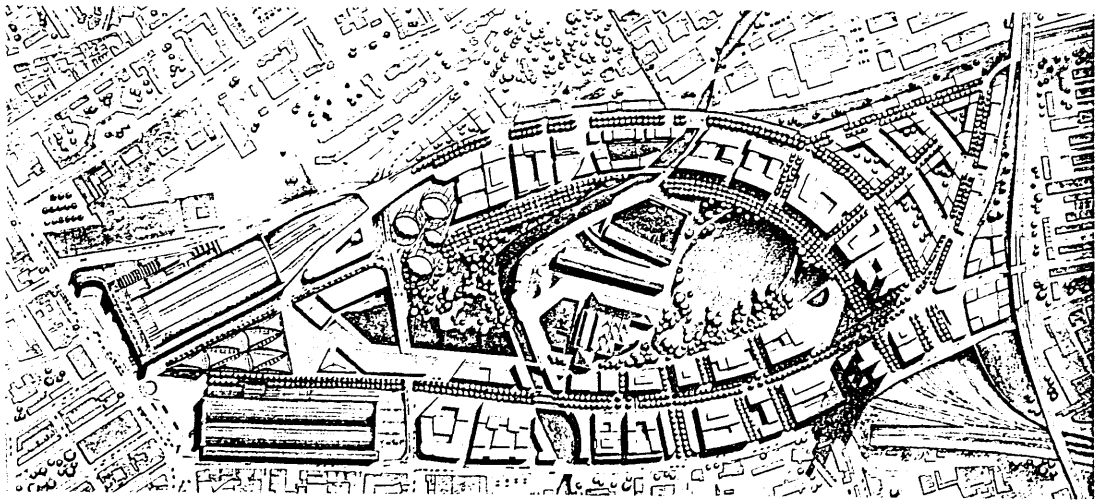
[29]Ibid, p. 105

Figure 2: Norman Foster's Kings Cross Scheme



Currently, the project is in the planning phase, though BritRail, asking .5 billion pounds sterling for the land, is experiencing difficulty finding a buyer for the site.[30]

2. Italy

Italy has a long cultural heritage and an active history of preservation activity of its ancient and historic resources. Most recently, the nation has begun to focus this activity on monuments of the 20th century. Industry is recognized as playing an important role in the formation of the modern Italian state. In Italy, heavy industry has traditionally been located in the northern provinces of the country in the industrial cities of Milano, Torino and Genova. Recently, large manufacturers have begun moving operation to the southern provinces, or to foreign markets with lower labor and operating expenses. Such movements are similar to those occurring in the United States, though these movements are done with a different framework of negotiation than in the United States, as the union is perceived as playing a much more powerful role. Urban areas in Italy are densely built, and the industrial landscape, once obsolete, becomes an important future piece of the urban context. As pieces of this industrial landscape in the northern provinces begin to become obsolete, and are eventually closed

[30]See Town & Country Planning, February 1989 and Progressive Architecture, February 1986, articles.

for production, the private sector has taken the lead to launch efforts, with strong input from the public sector, which both preserve this history and redevelop the industrial "monuments" for other uses. Two highly publicized examples of this effort-the Fiat Lingotto and the Pirelli Bicocca- are presented.

THE FIAT LINGOTTO

The renovation, over the last decade, of the Fiat Lingotto plant in Torino, Italy, presents interesting implications for the future of preservation and reuse of the built environment. The facility holds an important place in the history of the modernist movement as well the history of modern Italy. This history is presented first in the essay, since the historic past of the plant is significant to the revitalization approach. In the early 1900's, the automobile industry became the symbol of the industrialization and modernization of Italy. Fiat , founded in 1899, rose above the dozens of other automobile firms which had established themselves at the turn of the century in Torino, Italy's seat of technology and entrepreneurial spirit. In 1914, Fiat's owner-founder Giovanni Agnelli decided to transform Fiat into a large integrated company based on the techniques of organization and mass production that he had adopted from Henry Ford.[31] The existing production facility in the Corso Dante - Torino was deemed inadequate for standardized production and, based on Agnelli's directive, the Fiat factory in a southern district of Torino-Lingotto - meaning, literally, "ingot" was constructed in the American style of ":Daylight factories" which had been pioneered in America. Design work on the factory began in 1914 and was directed by Giacomo Matteo-Trucco, Fiat's Director of Production and *ingegnerone*, or "super-engineer". Because, however, of its striking similarity to such industrial structures as Ransome's United Shoe Machinery plant and Albert Kahn's Ford Highland Park plant, modernist analysts such as Reyner Banham have attributed the resultant aesthetic and functional qualities of the design to American consultants on the Fiat team.[32]

Site work began in 1916 with the main part of the Lingotto works finished and operational between 1919 and 1921, though building of the complex lasted an entire

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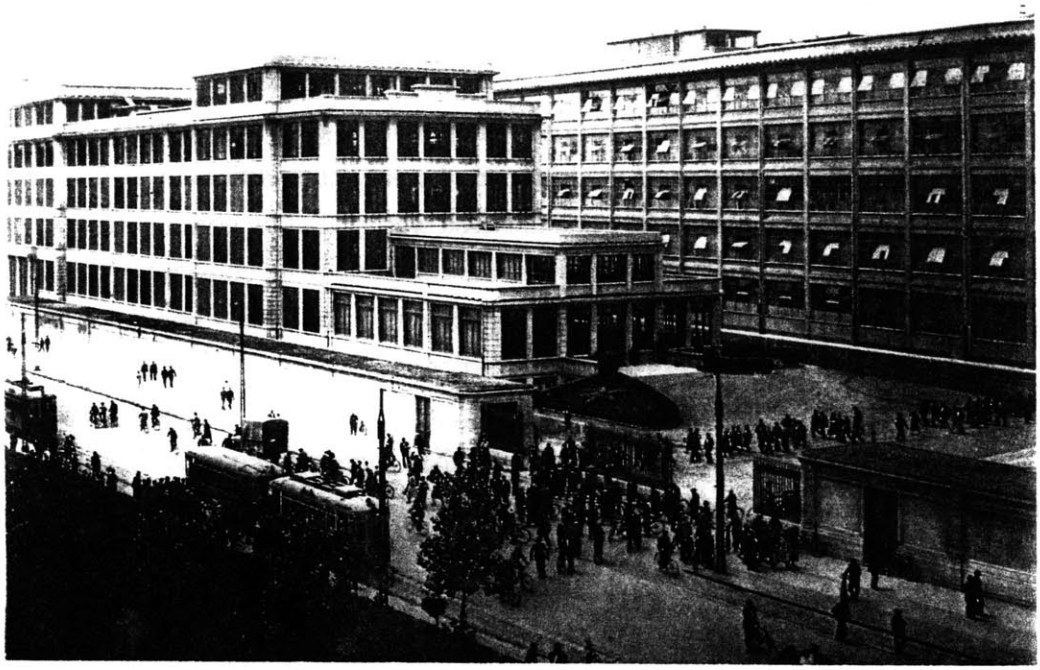
[31]Reyner Bahnam suggests that Agnelli studied and visited Ford in Detroit before building the Lingotto. A Concrete Atlantis, Cambridge, Massachusetts: MIT Press, 1986, page 259 (Note 52).
[32]Ibid, p. 239.

Figure 3: Fiat Lingotto ca. 1930



decade. The site, in close proximity to Torino's Porta Nuova main railstation, also featured extensive railyards directly adjacent to the north. The main body of the facility in place by 1920, is a single building, twenty seven meters high with five stories of production facilities, and composed of two parallel blocks five hundred and seven meters long and 80 meters in width, linked by two cross-blocks which contain two helical ramps. (**Figure 3**) In 1925, the building was extended by adding two five floor lateral wings projecting into the courtyard. The building is distinguished by the high-speed test track on the roof. This piece of "crowning glory", which has fixed the Lingotto firmly in the history of modern architecture, was not only a symbolic, but a functional crown. It was integral to Matteo-Trucco's concept of the organization of the production process, which was opposite of the American technique of the time (such as those in place at Ford's Highland Park) of gravity-flow production processes, where materials entered the plant at the top and proceeded downward to a finished product. At Lingotto, the material flow was from the bottom upward, where final assembly lines on the top floor. From there, the new Fiats would emerge onto the test track on the roof to prove themselves before returning to the parking yards between the plant and the via Nizza. Although the track was, because of its disproportionately sharp bends and steep

banking, not functional for high speed testing, it was, in the words of Reyner Banham, "one of the sacred places of European modernism, sanctified and certified by the photographically documented presence of practically every European Futurist, modernist, or other progressive spirit of note throughout the twenties and thirties."[33] When Fiat contemplated the future of the Lingotto, the prevailing attitude was that of reuse rather than demolition. Certainly this decision was guided by political forces, dominated by the unions, which would prevent the company from considering demolition as a viable alternative. But there does exist a larger, social motivation for the sentiment. This sentiment is not inspired in order to pay homage to a profound architectural statement, since the typology is not necessarily unique to Italy and the architect actually somewhat obscure, but rather by the Lingotto's symbolic value to Italian society, making issues of social value and collective memory the predominant reason for preservation. Its value to the civic life of Torino cannot be counted in mere economic terms. Antonello Negri said in 1983, the Lingotto is "a presence in the city, a standing witness to the period."[34]

From its opening, the Lingotto has had a place in the myth and legend of the city. Oddone Comerana wrote in 1981 of what the Lingotto means to a contemporary Torinese, "apart, of course, from the legion of personal memories, the entire population of the city of Torino can be supposed to be agreed on one point: The Lingotto is in a way the pulse of the place. If it is regular, we can rest assured. If fast or irregular, we have cause for alarm. Since the crucial moments of Torinese history in this century have always involved the Lingotto (rise of Fascism and sit-down strikes, bombings, the Resistance movement, the Liberation, the 1961 strikes, the Autumn strikes of 1980 etc.) Thus, although downgraded to a second-rank establishment in point of size and seniority, the central position of the Lingotto and the concentration in it of a very large number of workers a stone's throw away from Porta Nuova Station entitles it to its reputation as one of the hottest of the hot spots."[35] In the same year, Roberto Gabetti wrote of the reasons that the Lingotto Works have a special place in the affections in the people of Torino. "The Lingotto District itself means much to them: the memory of the

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[33]Ibid.

[34]Ibid, p. 246.

[35]Robert Gabetti, "Turin: The Lingotto Factory", Abitare, No. 198, October, 1981, p. 72.

old hostelries in the midst of open fields, work shops and workers' homes; of the trams on their way to the close-lying terminus, on the fringes of the villages outside the town proper; of the streets travelled along chiefly by bicycles, heading for homes far and near."[36]

The decision for revitalization came in 1982. After sixty years of operation, the Lingotto stopped manufacturing. Fiat decided that the factory was not suited to the new trend of robotics in automotive manufacturing processes, and decided to close the plant down, even as it was approaching the 60th anniversary of its foundation. Fiat began considering what to do with the facility, an enormous industrial complex which covers a total of 181,000 square meters of land (approximately 50 acres), of which 126,000 square meters (approximately 32 acres or 1.4 million square feet) are under roof. Fiat never contemplated demolition, but neither did they want to keep it as industrial archaeology. The company's true intent was to protect and conserve the overall identity of the Lingotto. Fiat had plenty of suggestions from the public sector as to how the plant could be reused: cultural center, public services, offices, craft-work center, but decided on a more formalized approach in envisioning the possible futures for Lingotto. Fiat wanted to avoid vague proposals for reuse of the Lingotto and also intended to make a real contribution to the planning efforts of the Town of Torino, especially to find coordinated solutions that took into account of the fact that large surrounding areas had been identified by the Torino council for redevelopment. In 1983, Fiat invited twenty architectural firms from several countries to draw up proposals for the future uses of the plant. This was specified as an international consultation, not a competition. Fiat requested suggestions, not rigid solutions, on how the complex could be converted to a multipurpose urban structure, able to deal with the many different requirements likely to arise over the years to come. The only limitation that Fiat imposed was that the essential characteristics of the original plant be respected. These virtually nonexistent parameters produced, as some detractors observed, answers that were "bizarre, megalomaniac, witty, elegant, but anyway always inconclusive."[37]

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[36]Ibid.

[37]"Lingotto: un Proposito di un Convegno", Domus, No. 652, July/August, 1984.

Fiat invited some of the best known architects in the world, based on their involvement with industrial architecture or the impacts that their work has had on largescale pieces of the environment. From Italy: Gae Aulenti, Vittorio Gregotti, Roberto Gabetti & Aimaro Isola, Luigi Pellegrin, Gaetano Pesce, Renzo Piano, Aldo Loris Rossi, Piero Sartogo, Ettore Sattsass. From Austria: Hans Hollein. From France: Ionel Schein. From England: Denys Lasdun and James Stirling. From Germany: Gottfried Bohm, Hermann Fehling & Daniel Gogel. From the United States: Lawrence Halprin, John Johansen, Richard Meier, Cesar Pelli, Kevin Roche. Project proposals varied from Lasdun's Transport interchange, to Aulenti's housing complex and Hollein's museum. Each of the projects was then put on display in a public exhibition at the Lingotto Plant in June of 1984. During the exhibition, which drew crowds from all over Italy and Europe, visitors were allowed the experience of driving around the test track and commenting, via computer, on the twenty schemes presented. In the end, Fiat and the city chose Renzo Piano's proposal for a mixed-use building which would combine commercial, industrial and educational institutions in a new inner-city relationship

An outline for a redevelopment plan for Lingotto was decided in 1985, naming the team of Renzo Piano, architect and project coordinator, Giuseppe de Rita, economic consultant, and Roberto Guiducci, Sociological consultant. The final site development area included not only the former site of the Lingotto factory, but an adjacent site along the River Po, the Dogana which had held the 1961 expo, and also the Mercati Generali, a fruit market and customs facility which occupyied a position on the north side of the tracks from Lingotto-an area of approximateley 300 acres. (**Figure 4**) The final development project has been billed as a "L142 million monument to modern industrialism".[38] The master plan transforms the 60-year old former car plant into an international conference center containing a trade fair area, a 3000-seat conference hall, an incubator area for small technology firms requiring low cost start up space, offices, training laboratories, and an interior "public square" featuring shops, restaurants, and a museum.

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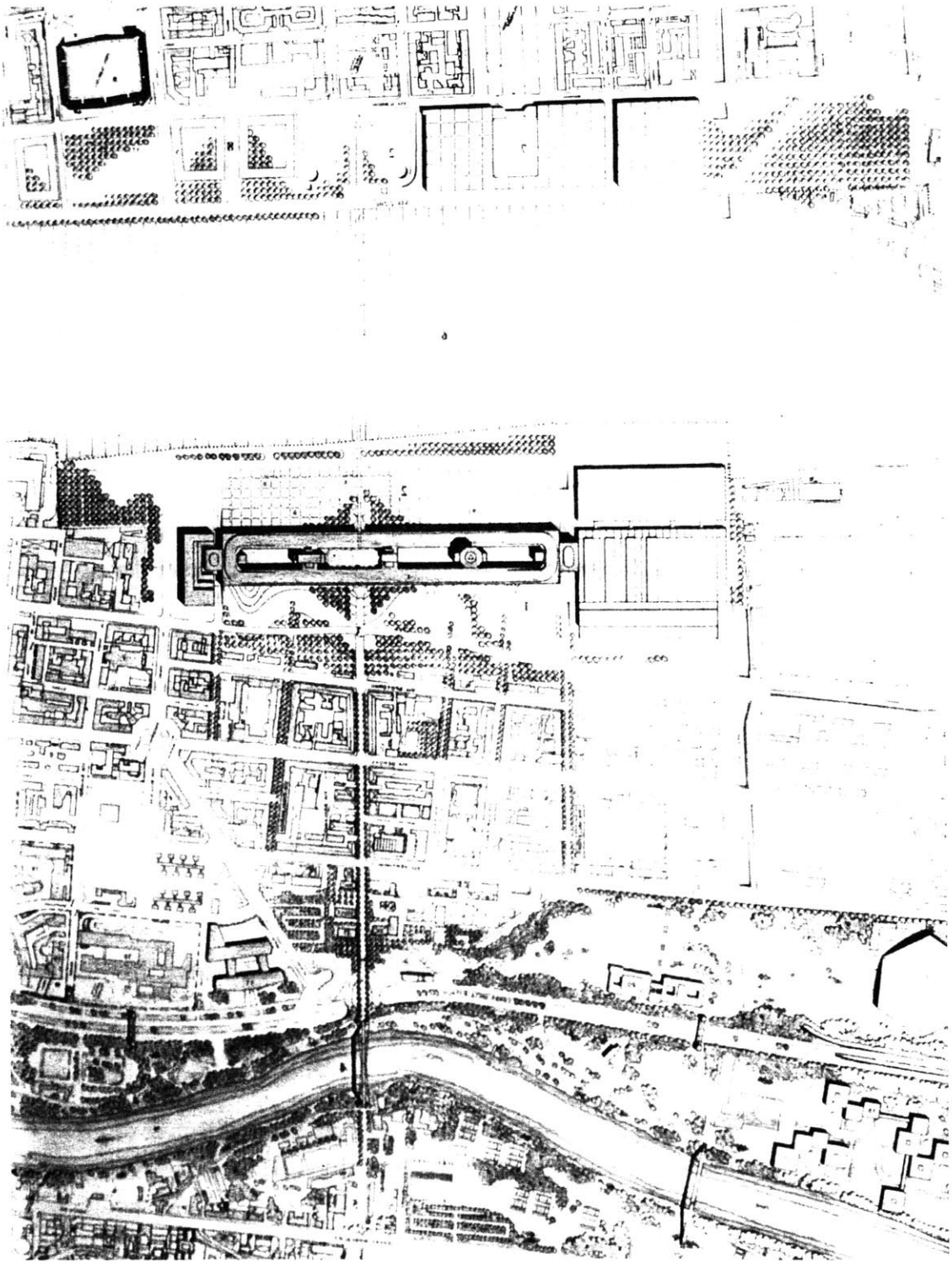
[38]"Piano's Lingotto", Architectural Review, Vol. 185, No. 1105, March, 1989.

Figure 4: Renzo Piano's Lingotto Proposal



Piano's winning scheme sought to "preserve the existing grid of the architectural structure and unify the production functions with the urban functions in an attempt to bring the building back to life as a multipurpose center."[39] The plan is based on Piano's concept for the reintegration of two principle systems. The first, which he terms the "vegetal" system is for leisure activities and the second, or "mineral" system, for work related activities. The Lingotto, Dogana and Mercati Generali will be converted to service instructional, productive and residential functions (the mineral system). A large urban park from the Italia '61 compound along the River Po will be established, with volumes and areas allocated to sports, recreation, the arts and hotel accomodations (the vegetal system). Activities such as the trade fair facilities and conference center will be located on the ground floor in the main pedestrian traffic streams, with the major exhibition hall occupying the old press shop. The other floors will be used for more specialized functions, offices and instructional training laboratories. Two of the towers between the factory courts will be extended upwards, one to become a heliport, the other to provide restaurants with views over the city of Torino and the Alps.

The area north of the railway, the Mercati Generali, contains an elevated road and rail arrival platform, underground parking, market/retail space, and residential apartment buildings. To the south, a new bridge will be constructed to link the Lingotto to the Dogana site, where leisure and sports facilities will be developed. The Lingotto effectively becomes the center of a new urban corridor, which relinks and re-orients the structure to the city. This notion of reorientation as well as the notion of the building, instead of container, becomes social condenser, or a microcosm of "city", are the principle differences between the final scheme and his consultation entry. In regard to landscape elements, Piano also emphasized that "nature will re-invade the building, since the factory took away country space, now it is time to redress the balance."[40]

In a formal sense the master plan retains the repetitive geometrical structure of the original building, and only later additions will be demolished. Crash barriers around the buildings roof-top test track will be dismantled so that the track can be seen from a

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[39]Marco Prusicki, "Progetto Lingotto", Domus No. 675, September, 1986, p. 36.
[40]Ibid.

distance, raising it and, as Piano describes, "permitting the sky to capture the movement of it".[41] Part of the track will be turned into a skating rink and a restaurant and its original ramps will be maintained as pedestrian walkways. The south ramp will also be exposed and preserved. Based on the same approach that Piano used at Schlumberger Montrouge Plant and other projects, the design provides for new internal functions within the existing structural system and developed using factory produced kits which are to be fitted into this framework. This "kit of parts" for the interior of the building includes fenestration, floor systems, partition walls and lighting in order to maintain a feeling of consistency.

Initial renovation activity has focused on making the facility functional for conference and exhibition activity. The conference facility was inaugurated in 1985 and an ongoing exhibit of the history of Italian Industrial Design has been housed there since 1986. In 1987 a major retrospective of Russian art was held in the gallery space. Superficial touch-ups at the entryways such as Piano's signature tension canopies and the overscale logo-type have also been implemented. Work on the project will be carried out in phases so each completed phase can be made operational without waiting for the entire project to be finished. Final planning approvals are still being negotiated, though major construction was predicted to begin at the end of 1990, with he total renovation taking from five to seven years. Public and private sectors have joined to redevelop the facility. Fiat retains two-thirds ownership and the Torino council owns one-third. Fiat is expected to sell some of its holdings to private buyers, and the council will dispose of part of its stock to other public sector bodies.

THE PIRELLI BICOCCA

The Milano based Pirelli Corporation, (Industrie Pirelli S.p.A.) was founded by engineer Giovanni Battista Pirelli in 1872. Originally producing rubber tires for farm equipment and eventually automobiles, the corporation has grown into diversified organization and a cornerstone of the Italian industrial system. The company began its expansion in 1908 with the purchase of 170,000 square meters (200 acres) of land on the outskirts of Milan, where it began its main plant-the Bicocca.

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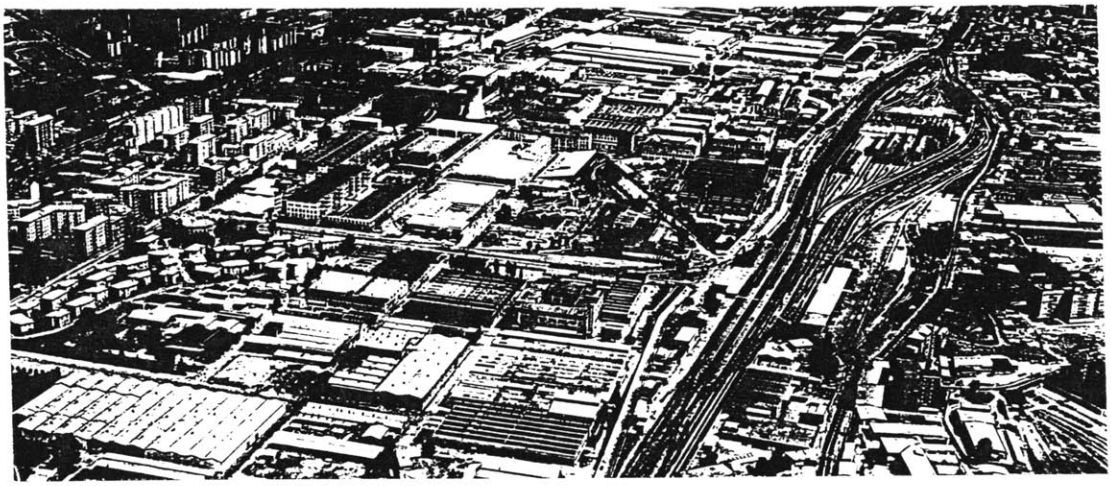
[41] Ibid.

Figure 5: Pirelli Bicocca ca. 1986



Today, the Pirelli-Bicocca encompasses an area of 714,000 square meters (approximately 200 acres) in an industrial site located to the north of Milano. (**Figure 5**) The site has housed, since 1908, the main plant and office buildings of the Pirelli Company, a major manufacturer of tires to the international auto market. Recently, the southern area of the site and its structures, an area encompassing 400,000 square meter (approximately 100 acres) have come into disuse and have been slated for demolition and redevelopment. The remaining areas and structures of the facility will continue to serve their manufacturing functions.

As in the Lingotto effort, the history of the Bicocca is also of importance to the redevelopment approach. The plant derives its name from the historic Bicocca degli Arcimboldi, a 15th century building which was situated on the original land purchase and initially used as a rubber museum. In 1908, when the first industrial structure was erected on the site of the Bicocca the area was open country-a rural setting to the northwest of Milano. Today, the site contains Pirelli's regional head office, the Pirelli skyscraper, designed by Gio Ponti in the 1960's. The Bicocca is an extensive part of the city in which, from the beginning of the century, the main Pirelli plant has been located. Bernardo Secchi describes the area as "a vast discarded industrial area, an "urban void" in which Pirelli itself, together with the local authorities, intends to create a "Technological Pole" by altering the character and role of a large and important "work

space."[42] The facility began to evolve, first with the construction of houses for managers, to avoid the long and difficult journey out of the center of Milano. In contrast to Fiat Lingotto, which was an immediate, massive architectural gesture, the Pirelli-Bicocca reflects, as Reyner Banham observed, "a slow, patient and adaptive growth, ... on the periphery of Milan."[43] The site grew steadily and expanded to include sports grounds and research centers, employee housing and the corporate museum facilities. As Domus describes, "a built heritage of incredible capacity, a city within a city."[44]

Pirelli played a prominent role in formulating a redevelopment direction for the Bicocca. Pirelli, faced with the necessity for industrial restructuring, decided in the mid 1980's, as Domus magazine described, "to re-design the post-industrial scenery of a metropolis in the process of reconverting its built products."[45]The Pirelli company developed a program for the redevelopment of the Bicocca to convert the former production facility into a technological center and node for the redevelopment of the entire district. In conjunction with municipal and provincial authorities and the Regione Lombardia, the corporation formed an agreement which covered future production development and planning programs and the creation of hightechnology activities in the area which would trigger the transformation of the vast industrial district which has grown up around the Bicocca. It is interesting to note that, this is the fourth planning initiative by the Corporation in the Milano area, with others in 1884, 1886 and 1945.[46] The corporation intends to keep on a mumber of functions in the area, including its own research, development and design laboratories, the administrative offices for coordination at an international level, general management, the general administrative and technical departments of the main Italian companies of the Pirelli Group, Pirelli Informatica S.p.A., and production and general services facilities for the manufacture of electrical cables. The specific program for space not occupied by Pirelli includes public and private labs and research centers, industrial activities with a high research and development focus, a computer and telecommunications research center, service

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[42]Pirelli, Progetto Bicocca, Milano: Edizioni Electa SpA, 1987, p. 13.
[43]Ibid, p. 35.
[44]"Progetto Bicocca", Domus 666, November 1985, p. 31.
[45]Ibid.
[46]"Concorso a inviti Progetto Bicocca Milano", Domus 673, Giugno,1986, p 76.

and technical assistance center for labs, transport and logistics services for companies operating in the area, professional training centers, general management offices, temporary residential facilities and meeting spaces, all able to guarantee a high standard of quality for the individuals living and working there.[47]

A brief history of the events which led to the international competition is of some help in understanding the importance of the facility and its transformation to the region.[48] In 1984, the company developed an agreement with the Region regarding the future economic evolution in the Milan area and the disposition of the Bicocca site specifically, dividing it into four areas: Segnanino, Central Body, Sports Fields and Albania. In January of 1985, the company in the midst of their restructuring and development plans, reached an agreement with the union to transfer tire production to the new Bollate plant and begin redevelopment of the Bicocca area as a multifunctional technological center. The city planning office also produced a document which would become the basis of the agreement between authorities and the company regarding the focus of development attention on issues such as infrastructure, public transportation, job training, parks and other public and private services in the area. In May of 1985, Pirelli, with the Lombardy Region, the Province and City of Milan, stipulated a protocol agreement which states the intention to transform the Bicocca area into a "Integrated Multifunctional Technological Center." In September of 1985, the company announced a two-phase competition for selected architects, "to develop the theme of the future urbanistic and architectonic order of the Pirelli-Bicocca area.... A project which could indicate a rich methodological base to face other cases of industrial zone transformation."(sic)[49]

The corporation proceeded to implement an international consultancy similar to that of the Fiat-Lingotto. The redevelopment recommendations came out of an international competition of urban development and architectural design which was conceived and sponsored in 1986 on the initiative of Industrie Pirelli S.p.A. The competition was held as the result of an agreement between Industrie Pirelli S.p.A. and the

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[47]Ibid.

[48]Information which follows comes from a timeline published in "Milano, Progetto Bicocca: risultati finali del concorso", Domus 698, October 1988, p. 80.

[49]Ibid, p. XXI.

Administrations of the Commune and Province of Milano and of the Region of Lombardy. To develop preliminary analytical materials for the competition and compile the exhibition and catalogue, Pirelli formed a research contract in 1984 with Bernardo Secchi of the Department of Territorial Sciences of the Faculty of Architecture at the Polytechnico in Milano. Twenty prominent architects and urban designers from Italy, Germany, France and the United States were invited to participate in the international competition. Of the twenty, eighteen answered the competition, including: Gae Aulenti, Carlo Aymonino, Mario Botta, Henri Ciriani, Giancarlo De Carlo, Gabetti e Isola, Frank O. Gehry, Gregotti Associati, Joachim Guedes, Herman Hertzberger, Richard Meier, Rafael Moneo, Gustav Peichl, Renzo Piano, Aldo Rossi, Justo Solsona, Oswald Mathias Ungers, and Gino Valle.

The contestants were given a program for the site and asked to develop urban and architectural schemes for an "integrated technological center" at the site of Pirelli's Bicocca plant. The site area for the competition, occupying 100 acres of the southern side of the site, was to have its existing multi-story concrete structures demolished and the site cleared for new architectural and landscape proposal and development. As Leopardo Pirelli described the objectives in May of 1986, "The creation of a "New Technological Pole" which should help to place the city in the vanguard from both the town-planning and the economic point of view, in line with similar experiments set in motion in recent years in the United States, France and Great Britain....".[50] Technological Pole can be understood as a Science Park or Technological Park, a concept developed in the United States as early as the 1950's, though Pirelli looked to the Silicon Valley in northern California and Route 128 in Boston as prototypes for their program.[51] He further describes the future character and role of the facility by adding "The Bicocca of the nineties should not be a place that is closed off and inaccessible to the city's inhabitants, but on the contrary an open one, brimming with opportunities for communication and for economic, social and cultural interchange. An area where new technologies "will speak the language of human beings," restoring urban values to the old factory-town of the Bicocca. And yet significant traces of this "city within the city" will remain, and for a long time to come, as testimony to a past

[50]Pirelli, Progetto Bicocca, Introductory remarks.
[51]Domus 673, Giugno, 1986, p. 76.

that has represented an era of great architectural, industrial and cultural achievements for Milan."[52] The entries were displayed as part of an exhibition entitled "Progetto Bicocca" held concurrently with another exhibition entitled "The Workplace" at the Triennial Exhibition in Milano from June 14 to September 28, 1986. Entries were varied, though Secchi grouped them into three basic conceptual categories, those which exploited the notion of the Bicocca as an urban "void", those which embraced contextual concerns and those which favored a theme of modification, some of which encouraged the retention of certain historic structures and infrastructure.[53]

In March of 1986, three entries, those of Gabetti and Isola, Gregotti Associati, and Gino Valle, were chosen to be admitted to the second stage of the competition. (**Figure 6** illustrates the three winning entries) The scheme of Gabetti and Isola was driven by historical themes, which the team defined as "the pattern of the "ancient" agricultural layout and that of the more modern industrial one (the railway to the Pirelli and Breda plants)."[54] This translated into two "positive signs" for the proposal, the first as extensive green areas throughout the "technocity" and the second is the existing industrial installation. A fine dividing wall was proposed to divide the two "signs". The entry of Gregotti & Associati was focused on the transforming the Bicocca area in relation to the urban system of Milano. The entry proposed not only a new configuration for the Bicocca but also for the surrounding areas in three phases. The proposed project "groups the functional activities of the Technological Pole into research and production sectors and into blocks devoted to services and service activities."[55] It accomplishes the grouping by creating four separate block areas-the central block, the company services block, the tertiary and urban services block, and the collective services block. The entry of Gino Valle focused on restoring the Bicocca's historic perimeter wall "so that it can go on recounting the history of what is there, of what still exists, and of what will be there in the near future."[56] However, in Valle's scheme the new "wall" is actually a park. The scheme is subdivided into three parts which surround the park. The first "villaggio Pirelli" was proposed as a new

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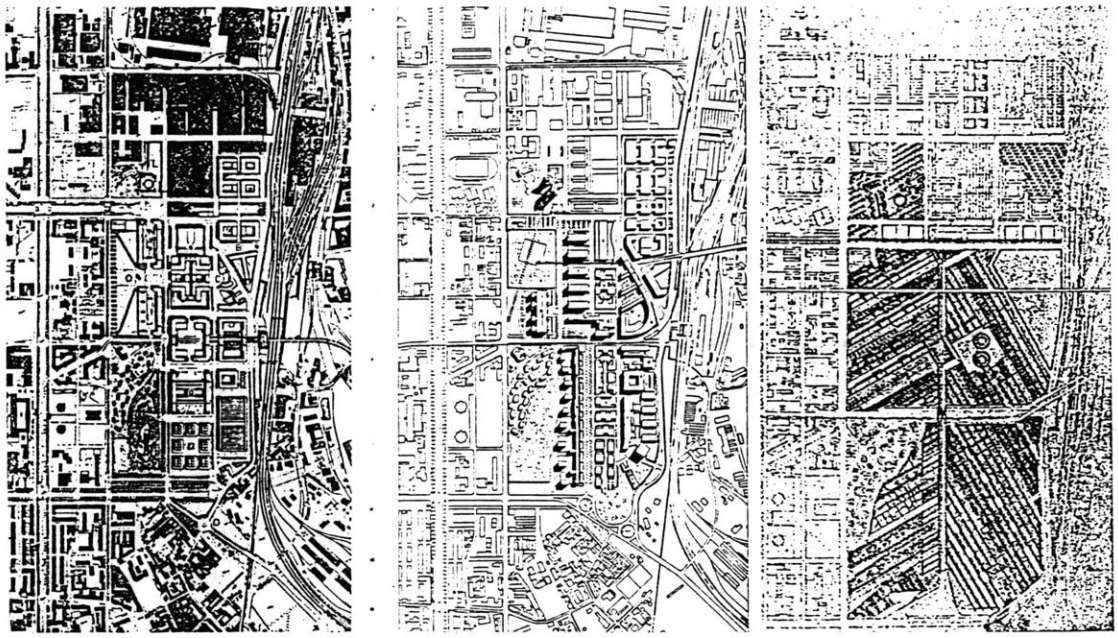
[52]Pirelli, Progetto Bicocca, Introductory remarks.
[53]See Bernardo Secchi's competition analysis, Ibid, pp. 13-19.
[54]Ibid, p. 106.
[55]Ibid, p. 128.
[56]Ibid, p. 271.

Figure 6: Three finalists in the Bicocca Competition



residential area; the second a true park measuring 860 x 165 meters, a wooded area within the city; and the third, the office and industrial park component of the project.

Each team which was advanced to the second phase was asked to rework their schemes, this time taking into account the specific market characteristics and recommendations for infrastructure improvements. On February 15, 1988, the final drawings were delivered and the second phase of the competition was closed. In the fall of 1988, Pirelli selected the winning entry among the three projects submit by the groups which reached the final phase. The choice was that of the project proposed by Gregotti Associati, rejecting those of Valle and Gabetti e Isola. Since that time, Pirelli has begun implementing the first phases of the Gregotti scheme.

3. France

France, like much of industrialized Europe, has experienced the decline over the last twenty years of heavy industry, especially coal, steel and chemical industries. This decline has left behind derelict structures, polluted lands and widespread unemployment. A 1985 government study estimated that there were as many as 49,500

acres of abandoned industrial sites in the nation, with 24,700 in the northern Pas-de-Calais and 5,680 acres in the Lorraine region alone.[57] The French refer to these areas as *Friches industrielles*, and they vary in typology from slag heaps, individual factories to vast terrains of industrial wasteland. Government agencies and business leaders have banded together in the last decade to develop programs for the redevelopment of such sites, focusing on acquiring a positive image for the property. In a mixture of need and philosophy, they have agreed that this "psychological conquest can best be achieved through a planned landscape treatment."[58] As Marilyn Clemens observes, "France does not hastily demolish unused factories, mills, workers' housing or even slag heaps. Much recycling takes place and much thought about people's attachment to the relics of their traditional ways of life."[59] Recent focus has been both on the redevelopment of urban industrial sites as well as rural and suburban sites. These suburban and rural sites have presented more of a challenge because there is no clear demand for the land, but the French have adopted innovative techniques of treating and holding land for future development.

The urban industrial sites in Paris have been of particular focus, because space is at such a premium in the densely built city. The city, in conjunction with private industry, has held several competitions over the past decade for diverse sites which were formerly auto plants, wine warehouses, immense slaughteryards and even a gypsum mine within the city limits. With the completion of the most recent projects, the city has added a total of over 100 acres of green and open space over the last decade. The catalyst project was that of Parc de la Villette, which focused on redevelopment of a slaughterhouse district in east Paris into a vast landscape of open space and cultural facilities, amenities which were lacking in this area of Paris.

In the Left Bank's 15th Arrondissement, the Parc Georges Brassens, designed by Daniel Collin and the Paris Parks and Garden Service, occupies the site of the old Vaugirard slaughterhouse and animal yards. Typical of Paris' newest parks, it incorporates elements of the site's past, specifically the main entry which features two

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[57]Marilyn Clemens, "Industrial Evolution", Landscape Architecture, January 1989, p. 30.
[58]Ibid.
[59]Ibid.

bulls on pillars, and the park's central focus, the former animal auction house and bell tower with modern landscape design techniques. The park includes a rose garden, areas for plants, a dog run, playgrounds, day care facilities and an apiary.
Most recently, the city has concluded a design competition which will transform the 32-acre Bercy wine warehouse site on the Right Bank into a public park.

An abandoned gypsum mine, the focus of many planning efforts over the years, in the immigrant and working-class neighborhood of Belleville has recently been converted into a new public park. The Piat butte, 26 feet higher than Montmartre, on the site was dynamited for its raw materials, besieged in wartime, and has served as home to the poor who were pushed out of Paris by 19th century urban renewal. In the 1920's, the city attempted to build housing there, but efforts were thwarted by the severely weakened substructure of the mined area. A neighborhood park has been promised and in planning stages ever since. In 1982, a city design competition was won by Paris landscape architect Michel Viollet and architect Francois Debulois. Working with structural engineers they shored up the hillside and created a park with views out over the city and in particular the Eiffel Tower. The park contains a platform belvedere which shelters a puppet theater, restrooms, greenhouses and maintenance space and features a waterstaircase and play areas. The upper slopes of the hill are a colored concrete grotto which is reminiscent of a gypsum mine, an amphitheater and vineyards. Use of the park is so high that grass play areas had to be renovated in 1989.

An 86 acre site riverfront site in the 15th arrondissement where Citroen cars were once manufactured is being redeveloped into an entirely new residential neighborhood featuring a 37 acre park featuring a linear canal, green house towers and theme gardens. City agencies laid out the site with a perpendicular axial relationship to the river and landscape architect Gilles Clement and architect Patrick Berger were responsible for thematic design content. The site presents a particular challenge because of its rail infrastructure which originally blocked access to the Seine. Landscape architects worked with the Port of Paris, the regional rapid transit authority and the railroad administration to achieve the feasible and compatible access across and under the rights of way to the river.

Another major industrial site which has received redevelopment attention in recent years involves the conversion of the Schlumberger plant in the southern Parisian suburb of Montrouge. The plant was initiated in 1925 and grew over the years to include manufacturing facilities, workers houses and office buildings. The eight hectare (approximately 25 acres) site reached its peak in the 1950's. The Schlumberger company has experienced complete transformation since then, evolving from a company focused on heavy engineering equipment production to a multinational enterprise engaged in the production of precision equipment associated with the production of precision instrument production and computer and electronic detection technologies for mineral fields, particularly oil. The change necessitated a facility where the company could place 2,000 employees engaged in administration and research. The land prices in central Paris prohibited the company from constructing a new facility, so they decided to renovate their existing Montrouge facility.[60] The facility contained sixteen five story concrete structural frame brick infill buildings on the site.

In 1982, the corporation considered 40 architectural and industrial design practices in Europe and the United States before a shortlist of 20 was invited to a site meeting at Montrouge. A comprehensive programming brief was distributed and the firms were requested to submit their proposals in three weeks. Schlumberger was most impressed with the scheme from Renzo Piano, because it envisioned the least change to the buildings on the site.[61] (**Figure 7**) Piano renegotiated the original renovation budget up to F 150 million which included F17 million for landscaping alone. The project, completed in 1985, featured three basic renovation foci: opening the site to the city (the site was originally surrounded by a wall); demolishing the central core of buildings (from the 50's and 60's) to create a central landscaped open space courtyard; and the third, the integration of Piano's signature kit of parts, providing color and overall unity.

In suburban and rural areas, particularly in the east of France, the government has adopted a policy of planting before building, or *preverdissement*. While landscape treatment of a site usually follows that of architectural design and construction,

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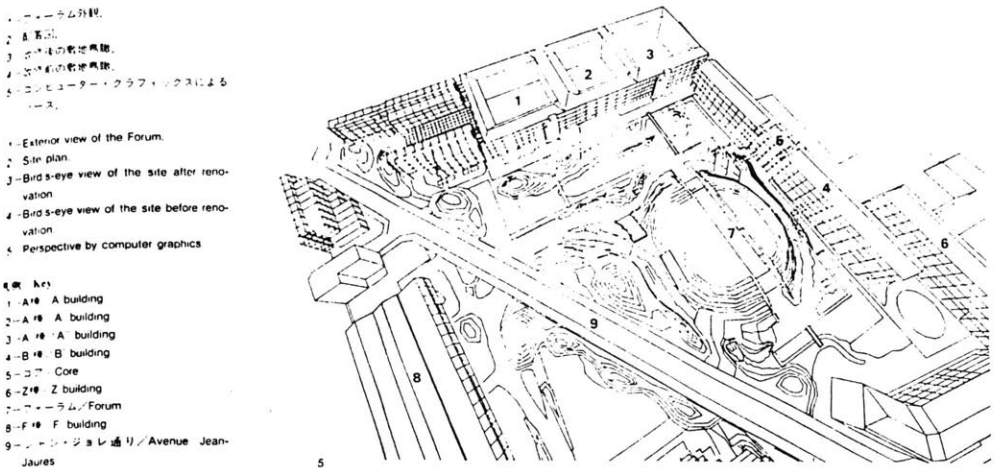
[60]"Renovation of Schlumberger Montrouge Factory", A+U, November 1987, p. 92.
[61]"Piano Rehab", Architectural Review 174, November 1983, p. 68-73.

Figure 7: Renzo Piano's Schlumberger Montrouge Scheme



preverdissement reverses that order and avoids the expensive, last minute installation of large plantings. The policy of planting before building follows successful experiences on former industrial sites in Germany and England. Designated industrial sites which some day may become parks, new communities or light industrial sites are put into the form of land reserve and transitional use, such as agriculture or forestry, until these future uses are defined for them. The technique is only employed on sites which will not be developed for at least five years. Sites chosen to receive government funding and technical assistance are usually chosen for their proximity to major population centers, easy access to transportation, recreational potential and inherent visual qualities. Planting before building is used before the future disposition of the site is known, simply to provide a "cared-for" image where there was once one of abandonment and blight. Using agricultural and forestry techniques, the soil is initially amended and young plants from a mix of species which are adapted to regional soil and climatic conditions are installed and become self-sustaining after a year or two. The arrangement of plantings does not permanently fix site layout, and the density of planting anticipate some failure and removal, perhaps even to elsewhere on the site.

Two very interesting applications of *preverdissement* have been accomplished in recent years. The first such revitalization effort is based in Pompey near Nancy, in the Lorraine region. The town is sited at the confluence of the Meurthe and Moselle rivers and accessible to Belgium and Germany by rail and highway. The town, railway and

canal were built to support a large steel mill, which produced the steel for the Eiffel Tower and supported generations of workers and their families. The mill failed and was dismantled, but local authorities and the Public Land Agency for Metropolitan Lorraine purchased the industrial site and hired Landscape architect Jacques Sgard of Paris. Sgard devised a plan to clear the site, restore the soil, reclaim the river's banks for fishing and recreation, screen off continuing industrial, reuse the canal and locate new housing and commercial facilities. A competition is now underway for a *preverdissement* on the site.

A second effort is underway which involves a site in the Chiers Valley near Longwy, a town that occupies a limestone plain in the north of France. The project is at the crossroads of Belgium, France and Luxembourg and comprises 740 acres of land. The three governments are cooperating to create a state-of-the art technological "capital" for a United Europe. As at Pompey, remnants of the steel industry are everywhere and the air and water are badly polluted. Foundation, subterranean chambers and channels remain in the arid soil. The governments sponsored a competition which was won by Jacques Sgard and Jean-Claude Hardy. Their winning conceptual scheme designs the site around three foci. To the north, a symbol marking the intersections of the frontiers, to the south the technological pole near Longwy, and, in the middle a great open space marking the new "center of gravity" for the EC. The essential landscape network of the *preverdissement* , which features large saplings to form the permanent structure of spaces and a tissue of smaller plantings which provide temporary ground cover, was completed in late 1989.

In an alternative approach to industrial waste, the slag heaps and great mounds of chemical by-products that dot the flat horizon of Northern France like volcanos are being reconsidered for productive use. The mounds, called terrils, are the point of heated debate. Some feel they should be demolished, as they represent the sinister side of the country's industrial past, while others believe they should be recycled, or kept as monuments to the labor of thousands of men over the years. At Wattrelos, near Belgium, a white mound of calcium phosphate has recently received unusual treatment by landscape architects Thierry Louf, Francios-Xaview Mousquet and Daniel Petit. The mound was analyzed for grade, toxicity, soil composition and pH, and analyzed in

relation to solar orientation and the adjacent town and countryside. Their scheme treats each side differently, based on the results of this analysis. They sculpted the northern slope and provided monumental stairs ascending its midline to the top plateau, which is programmed for recreational uses. The slopes were planted with grass and banks of adler, trees which are best adapted to calcium phosphate, in order to prevent erosion and have done well despite lack of irrigation and nitrogen. The area has been closed to the public until the plants have established themselves.[62]

[62]All of these French landscape efforts are described in detail by Marilyn Clemens in "Industrial Evolution", Landscape Architecture, January, 1989, p. 24-30.

C. APPROACHES IN THE UNITED STATES

The effects of the globalization of industry over the past two decades has had a profound effect on the traditional areas of heavy industry in America and produced a vast array of obsolete industrial facilities and the various impacts which are generated from them. While industrial decline and abandonment is a nationwide issue, it is of particular concern in the Midwest and Northeast, the traditional home of heavy industry in the county. The private sector in the United States has approached the issue of obsolete 20th century industrial infrastructure in a variety of ways. In the beginnings of the twenty year cycle, decisions were guided completely by efforts to retain corporate profitability and productivity. Abandonment, sale or demolition of such facilities were fairly common approaches to dealing with facilities that were designated as "surplus"-no longer serving their original production functions.

While this approach is still in evidence, extensive public sector incentive and the economic recovery of the 1980s and renewed demand for either the land or facilities supported a new strategy-that of redevelopment. Such redevelopment sometimes for other industrial use, but generally for other uses. Corporations and developers faced with surplus facilities larger than the market demands have utilized a reuse subdivision strategy in order to respond to the new demands of industry and commerce and the market. In addition, reuse of industrial infrastructure has begun to involve a broader constituency, and there are examples which involve joint efforts between the public and private sectors in approaching the problem. Such public-private efforts range from state and local legislative efforts to provide tax incentives and encourage site specific development to full scale planning efforts which produce regionwide economic development. In addition, the federal government through the Department of the Interior and the National Park Service has established programs which focus on the nation's industrial history with the goal of preserving and reusing such obsolete industrial infrastructure. In addition, the issue seems to be making its way into the academic sector. Work at the University of Michigan has been funded by the U.S. Department of Commerce and General Electric, whose concern is the underuse of

electrical infrastructure as a result of disinvestment.[63]Most of the work has focused on the reuse of multi-story industrial buildings through the insertion of advanced materials handling equipment. In 1987, the Architecture and Planning Research Laboratory was commission by the community of South Bend Indiana to produce a reuse study for the Studebaker Plant . The plant, which was shut down in 1963 has remained underutilized for close to 30 years. The planning approach combined physical and economic planning with an "expert system" for decision making. The following discussion will address each of these approaches, citing examples of how each has been used over the last two decades.

1. Conventional Approaches

The recession of the late seventies and early eighties hit the traditional heavy industries of steel and automobile particularly hard. Large corporations were caught ill prepared to face the increasing global competition and changing market demands. They had not upgraded production technology through automation, and faced with high operating costs and the prospect of retrofitting obsolete facilities, simply chose to shut them down. By the fall of 1982, half of the auto industry capacity and two thirds of the nation's steel making operations were idle.[64] In the steel industry, increasing global competition from Germany and Japan meant that production did not necessarily move elsewhere in the country, it was simply lost. The evidence of this is still palpable, particularly in Pennsylvania and Ohio, the nation's traditional steel making areas, where hundreds of abandoned steel mills line the banks of the Ohio, Allegheny and Monongahela Rivers. The Midwest, particularly southeastern Michigan and metropolitan Detroit-the traditional center of the automobile industry-can claim a huge percentage of the nation's abandoned industrial infrastructure. In the early 1980's Michigan had over 28 million square feet of vacant industrial facilities, and millions more in underutilized facilities.[65] In Wayne County alone, 42 factories were shut down and abandoned between 1978 and 1981, and by 1982, a Detroit Edison survey of

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[63]Jonathan King and Robert E. Johnson, "Silk Purses from Old Plants", Harvard Business Review, Vol. 61, No. 2, March-April 1983, p. 147.
[64]Steve Babson, with Ron Alpern, Dave Elsila, and John Revitte, Working Detroit, Detroit: Wayne State University Press, 1986, p. 211.
[65]Jonathan King and Robert E. Johnson, "Silk Purses from Old Plants", p. 147.

south eastern Michigan listed over 100 plant closings and liquidations since 1978.[66] While all these closing, large and small, had profound effect on the economy, the workers and the community, several are of note. The Ford Highland Park Plant and Chrysler Dodge Main plant in Hamtramck. Both were shut down by 1980, each experienced the conventional approach, though the projects produced different results.

The revolutionary and historic Ford Highland Park plant on Woodward Avenue in Highland Park, a small municipality within the borders of the city of Detroit ,was conceived at the beginning of the century by Albert Kahn and Henry Ford. Opened on New Years Day of 1910, the factory was the birthplace of mass production, the five dollar day and the daylight factory.[67] After the moving assembly line and most auto production was transferred to the suburban Rouge plant in the late 1920s, Highland Park was utilized for other production purposes. No longer the focus of Ford operations, the facility continued as an assembly plant, playing a role in World War II wartime production and eventually became the center of Ford Tractor production. The plant, though downscaled through the 1950s and 1960s, continued to serve this purpose until 1974, when the company moved tractor operations to a new facility in Romeo, Michigan. The facility was used primarly for storage until 1981. On October 7, 1981, in what some members of the community consider a clandestine departure from the city, Ford sold the 103 acre, 3.4 million square foot facility to HPF Associates for $6.5 million. HPF is essential two individuals, Martin Ross and Erwin Siegelman, though Ford still retains interest in the property. Apparently, part of the purchase agreement was that Ford would rent about 1 million square feet of warehousing space for the storage of equipment. This deal was apparently cut so that Ford would pay, through a lease agreement, enough to cover the real estate taxes on the property, which are approximately $1.7 million a year.[68] The property is managed and marketed by a real estate development group called Woodward-Manchester Corporation. Very little renovation activity has occurred on the site, and the structures are in decline. The facility is now marketed, "for sale or lease", as the Highland Industrial Center, for "inside and outside storage". In addition, the Administration Building on the site was

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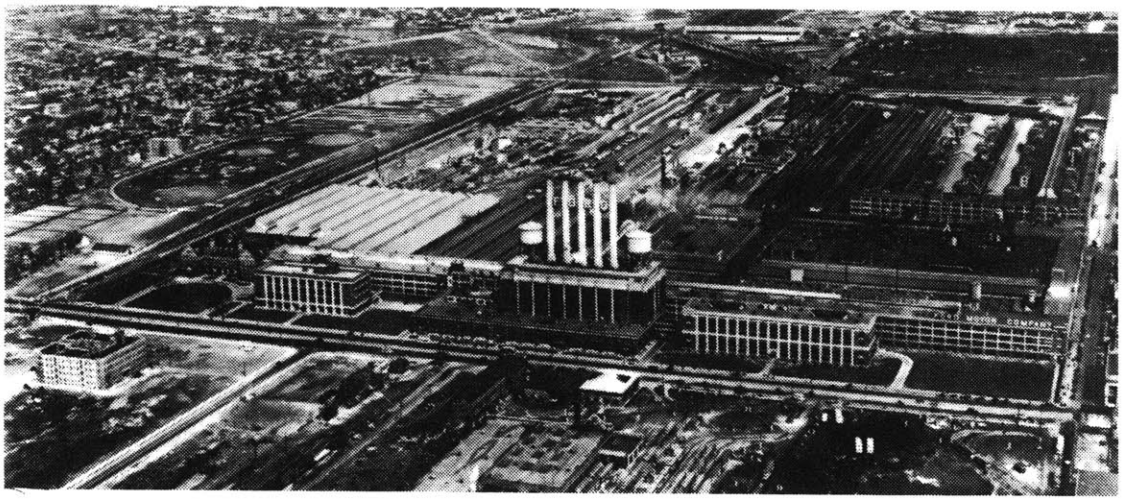
[66]Steve Babson, et al, Working Detroit, p. 211.

[67]The historic and cultural importance of the Highland Park plant is discussed in greater detail in Chapter III of this thesis.

[68]Conversation with Harriet Saperstein, President of HPDevCo, 4 September, 1990.



marketed as "extraordinary office space for lease", emphasizing the historic qualities of the structure.[69] However, the advertised renovation activity was never undertaken.

While it was considering moving tractor operations to Romeo and before selling the property, Ford sponsored a redevelopment plan for the facility in 1972. The company hired Architect and Planning consultants Smith, Hinchman & Grylls, Inc. of Detroit and their Ann Arbor based subsidiary, Johnson, Johnson & Roy,Inc., to complete the study. Ford gave the consultants several broad ground rules on which to base the study. These rules were: "1. Ability to completely and expeditiously dispose of the properties; 2. That planning and disposition take place such that Ford be in a positive and responsible position; 3. No direct participation by Ford in development."[70] The study then developed planning criteria for the community and the company, based upon these basic parameters, and recommended two different approaches for the redevelopment of the site. (See **Figure 8**) These approaches included a "New Town in Town" concept that was supported by the city and the community and a "Development Unit" concept which identified four different parcels on the site and recommended redevelopment for each based on characteristics and location. The four recommended land uses for the Development Unit concept included office,

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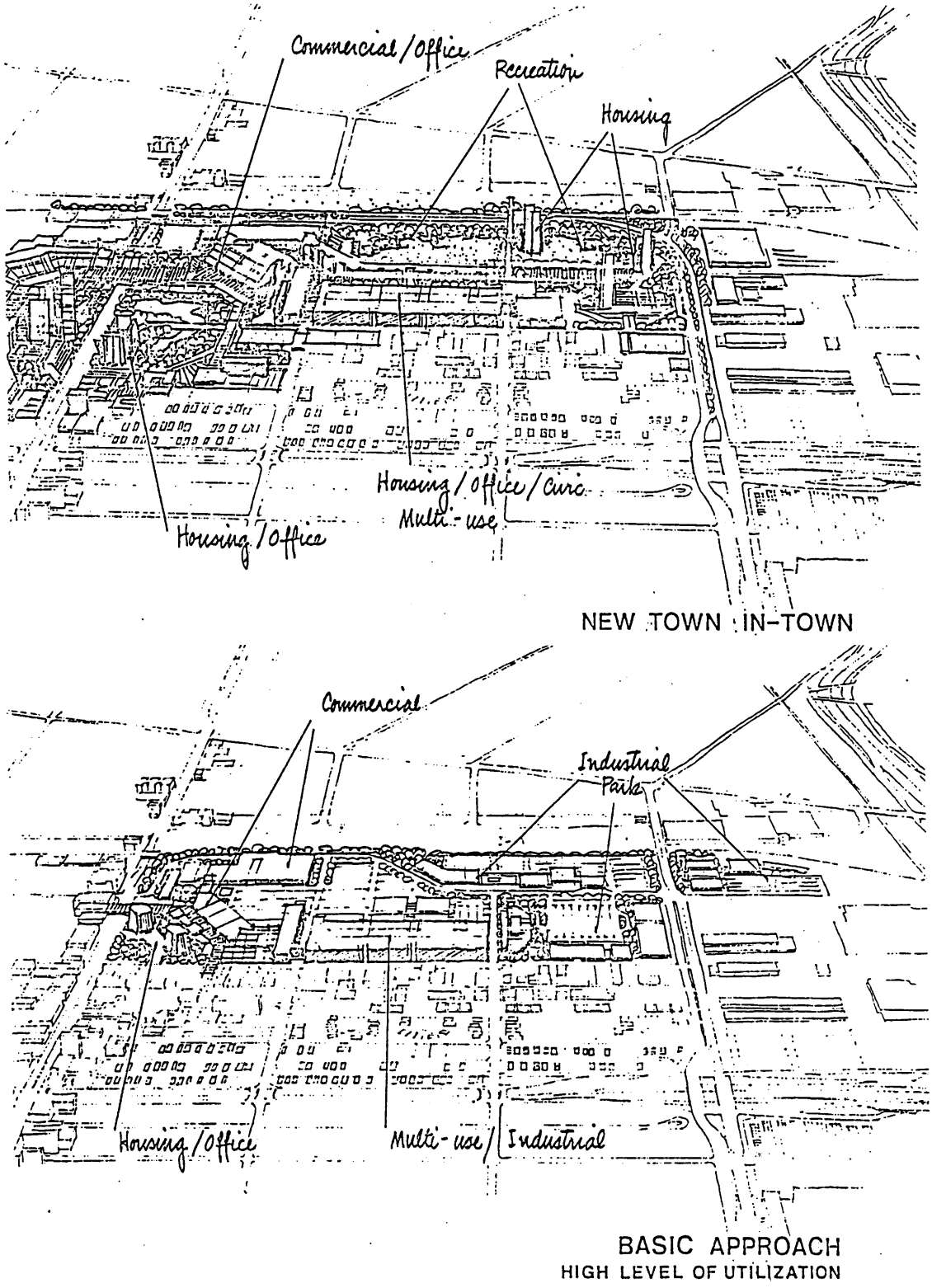
[69]Various Woodward-Manchester promotional brochures.
[70]Smith, Hinchman & Grylls, Inc. and Johnson, Johnson & Roy, Inc., The Ford Highland Park Property, September 1972.

Figure 8: Proposed Redevelopment Concepts for Highland Park



industrial/distribution, and commercial/retail. This basic approach was then presented in both a low level and a high level utilization strategies, which varied density of redevelopment on the site. In addition to the recommended schemes, the plan has extensive existing conditions documentation as well as market analysis and pro forma and other feasibility analysis for the recommended scenarios. Though Ford participated actively in the study process, no action was ever taken on the recommendation in the 1972 planning document, which many in the community perceive as "lip service" to a very significant issue.

Once again, just before the property was sold in October 1981, the state of Michigan's Economic Development Commission and the city of Highland Park co-sponsored a study for the Woodward-Manchester Corporation. This time, Howard P. Hoffman Associates, a subsidiary of Security Pacific Bank Financial Services, was retained for the study, which recommended a redevelopment plan and implementation strategy which released Ford from property ownership, provided a system of replacing Ford with new industries, and reinforced the city's employment and tax base. The study recommended that the property should be subdivided and leased for multiple industrial uses, but added a disclaimer that "because of location, size and high carrying costs, conventional redevelopment is not currently feasible."[71] Similar to the SHG/JJR study, the consultants divided the site into "development quadrants" and recommended a combination of demolition and renovation for structures within each. The study further recommended that in order to offset development risks, that the tax benefits derived from the site's historic landmark designation in order to attract investors to the property. Through the sale of the property to a specially formed corporation, Ford would then lease it back for the cost of carrying the buildings. The new corporation would then syndicate the tax benefits to investors, subdivide and lease the space to new tenants in order to reduce Ford's occupancy to a legal minimum.

Neither of the plans for Highland Park was ever pursued. Today, the historic Highland Park facility stands as an impressive anachronism, deteriorating and virtually unoccupied. A lone historical marker on the Woodward Avenue frontage of the site

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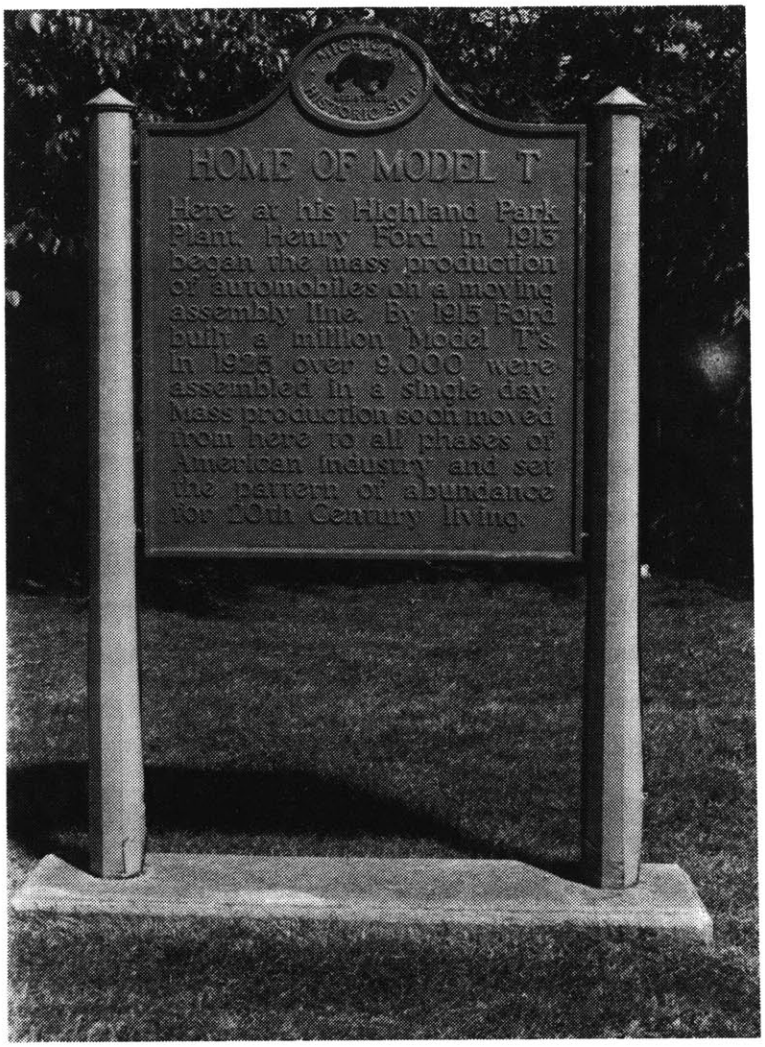
[71] Howard P. Hoffman Associates, Woodward-Manchester Corporation Redevelopment Program for the Ford Motor Company Property, Highland Park, Michigan, June 1981.



proclaims a subdued tribute to "the birthplace of mass production". According to Harriet Saperstein, president of HPDEVCO, the city's economic development agency, the current owners talk about potential redevelopment of the site, though they continue to ask extremely high prices for the land. This is of interest, since a good deal of the site is contaminated. In the mid-80s, PepsiCo looked at a 40 acre tract of the site (known as the back 40) for potential purchase. The process never proceeded past a feasibility stage, as an environmental assessment, which Pepsi will not release, estimated approximately $3 million in environmental remediation would be required on

the forty acre parcel.[72] The city of Highland Park responded to Ford's exit by strengthening their own industrial relocation laws. In 1985, the city negotiated a $14 million agreement with Chrysler Corporation, when the remaining major corporation within the city's boundary started planning a new tech center in suburban Auburn Hills. Chrysler agreed to maintain 40% of its design, engineering and procurement staff as well as its financial world headquarters within Highland Park. In addition, Chrysler agreed to a payment in lieu of taxes (PILOT) of $9 million over seven years to the city, and an additional $5 million to establish HPDEVCO, an economic development agency. HPDEVCO has used that funding for a variety of projects. The interest provides operating expenses for the small office with three professional staff members. The agency administers a $1 million revolving loan fund which provides low interest loans to businesses which move into or expand in the city. It has also provided technical assistance, strategic planning and equity investment in the planned Town Center retail project across Woodward Avenue from the Highland Park plant site.

Another example of the traditional approach to an obsolete facility is demolition. Such was the fate of the "Dodge Main" Plant in Hamtramck, Michigan, which is a self contained city, much like Highland Park, within the borders of Detroit. The historic Chrysler auto assembly plant was 70 years old and partially abandoned when management terminated operations on January 4, 1980. Since then, the plant has been demolished and a new assembly plant-General Motor's Poletown-was built in its place. The process leading to the eventual demolition and construction of Poletown is a complex case of planning and politics in Detroit. The history of the plant is also of note, as it was, other than the Ford plants, one of the most significant facilities in the Detroit area.

John and Horace Dodge, original stockholders in the Ford Motor Company and a supplier of transmission and engines to the same, eventually broke with Ford and opened what they termed "Dodge Main" where they began building their own Dodge automobile in 1914. Albert Kahn designed their complex in a similar style to the work he had done for Ford several years earlier at Highland Park. The original Dodge Main plant consisted of a four story reinforced concrete assembly building which

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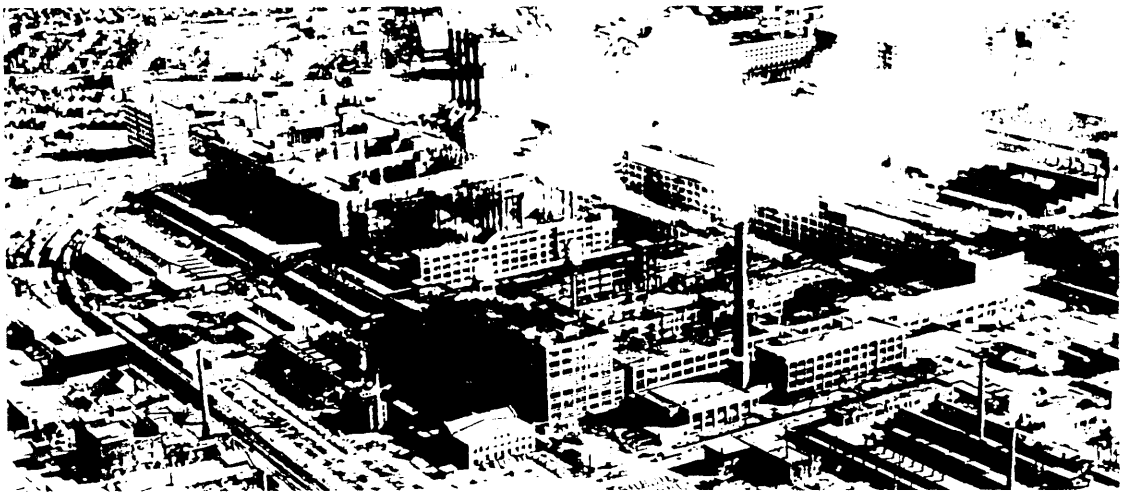
[72]Conversation with Harriet Saperstein on the 4 September 1990.

Figure 9: Chrysler's Dodge Main Plant, ca. 1954



was 1,100 feet long with 60 feet in width, with intermittent open courts. (**Figure 9**) The facility continued to expand-in 1915, an office building was added, in 1917 an eight story concrete structure for the assembly of howitzer components, and finally an enormous powerhouse was added in 1920-until it reached a total capacity of 5 million square feet. The plant, through the years, included stamping, casting, transmission, and assembly operations. Employment at the plant peaked at 40,000 during World War II. The plant played a significant role in the early development of the UAW. It was the first major plant to be organized in 1936. By 1937, U.A. W. Local No. 3, with 26,000 workers was the largest union in the country at the time. Chrysler purchased the plant from the Dodge Brothers in 1928 and slowly phased out most of the operations. By 1960, only the assembly component remained at the facility.[73]

In 1979, the year before the plant was closed, Chrysler engaged in a study effort in order to solicit ideas for the reuse of the plant. The effort was spearheaded by then local Congressman Lucien Nedzi who led the citizen task force for the reuse of the facility. Chrysler funded the study and retained economic development consultants Zucelli Hunter Associates, Inc. (ZHA) out of Annapolis, Maryland, to produce a plan. ZHA was charged to define appropriate economic and use activities for the 5 million square foot facility. According to former ZHA principal Donald Hunter, the process

[73]Historical information on Dodge Main comes from Charles Hyde, Detroit: An Industrial History Guide, Detroit: Detroit Historical Society, 1980.

was extremely open and creative. Possible renovation alternatives that were examined for financial and implementation feasibility included a headquarter and warehouse for international disaster relief efforts, a giant marketplace ala Fanueil Hall and Ghiradelli Square, a federal prison facility, and another auto plant. The study showed that the first three alternatives were not supported by the local market conditions in Detroit and Hamtramck, but that the federal prison could have been successful, both physically and financially. In addition, despite its negative stigma, it met the goals of the citizen task force, which included job retention and preservation of the historic facility and surrounding neighborhood.[74]

Although the federal prison proposed by the reuse study was viable, the city quickly began to focus on another opportunity for the property. When Chrysler announced that it was closing Dodge Main in January of 1980, idling thousands of workers and leaving an enormous abandoned facility, the city was in the midst of an aggressive industrial development plan to halt the flight of its industrial base to the suburbs and the sun belt. In May of the same year, General Motors Corporation (GM) issued a challenge to the city of Detroit. GM committed to the city that it would build a new assembly plant in Detroit if the city met certain conditions. The city was challenged to assemble a site of 500-600 acres, rectangular in shape and large enough for a modern auto factory, with access to both a highway and a mainline railroad, clear it and make it ready for development within a year.[75] The city screened nine potential sites and selected one of 465 acres, which spanned the boundary of Detroit and Hamtramck, encompassing the abandoned Dodge Main site. The project was officially named the Central Industrial Park Project (CIPP) but nicknamed "Poletown", because of the high percentage of residents of Polish descent who reside in Hamtramck. The project, which became one of the largest redevelopment projects ever attempted with estimated governmental costs of over $200 million, while General Motors would purchase the cleared site for $8 million, and invest another $500 million in construction of a new plant.[76] The city granted tax incentives and borrowed money from the HUD Section 108 loan program and also applied Community Development Block Grant (CDBG)

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[74]Conversation with Donald Hunter, November 1990.
[75]Joe Darden, Richard Hill, June Manning Thomas, and Richard Thomas, Detroit: Race and Uneven Development, Philadelphia: Temple University Press, 1987, p. 177.
[76]Ibid.

money, arguing that there was considerable long term gain from giving GM what ever it wanted in order to get them to locate there. The new plant would employ 6,000 directly, with a projected indirect employment benefit of 20,000 jobs. The city would also receive a 4.5 % increase in its property tax base. After 12 years, when a city-granted 50% tax abatement would expire, Detroit and Hamtramck would received an estimated property tax revenue of about $21 million per year.

However, what seems like a great economic deal had its dark side. The site which the Poletown project would clear contained 1,176 residential, institutional, commercial, and industrial structures and 996 families-all of which had to be removed in order to deliver the site to GM. The community received the news with mixed reaction. Some residents were pleased that the city was using its eminent domain powers to purchase their property, enabling them to leave what they considered a declining area. These advocates of the project formed the core of the Citizen District Council, the official citizen advisory board for the project. Others were ardently against the Poletown project, particularly the older Polish residents and those residents who, in the late 1970's, had formed the Revitalization Task Force, which had received a small grant to renovate the local shopping area just when the city announced the CIPP. These individuals formed the core of organized opposition to the project. They banded together and formed the Poletown Neighborhood Council (PNC), determined to fight the project and preserve their neighborhood. The PNC brought suit against the city, largely on the point that it was using its powers of eminent domain is supposed to be used only for land to be used for public use, not public benefit, such as job creation. The PNC also led protests that brought national media attention. While the city refused to engage in negotiations with the PNC the organization did have political support. The PNC's most important support came from the well known consumer advocate Ralph Nader and his organization. Nader assisted the organization with legal staff and financial resources in several court cases that attempted to halt the project. The Nader organization also spearheaded an extensive media campaign which included print, television and film media.

Despite the legal challenges and political efforts to halt the Poletown project, condemnation, purchase and demolition proceeded at a fast pace in hopes of meeting

GM's one year delivery deadline. Under the protection of Michigan's "quick take" law, which allowed the city to pursue rapid condemnation and clearance of a site even while litigation was still pending.[77] The officially sanctioned Citizen District Council supported the city throughout the process, the Catholic Archdiocese backed the city's plan to destroy the churches in the area, and many residents quickly accepted the generous relocation offers. The city delivered the cleared site in 1981, though GM did not complete and open the Poletown plant until 1985. The plant is fully operational, though the city is still waiting for its return on investment from the project. The jury is still out on what many have termed "the Poletown strategy" to retain industry within the city. In 1986, the city announced a similar project to help build the Chrysler Jefferson Avenue plant using a $50 million Urban Development Action Grant (UDAG). The funding never materialized and Chrysler recently announced that it was planning to demolish the plant.

2. Subdivision and Mixed Use Redevelopment

While conventional approaches are still in evidence, the economic recovery of the 1980s, coupled with extensive incentives from states and municipalities supported a new strategy-that of subdivision and mixed use redevelopment. Subdivision approaches generally were utilized to supplant other industrial use in obsolete sites and, in some cases, brought in new uses. Industrial corporations, particularly the big three automakers, faced with excessive production capacity and facilities larger than the industrial market demanded, began considering option for the disposal or redevelopment of the property. The corporate real estate division or subsidiary was charged with the management, disposition, and/or redevelopment of surplus facilities. Around this phenomenon of industrial subdivision has developed a consultant specialty-hybrid market analyst, economic development, real estate development and brokerage services for leasing or sale of the facility, which address the issues of surplus industrial facilities. The approach to the surplus facility has become fairly standard. A market study is conducted to determine regional demand and market saturation of similar facilities, then the market generated uses are examined in terms of

[77]Ibid, p. 180.

feasibility, both formally and financially on the site, to produce a reuse plan. Existing conditions are established and environmental assessments conducted and costs are presented for the recommended "highest and best use" of the property. In a recent innovation, the consultant who produces a planning document will also act as broker for the property. Corporate Properties, Ltd. of Providence, Rhode Island has utilized this approach to its advantage. In what the firm terms a compensation structure on a "success fee basis", the firm requests an up front retainer fee and then links additional compensation to the success of the lease out of the project, thus assuring their client of some reasonable level of success for the project. The strategy has paid off for Corporate Properties as Chrysler Corporation has recently retained them as lead consultant for all current and future surplus property.[78]

Such consultants have increasingly utilized a reuse strategy of "subdivision" in order to respond to the new demands of industry and commerce and the market. As a developer put it, "In an era when many old and large factories no longer suit the needs of modern business, and when a growing host of light-industrial businesses is seeking high-quality space at reasonable rents, industrial redevelopment makes strong economic sense."[79] Traditional manufacturing facilities are huge in comparison to the current market, encompassing hundreds of thousands of square feet. Modern light industry and warehousing uses require increments under 100,000 square feet, especially in units of 10 to 50,000 square feet. Techniques for retrofitting interior spaces, upgrading building efficiency, improving site amenities and separating utilities have developed to facilitate the subdivision approach. Adjunct to this subdivision strategy, corporations often engage in sale and lease back of surplus square footage, allowing them to maximize the value of the property while still retaining use of some part of it for on-going operations.

As discussed earlier, there are numerous examples of the conversion of older manufacturing building undergoing conversion into new uses. However, it is the heavy industrial sites of the twentieth century steel and automobile manufacturing plants

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[78]Conversation with Peter Roth of Corporate Properties, 18 March, 1991.
[79]Robert Sheridan, "Turning Old Factories into New-Style Industrial Buildings", Urban Land, February 1990, p. 5.

which have posed a more difficult conversion issue. However, recently a major shift has occurred, and former auto plants have been redeveloped into complexes containing a variety of office, retail, warehouse-distribution and residential properties. In 1988, General Motors sold more than 20 million square feet of unused factory space throughout the United States.[80] One such sale involved a former assembly plant in St. Louis, Missouri. The 158 acre site included a 38 acre main assembly plant, a truck terminal, a power plant, a tire-processing plant, a railroad siding, and over 100 acres of parking lots. The developer who purchased and converted the site did a variety of things. The assembly plant was renovated and leased with option to purchase to three tenants, including a storage bank, back-office space, and warehousing and distribution facility. One of the parking lots is being developed as 100,000 square feet of retail space. Perhaps one of the most infamous examples of this effort was the Kenosha, Wisconsin plant, whose surprise shut down garnered national attention and prompted the legislative efforts for early warning to the union and the community. Chrysler approached the Kenosha site, which contained over 4 million square of manufacturing space, with a parcelization strategy. Most of the structures were demolished, and the land parcels were either retained by Chrysler for future disposition or sold for redevelopment. The company also donated one building to the UAW Local for use as headquarters for a job retraining program.

In response to changing economic trends, Pittsburgh, a city which experienced the decline of the steel industry during the 70s and 80s, has developed strategies to attract light industry, warehousing and distribution facilities. Though he city still maintains a strong industrial base it also has a wealth of heavy industrial sites on the fringes of downtown which line the banks of its three rivers-the Allegheny, the Monongahela and the Ohio. Many of these obsolete sites are being converted to multi-tenant, multi-use facilities. In this shift to service orientation, the area has tried to emphasize the issues of delivery and distribution, an advantage of Pittsburgh over other northern manufacturing cities. The distribution network to which sites are directly adjacent consists of the three rivers, a transportation network which extends, by way of the Mississippi, to the port of New Orleans. Examples of such projects generally involve the sale of the industrial site to a development group for development. The Neville

[80]Real Estate Investment Ideas, Second Issue, July 1989, p. 5-6.

Island development, a former barge and tugboat building facility on a 70 acre site, has been converted to more than 500,000 square feet of multi-tenant manufacturing and warehouse space and 100,000 square feet of office, as well as rail and docking facilities. A second site, the McKees Rocks Industrial Enterprises' property, consists of twenty five buildings on approximately 100 acres of land. The developer of the two sites feels that this type of conversions "is typical of what we envision as the future for many of Pittsburgh's older, heavy industrial manufacturing sites and how new entrepreneurs will revitalize them."[81]

In recent years, the State of Indiana has developed incentives for the reuse and modernization of the state's obsolete industrial infrastructure. The state enacted an incentive program in 1987 which granted "dinosaur" designation to obsolete facilities. In order to qualify for the 25 percent state tax credit on renovation which the designation provides, a facility must be more than 300,000 square feet, at least 50 percent of the facility is 20 years or older and a minimum of 75 percent of the square footage had been vacant for at least two years. The state also developed twelve enterprise zones within which businesses benefit from investment tax credits, exemptions from inventory tax, employee tax deductions for those which work and reside within the same zone, and employment expense credits for companies that hire zone residents. In addition, Northern Indiana's Public Service Company offers a reduced utilities rate with the zones, providing a 32 percent discount on electric rates during the first two years of operation.

Most of Indiana's industrial obsolescence is concentrated in the northwest, due to the early 1980 economic slump which was triggered by the decline of the steel industry in the area. Since the mid-80s over $5 billion has been invested in modernization activities, bringing an influx of new businesses that serve the steel industry and are end users of steel.[82] Two examples of large industrial properties which have experienced revitalization are the East Chicago Enterprise Center, a 1 million sq ft facility which was, until recently, a manufacturing plant for M-1 tanks, and the Great Lakes Industrial

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[81]"Old Plants find new life in Pittsburgh",Tri-State Real Estate Journal, February 28, 1986.
[82]"Revamped industrial buildings tap a reviving market". Building Design and Construction, Spetember, 1989, p. 24-25.

Center, with 31 connected buildings containing 1.1 million square foot facility which was built in 1946 and had been vacant and suffered 40 years of neglect.
The East Chicago Enterprise Center consists of four buildings with 25-45 ft. high ceiling heights and crane capacities of 20-200 tons. The buildings were structurally sound, but mechanical, electrical and plumbing systems were replaced and new roofs were installed. The Great Lakes Industrial Center has become one of Indiana's largest reuse projects. Since the original 31 building facility was occupied by a single tenant, the rehabilitation involved a complete gut and redesign for multi-tenant use. Extensive roofing, ceiling, floor and insulation work was required as well as customization of systems in the individual spaces. Purchased for redevelopment in 1985, the Great Lakes facility was 100 percent leased in 1989.

In Chicago, renovation of obsolete industrial space is one of the most active segments of the rehab market. In 1989, Chicago experienced redevelopment of 6 million square feet of industrial space, totaling about 10 percent of its 60 million square foot industrial base.[83] This activity, of course, is buoyed by the fact that the Chicago market is quite healthy, with great demand for land or square footage in close proximity to the downtown and close suburban locations, creating a good sellers market for industrial properties. As Carl Manofsky of Coldwell Banker Commercial Real Estate Services observes, "Redevelopment of industrial properties is hotter than a pistol. Companies are taking older facilities that are close to the business and geographical center of the population with all of the infrastructure, utilities, labor force, etc., in place."[84]
One example of such an industrial redevelopment is Midway Business Center, the former Sears distribution facility on the West side of the city. The Boston-based Beacon Companies converted the eight city block, 1.5 million square foot facility into a multi-tenant industrial facility. The tenant list includes a variety of warehouse and office users including Sears, Dean Witter, Olympic Oil, First of America and American Airlines, with lease rates ranging from $2.80 to $8 per square foot, triple net.[85]
Legislative efforts in Illinois have assisted the rehab market as well, developing tax increment financing (TIF) to spur economic development. Today most states in the

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[83]Holly Sraeel, "Chicago's Renovation Activity: Keeping a Strong Market Plugging Along", Buildings, April 1990, p 64.
[84]Ibid, p. 66.
[85]Ibid, p. 66.

country have TIF, but in 1985 Illinois was the first state to adopt both state and local sales tax increments which supplemented the property tax increment, the basis of most TIF laws.[86] The city of Chicago is concerned with the redevelopment activity in terms of how it is eroding the city's industrial base. The city has developed planning mechanisms to assist in economic development, particularly retaining and renewing the industrial base. The city conducted a major land use assessment in order to identify industrial areas and recently passed zoning to protect industrial districts in the city.

3. Federal Efforts and Emerging Reuse Strategies

Municipalities have traditionally used federal funding programs, such as Community Development Block Grants (CDBG) and Urban Development Action Grants (UDAG), in order to stimulate redevelopment in areas that the market has abandoned. These grants, however, are not specifically designated for use on obsolete industrial landscapes, and municipalities generally have quite a bit of latitude on how they are spent. One focused federal funding program emerged in the late 1970's. Efforts to reclaim vast tracts of land devoted to surface and sub-surface mineral mining were spurred by the 1977 Federal Surface Mining Control and Reclamation Act. The Act generated funds to be used for reclamation by levying a surcharge on current coal mining operations. Since that time, numerous strip mines, hard-rock quarries, sand and gravel pits and even landfills have been recycled for productive uses. One ambitious project involves the former 1,450 acre Drummond Company's rock phosphate mine near Lakeland, Florida, between Tampa and Orlando. By the year 2001, the site will be Oakbridge-a $500 million mixed use development which will include 3,500 residences, a regional shopping mall, a 300-room hotel, several office parks, recreational lakes, a championship golf course. Ohio-based American Aggregates Co has been reclaiming its sand and gravel pits for over 70 years for reuse as industrial parks, warehousing, housing developments and parks. Ladd's Inc., of Troy, Michigan, has redeveloped three former sand pits in suburban Detroit into residential subdivisions. In West Virginia, an abandoned coal colliery and culm pile

[86]Ibid, p. 65.

became Chief Logan State Park and Amphitheater.[87]Some states developed programs which reinforce the Federal minelands legislation. In Illinois, the state formed the Abandoned Mine Lands Reclamation (AMLR) Council. With land donated by the Ottawa Silica Co. and partial funding through the federal act, the AMLR commissioned a landscape artist to recreate 200 acres of highly acidic and unvegetated land that had been stripped to reach a coal seam. The artist, Michael Heiser, created *Effigy Tumuli Sculptures*, five enormous, stylized figures one of which extended more than 2,000 feet in length, made of compacted earth and seeded with grass. The land is now administer through the Department of Conservation as part ofthe Buffalo Rock State Park.[88]

THE CULTURAL DEVELOPMENT APPROACH

A number of states in the Northeast, in particular, have developed and utilized a redevelopment/preservation strategy for dealing with their stock of obsolete and abandoned industrial infrastructure. Massachusetts, New York and Pennsylvania have all been active over the last two decades in the federally based initiative of the Department of the Interior and the National Park system. These efforts, initiated at the local state level and then augmented by federal assistance and funding, have produced interesting results. This concept seeks to identify unique aspects of American cultural and industrial history and then to preserve and redevelop the areas surrounding these resources, providing a basis for economic revitalization. The program creates a unique public/private development team and utilizes investment from both federal, state and local governments as well as private investors.

During the 1980's the U.S. Congress, faced with both serious federal budget constraints and the need for economic development strategies for home districts, began to investigate ways in which the National Park Service (NPS) could assume new areas and new responsibilities. Congress has, since that time, chosen to deal with this issue by directing the NPS to work cooperatively with state and local governments and

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[87]All of these examples are presented in detail in an article by James Krohe, "New Roles for Surface-Mined and Landfill Sites", Landscape Architecture, June, 1989.

[88]This example is presented in an article by John Beardsley, "Earthworks Renaissance", Landscape Architecture, June, 1989.

private groups to study, plan and create new units of the National Park system. The strategy has reduced the demand for federal involvement and increased the role of other public and private interests while still providing federal level recognition and assistance. At the same time, preservation efforts at a local level coincided. The public has become increasingly interested in the future of their communities and regions. These sentiments include desire for quality of life, including a clean environment, recreational opportunities as well as preservation of economic base and historic and cultural resources. Such sentiment has expanded the definition of what we consider of historical and cultural significance to the nation and has most recently begun to include the nation's historical industrial landscape. Both desires of the federal government and the community coincide in the industrial landscape: How can we preserve and interpret the nation's industrial and transportation heritage while at the same time provide economic revitalization for the industrialized regions of the country that had been so devastated by the recessions and restructuring which occurred in the late 70's and early 80's? Congressional leaders have been challenged to find ways to protect significant historic, cultural, natural, recreational and other values while not spending large amounts of money in order to do so. Traditionally, the NPS has been directed to own and manage a nationally significant area, but in these times of budget austerity, the agency has considered alternate means of achieving protection and public use goals for such areas. In this sense, federal assistance can be viewed in a fundamentally different way. It can be utilized to stimulate the actions and financial involvement of others, rather than as the primary means to create a National park. In response to this directive, the NPS has created a mechanism at the federal level which recognizes the nation's transportation and industrial heritage by creating "heritage areas", defined as "a regionally identifiable and significant landscape which is the focus of a cooperative public and private decision-making effort to recognize, organize and communicate a community's natural, cultural, recreational and economic attributes in order to protect important values, stimulate the local economy and improve the quality of life."[89] Further, although the heritage area involves primarily recognition of a physical place, the concept also embodies an important planning concept. The process is best defined

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[89]Glenn Eugster, NPS Mid-Atlantic Regional Office, Division of Park and Resource Planning, Transportation and Industrial Heritage, Prepared for the 43rd National Preservation Conference, National Trust for Historic Preservation, Philadelphia, PA, October 1989.

as "a way to allow all concerned individuals, organizations and governments to work together to develop a plan for the future of an area. Central to this process is the active involvement of landowners, local officials and the private sector in the decision-making process."[90] The heritage area concept has been employed in a variety of ways, including heritage parks, heritage corridors, heritage trails, and heritage areas. Each is designed as a federal, state, local and private sector partnership which features equitable, cooperative decision making; primary reliance on the more effective use of existing authorities and resources; respect for private sector initiative and local home rule; recognition that strategic public investment can stimulate private sector investment; and that the protection of significant natural, cultural, historic and recreational values can make an area more attractive for economic development. A key component of the economic development piece of the system is the amount of private sector development and investment that can be "leveraged" from the public investment in an area. The following table illustrates the amount of public investment in existing and proposed heritage areas and the accompanying private sector investment either realized or expected.[91]

National Heritage Areas	Public Sector	Private Sector
Lowell, Massachusetts	$64 million	$360 million
Johnstown, Pennsylvania	$50 million	$130 million
Lackawanna Valley, Pa.	$37 million	$100 million
New York State System	$30 million	$210 million

Typically a heritage area effort includes the preparation of a management, action or master plan and is directed by a task force of key public and private elected officials, resource experts and community leaders and involves citizen participation. Such a public planning forum has resulted in successful implementation beyond the planning phase of the project. The plan which is a result of this process provides a vision for the future of the area and allows a publicly accessible forum for such activity. Such plans generally include a memorandum of agreement between cooperating organizations and

[90]Ibid, p. 2

[91]Source of data: Lane Frenchman Associates, Inc., Boston, Massachusetts.

an agreed upon scope of work which includes such elements as: goals; historic and cultural resources; market and economic assessments; a study boundary; issues of concern to area interest; record of public involvement and the planning process; an evaluation of laws, programs and regulations which effect the effort; an evaluation of economic, social and environmental impacts; and specific recommendations for future public and private actions. After the planning process is complete, the plan serves as a basis for Congressional action. Legislation must be drafted for the designation of the park or area, which Congress must then ratify into law. However, the process can also work in reverse. Congress can direct the National Park Service to study an area to determine whether it is appropriate for addition to the National Park System.

Currently, there are five existing national heritage areas, two of which is are national parks, two of which are heritage corridors and one which is a hybrid of the two. The Lowell National Historic Park in Lowell, Massachusetts, which celebrates the beginnings of the industrial revolution in the United States was the first area designated. The Illinois and Michigan Canal, originally planned as a heritage corridor project is the second park designation, established in 1984. The two national heritage corridors include the Blackstone River Valley, established in Massachusetts and Rhode Island in 1985, and the Delaware and Lehigh Navigational Canal in Northeastern Pennsylvania, established in 1988. The hybrid heritage area involves a nine county area in southwestern Pennsylvania which focuses on the region's steel, coal and rail heritage. Other areas which have been under study-some of which are very close to designation and implementation-include the Lackawanna Heritage Valley in northeastern Pennsylvania focusing on the anthracite industry; the Mon Valley Steel Heritage area in northwestern Pennsylvania; the Calumet Heritage area in upper Michigan focusing on the history of the copper mining industry; the Wheeling Heritage Park and heritage area in Wheeling West Virginia, focusing on the coal mining industry; and numerous other river and heritage corridors throughout the country, including the Mississippi River Heritage Corridor which includes ten states. The following discussing briefly the efforts in the states of Massachusetts, New York and Pennsylvania.

Massachusetts

The idea for national heritage parks actually began in Massachusetts when the Commonwealth began a system of heritage parks in older industrial cities. Thirteen Heritage Parks now combine environmental enhancement, historic preservation and interpretive exhibits to stimulate community pride and economic development. The first formal federal heritage effort was in Lowell, Mass in response to the Commonwealth project. Lowell actually contains two parks-Lowell National Historical Park under the auspices of the National Park Service and Lowell Heritage State Park, focusing on the canal infrastructure and under the Department of Environmental Management (DEM), Commonwealth of Massachusetts. Both attempt to interpret the city's pioneering role in the American Industrial Revolution and preserve the historical, architectural and cultural resources. These parks, established in 1978, are the result of a cooperative partnership between Massachusetts and the NPS. Within the designated boundary, the parks include over 5 miles of canals, operating gatehouses, seven of the original ten mill complexes, mill worker housing and other 19th century commercial structures. (See **Figure 10**) Visitor service facilities which include interpretive exhibits on labor, power, capital, machines and the industrial city and a multi-image slide show are operated by the NPS and the state. National and State Park Service Rangers conduct guided tours daily, and the Parks sponsor a variety of festivals and special events throughout the summer months. The Lowell Parks attract approximately 1 million visitors every year, with summer the busiest tourism season.[92]

The story of Lowell is that of many other industrialized cities in America. Dominated by a single industry-textile, the city and area was devastated after 1920 when the industry began migrating to the south for lower operating and labor costs. But Lowell is also historically and physically unique, and it is this uniqueness which brought about its revival. Depressed, though with much of this historical infrastructure left intact, Lowell utilized its history to chart its future. The impetus for Lowell came from the

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[92]For details on the Lowell Plan see The Lowell Historic Canal District Commission, Lowell Massachusetts, Report of the Lowell Historic Canal District Commission to the Ninety Fifth Congress of the United States of America, January 3, 1977.

Figure 10: Lowell National Historic Park Site Map

interaction of local groups developing a set of objectives for the revitalization of its downtown and neighborhoods.

The planning and implementation effort was cooperative-including private sector groups and public sector agencies at the local, state and federal levels. All groups coalesced behind the strategy to revitalize their city, devoting manpower and funding to its planning and implementation. The city of Lowell also endorsed the park notion, and included it as a portion of their master plan. The Wang Corporation played an important role during the planning phase and eventually developed corporate facilities in the area including its training center in the downtown area. For management purposes, the park is divided into two zones: a central intensive use zone, and a broader preservation zone within the park boundary. Within the intensive zone, NPS and DEM have selective acquired and improved property in order to develop the major interpretive experiences in the park. In the broader preservation zone, a management entity with local, state and federal representation was established to supervise preservation and revitalization. Most all of the property within these zones, even the intensive use zone, has remained under private ownership.

Lowell was founded in 1822 on a site on the Merrimack River approximately 30 miles north of Boston. On this site, for the first time in American history, the forces of power generation, industrial production technology, capital formation, labor and social organization produced America's first "industrial city." Francis Cabot Lowell, a wealthy industrialist from Boston, was the progenitor of Lowell, though he never lived to see it built. His travels to English textile mills and his translation of the technology in America allowed the entrepreneurs who founded Lowell to create a vast textile empire. The conversion of the Pawtucket Canal paved the way for the development of major corporation in Lowell. In building their Mill complexes and related housing, social institutions and urban amenities in Lowell, they attempted to create a planned utopian community, much in contrast to the harsh realities of industrial England at the time. The mill owners recruited the daughters of New England farmers, the now famous "Mill Girls" to work in their mills. By 1850, the Mill girls were starting to be replaced by a diverse immigrant work force, creating a strong matrix of ethnic communities, many of which still exist today. The turn of the century brought increased competition, lowered textile prices and labor disputes. By 1920, the textile industry began migrating to the southern states. The collapse of the textile industry in New England resulted in high unemployment and economic stagnation. Lowell, like many New England cities, was left with abandoned industrial structures which came to symbolize the region's decline.

In response to the desperate economic situation, Lowell mobilized its collective resources at the beginning of the 1970's. By 1972, the city council adopted the cultural park concept as the focal point for local planning efforts. The city also invested in public environment improvements and created two local historic districts. In 1975, the city chartered the Lowell Development and Financial Corporation-a consortium of local banks that established a fund for low interest loans for downtown revitalization efforts. In support of local efforts, the Commonwealth of Massachusetts pledged over $9 million towards the restoration of the canal system and over $10 million for various infrastructure improvements. In 1977, the federal government commissioned a thorough study of the canal system by HAER and NPS and invested money in the restoration of several historic structures of national register status. Since implementation of the parks in 1978, the federal and state have contributed an additional

$64 million for implementation and operation. This public sector investment has been matched by over $360 million in private sector development in the city. Private development in the city includes residential development in various Mill structures, the Lowell Hilton, the Wang Training Center, the University of Lowell campus, and several parking garages. Most recently, the Boott Mills complex on the river is being redeveloped as office and commercial space. The NPS will open another major visitor facility within the complex featuring a demonstration/recreation utilizing the original looms from a textile mill.

New York

New York, as one of many industrialized Northeastern states, experienced the decline of primary industries and the resultant economic recession and the physical manifestations of such recession-a glut of obsolete industrial infrastructure and declining urban areas. Faced with declining industrial base and a need for economic revitalization in most of the state, the governor and the legislature decided to investigate a similar strategy to that of Massachusetts. In 1977, the New York State Legislature required the Office of Parks and Recreation to prepare a plan for a state-wide system of "Urban Cultural Parks" (UCP). Such a park was defined as an "historical area of special social or cultural significance combined with a revitalization process designed to satisfy four basic goals: preservation, education, recreation, and economic development."[93]

While many of the originally designated parks have been implemented since the statewide effort began, perhaps the best known results of this effort as the South Street Seaport in lower Manhatten and the Ellis Island Immigrant Museum in New York Harbor. The South Street Seaport, has evolved as a very successful public/private development venture. The focus of three hundred years of maritime activity, the South Street Seaport preserves the last remaining remnant of the 19th century port, a cohesive eight block district in lower Manhatten adjacent to Wall Street and the financial district.

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[93]State of New York, Hugh L. Carey, Governor, and New York State Office of Parks and Recreation, Orin Lehman, Commissioner, New York Urban Cultural Park System, Progress Report to the Legislature, April, 1980.

Beginning in the mid-1960's, the South Street Seaport Museum was established. The museum consists of a collection of historic sailing ships docked in the East River. After this initial effort, several private interests began renovating selected buildings in the area and the state designated the museum its official Maritime Museum and provided grants to assist in the restoration of adjacent Schermerhorn Row in order to house exhibits and other museum activities. In addition, the state effort helped to re-established the Fulton Ferry link to Brooklyn, under franchise to the NYC Department of Ports and Terminals and established a waterfront park on the grounds of the Empire Stores property in the Fulton Ferry District in Brooklyn. By 1980, the Rouse company announced a major commercial development adjacent to the Museum and the Pier 17 development was opened in the early 1980's. Rouse's Pier 17 is, essentially, a festival marketplace with a form, use and programming formula similar to that employed by Rouse at Baltimore's Inner Harbor and the Fanueil Hall Marketplace in Boston. The development has made South Street Seaport one of New York City's primary tourist attractions.

Ellis Island, which served as the country's primary federal immigration facility between 1892 and 1954 is the site where over 12 million immigrants took their first steps on American soil. From its humble beginnings as a three acre sand bar with a wooden processing station, the artificial island grew to over 27 acres and came to possess grand beaux arts brick and limestone structures including the main processing building and power plant, dormitories, hospitals, kitchen and laundry buildings and other support structures. Abandoned by the federal government in 1954, the site and structures experienced 30 years of environmental wear and vandalism. Through the New York UCP process, the structures and settings were finally restored beginning in 1984. Opened to the public in the fall of 1990, the Ellis Island Immigrant Museum is the result of a six year, $160 million restoration effort between The Statue of Liberty-Ellis Island Foundation, a private sector non-profit organization formed in 1982 to raise funds and oversee the restoration and the National Park Service, which directed the restoration activity and operates the national museum under the historic park program. The joint venture consultant team of Beyer Blinder Belle and Notter Finegold + Alexander Inc. served as project architects and planners. In 1992, a second phase of the project, a genealogy center, is planned to open in conjunction with activities surrounding Ellis

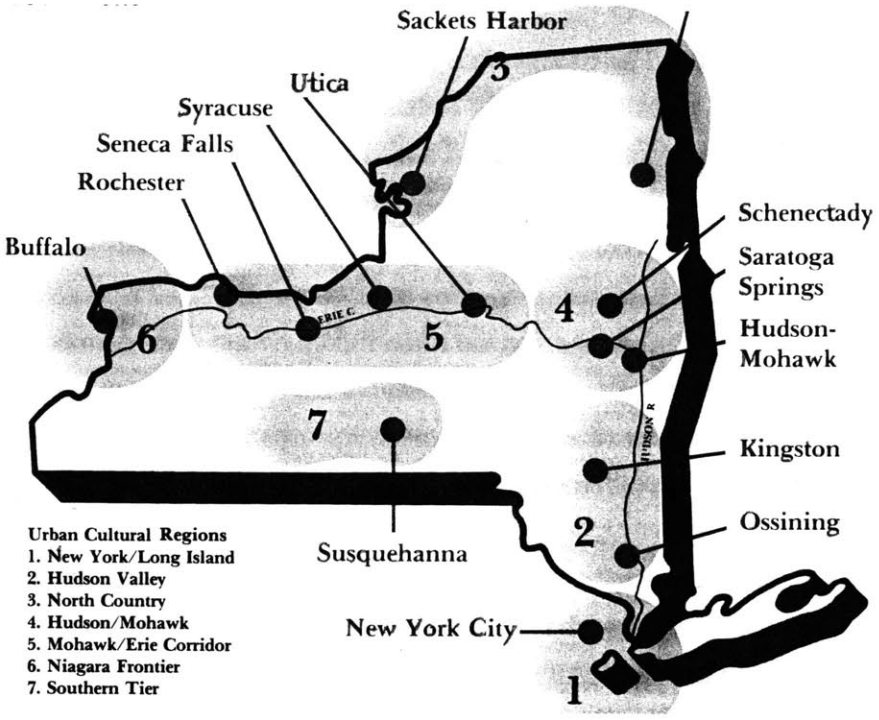
Island centennial celebration. These are the best known examples of a state wide process that involved government at the state, local and federal level as well as the private sector and the citizens of the state.

The Statewide effort which began over fifteen years ago attempted to reinforce several goals: to preserve and interpret important resources which are not necessarily architectural landmarks or civic monuments, but resources which have value in regard to lifestyle and heritage of an area and to respond to a growing constituency for the UCP idea which had been successfully implemented in Lowell, Massachusetts. This constituency consisted of local and community organizations. The state decided to provide a catalyst to local efforts, in supplying planning, funding and implementation assistance and to respond to energy shortages and fiscal austerity in regard to stimulating a "close to home" tourism industry within the state.

The planning process was conceived as a partnership among all three levels of government-local, state and federal- and also involved citizens and private enterprise in the planning process. The process was led by the Office of Parks and Recreation, which chaired the Urban Cultural Park Advisory Council. The Council membership was comprised of thirteen state agencies and offices which contributed to the program. In 1978, an Interim Report to the Legislature, defined the cultural park concept and recommended thirty-nine areas worthy of further study. The report also recommended that proposals for individual parks be prepared at the local level, with the participation of interested citizens and organizations. Grant assistance was then awarded to fourteen pilot programs in twenty-one municipalities around the state. These grants supported feasibility studies and early action projects which could be implemented immediately. A major federal commitment to the program was received when the Heritage Conservation and Recreation service authorized a consolidated grant on a matching basis to support these early action projects.

The Interim Report also established concepts and goals which provided a framework to structure the selection of the fourteen pilot areas. (See **Figure 11**)The park concept revolved around the establishment of "cultural themes" which represent the state's cultural development and which can be specifically associated with settings in the

Figure 11: New York UCP System Pilot Areas



state's natural and man-made environment. The nine themes were identified as: natural environment; defense; maritime trade; business and capital; roads railroads and canals; labor and industry; immigration and migration; reform movements; and the flowering of culture. In addition, three urban cultural regions were identified in order to organize the UCP system. The regions have retained a collective identity up to the present day and each had a unique role in the settlement of the state. These included three gateway regions-entered around New York City, the confluence of the Hudson and Mohawk Rivers, and the Niagara Frontier, all of which were major junction points of modes of transport and served as points of entry to the state and the country. Also included were two primary transportation corridors of the Hudson River and the Erie Canal, which link the gateway regions, and two region includes the state's Southern Tier, the last portion of the state to experience urbanization and North Country, which served through history as the state's defensive frontier. The Interim Report also provided basic system goals and recommended a "hybrid" system of parks which included four generic park "types". The stated goals were developed to insure that each UCP would be designed to preserve both significant natural and man-made features of a setting, educate residents and visitors about the setting, develop recreational opportunities

which make use of the setting and encourage economic development through private reinvestment. The four generic park "types" recommended in the Interim Report include: **Cohesive Historic Settings**-characterized by an integral grouping of historic structures, spaces and activities; **Linked Resources within one Community**-characterized by scattered historic resources which were to be linked to create a larger thematic unit; **Related Resources within a cohesive region**-characterized by a group of cities or towns which have a shared history or economic or social interdependence and are often linked by a natural connecting feature such as a river; **Natural Features of Historic Significance**-characterized by a natural feature which was the original reason for urban settlement and continues to shape growth and development.

Such projects emphasize recreation, but also include programs for historic resources.Within each region, the fourteen pilot study areas were identified. The following table indicates the regions, pilot areas and themes and type of park in the statewide effort.

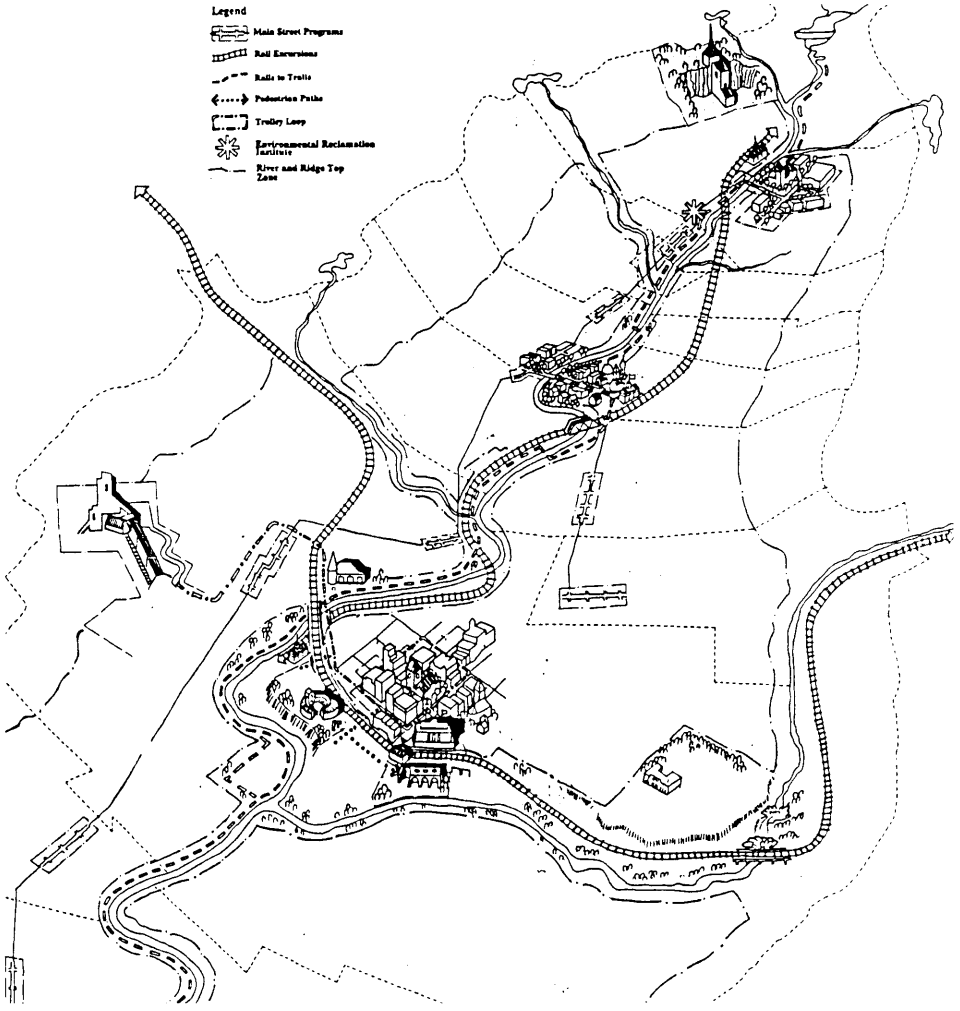
Region/Pilot Areas	Themes	Type of Park
New York/Long Island		
New York City	Maritime Trade Immigration Culture	Linked Resources
Hudson Valley		
Kingston	Transportation	Linked Resources
Ossining	Reform	Linked Resources
North Country		
Sackets Harbor	Defense	Cohesive Setting
Whitehall	Defense Transportation	Cohesive Setting
Hudson and Mohawk	Transportation	Related Resources
Saratoga Springs	Natural Environment Culture	Linked Resources
Schenectady	Labor/Industry	Linked Resources
Mohawk/Erie Canal		
Rochester	Natural Environment Labor/Industry	Natural Features
Utica	Transportation	Linked Resources
Syracuse	Business & Capital	Cohesive Setting
Seneca Falls	Reform	Cohesive Setting
Niagara Frontier		
Buffalo	Culture	Cohesive Setting
Southern Tier		
Susquehanna	Labor/Industry Immigration	Related Resources

Development and implementation of the system involved a partnership of the state and local governments, each serving in specific roles in the major activities of planning and design, development and operation of the UCP. The primary roles of the state include designation criteria and granting the actual designation, providing technical and financial assistance, provision of the state development assistance package including incentives to the private sector and legislative mechanisms for preservation and then in an on-going management role providing a framework of passive benefits and controls. Local authorities and communities were charged with resource identification, developing the park plan including strategies, commitments and defining the park boundary, development of facilities and programs, and ultimately the required long term local management for the park. Within this structure, the federal government, through the National Park Service, provided technical assistance and funding as well as assuming certain long term operational responsibilities.

Pennsylvania

Like Massachusetts and New York, the Commonwealth of Pennsylvania has utilized a state-wide approach to developing its industrial and cultural heritage. In 1984, the state suggested that a statewide heritage park system be developed in a study entitled *Pennsylvania Heritage Parks: a Concept with Applications*. Since that time, numerous planning efforts have been mounted across the state, though the project which is apt to gain the first state designation is the Lackawanna Valley in the northeastern corner of the state. The Valley has been the focus for possible cultural development for some time. In 1972, the NPS identified the region as the logical site for a national coal park. In 1986, Congress designated the Delaware, Lackawanna and Western Rail Yard in Scranton as the Steamtown National Historic Site. During that planning process, the NPS and local citizens recommended that other sites in the Lackawanna region were of significance and should be linked to the effort. The Lackawanna Valley was historically the center of anthracite coal mining in the United States, as one of three Pennsylvania fields holding 70 % of the world's anthracite reserves. As the mining and rail industries grew, the region became significant to the development of industrialized America, providing a cheap source of energy. The Valley also holds a rich history of entrepreneurship, immigration and ethnic heritage and the consequences

Figure 12: Lackawanna Heritage Valley Recommended Plan



of the exploitation of the natural landscape. In 1989, Congressman Joseph McDade suggested that an intergovernmental steering committee be formed to create a specific image for the Lackawanna Valley cultural development strategy. This planning process was recently completed in April of 1991. *The Plan for the Lackawanna Heritage Valley* "envisions the creation of a new type of regional conservation and development area to be known as the Lackawanna Heritage Valley."[94] The plan is unique in that it designates an area of over 34 miles-the Lackawanna Valley-and recommends long term stewardship programs as well as specifically identifying urban sites within the valley for development of a visitor infrastructure and interpretive activities. (See **Figure 12**)

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[94]Lane, Frenchman and Associates, Inc., Plan for the Lackawanna Heritage Valley, April, 1991, p. 6.

In order to implement the objectives, the plan calls for the establishment of the Lackawanna Heritage Partnership by the County as a way of formalizing cooperative intergovernmental activity for the implementation and management of the plan. An important piece of the economic development component of the plan would be the establishment of the Environmental Reclamation Institute (ERI) which would create and implement ways to reclaim the exploited face of the Valley in affiliation with state and local universities. Using the Valley as a laboratory, the ERI is intended to become national and even international in its scope, a center of research activity on the problems of reclaiming the industrial landscape. Ultimately, these programs will create an entirely new industry for the Valley, centering on research and delivery of leading-edge reclamation technologies.

On the other side of the state, efforts are underway to interpret the heritage of the steel industry in Pennsylvania. These efforts were catalyzed by a regional strategy which was initiated in the early 80s with the America's Industrial Heritage Project (AIHP) in nine counties in Southwestern Pennsylvania. The project was initiated and managed by the National Park Service. In 1992, management responsibilities will be transferred to the federally established Southwestern Pennsylvania Historic Preservation Commission. The ten year development project is scheduled to spend millions of dollars for heritage development projects. Outside of the AIHP, legislation has been drafted to establish Cambria Iron and Steel National Historical Park, focused at Bethlehem Steel's Lower Works in Johnstown, Pennsylvania, the site of the beginning of the steel industry in America. The notion of the park is best described by a General Manager of Bethlehem Steel who said, "We've opened our mills so that Americans can learn the importance of the steel industry."[95] When established, the park will represent a major federal commitment, with a development budget of $46 to $80 million and the potential to draw over 500,000 visitors a year.[96] Within the park, five Bethlehem Steel Plants in the Johnstown area have been designate as National Historic landmarks. One of these plants, the lower works, is still operating. The designation of these plants as National Historic Landmark included revolutionary language. For the first time, an

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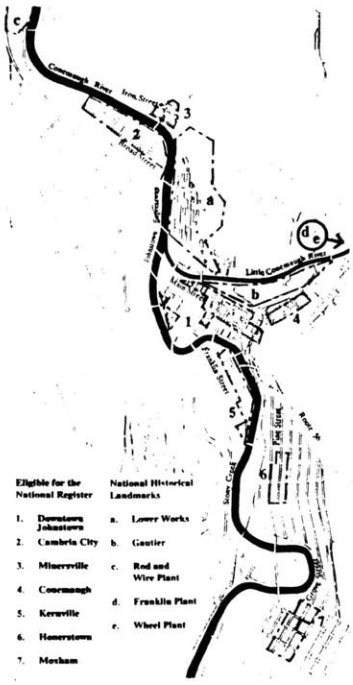
[95]Lane, Frenchman and Associates, Inc. and the Johnstown Flood Museum Association, Johnstown: The Third Century, May, 31, 1989, p. 7.

[96]Lane, Frenchman and Associates, Inc., Johnstown Heritage Development Plan, April, 1991, p. 4.

Figure 13: Johnstown Area Heritage Plan



industrial site was designated as "expected to change." The NPS has conceded that it is the nature of industry to change. In addition, the Federal government has decided, as part of the heritage park planning and implementation process, to assume the costs of environmental remediation at the sites.

In addition to the national park at the Cambria works, Johnstown has another distinction-it is the site of the country's most devastating disaster, the Johnstown Flood in 1889. In 1989, the city celebrated the first century anniversary of the flood with the opening of the Johnstown Flood Museum. The Johnstown Area Heritage Association has recently sponsored a plan for the further development of the the cultural heritage of the city. (See **Figure 13**) Further efforts to develop the state's steel heritage are being pursued by the state. Currently, plans for two industrial heritage corridors are being developed to interpret the role of the steel industry in the development of the state. The first is for the Allegheny Ridge Industrial Heritage Corridor, which includes the Johnstown area, and the second is in the Mon Valley, which is centered around Pittsburgh and the three rivers area.

D. SUMMARY OF RECONSTRUCTION ISSUES AND APPROACHES

1. Primary Reconstruction Issues

The discussion of case histories has shown that reconstructing the industrial environment is a complex task involving many issues and constituencies. Industrial landscapes which no longer serve their original function offer tremendous opportunity for regeneration, both to the community and the property owner. However, the reuse of industrial facilities, both sites and structures, carry with them many issues which need to be addressed in the planning and implementation of a reconstruction strategy. If a change of use and form is assumed as a given, then the following are four generalized categories of reconstruction issues: the issues which revolve around market and economic consideration, including the considerations of the property owner; the issues which revolve around formal consideration of the site and its structures; the issues which revolve around the consideration of the community, including abutters, residents and the workforce; and the issues which revolve around the consideration of environmental reclamation.

MARKET AND ECONOMIC CONSIDERATIONS

Market and Economic considerations are perhaps the most critical as they will dictate whether a reuse strategy is approached and implemented. Such considerations encompass the macro level economic issues of local and regional market and the micro level concerns of the property owner, including the costs and benefits of such an approach.

Location is a key issue. Often the location of an industrial site in a particular local and regional market is critical to reuse success, as well as proximity to infrastructure such as highways, rail service, airports, and labor markets. According to one school of thought in industrial redevelopment, it is also a major advantage to be located in "developed suburban markets with good highway access...close to big cities but enjoy the advantages of suburban locations, including lower land costs and ample

parking."[97] Rural areas are ruled out because of remoteness and lack of essential access to labor goods and services. Downtown locations are discounted because of issues of safety, and the fact that land, taxes, provision of parking and security become large expenses. Local zoning and building codes also play an influential role. Some municipalities have subdivision ordinances which require approval of the plan by the city council or planning authority.

Often the market in which an existing building is located will determine its future use. Changing use or subdivision of a building will be dictated by the size demanded by future users. For example, a 500,000 square foot facility would accommodate five 100,000 square foot light-industrial uses; twenty 25,000 square foot offices; fifty 10,000 square foot retail shops; or five-hundred 1,000 square foot residential apartments. The market may or may not support these various potential uses. A key consideration in redevelopment is the ability to lease the vacant building. This risk cannot be ignored, and investors must consider the supply and demand of the market and structure debt carefully.

Since abandoned or underutilized industrial landscapes are often remote from the center city and therefore the development market, they are often perceived as impediments to economic revival and tend to diminish the perception and the value of property in close proximity creating a false perception that an area is neglected dilapidated and crime ridden. This was evidenced in the Studebaker corridor. However, if the risk of adaptive reuse of an industrial area is undertaken, it can often redirect the economic pattern of the area, increasing the values of neighboring properties as well as its own.

While many developers and owners may argue for the clean slate advantages of greenfield development, there are cost advantages of reuse. These include lower building costs, no need for demolition and associated costs, and a shorter development period, resulting in fewer finance charges. Some developers feel that reuse is far more affordable than building new. Developers such as Gough-Prime, a firm which has been involved in the rehabilitation of heavy industrial sites in the Midwest, feel that

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[97]Robert Sheridan, "Turning Old Factories into New-Style Industrial Buildings", Urban Land, February 1990, p. 3.

"new construction costs two to three times more than reusing an old building. By rehabilitating, there is a savings of $40 to $60 per square foot."[98] And demolition costs should not be discounted. In the case of Dodge Main, which was reinforced concrete and steel substructure, the costs of demolition and especially the disposal of resultant materials to remote suburban sites was very high. Building demolition alone can run $3 per square foot, not considering sub surface demolition or transport costs for disposal of materials.[99]

There are also tax advantages associated with a renovation strategy. Under current tax law, any industrial structure more than thirty years old is eligible for some form of tax credit, either in the form of five year amortization or accelerated depreciation for the cost of rehabilitation activity. Certainly the industrial landscapes which are considered obsolete and candidate for reuse are of this age or older. In addition, industrial structures which carry National Register status can qualify for a full 20 percent investment tax credit on the cost of rehabilitation.[100] The National Park Service poll reports that two thirds of property owners would not have proceeded with conversion projects without some sort of tax incentive.[101] Conversely, historic designations offer disincentive for the demolition of historic structures. If demolition is pursued, deduction of the cost is not permitted and the owner cannot take a loss from the undepreciated life of the building.

The considerations of the private sector, particularly the property owner, often dictate the disposition of industrial landscapes. In the case of the corporation, the industrial site is imbedded in the corporate balance sheet, and retrofitting, closing, moving, or building a new plant all have massive implications to that balance sheet. Generally, if a property is designated as surplus, the property owner with an underutilized asset would

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[98]"Revamped industrial buildings tap a reviving market", Building Design and Construction, September 1989, p. 25.
[99]Conversation with Donald Hunter, November 1990.
[100]See G. Timothy Haight, "After-Tax Rates of Return of Historic Rehabilitation", The Journal of Real Estate Development, Vol.4, No. 1, Summer 1988, p. 57-67, and David C. Gruenwald, et al, "Preserving America's heritage: the rehabilitation tax credit-Part 2", Real Estate Accounting & Taxation, Winter 1988, p. 23-32.
[101]John Morris Dixon, and Thomas Fisher, Daralice D. Boles. P/A Inquiry: Reusing Industrial Buildings/New Products from Old Mills, Progressive Architecture, November, 1985, p. 94.

like to realize the cash value of the asset, and put that value to work more effectively. Depending upon the tax and ownership status of the facility, it may be of an advantage to the owner to sell the property outright, sell and lease back part of the property or to participate in the redevelopment of the property. The property owner is also concerned with issues of practicality, ease of disposition, the public affairs aspects of redevelopment or disposal, the economic return that will be realized, the cost of redevelopment or demolition, and optimization of property value.

FORMAL CONSIDERATIONS OF THE SITE AND ITS STRUCTURES

The formal issues of industrial reconstruction often revolve around the issues of changing use. Industrial structures and sites are designed for specific uses and inserting new ones requires additional formal considerations. While industrial landscapes can be reused for other industrial or light industrial purposes, which require a certain amount of retrofitting, the biggest consideration comes when the use is changed to a new category. There are, generally, differences to be considered in regard to specific form and performance issues, such as ceiling heights and bay sizes, parking ratios, separation of utilities and life safety elements. In addition, if the renovation involves a registered building, the Secretary of Interior's standards offer guidelines for the renovation of the structure, building new additions, and maintaining the relationship between rehabilitated buildings and their original environment. Issues can be divided into categories of form, relating to the architectural and mechanical system performance issues of the structure; and site, which relate to site preparation, site utilities, access and landscaping. Environmental remediation is addressed in a separate section.

Form

Industrial facilities tend to be built as very sturdy structures but with little insulation. This is an important issue in regard to energy conservation and use. However, the characteristic exposed construction lends to easy alteration. Insulating the inside of the building shell and installing storm or double-glazed sash are the simplest conversion strategies. Passive solar heating, cooling and daylighting are advantages to industrial buildings because of their operable windows, massive construction and open floor

plans. The large, flat roof areas can accommodate, unobtrusively, active solar collectors. Exterior materials often require cleaning, or restoration and the structure must often be waterproofed. Industrial buildings generally possess a profusion of freight doors, but lack main entry doors required for public use. This can be addressed within the structural frame or with the addition of a covered entry or canopy. In addition, original windows may require replacement. Change of use also generates interior renovation issues and certain industrial forms tend to lend themselves to certain reuse categories. Because of the open floor space and high ceilings, warehouses convert well to residential and commercial loft space. Certain multi-story manufacturing buildings can be retrofitted for office, business incubator or light manufacturing, mini-storage space, and showroom uses. Artists studios and galleries can benefit from the large amounts of glazing, shopping and convention centers benefit from the heavy construction and long spans. Voluminous interior spaces can also be retrofitted with the insertion of new floor plates within the original volume in order to accommodate new uses. Sometimes, older industrial structures are considered troublesome to renovate because of their inherent design features. Depending upon the new use desired, some industrial structures, particularly multi-story structures, are perceived as too difficult to convert. The narrow bays and close column spacing, low ceilings heights, inadequate vertical materials handling and congested sites associated with these structures are perceived as obstacles too obtrusive to justify reuse. Recent studies at the university of Michigan have shown that retrofitting is indeed cost effective.[102]

Interior renovation also often requires the rebuilding or installation of mechanical systems for heating and air conditioning, electricity and water sewer and fire protection. Electrical systems must accommodate the new requirements for computer and telecommunications equipment. New fire code regulations now require electronically supported sprinkler systems, enclosing stairwells for fire protection, new elevator regulations, and a host of federally regulated occupational safety and health regulations, such as removing asbestos.(OSHA) Requirements must be met before new uses are to

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[102]See Robert E. Johnson, Architecture and Planning Research Laboratory, The University of Michigan, "Revitalization Strategies for the Studebaker Corridor-Final Report, South Bend, Indiana", September 1987.

be put in place. All are expensive and therefore, serve as primary reasons for delaying or forestalling the reuse of industrial structures.

If more than one new use will supplant the original, then separation of utilities is required in order to provide for the equitable distribution of costs among tenants. Some systems are easier to separate than others. Generally, heating is easier, with systems such as hot-water easily monitored with flow meters, enabling the prorating of heating costs among tenants. Since most states prohibit the submetering or reselling of electricity, systems to measure individual tenant use may be of advantage over bringing individual power to each user. Subdivision of the sprinkler system requires temporary shutdown, and therefore, notification of the building's insurer.

Site

Generally, industrial landscapes are sited in a way which emphasizes security, not public entry. These issues of access and visibility must be addressed. Often, industrial sites, particularly those in suburban areas which predate their context, are constructed with little consideration to context, particularly if the industrial structures are adjacent to residential or commercial districts. The landscape surrounding industrial structures is generally paved. Reusing these areas for parking or changing the paving materials for other use is an option. Removing pavement and planting natural landscaping, such as trees and grass, is sometimes necessary and desirable when changing use. Site amenities such as lighting and street furniture may also be required. If the site is subdivided among different users or tenants, site improvements such as driveways, additional loading docks or other delivery facilities and expanded parking may be required.

COMMUNITY CONSIDERATIONS

Communities in which industrial sites lie have several issues of concern around the reuse of such a facility. Certainly there are issues of tax base, as many industries provide large percentages of the property tax for the community in which they reside. In some cases, particularly when the development market for industrial land is weak,

the community must become involved with the property owner in catalyzing the reuse potential for the site. Economic incentives such as below market interest rate loans, tax credits and job retraining can assist in this effort. However, this is a difficult situation, as the community is often financially handicapped by the loss of a manufacturing use, a use which will rarely be supplanted in terms of its tax contribution to the community. Issues of environmental clean-up, job retention and the issue of image-the extent to which the community is defined by the industry and its formal manifestation - can be both positive and negative. Often communities view abandoned and obsolete industry as blighting elements not worthy of investment, or representative of what they have lost, in terms of economic and community identity.[103] Communities are also concerned that redevelopment involve the public in some substantive way, respond to the community's planning agenda and the needs of the population, whether or not it means employment opportunities, appropriate physical response to context both in terms of use and aesthetics, effects on municipal services and other impacts from change of use, the phasing of redevelopment and issues of community and historic identity.

The primary consideration for the workers or union at an endangered industrial site is that of job retention. Planner and Professor John Mullin discusses the situation in regard to the textile industry in New England. "It is extremely difficult for any public official to tell a crowd of several hundred laid-off textile workers that their occupation has no future in their home town. It is also saddening to watch many of these workers take early retirement, settle for lower wages in a service job, or simply drop out of the economy."[104] However, Mullin points out that the economic concessions such as subsidies, lower wages and tax breaks that a workforce and community subjects itself to in order to retain jobs are often just delaying the inevitable. Displaced workers often require additional school or formal retraining if they are going to be reemployed by the new industrial or commercial uses which replace the former employer. Without such retraining, these workers run the risk of never reentering the workforce. A 1985 study on dislocated textile workers during the past three recessions by the Federal Reserve of

[103]Conversation with Nancy Watkins, Wayne County Parks Department, 26 November, 1990.
[104]Mullin, John R and J. Armstrong and J. Kavanaugh, "From Milltown to Milltown", APA Journal, Vol. 52, No. 1, Winter 1986, p. 56.

Boston found that jobs which were lost were never recovered, they simply vanished.[105] In order to emphasize the need for retraining, Mullin cites a study by Bluestone and Harrison which showed that between 1958 and 1975, fewer than 3 percent of displaced textile workers in New England were hired by the region's new high-technology employers.

RECLAMATION OF THE NATURAL ENVIRONMENT

Currently the single most significant factor, both in terms of program and cost, in the reconstruction of industrial landscapes, is the issue of hazardous and toxic waste site problems. The issue is multivaried: waste products exist on industrial sites; their identification is required; mediation is inevitable; clean-up is time consuming and costly; and, technologies are developing to address them, as all of importance to the reconstruction process. Reclamation of the natural environment is generally accepted as a quid pro quo for reconstruction activity. Over the last decade in the United States, extensive federal, state and local legislation has been put into place regulating the release and clean-up of hazardous materials. CERCLA and SARA have bred tough state and local laws, but also have helped to generate a framework for reclamation and the new technologies which will accomplish it. State laws often bind the property owner to, at minimum, reveal the results of an environmental assessment, and in some cases, assume all costs in a clean-up. The private sector has also responded. Often, lending institutions demand assurance from developers that land is free of waste before they lend, and buyers often demand that property owners assume responsibility for the clean-up before they purchase. The requirements of identification and clean up of environmental hazard, both at the federal and state level, often require extensive time and cost, delaying both the decision to pursue a reconstruction strategy and the reuse process itself.

Almost all industrial sites contain some form of environmental hazard, either in the soil, the ground water or in the structures on site. These hazardous materials range from underground storage tanks, asbestos, PCBs, or heavy metals such as lead and cadmium. Of the 66,000 chemicals used in the United States today, the EPA lists

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[105]Ibid, p. 57.

60,000 as potentially hazardous to human health. The EPA defines toxic wastes as those materials that are ignitable, corrosive or dangerously reactive. Such materials are generated from things as obvious as atomic weapons manufacture, to those as seeming innocuous as mercury in exhausted watch batteries.[106] On industrial sites, hazardous and toxic contaminants must be eliminated or contained before redevelopment can proceed. However, technologies have been developed over the last decade to for cleansing the land and making it safe and viable for reuse. There now exist options to the now conventional approaches of excavation, clay or top soil caps. Clean-up is a long term process, often requiring many years of treatment. However, most developing technologies can be employed during the reconstruction process, and do not necessarily have to impede it. By 1989, the EPA had examined thirty clean-up technologies under its innovative technology SITE program. Each of the technologies is currently commercially deliverable. Of the thirty technologies examined, "eight used heat, four were biological, six locked the poisons in solid masses, three used chemicals, six used physical forces, and three combined several of these methods."[107] Heat methods include *vulcanisation*, which uses the ultraviolet energy in sunlight as a cleansing agent to purify industrial waste in groundwater, and *in-situ vitrification (ISV)*, which converts contaminated sludge into a crystalline lava by using intense heat generated by an electrical network in the ground. A mobile *computer-controlled pyroplasma arc unit* contained in a 48 foot trailer uses an electric arc in an oxygen-deficient atmosphere to produce very high temperatures (9-36,000 degrees Fahrenheit) that break down chemicals in waste to their atomic state. The recombined gas product is then scrubbed with caustic soda to neutralize and remove by-products. In contrast, a *low-temperature, indirect heat process* is used to remove highly volatile organic contaminants from the soil, followed by high-temperature incineration of exhaust fumes in an afterburner. The process can remove eight tons in an hour. Biological methods include the application of *proprietary, naturally occurring nonpathogenic organisms* ("Sludge eaters") which involves accelerated growth and the organisms and plantation in the water/sludge/soil matrix. The result is a systematic biodegradation of the contaminants over two to four months. A polymer made of *Nonliving algae* is used to remove toxic metals by forcing the metals to bind to them and be absorbed by them,

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[106]Forrest Wilson, "Cleansing the Land We Build Upon", Architecture, August 1989, p. 97.
[107]Ibid, p. 98.

allowing the saturated polymers to be removed and the metals to be disposed. Solid mass technologies include the creation, through the blending of contaminated soil with sludge, cement and Chloranan, of *a concretelike mass* that immobilizes contaminants which can be reprocessed and repoured for foundations. The material is almost impermeable and has withstood four hundred hour freeze-thaw cycles without degradation. *Freezing* contaminated water has also proven successful in separating and removing toxics. Methods which use physical forces include a technique which removes volatile organics from soil by using *steam and heated air*, a reverse geyser of steam ala Old Faithful. The "geyser' is injected into the ground through drills that have been modified to allow the explusion of steam and air to strip contaminants and bring them to the surface. On the surface, shroud traps and transports the volatiles to a treatment trailer where the water and organics in the gases are condensed, separated and recovered.[108]

The issue which emerges out of reclamation technology is the consequences of their application. Though they do indeed make a site safe for human habitation and establish a solid basis for reuse, they also change the very nature of the earth upon which we build. As Forrest Wilson observes, "obsidian beds and chunks of artificial stone conceivably can serve as solid building foundations, but they limit the use of the land thereafter. Responses to natural action, such as the release time of toxic gases, response to ultraviolet rays, and thermal cycles, are not known."[109] He projects, however, that a new building science will emerge, out of necessity, from these technologies.

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[108]Ibid. These methods and the firms which developed and currently deliver them are described in detail by Wilson.
[109]Ibid, p. 100.

2. Inspirations and Limitations of Current Approaches

Possibly the most important, though obvious, lesson to be gained from the examples in both the European Community (EC) and the United States, is that the entire industrialized world is experiencing similar effects of the restructuring of the global economy, the automation of production processes, and the relocation of industry to areas characterized by low production costs, whether it be Singapore in the Pacific Rim, Spain in the EC, or Mexico in North America. For this reason, vast amounts of 20th century industrial infrastructure lies obsolete, poised for abandonment, demolition, or reconstruction. The good news is that reconstruction of these obsolete industrial landscapes is occurring en masse. We have discussed several examples which offer encouragement for the prospect of reconstruction. From this point, however, there exist significant differences, between nations, between various bases and motivation for these efforts, in regard to alliances, techniques and success, and the way in which these successes are measured.

Another obvious observation must be made in regard to the purposefulness with which the EC is pursuing reconstruction in comparison to the United States. The motivation for this activity is primarily the fact that the EC faces a land resource shortage. The EC is densely built with little wilderness, limited agricultural land and few tracts of open, developable land in proximity to urban areas. The EC has an extremely limited land resource, in comparison to what we in America consider to be an endless and disposable resource. Because of this, industrial sites which are underutilized or abandoned in Europe are generally in great demand for redevelopment. In the United States, there is no shortage pressure for new sites, so an abandoned industrial site is largely viewed as stigmatized by age, obsolescence, inflexibility, toxicity, and high renovation costs. Corporations prefer to ignore these sites for the greenfields of the suburbs, and, more recently, rural areas. High speed transportation technologies threaten to open the American frontier to this fate as well. The luxury of our birthright- the vast Amercian continent- historically open to exploitation for both personal and financial opportunity, has bred a national ethic which facilitates the contamination of the virgin soil, rather than pursuing the reuse of already contaminated sites. To an extent, this luxury may be changing, as we as a nation grapple with our collective

notions of environmental preservation and the real definition of the cost of externalities such as pollution.

THE EUROPEAN COMMUNITY

In Italy, the futures of both the Fiat Lingotto and the Pirelli Bicocca seem to be positive. Both of the cases discussed share similar characteristics. The property owners are premiere Italian manufacturers, who have been in strong financial positions in recent years. Both sites are located in Northern Italian industrial cities-dense urban areas where land value and demand for land are both very high. Both benefit from a traditional interrelationship between the corporation and the "commune", and assumptions of corporate citizenship and social responsibility that do not exist in a market driven economy, or a politically and financially conservative climate. Both recognized the importance of the historic role of the facilities, culturally and economically, in the reconstruction proposal. And both called upon the disciplines of Urban Design and City Planning in soliciting direction and ideas for the reconstruction program.

Though both companies solicited proposals for reconstruction through the form of an international consultancy, or competition, the end results were not the same because of a fundamental difference in methodology. Pirelli pursued the competition with a very detailed program for the site-that of a Technology Park-giving the participants parameters on which to base their schemes. The Lingotto competition was open-ended, allowing the participants to submit their individual preferences. The later approach produced disparate and less useful results.

In France, the Schlumberger-Montrouge case is an example of a company that, while looking for a new site for a new building, came to realize that there was value in examining their existing industrial site for reuse potential. Another important lesson from France is that nature can be forgiving of the exploitation associated with industrial uses. In addition, the Federal government and the private sector were partners in these efforts, which involved the design professions and embraced industrial artifacts as important to the reconstruction strategy.

The important lesson from Britain that emerges out of the Docklands development is that the zeal for economic development by the public sector does not necessarily yield good architecture or urban form, nor does it yield benefits to the immediate community such as affordable housing and jobs.

THE UNITED STATES

In the United States, the vast quantity of industrial landscapes which no longer serve their original purposes, are, therefore in transition, project a rather desperate state of affairs. In regions of the Midwest and the Northeast, the traditional locations of heavy industry, the issue seems overwhelming. But not all is so dire. Some industrial sites, particularly waterfront sites, are in particular demand for reconstruction. Reconstruction activity involving obsolete industrial waterfronts across the country, from Boston to Portland, is healthy. In addition, industrial sites which are located in hot development markets, as evidenced in Chicago, are in demand for reconstruction. However, as we have seen, the majority of industrial sites, particularly those of basic industries, such as steel and automobile, are located in economically depressed markets, with great supply and very little demand. In addition, the stock is wrong for the current market, which demands smaller units of space. The oldest 20th century infrastructure is in the worst circumstance, as it is perceived as less desirable and more expensive to retrofit than the later single story sheds, which have become prime candidates for subdivision for light industry and warehousing facilities. However, older multi-stories are often located in higher demand downtown markets, and, as discussed, can be retrofitted cost effectively, either with vertical materials handling technologies for new industry, or through convention renovation for other non-industrial uses. The single story shed represents the glut of space, therefore competition and is generally located in the suburbs, which is located in low demand market.

The subdivision strategies show that reconstruction is possible and can produce hidden economic value in these sites. It also reinforces that the issues of environmental hazards and toxic clean up are a real part of the process. Clean up is expensive, but it is also legally mandatory and technically achievable. There is, in most states, flexibility in

the determination of where the liability and financial burden is ultimately placed. Negotiations and environmental remediation can be accomplished between the owner, the potential buyer and even the public sector. However, the market driven approach which has been used increasingly as a reconstruction strategy does not necessarily produce, as is its intent, the highest and best use for the property, except, perhaps from the view of the property owner and maximum economic value. The market does not necessarily address the issue of industrial obsolescence in a socially equitable or desirable way. Particularly if a region is economically depressed, the public sector can step in and stimulate action. Various examples of state and federal level assistance are often required to catalyze or implement reconstruction activities. These efforts can have positive results, as we saw in Indiana, and negative, as we see in the Poletown example.

The federal level NPS industrial heritage effort has had positive social and economic effect in the regions where it has been applied. It has provided an open, participatory process for which disparate groups with sometimes antagonistic points of view have come together on a common platform-their common history and create a framework for planning the future. It has produced comprehensive and coordinated plans for the conservation of significant natural, cultural and historical resources which are endorsed by all participants. It has provided technical assistance and strategic financial investment in order to spur leveraged private sector investment in economically depressed communities.

However, the economic effects are selective, not broad, as is evidenced in Lowell, Massachusetts. Development has occurred selectively, but the traditional business district has not necessarily experienced dramatic change. The inherent limitation in this economic development strategy is evident. It can only be applied in regions or cities which have significant historical or cultural resources. For every one Lowell or Lackawanna, there are hundreds of other communities with obsolete industrial infrastructure with local historical and cultural value, but few that approach the level of national significance required to qualify for this consideration and designation.

Chapter III: A Proposal for the Future of the Rouge

"...learn from the past to improve the future."[1]

Henry Ford II
Former Chairman of Ford Motor Company

"Unless you know where you came from you don't have the sense of direction that will lead you to the goals you seek."[2]

Walter Reuther
Former President of United Auto Workers

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[1]Lorin Sorensen, The Ford Road 75th Anniversary-Ford Motor Company, Silverado Publishing Company, 1978, p. 187.

[2]Ford UAW Department, The Road We've Travelled, ca. 1960's. Source: Collections of the Archives of Labor History and Urban Affairs, Wayne State University Archives.

A. WHY THE ROUGE?

A candidate reconstruction planning is the Ford Rouge Complex in Dearborn, Michigan. In a state of transition and uncertainty about its future, poised for reconstruction, it is now at the center of an economy which has been wholly dependent on the cyclical nature of the automotive industry and tied to its convulsions, relocations and downsizing. The Rouge is also in the midst of the region's economic and social strife that includes the recent abandonment and demolition of several major pieces of the industrial landscape, as well as disparity of wealth and investment in the suburban ring, and a concentration of poverty and disinvestment in the center city. The Rouge occupies a 1200 acre site adjacent, on one side, to Detroit- a declining city,-and on the other to one of the largest, most successful mixed-use developments in the country- Fairlane in Dearborn. The market in southeastern Michigan is characterized by a glut of industrial land and infrastructure which is obsolete and not in demand. This obsolescence is based on a declining industrial base and economic development strategies which have emphasized the service economy. The land itself, probably contaminated from years of industrial use, is of low economic value. It is zoned industrial, and it carries the low economic value that industrial land dictates, including, low site preparation and construction costs dictated by the low expected lease rates. Based on these existing conditions, can a redevelopment approach for this site create

new economic and social value? If a strategy which embraces a multidimensional notion of value, emphasizing "information value", is employed, the answer may be in the affirmative. Considered in this way, the Rouge represents a major redevelopment opportunity. Nowhere is there a more potent site for such a redevelopment; nowhere in the region does the confluence of these three notions of value occur in a more powerful way. The infrastructure that exists there could not be cost effectively reproduced today. There is no other location in the region which is better served by modal options or better positioned in relation to such options. Most importantly, there are few other sites in the world which are so charged with historic and cultural meaning which is of significance at a local, national and international level, and where the juxtaposition of 20th and 21st century industrial landscape and technology meet. In order to support this argument, the "story" of the Rouge-its context and its history-is an important factor in establishing the basis for the reconstruction approach.

1. Physical and Economic Context

The urban context of the Rouge is that of the Southeastern Michigan and the Detroit Metropolitan area. The Rouge site is located in Dearborn, Michigan, on the Rouge River, 3 miles north of the Detroit River and 10 miles from Downtown Detroit by expressway and at the western end of the industrial belt of the former Detroit Terminal Railroad. (**Figure 14**) The community context of the 1200 acre site is bounded on three sides by Dearborn and on the South by the community of Melvindale. Specifically, it is bounded by the Detroit Industrial Freeway (I-94) to the northwest, by Rotunda Drive to the north, by the Cheasapeake and Ohio Rail Road right-of-way to the east, by Shaeffer Road to the west and by the Rouge River to the south. To the north is the central business district of East Dearborn, which contains City Hall, to the east is the Salina neighborhood which borders Detroit and the largely industrial Boynton and Delray neighborhoods, a largely residential neighborhood inhabited by an Arab American population, to the south is mostly industrial uses and the Detroit River and to the west is an area which has been redeveloped in recent years for light industrial uses. (**Figure 15** identifies immediate adjacencies) The urban context for the Rouge is actually multi-dimensional, including the physical social, political and economic context of Dearborn and the Detroit metropolitan area, and the economic context of the nation

Figure 14: Urban Context of the Rouge

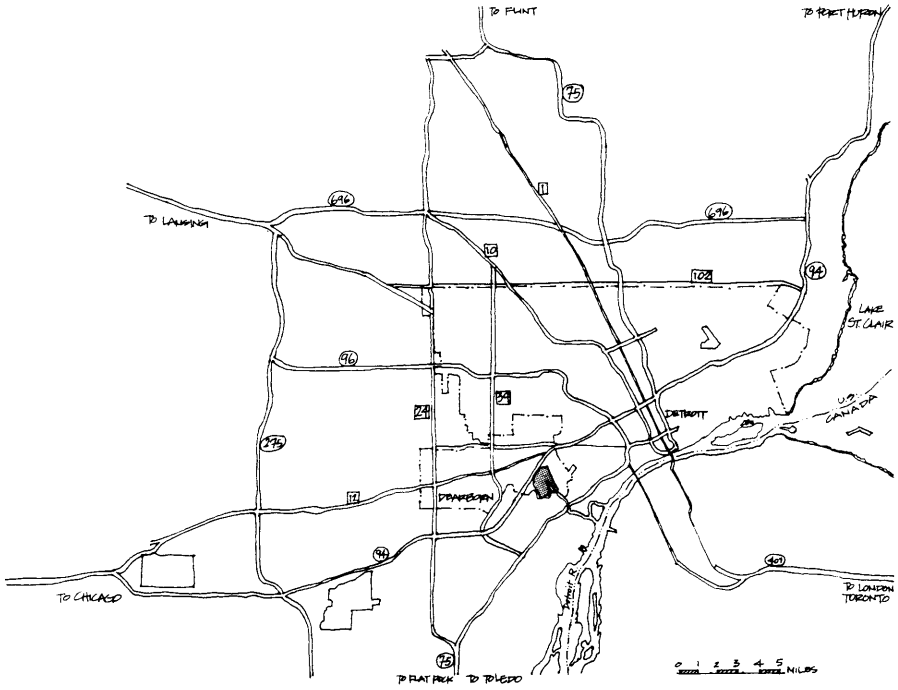
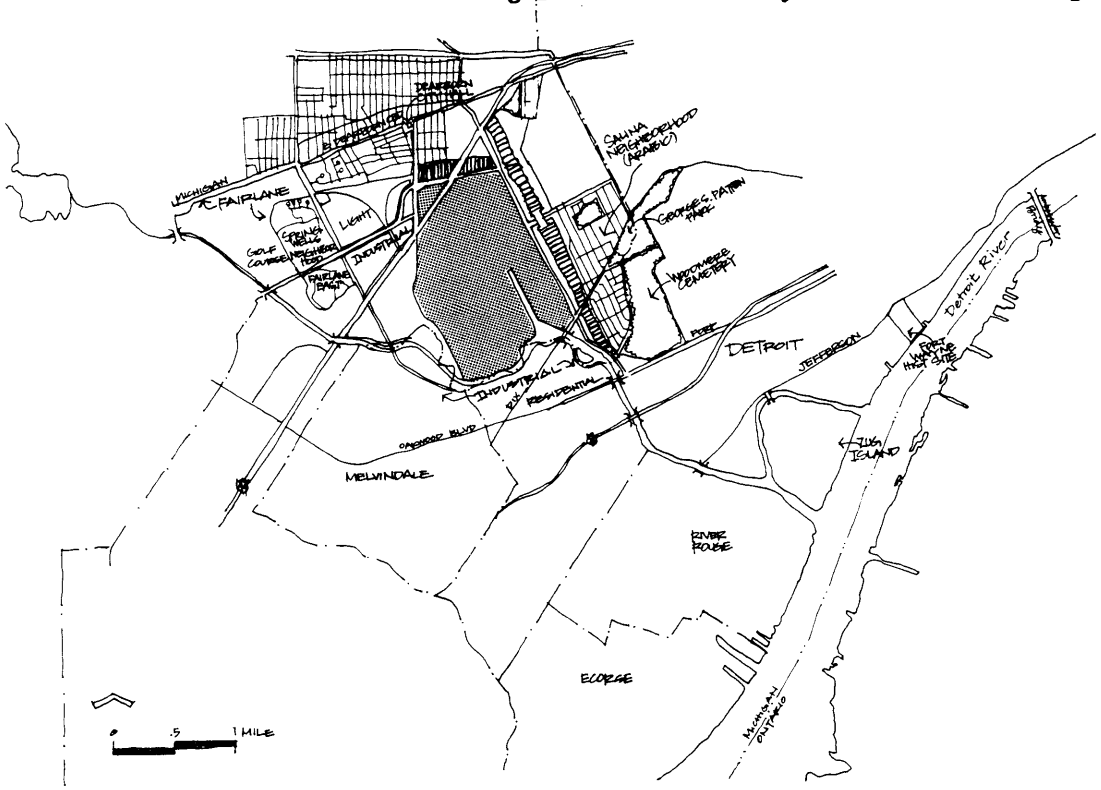


Figure 15: Community Context of the Rouge



and the world. This is true not only because of its physical size as a piece of the city of Dearborn, but its role in the urban history of the region. In addition, the Rouge has had extensive economic influence on the greater Detroit metro region and its implications on the national and international level in regard to its role in the development and current state of the automobile industry.

THE URBAN CONTEXT: THE DETROIT METROPOLITAN AREA

While Dearborn is the immediate context for the Rouge plant, the larger metropolitan area of Detroit is also of primary consideration in the story of the Rouge. The Rouge as well, has had profound impact on the formal and economic development of the region. Detroit, Michigan has been a French military outpost, fur trading and later industrial shipping center for the great lakes, and the automotive capital of the world. It has been nicknamed The City of the Straits, The Paris of the Midwest, the Arsenal of Democracy, Motown, Murder City, Motor City. Detroit has been known to the world for all of these attributes and all of these appellations, though it is known throughout the world chiefly as an industrial city. Detroit is the sixth largest city in the United States, the major industrial center of the nation's heartland, the headquarters of the automobile industry which directly or indirectly employs one out of every six Americans. Despite the geographical dispersion of auto production, the city is still perceived as the home of the domestic auto industry, with the headquarters of the big three-General Motors, Ford and Chrysler, as well as Honda of America, all located in the metropolitan area. What is less known and less obvious about this midwestern industrial city is that it is divided by dramatic social and economic problems and its heritage of racial and class segregation, both social and spatially, which persists to this day. But Detroit's problems are not new, they are simply the legacy of an institutionalized pattern of economic, social and physical development ..

Twenty-five years after the infamous riots, Detroit is still plagued with urban problems in an extraordinary way: unemployment, residential decay and abandonment, inadequate schools and healthcare, high crime rates, depopulation, disinvestment, spatial inequality of wealth, industry and commerce, chronic racial and class segregation, loss of economic and employment base, contentious and fragmented

regional politics. Detroit, at its peak population in the 1950's was home to 2 million, 80% of which were white. In 1960, 70% of the 1.67 million in population was white. Today the city has less than 1 million residents, and recent census data projects that over 70% of them are black. The social consequences of this "dying city", as the Detroit News described it in a series of articles published in 1985, are "declining neighborhoods, white flight, crime and economic problems and the ever present feelings of racism."

However, Detroit's central city cannot be examined in a vacuum. It must be evaluated in the context and in concert with the greater metropolitan area, one ironically enough, that is one of the richest regions in the nation. For the last forty years, a momentum of critical mass investment in the suburbs and corresponding disinvestment in the downtown has been difficult to reverse. Investments in the suburban ring around the city continue to perpetuate themselves and continue to deplete the commercial and cultural reasons for inner city experiences. Detroit and its suburbs combine to form a metropolis where 4.4 million people reside. The center city, where fewer than 25% of the population lives, contains 85% of the regions blacks. The suburbs, by contrast, contain 75% of the population, and 88% are white and about 4% are black.[1] In a recent University of Chicago study, Detroit was labeled the country's most segregated city. A 1987 National Urban League study used the term "apartheid" to describe discriminatory patterns in Detroit. It is difficult to make such a comparison, because discrimination is not so institutionalized as to be considered law, though the statistics portray a situation which could well represent an institutionalized policy, no matter how covert. B.J. Widick, a longtime educator and activist in Detroit, has postulated that the city's destiny remains in the grip of two overwhelming forces-social and economic-that make the future seem bleak and prevent real social and economic parity. "One social force, like an incurable cancer, is the persistence of racism, manifested in black frustration and rage and white fears, which prevents healthy race relations."[2] His second judgement is more controversial. It suggests who is responsible for this situation. "Above all, there is a reticence to analyze the second powerful force-besides

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[1]City of Detroit Master Plan, 1990.

[2]B.J. Widick, Detroit: City of Race and Class Violence, Detroit: Wayne State University Press, 1989, Revised Edition, preface.

the race issue-which negatively affects Detroit. It is the impact of the decisions of the power structure-the auto industry leaders, the big merchandisers, and the real estate investors-to shift the bulk of its plants, stores, investments, and activities outside the city."[3]

This pattern has also been institutionalized in the workplace. Except for Ford, which some say used large numbers of blacks as an anti-union ploy, none of the auto companies hired many black workers until the labor shortages of World War II. And although Ford employed blacks, it was not acceptable for them to live within Dearborn. Ford established the suburb of Inskster for his black employees at the Rouge and to this day, the majority of black who work at the Rouge live in Detroit or other suburbs. During World War II, blacks mainly from the south, were hired by the thousands. An example is Chrysler, where there were zero blacks in 1941 and 5,000 by 1945. Since Ford and GM had moved most of their operations out of Detroit center city, the bulk of the new black workers in Detroit were employed by Chrysler. They invariably got the worst and and most hazardous jobs: the foundry, the body shop, and engine assembly. These were the jobs requiring the greatest physical exertion and were also the noisiest, dirtiest and most dangerous in the plant.

In addition to race relations, the city also suffers from economic problems. A monolithic Industrial/Economic base exists, the result of the conversion of the originally diverse economic base of the city to one wholly dependent on the automotive industry, and therefore inescapably tied to its cyclical characteristics. Detroit's current economy is largely based upon one export industry: motor vehicle production; and three complementary industries: nonelectrical machinery, fabricated metals, and primary metals. Most of the machine tools, foundry products, metal stampings, machinery, and sheet steel these complementary industries make end up in the auto plants, and most of the service industries that meet the needs of urban workers and residents are focused here as well. So for most of this century the city's economic prosperity has followed that of the car companies. The siting of industry has largely dictated the contemporary spatial structure of the city. In addition, the dominance of the

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[3]Ibid.

private automobile as a mode of transportation in Detroit has dictated its spatial structure, emphasizing highways and de-emphasizing public transportation.

Though there is much discussion and disagreement about how to improve Detroit's situation, some regard that the lack of regional governance and policy is at the root of the city's problems. The region's basic political structure-based on fragmented, fiscally independent municipalities-encourages economic competition and discourages cooperation. As June Thomas has observed, "combined with the racial estrangement that exists, this economic isolation becomes particularly pernicious, hardening political walls and discouraging regional efforts." The Southeastern Michigan Council of Governments (SEMCOG) is primary vehicle for intergovernmental cooperation above the county level. It serves a limited role because of fear on both sides--the suburbs don't want to financially subsidize a dying city, and the residents of Detroit do not want to give up political control of their destiny. SEMCOG is involved in regional economic development and regional planning data analysis. More recently, the State of Michigan has stepped in to encourage a balance of investments in the Metro area. For example, Chrysler Corp was convinced to invest equally in both the suburban Auburn Hills facility and the new Jefferson Avenue Plant in the city. In addition, a new group, the Greater Detroit Economic Development Group, the membership consisting of state, city and several counties, markets the Detroit area and is developing legislation designed to coordinate regional infrastructure investments. But most in the area feel that a more powerful regional government, especially in regard to economic development issues is required. Proponents for regional government point to situations such as the recent proposal for a $250 million, 230-store "megamall" that will soon be built in Auburn Hills. The Auburn Hills city council, representing less than 0.4% of the 4.4 million people in southeastern Michigan, voted on perhaps the most important land use decision of the decade, one that will alter the commercial and retail patterns of the entire region.

In order to portray a general profile of the city's current situation, the following attempts to summarize the characteristics of the city both statistically and physically. The statistical and physical profile of this city are not only facially shocking, they

represent a state of affairs unique in severity among all the major urban areas in the nation.

Statistical Profile

Huge population shifts to the suburbs have helped to shrink the city. Between 1950 and today, the city has lost half of its population. In the same time, metropolitan Detroit saw the creation of boomtowns, suburbs whose affluence can be compared to the wealthiest areas of the United States. This spatial distribution was reinforced by the depopulation of the center city. Detroit's population peaked in 1952 at 1.85 million. By 1960, the population had fallen to 1.67 million and by 1980 the city lost another half a million, while the surrounding suburban communities gained over a million new residents. In 1960 the city was home to 43% of the area's residents, but by 1980, that figure was down to 27%, with the remaining 73% residing in the suburbs. The 1990 census predictions are 970,000, a figure currently being disputed by the city. If the city's population if verified at below one million, it will lose important federal funding and also its right to levy certain taxes under Michigan State law. This exodus has not been limited to the white residents of the city. Southfield has been nicknamed "little Detroit" with its percentage of black residents growing in the post riot era along with other suburbs. The movement of population also signaled the movement of capital and value. In 1960, the city represented approximately 50% of the area's value, but by 1980, that had dropped to 15%, while some suburbs, such as Oakland county, had experienced property value increases of nearly ten fold.

For the last twenty years, Detroit is ranked as having the nations number one position in the nations largest metro areas in terms of disparity in household income between center city and the suburbs. Widespread inequality exists between blacks and whites in metro Detroit which is directly related to the uneven spatial distribution of blacks and whites in the metro area. The uneven racial distribution is also related to uneven economic distribution. Whites are over represented in the super wealthy Oakland county and blacks are overrepresented in the central city and in Wayne county. Class inequality, with higher educated, higher wage earners living in the outlining suburbs. This segregation between wealth and race has had negative economic consequences for

Detroit's blacks. Employment opportunities are not available and unemployment is high in the central city. Disparity also translates to lower quality housing and lower home ownership rates. Vacancy and Abandonment rates are also higher.

Other large US cities have the same problems as Detroit, and in some cases they're worse. Statistically, Washington, D.C. has more murders, L.A. has more gangs, and New York has more racial violence. But in no other city does one see the dichotomy of two worlds, one poor and black and one wealthy and white, each with their back turned on the other. Detroit's unemployment rate is staggering, National unemployment rate is 5.6%, Detroit's is 11.6%, though it is double that figure among blacks. Infant mortality is twice the national average, which is 10.1 per 1,000. In Detroit infant mortality is 19.7 per 1,000. And almost three times as many Detroiters fall below the poverty line. The National percentage is 12.8, in Detroit it's over 30%. In 1985 blacks in metro Detroit had the highest jobless rate 28.9 % of those living in the nation's 30 largest metro areas. For black youths 16-19, the unemployment rate was 60%. These figures are even higher in the city itself, due to the concentration of the black population. In the face of such dire economic conditions, the expansion of the illegal underground drug economy with its attendant problems of increased crime and murder, is inevitable. The city estimates 1.2 million guns, more guns than people. The billion-dollar a year drug business is now the biggest employer of young black men in Detroit. If you are young, black and male, you are more lightly to die by violence than by any other cause.[4]

Physical Profile

The planning and development climate of the metropolitan area can be characterized as an era of regional competition which can be dated from the great depression for the auto industry in the early 80's, and extends to the present day. The era is characterized by an emerging region of interdependent yet still relatively autonomous cities. This region, now dubbed "The Crescent" because of the way in which it surrounds the city, is the manifestation of the tremendous growth of investment and wealth in the suburbs.

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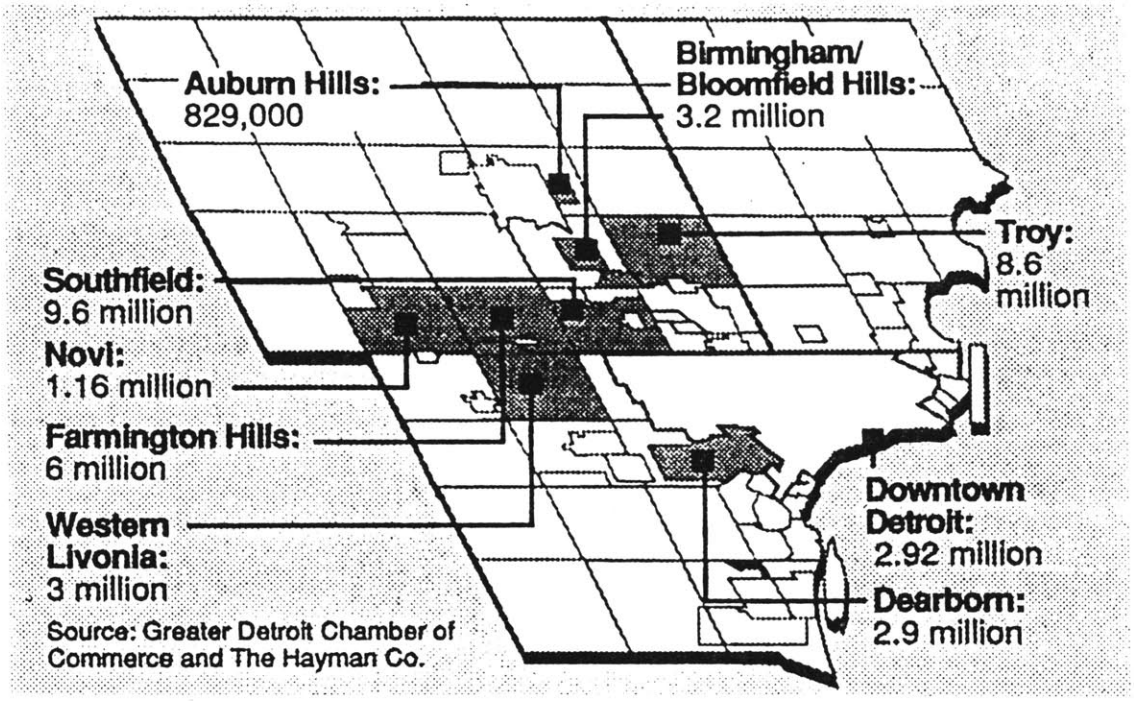
[4]These statistics are generally from the Transcript of "Detroit's Agony", ABC News Primetime Live, broadcast November 8, 1990.

Figure 16: Urban Villages in Metro Detroit



The Crescent consists of a series of suburban office and financial centers, or Urban Villages, in locations ringing Detroit. These Urban Villages, or secondary downtowns, begin in Troy to the north and continue through, Birmingham/Bloomfield, Auburn Hills, Southfield, Novi, Farmington Hills, Livonia and Dearborn. Together they contain more than ten times the office square footage of the center city. (**Figure 16**) At the same time, the city and downriver communities have continue to symbolize industrial decline and disinvestment.

A reconnaissance trip to downtown reveals the present physical character of the city. A string of pristine (and largely uninhabited) development along the Riverfront, and disinvestment, abandonment and devastation throughout the rest of the City, even within one block of Woodward Avenue. During the day, over 100,000 white collar workers occupy the skyscrapers and government offices of downtown Detroit; at night, however, the city resembles a ghost town. Areas surrounding the commercial core reveal a vast wasteland of burned or dilapidated and abandoned houses and gutted apartment buildings, empty idle factories and boarded up stores. The once glorious main arteries of Woodward, Grand River, East Jefferson and Michigan are shocking

sights, with blocks of boarded-up storefronts and abandoned buildings. Ze'ev Chafet describes Detroit today as a "fearsome looking place, with neighborhoods that resemble present day Beirut or post World War II Berlin."[5] Even visible from the city's main Avenue, Woodward, houses are burned and vacant. The city has lost 30% of its housing stock to arson or abandonment between 1960 and the present day. Within blocks of the CBD entire neighborhoods are littered with vacant lots and the carcasses of abandoned automobiles. The city now has the unique problem of annually having to clear 100 million square feet of shoulder high brush that has been called the "urban prairie". Once busy shopping streets are deserted, even Woodward Avenue at lunchtime on a Friday revealed only a few pedestrians. The once great Hudson's store stands vacant and decaying as do entire hotels, office buildings and apartment houses. Chafet observes, "the decay is everywhere, but it is especially noticeable on the east side, which has lost roughly half of its residents in the past thirty years-the most extreme depopulation of any urban area in America."[6]

In the midst of all of this deterioration, there are good statistics associated with the city. Detroit has one of the highest commercial occupancy rates in the US, remaining above 90% since the late 70's even with the addition of additional square footage. The city also has one of the lowest homeless rates in the country and the most affordable single family housing stock. There are a few pockets of stability and interracial harmony: Indian Village, northwest sections of the city such as Rosedale Park and the relatively stabile urban renewal neighborhoods Elmwood and Lafayette Park. Several neighborhood based efforts to stabilize communities, led largely by the black ministers of the city, have begun to emerge. There are some signs of economic life in recent years: new buildings downtown, such as Detroit Center and the proposed Comerica Tower, development on the waterfront such as Chene Park and Marina, and the restored Fox Theatre on Woodward and the opening of the Motown Museum on West Grand Boulevard. But most of these developments follow the pattern established at the beginning of the "Renaissance", providing facilities for high income groups and neglecting the poor neighborhoods.

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[5]Ze'ev Chafet, Devils Night: And Other True Tales of Detroit, New York: Random House, 1990, p. 23.
[6]Ibid, p. 24.

This attitude toward development is perhaps the best evidence of the lack of planning in Detroit. The present city administration's obsession lies with the development of the Detroit riverfront and occasional industrial projects to the virtual exclusion of planning for the conservation and revitalization of the city's sagging neighborhoods. The result of the city's style of planning or nonplanning is, as Mel Ravitz wrote, "the steady growth of two cities: one shiny new city being developed downtown and aimed at the upper middle class, and the rest of the city - old, deteriorating, and lacking adequate city services-from which residents are quietly leaving. Long range planning is largely absent in Detroit, except for that of the mayor, and his vision does not seem to incorporate the needs of the citizens of the city."[7]

A Brief History of the City of Detroit[8]

On July 24, 1701, a group of approximately 200 Frenchman and Indians, lead by Antoine de La Mothe Cadillac, completed their journey to establish an outpost of French power and influence in the Great Lakes. Their journey had begun at the head of the LaChine Rapids near Montreal forty nine days earlier. After a voyage of over seven hundred miles and 30 portages, by the "Northern Route" up the Ottawa River, into Georgian Bay and finally Lake Huron, the fleet of some two dozen canoes entered the "Strait,"- "D'etroit" in the language of the French. They established camp by selecting a commanding site for their fort on the right bank of the River, claiming the land in the name of the King, Louis XIV, for these settlers were to found a colony which would control the traffic of the Upper Great Lakes and become the nucleus of French power and commerce in the region. This colony was the beginning of the present day Detroit. Soon he selected the ideal site for a fort at the narrowest stretch of the river, where there was a level expanse of ground at the tip of a 40-foot clay bank, and a small creek ran parallel to the river, then turned and joined it. On this peninsula of high ground, Cadillac built *Fort Pontchartrain, Ville de Troit,* Fort Pontchartrain of the Strait, named after Count Pontchartrain, the Minister of the Marine at the time, and began his

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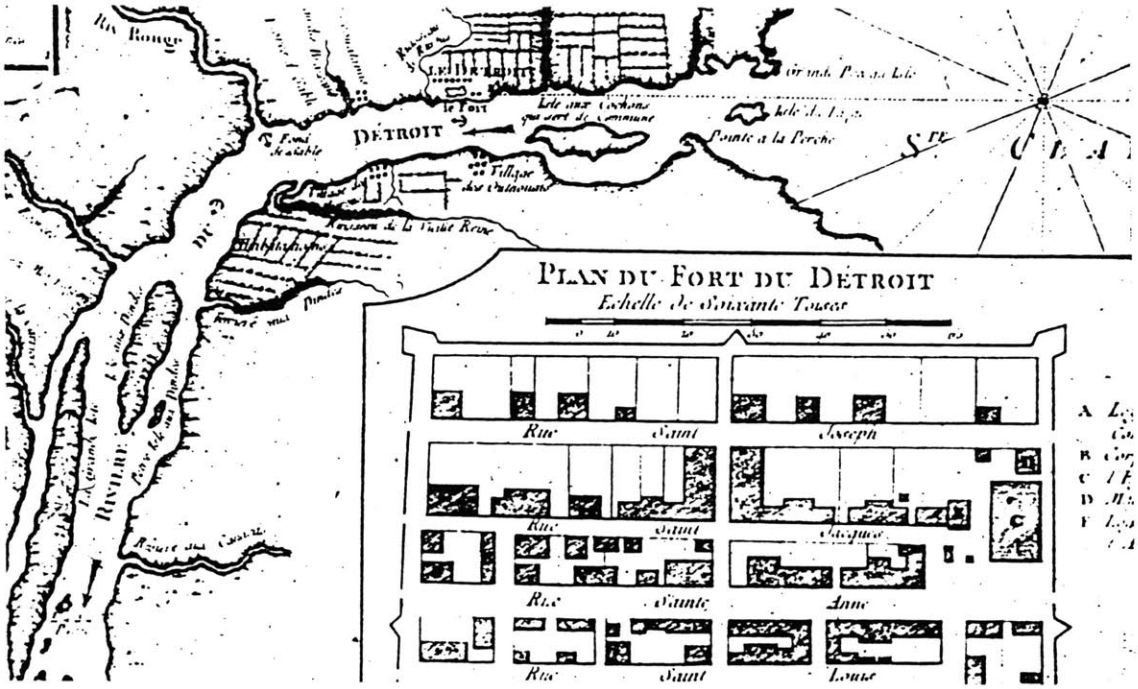
[7]Mel Ravitz, "Perils of Planning as an Executive Function", APA Journal, Spring 1988, Vol. 54, No. 2.

[8]The early history of Detroit is condensed from two sources unless otherwise noted: Almon Earnest Parkins, The Historical Geography of Detroit, New York: Kennikat Press, 1970, Second Edition, and David Katzman, Before the Ghetto: Black Detroit in the Nineteenth Century, Urbana: University of Illinois Press, 1973.

Figure 17: Plan of the Fort of Detroit, ca. 1710



settlement. (**Figure 17**) The fort was about 200 feet square with bastions at each corner. There was a large gate toward the river and a small one to the west. The most prominent buildings were the church, the priest's and Cadillac's and Lieut. Tonty's houses, a warehouse, and two guard houses. The original fort was located in an area that is today bounded by the southern side of Jefferson Avenue and Griswold, Larned, and Shelby Streets in downtown Detroit. The site is currently occupied by the Pontchartrain Hotel.

Though the French settled the city, the British gained power of Detroit in 1760, after victories over the French at Duquesne and Quebec, and retained it until well after the revolutionary war. In the war of 1812, Detroit was the chief center of the control of Indians and of the fur trade of the Upper Lakes, and was therefore the center of struggle between American and British forces in that war. Surrendered to the British in 1813, it was reoccupied by the troops of the United States the following year. Under both the French and the British, Detroit was simply a military and trading post. It was not until the early part of the nineteenth century, as the ever expanding American frontier began to envelop it, that it became an integral part of the United States. As

Almon Ernest Parkins observes of the City of Detroit, there are few other cities in America that have taken so long and so prominent a part in the history and development of the sections in which they are situated. "Detroit was fifty-three years old when the British began their fort at Pittsburgh, Pennsylvania, ninety five when Moses Cleveland laid out Cleveland, Ohio on Lake Erie, and one hundred and twenty nine years old when the Illinois Board of Land Commissioners surveyed the site of Chicago, the great Metropolis of the Interior."[9]

After the French were defeated in the French and Indian War, the British controlled Detroit, and the Great Lakes region, from 1760 to 1796. The British, reluctant to relinquish the trade rich area, waited thirteen years after the ratification of the Treaty of Paris to move out of Detroit. Finally, on 11 July 1796, the American Flag was raised over Detroit. The physical development of the city proceeded slowly until the early part of the 19th century. The riverfront was occupied by the French "ribbon" farm, in most cases extending two miles back from the river. The need for mutual protection and the desire for all settlers to have access to the river highways determined the form of the farms. Industries at this time were in the "household stage" of development, with evidence of grain and grist mills and a stone quarry. As the settlement increase in size, skilled artisans began to arrive and industry began to flourish. The region around Detroit had developed similarly, with small settlements of french ribbon farms along the Detroit river and other rivers, such as the Rouge and Huron rivers, of the area. Metropolitan suburbs southwest and west of Detroit can trace their beginnings to this settlement pattern. An example of these agricultural beginnings is the city of Dearborn on the Rouge River, named by the French for the clay soil that gave it its reddish appearance.

When the Americans took control of Detroit, it was officially located in the Northwest territory. In 1805, a bill enacted in Washington created Michigan Territory, which included approximately the present day area of the Lower Peninsula and a small portion of the upper peninsula. The territory was to be administered by a governor and three judges. President Thomas Jefferson appointed William Hull of Massachusetts as governor and Augustus B. Woodward of Washington as the chief justice of the new

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[9]Almon Ernest Parkins, The Historical Geography of Detroit, p. 4.

territory. Just before the territorial rulers arrived, Detroit was completely destroyed by fire on 11 June 1805. They arrived to find nothing but the charred debris of the former frontier town. It was fortunate that fate brought Woodward to Detroit at this grave moment of the city's history. A man of extraordinary intellectual curiosity, he was aware of the latest developments in city planning and had the imagination to visualize a model metropolis of the future on the site of the ruined frontier post. He was a friend of Jefferson and knew Major L'Enfant, who was responsible for the plan of Washington. Woodward's Detroit plan was not merely a copy of L'Enfants's Washington Plan, a gridiron system of streets overlaid on radial diagonals, for Woodward's was based upon a hexagon, divided into 12 sections, which could be repeated ad infinitum. There were principal north-south and east-west parkway boulevards 200 feet in width, secondary diagonal avenues 120 feet in width, interconnecting streets and circles or circuses and other open spaces. In 1805-1806, Congress authorized the platting of the new plan. The work of surveying and laying out the streets proceeded slowly. Unfortunately, uncooperative land owners prevented all but a fragment of the original plan from being implemented. However, we are indebted to Woodward for the broad avenues and open spaces which today give Downtown Detroit a distinctive quality. The area bounded by Michigan and Monroe Avenues, Randolph street, and Adams and Cass Avenues represents a small part of one hexagon which was to have a full circle Grand Circus Park in the center.

American immigration to southeastern Michigan began shortly after 1796. It was only at the beginning of the 19th century that the stabilization of the frontier encouraged settlers in appreciable numbers to migrate from the East. Then began the phenomenal growth of population that continued unabated until the mid-20th century. This immigration from the east was augmented by immigration from Europe and migrations from the South. Growth did not reach any great magnitude until 1818 which marked the opening of a US Land Office and the beginning of steam navigation on Lake Erie. Detroit was incorporated as a town in 1802 and in 1805 had a population of only 551. In this decade Detroit had an unfortunate settlement history. The great fire destroyed every house in the town and during the War of 1812, the whole region was pillaged, houses burned and crops destroyed. After the war, President Madison appointed Lewis Cass governor of Michigan Territory. During his 15 years of administration,

Cass converted a wilderness outpost into the capital of a commercial empire, spurring population growth.

Capital of the new state of Michigan, which had just been admitted into the union in 1837, Detroit served as the commercial center to the region which stretched northward to Mackinac, westward to Lake Michigan, southward to Toledo, and eastward into the Canadian countryside. The docks were the lifeblood of the expanding agricultural and industrial economy. At the civil war, the city's first generation of industrialists and workers built the foundation for Detroit's development over the rest of the century.[10] Major transportation projects were undertaken, the first of which was the Detroit and Pontiac Railroad begun in 1838 and completed in 1843. A western line, the Detroit and St. Joseph (later the Michigan Central) Railroad began in 1837 and reach Chicago in 1852. Two years later, the Great Western Railroad opened a line through Canada which linked to the New York Central Railroad, opening a route from Chicago to Eastern markets via Detroit. Ferries would shuttle railroad cars across the Detroit River until the Michigan. The second major transportation development was the opening of the Soo Canal in 1855, linking mineral-rich Lake Superior district with the rest of the great Lakes basin and making Detroit the most strategic position in the Midwest's transportation network until Chicago surpassed it with the building of the canal linking it to the Mississippi River, effectively connecting Chicago's trade with the Atlantic and the Gulf of Mexico. In the mid-1800's, several significant smelters of iron ore and foundries and metal fabrication works located in the Detroit area. The Detroit area also became a major shipbuilding area in the 1850's, although the roots of the industry began much earlier, with the first wooden sailing ship built in 1769 and the first steamer in 1827. By 1905, Detroit's production accounted for one half the tonnage of all vessels built on the Great Lakes. The city also became a major center for the production of railcars. The availability of cheap wood and metals made Detroit a natural location for this industry. At its peak in 1907, the railroad car industry was producing 100 cars a day and employing 9,000 workers.

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[10]Much of the information on Detroit's Industrial development comes from Charles Hyde, Detroit: An Industrial History Guide, Detroit Historical Society, 1980.

Before it became the Motor City, Detroit was best known for its heating and cooking stoves. The city was the largest producer of stoves in the United States by the early 1880's and it remained a major center well into the 20th century. One of Detroit's exhibits at the Columbian exhibition in 1893 was a giant stove built by the Michigan Stove Company. Besides wood and metal working industries, the city also had also developed significant chemical, tobacco processing and pharmaceutical industries. After the discovery of salt in Wyandotte in 1890, there were five companies producing salt, soda ash and other salt products by the turn of the century. Tobacco processing began in Detroit in the 1840's and by 1887, the city was the third largest producer of tobacco products in the US. By 1899, 200 firms employed over 4500 workers, making this one of the largest industries in the city. The pharmaceutical industry also developed to a point where Detroit was the second largest producer, next to New York City, in the early 20th century. The most notable firm, Duffield, Parke & Company was incorporated in 1867 and adopted its present name of Parke, Davis and Company in 1871. Its riverfront complex remains today, the focus of a large adaptive reuse project. Other industries that need recognition include floor milling, meatpacking, paint and varnish, shoes, men's clothing and beer-making. The small brewery which Bernhard Stroh opened in 1850 evolved into the Stroh Brewery Company which remains today an important regional producer. The Burroughs Adding Machine Company moved to Detroit from St. Louis in 1904 and has grown into a vital industry in the region.

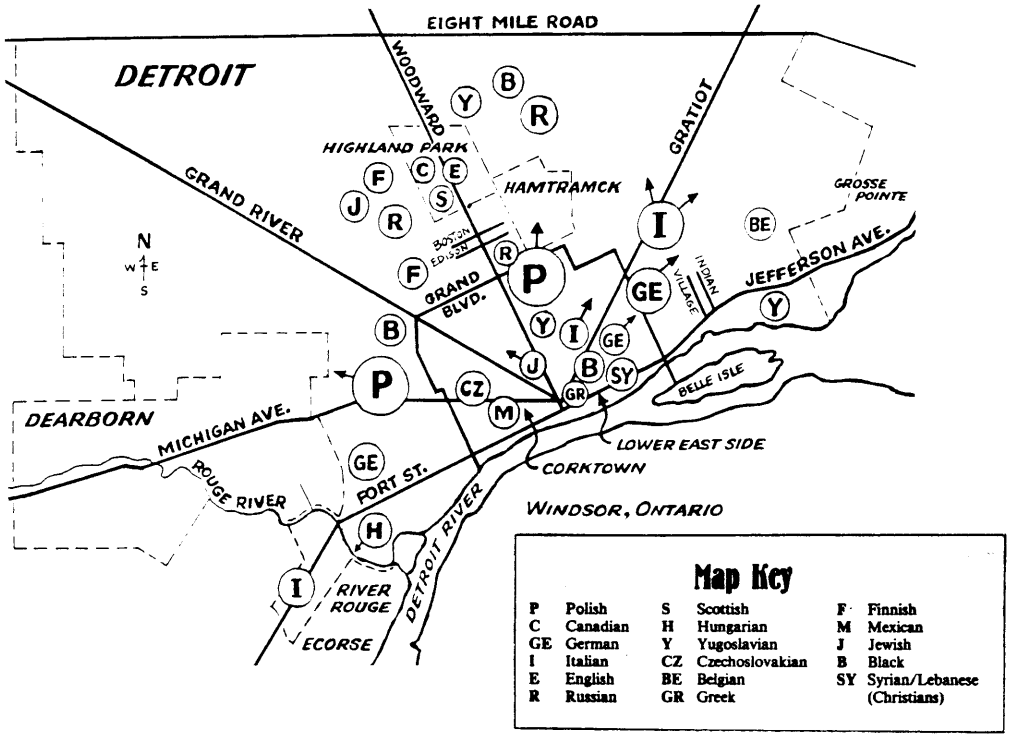
Detroit had a highly diverse industrial base during this period. This diverse industrial base accounted for tremendous economic and population growth of the city prior to the advent of the automobile. By the turn of the century, Detroit had the 15th largest industrial product in terms of value, among American cities. As late as 1904, motor vehicles were in fifth position on a list of Detroit's leading industries, with foundry and machine shop products first, followed by pharmaceuticals, tobacco products and stoves. Labor organizations developed in the nineteenth century, but with few exceptions remained weak. Detroit remained an open-shop city until the 1930's, making it an attractive location for firms. Public utilities and improved transportation contributed significantly to the growth of population and industry. Four streetcar lines on Jefferson, Woodward, Gratiot, and Michigan Avenues were opened in 1863, all

using horse-drawn cars. By 1886, there were 13 lines still using horse power, but in 1893, the system was converted to electric operation. The streetcar system was well used until about 1920, when the automobile began to reduce ridership. Public utilities of water, gas and electricity also grew up in the late 1800's. Street lighting was initiated in 1882, and in 1886, the Edison Illuminating Company opened a generating plant, Station "A", which provided direct current for the downtown area. The successor firm of Detroit Edison Company, of 1903, quickly became, and still remains, the premier supplier of electric power for Southeastern Michigan.

Between 1886 and 1890, large population increases and the electric railroad altered the pattern of the city life. No longer bound by the truncated arcs of settlement that were dictated by pedestrian ability, many developers developed areas adjacent to Woodward Avenue. While industrial workers tended to live near factories near the waterfront, many professional considered it beneficial to escape the density, pollution, decay and ethnic colonies of the core areas of the city. Distance was no longer a barrier as the streetcar brought all points in the city closer together. The movement to new subdivisions created vacant housing in the city's core, and foreign-language speaking immigrants and other new arrivals found the vacated neighborhoods in the city's oldest districts to be conveniently located to the workplace.

Detroit, like most northeastern cities of the time, was a conglomeration of ethnic and racial neighborhoods. (**Figure 18**) From 1860-1880, Corktown, Dutchtown, Kentucky, Polacktown, and Piety Hill were common neighborhood names in the city. At the turn of the century, Detroiters could still identify the waterfront with the French, the east side with the Irish, the St. Antoine district with blacks, Gratiot with Germans, Hastings with Polish and Russian Jews, Hamtramack with Poles, and Paradise Valley with Italians. In late nineteenth century Detroit, it was the neighborhood, not the wards or blocks, that were the living units of the city. It is interesting to note the way in which the wards of the city took on the same linear form of the original French Ribbon Farms. By 1910, the eastern Europeans, from Poland, Russia, Italy, Greece, and Hungary had surpassed the number from Britain, Ireland and Germany. Detroit's near east side, the first few wards east of Woodward, served as a port of entry and stopping-off place for much of the city's immigrant population. Amid the changing

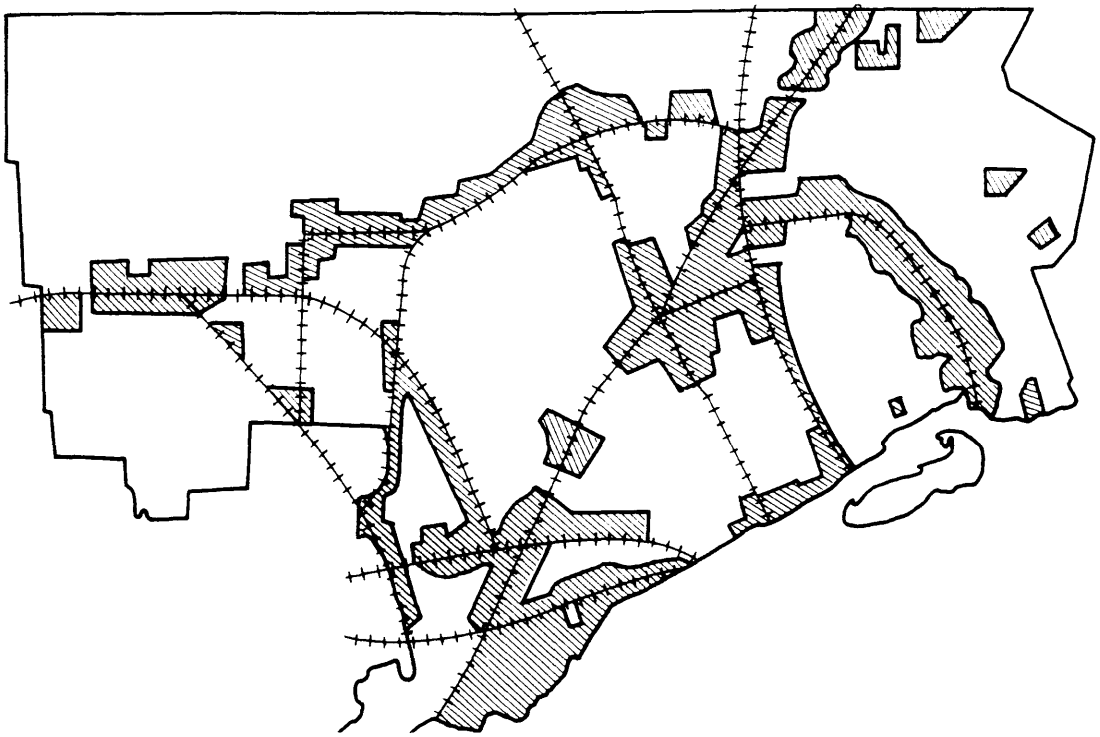
Figure 18: Ethnic Neighborhoods in Detroit



ethnic and racial character of Detroit's near east side, the presence of most of the city's black population represented one of the few stable factors.

Between 1900 and 1945, the growth of Detroit was dominated by the spatial logic of industrial expansion. The auto industry and the metro area expanded according to a well defined spatial logic: a factory, then complementary plants and residential development clustered along industrial corridors following the railroad lines. (**Figure 19**) Commercial districts emerged along highway arteries paralleling the industrial corridors. The city grew with the expanding auto industry, outward from the river to the north, west and southeast, into the landed interior. The inner city developed unevenly, with an inner city where housing stock was old and the poor were concentrated, a middle city where land use was mixed and in transition, and an outer city where the urban gentry lived in large homes clustered around schools and parks, according to a city plan.

Figure 19: Detroit Industrial Corridors



The spatial pattern of the automobile industry dictated, to a large extent the growth of the spatial pattern of Detroit. In the beginning of the century, there existed hundreds of small manufacturers, most located near the rail lines and near the labor force on the city's east waterfront. Soon these plants attracted complementary metal fabrication and machinery shops and then residential subdivisions. In 1907-1910, Henry Ford's bold move to build the Highland Park Plant and later the Ford Rouge Plant in the suburbs of Detroit's established a dramatic new direction and spatial logic for industrial architecture: the construction of single story buildings on sprawling open sites.

The auto industry, which, at the turn of the century, was spread all over the northeast, mid-Atlantic and Midwestern states, was drawn to Southeastern Michigan by both the natural and industrial terrains. Located at a point where water shipping and railroads met, Detroit was also midway between the iron ore fields of Northern Michigan and the coal fields of Appalachian, the two important ingredients from which steel is made and had availability of relatively cheap industrial sites. In addition, Detroit was manufacturing stoves, gasoline engines, farm implements, marine equipment, and carriages which were all forerunners to the auto industry. The automobile's true progenitor was the carriage, for carriage making required bodies, wheels, components

construction and the assembly principle. Carriage manufacturing was important in Northern Indiana and Southern Michigan, with its capital in Flint, just north of Detroit. William C. Durant's carriage firm was the beginning of the industrial giant of General Motors. Detroit, however, was not a major producer of carriages so perhaps the more generalized metalworking skills found here were more important. Detroit's machine shops and foundries on the east riverfront employed nearly 16,000 at the turn of the century. There were also key individuals, particularly Henry Ford and Ransome Olds, who had significant impact on the early development of the industry.

While popular culture heralds Henry Ford as the inventor of the automobile industry in America, many others, including Duryea in the east and Olds in the midwest, preceded his efforts. Ransome Olds, who had experimented with steam powered vehicles in Lansing for more than a decade before he drove his first gasoline powered vehicle in 1896, preceding Ford by three months. In order to gain financial backing, Olds moved his factory to Detroit and in 1899 opened the city's first automobile factory at an East Jefferson location later occupied by Uniroyal and now vacant. After this, dozens of auto companies located in Detroit after the turn of the century. The still familiar names included: The Cadillac Automobile Company, the Packard Motor Car Company, The Studebaker Corporation, Hudson, Dodge Brothers, the Lincoln Motor Car Company, and numerous others. While many failed and none matched the success of the Ford Motor Company, they provided considerable production and employment. The auto industry had spawned a variety of firms supplying parts and raw materials. The complexity of the automobile (an average of 15,000 parts go into its manufacture) spawned dozens of firms specialized in manufacturing engines, transmissions, wheels, brakes, springs, radiators, belts, hoses, gears, frames, lights, and electrical systems.

However, all of the producers were insignificant when compared to the impact of Ford. The growth in automobile production in the Detroit area was the result of Ford's enormous production and marketing achievement of the Model T and the entry of dozens of new firms into the industry. An industry that produced 22,000 vehicles in 1904 had an output of 1.7 million in 1917, one million of which were produced in Detroit. By the 1920's, Michigan became the center of the automobile industry, with 55 percent of all wage earners in the industry living in Michigan. The booming auto

industry attracted thousands of immigrants from Canada, Europe and the rural southern US. During the same period, Detroit underwent significant physical expansion through annexation. The city's area grew from 23 square miles in 1900 to 139 square miles in 1927, when the boundaries became virtually the same as they are today. Detroit, was not, strictly speaking, the home for the major manufacturing facilities. Ford plants were in Highland Park and Dearborn, and , with the exception of the Cadillac Division, the major production facilities of General Motors were in Flint, Pontiac and Lansing. However, GM did build their headquarters in Detroit. Only Chrysler, the last of the big three to develop, had its largest facilities in the city, though their Dodge Main plant was in Hamtramck.

By 1930, Detroit became the most important industrial center in the US and perhaps the world. For this reason, it was also probably the hardest hit by the Great Depression . Motor vehicle production went from 5.3 million in 1929 to 1.3 million in 1932, not returning to the 1929 height until post World War II in 1948. The thirties were a time of economic hardship for the city, but also a time of renewed militancy among workers. There is not enough room here to do justice to the story of organized labor, but it must be mentioned. Unions developed during those years, including the United Auto Workers (UAW), established in 1935 within the American Federation of Labor (AFL). In 1936, the UAW affiliated with the Committee for Industrial Organization (CIO), the militant wing of the AFL. The struggle was long and often violent, but with "the fall of Ford" 1937-41, the last open-shop in the area, the labor unions established a power base that would permanently change the way in which the industry functioned. It is not surprising that in 1932, when the Detroit Institute of Arts with the patronage of Edsel B. Ford, commissioned Diego Rivera to create frescoes immortalizing Detroit Industry that be chose to portray auto production at the Ford Rouge Plant.

With the advent of World War II and the demands of wartime production, another wave of factory construction and therefore spatial growth of the city was accomplished. The suburban dispersion was driven to a certain extent by a national defense policy that required satellite city construction of facilities in order to protect against atomic attack. By the late thirties, Detroit recovered as the "Arsenal of Democracy", as the city's factories were quickly converted to wartime production. There were also new facilities

built, including Ford's massive Willow Run Bomber Plant in 1941-2, and the Chrysler Tank arsenal in Warren. The need to improve connections between war plants led to the beginning of the city's freeway system, with the first segment of the Davison Expressway built in 1941-2 near Highland Park.

After World War II, Detroit's development was focused around intensive suburbanization of the metropolitan area, the reorganization of commercial capital and federally subsidized construction of infrastructure and housing to meet the demands of the post war population boom. In terms of industry, the postwar decades brought consolidation of firms and further loss of economic diversification. Continuing the trend begun before the war, the auto industry and its suppliers built new plants on cheap suburban sites ringing the city from Woodhaven in the south to Sterling Heights in the north. After 1950, Detroit experienced increased disinvestment in the center city fueled by the construction of a freeway system linking the city with a network of state and national highways. As population and industry moved to the suburbs, the growing system of freeways aided the march. The John Lodge Expressway running in a north-south alignment was begun in 1950, while the Willow Run Expressway was gradually extended eastward toward Mt. Clemens and eventually renamed and completed as the Edsel Ford Expressway. The other major freeways in the area were begun in the late 50's and completed in the 1960. More recently, highway extension projects of the 70's and 80's have improved connections between outer suburbs, making travel through the center city virtually unnecessary. Metropolitan Airport was opened in the western suburb of Ecorse in the mid-1950's and today is the center of a major expansion proposal.

The post war federally financed construction of a huge network of highways in the Detroit metro area further facilitated this sprawl and the big three (Ford, Chrysler, and GM) constructed 20 some plants between 1947 and 1955. The federal government also played a role in the residential development of the suburbs, as the Federal Housing Administration insured loans for new suburban homes. The freeway system provided a funnel, not only for the movement of industry, warehousing, commercial and retail activity out of the center city, but especially residents, beginning the pattern of suburban immigration from the center city. Suburbs developed in two ways: the

working class suburbs, such as Center Line and Warren to the north and Melvindale, Inkster and Wayne to the West, clustered in the industrial corridors. The more priveledged suburbs, such as Birmingham and Bloomfield Hills, where white collar workers lived, cluster along radial causeways to the north. Federal dollars and policy further constrained inner city industrial development by not qualifying the revitalization of decrepit industrial sites as not meeting the definition of slums or blight under state enabling legislation for urban renewal. Post war suburban growth was also fueled by the lack of vacant land zoned for industrial uses in the city. New industrial firms of the time were using 15 to 20 employees per acre, while Detroit's firms averaged 45 employees per acre. To accommodate modern industrial expansion, this would have meant the city would have had to triple the land use devoted to industrial uses, from 6.000 to 18000 acres, which would have been impossible. At the same time, though the UAW-CIO was very active in trying to amend the city's industrial redevelopment policies in order to retain the manufacturing base, residential neighborhoods were beginning to become more vocal about the encroachment of industries into residential locations.

At the same time that the suburbs were developing, city agencies were devoting resources to the redevelopment of the inner city. The city undertook large scale urban renewal projects and extensive housing program of HUD properties. These ill-fated projects, designed to destroy the ghettos and retain the cities middle class and white population base, ultimately failed. Despite these valiant redevelopment efforts, the dramatic dichotomy of the prosperity of the suburbs and the continuing decline of the central city led the city to succumb to social unrest in the summer of 1967. When Detroit burned in July 1967, in the most widespread and costly of hundreds of urban rebellions throughout the United States, the heads of the public and private sectors knew they had to take immediate action to end the general crisis and rebuild the city. In Detroit, after the National Guard had lifted its occupation of the city and the police had restored minimal order, they formed a self appointed blue ribbon committee called "New Detroit." This organization of the city's ruling elite intended to put an end to urban unrest with a vast building program designed to replace inner city squalor with the sleek new architecture of modern office buildings, banks, condominiums, hotels, convention attractions and a host of related enterprises. The program was meant to

stimulate economic development, create jobs, and provide social stability and confidence for a troubled city. "New Detroit" was organized in such a way that it was able to bypass openly the elected government and to finance its projects directly from corporate and foundation coffers. Over fifty million dollars were immediately earmarked by some fifty Detroit firms for a massive waterfront rebuilding plan which led to the formation of a separate organization called "Detroit Renaissance." Two hundred million dollars in short-term mortgage loans were arranged for Detroit Renaissance by a group of thirty-eight banks led by the National Bank of Detroit. This loan was designed to have a second phase beginning in 1977 when the financing would shift to the Ford Motor Credit Company and four insurance companies. The political and social climate of this period is manifest in the monumental Renaissance Center (the RenCen as it is called by Detroiters) which still dominates Detroit's skyline. The Renaissance Center was initiated by Henry Ford II who formed the Renaissance Center Partnership of 51 corporations in order to revive the failing downtown in 1971. The $350 million first phase was the world's largest privately finance real estate development. The center, designed by John Portman & Associates, towers 741 feet above Jefferson Avenue and contains the 1400 room/73 story Detroit Plaza Hotel as well as 100 retail stores and four 39 story office towers that were joined by two 21 story towers in 1981. Ford, in a futile attempt to ensure the success of the project, devoted funds and energy, even moving certain financial and administrative functions from its suburban world headquarters into office space in the development. The massive project, which most believe would have never been built without the tremendous financial and political clout of Henry Ford II, failed not only financially, but in a formal and civic sense.

Figure 20: Decline in Manufacturing Employment

TABLE 1: Central city employment changes in six U.S. cities by sector, 1948-82, 1967-82, and 1982-87 (in thousands)

Central city and period	Sector				
	Manufacturing[a]	Wholesale	Retail	Services	Total
New York					
1948-82	-411	-104	-104	305	-314
1967-82	-367	-83	-155	200	-405
1982-87[b]	—	1	45	117	—
Chicago					
1948-82	-390	-64	-102	109	-447
1967-82	-270	-58	-96	102	-322
1982-87[b]	—	-4	7	27	—
Philadelphia					
1948-82	-204	-29	-52	46	-239
1967-82	-139	-22	-41	25	-177
1982-87[b]	—	-1	15	26	—
Detroit					
1948-82	-232	-26	-76	3	-331
1967-82	-103	-27	-58	-6	-194
1982-87[b]	—	-3	1	5	—
Boston					
1948-82	-55	-27	-25	63	-44
1967-82	-33	-14	-16	51	-12
1982-87[b]	—	-15	-9	78	—
Pittsburgh					
1948-82	-29	-14	-26	22	-47
1967-82	-33	-9	-9	18	-33
1982-87[b]	—	1	2	13	—

a. Covers 1947-82 rather than 1948-82.
b. Data not yet available for manufacturing in 1987.
Source: U.S. Bureau of the Census, Census of Manufacturing and Census of Retail, Service, and Wholesale Sectors, 1948, 1967, 1982, 1987. Washington, D.C.: U.S. Government Printing Office.

The effects of the 1980 recession are still evident throughout Detroit. Since World War II, all of the largest northeastern and midwestern metropolitan areas have suffered decline in manufacturing, wholesale and transportation employment, though they have also experienced an increase in service, retail, financial and government jobs. (See **Figure 20**) Though most cities experience heavy losses after 1967, most were able to compensate substantially with growth in their service sectors. Detroit, however, has been unable to compensate for its loss in manufacturing employment. However, Detroit's situation is unique, due largely because of it dependence on one manufacturing industry- automobile, a dependence matched only in the United States by Pittsburgh's dependence on steel. Pittburgh has rejuvenated for several reasons: a unique cluster of technical universities, labor force skills and retraining, relatively low proportion of new workers moving into the area, and strong regional cooperation and economic development policies.[11]

[11]This theory and data are presented by June Manning Thomas in, "Planning and Industrial Decline in Detroit", APA Journal, Vol. 56 No. 3, Summer 1990.

In response to the recession and realizing that the auto industry may never reabsorb the laid off workers and assume its former dominant role in the economy, the city's business and governmental leaders decided to address the issue of a coordinated, regional economic redevelopment plan. In 1981, the city's business leaders, led by the Greater Detroit Chamber of Commerce, formed the Greater Detroit/Southeast Michigan Business Attraction & Expansion Council (BAEC). The BAEC was funded by area businesses with the support of SEMCOG and the Michigan Department of Commerce. Initial economic development studies focused on diversifying the economic base of the city, focusing on various industries, from robotics to food processing. In 1984, the BAEC commissioned the economics department at Wayne State University to conduct analyses which would aid the organizations in preparing an economic development strategic plan for the region. The purpose of the study was to "draw together in a single document the key findings, conclusions and recommendations prepared by or for the various organizations engaged in economic development efforts in Southeast Michigan. The strategic planning process provides a convenient framework through which changes in the economy of the region can be anticipated, influenced, directed coordinated and monitored."[12]The plan established a mission, to re-establish Southeast Michigan once again as a strong and stable economic environment. In addition, the plan identified nine critical issues, including the economic growth outlook in relation to the rest of the country, improvement of a poor image, training and employment for the labor pool, restoring the central city, monitoring the effects of single industry domination, halting the brain drain, improving the business climate, especially for labor-intensive manufacturing, coordinating the efforts of various economic development organizations, and stimulation of entrepreneurship. The plan also identified eight goals with specific goal measures, which would be measured and reported annually and concluded with a summary of major strategies with which to accomplish the goals. The annual review of progress toward the goals established in the strategic plan were pursued, and the "Spring 1990 Progress Report " on the strategic plan reveals some positive news for the region. In evaluating the results, however, one must consider that the statistics of Detroit region's affluent suburbs are

[12]BAEC, Strategic Plan for the Economic Development of Southeast Michigan, October 24, 1984, p. 4.

included in the evaluation of economic indicators.[13] Goal No. 1, restoring economic vitality as measured by the DICI and comparison to the GNP showed that the region averaged an annual growth rate of 3.7 percent per year during 1982-89, but lagged the growth of U.S real GNP by .2. Goal No. 2, improving the image of Detroit as a place to live and work, reportedly improved, pointing to statistics such as one of the lowest office vacancy rates in the country, and improved convention attendance of close to 790,000, up 12% from 1988, but suffered due to crime, although crime have statistics showed a steady decline since 1984. Goal No. 3, increase employment and a decline in unemployment, was met, with employment reaching over 1.9 million, an increase of 1.6% from 1988 and unemployment declining .7 % to 7 percent. Goal No.4, improving Southeast Michigan's business climate, focuses on the status of the unemployment insurance (UI) cost burden on businesses which increased, making the state's UI system 10 % higher than the average of the 28 largest industrial states. Goal No. 5, increased the number of businesses that are retained and/or expanded in the region, showed improvement, but it was concentrated in the hotel and lodging and personal and business services sectors. Goal No. 6, increase the number of new businesses created in or attracted to the region, showed a rapid growth in the number of industrial parks, reaching a total of 309, up 22 from 1988, an increase in foreign investment, and an increase in business and real estate inquiries from both domestic and foreign firms. Goal No. 7, reduce the impact of national business cycle contractions on the regional economy, reported a fairly stable situation, with gains in the service sector and stability in the manufacturing sector. It is interesting to note that shift in the regions economy. In 1989, manufacturing employment accounted for 23.8% of the region's total payroll employment, while the service producing sectors accounted for 76.2%. A decade earlier, in 1979, these figures were 32.2% and 67.8 percent, respectively, revealing sharp losses in the manufacturing sector.[14] Goal No. 8, implement a regional economic development system in Southeast Michigan, is claimed a continued success. The BAEC, now in its tenth year, counts among its cooperating participants the Michigan Department of Commerce, SEMCOG, Lapeer, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne counties, and the city of Detroit.

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[13]All Figures from BAEC, Progress Report on the Strategic Plan for the Economic Development of Southeast Michigan, Spring 1990.
[14]Ibid.

However, the current disparate state of the region, both socially and economically, reveals a less than cooperative spirit. BAEC has recently commissioned Eastern Michigan University to develop a major revision of the 1984 strategic plan, revising goals and re-evaluating the economic base of the region, due to be published soon.

THE COMMUNITY CONTEXT: DEARBORN, MICHIGAN

Dearborn is a city of approximately 90,000 inhabitants which lies on the western border of the City of Detroit. The city proudly claims on its city seal that it is the "Home Town of Henry Ford". The city, however, has a long history before its most famous citizen arrived on the scene in 1863. Like the entire metro Detroit region, the area that is now Dearborn was founded as a French settlement in the early 1700's. Like most of the area, it was initially inhabited by Paleo-Indians, then Archaic and Woodland tribes. When the French settled the area, they divided the vast wilderness into "Ribbon Farms", which fronted the Rouge River, the primary means of transportation. When the British gained control of the region, Indians who had gained control of land during the French and Indian Wars gave vast tracks of lands along the Rouge to show their allegiance to the British Crown. These farms were in turn awarded by the British to settlers loyal to the crown. Records show an early settler, Charles Rouleau (later Roulo) a bachelor from Quebec, began farming land in 1792 in the area of the present Rouge plant, building a grist mill at the point where the Roulo Creek joined the Rouge River.[15] **Figure 21** shows Ribbon Farms along the Rouge between 1780 and 1796.

After the American Revolution and the successful war of 1812, Dearborn began to grow, first as a military outpost, with an Arsenal and Commandant's quarters, and then farming was eventually replaced with the manufacturing of bricks and then automobiles. The name of the area was changed from Pekin to Dearborn on April 1, 1833 after General Henry Dearborn, a Revolutionary War/War of 1812 hero and statesmen, and became Dearbornville when it was incorporated 1838. It became the city of Dearborn on February 15, 1927, and on January 14, 1929, the cities of Fordson and Dearborn (roughly the communities of east and west Dearborn today) consolidated to form the present city. The railroad came from Detroit in 1837 and the old Sauk trail

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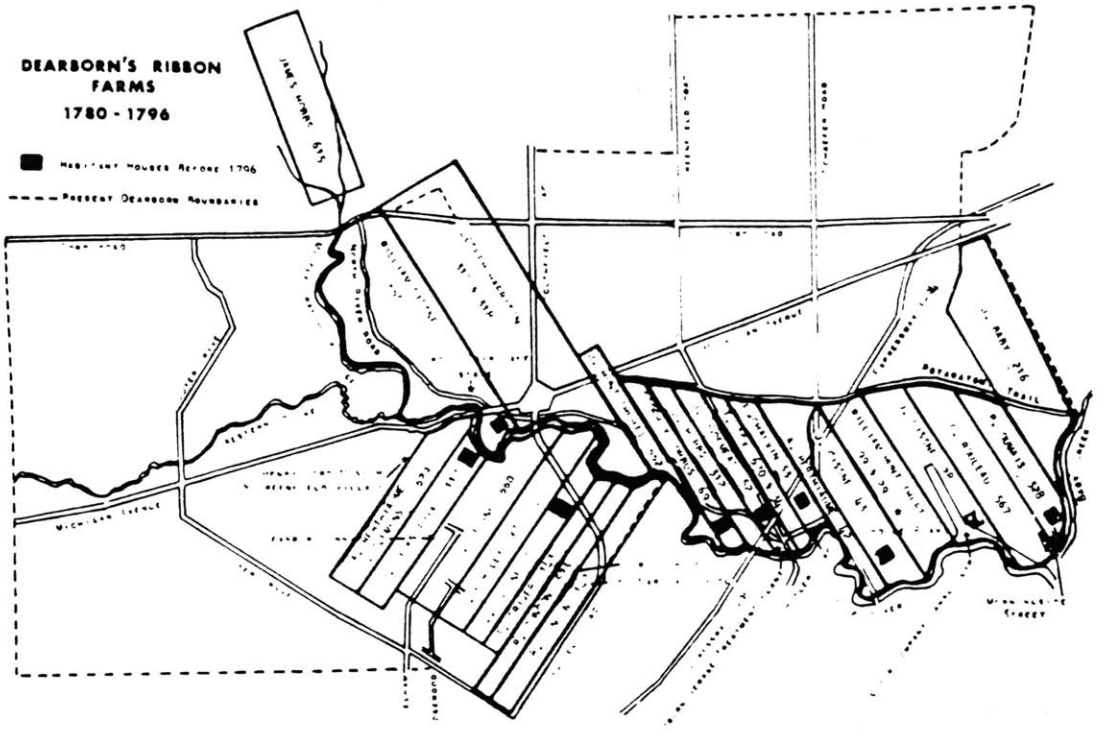
[15]Eleanor Eaton, Dearborn: A Pictoral History, The Donning Company, 1984, p. 13.

Figure 21: Early Settlement in Dearborn



was transformed to the Chicago Road-the traditional connection to Chicago. This road was covered with gravel in 1897 and interurban cars began running. It was asphalted in 1897 and finally paved in 1913, when it was renamed Michigan Avenue.

The most important natural feature in the city, the Rouge River, has played a vital role in its evolution and as a water supply to industry. Though long used for recreational purposes, the river and its flood plain have, in recent years, been limited to serving the function of diluting and carrying municipal and industrial wastes. Because of this, the Rouge River was recently listed as one of the most polluted sites in Michigan, meriting a score of 43 on the state's "Act 307 List".[16] The four major sources of contamination are the river's own natural features, which contribute to sluggish flow and low recreation, the combined storm and sanitary sewers in the city, which during heavy rainfall, dumps up to six billion gallons of untreated municipal wastewater into the river, non-point sources such as runoff, and industrial discharge, which is regulated by the National Pollution Discharge Elimination System (NPDES). The primary source of

[16]Michigan Department of Environmental Resources, Michigan Sites of Contamination Act 307, March 1991.

industrial discharge is the Ford Rouge Complex. Although the Rouge, and other industries which discharge into the river, are in conformance with their NPDES Permits, this does not necessarily result in high water quality, since the resultant oxygen demand of regulated pollutants may exceed the river's assimilative capacity.[17] A Rouge River Basin Strategy was initiated by the Water Resources Commission in 1985, and the city is currently examining a new sewer system which would increase capacity and limit overflow during heavy rainfall.

Dearborn grew through its 200 years of history largely because of its most famous citizen, Henry Ford I, born in 1863 on a farm which was located at the corner of present day Greenfield and Ford Road to Irish immigrants William and Mary Ford. His ownership and development of the large tracts of land in the city as early as 1910 shaped the destiny of Dearborn. (**Figure 22**) Ford's developments included his initial Fordson Tractor facilities, the headquarters of Ford Motor Company, engineering facilities, Ford Airport , the Dearborn Inn and the Henry Ford Museum and Greenfield Village had impact on the form and growth of the city. It was the Ford Rouge complex, however, which brought thousands of workers from all over the world, which has had the most profound effect on the form and character of the city. Descendants of ethnic groups, from Northern, Eastern and Western European countries and later the Middle East, make up the diverse ethnic mix of the cities population today. Dearborn today is an industrial community in transformation. From its peak population in 1960, Dearborn today has approximatelyt 90, 000 residents, some 25% of whom are of Arab descent and another 25 % of whom are over the age of 60.[18] It is virtually two cities, West Dearborn, a fairly affluent bedroom community, and East Dearborn, an older community with the largest Arab population in the United States and the site of the Rouge complex, separated by the vast tracks of Ford land and development which lie in between. (See **Figure 23**) Due to massive commercial development undertaken by Ford Land Development, this area in between has become an "Urban Village" along with several other areas which ring the city of Detroit in a crescent. The Fairlane Development, which Ford Land launched with a master planning effort in 1970

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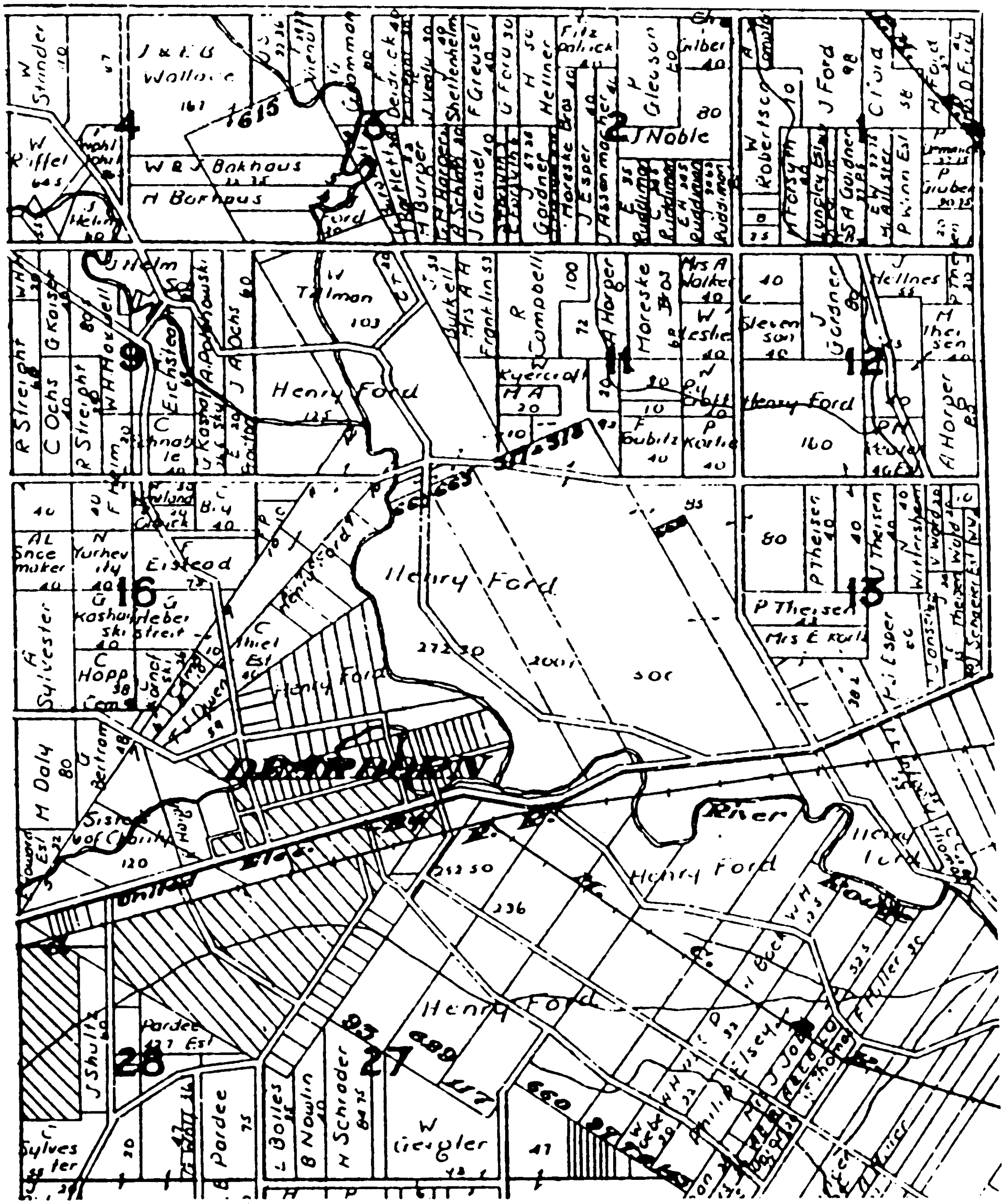
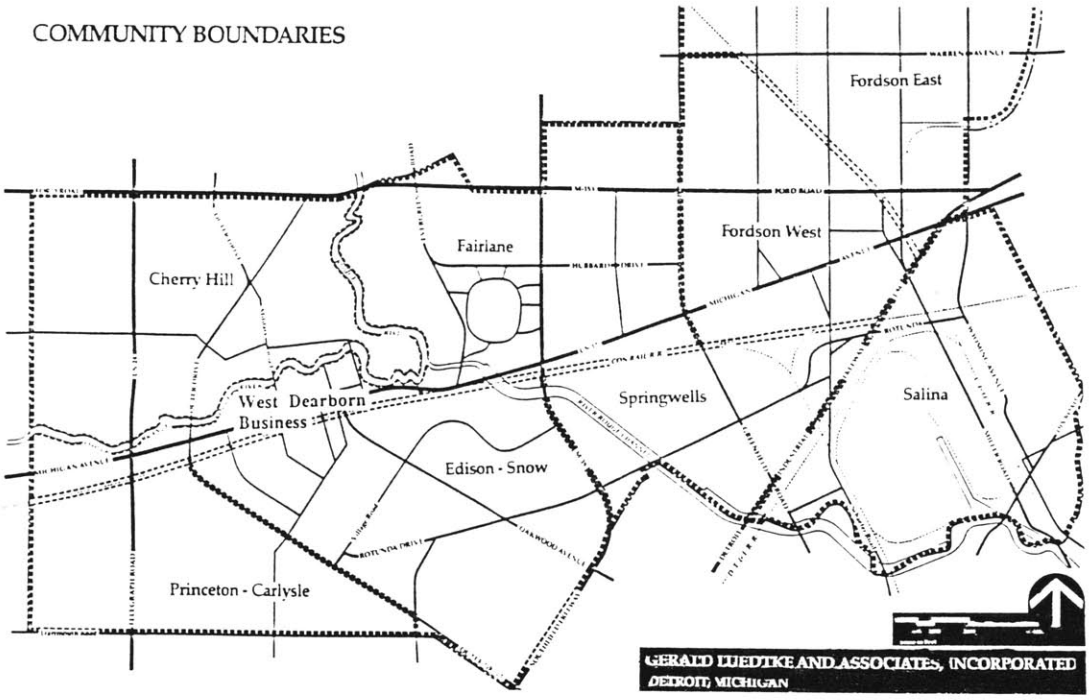
[17]The Dearborn City Plan Commission and Gerald Luedtke, Master Plan for the City of Dearborn, September, 1985, p. 153.
[18]Ibid, p. 33.

Figure 22: Ford Land Ownership in Dearborn ca. 1915



A DEARBORN MAP OF 1915 IN WHICH THE HENRY FORD PROPERTIES DOMINATE THE SCENE. (D-1248)

Figure 23: Map of the City of Dearborn with Community Boundaries



with 2,360 acres of open land held by Ford, the single largest amount of contiguous developable land in close proximity to a major city in the nation.[19] The mixed use development (named after Fair Lane, a tiny road which led to fairgrounds in Cork County, Ireland, the home of Henry Ford I ancestors and also the name of his estate on the Rouge River) currently contains 2.9 million square feet of office space in various office parks on the property , 2.3 million square feet of retail space in two separate Malls, the Fairlane Town Center with 5 anchors and 220 other shops as well as cinemas and restaurants-the largest mall in Michigan attracts over 18 million shoppers annually (50,000 a day) from all over the state and even Ontario, and Fairlane Meadows a 300,000 square foot specialty mall, 1.8 million square feet of light industrial, research and development space in two commerce parks, 1,200 residential units in four separate residential subdivisions, 1,500 hotel rooms in three hotels (Hyatt, Ritz Carlton, Marriot Courtyard) a private Country Club and a 210 acre-18 hole Championship Golf Course designed by Jack Nicholas. The development has approximately 25% of its acreage as of yet undeveloped, though designated for future commercial, residential and light industrial development.

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[19]Joe Darden, et al, Detroit: Race and Uneven Development, p. 1987.

Figure 24: The Extent of the Fairlane Development in Dearborn

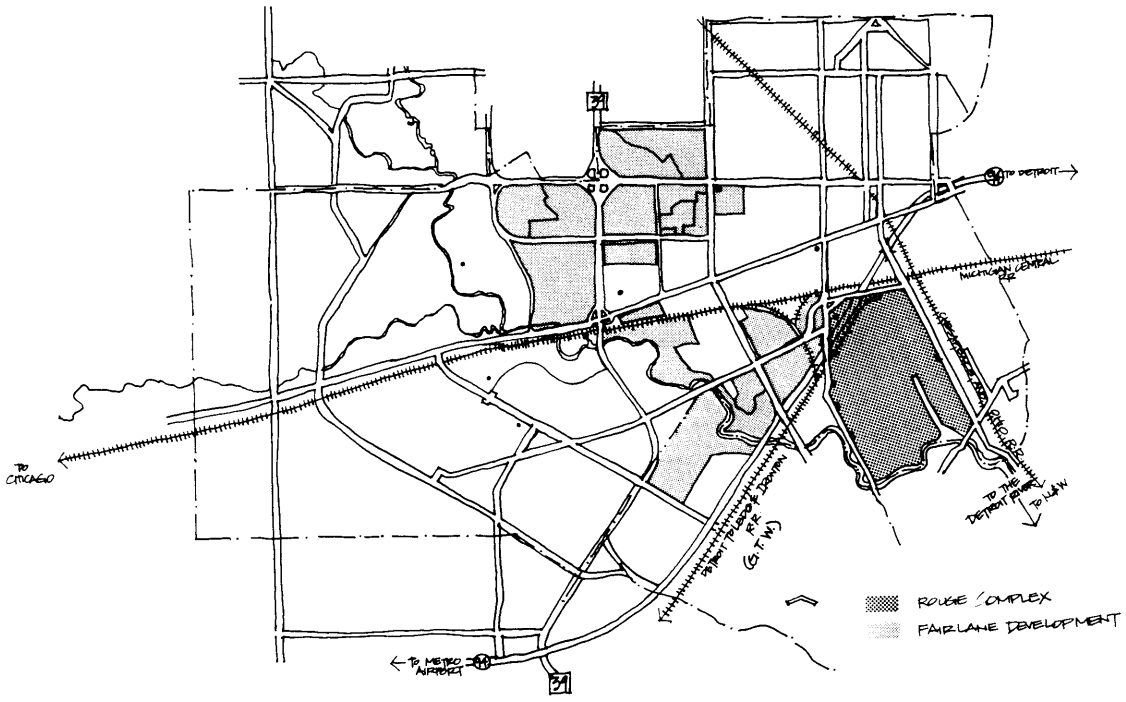

Figure 24 illustrates the extent of the Fairlane Development within the city and its location in relation to the Rouge plant.

2. The Story of Ford Motor Company

"I will build a motor car for the great multitude.. It will be so low in price that no man...will be unable to own one." **Henry Ford**

HISTORY OF THE COMPANY AND THE UNION[20]

As James Flink observes, "no synthesis of American automobility would be complete without an interpretation of Henry Ford and the Ford Motor Company."[21] He further cautions that "anyone compelled to write still more about Ford must reckon with Reynold M. Wik's assessment that more has already been written about the subject than any individual could read in a single lifetime."[22] He also observes that interpretation of Ford is difficult because of the many contradictions of his statements and behavior. These include: Ford's well publicized anti-semitism contrasted with the retention and long relationship with Albert Kahn, who was a Jew; His staunch anti-war attitudes, evident in his WWI Peace Ship mission designed to bring the troops home, and the military contracts with which he involved his company; Discrimination against negroes as compared to the building of Inkster, and his policy of hiring the same percentage of blacks at his factories as in the population, (though some consider this a non-union ploy); Ford's special brand of paternalism which included the security and sociological departments, virulent anti-unionism contrasted with relatively high wages, employee gardens, company stores that were designed as not for profit; and his development of various schools which included trade as well as elementary and primary education; The perniciousness attributed to Ford regarding the design of the Rouge, which critics feel

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[20]Facts included in this section come primarily from the Nevins and Hill series except where otherwise noted. The series includes:

Nevins, Allan and Frank Ernest Hill. Ford: The Times, the Man, the Company, New York: Charles Scribner's Sons, 1954, _____. Ford: Expansion and Challenge:1915-1933, New York: Charles Scribner's Sons, 1957, and _____. Ford: Decline and Rebirth: 1933-1962, New York: Charles Scribner's Sons, 1962, 1963.

[21]James J. Flink, The Car Culture, Cambridge, Massachusetts: MIT Press, 1975, p. 67.
[22]Ibid, p. 67.

effectively enhanced the strict control and anti-unionism that he advocated[23], compared with his simple explanations regarding his motivations of independence from suppliers, cost savings, efficiency and reuse of materials. As an industrialist, Ford seemed to want to alleviate the guilt he felt in his important role in transforming American society from agrarian to industrialized. Between 1919 and 1944, at the same time that Ford was building the Rouge, he was also developing his micro scale Village Industries throughout southeastern Michigan.

Despite these contradictions, few would dispute that Ford and his work has left profound impact on the twentieth century and beyond. Perhaps no one has had a more profound influence on the way in which we live and the form and quality of the environment. A Frenchman, Father R. L. Bruckberger once said that Ford's innovation of the five dollar, eight-hour day, along with the moving-belt assembly line,

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[23]See Lindy B. Biggs, Industry's Master Machine: Factory Planning and Design in the age of Mass Production, 1900 to 1930. PhD Thesis, Department of Urban Studies and Planning, Cambridge, Massachusetts: MIT, 1987, and John M. Staudenmaier, S.J., "Two Technocrats, Two Rouges: Henry Ford and Diego Rivera as Contrasting Artists", STS News, Cambridge, Massachusetts: MIT, December, 1990.

alone has had more important consequences in the twentieth century than Lenin's socialist revolution. Flink says, "while this is clearly debatable and premature assessment, few would disagree that these innovations at Ford, the Model T, and the Fordson tractor influenced twentieth-century American historical development more profoundly than the collectivity of reforms emerging from the so-called Progressive Era and the New Deal combined."[24] Alan Nevins observed "The story of the Ford Motor Company...when viewed as a whole is perhaps the preeminent American story of a great industrial vision transmuted in hard fact. It is simple truth to say that the Ford Motor Company changed the face of American civilization and affected patterns of life throughout half the globe."[25]

Henry Ford was born in 1863 to Irish immigrants Mary and William Ford. He spent his childhood on their Dearborn farm, very near the Rouge, the site of which lies at the present intersection of Ford and Greenfield Roads. It was in Dearborn that he met and married Clara Bryant and where they began their life together before moving to Detroit where Henry began his career. Henry Ford had begun working at the Willis Station of the Edison Illuminating Company (now Detroit Edison) in 1891 as a night fireman. He soon became a machinist repairing all of the company's engines and eventually became chief engineer in 1893. It was through this position that he met Thomas Alva Edison, although their close friendship began after Ford had established his company. Ford wrote of Edison that "no man exceeds Thomas A. Edison in broad vision and understanding. His knowledge is almost universal. He is interested in every conceivable subject and he recognizes no limitations. He believes that all things are possible. At the same time he keeps his feet on the ground."[26] Ford recalls their first meeting as around 1887, where he spoke to Edison about his ideas for the internal combustion engine and found encouragement. Ford spent much of his spare time experimenting with building engines and vehicles, producing and racing a successful race car called the Old 99 before pursuing motor cars for the masses.

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[24]Flink, The Car Culture, 1975, p. 2.
[25]Nevins and Hill, Decline and Rebirth, 1962, p. 442.
[26]Henry Ford with Samuel Crowther, My Life and Work, New York: Doubleday, Page & Company, 1922, p. 234-235.

Chapter III- A Proposal for the Future of the Rouge

The unsuccessful Henry Ford Automobile Company, founded in 1901, was followed by the formation of the Ford Motor Company on June 16, 1903. The company began operations in a small building on Mack Avenue. Primary assets consisted of tools, machinery and $28,000 in cash. There were 12 stockholders, Henry Ford and 11 investors. A total of 1,703 cars, the original Model A's were produced at the Mack Avenue location. Just as Ford operations began, George B. Selden, an attorney who held a patent on vehicles powered by internal combustion engines, filed a syndication and royalty suit against the company. The battle lasted eight years and was eventually won in 1911, freeing Ford and the entire industry from having to pay royalties to Selden. Operations were not suspended, and Ford and his engineers produced various models during that time, naming the 19 cars from the Model A to the Model S, most purchased by the wealthy. In 1908, Ford introduced what was to become known as the car for the masses-the Model T-the car which now has a permanent place in the history and culture of the country. Production during the first year reached 10, 660 units and sales prices ranged from $260 to $400 a car. Production of the Model T eventually exceeded 15 million.

As the operation expanded, Ford moved to a Piquette Avenue plant located at Piquette and Beaubian streets in Detroit. Operations remained there until 1910, when operations moved to the revolutionary old shop at Highland Park plant, designed by Albert Kahn and often referred to as the "Crystal Palace". This major innovation in factory design included the use of reinforced concrete floors to relieve the load bearing responsibility of the walls and allowing the use of extensive glass walls and the saw-toothed butterfly roofs, thus christening the new architecture as the "Daylight Factory". Kahn had experimented with this in his design for the Packard Plant in 1905 and the Chalmers plant in 1908, but Highland Park was the first example of the concepts on a grand scale. Highland Park is where Ford revolutionalized the industry with the assembly line and the five dollar a day wage.

Within a few years, however, Ford abandoned the multi-story factory building, and consequently Highland Park, as inherently inflexible for the assembly line mass-production that he had pioneered. In 1917, he began developing the Rouge Complex on 1200 acres of farmland in suburban Dearborn, again revolutionalizing the

manufacturing process in architecture, siting and process. The first of over a dozen Kahn-designed structure at the Rouge was the "B-Building" (the Boat Building), a single-story steel framed brick structure named after its function for the assembly of Eagle Boat, submarine chasers used during World War I. Ford's vision at the Rouge went far beyond military contracts, however, as he had begun expansion plans for automobile manufacture at the Rouge even before the navy contract was complete. Ultimately, the complex grew through the twenties and thirties into the largest vertically integrated manufacturing facility in the world containing within its boundaries facilities for raw material receiving and processing, steel making, foundries, stamping, engine, glass and assembly plants.. After the facility inherited Highland Park's assembly line in September of 1927, the production of a complete car on one site dropped the production process from twenty-one days to four. On the 1200 acre site, raw materials were converted into parts and components and ultimately assembled into an automobile at the rate of 10,000 per day. The Rouge quickly became an industrial symbol, with the statistics of its mass and complexity repeated around the world. One such statistic, the number of men, mops and paint employed in the regular and obsessive cleaning of the facility, promoted a bright image much in contrast with the mood and working conditions at the facility. Much effort was made at the Rouge in the appearance and cleanliness of the factory. Upper walls, girders, and ceilings were painted eggshell white to reflect sunlight from the broad window spaces. A gray-blue was used for machines and housing, because it was believed to be easiest on the eyes. The walls to mid-height were finished in a deep gray, the railings were black and the hydrants and alarm boxes were red. Ford was obsessed with cleanliness-feeling that order and morale depended upon it. In 1929, the Rouge employed over 5,000 men continuously in keeping the premises clean. Every month, more than 11,000 gallons of egg shell white and 5,000 gallons of machine blue were used to repaint the factories. Trash cans were emptied every two hours and elaborate suction systems kept the air free from dust.[27] The entire complex, even the foundry, was spotlessly clean. One observer even remarked that when Henry Ford I was alive one could eat off the floor in the Power House. Other issues of working conditions were emphasized at the Rouge, though automobile production had its hazardous side. Man workers were maimed and even killed, particularly in the dangerous jobs of the Foundry.

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[27]See the discussion in Nevins and Hill, Expansion and Challenge, p. 511.

The company had grown to encompass several thousand branch operations in the United States and overseas at the end of the 1920's. Hourly employment at the Rouge, now the center of the Ford Motor company, rose to over 98,000 by 1929.[28] But employment at the Rouge was a mixed blessing. As the New York Times observed in January of 1928, Ford was the world's outstanding example of an industrial dictatorship and Henry Ford was "an industrial facist-the Mussolini of Detroit."[29] Ford ruled his organization primarily through fear of job loss and an elaborate network for enforcing his strict rules and regulations. To control the lives of workers outside of the plant, Ford maintained a "Sociological Department", which employed investigators who made regular visits to employees' homes and monitored their personal activities. Ford even published a manual for employees to prepare for such investigations entitled "Helpful Hints and Advice to Ford Employees" which covered everything from proper dental hygiene to the appearance of the home. Those who were judged to drink to excess or did not improve their living conditions or personal hygiene were fired. Within the plant Ford enforced the strict disciplinarian atmosphere through Harry Bennett, an ex-pugalist and sailor with mob connections who was appointed a director of personel and also commanded the infamous Ford "Service Department", basically a gang of armed spies and thugs whose duties involved policing the plant grounds and harassment of employees. Nevins describes the group as "broken bruisers, ex-baseball players, one-time football stars, and recently feed jailbirds."[30] Workers could be dismissed for simple infractions such as talking on the line, leaning against a machine to rest, or leaving a few seconds before the lunch bell rang. They were followed to bars and restaurants after work hours and those suspected as union sympathizers or known to be union members were fired. Bennett maintained an office in the Administration building and another on site in the basement of Gate 4, where he had a firing range which he and the elder Ford utilized for target practice. From Edsel Ford on down, employees at Ford came to fear and despise Bennett and his tactics. Writing during the depression, Jonathan N. Leonard, and early Ford debunker, wrote that "Detroit is a city of hate and fear. And the major focus of that hatred and fear is the astonishing plant on the River Rouge."[31] The main reason for Leonard's

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[28]Nevins and Hill, Expansion and Challenge, p. 687
[29]Flink, The Car Culture, p. 104.
[30]Nevins and Hill, Decline and Rebirth, p. 111.
[31]Ibid, p. 105.

assessment was that "over the Ford plant hangs the menace of the "Service Department", the spies and stool pigeons who report every action, every remark, every expression...No one at Ford is safe from the spies-from the superintendents down to the poor creature who must clean a certain number of toilets an hour."[32] After the great depression, Ford and the rest of the auto industry would face, and try to resist, organization of workers and unionization.

The great depression had a huge impact on the city of Detroit and the auto industry. Blue collar workers were hit hard. In 1929, there were 475,000 workers int he Detorit area auto plants. By 1930, 125,000 had lost their jobs and in 1931 another 100,000 were laid off, leaving the remaining workers with part-time employment. The economic conditions made the time ripe for radical agitation, and the Socialist Party, the Proletarian Party, the Industrial Workers of the World, and the Communist party in Detroit were very active and well subscribed. An event which was staged at the Rouge, the "Ford Hunger March" on Monday, March 7, 1932, provided a preview of coming labor and civil rights struggles in the decade ahead. The plant was targeted because, as B.J. Widick reports, organizers recognized the "political value of a successful demonstration at the Ford plant, which was considered a world symbol of of the American open-shop industrial system and of anti-Semitism."[33] The Rouge was the largest plant in the world and, at the time, was also the largest employer in the auto industry, employing close to 100,000 before the crash, and laying off thousands as a result of it. The march began in Detroit and the 3,000 marchers headed toward the Rouge along Fort Street carrying posters with slogans such as "Feed the Poor" and "All War Funds for Unemployed Relief." As the march approached the Dearborn City line, Dearborn Policemen and Ford Security Forces, led by the infamous Harry Bennett, director of the Ford Service Department, attempted to block the path. A quick series of violent events from tear gas to hand-to-hand scuffles to gunfire escalated quickly until, in the aftermath, four men lay dead and scores lay wounded. The four dead marchers, Joe York, Joe Bussell, Coleman Leny, and Joe De Blasio, were honored by over 70,000 workers in a funeral march down Woodward Avenue in Detroit, and then

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[32]Ibid, p. 105

[33]B.J. Widick, Detroit: City of Race and Class Violence, Detroit: Wayne State University Press, Revised Edition, 1989, p. 50.

buried in the Woodmere Cemetery off of Fort Street, not far from the Rouge site. Widick observes, that "the Ford Hunger March, thanks to the overreaction of the Dearborn police and Harry Bennett's servicemen, made the Communist party a significant political force in the new wave of radicalism sweeping the auto industry."[34]

The Battle of the Overpass--After having organized General Motors and Chrysler in 1937, the UAW focused on Ford. Ford had said, in April of 1937, that he would "never recognize the UAW or any other union." He had organized against them, with loyal plant leadership, an efficient espionage service and the benefit of learning from his competitors "mistakes". Nevins observes, "with Ford, Bennett and Sorensen maintaining their severe regime, the atmosphere of the Ford factory on the Rouge was particularly noxious, and the hostility to unions especially virulent."[35] The UAW announced that they had planned to, for the first time, to distribute leaflets at the Rouge, an activity that they had obtained a permit from the city of Dearborn. The events of May 26, 1937, are now known in UAW history as the "Battle of the Overpass".

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[34]Ibid, p. 53.
[35]Nevins and Hill, Expansion and Challenge, p. 47.

When the sixty union distributors, two-thirds of them women, came to the Rouge, they were attacked and severely beaten by Ford Servicemen. Two of the union's officials, Walter Reuther and Richard Frankensteen, were singled out for particularly rough treatment, sending both to the hospital and sending Reuther's career into a meteoric track. Dearborn police stood by throughout the event, doing nothing to prevent the violence against the UAW while photographers from the Detroit papers, the *New York Times* and the Associated Press recorded the event for the nation. When Time published an account of the beatings, the company withdrew its advertising for a year and a half.[36] Following the incident, the UAW kept up its leafleting activities and eventually Ford pressured the Dearborn City Council to pass an ordinance which prohibited distribution of literature at congested areas, namely, the approaches to the Rouge at the times when shifts changed. By 1940, the union established a large fund, half provided by the national CIO led by John L. Lewis, then CIO president, and half provided by the UAW, for the purpose of breaking the closed shop at Ford. The Rouge was once again the focal point for union activity.

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[36]Ibid, p. 78.

The "Fall of Ford" in 1941--UAW Local 600 was chartered August 9, 1938, but did not gain much worker support until the Rouge plant-wide strike of 1941. The UAW slowly began to gain a foothold on Ford. Ford tacitly recognized the union by agreeing to meet with plant wide committees, but it still refused to talk to the UAW national leaders.[37] Harry Bennett, head of the Ford negotiating team, promised to uphold the law, but conveyed Ford's real position when he said, "we will bargain till hell freezes over but they won't get anything."[38] In April of 1941, the company's policy took an unexpected turn. On April 1, 1941, Ford refused to meet with any union committees, and in the rolling mill, pressed steel, tire plant and Assembly (B) buildings, UAW committeemen were discharged. After this, the men in the plants just quit working and waited for the company to rehire the committeemen it had discharged. The strike spread from building to building, until the entire plant was shut down. UAW officials did not know what had happened, for the strike had not been planned and there was no effective way of communicating with or within the plant. By evening of that day, the papers reported what Detroit thought was unbelievable and impossible: "River Rouge Is Down 100%."[39] Harry Bennett's "hell" had frozen over. Ford eventually relinquished the strong anti-union stand, granting generous concessions. (See **Figure 25** for a listing of the Union's demands) The first UAW contract with Ford Motor Company was signed June 20, and ratified by the Local on July 22, 1941. After organization, Local 600 remained the largest and most controversial local in the UAW. In 1949, Local 600 called another strike against Ford over the management directive of the speeding up of the assembly lines. During the McCarthy era, numerous Local 600 officers were the target of anti-communist investigations. The local was also the center of anti-Reuther sentiment in the union. With as many as nineteen separate plant units and 50,000 to 80,000 members in various periods of its history, Local 600 remains perhaps the most active local in the UAW. In 1980, Local 600 membership had still over 30,000 active workers. However, layoffs and closures have seriously diminished the rolls, and by 1990, active membership roll in Local 600 is under 17,000-a figure

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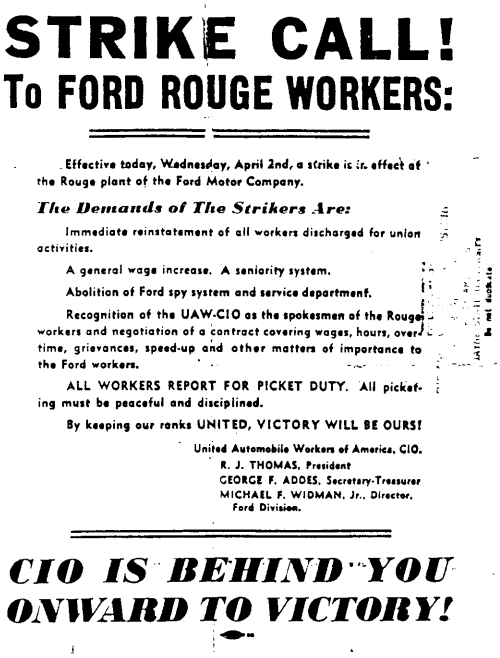
[37]Ibid, p. 81.

[38]"The United Automobile Worker", Vol. 19, No. 6, June 1956, p. 11. From the Wayne State University Archives.

[39]The Detroit Free Press, Thursday, April 3, 1941, p. 1. From the Wayne State University Archives

Figure 25: Strike Call from the CIO to Ford Rouge Workers



STRIKE CALL!
To FORD ROUGE WORKERS:

Effective today, Wednesday, April 2nd, a strike is in effect at the Rouge plant of the Ford Motor Company.

The Demands of The Strikers Are:

Immediate reinstatement of all workers discharged for union activities.

A general wage increase. A seniority system.

Abolition of Ford spy system and service department.

Recognition of the UAW-CIO as the spokesmen of the Rouge workers and negotiation of a contract covering wages, hours, overtime, grievances, speed-up and other matters of importance to the Ford workers.

ALL WORKERS REPORT FOR PICKET DUTY. All picketing must be peaceful and disciplined.

By keeping our ranks UNITED, VICTORY WILL BE OURS!

United Automobile Workers of America, CIO.
R. J. THOMAS, President
GEORGE F. ADDES, Secretary-Treasurer
MICHAEL F. WIDMAN, Jr., Director, Ford Division.

CIO IS BEHIND YOU
ONWARD TO VICTORY!

which includes 1,200 Health Care Workers.[40] Employment at the Rouge is reported at 8,900 and an additional 2,900 workers at Rouge Steel.[41]

Ford played a prominent role in the "Arsenal of Democracy"-the war production effort for World War II. During America's participation in WWII, Ford transferred its capacity to the production of armaments. Ford produced Liberator bombers at its Willow Run facility to the west of Dearborn and built a variety of engines, vehicles, including the jeep, at the Rouge facility and parts at the Highland Park plant. Charles Sorensen writes that because of the Rouge plant, Ford emerged from WWII to peacetime manufacture of automobiles with five distinct advantages over its competitors: "First...it had its own source of raw materials. Second, it had the world's greatest, most complete industrial manufacturing plant-the biggest machine shop on earth. Third, the Rouge plant, with assets of $1,500,000,000 was owned outright an dwas built out of profits and not a cent of borrowed money. Fourth, it had a work force and supervision at the foreman level trained in Ford production methods.

[40]UAW Local 600, UAW Facts, Vol. 52, No. 9, September 1990, p. 1.
[41]Detroit Free Press, Saturday, October 6, 1990, p. 9B.

Fifth, it had its own steel mill and therefore was unaffected by a steel shortage after the war which crippled the operations of many less fortunate companies."[42]

Although the Rouge placed the company in a strong competitive position after the war, it also placed the company in a precarious position politically. In discussing the legacy of Henry Ford, David Halberstam observes about the Rouge:

"Nothing reflected his failures more tellingly than the fate of the River Rouge manufacturing complex. It was an industrial masterpiece, and it should have stood long after his death as a beacon to the genius of its founder. But the treatment of human beings there had been so mean and violent, the reputation of the Rouge so scurrilous, that in the postwar era it stood as an embarrassment to the new men running Ford, a reputation that had to be undone."[43]

With the unexpected death of Henry Ford I's son Edsel at the age of 49, the 80 year old founder resumed the presidency. The passage of family leadership went to Edsel's son, Henry II. The second Henry Ford was twenty-eight years old when he took over in September of 1945. Two years later, Henry I died at his Fair Lane estate at the age of 83. Henry II (the Deuce as he was affectionately called) inherited a financial mess that by the beginning of 1946, was losing $10 million a month. Much of this disarray was due to the founders distrust (and documented dislike) of accountants. It is not surprising, given the sense of financial disrepair he inherited the company in, that Henry Ford II turned to a new breed of executive-professional managers and financial experts- a group of whom were nicknamed the "Whizkids", including such names as Robert McNamara and J. Edward Lundy. In the post war years the new management of Ford, to whom Henry Ford II gave nearly unlimited power, moved the focus of the company from engineering and production to that of management and control systems.

Henry II focused on reorganizing and decentralizing the company. The company split its operations into two; North American Automotive Operations (NAAO) and

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[42]Charles E. Sorensen with Samuel T. Williamson, My Forty Years with Ford, New York: WW Norton & Company, Inc., 1946, p. 152

[43]David Halberstam, The Reckoning, 1986, p. 104

International Automotive Operations (IAO). Beginning in 1944 and continuing to this day, Ford is the largest U.S. based auto firm in terms of sales and foreign operations. In 1956, public sale of Ford common stock began. In 1957, Ford began diversification with the founding of Ford Aerospace & Communications. Diversified Products eventually expanded to include Glass, Steel, Casting, Plastics and other products, and even land development by establishing in 1970 the Ford Land Development Corporation. He also established the Ford Foundation, an international organization, with an endowment from the company.

Ford on the eve of the 1980's had just celebrated its 75th anniversary, and was the least prepared of the big three to face the radical restructuring of the automotive industry in the 1980's. A recent account of Ford's rebound states, "the Ford Motor Company rebounded from virtual extinction in the late 1970's to become the world's most profitable automaker and the undisputed leader in a resurgence of American manufacturing quality and productivity."[44] Ford went through massive five year, $5 billion transition, in models, facilities and key management personnel during the early eighties. Led by Phillip Caldwell and Donald Peterson, the company developed it widely successful Tauras and Sable series cars, which came to symbolize Ford's transformation. The company at the end of the decade was actually on an upswing. Dramatically downsized and reorganized, Ford had also shifted some of its management energy and focus from manufacturing to finance. The company reorganized into the automotive group, the diversified products operations with ten automotive and non automotive businesses, and the financial services group, including Ford Credit and other insurance and banking concerns. During the 1980's the company also purchased interest in several manufactures, including Mazda, and eventually Rouge Steel, when it sold the operation to the Marico Corporation, and purchased Jaguar outright. The cash outflows left the company ill prepared for the abrupt economic downturn of 1990. The 1990's have proven to be financially difficult for Ford as well as the entire auto domestic industry. Buyer demand is down and plant shut downs and layoffs are up. Recently, Ford reported record second quarter 1991 losses of $884 million.

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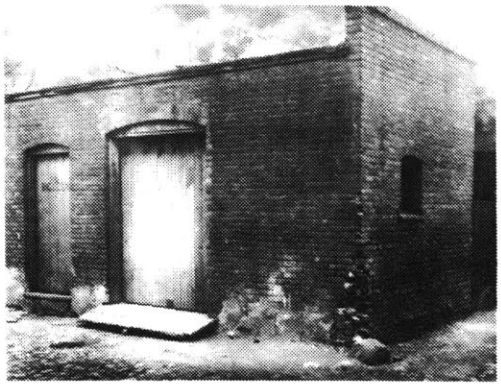
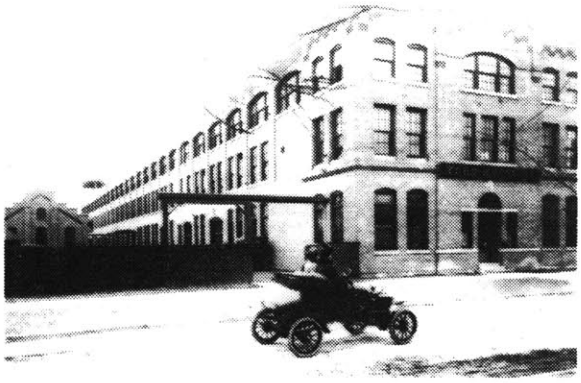
[44]Alton F. Doody and Ron Bingaman, Reinventing the Wheels: Ford's Spectacular Comeback, Cambridge, Massachusetts: Ballinger Publishing Company, Cambridge, 1988.





A brief history of the facilities that preceded the Rouge

Bagley Avenue Workshop -- when Ford was working as an Engineer at the Edison Illuminating Company in Detroit, he began working in a small workshop at the rear of 58 Bagley Avenue residence in Detroit where he and his wife Clara were living. Every night he would return to the workshop and work late into the night on his engine and chassis ideas . Ford, 32 at the time, produced his "quadracyle" at the workshop with the aid of four helpers, and took it on its trial run on 4 June 1896.[45]

Mack Avenue Plant -- In 1902, Ford's early partner Malcolmson purchased a small coal business on the beltline railroad at Mack Avenue. The site consisted of a coal yard and an old wagon shop, which they remodeled according to Ford's designs for use as an automobile assembly plant. After three months work, they brought over the equipment and work force form the Park Place Shop on April 1 of that year.[46] The plant featured an assembling room about 250 feet by long 50 feet wide and a dozen workmen hired a $1.50 a day to work a 60 hour week.[47]

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[45]Nevins and Hill, The Times, the Man, the Company, p. 230

[46]Ibid, p. 230

[47]Ibid, p.236

Piquette Avenue Plant -- The explosive growth of the company in 1903 led Ford and his associates to consider expansion of facilities and manufacturing capacity. On April 1, 1904, a special meeting of stockholders approved the purchase of a new site a t the junction of Piquette and Beaubien Avenues for $23,500 and the construction of a building at a maximum cost of $76,500.[48] The lot was 430 x 308 feet, or 1.4 acres, and was adjacent to the tracks of the Michigan Central, Lake Shore, Grand Trunk, and other railroads. Foundations for the 402 long x 56 foot wide, three-story structure were laid in May of 1904, with construction of the building occurring that summer. The Detroit architectural firm of Field, Hinchman & Smith designed the plant, which included the main building, a power plant, a paint shop, and a testing house of wood and brick construction. The main plant featured stairways at the front and back, an elevator at the rear for materials, and careful precautions against fire, including fire walls and an automatic sprinkling system. The first floor featured business offices, factory uses and a testing area. The second floor contained Ford's office, drafting rooms, a second machine shop. Later room was made here for assembly work, and

[48]Ibid, p.262

body painting and trimming. The third floor initially housed painting, trimming and and varnishing operations and the general assembly of cars. All three floors had storage space. Eventually, the drafting room was moved to the third floor and a metal analysis unit was installed.[49] In late 1904 and early 1905 manufacturing operation were transferred to Piquette Avenue. The facility was much larger than the Mack Avenue Plant, providing space for the entire work force of the company. For the first year, production of cars was 1745, little more than the company's 1903-04 period. At this time, assembly of autos was a primitive operation, with engines, frames and bodies assembled separately, and brought together for final assembly simply by being carried to a designated spot and set on wooden horses. Each individual car was then completed by a group of workmen, with twelve or fifteen such stations active at one time. With increasing production, the factory soon ceased to be adequate, especially since it was never designed for sequential production. Many have speculated that as Ford and his associates looked at the unsystematic, cluttered rooms, they began to envision a better arrangement: a plan in which machines, employees, and materials would be placed in a sequential line of production. In 1906, Ford decided that the Piquette Plant was not large enough for all the necessary parts manufacture, and the company leased a building at 773-775 Bellevue Avenue from the Wilson & Hayes Manufacturing Company. The **Bellevue Avenue Plant** was used for the production of engines and transmissions for a low priced car that they called the Model N. The Model N was the predecessor to the Model T, the origin of Ford's notion of producing large numbers of identical cars at very low prices. The Model T was the handiwork of a dozen men, with Ford serving as leader, designed in a small experimental room at the north end of the third floor of this plant, a process that began in 1906 with Ford's experimentation with vanadium and heat-treated steels and culminated with the beginning of deliveries from the plant in fall of 1908. In the summer and fall of 1908, frenzied preparations were made to improve the plant to produce to the demand for the Model T, which grew well past 10,000 in the first year of production. Planning, factory design, focusing of material and addition of new machinery was implemented at Piquette in order to improve production conditions, and eventually the plant was expanded in 1907. Consolidation of the Piquette and Bellevue operations also occured in early 1907, moving all machinery from Bellevue into the expanded Piquette

[49]Ibid, p.266

operation. In the summer of 1908, the Piquette workers broke all records in automobile history in meeting the final orders for the Models N and S. During one ten hour day they built 101 cars. The company soon called for steady maintenance of the 100-car-a day level, and Ford predicted that the impending move to the new Highland Park facility would "multiply by five".[50] There is anecdotal evidence that a chassis "rope hauling" experiment may have taken place at Piquette, but there was no genuine attempt to establish a moving assembly line there, nor even in the first two years at Highland Park.[51] The first great step had been taken at Piquette, when the management began bringing the work to the men instead of men to the work. The second step followed, partly at Piquette and more completely at HP, when men, machines and materials were placed in the sequence of operations. However, the Highland Park plant was planned with increased production goal in mind, and Ford knew to achieve it he needed to add two vital new elements: Moving assembly lines and numerous overhead conveyor lines, orchestrated through careful timing to give continuous flow to operations. The transfer to Highland Park laid the ground work for, as Allan Nevins wrote, "the systematic inclusion of these two new elements in factory work, and for the mastery of everything implied in mass-production-the greatest of the achievements associated with Ford and his company."[52] The company decided it was more economical to concentrate the work in one place, so , in the summer of 1911, the Piquette buildings were sold to Walter E. Flanders, acting for the Studebaker Corporation, to become Studebaker Plant No. 10. The buildings still stand today, housing a dry cleaning operation and warehousing facilities.

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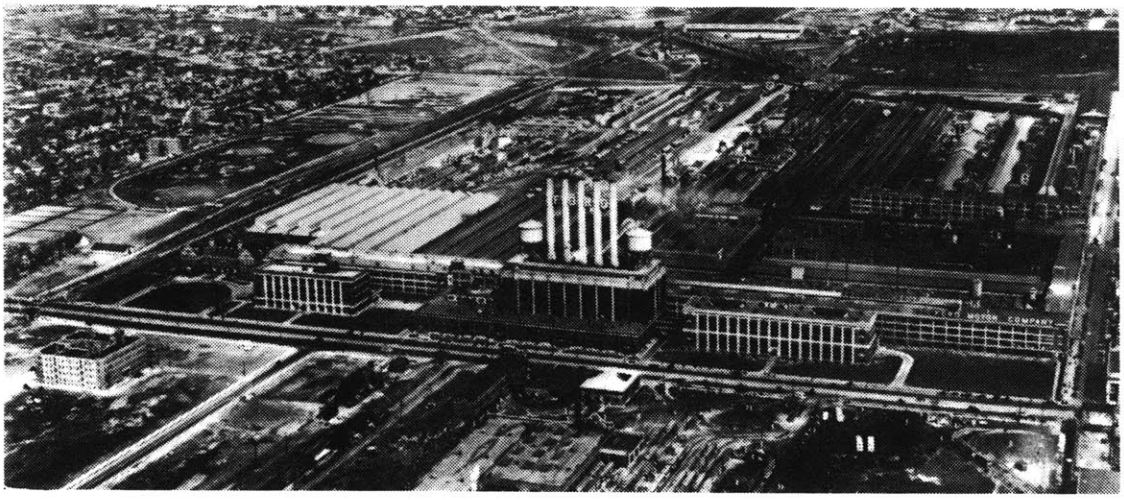
[50]Ibid, p. 372
[51]Ibid, p 369.
[52]Ibid, p 372.



Highland Park--was designed by Albert Kahn with the assistance of Ford chief construction engineer Edward Gray, and erected in 1909 on Woodward Avenue, "way out in the country", at the time, in northwest Detroit, and now the city of Highland Park. The initial factory building was four stories, length of 865 feet and width of 140 feet, it was, at the time, the largest building under one roof in Michigan.[53] The structure was of concrete-slab girder-beam construction. For the first time, industrial steel sash, imported from England, was used in combination with the concrete frame. The concrete framing allowed the use of more than 50,000 square feet of glass, which earned it the nickname "the Crystal Palace" and ushered in the era of the Daylight factory. Kahn used brick corner bastions and a cornice to ornament this structure-the last time in his pursuit of a more utilitarian aesthetic. Ford and Sorensen had, in the mean time, perfected their experiments in production efficiency. It is in this facility that they employed the magneto line and ultimately, in 1913 came the dawn of production by the powered continuously moving assembly line-the birth of mass production.[54] Though the process is commonly called 'mass' production it centered on more than the principal of quantity production. Ford summarized it as "the focussing upon a manufacturing operation of seven different principals: power, accuracy, economy, continuity, system, speed, and repetition."[55] His experiments paid off and production

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[53]Ibid, p. 452

[54]The exact date is not known, though Nevins and Hill identify a test run in "spring of 1913.",. Ibid, p. 466.

[55]Nevins and Hill, Expansion and Challenge, p. 61.

at Highland Park increased exponentially. In 1910: 19,000; in 1911: 34,500; and in 1912: 78,440.[56]

The move from Piquette to Highland Park was accomplished on New Year's 1910, on the first day of the new year the company began shipping product out of the new structure, only one quarter finished. The complex then added several other structures: parallel to the main building was a one story machine shop with a saw-tooth, or butterfly, roof. Both buildings opened on to a craneway, which was between them. The auto storage area was of steel construction with a skylight running down its full length. At the rear of the site was a large foundry (200x200 feet). In front of the main building was the power house with five smokestacks and glass front, revealing its inner workings to the street, and a four story brick and stone office building in front of the main structure on Woodward. Ford was very proud of the power house, which was kept spotless and often shown to visitors. His own office was connected to the Power House via a second story bridge.[57] The principal additions to the original plant, such as buildings W and X, were designed by Gray and Ford engineers between 19019-1915, though much of the credit has been given to Kahn.

The Highland Park factory was Henry Ford's first association with Albert Kahn, the architect who eventually designed over 1,000 plants for the Ford (plus 150 GM plants, a dozen Chrysler plants and hundreds of others in the US and around the globe) and has now been most notably associated with 20th century industrial architecture. As David Lewis writes, "Kahn owed much of his reputation to his relationship with Henry Ford and the design of two Ford factories: the Highland Park plant, largest auto facility of its day, and Ford's River Rouge complex, the world's biggest single-company industrial concentration. These factories were the most visited and publicized of their era. As their fame spread, so did Kahn's."[58]

Kahn was born in Germany in 1869 and emigrated to Detroit in 1880 with his family. He began his architectural apprenticeship under George D. Mason in 1885 and

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[56]Nevins and Hill, The Times, the Man, the Company, p.457.
[57]Ibid, p. 456.
[58]David L. Lewis, "Ford and Kahn", Michigan History, September/October 1980, p.18

eventually established his own firm in 1902. Kahn maintained an architectural practice in Detroit until his death in December of 1942. In 1903, Kahn's brother Julius, an engineer, became associated with the firm as chief engineer and is generally given credit for much of the innovation in structural concrete which revolutionalized industrial architecture.[59] Though all of his commissions had been of a residential and commercial nature, in 1903, Kahn was commissioned to build a new plant for the Packard Motor Car Company.[60] Most architects of the time considered this type of commission beneath them, though accepting it proved fateful for Kahn. The first nine buildings on the site were conventional mill construction, but Kahn sought increased flexibility from the narrow column spacings that were inherent in this prototype. Kahn utilized the system of reinforced concrete that his brother had perfected in the design for building No. 10, which was erected in 1905. It was not long before the concept revolutionalized factory architecture nationwide. In 1907, Kahn received a phone call from Henry Ford: "Mr. Kahn, can you build factories?" asked Ford. Kahn replied, "I can build anything." Ford continued, "Well, come over here. I want to talk to you about that new building we are planning."[61] So began the relationship which would revolutionize industrial architecture.

Kahn is largely credited with this revolution. His biographers have said, "The role of the industrial architect today was anticipated by Kahn, who studied the production problem with the aid of a composite specialist group--production, structural, mechanical, and electrical engineers--and achieved a speedy and efficient result."[62] Further, "The system (of reinforced concrete) evolved in this 1905 plant (Packard 10) was destined to have a considerable influence upon contemporary American architecture

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[59]Another American architect, Ernest L. Ransome, is generally given credit as the concrete pioneer of the later nineteenth century and patented his re-inforced concrete system. Ransome's work is credited as creating the crucial break between the 19th century Mill building and the early 20th century multi-story factory. As Banham notes, "he is the apparent inventor of the concrete frame in its American version and thus of the true Daylight Factory." The Kahn brothers patented the Trussed Concrete system and are generally recognized as the most innovative in the next generation of builders in concrete. Banham, A Concrete Atlantis, p. 32.

[60]Much of the history here is taken from W. Hawkins Ferry, The Legacy of Albert Kahn, 1970 Detroit Institute of Arts, and Grant Hildebrand, Designing for Industry: the Architecture of Albert Kahn, Cambridge, Massachusetts: MIT Press, 1974.

[61]Lewis, "Ford and Kahn", p. 17.

[62]J.F. Munce, Industrial Architecture, New York: F. W. Dodge, 1960, p. 40.

and its preoccupation with the grid system. The principles enunciated in 1905 concerning proper industrial practice still hold good today."[63]

However, this initial work was soon eclipsed by Kahn's second revolution at the Rouge. Grant Hildebrand observed about Kahn's effort at Highland Park that, "Interesting as it was, this approach to the housing of manufacturing was soon to be outmoded with Ford's introduction in this same plant of the powered moving assembly line. Within five years of the opening of Highland Park, Henry Ford would turn his thoughts to a new manufacturing complex, and within seven years the company would embark on a policy of one-story buildings to the virtual exclusion of the multistory scheme.[64] The form of Highland Park, the birthplace of the moving assembly line, would be outmoded by its own progeny. Ford was concerned with efficiency, and the multi-level scheme was not the ideal architectural form for housing the production technology. The ramping of the line and the elevators required for material handling slowed production and were expensive equipment which was not contributing to assembly. In addition to the abandonment of the multi-story scheme, the assembly line also dictated the use of steel framing over reinforced concrete. With the advent of the single story plant which rested directly slab on grade, the characteristics of damp vibration and fireproofness became of less importance. The very large spans and relatively small columns achievable in steel better accommodated the layout complexities of machines and conveyors. After 1915, nearly all of Kahn's work for Ford was structured in steel.[65]

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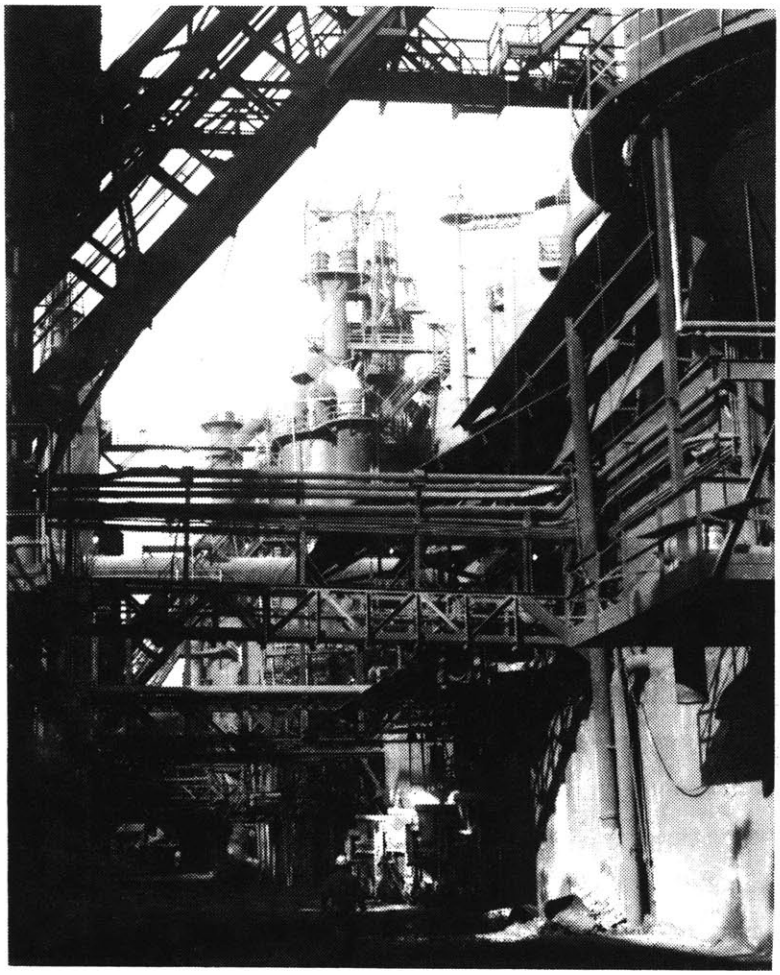
[63]Ibid, p. 40.
[64]Hildebrand, Designing for Industry, p. 45.
[65]Ibid, p. 92



3. The Story of the Rouge

"The forms of the Rouge had an authority of their own, severely functional. The concrete-lined oblong of the slip; the storage bins with their dark hills of coal or iron ore and white hills of limestone, the sheer bulk of the foundry, the stacks of the blast furnaces and power house, the authentic sweep of the High Line, the covered conveyors twisting like angular snakes from building to building--all give a picture of designed power...." **Alan Nevins**

Ford continued his successful association with Charles Sorensen and Albert Kahn to build his vision of a self sufficient industrial complex. From modest beginnings of a single structure on remote farm and marshland in 1917, the Rouge evolved, over the last 75 years, into the largest single site manufacturing complex in the world. Most accounts of the Rouge are a litany of impressive figures regarding its size and performance. Kahn and his firm was involved with the design and construction of the majority of the structures on the site between 1917 and 1938. The Rouge expanded rapidly, and by 1926, there were 93 structures (23 main buildings) on 1115.2 acres; 1-1/2 miles of docks for ocean-going vessels, 93 miles of railroad and 27 miles of conveyors. Before World War II, manufacturing buildings designed by Kahn had a floor area of more than 9,650,000 square feet.[66]

The 1200 acre site is bounded by the Detroit Industrial Freeway (I-94) to the northwest, by Rotunda Drive to the north, by Chesapeake & Ohio Rail right-of-way to the east, by Shaeffer Road to the west and by the Rouge River to the south. Within the site, the once highly integrated facility consists of four major manufacturing and processing units, that of Assembly, Glass, Engine, Stamping and Rouge Steel, of which Ford is a minority owner, as well as an array of support structures such as power houses, warehouses, laboratories, maintenance and office buildings, all of which sum to a total of 16,995,540 square feet of floor space. In 1989, the sale of Rouge Steel has effectively halved the operation that is solely owned and operated by Ford, though certain parts of Rouge Steel operation, the Power operation in particular, were recently turned back over to NAAO control. The site has been divided into two area, largely for tax purposes. These areas lie to the south and north of the main organizing arterial-Road 4-and delineate, roughly, the division between the land and facilities owned by Rouge Steel and the remainder, which still belongs solely to the Ford Motor Company. (See **Figure 26**) The Rouge is served by rail through the facilities of Consolidated Railroad Corporation (Conrail-the former Pennsylvania Railroad), the Chesapeake and Ohio (C&O), and the Grand Trunk Western Railroad, which in the 1980's acquired and absorbed the old Detroit Toledo & Ironton Railroad (DT&I-purchased by Ford in 1920 to transport coal from Ironton to the Rouge and Highland Park and eventually sold to private interests in 1929) The Grand Trunk Western handles traffic in the direction of

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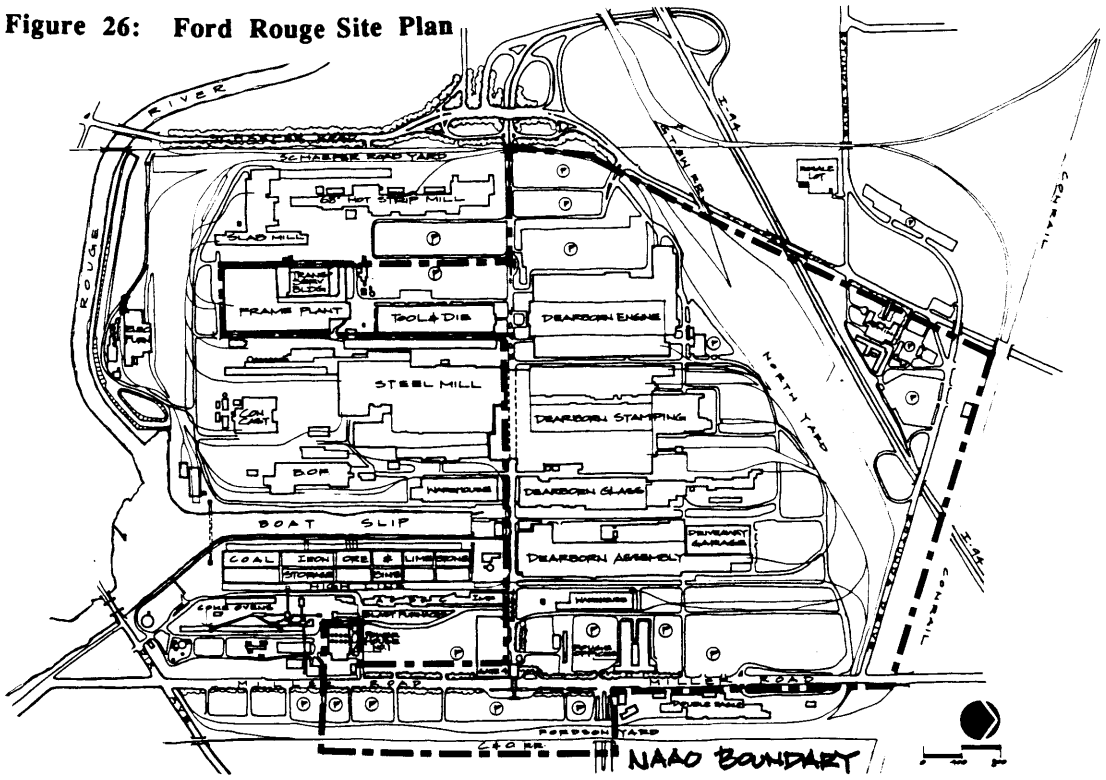
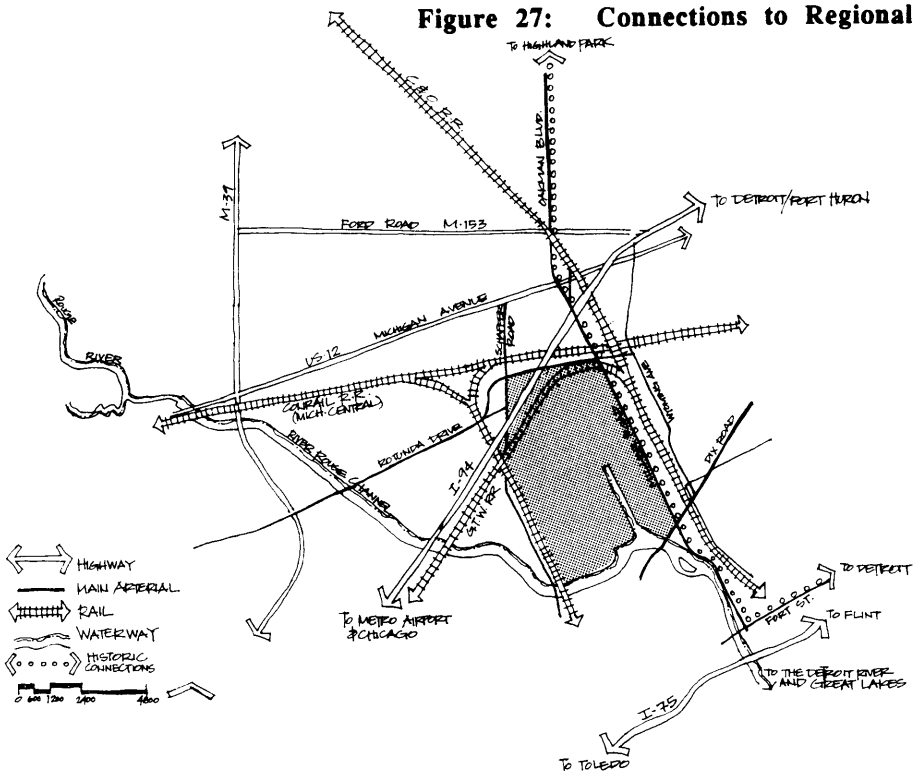
[66]Albert Kahn Associates, Inc., Detroit, Michigan, Archival Document.

Figure 26: Ford Rouge Site Plan



Canada and Chicago, the C & O handles southbound traffic to Ohio, Pennsylvania and Virginia, and Conrail handles the bulk of the traffic headed to the east coast as well as Indiana and Chicago. Within the site boundaries, the Rouge Railroad system has 90 miles of Ford owned tracks that service the various buildings and form the various railroad yards. Chief railyards include: the Fordson yard to the east, the Main North Receiving and Interchange yard and the Patterson storage yard, to the north and the Schaeffer yard to the west. The site is served by water by the Detroit River via the Rouge River, through a turning basin and canal slip which is 24 feet deep. Docks, 1-1/3 mile long, are located along the slip for receiving and storing ore, lime stone, and coal. Roulo Creek, which was paved over during construction of the complex, still runs north-south along the Assembly Building, under Road 4 and drains into the canal slip. The site is connected to the regional highway network through two exits to I-94- one off of Rotunda Drive and the other off of Schaeffer Road. Access to I-75 is to the south along Miller Road to Fort Street. **Figure 27** illustrates the site's connections to regional rail, highway and waterways. The site is also served by bus and was formerly served by streetcar. There are 35 miles of concrete Roadways and 59 areas for employee parking consisting of 110 acres, enough to handle 16,500 cars, service the

Figure 27: Connections to Regional Infrastructure



plant buildings. Extensive network of utilities and services provide the various factories within the complex. There is an extensive sewer and water system, the main Power House provides electricity, The Coke Ovens and Blast Furnaces provide gas, ammonia gas, high pressure air, steam, hot water, mill water, and drinking water is piped to and into all main buildings. Two propane gas systems are maintained for emergencies. The Rouge maintains a hospital, a construction department, a fire department, a private security force, a transportation services division which manages full fleet of automobiles, buses, trucks, locomotives and other heavy industrial equipment for transporting goods and individuals within the plant site.

Pre-Ford development --The Rouge River is a major estuary in the Detroit area, beginning at the top of the Rouge basin and emptying into the Detroit River. Early development of the area included the French Ribbon Farms. The French settlers named it *La Riviere Rouge*-- the red river. Henry Ford, born in 1863, grew up on a farm near the Rouge River, which was an important recreational part of his young life.[67] About a quarter mile south of the house ran Roulo Creek, which emptied into the Rouge River

[67]Nevins and Hill, Ford: the Times, the Man, the Company, p. 43

several miles below. The Rouge flowed from the north about two miles due west of the Ford Farm, running through a thickly wooded region southeast to the Detroit River. Fifty years later he would begin the Rouge complex, and between 1914-16 he would build a home-the Fair Lane Estate- there. The Detroit Riverfront in the late 1800's was already dominated by industrial uses. The development of the shore toward the mouth of the Rouge River was already beginning. Under the direction of the Rouge Improvement Company, some $8 million was already invested there by 1882, and the river had been made navigable for deep draft vessels for three miles inland.[68]

By 1912, Ford had purchased about 3700 acres in Dearborn Township, his holdings almost completely surrounding the little village of his childhood. When he began buying property, many citizens entertained visions of a great factory. Why else would he require so much land, a single tract embracing 1700 acres? When Ford made no immediate moves to construct a new factory, reports arose that he, a man with keen interest in wildlife, intended "merely the creation of a large bird reservation."[69] There had been speculation that Ford began acquiring huge tracks of land with the notion of constructing the Rouge or some large industrial complex in mind. There is evidence that his original thoughts involved envisioning a great Steel Plant, a plant that would require far more water than Highland Park offered, thus requiring a water front location.

With Ford making such extensive purchases of land in the Dearborn area, there exists some discrepancy regarding the timing and cost of the acquisition of land for the Rouge facility. Nevins and Hill cite the papers of Ford's real estate agent, Fred E. Gregory, which claim that between May 22, 1915 and Oct. 10, 1918, Gregory purchased 1439 acres in Springwells (to the north and east of the Rouge River) for $2,207,393.27 In addition, Gregory purchased 1030.13 acres in Ecorse Township for $1,001,440. Nevins states, "it may be assumed that of this total Gregory had acquired at least 2000 acres by July 15, 1915.[70] Biggs states that the purchase probably occurred in 1915, though cites company records that do not mention the purchase until November of

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[68]Ibid, p. 122-23.
[69]Ibid, p. 497.
[70]Nevins and Hill, Expansion and Challenge, p. 642.

1916.[71] Charles Sorensen asserts that the Gregory purchases took place by 1913 and that the entire 2000 acre site cost Ford only $700,000.[72] A year later Sorensen purchased a tract of land near Warren Avenue and built a home on the banks of the Rouge not far from the plant that he would craft, and in October 1915, he and Henry Ford would move their offices from Highland Park to Dearborn, beginning the shift in focus to the Rouge.

Throughout this period there is evidence that Dearborn site was not Ford's first and only consideration for the construction of the facility. Reports by William B. Mayo, the company's chief engineer of the time and Julian Kennedy, compare the desirability of the Rouge site to another site along the Detroit River.[73] Charles Sorensen writes, that he and Henry Ford "studied every tract of land available for industrial purposes around and about Detorit. We went the length of the Detorit River in a motorboat and as far up the Rouge as we could. The only vacant Detroit River waterfront land was some 400 acres, which would not be enough at the rate Ford Motor Company was expanding."[74] Sorensen remembers that Ford felt the Rouge site "had all the natural requirements for a large scale plant-level ground, available rail transportation, and a river which might be useful if it could be dredged."[75] Other evidence points to the fact that Ford had considered other sites for his massive operation. Ford had begun negotiating purchase of the large tract of land on the Maumee River in Ohio, but abandoned the deal when local speculators attempted to profit from it. In addition, Ford, before the turn of the century, had attempted, as a member of the "Citizens Committee of Fifty, to develop a residential community called "Oakwood" a community located just south of where the Rouge plant's turning basin was later located. The planned community, which developed slowly, was to have an electric rail road to provide rapid transit to Detroit.[76] This never materialized and the area now is dominated by industrial uses.

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[71]Biggs, Industry's Master Machine, p. 194.

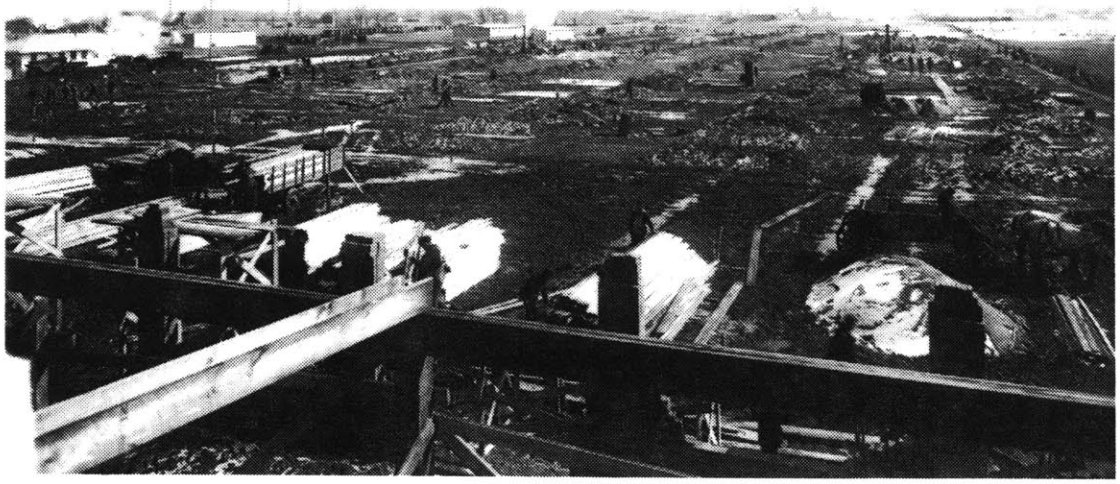
[72]Sorensen, My Forty Years with Ford, p. 154-157.

[73]William B. Mayo report on Rouge River Location, Nov. 13, 1916, FMC Archives, Accession No. 62, Box 49.

[74]Sorensen, My Forty Years with Ford, p. 156.

[75]Ibid, p. 156

[76]Nevins and Hill, Ford Expansion and Challenge, p. 200.



Fred Gregory's daughter Mary Louise remembers visiting the remote area, which lay three miles north of the Detroit River, and far from any developed part of the cities of Dearborn or Detroit. She is quoted as saying, "I thought there would be a factory, but that it would never be big." Ford and his engineers had a distinctly different vision. Sorensen remembers the planning meetings for the Rouge as early as 1915, before the land was apparently purchased or the contract for the Eagle boats was even negotiated. These meetings focused on the dredging the Rouge for deep water vessels and the provision of a iron smelting operation at the Rouge site. Since the project involved the consideration of a two mile trip up a relatively narrow channel, the Rouge would have to be dredged. This was a federal government matter, and in 1917, after a favorably survey from the Army Corp of Engineers, Senator William Alden Smith of Michigan introduced a bill that would deepen and widen the Rouge for a cost to tax payers of $490,000. The Rouge appropriation was passed in August of 1917.[77] Ford paid for the docks, canal (boat slip) and the turning basin which would allow steamers of some 600 feet to turn around and navigate back down the Rouge to the Detroit River. Additional money was spent to fill the swampy lands on the site, particularly adjacent to

[77]Sorensen, My Forty Years, p. 162.

Roulo Creek. There is some dispute about the public versus private funding of the start of the Rouge. Nevins claims Ford funded most of the improvement, which Hildebrand claims that the Eagle Boat contract afforded Ford "construction of a government-financed factory".[78]

Sorensen also recalls discussing details of future plant operations at these meetings, including provisions for bringing in workers by bus and streetcar. William B. Mayo was brought in to make preliminary studies for the blast furnaces and coke ovens. The layout of the ore storage, coke ovens, coal storage on the docks with the ore, dock space for lake ships to unload coal, ore, and limestone, and buildings for pouring iron and a slag disposal operation was first, and then dictated the exact location of later foundry and machine shops and finally assembly buildings. This conceptual design would allow the production of 10,000 automobiles a day, though this was still ten years away.[79] As with the Highland Park effort, the Ford engineers take credit for much of the site planning and physical design of the Rouge. Sorensen, in discussing the layout of the facility states, "(Harry) Hanson drew the men he needed from Ford Motor Company drafting departments, and the final layouts were made by the organization he set up. Then Albert Kahn, the architect, took these floor plans and designed the buildings."[80]

Ford pursued funding for the smelting operation at the Rouge even before the board of directors approved the purchase of the site. As was typical of the early company, Ford paid for all physical expansion and facility improvement with cash from profits. The board of directors met at the end of October, 1916, voted an expenditure of nearly $23 million of the companies profits. Of this, $12 million was for "the company's manufacture of its own iron and the erection of a manufacturing plant on lands to be acquired from Mr. Henry Ford at the River Rouge."[81] The expenditure triggered the now famous suit that stockholders John and Horace Dodge brought against Ford for diverting profits from dividends to expansion plans. In February of 1919, the

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[78]Hildebrand, Designing for Industry, p. 92.
[79]Sorensen, My Forty Years, p. 159.
[80]Ibid, p. 164.
[81]Ibid, p. 161.

Michigan Supreme Court handed down its decision in the Dodge case, requiring Ford to pay an immediate dividend and admonishing him from withholding dividends from stockholders in an arbitrary way. This decision made Ford a wealthy man, as he owned 585 shares of the 1,000 available, and he decided to buy out other stockholders in order to secure control of the company and protect himself from further interference with his expansion plans. On September 17, 1919, Henry, Clara and their son Edsel became sole owners of the company.

The Rouge grew out of Henry Ford's personal obsession with industrial self-sufficiency. Ford was already displeased with the inadequacy of Highland Park and the war had caused scarcity and rising prices for materials. Ford also disliked dependency on suppliers, and the threats of shortages and labor strikes all combined to kindle his idea of a manufacturing center that would function autonomously, controlling everything from raw materials to the finished product. Control of materials seemed to him, "buying insurance against non-supply."[82] Sorensen addressed the basic concept of the self-sufficiency of the Rouge:

"Its immensity and completeness are now so much a matter of course as to cease being a wonderment. What is overlooked, however, is its basic simplicity: raw materials come in at one side, a complete motorcar comes out the other. Also frequently overlooked is the essential philosophy behind its building and operation. Of the raw materials, coal and iron are the backbone of the automobile industry-iron because it is the principal component of the motorcar and coal because it is an essential in smelting of the iron and in furnishing the power without which there would be no manufacturing. No matter how efficient that manufacturing, coal and iron costs are prime elements in determining the cost of the completed automobile. These fluctuation costs are beyond the control of other auto companies. When Ford built the River Rouge plant he either owned or had lined up enough coal and iron deposits to handle his production. Thus, he controlled the sources of his two most important materials"[83]

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[82]Nevins and Hill, Expansion and Challenge, p. 201.

[83]Sorensen, My Forty Years, p. 152

As Ford had demonstrated at Highland Park with the inception of the assembly line, the basic element in his industrial concept was "flow". Ford recognized that without the flow of material to the point of manufacture, that flow at the point might be impeded. This revelation led him to the master machine of the Rouge and beyond-including long distance transportation of materials on land, water and rail and even to the ownership of sources of raw materials. Ford acquired the DT&I railroad in 1920, insuring rail connection to other major lines and his raw materials to the south. He also developed a fleet of 600 foot ore carriers, which transported cargoes of raw materials on the Great Lakes. Ford at this time owned extensive holdings of iron ore in the Upper Peninsula of Michigan and Minnesota, coal fields in Kentucky and West Virginia, and eventually rubber plantations in Brazil.

The issue of planning is an interesting one. Though the planning process is described as very formalized by some accounts, such as Sorensen's, there is evidence that the Rouge was the result of haphazard growth. Ford's underlying conviction that the factory must anticipate and accommodate change and expansion is evident, as is the notion for adequate room to enlarge one operation as an operative "planning policy". One observation of the planning of the Rouge as a total complex was "I think the Rouge was pretty much like Topsy, I think that it pretty much just grew." Even the mastermind's comments support this, as he is quoted as commenting on the location of a new manufacturing unit, "Well, push it over plenty far, we don't know what we're going to put around it."[84] But Hildebrand argues one significant planning strategy-that of the circulation matrix-was deliberate and probably included Kahn in the planning process. The clarity of the circulation matrix allowed ordered and efficient growth. All major rail and street lines and the canal slip run north-south, and major process lines in all buildings, beginning with the B-building and continuing, are oriented north-south, creating the basic relationship between buildings and infrastructure on the site. The other major organizing element, Road 4 which runs east-west, was not originally planned, but evolved as the plant grew laterally.

Ada Louise Huxtable writes, "he had envisioned this super-plant as early as 1915, with its own inland port, independent rail and water transportation, stock-piles of supplies,

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[84]Hildebrand, Designing for Industry, p. 117.

and its unhampered spread of low buildings providing acres of unobstructed space for the free flow of materials and operations."[85] Sorensen, however, states that Ford's initial concept for the Rouge site was "a feeder plant for Highland Park, just as the Piquette Avenue Plant was kept for a time as the feeder. The idea of the Rouge as a self-contained manufacturing unit did not at first enter his mind."[86]...Some evidence that Ford knew the final scope of the operations of the Rouge even before production began there comes in a news story where Ford discussed "making the Rouge a harbor for craft that will bring ore from the upper lake district and for craft that will carry the Rouge cargoes of motors direct to England, France, Germany, South America, Australia, and the Orient," in which Ford said of the Rouge, we may take ten years to bring thins to the point where we want them." [87]In addition, Ford was quoted as seeing the site, located between the iron ore of Upper Michigan and the Coal deposits of West Virginia as "the best spot in the world to build a steel industry."[88]

Though much has been written about the pernicious motivations behind the construction and operation of the Rouge, Ford's opinion of the facility seems to have less to do with power and control as with the ability to improve productivity, efficient use of materials and lessen waste, and in doing so, lower cost. It is for history to decide whether, in the Rouge, Ford finally achieved his objective, to "lift...drudgery off flesh and blood and lay it on steel and motors."[89] He said of the Rouge:"The greatest development of all, however, is the River Rouge plant, which, when it is running to its full capacity, will cut deeply and in many directions into the price of everything that we make."[90]

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[85]Ada Louise Huxtable, "River Rouge Plant for Ford Motor Company-1917", Progressive Architecture, December 1958.
[86]Sorensen, My Forty Years, p. 156.
[87]Nevins and Hill, Expansion and Challenge, p. 201.
[88]Lorin Sorensen, The Ford Road: 75th Anniversary Ford Motor Company 1903-1978, St. Helena, California: Silverado Publishing, 1978, p. 108.
[89]Nevins and Hill, Expansion and Challenge, p. 295.
[90]Henry Ford, My Life and Work, p. 151.

Figures 28-29-30 show the functional evolution of the facility. The first, drawn in ca. 1930, shows the original layout and intent of flow. The second is from ca. 1940, with the Rouge at its peak production capacity. The last shows the Rouge flow in ca. 1985, highlighting the inefficiency and awkwardnes of the flow of materials, showing some raw materials and parts handled twice in order to process them.

Figure 28: Rouge Functional Diagram ca. 1985

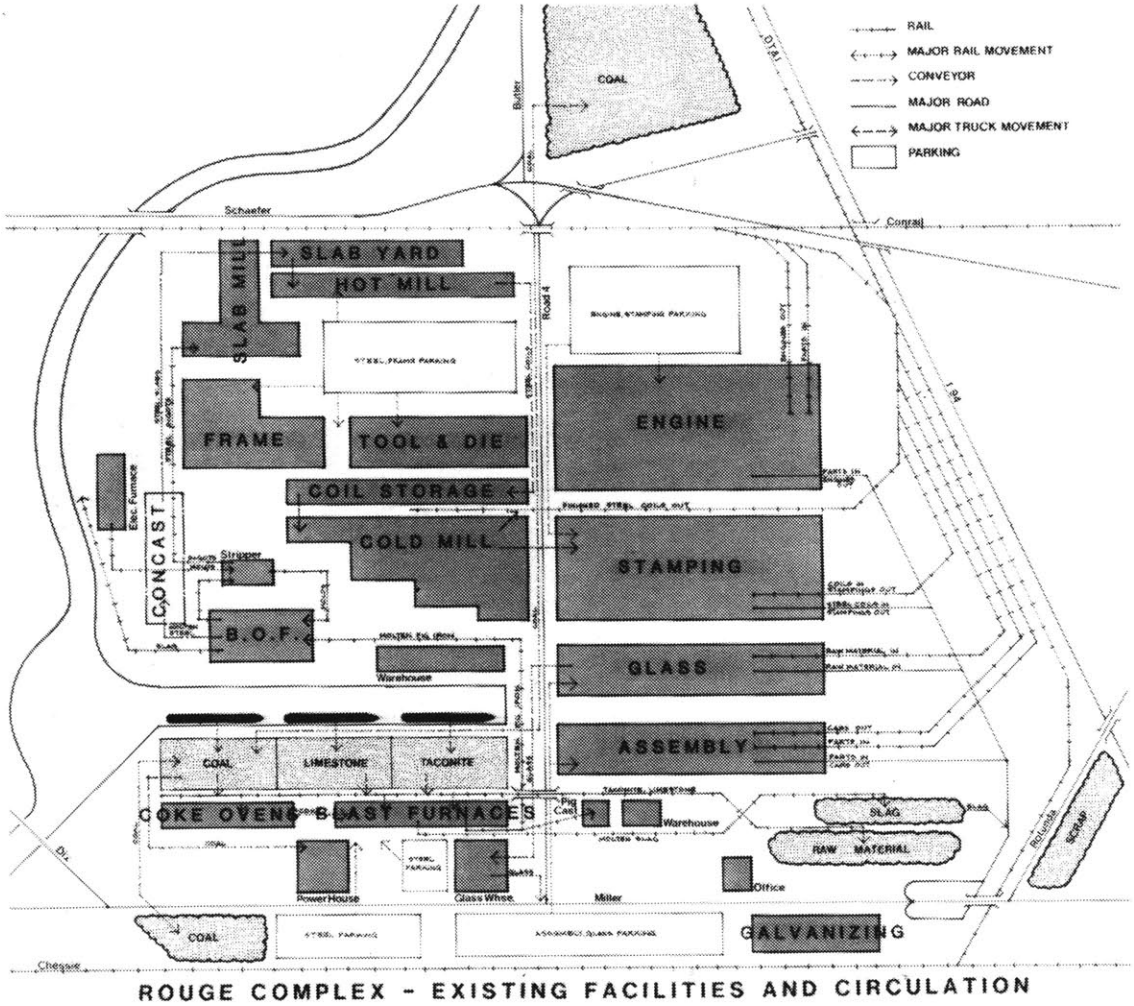


Figure 29: Rouge Functional Diagram ca. 1930

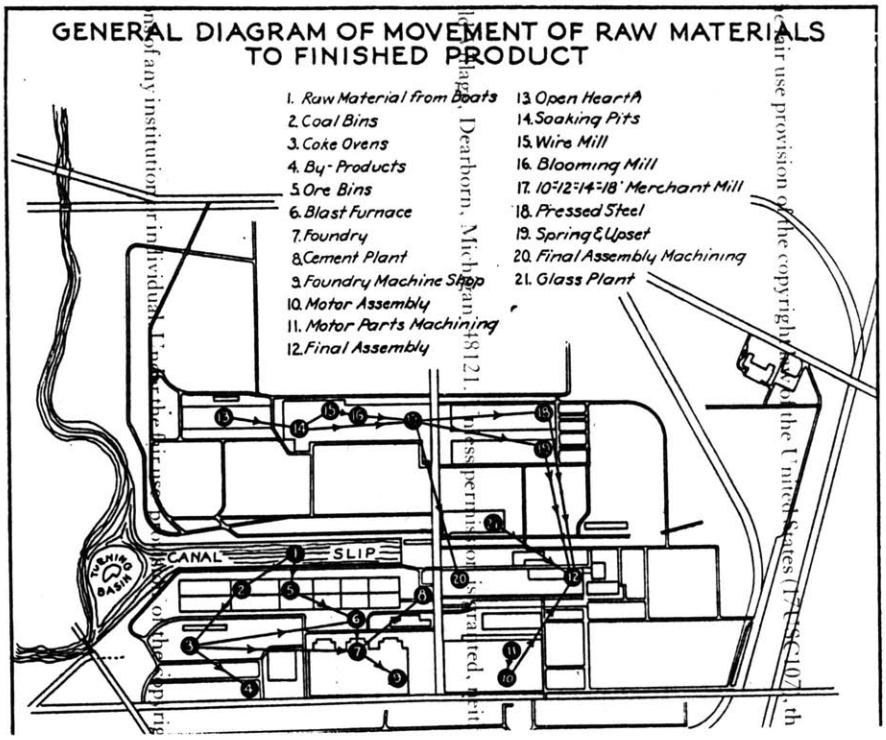
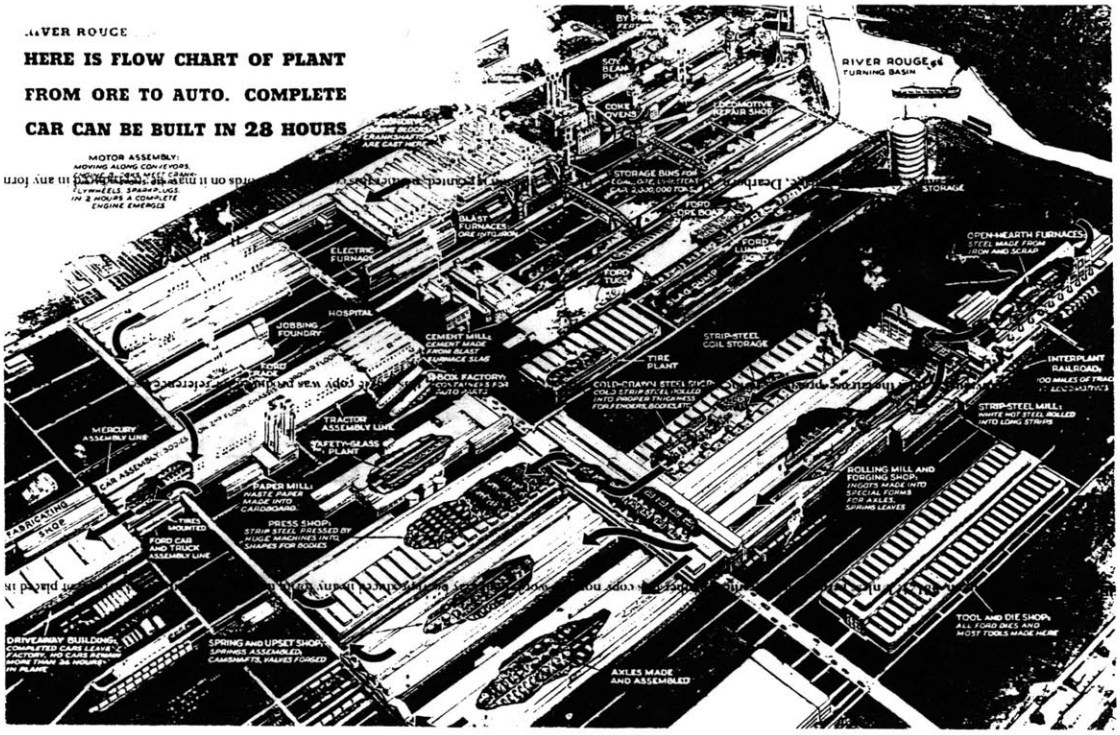


Figure 30: Rouge Functional Diagram ca. 1940



PHYSICAL EVOLUTION

To aid in the understanding of the physical evolution of the facility, the following timeline with accompanying illustrations of major phases of both construction and demolition of the facility. There seven major periods of growth: **1917-1918, 1918-1921, 1923-1930, 1930-1945, 1945-1960, 1960-1980** and **1980-Present.**[91]

1917-1918 (Figure 31)

While Ford planned extensive operations for the Rouge, the first actual construction on the site was catalyzed when Ford secured defense contract for the WWI Eagle Boat Submarine Chasers. The Eagle Boat contract had roots in a meeting in February 1917 between Ford and Navy Secretary Daniels in which Ford offered to turn over the full productive resources of his company to the Navy.[92]"On December 22, 1917, I offered to build the boats for the Navy."[93] On January 15, 1918, (March 1, 1918[94])a contract was let . The Navy authorized Ford to build 100 Eagle Boats, and Ford had boasted that he could build one per working day. Ford recorded the production events in his book with a casual tone that David Hounshell suggests that Ford view implied that he "could just as easily have been a vacuum sweeper as a 200-foot long, 500 tons displacement patrol boat; his firm's mass production technology was universally applicable."[95] In keeping with a reduced contract from the Navy, Ford eventually built only 60 of the sub chasers, delivering the 60th boat on October 15, 1919. The program was plagued by design and manufacturing flaws. The Eagle boat venture

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[91]Information for this timeline was collected from several sources, the majority came from three: Albert Kahn and Associates Archives original production drawings and briefing sheet for the Rouge Job Nos. 847, 847 A.H., and 1071; Henry Ford Museum Archives Accessions No. 524 Boxes 7 and 8, and No. 680 box 4, and The Ford Industrial Archives Accessions 65-90 Plants/Divisions/Buildings including Ford Facts and Figures, the official Tour Guide book last published in 1979 (29th Edition) for use in the Rouge Tours. The various site plans which are shown as illustrations (sources noted) also provided information. George Bodurow was an invaluable source of information for physical changes between 1950 and the present day.

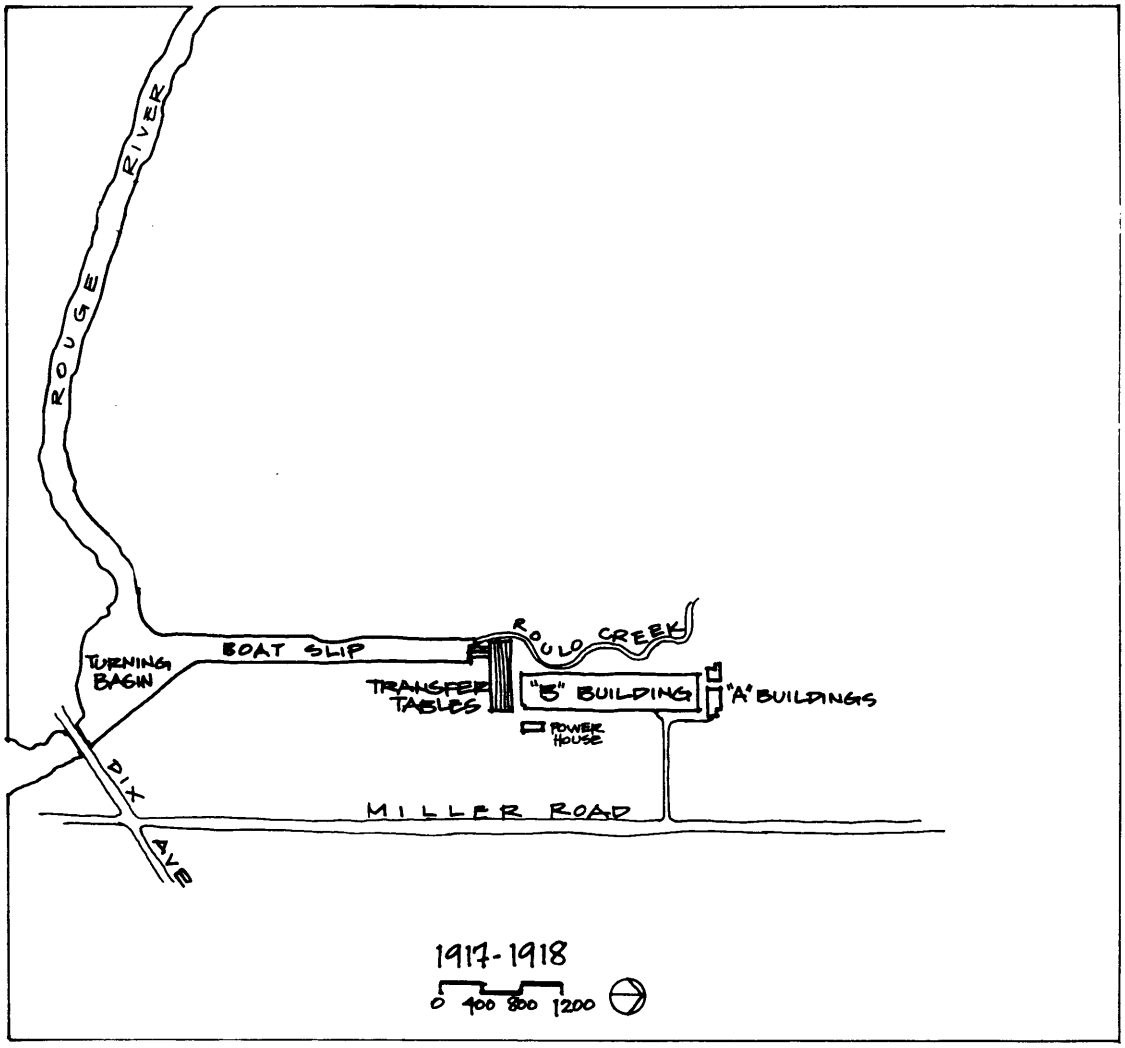
[92]David A. Hounshell, "Ford Eagle Boats and Mass Production", Military Enterprise and Technological Change: Perspectives on the American Experience (Edited by Merritt Roe Smith, Cambridge, Massachusetts: The MIT Press, 1985), p.180.

[93]Henry Ford and Samuel Crowther, My Life and Work, Garden City, NY: Doubleday, Page, & Co., 1922, pp. 246-47.

[94]Hounshell, "Eagle Boats", p. 184.

[95]Hounshell, "Eagle Boats", p.179-180.

Figure 31: The Rouge 1917-1918



was, as Hounshell concludes, "an ill-fated attempt to bring the supposed power of mass production technology to bear on the problem of procuring ships for warfare. It pointed up the difficulty of transferring the methods used to manufacture a high-volume consumer durable like an automobile into an area like shipbuilding which had its own tradition of knowledge and skills and which produced a comparatively small number of units."[96] However, the Eagle Boat venture had significant impact on the beginnings of the Rouge facility, allowing Ford to set the design and growth pattern of the facility: to build quickly and on a huge scale.

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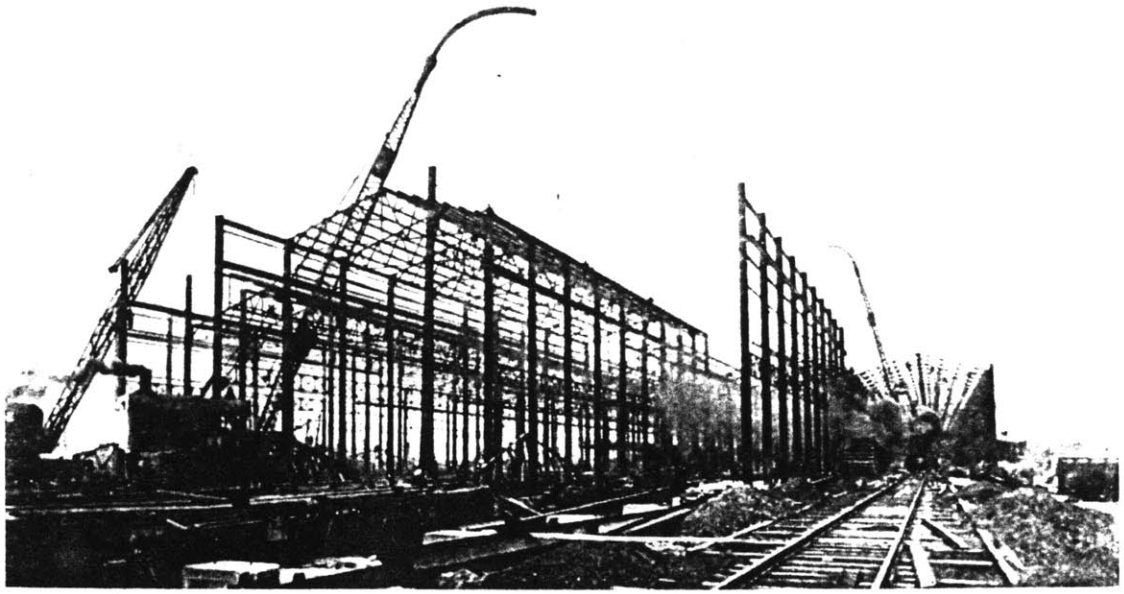
[96]Ibid, p. 201.



Ford Shipbuilding Plant. Job #847. (1919)
Dearborn, Michigan

1917 -- As soon as the contract was let, Ford began the construction of a full size model of the Eagle Boat in the main craneway of Ford's Highland Park Factory, and simultaneously began design and construction (with public funds) of the B-building (Boat Assembly Building) and other facilities at the Rouge site. The structures, designed by Albert Kahn, included the the fabricating shop and tool room, or A-Building (150 feet by 600 feet) constructed first to store materials for the construction of the main assembly building[97] and eventually where the steel sheets were formed and where other Eagle parts were fabricated. The main assembly building, or B-Building, was a huge one-third of a mile long containing 30 acres of floor space (300 x 1702 feet with a floor area of 1,371,652 square feet). The structure was designed with 5 immense aisles, each 51 feet wide by 1700 feet long, which accommodated the travelling craneways and three parallel assembly lines for the 200' boats was constructed just south of the A-building. The structure was designed as a single floor open shed, though it was high enough to assemble the complete ship under its roof, and designed so that Ford could add three floors the full width and use it for a

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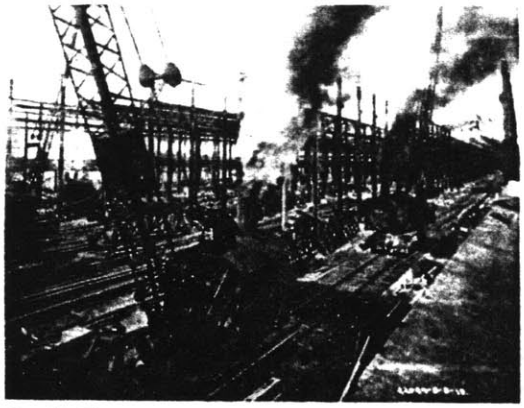
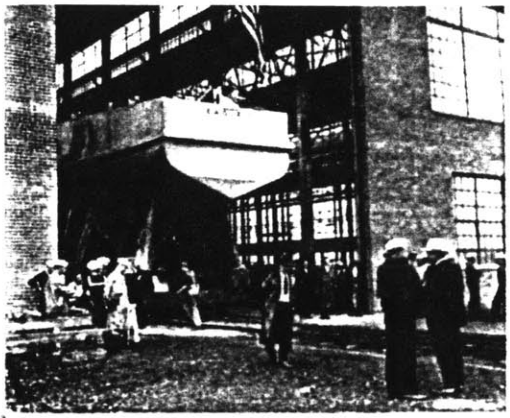
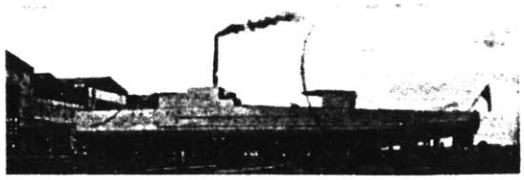
[97]"DAP's Annuals 1915-1928", Dearborn Assembly Plant Management Bulletin, February, 1955, p. 4, from Accession 524, Henry Ford Museum Archives.



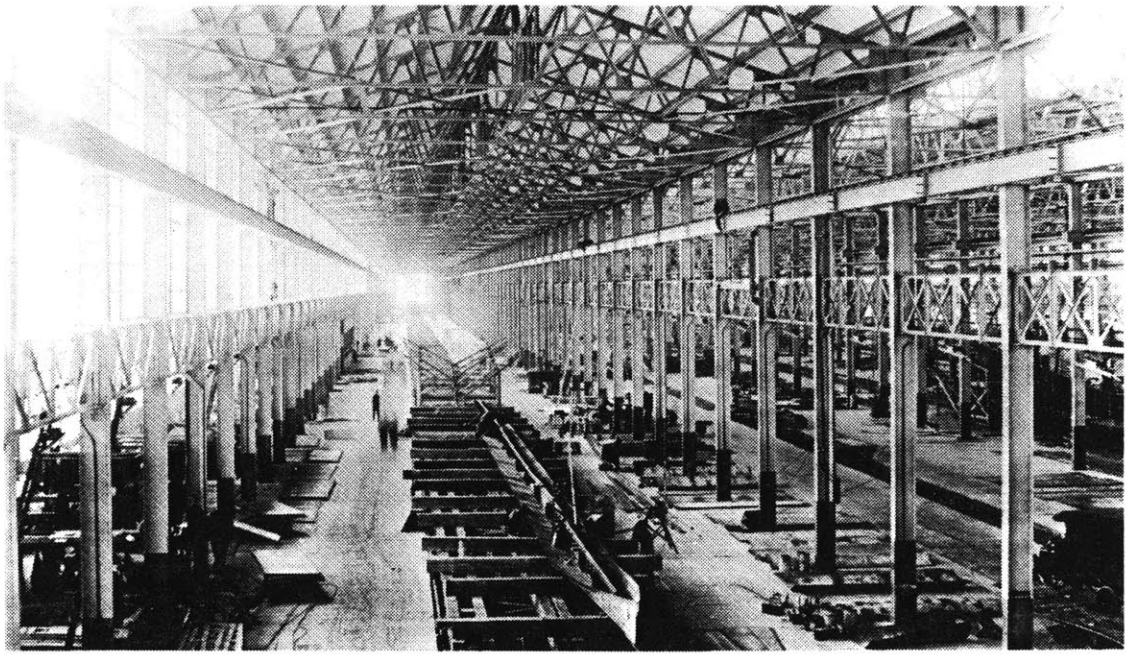


Ford Shipbuilding Plant. Job #847. (1919)
Dearborn, Michigan.



manufacturing and assembly plant after the Eagle Boat contract.[98] The site also included two large outfitting buildings, and an elaborate transfer and launching table that moved the Eagle boats out of the assembly building and into the water. Kahn designed the B-building as a four story steel frame structure with brick walls, metal sash, concrete and block floors, tile roof. Kahn used materials and equipment that were, at that time, still a novelty in factory design: large spans of structural steel, unit heaters, cement tile, steel industrial sash, and the glass-walled facades that had given Kahn's Highland Park and Packard factories the name of "daylight factories". The size and speed of construction of the structures awed visitors even then, (Hounshell states the construction period for the Eagle Plant was from April 9th to May 25th of that year, as does Albert Kahn Associates, and the DAP Annuals, though Ford records state that the plant was constructed in 1918, a date that the company reinforced recently by celebrating the 70th anniversary of the plant in 1988) but it was the operation of the transfer and launching tables which captivated observers. Designed by Ford engineer W. B. Mayo, the 202 foot long transfer table, supported on eleven railroad tracks, carried Eagle boats out of the assembly building and then moved them perpendicularly

[98]Sorensen, My Forty Years, p. 170.

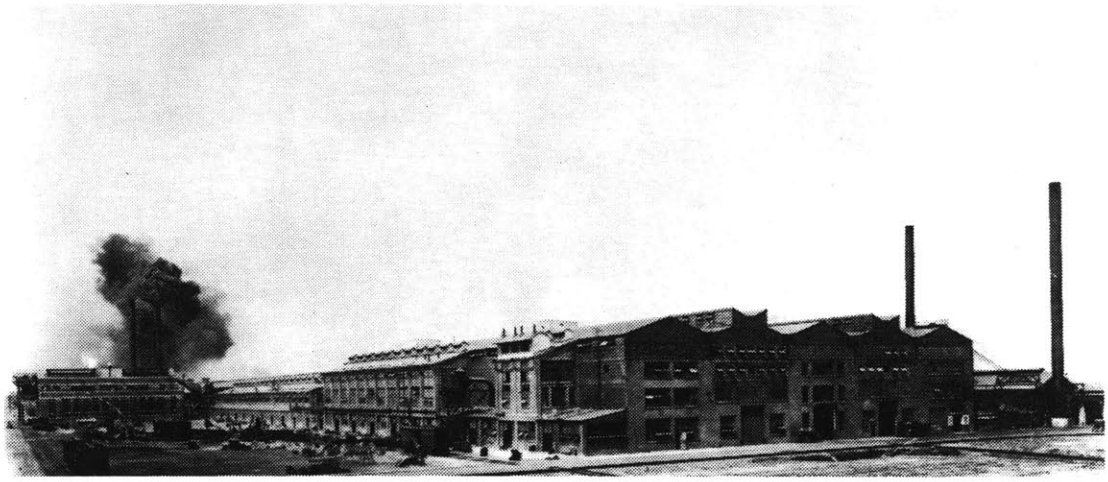


Ford Shipbuilding Plant. Job #847. (1919)
Dearborn, Michigan

300-600 feet away into position with the launching table where they were lowered gently into the water by means of hydraulic jacks[99] The transfer and launching tables were located at the site of the present day Road 4. On July 11th, the first completed Eagle Boat was launched.

The following account is of the history of the Dearborn Assembly Plant after the end of Eagle Boat production. The history of the remainder of the complex follows. At the end of the contract for the Eagle Boats, Ford quickly converted the B-Building for automobile manufacture. Sometime after the end of Eagle Boat production, the B-Buildings foundations were reinforced to support two story floor additions on either side of the central bay. By August 1919, a body making plant was installed on part of the main floor. In **1919-1920** Ford moved the entire Fordson Tractor line from its original production location in Dearborn (now the Engineering Staff Building) to the Rouge. **By 1921**, the first Fordson Tractor rolled off the lines at the Rouge on February 23,1921, and within a few months, production was up to 100 a day, later

[99]Ibid, p. 188-89.



reaching 400 per day.[100] Tractor production utilized only part of the floor space in the assembly plant, which was now renamed "the Fordson Plant." **By 1922,** Highland Park and 23 other assembly plants were producing Model T's at a rate of 10,000 units per day. The Rouge became the main support for this production, producing all necessary parts for the Model T production and shipping them by rail to assembly locations nationwide. At this point the plant had Tractor Assembly, a Pressed Steel department which produced metal parts and a Roughing Mill which produced the wood body parts and the Touring and Sedan Mills which assembled bodies, on the ground floor, and, on the west side of the second floor the finishing department with the heavy brick cyanide pots for dipping metal parts. Employees entered the plant on foot through what is now Gate 5, where timeclocks and turnstiles were located. Roads within the plant were not yet paved.

In 1925, the plant hospital moved from its original Miller Road location into the assembly building on the northwest side, the Ford Trade School took over the third and fourth floor utilizing the space for machinery instruction and classrooms, respectively. **In 1926,** the fire department and laundry were located near the hospital.[101] After 1926, the entire tractor assembly line was moved to Cork, Ireland and the Rouge went through another production transformation. In addition, the last and 15 millionth

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[100]"DAP's Annuals 1915-1928", p. 6.
[101]Ibid, p. 8.

Model T was produced at Highland Park on May 26, 1927 just as Ford prepared to introduce the Model A.

On December 2, **1927**, Henry Ford introduced the Model "A" saying, "the new Ford car is more than a car for the requirements of today. It goes further than that. It anticipates the needs of 1928, of 1929, of 1930. I consider it my most important contribution thus far to the progress of the motor industry, to the prosperity of the country and to the daily welfare of millions of people." Between May and December, Ford transferred the assembly line operations from Highland Park to the Rouge. The facility was renamed the "Dearborn Assembly Plant" and began producing Ford's new Model A. The assembly building went through another series of physical retrofitting. A huge frame line beginning at the midway point of the building was installed. It ran south and then looped backaround to feed two final assembly lines, one for the Model A and the other for the AA Truck. Stations fro the production of axles and driveshafts were installed alongside the line. The second floor was retrofitted with paint booths and ovens.which would provide four (not one) colors for the Model A. A small wooden structure was built adjacent to the plant to use for storage of the finished vehicles. (site of the present Drive-away garage.) By April 14, 1931, the plant had produced 20 millionth Model A and was again destined for retrofitting and the production of a new model.[102]

1932--On March 9, 1932, the first Ford V-8 rolled off the assembly line at the Rouge. Between 1932 and 1939, both of the final assembly lines were devoted to the production of the V-8. In 1939 a third assembly line was added to produce the first Mercury model. In 1939, the Driveaway Garage was constructed to the north of the assembly plant. **1941 to 1945 (WWII)**-- The assembly lines at the plant were converted to war production and on March 1, 1941, the first Army Jeep was driven off the line. On September 10, 1942, the first of 13,000 Amphibian vehicles was rolled out of the plant and into the Rouge slip for a water test. Half of the plant was devoted to the production of Army tank parts and the plant also produced army trucks, staff cars

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[102]"DAP's Annals 1928-1932", Dearborn Assembly Plant Management Bulletin, March 1955, p. 9, Accession 524 Henry Ford Museum Archives.

and tractors during the war years.[103] Post war conversion to commercial production yielded the conversion of four assembly lines: one for Ford cars, one for Mercury cars , a third for trucks, and a fourth for tractors. **By 1947**, tractor and truck production was moved out of the plant and the four assembly lines were devoted to car production. In **1952**, the mercury line was moved to the newly constructed Wayne Assembly plant, and the DAP was focused on the production of Ford cars. From **1968** to **1990,** the Assembly plant has produced the Ford Mustang.

1918-1922 (Figure 32)

As the Rouge was being converted from the purpose of Boat manufacture to that of automobile manufacture, extensive building took place to the south of the B-building and the east of the Rouge slip. During this period, the site was served primarily by rail, even though the slip was capable of receiving deep water ships. The site was well located adjacent to the rail facilities of the Michigan Central and the Pere Marquette, and was also close to the tracks of the Detroit Terminal, the Wabash, the Grand Trunk, and the Detroit, Toledo & Ironton (DT&I), a rail line that Ford eventually purchased in 1920. Ford said, "we bought the railway because its right of way interfered with some of our improvements on the Rouge River."[104]

During 1919-1920, the construction was concentrated on the coke conversion process. The no. 2 block of coke ovens was completed and in operation on October 15, 1919, and No. 1 came in on December 6. Work on Blast Furnace A was nearing completion as the year ended and Furnace B was well under way. By Jan 17, 1920, a network of 24 miles of railway track was laid. The Highline bins and trestle enclosure was built to hold and transfer the raw material after it was unloaded from the ships. The concrete bins of the highline extended from the tracks to the edge of the slip, more than 250 feet, with a capacity of more than 2 million tons. They held the coal, limestone and iron ore necessary to run the Rouge. The bins were supplied by rail car and barge, and ships, later, as the Rouge was deepened. Three unloaders ran along the tracks at the margin

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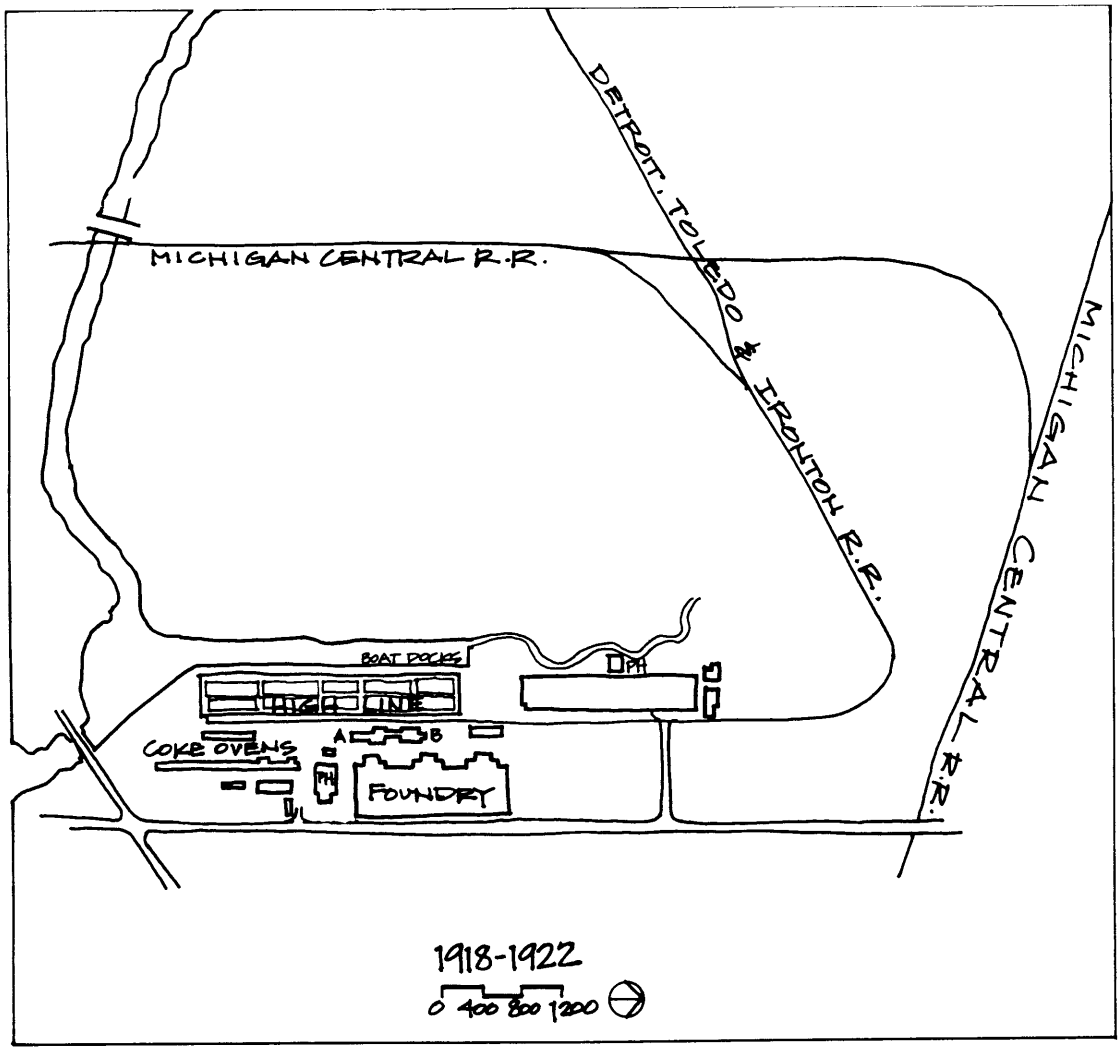
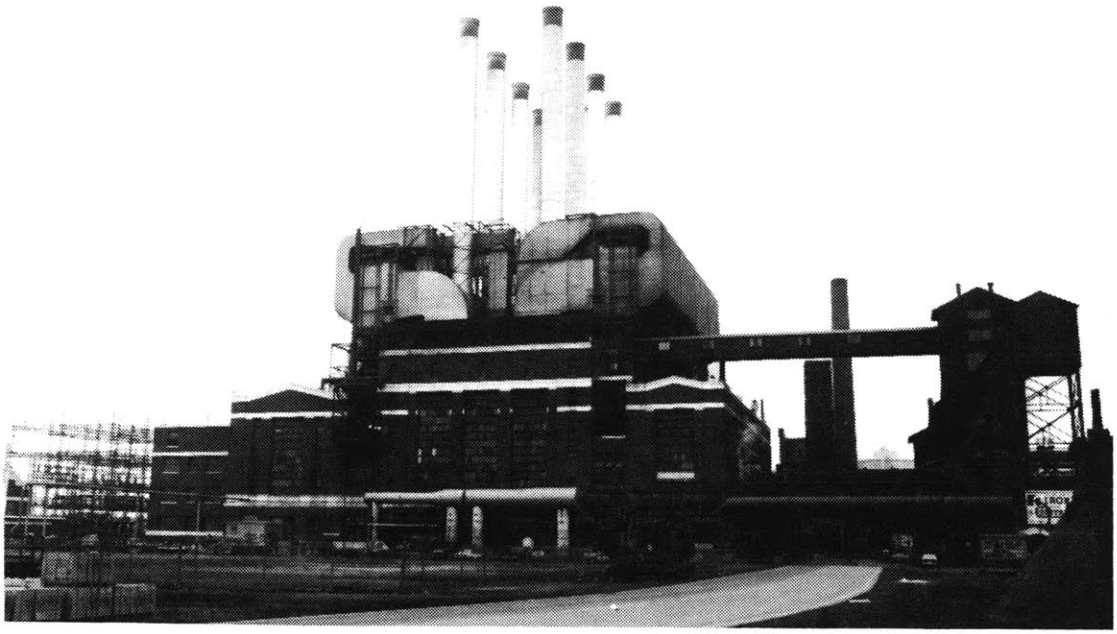
[103]"DAP's Annals 1932-Present, Dearborn Assembly Plant Management Bulletin, May 1955, p. 16, Accession 524 Henry Ford Museum Archives.
[104]Ford, My Life and Work, p. 224.

Figure 32: The Rouge 1918-1922



of the slip. They would unload incoming vessels, taking up cargoes of eight to ten ton bites, and then depositing them in the bins. Two enormous transfer bridges also operated along the slip, lifting materials from one bin to another, or to transfer the coal, iron, or limestone to empty cars coming up the High Line. The High Line, "heart of Rouge transportation", was a concrete structure 40 feet high, extending the full length of the slip. Its flat top had five rail road tracks. At the north end, a ramp connected it with the intra-factory rail system below. The Highline served as a "building" as well as



a transportation unit, as it contained active storage hoppers beneath it, which served the coke ovens and furnaces, and several small shops, which serviced the plants.[105]

Other support structures, such as the car dumper and the scale house,the breaker building, the coal coke handling building, The next to go in were the two Blast Furnaces, A&B. Ultimately, The Foundry, the power house, and coke ovens were added. Early in 1920, a saw mill, which prepared wood for body operations, began to function. The Foundry was designed as a massive single story structure. The Power House, which was, at the time of its construction, the largest capacity generator in the country was sited near the coke operations.

1920 -- By this time, 24 miles of railroad track, including the High-Line, serviced the buildings and tied them together as a working group.

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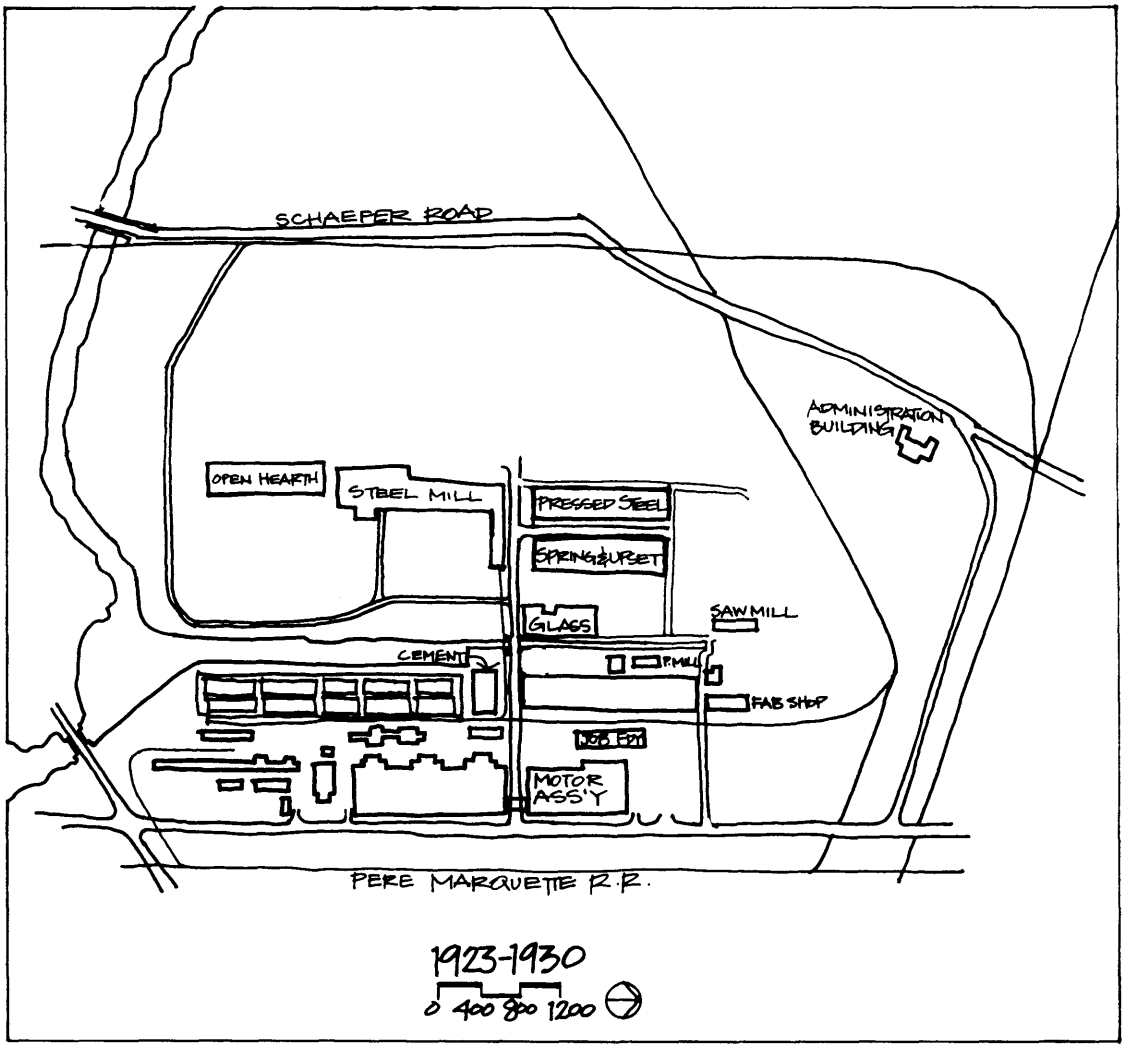
[105]Nevins and Hill, Expansion and Challenge, p. 208-209.

1921 -- Construction of the Dearborn Iron Foundry. The structure was 720 x 1600, covering 17.7 acres. The structure was demolished in the early 1980s. Two additional power houses, No.6 and No. 3, were constructed. Also in 1921, the employment office was constructed at Gate 2, near the Power House No. 1.

1922-- The Coke Ovens and By-Products Plant were added east of the boat slip in the vicinity of the blast furnaces.

Figure 33: The Rouge 1923-1930



1923-1930 (Figure 33)

Ford wrote in his autobiography of the Rouge in 1923. "the property covers six hundred and sixty-five acres-enough for future development."[106] By this time, the Rouge had taken its place as one of the tow principal Ford plants. It was the chief reception depot for coal, iron ore and lumber and it processed all the coke for its own furnaces and foundry as well as supplying Highland Park. It provided casting and body parts to most of the branch plants. It power house supplied current to both the

[106]Henry Ford, My Life and Work, p. 151.

Rouge and Highland Park. Alan Nevins observed, "Highland Park was bound to decrease and the Rouge to increase; like some inflexible, calmly feeding steel monster it was already detaching and absorbing, unit by unit, the proud home of the first moving assembly line. The end was inevitable, for in site, planning, construction and mechanization the Rouge symbolized a new industrial era, while that of Highland Park was passing."[107]

1923--By this time, the blast furnaces and the foundry were in full operation, shipping carloads of engines, front and rear axles, transmissions, radiators, and stampings for bodies, fenders, and hoods were being shipped out to branch assembly plants across the country. A number of paved roadways were installed during this period, including the main organizing arterial-Road 4-which runs east west on the route of the original transfer and turning tables for the Eagle boat production. The beginning of the site rail systems also occurred during this period.

1923--Glass Plant was constructed. The structure was 280 x 750 feet (210,000 square feet) This is considered by some to be Kahn's greatest piece of industrial architecture at the Rouge. Kahn's biographer, Grant Hildebrand said of the plant, "If one were forced to name a single factory that carried industrial architecture forward more than any other, this would most likely be it. Whether the glass plant is revolutionary is perhaps a moot point; probably it has as much right to the term as any other building of the twentieth century."[108] The structure had clerestroies and the butterfly roof, encased in a simple, efficient envelope with detached smokestacks. Ford decided to build a glass plant at the Rouge when the cost of plate glass from outside suppliers had progressively risen from $.30 to $1.50 a square foot. In building the plant, Ford's production engineers also revolutionalized the process, casting,grinding and polishing an endless unbroken strip, something experts at the time declared impossible. In doing so Ford also reduced material cost to .20 a square foot.

1923 -- The Cement plant is constructed near he boat slip.

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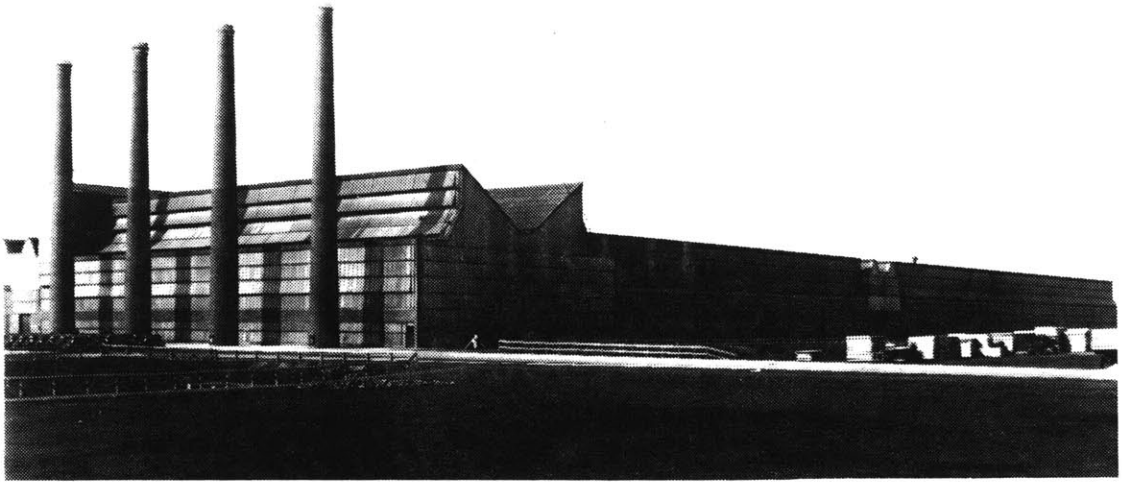
[107]Nevins and Hill, Expansion and Challenge, p. 279.

[108]Hildebrand, Designing for Industry, p. 111.



In the same year, numerous other buildings were constructed: the Jobbing Foundry, Fabricating Shop, Paper mill, Sintering plant, Electric Furnace building, and a number of smaller structures and sub stations.

1925 -- The plant expanded with four major structures in this year: the Power House, the Motor Assembly Building (Jan), the Pressed Steel Parts Plant (June) (which was later expanded and incorporated into the Stamping facility) and the Spring and Upset Building (July). The 306,590 square foot Motor Assembly Building was constructed near the Foundry. The beginnings of Rouge Steel also occurred during this period. Steel making was a natural extension of the iron smelting operations that the Rouge had already. Charles Sorensen credits United Engineering with laying out the facilities that would cost Ford $35 million.[109] The mill, sited to the west of the slip, embraced every operation of steel manufacturing, from open hearth to blooming mill and rolling mills for sheets, bars and rods. Coke oven capacity was also increased. Once the Rouge Mill was in operation, it effectively reduced the production cycle for steel from twenty one to four days. The Open Hearth building, designed by Kahn, was started in 1925, about a 1/4 mile from the southern end of the slip, with a capacity of 10 furnaces, though only 4 were initially installed. The initial Open Hearth Building was 240 x 1,066 feet (255,840 square feet) The rolling mills were erected just to the north.

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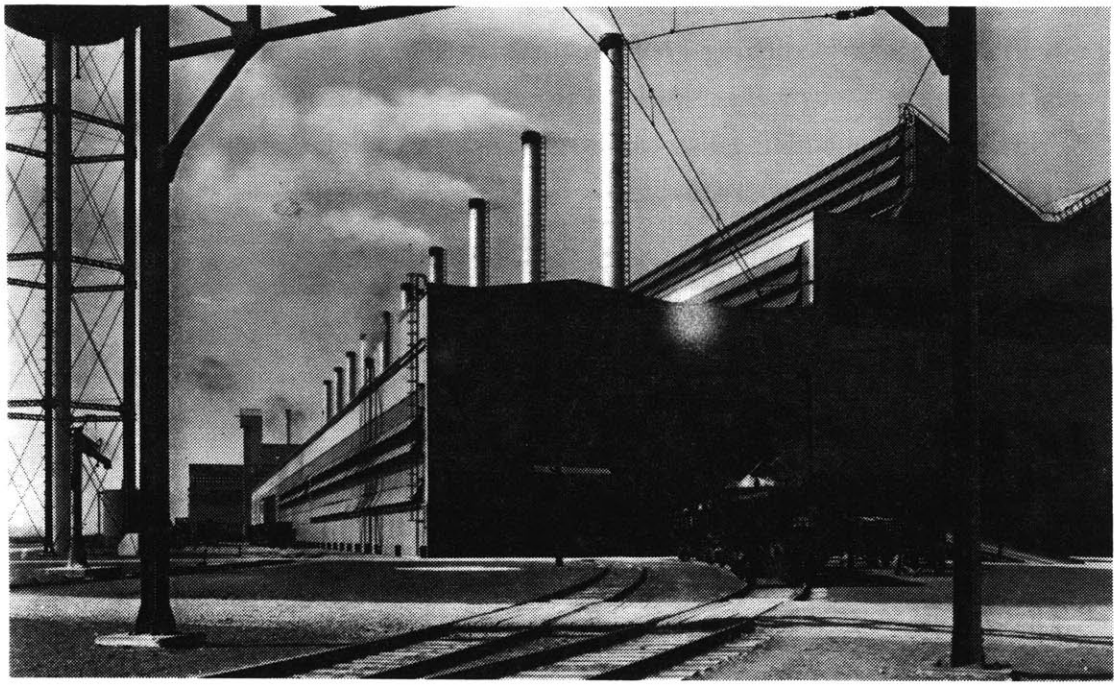
[109]Sorensen, My Forty Years, p. 173.



Also built in this year were the By Products Building ("XX") a two story steel frame building with brick walls, metal sash, concrete and brick floors, and tile roof, adjacent to the coke ovens for exhausting coke oven gas and recovering ammonia sulfate. Contains compressors for gas distribution system for the facility.

1925--The Open Hearth Building in operation by June 21, 1926(site was near river, south end of the slip, swampy, bedrock was 100 feet down, so pile foundations were necessary.

1926--The first conveyor systems were constructed, completed a unit that connected the foundry with the motor assembly building, 3600 feet in length. Another went into construction between the foundry and the B building, a mile and a quarter apart. In the same year, the company constructed walk-overs from Miller Road to the B-building and from there to the Spring and Upset Building.

1927--Construction of the Administration Building, which served as the Company's main office until 1953-6 when the Glass House, designed by Skidmore Owing and

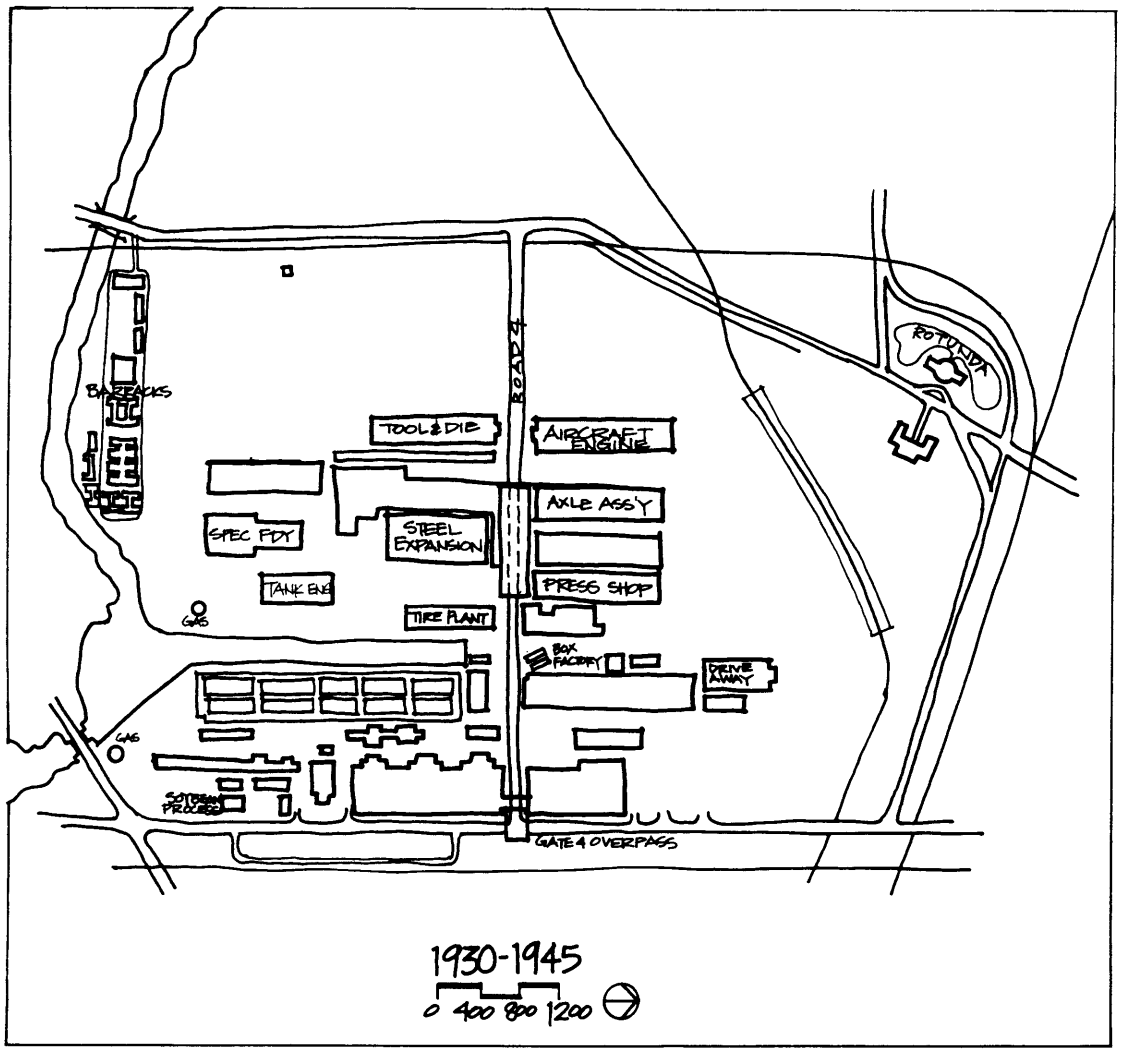
Merrill, became the headquarters. Albert Kahn designed this multiple story building in a modified prairie style utilizing a reinforced concrete frame and floors, lime stone walls, wood sash, acoustical ceilings and interior partitions of wood and glass. The 204, 431 square foot building also has an adjoining garage. It currently serves as the offices of the Parts & Services division.

1927-- In September of this year, the Final Assembly Line was transferred from Highland Park to the Rouge.

1930-1945 (Figure 34)

At the beginning of the decade, the great depression caused construction at the Rouge to slow. The company made additions to the Rouge Power House in 1930-31 and also built a two mile tunnel from the Detroit River to the Rouge during the next two years in order to supply the facility with mill water supply that it still utilizes today. By 1935, however, the signs of the depression were no where in sight at the Rouge. Employment rose to 70,000, the largest since 1929, and $37 million on new and modernization projects including, $10 million on expansion of steel making facilities including a new hot strip mill and a cold sheet finishing mill were built and the capacity of the blast furnaces were expanded and the glass plant, the entire power plant were modernized. In addition, Ford's interest in the cultivation and processing of soybeans both for dietary and material value, led to the opening of a soybean plant in 1935. In another two years, expansion continued when in 1937 the tire plant opened, which had be erected under the supervision of E.F. Wait, who came from Firestone Tire and Rubber to run it. In addition, the pressed steel plant and a new tool and die shop were added in the same year. In addition, early in 1937 engineering as immediately affected production was moved from the Lab Building in Dearborn and established in new headquarters at Gate 4 at the Rouge, and a Manufacturing Services building was constructed to the west of the Steel Operations. At the end of the decade, Ford secured a contract for 4,000 aircraft engines from the Dept of Defense. Ground was broken for the aircraft engine factory on Sept, 22, 1940. Certain plants, including Cement, Soybean Processing and Tank Engine, were demolished before the end of the period.

Figure 34: The Rouge 1930-1945



1934 -- The Rotunda, built for the Chicago World's Fair-Century of Progress-is relocated to the Rouge to serve as the Visitor's center for the plant. It was sited directly across the street from the Kahn Administration building.

1935 -- Steel operations added a new Strip Mill. Also in 1935 Ford established a Soybean plant at the Rouge. The plant extracted the oil from the bean and made plastic units for use in Ford Cars.

1937 -- The Tire Plant, which eventually produced 5,000 tires per day.

1938 -- In this year, Kahn designed and built the first of two structures, the Tool & Die plant, with "matching facades" which face each other across Road 4 west of the original Steel Mill.

1939 -- The Drive Away garage was added to the Assembly plant. A box plant was also constructed in close proximity. In addition, the Soybean operations were added, including an extraction building and the Soybean Powerhouse. Both illustrate Ford's desire to recycle production materials into useful products.

1940 -- A new aircraft engine factory was place on the few remaining open areas of the Rouge. The final two story building covered an area of 360 x 1408 feet, with a wing for test cells 270 x 952 feet totalling 1,286,344 square feet and cost $39 million. An aircraft school accommodating 1100 trainees was running by 1941 when the plant began production. In addition, a Tank Engine plant, which did magnesium plating for the engines, was built west of the boat slip. An extensive Military Barracks installation and a Naval Station were also erected on the River in support of the war effort.

1945-1960 (Figure 35)

Charles Sorensen writes that because of the Rouge plant, Ford emerged from WWII to peacetime manufacture of automobiles with five distinct advantages over its competitors: "First...it had its own source of raw materials. Second, it had the world's greatest, most complete industrial manufacturing plant-the biggest machine shop on earth. Third, the Rouge plant, with assets of $1,500,000,000 was owned outright an dwas built out of profits and not a cent of borrowed money. Fourth, it had a work force and supervision at the foreman level trained in Ford production methods. Fifth, it had its own steel mill and therefore was unaffected by a steel shortage after the war which crippled the operations of many less fortunate companies."[110]
In 1950, the board of directors further enhanced the Rouge by voting funds for the modernization of the Rouge and the expansion of steel operations. By 1955, construction had begun on the Detroit Industrial Expressway, (later the Edsel B. Ford Expressway, I-94) which ran adjacent to the Rouge property on the northwestern edge.

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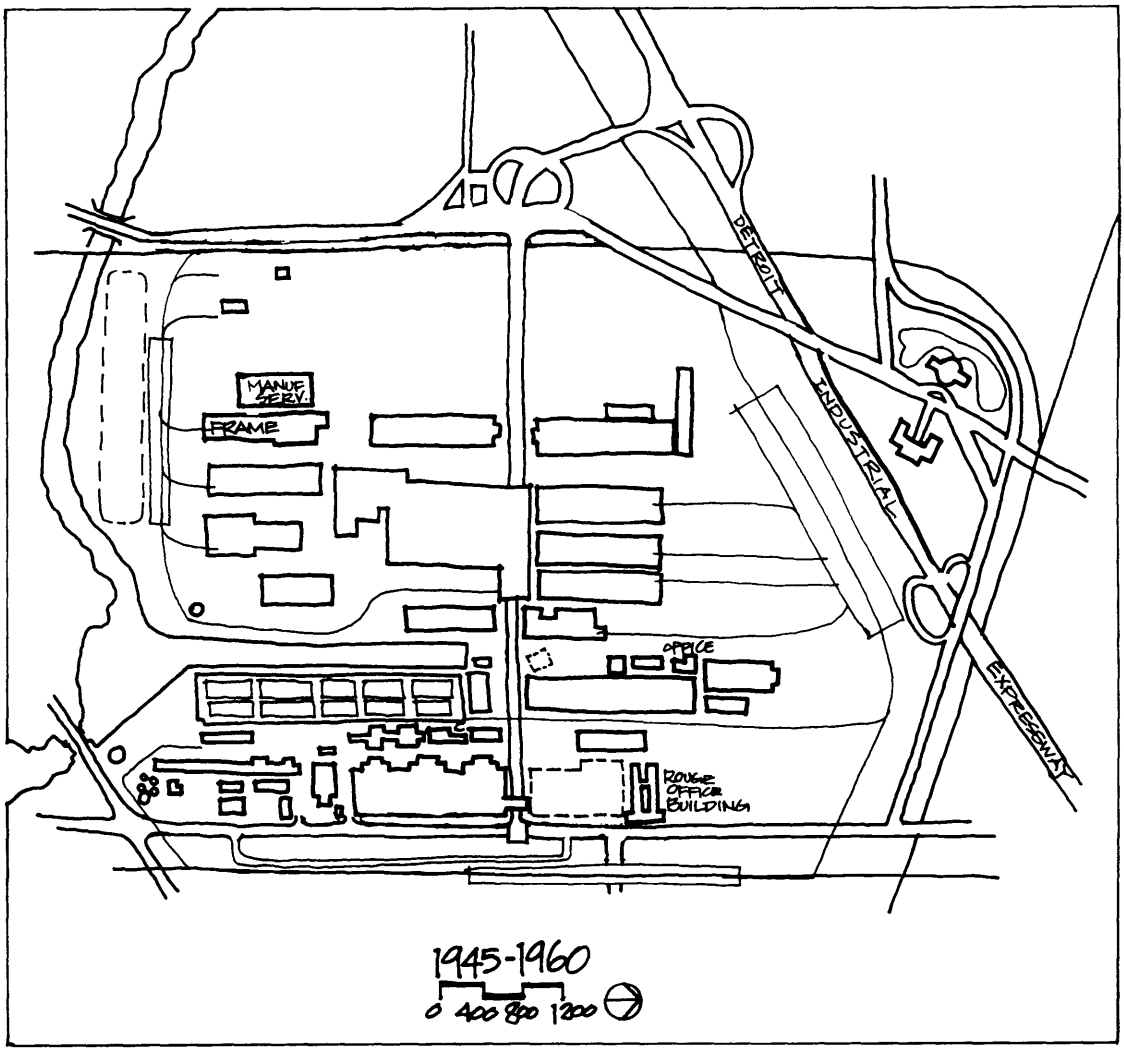
[110]Ibid, p. 152.

Figure 35: The Rouge 1945-1960

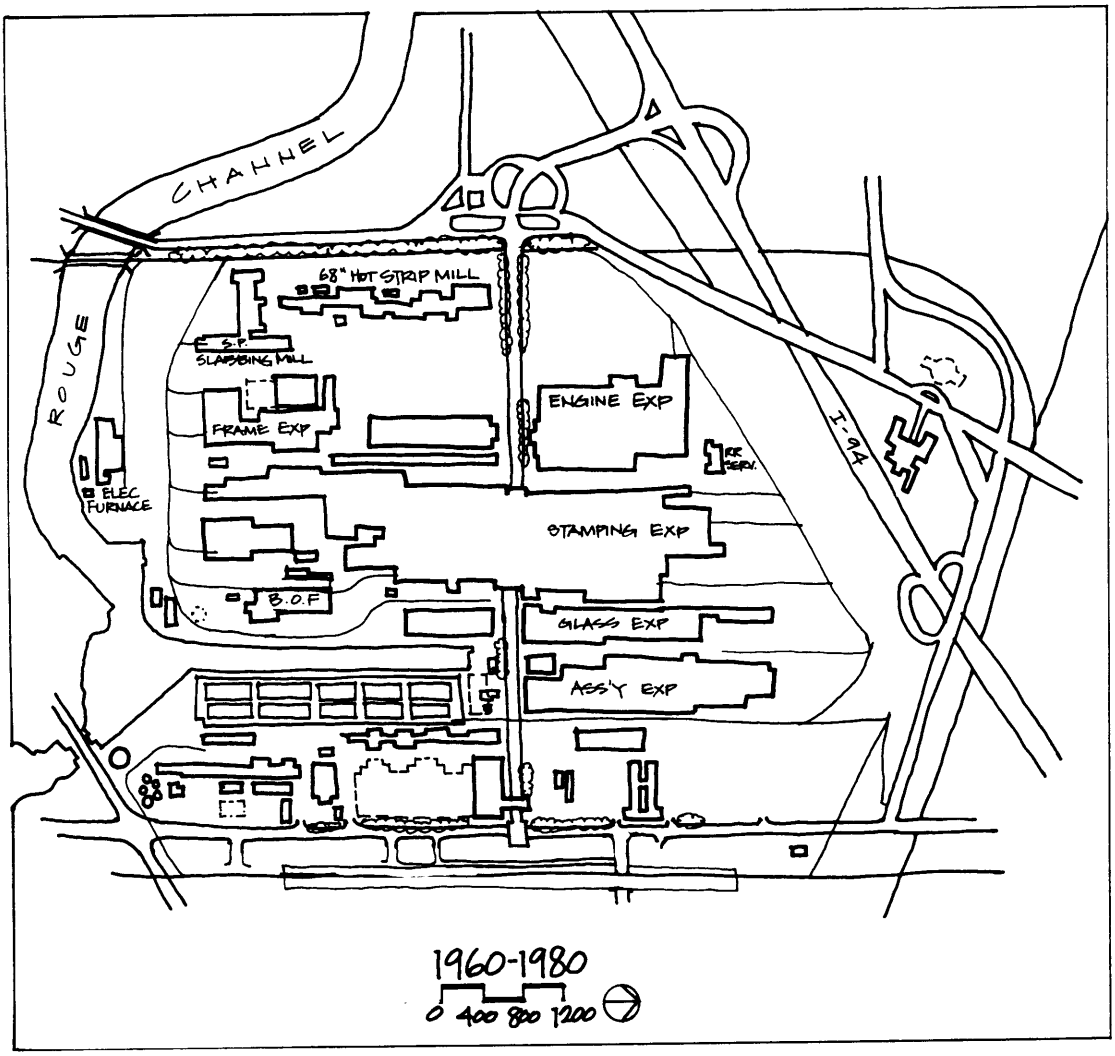


1952-3 -- a third blast furnace -Blast Furnace C-was added. The Motor Assembly Building was demolished and half of the vacated area was occupied by the new Rouge Office Building.

1954 -- The Glass Plant underwent a major expansion, nearly doubling its size to 825,00 square feet and occupying 19 acres.

1958 - The Frame Plant was constructed on the southern part of the site near the Open Hearth building.

Figure 36: The Rouge 1960-1980



1960-1980 (Figure 36)

Early in the 1960's, the Frame plant was expanded through partial demolition of the Transportation Services Building in the south yard. The Stamping plant was extended at this time. occupies an area of 80 acres and is on 92 foot pilings with a 36 inch concrete floor mat used as a sub-base for machines. During the seventies, extensive investment was made in to upgrade and modernize the steel division facilities. At the end of 70's, approximately $22 million was spent to improve the general exterior appearance of the facility's parking lots, lighting, and landscaped burms.

1962 -- The Rotunda burned and was not reconstructed.

1968 - Basic Oxygen Furnace area of operation 6-1/3 acres on the west side of the boat slip, height of building 221 feet.

1970 - A new Electric Furnace for the steel operation was built along the Rouge River.

1972 - The Dearborn Iron Foundry was phased out and production was moved to Flat Rock Michigan Casting Plant. The structure was demolished except for a newer portion of offices and warehousing near the Gate 4 entry.

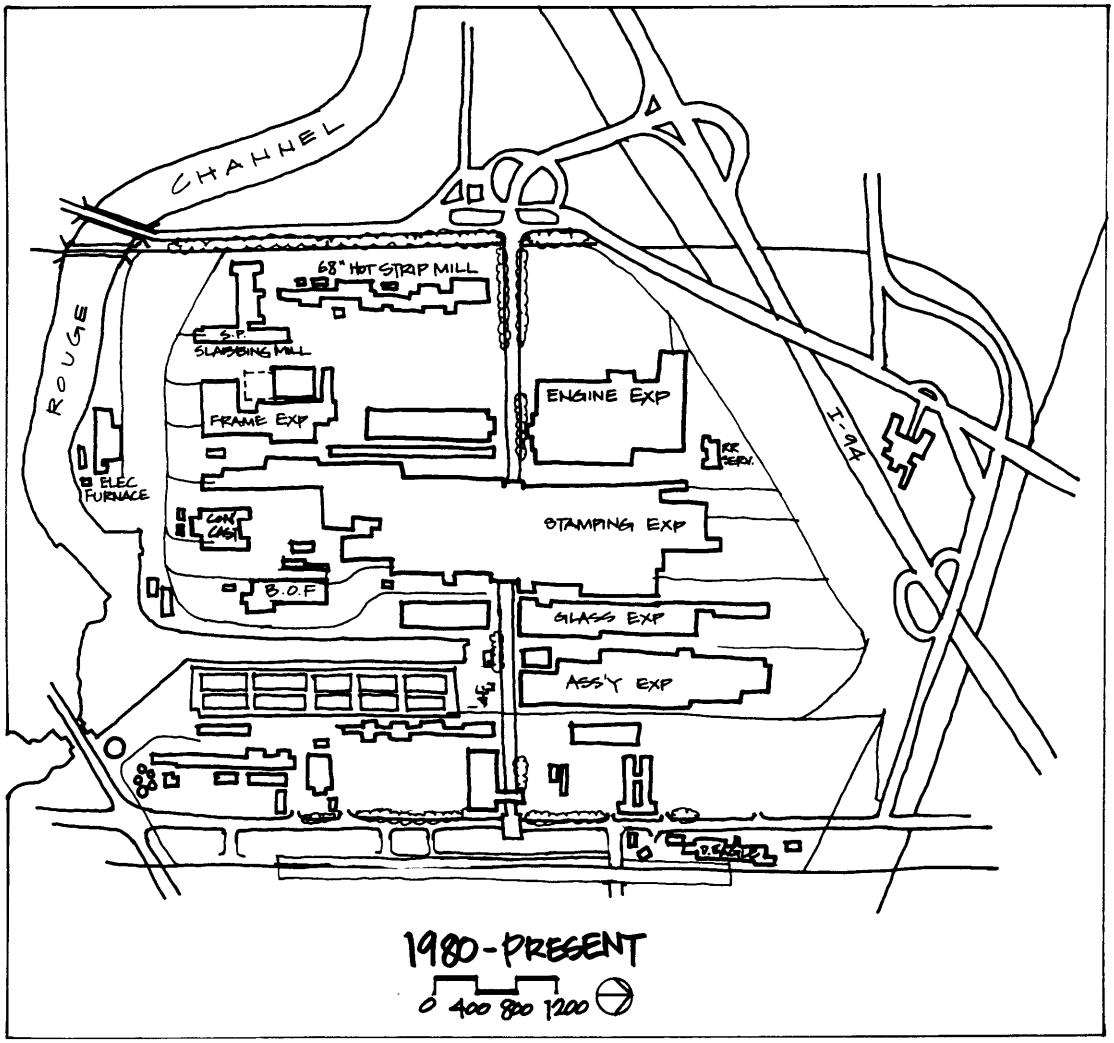
1974 -- 68" Hot Strip Mill south of Road 4 with an area of 525,000 square feet and a building length of 2,135 ft. and a mill length of 1,750 feet. In addition, a Slabbing Mill and Soaking Pits were constructed immediately south of the Hot Strip Mill.

1975 -- In order to control flooding, the Rouge River was diverted south of Michigan Avenue to the Rouge site, and a cement channel was laid for the new River bed. After completion, portions of the former River bed were utilized for the installation of Oil Recovery Lagoons which process waste water from the complex.

1978 -- The brick facades of both the historic Glass and Assembly plants were clad in aluminum siding in an effort to "improve" their appearance in honor of the 75th anniversary of the company.

1979 -- Dearborn Engine Plant underwent $450 million remodelling and retooling for the 1.6 liter engine production. This represented a major expansion of the plant westward on the site.

Figure 37: The Rouge 1980-Present



1980-Present (Figure 37)

This period is again characterized with extensive investment in the steel operation. The decade ends with the sale of the steel division, effectively halving the Rouge site owned and operated exclusively by Ford.

1982 - A new Continuous Casting plant was built after the complete demolition of the Specialty Foundry.

1984-5-The $250 million Double Eagle Galvanizing Plant was built east of Miller Road as a joint venture with USSteel Corporation (now USX).

1987 - The coke ovens of the steel division were shut down, marking the first break in the integrated operations at the Rouge.

1989 -- Rouge Steel purchased for $180 million by Marico Corporation a consortium led by Carl Valdiserri and including minority share holders Chase Manhatten Bank of New York, Worthington Industries and Ford Motor Company, each holding a 20 percent share. Ford also agreed to purchase 40% of the steel company's output.

In conjunction with the plans to sell the steel division, a long range planning effort was mounted in the mid 1980's. This planning effort was initiated by the NAAO organization and involved all of the operating divisions at the Rouge. The resultant strategy was to physically separate the Rouge into two major parts, one north and one south of Road 4. The southern half of the site would be devoted to Rouge Steel operations and the north a reduced version of the Rouge. The plan was to establish a Ford-Rouge industrial park north of Road 4, east of Miller Road and Patterson yard. The plan considered moving in some of Ford's industrial capacity and then attracting third parties into development. The rail operations would continue to operate as a terminal function to all tenants, including Rouge Steel. The plan was never implemented, largely because of budget considerations. It did identify certain pertinent issues in any possible redevelopment of the site, including:

- Separation and accesses to rail connections.
- Separation of utilities. Gas and electricity could be separated through metering, the more problematic were the sewer system and the mill water system.
- Clarification of Water wastes, which is an expensive and land demanding process. Currently, this is accomplished in the lagoons near the Rouge River on Rouge Steel property.
- The presence of contaminated soil and the need for environmental remediation.

In 1985, Ford Land Development conducted another planning process and published a plan entitled *The Rouge Complex: An Outline for Orderly Evolution.* The report was

"intended to broadly address the question of land allocation policy and to focus more narrowly on a program of immediate appearance enhancement."[111] The plan was based on the fact that "over the next decade it is likely that a number of plants within the Complex will be phased out of service for reasons of obsolescence or of change in the Company's approach to bringing its products to the market." The study made the assumption that Rouge Steel would be a continuing use and would maintain a consolidated land holding on the site. Frame, Stamping, Tool & Die, and Assembly plants would be phased out of operation, making them, or they land they occupy available for redevelopment. The land allocation recommendations included that land internal to the Rouge Complex should be recycled into materials storage when it becomes available in desirable locations. The example promoted for such storage is the current location of the Assembly plant. In addition, land internal to the complex should be recycled into employee parking lots, freeing land on the periphery of the site for redevelopment. These peripheral parcels, particularly those along Butler, Schaefer and Miller Roads, should then be redeveloped for use by non-Company facilities. (See **Figure 38**) The plan also identified potential new uses for the Rouge facilities and property. The list included company warehousing, public warehousing, support facilities for Japanese manufacturers, port facilities, trucking terminal, produce terminal and whole sale market, public marketplace, public power generation, and new heavy industry including petroleum refining and storage, chemical plants,and heavy milling. To date, no further action has occurred on the 1985 plan.

Selective investment does continue at the Rouge with both Ford and Marico Corporation have approached the city of Dearborn with tax abatement requests for improvements at the Rouge. In September of 1990, Ford requested and was granted a 50 percent tax abatement over twelve years for a $95 million modernization and expansion of the Glass Plant at the Rouge. The modernization program will upgrade windshield manufacturing with a highly automated process which will reduce the 900 member UAW work force by about 240. Last fall the city council denied continuation of abatements for two Rouge Steel projects and more recently, in April of 1991, Rouge Steel requested and was denied a 50 percent 12 year tax abatement for $10.2 million

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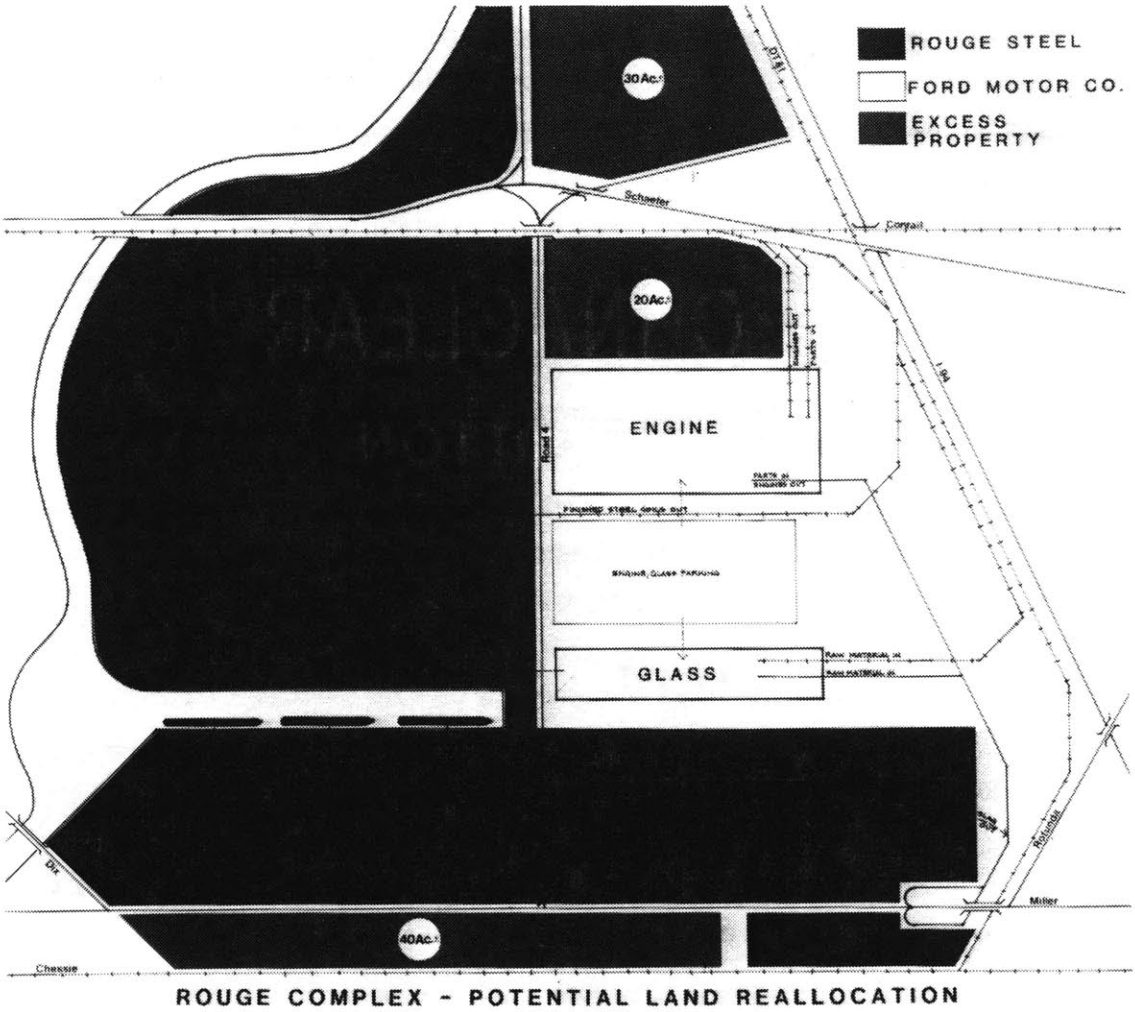
[111]Ford Land Development Corporation, The Rouge Complex: An Outline for Orderly Evolution, July 29, 1985, Dearborn, Michigan, Introduction page.

Figure 38: Rouge Complex Potential Land Reallocation



improvement project for rebuilding a stove in blast furnace C and purchases of other equipment. The city council denied the request largely because they saw it as a maintenance expense that would not generate any new jobs, though the relationship between the steel company and the city has been tenuous lately. Rouge Steel is currently appealing the city assessment of the property at $674.3 million. The company was sold in 1989 for $180 after Ford Motor invested over $400 million in modernization. Rouge Steel claims the worth of the company to be $134.9 million and would like an adjustment. The company is appealing the assessment and the city just won a battle to get the state to audit the steel company. It is a significant issue, as

Rouge steel is the city's largest taxpayer. In 1989, the company paid $3.3 million to the city, $5.8 million to the public schools and $1.6 million to the county. If Rouge Steel wins it appeal, those figures will be reduced by 80%. In Dearborn, the industrial tax base represents 44 percent of all taxes that the city collects, compared with 36 percent from residential property.[112]

[112]Dearborn Times Herald, Wednesday September 12, 1990, p. 1.

4. Cultural impacts of the Rouge

As the first facility in the world to launch production on a mass and comprehensive scale, changing the American workplace as well as society, the Rouge holds significant cultural and historical significance in regard to the development of American industry, if not industry world-wide. The site is rich in themes of this industrial heritage, from the story of mass production and vertical integration, modern industrial architecture, the 20th century rational factory, and the birth of the modern labor movement, to name a few. Spiro Kostof, in his recent book, America by Design, describes the Rouge as "Ford's grand vision of the American workplace. It is still, despite some neglect and loss of purpose, an astounding landscape of industry."

In fact, one might argue that such sites are physical manifestations of the Detroit area's underlying identity, at least for most of the 20th century, as the center of world-wide automobile production. As symbol, the Rouge has been powerful, both in its prime and as an anachronism. Thousands migrated from all around the world to work, or visit the Rouge, knowing only its image and story. At a smaller level, the Rouge represented the economic cornerstone for the region. The entire population was assured by its presence of prosperity, though only a small percentage actually ever worked or visited the site. During the infamous strike of 1941, the Detroit Evening Times ran a picture of the facility with the caption, "The scene of quiet, industrial beauty that Dearborn Residents might have seen yesterday."[113] This sort of detached, vicarious association with the facility is characteristic of the resident. Still, despite the reduction of the scale of operations there, the city of Dearborn and its residents still define themselves by its presence. A recent master plan states that "one of the most important image creating elements in the city is the historic Ford Rouge Plant"[114]

A facility such as the Rouge, with a history spanning seventy five years and including so many groups of individuals and philosophies, contains several versions of history, several types of memory. In telling the story of the Rouge, perhaps the greatest

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[113]Detroit Evening Times, Thursday, April 3, 1941. Wayne State University Archives.
[114]Mater Plan for the City of Dearborn, 1985, p. 83.

challenge becomes identification of an abstract, or uncontested collective memory that can be associated with the facility. The collective memory of the Rouge Plant is indeed, multidimensional, involving many different groups of individuals in varied interactions with the facility. It can be categorized in two ways: experiential, the memories of those who actually interacted with the facility, and vicarious, the memories of the facility that were transported around the country and the world, through the media, art and literature. These two aspects of collective memory also possesses a temporal characteristic, as the sentiments toward and perceptions of the Rouge have changed over the last century. In this way, the values that it embodies and the meaning of the Rouge have also changed. In addition, both of these aspects of the collective memory can be described as contested, as there exist several versions of the memory of the Rouge, influenced by the experience and ideology of the groups which interacted with the facility. For this discussion, I have chosen to identify three general groups of collective memory: that of the company, the union and the public.

For many years, the Rouge was the literal and symbolic center of the Ford Motor Company. Not until after WWII, when Ford mounted a specific decentralization plan and moved its World Headquarters outside its boundaries, that the Rouge was not considered the central facility of the Company. Perhaps the best example of the transition of importance of the Rouge in the perspective of the company is the way in which it is featured in each of the four anniversary publications that Ford has published. In the first and second, on the event of the company's 30th and 40th anniversaries in 1933 and 1943 respectively, the Rouge was featured prominently in the beginning of each book. In each, the Rouge is described as "the world's industrial colossus."[115] Even in the fiftieth edition, in 1953, the Rouge is featured prominently in the book, immediately after a discussion of the founding and history of the company. The text reads, "just as the Bagley Avenue workshop symbolizes Ford's beginnings, the rise of the mighty Rouge marks the transition of the company into strong and mature manhood."[116] More recently, on the occasion of the 75th anniversary of the company in 1978, the Rouge was delegated to a position toward the end of the book, given only a two page spread, though still referred to as the "Mighty Rouge." It was

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116 Ford at Fifty: An American Story 1903-1953, New York: Simon and Schuster, Inc., 1953, p. 22.

not until the great economic depression of the 1980's, when the automotive industry experienced global restructuring, that the Rouge began to symbolize the excess and backwardness of the American automobile industry. Modernization plans stopped, the tours of the facility, which had exposed millions from around the world to the working of the plant were suspended, and the company began planning the sale of the steel division. Perhaps most telling of the company current sentiment toward the Rouge is its decision in 1985 to celebrate the 75th anniversary of Henry Ford's invention of the assembly line at the ultra-modern, highly automated Wayne Assembly Plant, by-passing the technological heir of Highland Park as an obsolete and embarrassing relic of industry.[117]

For the union, the United Auto Workers (UAW), the site is the setting of seminal events in the history of the modern labor movement, the birth of the UAW and the rise to power of Walter Reuther as a labor leader. It is the place of the Ford Hunger Strike of 1932, where laborers marched and some died for the cause of organized labor. It also remains as the memorial to the events of 1937 and 1941, the Battle of the Overpass and the final march to the "Fall of Ford", the last open shop in Detroit's automotive industry and the decisive event which ended the reign of the brutal Ford Security Department lead by Harry Bennett, and granted the UAW its standing in the industry. Today, the once powerful Local 600, whose membership was the largest in the world, is now struggling to retain the remaining jobs at the Rouge. The facility has come, once again, to symbolize a battleground for the UAW. It would be difficult to argue, however, that all UAW members, past and present, have one collective memory. As Halbwachs states, there are as many collective memories as there are individuals. Certainly the exterior architectural form of the Rouge has a place in the collective memory of each worker. However, there should also be a distinction made regarding the exterior and interior formal impressions and experiences. The facility is so vast, that often the common denominator of collective memory is probably the interior plant experience rather than the arrangement of architecture on the site. Each of these elements broaden the choice of which collective memory and at what place in the time continuum of the life of the place. Those who are trained to focus on the formal value

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[117]Steve Kaskovich "Ford celebrates 75 years on assembly line", The Detroit News, Friday, October 7, 1988, p. 1-2E.

of the Rouge may easily dismiss the actual experience and memory of working at the plant. The following a Detroit Blues song written and recorded by Joe L. Carter in 1965 while he was a production line worker at the Ford Rouge plant, expresses the dark side of this sentiment.

Please, Mr. Foreman, slow down your assembly line.
Please, Mr. Foreman, slow down your assembly line.
No, I don't mind workin', but I do mind dyin'.
Workin' twelve hours a day,
Seven long days a week,
I lie down to try to rest, but Lord knows I'm too tired to sleep.
Lord knows I'm too tired to sleep.
Please, Mr. Foreman, slow down your assembly line.
I said, Lord, why don't you slow down that assembly line?
No, I don't mind workin', but I do mind dyin'.

The following quote expresses the positive sentiment that those who work at the Rouge have about their place of work. "To the thousands who lived and worked there, the place had a degree of cherished memories and fascination. Many old timers remembered the brutal times under Harry Bennett but spoke with tender words about their home away from home."[118]

The public groups society at a local, national and international level as it has experienced the facility over the years. As Alan Nevins observed, "Many Americans, if asked to say what the word "Ford" meant to them, might have replied "The Rouge".[119] Exposure to the Rouge came through print and visual media as well as the Rouge tours which drew millions of visitors until they were eventually suspended. Perhaps the best medium for the collective memory of this group is the way in which the Rouge has been featured in art and literature over its life. During the 20's and 30's, at the height of the facility's prominence, the preoccupation of artists and writers with industry reflected the political, economic and social tempo of the times. Henry Ford

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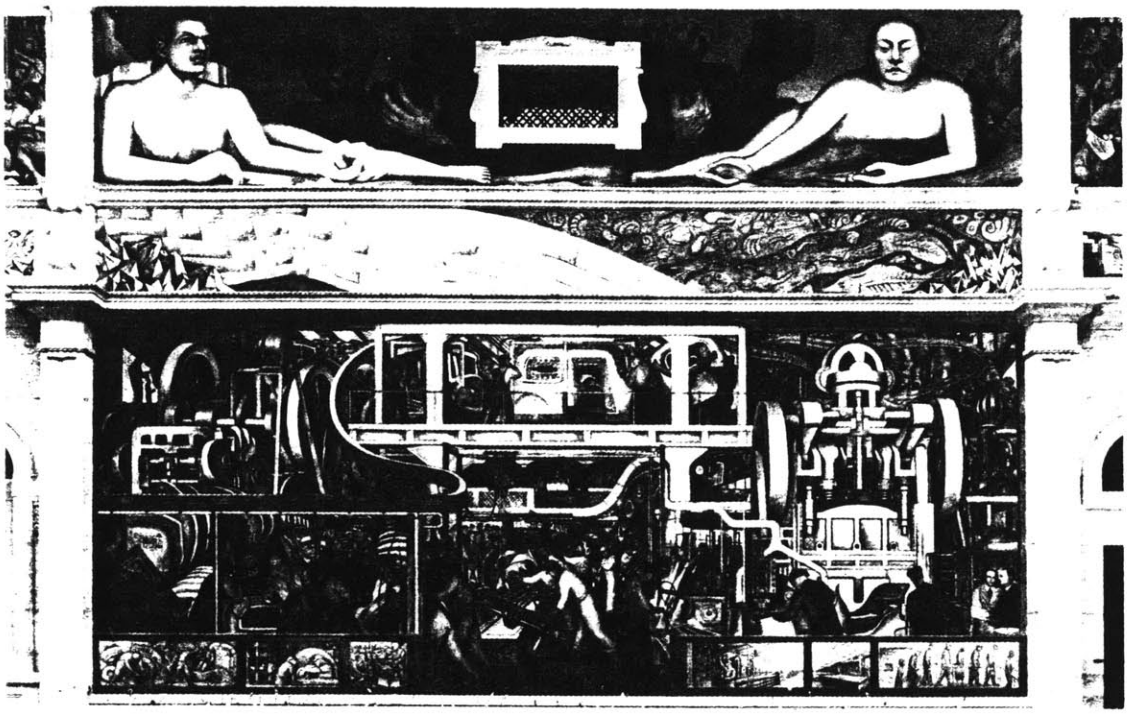
[118]Letter from George R. Bodurow, March 12, 1991.
[119]Nevins and Hill, Decline and Rebirth, p. 8.



had proclaimed machinery to be "the new Messiah," and President Calvin Coolidge reinforced this saying, "the man who builds a factory builds a temple, (and) the man who works there worships there."[120] It is fitting that two of the periods most significant artists, Charles Sheeler and Diego Rivera, translated the architecture and machinery of the Rouge into their most important works.

In 1932, Diego Rivera the celebrated Mexican muralist, was commissioned by the Detroit Institute of Arts to complete a series of murals in the museums garden court. At the outset of the project which was to focus on the theme of Detroit Industry, Rivera planned to devote only two of the twenty seven panels in the court to the automotive industry, specifically to the Ford Rouge complex. After his month long visit to the Rouge, however, Rivera was so fascinated by the complex that he devoted almost the entire project to the men and manufacturing activities that he witnessed. As the Institutes gallery sheet claims, "the Rouge was the first large industrial complex Rivera

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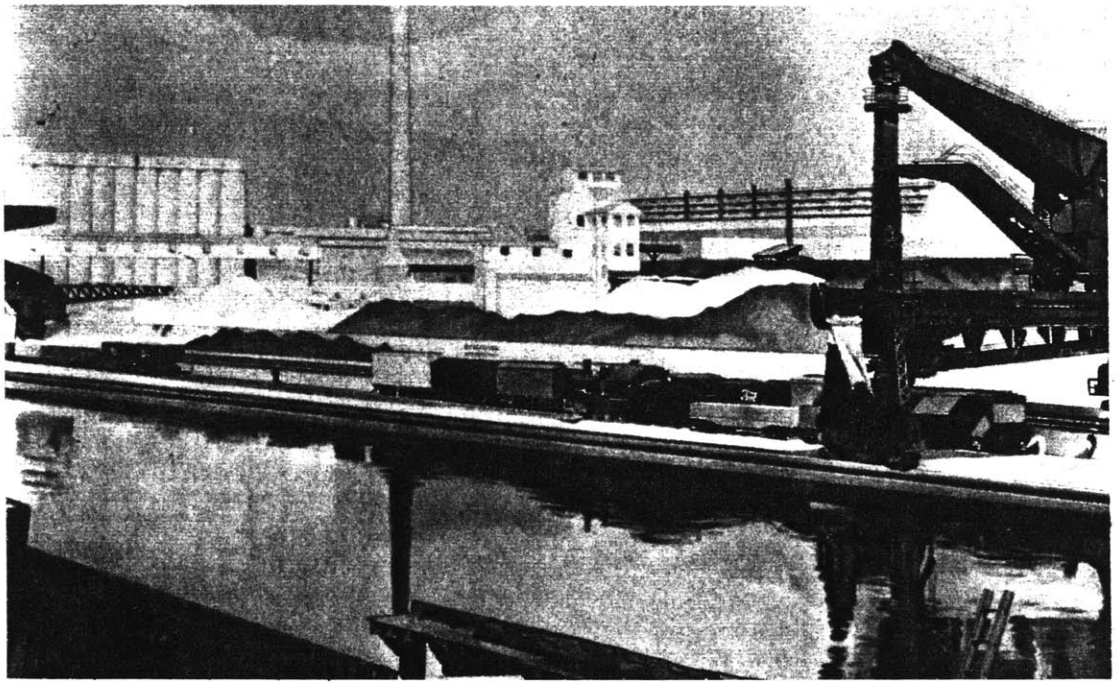
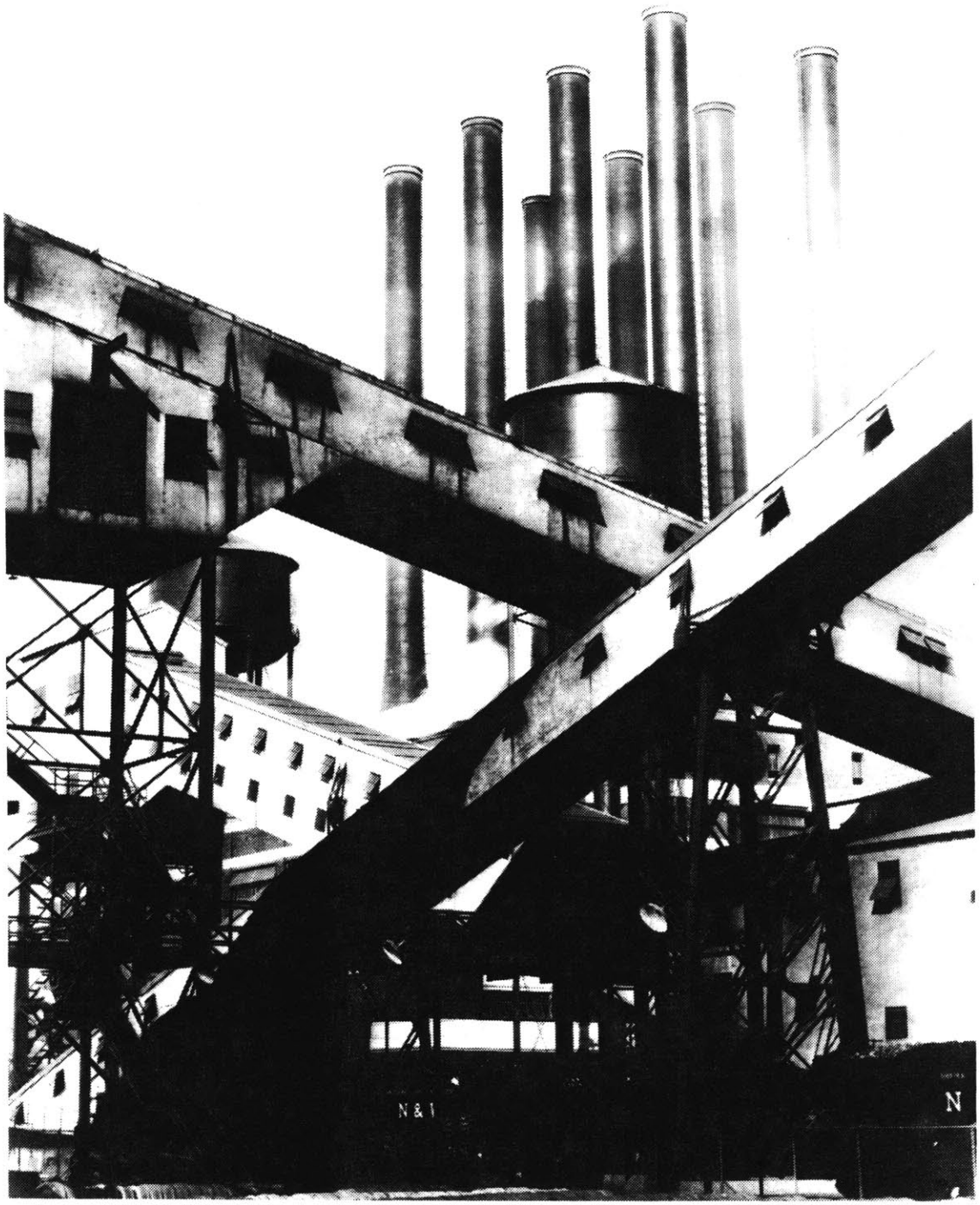
[120]Linda Downs, The Rouge: The Image of Industry in the Art of Charles Sheeler and Diego Rivera, Detroit: Detroit Institute of Arts, 1978, p. 13.



had seen and it must have seemed to him like a microcosm of the industrial age."[121] The result is an enduring legacy to the plant and its employees, which has become an important cultural symbol for the city of Detroit and the most popular attraction of the museum.

In 1927, Ford commissioned Sheeler to complete the now famous series of photographs at the Rouge, an assignment that marked a turning point in the artist's career, as the Rouge became a life-long subject for his paintings, and led him to adopt American Industry as one of his primary subjects. The Sheeler works were not only influential in the 1920's-30's, where they served as the vanguard for the Precisionist movement in America and eventually around the world, they have endured as representative of the dominance of industry in American culture. More recently, Leo Marx utilized Sheeler's *American Landscape*, a painting of the Rouge, in his book *The Machine in the Garden* uses this pastorialization of the industrial landscape to illustrate

[121]Linda Downs, The Detroit Industry Frescoes by Diego Rivera, The Detroit Institute of Arts Gallery Sheet, p. 2.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"the anomalous blend of illusion and reality in the American consciousness."[122] Though Sheeler's original set of photographs were commissioned for company use, they later appeared in periodicals in the United States and Europe. An example is when the definitive *Criss-Crossed Conveyors* appeared in *Vanity Fair* , along with the caption "By Their Works Ye Shall Know Them". The story referred to the Rouge as "The most significant public monument in America throwing its shadow across the land probably more widely and more intimately than the U.S. Senate, the Metropolitan Museum of Art, the Statue of Liberty, or the novels of Harold Bell Wright...it has been compared lyrically, reverently, vindictively, to...an American altar of the God-Objective of Mass Production...America's Mecca, toward which the pious journey for prayer."[123] It is difficult, perhaps, for this generation of Americans, those of the "information age", to understand such passion for an industrial site. The sentiment is captured in a New York Times article written in 1973 by Ada Louise Huxtable, upon hearing erroneous information regarding the demise of the Rouge:

"The Rouge. Meaningless words to this generation. Magic and awesome words to the last one. Mine is a generation caught between the automobile and the air age; we are the survivors of the last luxury trains and trans-Atlantic liners. We have experienced a revolution and, certainly, history. And so perhaps I attach more cosmic significance to a recent news item that the Ford Rouge plant is headed for closing and demolition than those who never knew about its unparalleled impact on industry, labor, the construction art and 20th-century life style."

The image of the Rouge was also conveyed through popular media. In 1937, newscaster Lowell Powell made a documentary film about the facility. During World War II, the Voice of America featured radio broadcasts about the production might of the Rouge. The broadcasts were designed to frighten the enemy forces, as they featured detailed descriptions of the production levels of the central piece of the "Arsenal of Democracy." The Rouge was so advertised that it led the country and the company to fear that the facility was a prime enemy bombing target. In the eventuality

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[122]Leo Marx, The Machine in the Garden: Technology and the Pastoral Ideal in America, Oxford: Oxford University Press, 1964, p. 356.
[123]Vanity Fair, February 1928, p. 62.

that the Rouge might be destroyed, plans and production documents were relocated during the war to a protective bunker in a remote location. The bunker was only recently evacuated.[124]

Popular medium of the Worlds Fair also conveyed the Rouge to the public. At the Chicago World's Fair - Century of Progress in 1934, Ford installed the Rotunda exhibit, a huge, gear-shaped structure designed by Walter Dorwin Teague and Albert Kahn. Landscaping at the fair site was designed by Jens Jensen. When it was returned to Dearborn, the first commercially installed geodesic dome by Buckminster Fuller. 12 million visitors viewed the inner court of the structure, which featured an elaborate display, including 20 foot high photographic murals highlighting not only the Rouge facility, but Ford's efforts from engineering to the city of the Future. After the Rotunda served its role in the World's Fair, it was relocated back to Dearborn to serve the purpose of a Visitor Center and departure point for the Rouge Tours. The structure was installed on the open expanse of land directly opposite the Kahn Administration building. An auditorium and visitor services wing were added, displays were enhanced

[124]Conversation with David L. Lewis, October, 1990.

and an elaborate site planning effort, which duplicated a driving course used at the World's Fair called "Roads of the World" was installed. This course was designed to present the history of road building through the ages, and featured stretches of 17 different roadways through the ages, beginning with examples of Roman Roads and continuing to the present day. The ulterior motive, as the promotional brochure concedes, was that "the tourist becomes aware of how modern automotive products provide even greater comfort on all types of roads."[125] The Rotunda burned in a devasting fire in 1962, and the company never again reconstructed a special visitor's facility, moving the greeting and departure function for the Rouge tours first to the World Headquarters Building and then to a location within Greenfield Village in later years.

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[125]The Ford Rotunda: Fifty years forward on the American Road, Ford promotional publication from the Ford Industrial Archives, Accessions AR-65-90, Box 6.

The Rouge Tours exposed thousands annually to the facility, even before the company installed the elaborate Visitors Center, as the numbers and names of luminaries who participated indicate. Early tours consisted of informal strolls. Once the main gates and fencing were installed, visitors gathered until the groups became large enough for a tour, and then plant employees doubled as guides. In 1924, the company established a formal tour program and until the tours were suspended in 1980, over 4 million visitors passed through the facility. Film records, which are now part of the collection of the National Film Archives at the Smithsonian, captured the likes of President Roosevelt, the Duke of Windsor and even Crown Prince Cyril of Bulgaria visiting the Rouge with Henry Ford as private tour guide. Millions of others, a good percentage of them school children, also visited the Rouge. The importance of the experience is well described by a high school teacher who wrote: "No film or lecture could ever make as great an impression on the high school students as the actual sight, smell and feel of the industry portrayed at the Rouge."[126] David Lewis described the experience of visiting the Rouge in terms of its visceral impact. "Visitors were perhaps most impressed by the plant's panoramic vastness, for no other embodiment of the industrial revolution was (and is) more commanding or overpowering. "In the eyes of many a spectator, " observed one writer, "this monument of Ford is more awesome than the mightiest sights of nature for the reason that it is man-made. It looks like the ultimate, even in an age that is accustomed to feast on the big and the spectacular.""[127]

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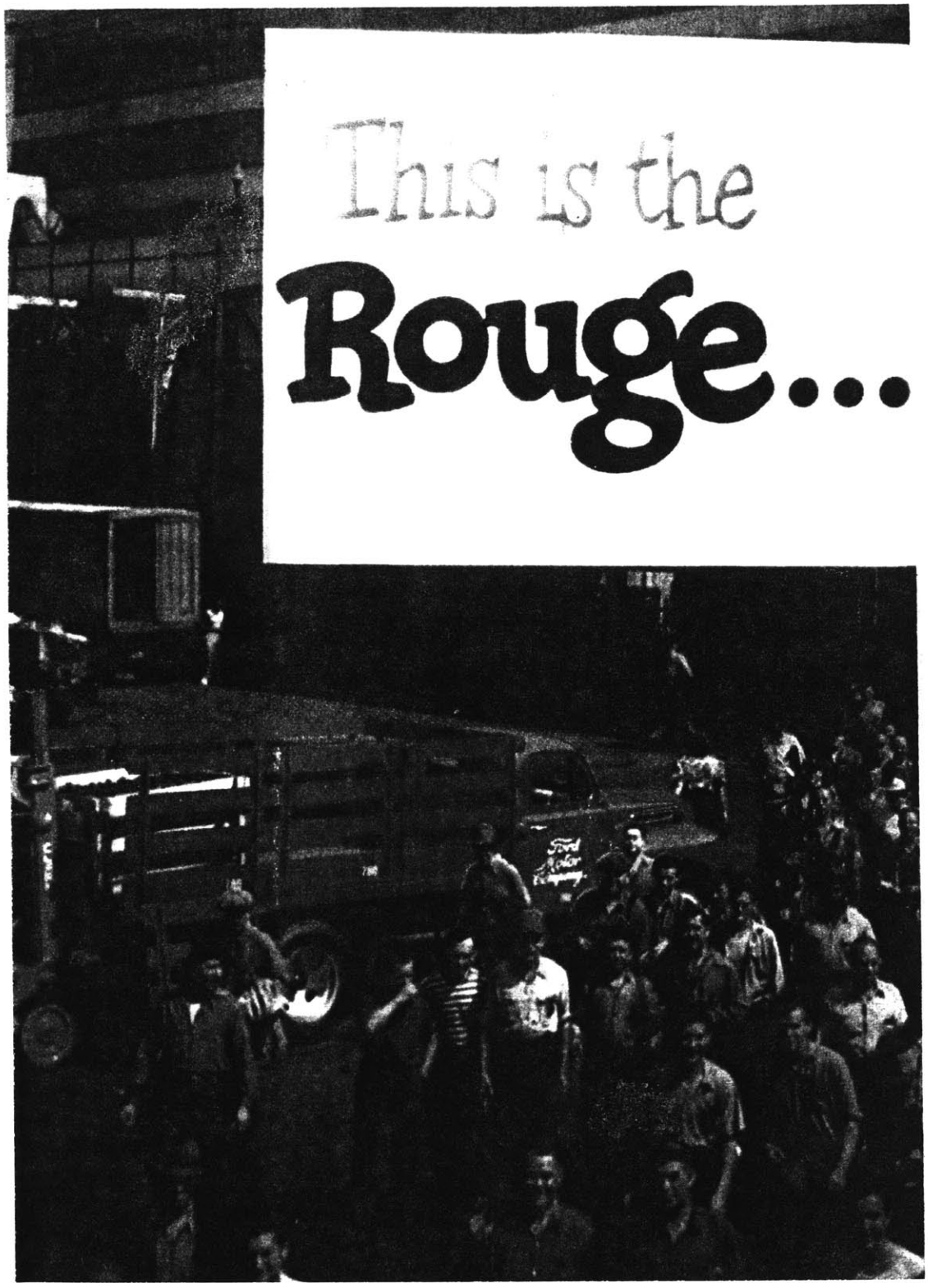
[126]Ford News Department Press Release, August 1967, from the Detroit Public Library National Automotive History Collection.

[127]David L. Lewis, "The Auto Industry-America's Forgotten Industry", Cars & Parts, Vol. 17, No. 1, November 1973, p. 119.


This is the
Rouge...

5. The International Impacts of the Rouge

The Rouge was conceived and begun on the eve of the Machine Age in America, a period in which America created a new culture and the resultant art forms through technology and industrialization. Factory architecture, Industrial design, American Dada, the Precisionist Movement--all new forms of art and design which sprang from the inspiration and technological processes of the machine. This period represents the first time in the life of the nation where Europe looked to America for inspiration. The advances in industrial architecture that Albert Kahn first at Highland and then at the Rouge influenced the work of architects around the world, attempting to create a machine aesthetic, one in which "style was replaced by an attempt to utilize the machine and its processes in creating architectural form."[128] As Venturi observes in Learning from Las Vegas, "The architecture of the Modern Movement, during its early decades and through a number of its masters, developed a vocabulary of forms based on a variety of industrial models whose conventions and proportions were no less explicit than the Classical orders of the Renaissance. Their buildings were explicitly adapted from these sources, and largely for their symbolic content, because industrial structures represented, for European architects, the brave new world of science and technology..."[129] The Rouge was admired by Moholy-Nagy, of the Bauhaus, among others, and Charles Sheeler's famous precisionist photographs of the industrial scenery of the Ford River Rouge plant appeared unacknowledged in European publications like Moholy-Nagy's "Von Materiel zu Architektur"[130] and in Moholy-Nagy's "Bauhausbuch" both published in 1929.[131] In Europe, architects were quick to appreciate the "machine aesthetic" that resulted from the functional expression of the production process. A new breed of European architects and philosophers, looking for the essential plurality and utility of the machine aesthetic, and the supposed democracy which technology could create, conceived of Modernism and the Modern era. Walter Gropius, considered the initiator of the Bauhaus and the Modernist movement

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[128]Richard Guy Wilson, The Machine Age in America, New York: The Brooklyn Museum, 1986, p. 185.
[129]Robert Venturi and Denise Scott-Brown, Learning from Las Vegas, quoted in Banham, A Concrete Atlantis, p. 3.
[130]Banham, A Concrete Atlantis, p. 164. See also Hildebrand, Designing for Industry, p. 121.
[131]Ibid, p. 178.

reinforces the role of industry: "Compared to the rest of Europe, Germany seems to have taken a considerable stride ahead in the field of artistic factory building, but America, the Motherland of Industry, possesses some majestic original constructions which far outstrip anything of similar kind achieved in Germany. The compelling monumentality of the Canadian and South American grain elevators, the coaling bunkers built for the leading railway companies and the newest work halls of the great North American industrial trusts can almost bear comparison with the work of the ancient Egyptians in their overwhelming monumental power. Their unique individuality is so unmistakable that the meaning of the structure becomes abundantly clear to the passer-by."[132] J.A. Spender, English editor and historian, said of the buildings of the Rouge: "If absolute completeness and perfect adaptation of means to end justify the word, they are in their own way works of art."[133] While the European avant-garde was actively admiring the sophistication of the Rouge, Americans were not. The Rouge was well published in industrial and engineering journals, such as Mill and Factory in 1936 Industrial Management in 1919 and 1922, but did not appear in architectural publications, either conservative or avant-garde. Yet, as an example of the more practical aspects of design, "it was the most important industrial complex of its time."[134] Richard Guy Wilson writes, "the River Rouge factory buildings, which so excited Charles Sheeler, had a direct presence, vast enclosures of steel and glass with cylindrical smokestacks appearing as totems of the machine totems of the machine age."[135]Fordism, the mass production/consumption philosophy of Henry Ford which was both made possible and manifest in the scale of operations at the Rouge, also influenced European life.

Ford, Sorensen and Kahn began revolutionalized 20th century industrial form and process at Highland Park, but it was at the Rouge where these notions had the most impact on the rest of the century. These influences are multiple, but can be grouped into architectural and operational influences. Electricity had allowed industry to free itself from waterfront locations. Power, its transmission and distribution, was not primarily important for lighting the factory, but for its arrangement. It freed industrial

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[132]Ibid, p. 202.
[133]Huxtable, Progressive Architecture, December 1958.
[134]Hildebrand, Designing for Industry, p. 121.
[135]Wilson, Machine Age, p. 185.

engineers to lay out the factory floor without constraint and to maximize efficiency.[136] Siting the Rouge in Farmland, miles from the city, began a trend that would not be further reinforced until after WWII when massive highways and the development of suburbs reinforced the trend. The move from the multiple story mill structure to the single story shed. The separation of the management office from the factory floor. The proliferation of industrial engineering and the rationalization and control of the design of the factory and the process of manufacture and worker involvement.[137] The innovative use of window wall and butterfly roofs to maximize sunlight. As Banham observes regarding the architecture of the late 1920's, " the River Rouge plant, however, whose vast single-story worksheds represented a critical break from the now almost defunct tradition of the concrete-framed Daylight factory.."[138] Banham continues, "the other factors that militated against the long survival of the earlier multi-story factories, were of course, their early obsolescence as a building type and their replacement by single-story structures as the preferred containers for manufacturing processes. The story tells itself dramatically in Detroit, where the high-density Packard plant, with railyards alongside, is superseded by the linear Old Shop at Highland Park, with the railyards sandwiched between it and the machine shops. That was in turn superseded by the New Shop, through which the rail tracks actually pass, and then by the long, single-story sheds of the River Rouge, scattered over a remote suburban "green field" site far from any other industries or human settlements, and where connectivity by rail and road seems to dominate all other design considerations."[139] Thus Ford, as early as 1917, innovated an entirely different conception of industrial building and organization and defining industrial architecture and land use principles that are still embraced to this day by the high technology sector.

This is reinforced by numerous scholars and architectural historians. "Detroit can be truly called the birthplace of the modern factory, a field which the American architect feels himself to be supreme. Henry Ford established his business on the production of a really workable car and required the same quality in his factories. He first called for

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[136]See Biggs, Industry's Master Machine, for a discussion regarding how this led to the growth of the profession of Industrial Engineering.
[137]Ibid.
[138]Banham, A Concrete Atlantis, p. 164.
[139]Ibid, p. 178.

the large-area single-story factory production and got it, but even he, with all his farsightedness, could not envisage the lengths to which the factory plant would develop. Kahn realized that the ideal factory could be achieved only by the integration and collaboration of the specialist groups, including process engineers."[140]
What happened at the Rouge so early in the century is now the standard of the industry. "Single story factories are now almost universally accepted because horizontal transport has been more highly developed than vertical. Many American factories are similar in type, independent of the kind of product manufactured. This is because new methods of production are constantly being evolved, and factories must therefore be flexible. Uniformity of character is a striking quality of American factories."[141]

The Rouge as an industrial typology was not only revolutionary and unique, but also a model for 20th century industry. The complex was an exemplar of machine equipment, processes, materials handling and factory design. As Alan Nevins observed, "despite its sinister aspect, which organized labor and more enlightened management would in time cure, the Rouge stood out as a pioneering accomplishment in industry which affected both automotive and other manufacturing processes. The Ford organization as embodied in the Rouge unquestionably took a great stride forward as compared with any of its rivals. None so completely controlled and related the basic elements of production. None effected a concentration of manufacturing which permitted so great an integration of related activities, along with notable economies in manufacturing. None achieved the same degree of mechanization, or quite matched the modernity of the tooling. In its own different fashion, more complex and not always obvious, the Rouge influenced the motor car factories of the late nineteen twenties and the nineteen thirties much as the moving assembly line had influenced those of the preceding period. In its extension and refinement of mechanization it even helped to lay one part of the foundation on which the phenomenon of today, automation, rests."[142]

The influence of the Rouge around the world is also in evidence. Ford itself created smaller scale duplicates of the facility when it planned and opened the 562 acre plant at

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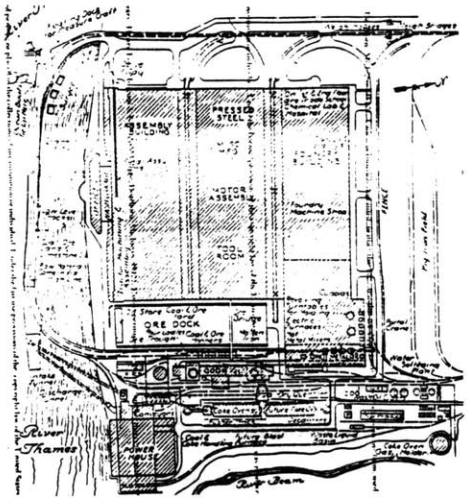
[140]Hildebrand, Designing for Industry, p. 40-41.
[141]Ibid, p. 41.
[142]Nevins and Hill, Expansion and Challenge, p. 297.

Figure 39: Ford Dagenham Plant ca. 1930



Dagenham, England on the Thames, and another in Koln, Germany between 1929 and 1931. (**Figure 39**) General Motors adopted the model when it opened Buick city in Flint, Michigan. Even the Japanese admit influence by the Rouge in planning their post WWII industrial facilities. Some sixty years after the Rouge was conceived, Toyota would be credited for its "just-in-time theory" of manufacturing, in which the concept of stocked inventory was all but eliminated and parts from suppliers arrived just in time for use in final assembly operations. In a toast to then Ford Chairman Phillip Caldwell during a 1982 visit to Japan, Eiji Toyoda said, "There is no secret to how we learned to do what we do, Mr. Caldwell. We learned it at the Rouge."[143]

Although modern modern American manufacturing theory has now come to embrace the Japanese techniques of lean production, the Rouge model still lingers and influences even contemporary projects. The recent design and construction of the General Motors Saturn plant in Spring Hill, Tennessee, has been touted, both physically and in its experimental labor/management structure, as the model for 21st century automobile manufacturing. In a recent magazine article describing its opening, the facility was compared to the Rouge: "Everything about Saturn is largescale. It is GM's first new carmaking division since the automaker acquired Chevrolet in 1918, and its huge new plant in Spring Hill is the most self reliant assembly plant built in the U.S. since Henry Ford put together his Rouge River complex in 1927."[144]

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[143]Halberstam, The Reckoning, p. 88.

[144]"The Right Stuff", Time Magazine, October 29,1990, p. 75.

B. THE RECONSTRUCTION PROPOSAL

The recommended scenario for the reconstruction of the Rouge focuses on program, process and participants, and draws from examples of industrial reconstruction projects in the European Community and the United States. Though the Rouge complex is still functioning, a multi-disciplinary, participatory master planning process led by Ford should begin now, involving all of the groups and constituencies which have a stake in the future disposition of the site. A steering committee should be created to lead the master planning process as a way in which to begin to approach this very complex issue. Planning task forces would be established for each of the four proposed development components. The recommended scenario is a proposed Master Planning approach which employs the three notions of value-infrastructure, location, and information-in an additive way to produce programmatic recommendations which have formal implications on the site. In addition, the scenario will recommend more than one use implemented over more than one period of time. The recommended scenario is a project which encompasses four different use and program directions for the site, and addresses for each the program, process and phasing over an assumed twenty year planning and implementation period. The proposal is a simulation of process and, because of the size of the site, and the complexity of issues associated with it, only one of many possible futures for the site. Emphasizing the master planning method, it is, however, a way with which to begin to approach such a complex issue.

1. The theoretical basis for the proposal

The proposed scenario for the future of the Rouge has an implicit theoretical basis. This includes the notion of conservation, an attitude of placing natural and man-made resources in a continuous cycle of productive use. Also, that preservation of the past, in balance with allowing new innovation and progress, is important to society. In order to convey such history, architecture, the physical remnant, or tangible past, plays an important role. That for such a large piece of the city, an important piece of urban history, for environmental opportunities of such scale, there is no single solution or single land use. Consequently, a multi-dimensional master planning approach, which embraces an imaginative, far-reaching process is essential, and such planning for the future of the site should be participatory. Ultimately, this is the only way in which an

equitable and lasting vision can be formed. And finally, that the architectural and cultural legacy of the Rouge must be conserved in conjunction with emphasizing its historic economic role in the region. Continuation of current manufacturing operations would only enhance the proposals made here. However, if such operations prove not to be unviable in the long term, then another productive use must supplant them.

Change has occurred, is occurring, and will occur at the Rouge. The question becomes, however, what are the increments of change and how does one promote the transition of the area such as the Rouge to new productive uses while still retaining history and meaning for society? The first and essential step in this process is acknowledging that the Rouge represents a tremendous asset, not a liability. Society is prone to look at industrial environments with distaste, or allow itself to be overwhelmed by the task of reuse. This is the basis of the reaction to abandon them, in favor of replacing the same on virgin land elsewhere, often replicating the problems we set out to avoid. If we maintain such an attitude, we will end up surrounding ourselves with identical problems. Kevin Lynch calls these "wastes and scars" in the environment and advises, "when we look at waste and scars with new interest, we may learn how to integrate them into a continuous cycle of use."[145] It is this continuous cycle of use that I am advocating in a "conservation" approach. It is supported by the current cultural shift, away from disposable goods and toward recycling, and renovation, and a growing national sentiment for conservation and reuse. But this notion of conservation should not be confused with preservation. To clarify the intent I will borrow from Kevin Lynch's definition: "not only keeping true basic resources intact but also encouraging the reuse and disposal of environmental wastes (derelict space and structure, as well as the more familiar environmental pollutants), maintaining and monitoring adaptability, and keeping a stock of developable space and other environmental reserves."[146] He continues, "The issue is how to return entire complex sites to a productive status or at least to an open and ecologically stable condition that permits future development."[147]

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[145]Kevin Lynch, What Time is this Place?, Cambridge, Massachusetts: MIT Press, 1972, p. 190.
[146]Ibid, p. 233.
[147]Ibid, p. 233-234.

However, a certain amount of preservation attitude is embedded in the conservation approach. Preserving pieces of the past is of value to modern society. It can comfort us, inspire us, educate us, provide tangible links to common or disparate cultures and heritage. It reminds us where we have been and where we may go as a society. But the issues surrounding preservation are complex. What are the base motivations for preservation? What is the best method or medium for preservation? Who decides what should be preserved? What are the criteria for selection? How are resources allocated between preserving the past and building the future? Lowenthal discusses the burdens and benefits of the past warning against overzealous preservationism,"the danger often lies in our tendency to overrate the past's importance or virtue by comparison with the present. The American National Trust promotes historic preservation with the slogan 'They don't build them like they used to. And they never will again.' -suggesting the inherent inferiority of today's architecture. A past too much esteemed or closely embraced saps present purposes."[148] He goes on to discuss the dilemma of preservationism, "How to enjoy the benefits of the past without being overwhelmed or corrupted by it is a dilemma that confronts us all. Each inheritance demands to be both revered and rejected. Whether or not people expressly articulate the conflict, rivalry between tradition and innovation engages every historically conscious society. Any effort to balance the past's benefits and burdens implies some awareness that we need to cherish the past and also need to get rid of it;"[149]

Lynch offers a proposal for balance in this regard. He writes, "I prefer to emphasize the creation of a sense of local continuity-the tangible preservation of historical context, one or two generations deep, in all our living space-over the saving of special things."[150] This pluralistic approach is further reinforced in his recommendation for who decides about what should be preserved. He advises, "The memories and hopes of the users of an area would be the guide for choosing the elements to be retained."[151] And he advises, as is becoming the trend, that the artifacts of our every day lives, particularly the most recent past, is of importance in conveying meaning. "Recent work

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[148]David Lowenthal, The Past is a Foreign Country, Cambridge, England: Cambridge University Press, 1985, p. 65.
[149]Ibid, p. 74.
[150]Lynch, What Time?, p. 235
[151]Ibid, p. 237

in industrial archaeology is a good example of the search for a past recent and important enough to have a real connection with our present lives. The remote past is always of intellectual interest and is surely relevant to our understanding of man. But emotionally that relevance is easier to grasp when we have first built a bridge to it across our own time locality. We might display not only characteristic periods but also the critical transitions, when society shifted in some crucial way-a more difficult objective."[152]

The way in which the past is conveyed to us in the present is a mixed media experience. We receive information from a variety of media and methods. Both Rossi and Halbwachs emphasize the notion of *place* in aiding the collective memory. Halbwachs and Rossi both stress that the places we experience are fundamental to our ability to remember and to communicate to future generations. Ruskin emphasized this also in *The Seven Lamps of Architecture:* "We may live without (Architecture) and worship without her, but we cannot remember without her." Lowenthal speaks of how we know the past, identifying memory, history and relics as the three vehicles for this activity. He claims that "Memory, history, and relics continually furbish our awareness of the past. The past is gone; its parity with things now seen, recalled, or read about can never be proved." He quotes R.G. Collingwood 'The past simply as past is wholly unknowable, it is the past as residually preserved in the present that is knowable.'[153] He further defines the vehicles by saying that "memory and history are processes of insight; each involves components of the other, and their boundaries are shadowy. Yet memory and history are normally and justifiably distinguished: memory is inescapable and prima-facie indubitable; history is contingent and empirically testable. Unlike memory and history, relics are not processes but residues of processes. Man-made relics are called artifacts; those that are natural lack a distinctive name. Both attest to the past biologically, through ageing and weathering, and historically, through anachronistic forms and structures."[154] Relics become part of what he defines as the "tangible past." He also emphasizes the interconnection of the three, making each more credible. "Relics trigger recollection, which history affirms

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[152]Ibid, p. 237
[153]Lowenthal, Foreign Country, p. 187.
[154]Ibid, p. 187.

and extends backward in time. History in isolation is barren and lifeless; relics mean only what history and memory convey."[155]

Lowenthal discusses the value of relics, or tangible remains, lies in their inherent accessibility. He discusses Henry Ford's populist agenda when he said, 'history is more or less bunk', determined to 'build a museum that's going to show industrial history, and it won't be bunk...That's the only history that is worth observing...By looking at things people used and then show the way they lived, a better impression can be gained than could be had in a month of reading.'[156] Lowenthal then states, "Relics open to public inspection and potentially visible to any passerby provide unmediated impressions of the past. Seeing history on the ground is a less self-conscious process than reading about it: texts require deliberate engagement, whereas relics can come to us without conscious aim or effort. History and memory usually come in the guise of stories which the mind must purposefully filter; physical relics remain directly available to our senses."[157] This easy availability puts the past and its history in close proximity to our everyday lives. When the past is juxtaposed to something of current society, the statement is made even more powerfully. Lowenthal observes that, "Coexistence with the present is another vital quality of the tangible past: something old or fabricated to seem old can bring the past to us, palpable and potent."[158] Bill Porter has suggested that it is only through change of use that the past is remembered. The conflict between form and expectations of appropriate use gives rise to memory, creating a gap of understanding that needs to be filled. This contrast between use and form does not, however, constitute a basis for memory it simply is surprising and intriguing. "Memory must be substantiated by the form itself."[159]

As the history of the Rouge conveys, these environments are infused with the memories of various groups whose experiences with the complex were either direct or vicarious. There is then, a multidimensional collective memory associated with the Rouge Plant, which must be acknowledged and interpreted. The role of architecture

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[155]Ibid, p. 249
[156]Ibid, p. 244.
[157]Ibid, p. 245
[158]Ibid, p. 247
[159]Bill Porter, during the MIT Advanced Seminar in City Form, 14 December 1990.

and site arrangement in history, memory, and modern (current) meaning is discussed in both the works of Halbwachs and Rossi. In relation to the Rouge, an industrial site of considerable scale, Rossi's concept of *permanences*, and its role in the collective memory applies. Rossi's notion of permanences, physical manifestations of the city's underlying identity is in the persistence of important elements-buildings or spatial organizations. Rossi distinguishes permanences as either "historical or propelling permanence as the form of the past that we still experience" or "pathological permanence as something that is isolated or aberrant."[160] Using the illustration of the Alhambra in Granada, Spain, which Rossi sees as no longer tied to the city in its original function and standing virtually isolated in the city. The latter definition is applicable to the Rouge, and so many other industrial sites in demise or abandoned, as Rossi intends it as essentially anachronistic. In fact, one might argue that such sites are physical manifestations of the Detroit area's underlying identity, at least for most of the 20th century, as the center of world-wide automobile production. As symbol, the Rouge has been powerful, both in its prime and as an anachronism. Thousands migrated from all around the world to work, or visit the Rouge, knowing only its image and story. At a smaller level, the Rouge represented the economic cornerstone for the region. The entire population was assured by its presence of prosperity, though only a small percentage actually ever worked or visited the site. During the infamous strike of 1941, the Detroit Evening Times ran a picture of the facility with the caption, "The scene of quiet, industrial beauty that Dearborn Residents might have seen yesterday."[161] This sort of detached, vicarious association with the facility is characteristic of the resident. Still, despite the reduction of the scale of operations there, the city of Dearborn and its residents still define themselves by its presence. A recent master plan states that "one of the most important image creating elements in the city is the historic Ford Rouge Plant"[162]

Many communities have begun preservation efforts to preserve local heritage, even when this extends to the unpleasant memories associated with the industrial landscape as we have seen in the heritage development projects of the northeast. It brings the

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[160]Rossi, The Architecture of the City, p. 60.
[161]Detroit Evening Times, Thursday, April 3, 1941. Wayne State University Archives.
[162]City of Dearborn, John B. O'Reilly, Mayor, John J. Nagy City Planner, Master Plan for the City of Dearborn, 1985, p. 83.

issue of elitism. Lowenthal says, "preservation remains tainted by elitism despite its claims to popular support. It is by and large the rich who wish to save old buildings- and who receive grants or tax benefits for doing so."[163] Many of the working class and poor have little interest in preserving a past tinged with negative memories. Lowenthal quotes one source as saying, 'Preserve a steel mill? It killed my father. Who wants to preserve that?'[164] However, Lowenthal acknowledges that "the fearsome industrial past is by no means universally rejected" and cites the success of such efforts as the preservation of Lowell, Amoskeag and others, pointing to the visit of a former mill girl as "by no means nostalgic for her childhood days of toil, one visitor was none the less glad to know that her mill was still there: its survival validated her memories."[165] Even with the brutal reality of factory work, the emotional attachment of an individual and group of individuals to the physical form of their workplace remains. During the recent demolition of the Dodge Main plant in Detroit, retired and laid-off union workers came daily to watch and lament the destruction of their workplace and their collective memories. Interviews revealed a strong emotional attachment to the plant as a physical artifact. It had been a testament to their lives of labor, a legacy that was palpable, that they considered to be enduring, a place that they could show to their children and grandchildren. No historic plaque on the site could convey, in the way in which the plant itself could, the enormity of scale and activity to future generations.[166]

If we accept the importance of architectural form in the collective memory, then to what extent can the original formal language and site arrangement be altered without impacting this memory? The seems particularly potent in thinking of the Rouge, and industrial landscapes in general. How could the scale and power of these sites be retained in the collective memory without their formal remnants, either still in use or abandoned? Even Rossi concedes that form alone cannot perpetuate the collective memory. He concedes that ritual, which I will interpret here as use, also plays a significant role. In the case of the Rouge, one must consider the extent that preservation of the place can occur without retention of original use or at least the

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[163]Lowenthal, Foreign Country, p. 403.
[164]Ibid, p. 403.
[165]Ibid, p. 403
[166]Conversation with Charles Hyde in Detroit, Michigan, 8 October 1990.

implications of original use. Reyner Bahnam wrote on this subject in regard to the recent adaptive reuse and preservation of the Fiat Lingotto plant in Turin, the historic automobile factory that has become a symbol of modernism in Italy. Banham argues convincingly that without preserving the facility's use, or at very least incorporation some tangible and comprehensible evidence of its productive past, that meaning and preservation purpose is lost. He accuses architects of believing in "preservation at any cost", often forgetting that the building shell, without its social content, is not what they set out to preserve. He argues that "the Lingotto demands, first and above all else, Metal! Oil! Noise! Smell! Proletarian Blasphemy!"[167] Banham's concern here is with superficiality, poorly accomplished adaptive reuse which has filled industrial monuments such as the Cannery with an agglomeration of boutiques and restaurants, ignoring completely its past use and making it indistinguishable from all other recycled industrial monuments in the rest of the world. Certainly there are examples of reuse of industrial structures, the 19th Mills of Manchester, New Hampshire, for example, which have successfully programmed a mix of new uses, including contemporary industrial uses. Rossi uses the example of the Palazzo della Ragione in Padua to illustrate this notion of continuing use and meaning. In the adaptive reuse of this form, Rossi feels that "the physical form of the past has assumed different functions and has continued to function, conditioning the urban area in which it stands and continuing to constitute an important urban focus."[168] This would certainly be the objective of a reconstruction program for the Rouge, though this exercise becomes challenging due to the facilities enormous scale and economic role in the community.

Focusing on a "living" museum and using the actual facility is a much more powerful and palpable approach. Failures to interpret industry are abundant. General Motors demolished the historic Flint Fisher Body No. 1 plant where UAW began with the famous 44 day sitdown strike of 1936, and built Auto World, a multimillion dollar fiasco of an auto theme park built in downtown Flint. The city of Youngstown, Ohio has recently built the Historical Center of Industry and Labor-a tribute to their steel making heritage. The city opted, however, for a new museum structure designed by Post-Modern architect Micheal Graves, instead of using one of their many abandoned,

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[167]Reyner Banham, "Lingotto: A Transatlantic Perspective", Casabella, April 1984.
[168]Rossi, The Architecture of the City, p. 59.

though infused with history, steel complexes. The museum is empty, having run out of funding for completion, and unveiling has been postponed indefinitely.[169]

Detroiters have an opportunity to use their remnants of the tangible past in order to interpret their own history. However, before such a strategy emphasizing the history of the city is pursued, there must be a fundamental change in the regional conservation attitude in the region. Though some isolated preservation efforts have been successful, such as the recent restoration and renovation of the Wayne County Courthouse and the redevelopment of the historic Stroh's brewery on the waterfront, there is a certain anti-preservation attitude in the region. In a related example, the historic Dodge Main Plant, after an extensive planning process that proposed renovation and adaptive re-use, was demolished along with a good portion of the neighborhood surrounding it, in order to construct the new General Motors Poletown plant. Recently, in perhaps the most serious offense, the pre-Civil War Monroe Block, the oldest set of sites and buildings in the city, was demolished to clear the way for the development of a surface parking lot. Recently the city announced intentions of demolishing the Ford Auditorium, a gift of the Ford Family to the city in the 1950s, and delivering the publicly owned riverfront parcel to the private sector for development. The first was Comerica Bank, who had threatened to leave the city for suburbs if they could not build a 400 foot Cesar Pelli designed tour on the site. After much controversy and a law suit, Comerica backed away from the parcel. More recently, a proposal by Hilton International to place a high rise hotel on the site, though this was voted down in a city wide referendum. In another part of the city the historic Tiger Stadium.is under threat of demolition by the Tiger organization, who, faced with declining receipts, want to develop a self sufficient "Tiger City" mixed use development just to the north of the existing stadium in order to attract suburbanites downtown. Citizens groups have organized to monitor both of these projects, and some are committed to prevent them from moving forward.

The analysis of this preservation attitude is complex, though a plausible explanation comes from the current political climate that exists in the city. Charles Hyde offers a theory about the region's preservation attitude. Detroit has a political constituency that is mostly black and mostly poor. The constituency equates the older structures of the

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[169]Newsweek, October 30, 1989, p. 84

city with deterioration and disinvestment. Thus, the political bureaucracy, attempting to appease this constituency, has pursued a program of renewal and new construction, with very little emphasis on preservation and reuse. In addition, the advocates of preservation generally tend to be the middle and upper classes, and historic preservation is associated all too often with the history of wealth and privilege. This constituency lives in the suburbs, and has no political clout in the city. To be fair, there is a larger social context that exists in Michigan and perhaps the Midwest in general. Economic considerations and job retention are of most importance, and there have been few examples of how adaptive reuse can actually stabilize and enhance the economic base. There is a certain "planned obsolescence" of the built environment, fueled by technological progress and the availability of vacant land. This attitude is evidenced in an historic pattern of "build-abandon-rebuild new", generally at another new and more decentralized site. The trend is evidenced in Detroit in every land use category: industrial - in the exodus to suburban sites, residential - in the growth of the suburbs, and commercial - in the growth of urban villages.

In 1973, Ford Scholar David L. Lewis wrote an article about efforts to preserve the automotive heritage of the region, calling the automotive industry "America's forgotten Industry."[170] His point was that between 1966 and 1973, the Department of the Interior had designated 51 sites in the field of commerce and industry as national historic landmarks, only one of which,-Henry Ford's Estate Fair Lane-had been identified with the automotive industry. Since that time, a number of automotive sites and structures in the Detroit area have gone through the designation and registration process, both at a state and federal level, including the Rouge and the Highland Park Plants, designated in 1979-80. Yet this was not a locally based initiative and Ford at one point considered appealing the designations.[171] However, these plants are not out of danger of being lost. The Highland Park plant experienced selective demolition in the late 50's and was quickly shut down and sold to private interests in 1980 when Ford moved its Tractor operations to Romeo, Michigan. The birthplace of the moving

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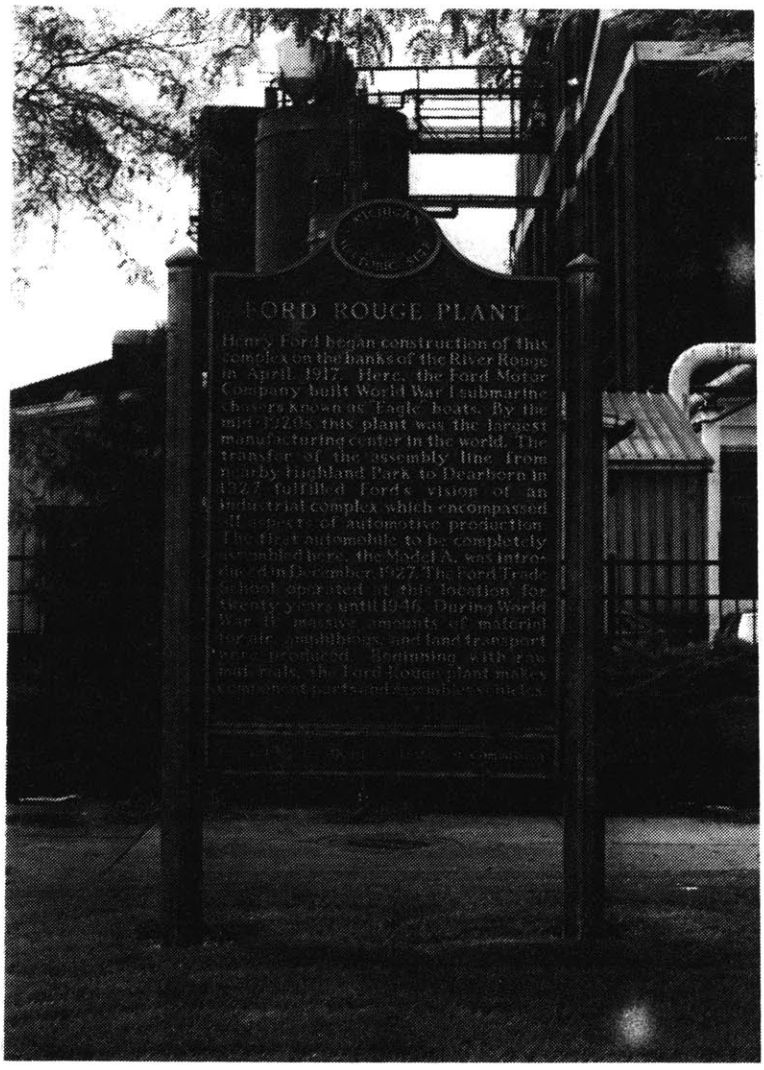
[170]David L. Lewis, "The Auto Industry--America's Forgotten Industry", Cars & Parts, Vol. 17, #1, November 1973, p.118.

[171]Conversations with Charles Hyde and Catherine Eckert. The research was conducted by the American Association for State and Local History in Nashville, Tennessee, using an historical consultant from HABS/HAER



assembly line and the five dollar day, the Highland Park plant still stands, though it is in disrepair and is actively marketed for sale or lease with no planning efforts underway to preserve and interpret its world impacting significance. Certainly the Rouge, especially its original Assembly plant is in similar danger. Long the target of criticism for industrial inefficiency (the only remaining three-level assembly plant in Ford's NAAOperations) the 1985 Ford Land Development plan for the Rouge suggested the demolition of the Assembly Plant to make room for raw material storage for the Rouge Steel operation-a demolition that would not violate the National Landmark designation.

In Dearborn, despite preservationist's efforts, and the fact that the city houses Greenfield Village and Henry Ford Museum, one of the nation's largest historical museums which includes such early industrial landmarks as Thomas A. Edison's Menlo Park Laboratory and the Wright Brothers Cycle Shop, the city has systematically demolished its built heritage-including pieces of the Henry Ford estate. Today, the city possesses only a few original historic structures. The two oldest remaining buildings are The Commandant's Quarters of 1833 and the McFadden Ross House of 1839. Several other structures date from the first half of the 20th century, including The Henry Ford Estate-Fair Lane of 1915, Dearborn City Hall of 1929, and the Dearborn Inn of 1931. At the state level, a recent task force concluded that the state's history was of primary importance in stimulating the state's tourism industry, but made no specific mention of the industrial history and resources as playing a significant role. The recently elected governor Engler announced that he was cutting funding to the Michigan Council for the Humanities and funding for the Bureau of History is at a very low level.

In addition to the conservation basis, the proposal also advocates an open and participatory planning process, one which balances the financial and social objectives of the company, the local community and the union and allows the participation of all vested interests and constituencies in the planning process. Such a process can bring inventive and sustainable solutions to the reconstruction effort, and ensure an equitable and mutually acceptable outcome. The Rouge is an architectural as well as a political space. For this reason, the proposal identifies disparate or contending ideologies and attempts to provide a neutral ground on which each can be voiced and interpreted. Further, the proposal does not advocate eliminating manufacturing. On the contrary, the retention and growth of a productive, competitive manufacturing sector, particularly automobile manufacturing is most desirable state. The manufacture of automobiles in the Detroit area is recognized as essential to the future prosperity of the region and the nation. This was reinforced recently by the Congressional Delegation which visited Detroit on April 25-26, 1991 for a fact finding tour on the domestic auto industry. Detroit is still considered the home of the domestic auto industry, and the visit confirms the importance of the auto industry to the future economic health of the country. Any proposal for the future of the Rouge must focus on retaining the vital economic role of

the facility. Therefore, the proposal here does not advocate displacing manufacturing uses in favor of other uses. It does, however, promote replacement of this activity, on a comparable economic scale, if and when it becomes necessary. In addition, the proposal promotes that such new economic activity should rebuild from within the regional economy, and draw from the regional labor pool, advocating the retraining of workers for the future uses on the site.

2. Basic Assumptions

Certain **basic assumptions** were made in developing the recommended scenario. These include:

- It is to the advantage of the Ford Motor Company to consider redevelopment options for the facility. It assumes that the complex (excluding Rouge Steel) is fully owned and depreciated and that it is in the interest of Ford to consider new uses that would improve their financial position as well as enhance their corporate image.

- Ford, a publicly held company, would not be required to subsidize any use on the site. Each use would be financially self-sustaining.

- Such a redevelopment process would be led by Ford Motor Company, specifically the Ford Land Development Corporation, and will be phased over approximately twenty years. Ford Land Development, in recent years, has been involved in the planning and redevelopment of surplus industrial properties for the company. In Mawah, New Jersey, involvement was desired, but the facility was eventually sold to another developer who is pursuing mixed use development which includes both reuse and new construction. At the Sante Fe Assembly Plant, Ford Land Development has a joint venture development partner and is currently involved in the planning and redevelopment of the facility.

- All scenarios address redevelopment of the Rouge property north of Road 4, with the exception of the facilities within Rouge Steel that are still controlled by NAAO. (This includes the Tool & Die plant and the Frame plant south of Road 4 and the Power

plant to the east of the boat slip) This assumption is made because Rouge Steel is a separately owned and operated entity, and it is assumed to be a continuing and viable operation well into the 21st century.

- Assumes that certain manufacturing units (as suggested in the 1985 Master Plan) are in the process of being phased out and shut-down, particularly the Frame Stamping and Assembly Plants. The recommendations do not embrace or advise such shutdown; on the contrary, continuing industrial uses at the facility would be the most optimal state and would not interfere with, and in certain cases would enhance the proposed program. The scenario assumes, however, that there is the possibility of such an occurrence, and recommends future uses of these facilities in the event that they no longer serve their original productive purposes.

- Acknowledges that environmental quality issues exist on the site, but takes a very encouraged stance regarding the prospects for clean-up. It assumes that Ford will conduct environmental assessments as required and that the liability/responsibility for clean-up will be borne by Ford or other public and private parties that become involved in the master planning effort. It further assumes that the technology for such clean-up of the natural and built environment currently exists and will be part of the redevelopment procedure. As discussed earlier, an entire industry has begun to develop around new technologies currently available for the cleansing of ground water and soil. The possibility of asbestos in the plants is real, though presumably efforts have been made to comply with OSHA requirements regarding the work environment, and so this is not considered a hindrance to future redevelopment. Cost of the environmental clean-up will be shared by the Ford Motor Company, the public sector, and any future development partners and/or land owners.

3. Recommended Master Planning Approach

In developing an approach for the reconstruction of the Rouge, it is necessary to acknowledge the significance of the site, both in terms of its physical size and economic, social and historic importance. For as many significant roles that the plant has played in its productive life there could be as many exponential scenarios for its

future. And, depending upon the notion of "value" that is emphasized and the interests that are addressed in a redevelopment approach, each will have vastly different physical outcomes and impacts on the region. The recommended scenario is an "additive" approach, emphasizing information value, though utilizing infrastructure and locational value as well. Each of these later two could be emphasized separately, producing much different formal and programmatic results for the site. One such scenario might utilize the typical approach that the private sector has employed for industrial facilities that have been declared "surplus". Such a scenario would be driven purely by "infrastructure value", which, in a real sense, perceives the Rouge as a machine, emphasizing its productive assets, and considers exclusively the demands of the market in its redevelopment. A second scenario might be driven by infrastructure as well as "locational value". Such a scenario perceives the Rouge as a piece of real estate and would include a broader consideration of method, and result in more diversity in ultimate uses.

The proposed scenario is driven by an additive strategy, encompassing three notions of value, adding the significant component of "information value" to the redevelopment equation. It is proposed as a master planning process, which is characterized by programmatic recommendations which have formal implications for the site and facilities, and provides the basis for further, more detailed implementation plans and agendas. This recommended scenario proposes a master planning effort which includes four proposed ultimate uses, or "development components" which are realized in a phased planning and implementation effort of approximately twenty years. The scenario proposed is done so acknowledging that it addresses a complex issue-the redevelopment of a large piece of urban history and the living city. A site which is infused with information and issues from the economic and social condition of the Detroit metropolitan area, the difficult business climate that Ford finds itself in, the consequences of environmental reclamation, to the origins of industrial architecture. The proposal condenses these issues into a simplified framework. This framework provides a basis for approaching the issues and provides a pluralistic platform for dealing with the complex issues surrounding industrial reconstruction.

• **Scenario One: Industrial Reuse** -- This scenario concentrates on a singular focus: reusing the infrastructure of the Rouge for industrial purposes. The strategy here would be to enhance the present use and form, but not look to any other inspiration for redevelopment. Such an approach perceives the Rouge as a machine, and focuses on the **infrastructure value**-the value of the buildings and associated infrastructure-in a strategy of reinvestment or regeneration, either for the company or for another industrial owner/user. As the examples of subdivision showed in the previous chapter, it is an approach that satisfies primarily corporate interests. Depending on the timeframe and the market conditions for the study, an assessment of the regional market might produce: a demand for space from for light industrial uses, or from new industries such as computer and biotechnology requiring large amounts of horizontally planned space in single story structures. There is adequate square footage at the Rouge for both manufacturing and warehousing space. The physical result of such a program would vary, as it would reuse or demolish structures and infrastructure based on indicators for the "highest and best use" produced by a market study and other assessments. The results would bring new industries to the site, as the subdivision of existing structures would allow the inhabitation of many more companies.

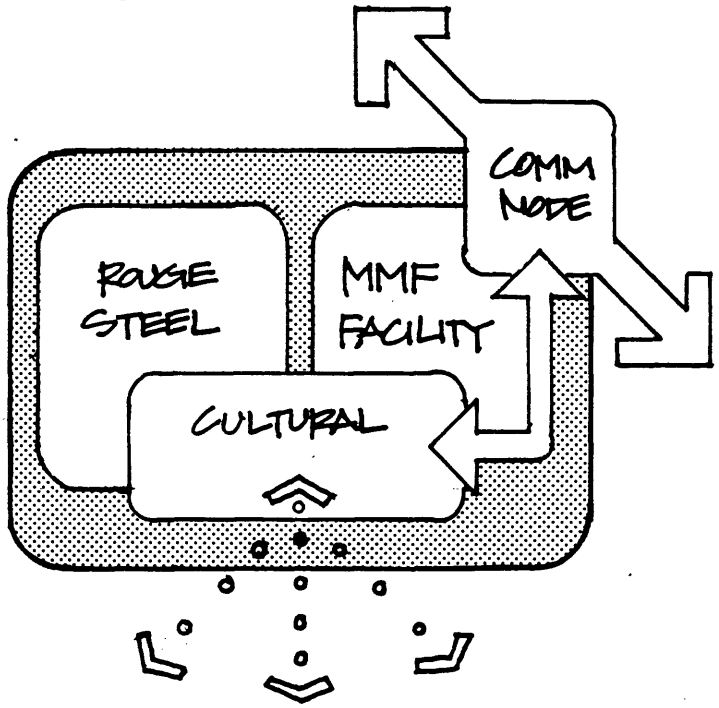
• **Scenario Two: Mixed Use Development** -- This scenario concentrates on various uses and opening up the study and process to investigate a wide variety and range of market and land use options. The scenario implies a mixed use disposition for the site, and could include industrial, commercial, institutional and even residential uses. The formal results of such a scenario could vary widely depending upon the proposed mix of uses. This scenario perceives the Rouge as a piece of real estate, focuses on the site's **locational value** and make strong association to the Fairlane development which it abuts. The context, adjacencies and linkages of the site become of primary importance in this scenario, allowing the expansion of adjacent uses and connection to the region. In the way in which Pirelli redeveloped the Bicocca, Ford could set a specific program for the redevelopment of the site. This process could be somewhat more participatory, although still controlled by Ford. Ford could develop a basic program approach, then solicit formal proposals in regard to accomplishing the direction.

• **Scenario Three: Cultural Development** -- This recommended approach is actually an additive strategy, encompassing the industrial reuse and mixed use scenario and adding a key element-a cultural development component. With this cultural development component, the scenario identifies and capitalizes on the **information and cultural value** of the site. By focusing on the educational and cultural value of the site, this scenario actually facilitates the other two, which are imbedded in it. Without emphasizing these attributes, the true value of the site is not identified and tapped. In focusing on the information value of the site, it will be possible to increase the applicable land values, leasing rates and capital values for the site. Such an approach will enhance the value of the land through changing prospective uses. The current, lower value industrial land values could, through this redevelopment strategy, be revalued in certain areas to higher Commercial and Institutional rates. This scenario includes a multi-disciplinary, participatory planning process that includes broader constituencies and interest groups. The approach would also build on the extensive network of cultural and historic linkages that the site has to the area in order to stimulate economic development on site and in the surrounding area, the city and the region through increased cultural tourism.

It provides an important unifying theme and public image and an organizing presence for the physical and programmatic reconstruction of the site. Conceptually, there would be two ongoing industrial uses for the site-that of Steel Operations and the Multi-modal freight and Shipping facility which would be overlaid by the Cultural Development Component consisting of a national heritage area and a Commercial node of mixed use development which would reinforce and serve all uses on site. This would emphasize the juxtaposition between the historic and future uses on the site. (See **Figure 40**)

As I have shown in the previous section, the Rouge is an excellent candidate for such a redevelopment strategy. There are obvious synergies with Greenfield Village and the Henry Ford Museum in both the planning and the ultimate operation of such a cultural park. The implementation could even be timed to coincide with the 75th anniversary of the facility in 1992 and would represent a rebirth through adaptive re-use that would serve all interest groups.In addition, key elements currently exist which would ensure

Figure 40: Conceptual Diagram of Recommended Scenario



success of this approach. History and national significance are in abundance at the Rouge, Cultural tourism at Greenfield Village, the support retail and services for cultural tourism within the region, and a proven development market in Fairlane. I hope to convey the potential of such a design and development strategy for the adaptive re-use of this significant facility. Such redevelopment represents a tremendous opportunity for Ford, as well as the city of Dearborn, to celebrate the history and significance of this great facility, while capitalizing on its redevelopment to generate new economic benefit.

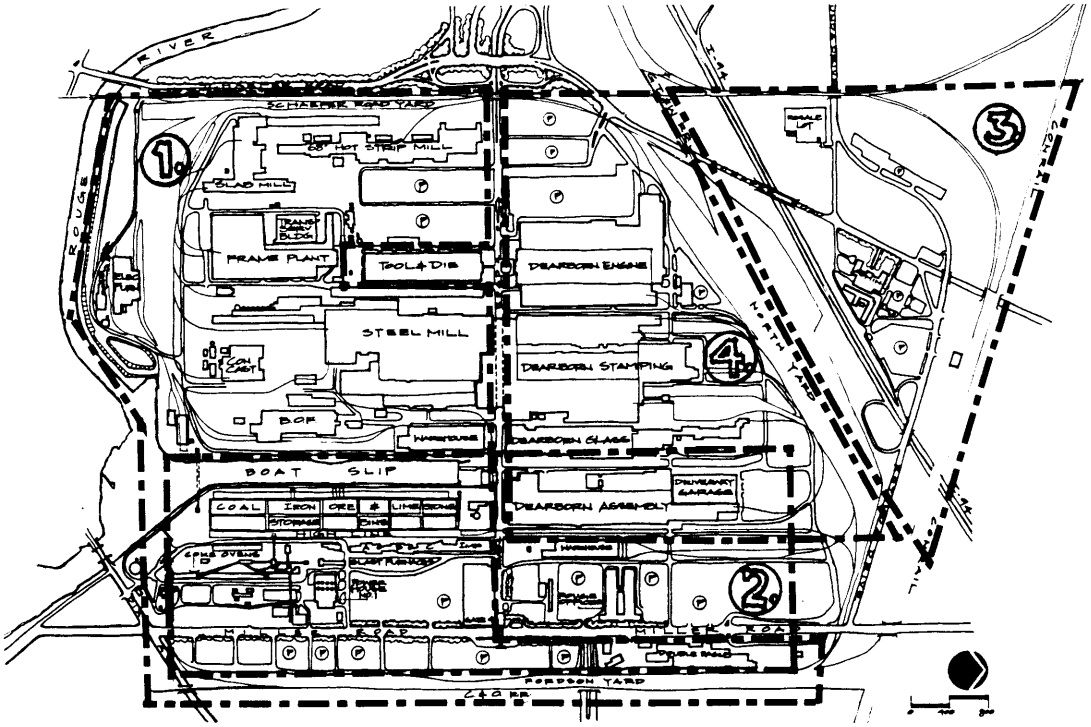
As the cultural development examples presented in the previous chapter illustrate, the history of an area can play an important role in its economic revitalization. The state and the region can learn from what many other industrial cities in the northeast have been pursuing over last decade. In Southeast Michigan, this would focus on the celebration of labor and industrial history. The region's industrial history, specifically its automotive history, provides a unique opportunity of linking region-wide heritage sites. Detroit's labor and industrial heritage is of immense significance to the nation and the world. A state level effort should probably be initiated to study such a

possibility. With assistance through the National Park Service and in association with local initiatives, the State could develop an extensive system of regional sites to preserve and interpret its industrial history, while at the same time providing the basis for economic stimulus and jobs creation associated with increased tourism and commercial activity in the region. Key themes which are not currently represented, such as manufacturing and labor union history, are readily available in Southeastern Michigan. The industrial and labor history of Detroit is rich and of national and international significance. Recent cooperation of the big three auto makers, GM, Ford and Chrysler, on the Congressional delegation visit could be utilized for such an effort. This could possibly be coordinated through the Motor Vehicle Manufacturers Association, (MVMA), the trade and lobbyist association which represents them and Honda. The city is still rich in physical historic resources and programs and Ford facilities are a major part of this. Since Ford was the catalyzing force of the automobile industry and continues to be a force in its dominance in Southeastern Michigan, it is appropriate that the company and its facilities play an initiating role in such cultural development. The Rouge is perhaps the most historically and culturally identifiable sites in the region. In addition, it is relatively intact and represents a living resource which can continue to be interpreted.

RECOMMENDED DEVELOPMENT PROGRAM

The city of Dearborn in conjunction with Ford Land Development would designate the Rouge as a Planned Development Area (PDA). A master planning effort, led by Ford, would then commence, around the development components described below. Eventually, each of the programmatic pieces of the Rouge would be examined for tax implications and in regard to their new uses. Ultimately, the Master Plan should include a number of tasks and produce a number of reports, involving various and disciplines and consultants. These should include an existing conditions report, which evaluates the property and its characteristics, documents the utilities, buildings, other infrastructure and site conditions. An environmental assessment, which investigates possible hazardous or toxic substances and recommends mediation measures should also be initiated. A development feasibility study should also be done, assessing the physical and financial feasibility of conversion of the specific facilities, including

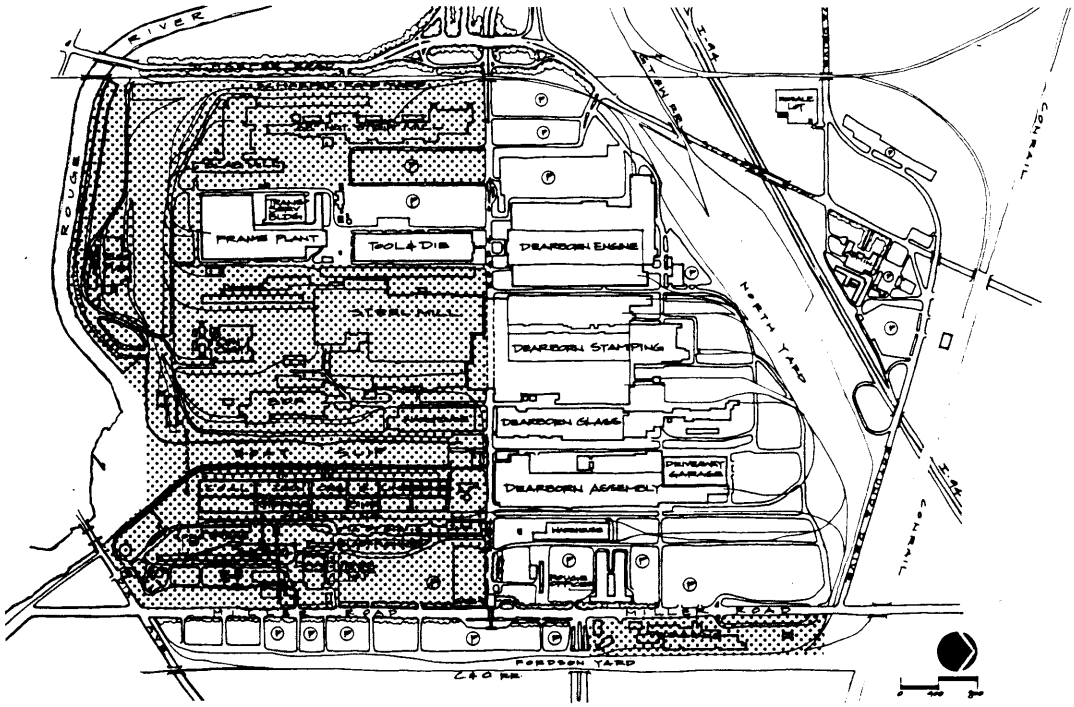
Figure 41: Four Development Components



development costs and alternatives for disposition. Several inventories of the Rouge and its context should also be included, such as an urban design inventory of the surrounding area, an economic and business conditions inventory (essentially a market study), an environmental and cultural inventory, and an inventory of public institutions and community organizations, and possible funding mechanisms which could be involved in planning, implementation and funding of the master planning effort. Each of these inventories will serve to inform further design efforts for the development components.

The proposal divides the site into four different **development components** which are planned and implemented in a chronological and interrelated way. Their generalized zones are illustrated in **Figure 41**, and the following narrative and figures explain each component in more detail.

Figure 42: Rouge Steel Component



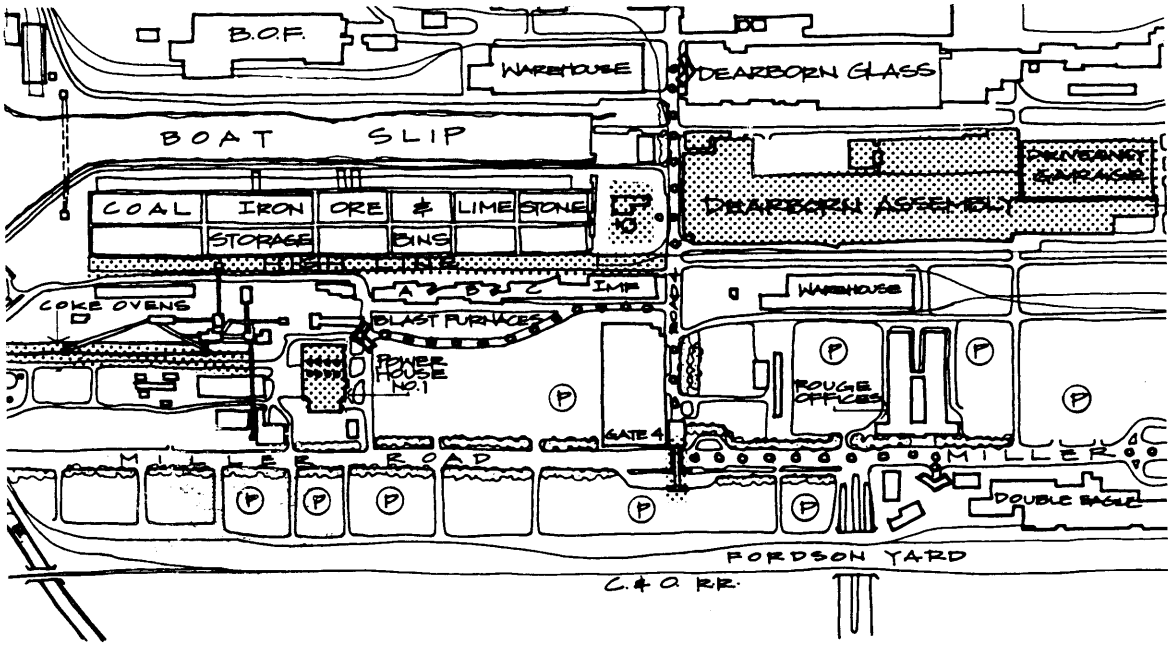
1. Rouge Steel

The current steel operation would continue indefinitely and consolidate south of Road 4. This would require several actions: moving all management functions within the confines of the Rouge Steel boundaries and the demolition of the Road 4 underpass at the Stamping plant, which would separate the steel and the other uses on the site. Transportation Services would continue to serve the operation. (See **Figure 42**)

2. Cultural Development

The cultural component at the site, focusing on the culturally charged buildings and infrastructure on the site, should be planned and implemented between 1991 and 2000. The emphasis here would be on the Rouge as a "living" industrial resource, where interested individuals of all ages, school children engineers and scholars from around the world could come to experience the history of automotive manufacturing and the development of organized labor as well as leading edge technology and contemporary labor relations. Such a historical component would concentrate on identifying several

Figure 43: Cultural Development Component



major themes inherent in the Rouge, and then develop settings for education, interpretation and specific experiences on site. The development would also provide Visitor Services and identify Urban Connections in the metropolitan area. (See **Figure 43** shows basic organization, access and circulation)

The cultural development strategy would focus on those aspects of the site with significant historic and memory content. These elements would be preserved or interpreted in a variety of media through which the visitor can experience the Rouge. Visitor services would concentrate on bringing visitors to the site and then providing an area for visitor processing. This would be accomplished in two places. The first area would be established at the historic Administration Building and the second directly on the Rouge site, adjacent to the High Line and Boat Slip and across from the Assembly Plant. The Administration building location could accommodate the majority of tour bus and auto traffic, as it is more adapted to visitors arriving in cars and requiring parking facilities. It is also well situated to future rail connections to the site. The Administration building would also serve as a location for initial welcoming functions, provision of information on the variety of experiences available on site, and major

media and display experiences for the three themes. The Boat Slip site is optimal for initiating visitors to the on-site tour opportunities and close to future waterborne access to the site.

The historical and cultural significance of the Rouge has been discussed in the previous section. The site holds potent educational and interpretive themes. The following are the most significant general themes conveyed at the Rouge:

- **The Evolution of 20th Century Industry** -- In a single site, the Rouge conveys the story of how 20th century industry began, and where it is headed. The facility catalyzed the spread of mass production, brought it to its peak with vertical integration, drove the development of machinery and processes to support such production, played an important role in military and wartime production, illustrates the transfer to lean production and presents examples of the manufacturing facilities equipped with leading edge technologies. All of these themes can be interpreted on site, where visitors can receive a potent and palpable experience of the evolution of 20th century manufacturing.

- **The Role of Labor** -- The Rouge holds the stories of thousands of laborers and their families who sought jobs in the auto industry. From the pre-union beginnings when laborers were subjected to the paternalism of the company, to the days of organization, and important legacy of the efforts of the UAW, the strikes, the battles, all took place in and around the Rouge. The Rouge also conveys the continuing story of the union and their struggle to retain jobs in the face of automation and geographical relocation. The Rouge also conveys the story of Afro-Americans, various ethnic groups, and women in the automotive industry over the years.

- **Industry, Urban Growth and Culture** -- The Rouge played a critical role in the growth of the auto industry, which has a profound effect on the urbanization and growth of southeastern Michigan and the rest of the country. The impacts of the Rouge are still in evidence in the communities and culture of the region. The complex also had a considerable impact on the art, architecture and culture of the 20th century.

This history provides a rich array of potential themes for interpretation and visitor experiences at the site. These themes and experiences would be built around specific historic sites and existing structures at the Rouge. In addition, there are rich opportunities for urban connections in the Metropolitan area in order to further interpret the themes represented at the Rouge. Experiences at the Rouge would center around the basic themes of industry, labor and culture as discussed above. The following discusses locations on-site where these experiences would occur. A cultural map of the Rouge depicts the specific sites associated with events and themes at the Rouge.

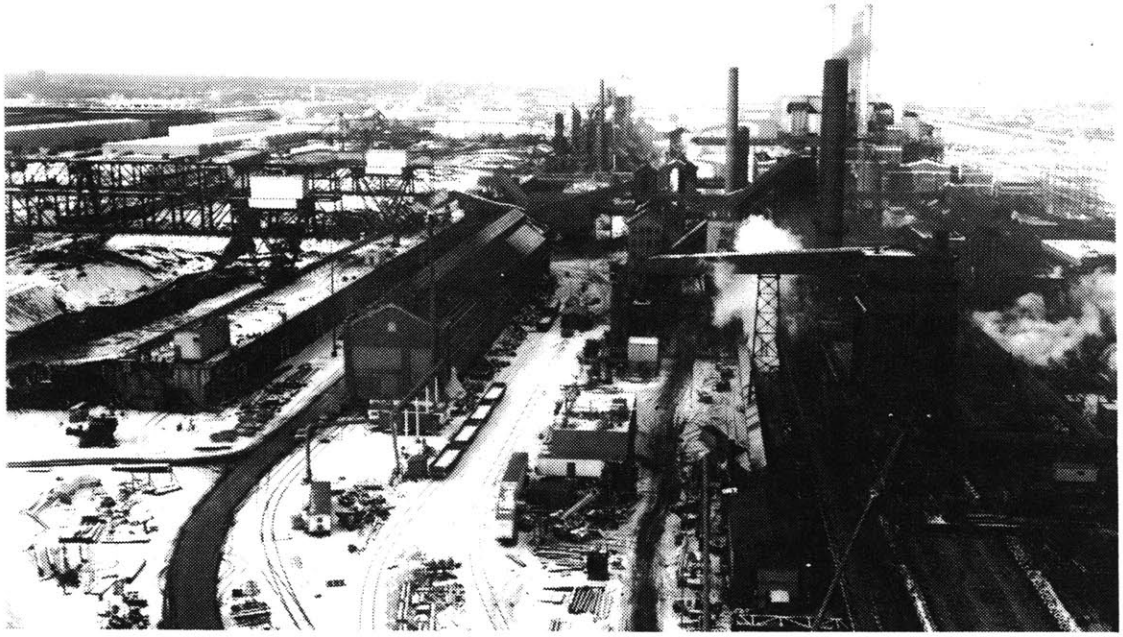
- **The Evolution of 20th Century Industry**

This theme would encompass the story of the origins and development of mass production, it s rise and proliferation, and ultimate replacement with new production techniques. Each of the following sub-themes would be interpreted at specific sites and building through various interpretive media. Interpretation of the themes of 20th century industry could be concentrated physically at the east side of the site. This is the area which hold the origins of the complex. Tours and Demonstrations would interpret the sub-themes of:

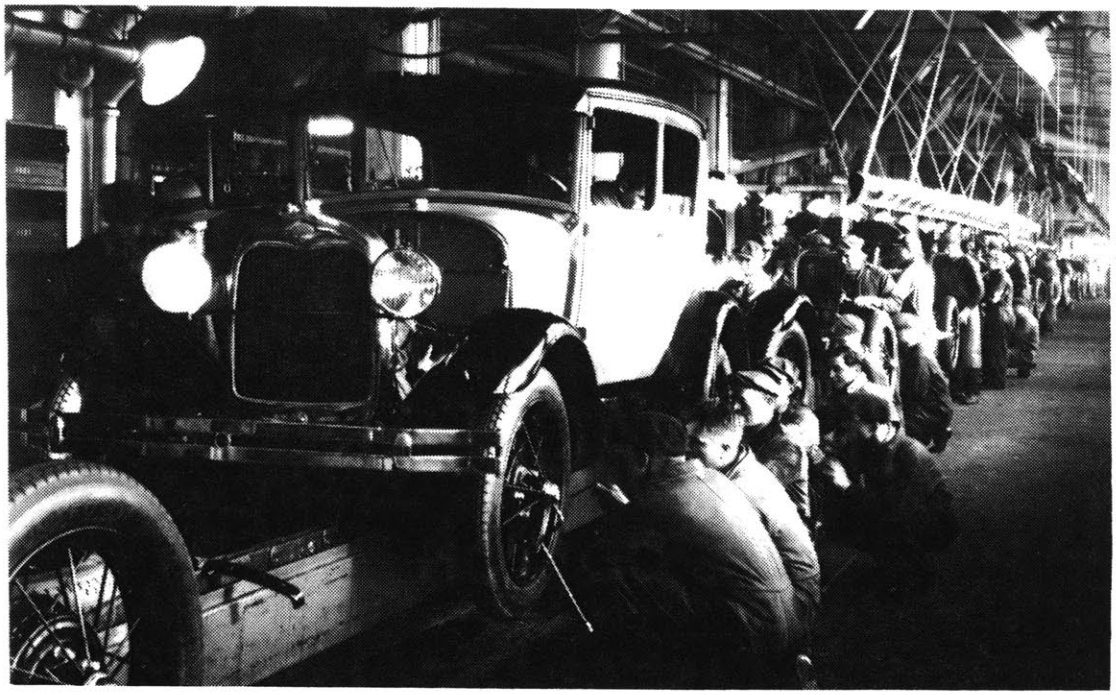
- the story of mass production and vertical integration;
- the story of electrical power transmission and distribution, suburban siting, architectural innovations, rail and road infrastructure;
- War Production during WWI-Eagle Boats and WWII-Tanks/Jeeps/Amphibians;
- The evolution of auto assembly line from the Model T to the Mustang;

Display and other forms of media would interpret the following sub-themes of:

- Innovation in Engineering, Machinery Design and Process
- Industrial Engineering and Management Control
- Ford the industrialist including his interest in farming and employing farmers, the moving assembly line, the five dollar day, integration, cost control, material by-products recycling, etc.



• **Mass Production/Vertical Integration:** The objective would be to allow the visitor to experience the Rouge by process. Visitors could be "processed" through The Boat Slip and the High Line, where raw material delivery and processing begins. Then they would proceed to the Blast Furnaces and The Power House, were raw materials are further converted. Visitors would then move on to tour the Steel, Glass, and Assembly operations to follow the process to the finished product. The historic Assembly Plant, the first major structure on the site, would be the location of major demonstrations. The interpretation of mass production would continue at the Assembly Plant, where visitors could view the assembly of the Mustang. In the same structure, a demonstration of the evolution of the assembly line, from the Model T to the present day could easily be developed. All tours, however, must be developed in conjunction with the UAW and should include presentations by workers. This to avoid the perception that the workers are "on exhibit".



The Power House also provides the opportunity to interpret the way in which electrical power liberated the factory from waterfront locations and allowed the suburban siting of industry. It is also an excellent location to further interpret the story of integration, as it was connected to the Highland Park plant through utility tunnels and Oakman Boulevard. To facilitate this experience, the creation of a Park with Industrial Ruins in the area near the now shut down coke ovens. This piece of the site contains some of the oldest and most historical industrial architecture on the site. While in need of maintainance, this area looks much the same as 1927, when Charles Sheeler produced his compelling series of Rouge photographs. The park could be created, much the way in which designers have approached the Parisian urban parks, in incorporating the architectural elements of this area as "industrial ruins." It is an area that is strategically located near the important historic areas and structures that would be emphasized in the cultural development, and so it could actually provide an amenity to the tours of the adjacent buildings such as the Power House, the High Line and the Blast Furnaces, which make the use linkage logical. It is also an opportunity to claim a piece of the site near the water which could be planted and, in future years, could become an important

open space adjacent to the river. The park could eventually serve as a dramatic setting for concerts and other civic events.

- **Military and War Production:** would be interpreted at the Assembly Plant, where production for both WWI and WWII was centered, but could also include the engine plant, where aircraft engines were produced.

- **Ford the Industrialist:** these stories could be interpreted at the site (such as discussions and demonstrations of material recycling) and augmented exhibits and media presentations either at the Administration building or at the recommended urban linkage sites in the region, such as Greenfield Village.

- **Innovation in Engineering, Machine Design and Process and Industrial Engineering and Management Control:** Exhibits which offer real life demonstrations of the innovations which occurred at the Rouge in conversion and assembly which utilize the existing building/machines in order to accurately portray the working of such equipment. Additional media presentations and display at the Administration Building would augment this experience.

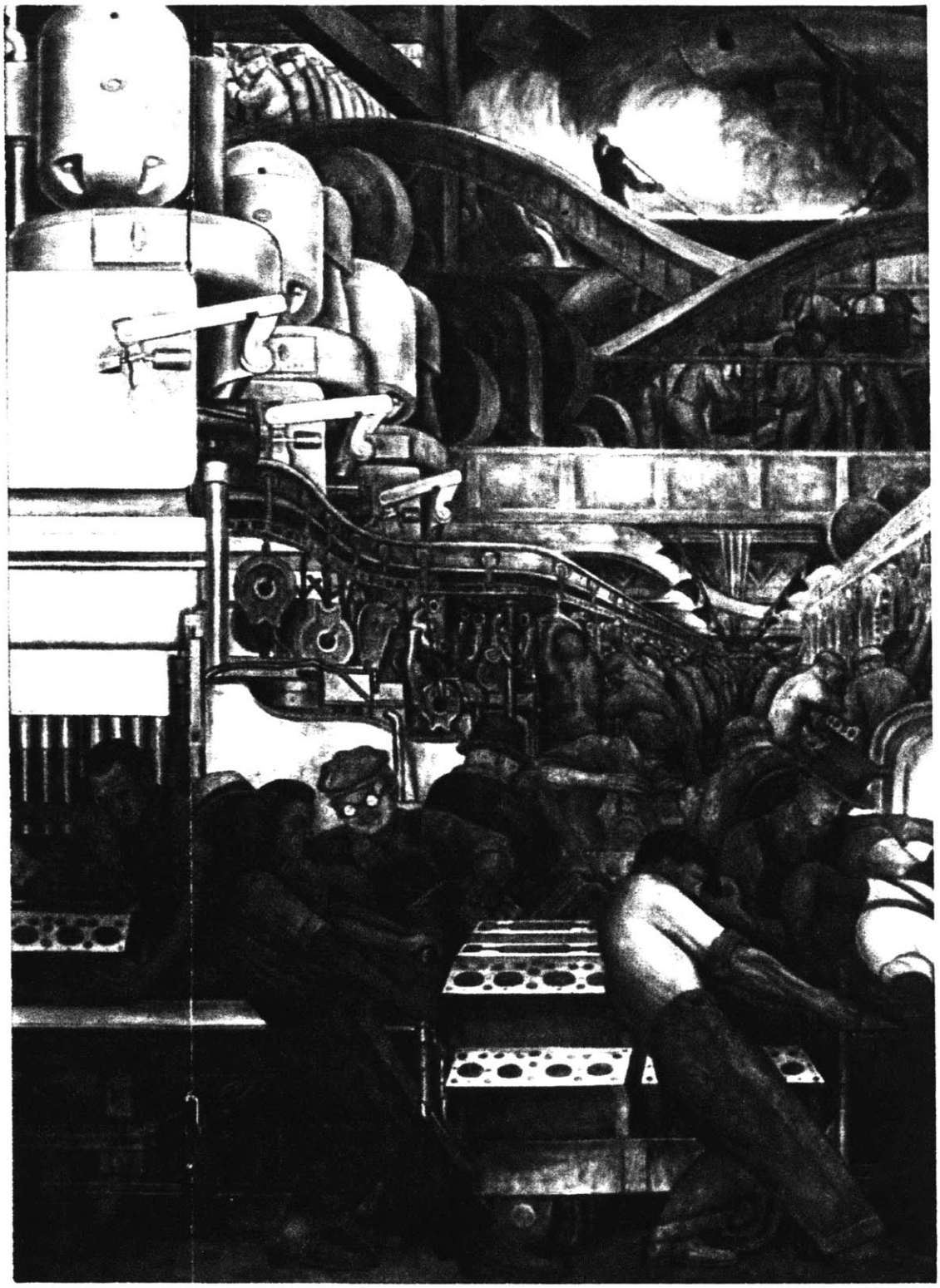
The Role of Labor

This theme would emphasize the experience of the worker at the Rouge over the years, beginning with the conditions of Paternalism before the union, then interpreting the important events surrounding the organization of the Rouge, and featuring stories on race, gender and ethnicity in the automobile industry. UAW Local 600 Headquarters (on Dix Road) could be the site of more interpretive activities regarding the history of the labor and the Rouge. Current union activities could be interpreted in the plants and at Local 600 headquarters. Important urban connections should occur here to the city of Detroit, including the labor history tours, Solidarity House and the Walter Reuther Archives. Important interpretive activities would include:

- **The Organized Labor Movement:** including the birth of UAW Local 600 and emphasizing events such as the Hunger March, the Battle of the Overpass, and the events leading to the First UAW-CIO/Ford contract in 1941. These events concentrate along Miller Road, but could also be interpreted inside the various plants, such as the Assembly building.

- **Paternalism:** this would emphasize the working conditions before organization, telling stories of the Ford Trade School, the Ford supermarket, the Security Department and the Sociological Department, as well as the effects of Fordism. These stories could be presented through various media either at the site or at the other urban linkage locations.

- **Race, Gender and Ethnicity in the Auto Industry:** this would emphasize the various stories of the labor pool, including stories such as the role of Afro-Americans in the auto Industry, diverse ethnic populations who worked at the Rouge, family legacies, and the experience of female workers.



Industry, Urban Growth and Culture

This segment would emphasize the architecture on site, the media presentations at the Administration Building and the urban connections to area resources representing the themes of art , culture and urban growth.

- **The birth of Modern Industrial Architecture:** would emphasize the role of Albert Kahn and his work for the Rouge in the innovation of the modern factory. Kahn's work could be interpreted on site, emphasizing the Assembly Plant (the first structure Kahn designed for the site), the main Power Plant and the Glass Plant, which has been hailed as his innovative industrial work. His prolific industrial work around the world could also be interpreted in exhibit form on site or in a central exhibit area, perhaps in the Administration building. A primary piece of the exhibit could be the original linen drawings for the Rouge, which still exist in the archives of Albert Kahn Associates, Inc. in Detroit.

- **The Precisionist Art Movement:** emphasizing the works of Charles Sheeler and Diego Rivera. A nationally organized exhibition could be developed as a retrospective of their work and could also include the work of other artists of the precisionist movement. Several experiences could interpret this theme. Visitors could tour, on-site, the structures and locations that Sheeler used as the basis for his work. Exhibitions of his work could also be arranged. Sheeler's original works are scattered throughout the country in public and private collections, though the negatives of the series do exist in the Henry Ford archives. An ongoing exhibition at the Administration Building or at the Henry Ford Museum. Diego Rivera's Detroit Industry Murals are part of a permanent installation at the Detroit Institute of Art. This would be an important urban connection. However, historic film footage exists of River's mural project, and these films could be part of the media presentations at the Administration Building. In addition, on-site interpretation of the plants, processes, and workers that so inspired the artist could occur.

- **Popular Culture:** exhibits which portray the role of the Rouge in popular culture could be established at the Administration Building. Souvenir maps and other nostalgia from the World's Fairs, the Rotunda and the Rouge Tours could be included in such an exhibit. Displays could interpret the influence of Ford and the Rouge in American folklife in songs, poems, plays and other influences in popular culture. In addition, there are extensive collections of print and film media, such as The Ford Film Collection in the National Archives and the photographic collections at the Henry Ford Archives and other sources. An impressive media experience regarding the Rouge could be developed at the Administration Building or at other linked locations such as Greenfield Village and the Henry Ford Museum.

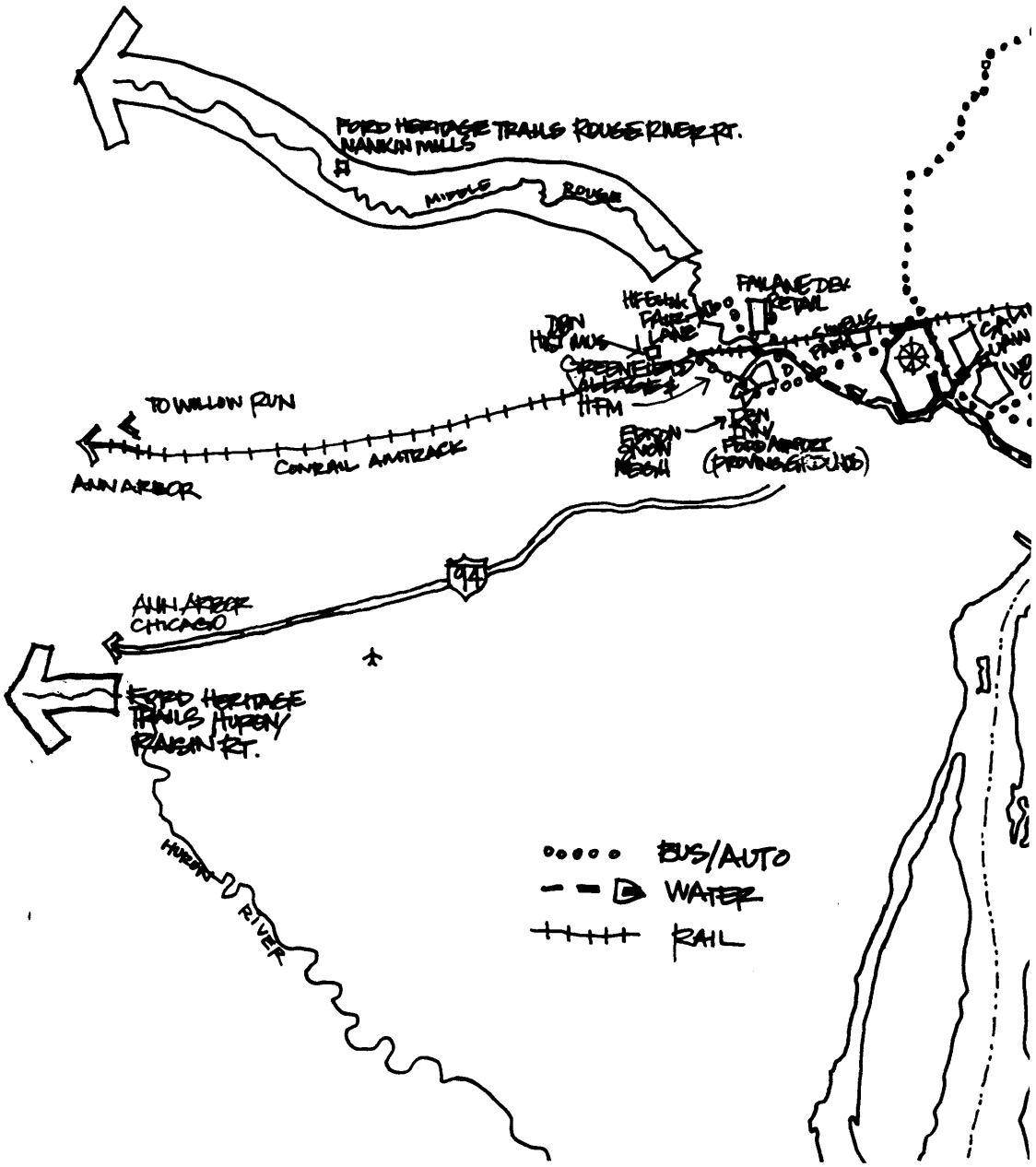
The Urban Connections

The cultural development at the Rouge would eventually serve as the center of a network of well established cultural and historic resources in the metropolitan area. These sites could be linked, coordinated and promoted as part of the project simply through a promotional brochure or through a more formalized mechanism. These urban connections further interpret the story of the influence of Ford, automobile production and organized labor. Such connections would utilize auto/bus tours which originate at the Administration Commercial node, both guided and self-guided, and eventually water and rail modal options.

Urban Connections In Dearborn:

Dearborn already has a very healthy tourism economy, with Greenfield Village and the Henry Ford Museum drawing 1.3 million visitors per year. Because of this, the city has also developed extensive visitor services such as hotel and retail facilities, particularly at the Fairlane development. There are other active destinations in the city, which are described below. Urban connection in Dearborn should occur mainly by car and bus transportation, though a future water connection to Greenfield Village could easily occur along the Rouge River and augment the experience of arriving at the Rouge and beginning the tour at the High Line. (See **Figure 44**)

Figure 44: Urban Connections in Dearborn



- **Greenfield Village and Henry Ford Museum-** This well established tourist destination is the most largest attraction in Michigan drawing 1.3 million visitors a year to view the indoor and outdoor museum of Americana that Ford created in the 1920's and participate in a number of Folklife festivals. The focus of the museum is the sweeping changes that transformed America form a rural agrarian society to a high technological, industrialized nation. The museum has recently installed the "Automobile in American Life" exhibit and also plans for 1992 a "Made in America" exhibit. The Rouge would be a logical extension of this, allowing the visitor to experience first hand the automobile manufacturing process as well as its history. Other Ford Facilities in Dearborn which are in close proximity to Greenfield Village include the Ford World Headquarters, the Engineering Laboratory, the Ford Test Track (formerly the Ford Airport) and the Dearborn Inn.

- **The Fair Lane Estate**-tours of Henry Ford's home on the Rouge are well established. A recent renovation effort sponsored by Edsel Ford II will renovate the mansion and grounds to its former splendor.

- **The UAW Local 600 Headquarters** - located in close proximity to the Rouge on Dix and Wyoming, the headquarters should serve as an important interpretive and educational locational for conveying the story and experience of labor and the important events associated with the union movement.

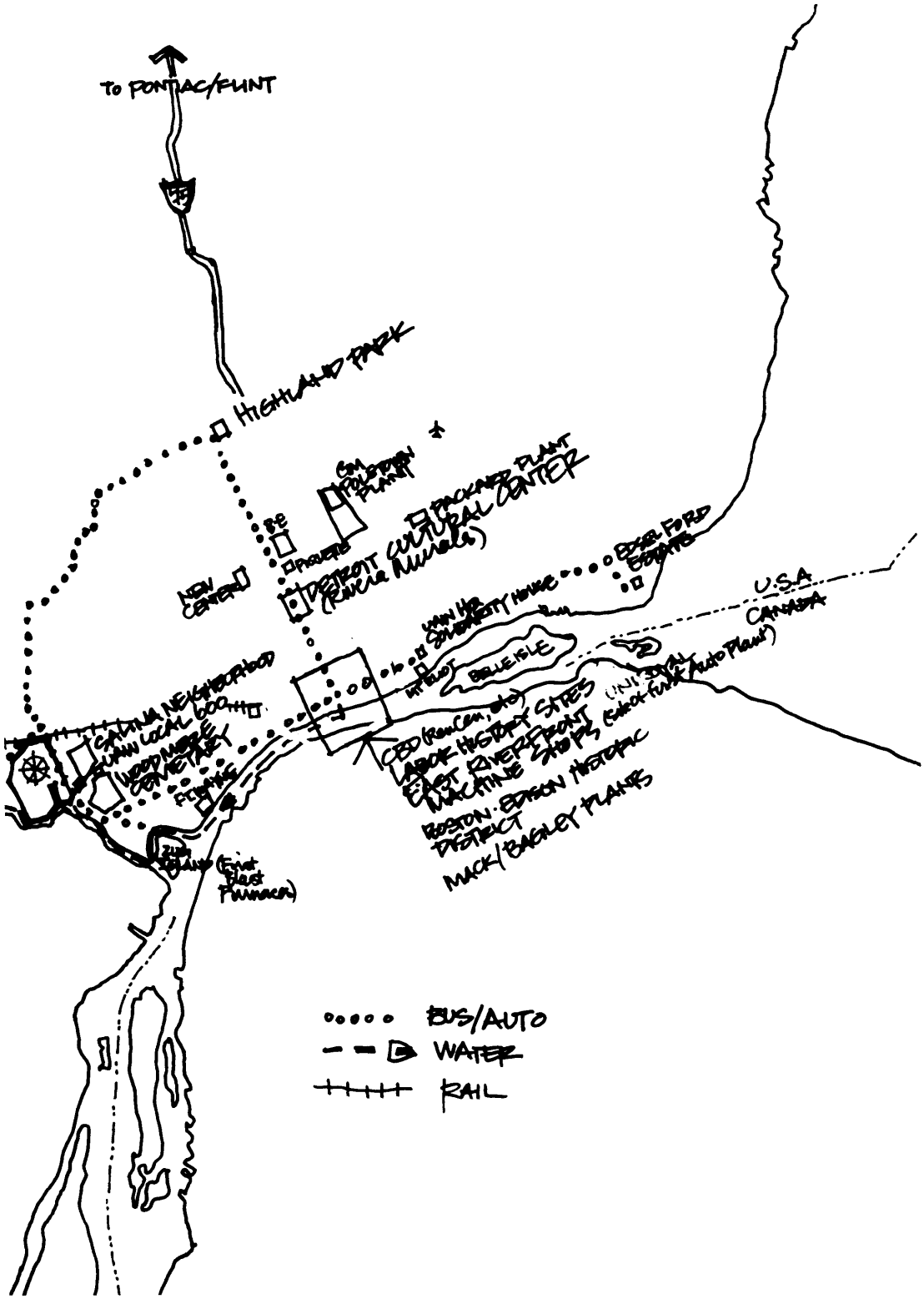
- **The Dearborn Historical Commission and Museum**--features archives, exhibits, educational programs and publications on the history of Dearborn.

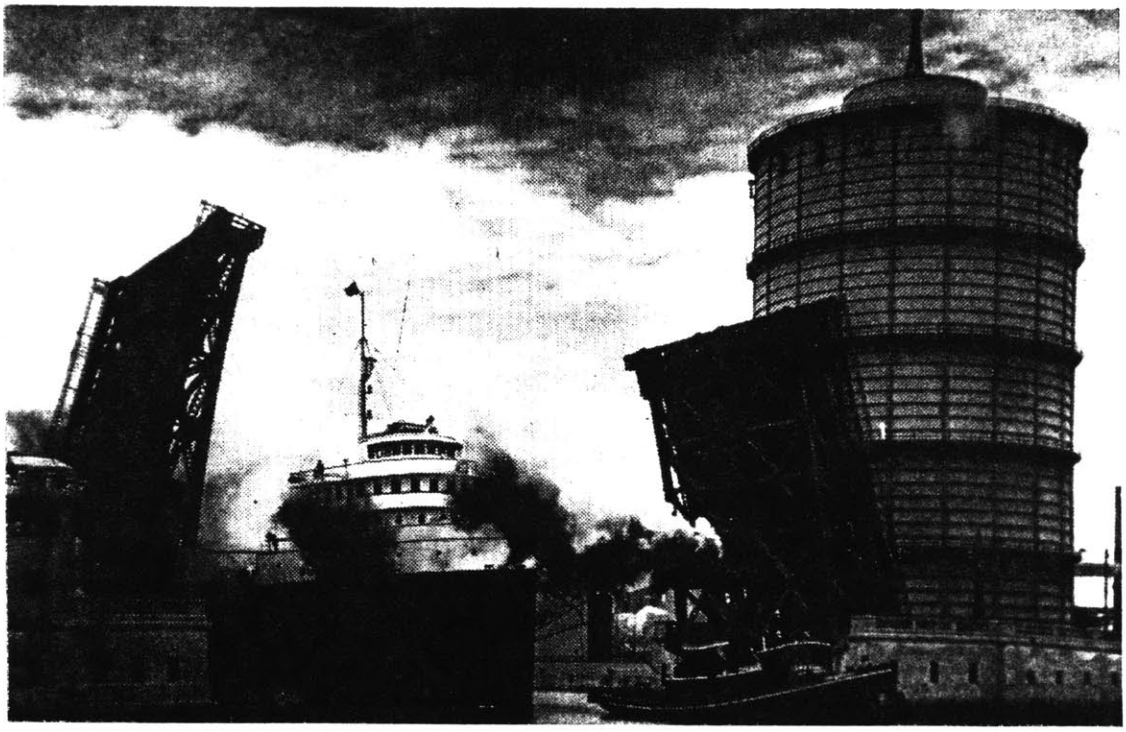
- **The Neighborhoods**--The Rouge sits between two residential neighborhoods, Salina and Springwells. These neighborhoods support the stories of labor and ethnicity. The **Salina neighborhood**, particularly the Dix/Vernor neighborhood, or Dearborn's "South End" immediately to the east of the Rouge and on the border of Detroit is the location of numerous immigrant groups who came to seek employment at the Rouge through the years. Inhabited over the years by western and eastern European populations and eventually the Arab groups who continue to occupy it today. The neighborhood still contains excellent examples of historic homes, churches and schools. **Springwells Park** off of Rotunda Drive was originally constructed in the 1930's by Ford to house the managers who moved to Dearborn to work at the Rouge. Today, the well preserved, attached brick townhouses and storefronts have been converted into a rental apartment community. Immediately to the west of Springwells is the **Edison-Snow neighborhood**, within which six streets which contain 250 homes built by Henry Ford in 1919-20 for employee use. This area has been designated an historic district and still contains original architecture and streetlights from the period.

Urban Connections In Metropolitan Detroit

Linkage of the site to Detroit should initially occur by car and bus south along Miller Road to Fort Street, which is the historical link to the city. It could also occur to the North along Oakman Boulevard, which is the street that Henry Ford built to link his Highland Park facility to the Rouge. Eventually, rail and water links to Detroit could be developed to move visitors and employees between the Rouge and downtown Detroit. Specifically, a rail link at the proposed commercial nod and a water ferry which would shuttle visitors between the Renaissance Center and the Rouge. The following sites could be included in the linkage tour. (See **Figure 45**)

Figure 45: Urban Connections in Detroit





• **The Rouge and Zug Island Bridges**--At the time the Rouge was initiated, the three mile stretch between the Rouge and the Detroit River was crossed by several major roads and rail lines. Between 1921 and 1926, five trunnion style bridges for road traffic and three rolling lift style bridges for railroad spans were built. In addition, three bridges link Zug Island to the mainland, two rolling lifts and one swing span, all of which are still in operation.

• **The Woodmere Cemetery**--This large cemetery near the border of Dearborn is the burial site of the four men who were slain by Dearborn Police during the Hunger March at the Rouge.

• **Historic Fort Wayne and Park**--The only remaining fort from Detroit's historic military role on the Great Lakes is currently operated as a visitor attraction. Detroit's master plan intends to develop the site for more recreational activity, linking it and other open spaces along the Detroit River by developing a continuous pedestrian/bicycle pathway between the Fort and the Central business district, creating more opportunity for public access to the River. This west riverfront area also includes

The Detroit Salt mines and other historic industrial corridors, which the master plan says "should be exploited to the fullest." as current or potential tourist attractions.[172]

- **Detroit Cultural Center**--The regions' current important cultural resources, including the Detroit Institute of Arts (location of the Rivera Murals), the Detroit Historical Museum, the National Automotive History Collection at the Detroit Public Library, and the Walter P. Reuther Archives at Wayne State University are all concentrated in this area.

- **Ford Heritage Trails**-- This project was recently developed and implemented by the Wayne County Parks department and the Michigan Department of Transportation and the Fair Lane Estate. The first two of four heritage trails are now in use, emphasizing the influence of Henry Ford in the region and developing natural and recreational resources for local use. The operating trails focus on the Rouge and Raisin River Valleys where Ford developed his Village Industries between 1919 and 1940. The promoters of the project have requested federal assistance through the NPS Rivers and Trails conservation assistance program, for establishment of the four heritage trails, the others focusing on Ford's urban contributions in the Detroit and Windsor areas. Recently, a non profit foundation, the Ford Heritage Association, was formed to carry the project forward to the next step of implementation and further study. The Association is also attempting to produce a television special to promote the Heritage Trails. The Ford Heritage Trails would be an important augmentation to the concept of cultural development at the Rouge, and the Ford Heritage Association could play a role in its planning.

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[172]City of Detroit, Coleman A. Young, Mayor and Ronald J. Hewitt, Director Planning Department, Detroit Master Plan of Policies-Summary Edition, November 1987, p. 400.

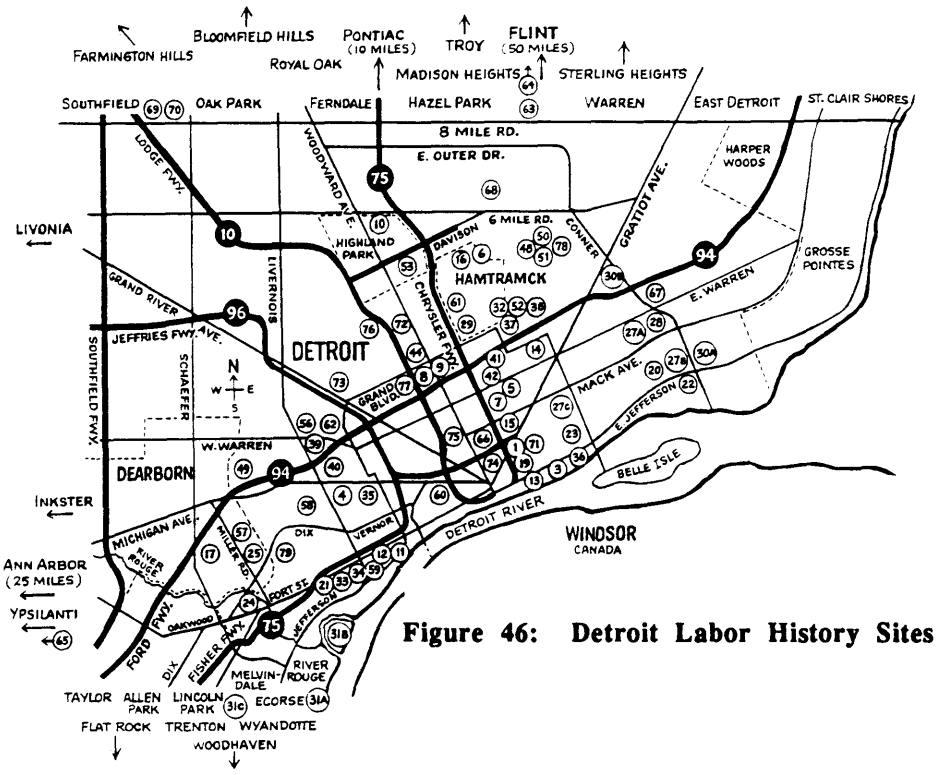

Figure 46: Detroit Labor History Sites

• **Detroit Labor History Tours and UAW Headquarters**--Scholars from Wayne State University's Department of Labor and Industrial Affairs and the Industrial History Department have fueled efforts to preserve and interpret the regions labor history. The Detroit Labor History Tours organization has, through state and federal grants, published a book on the city's labor history as well as produced media and educational materials, and conducts informal tours. These efforts could be more formalized in conjunction with the efforts at the Rouge. **Figure 46** is a map of the significant labor sites that the project has identified.

• **The other historic Ford Plants and sites**--Several historic plants still exist though are no longer in production use. These include the Piquette, Highland Park, Willow Run plants. In addition, the sites of the Mack and Bagley Avenue shops (now marked by historic markers. The early residence of Ford and other industrialists in the Boston Edison Historic District as well as the Edsel and Eleanor Ford Estate, an established visitor destination, could also be included.

- **The Mt. Eliot Historic District** --the east Riverfront machine shops along Franklin Street where the birth of the auto industry occurred. The city of Detroit, through the "linked parks program" has recently attempted to interpret the history of this area and secure open space for recreational purposes.

- **Other Automotive and Industrial sites** particularly those designed by Albert Kahn, such as the Packard and Lincoln Plants, or others such as Zug Island/National Steel site that have significance in the growth of the automotive industry in the region. Other sites which illustrate contemporary production techniques could also be included, such as GM's Poletown plant operated by Cadillac Division, which currently runs free two hour group tours of the plant.

- **The Central Business District** - Downtown Detroit has a number of visitor destinations and special programs occurring in and around the CBD, including Greektown, the RenCen, Hart Plaza, Riverplace, and Cobo Hall and Joe Louis Arena, the site of the annual North American/International Auto Show.

- **Other programmatic links**--Ford currently runs tours at the Wayne and Wixom Assembly plants and should feature the Rouge once again. The Smithsonian Institution through its Smithsonian National Associate Program promotes a "Detroit Auto Barons"study tour, sponsored by the Smithsonian National Associate Program. This tour is conducted twice a year in May and September and is continually oversubscribed. While the tour focuses on the mansions of four auto barons (including Henry and Edsel Ford, Lawrence Fisher, and John Dodge), it also includes a tour of the Ford Wayne Assembly plant ("to marvel at current industrial technology") and Greenfield Village and Henry Ford Museum. Certainly the Rouge should be a part of the story of the "auto baron" Henry Ford. The study tour chooses Meadowbrook Hall in Rochester, Michigan as its base. With cultural development at the Rouge, this tour, and others, could choose Dearborn as their base and therefore the recipient of tourism dollars. Other groups from around the world would be attracted to such package tour opportunities. Professionals from industrial archaeologists to automotive and technology historians, architects, designers, artists, labor historians and specialists, industrial engineers, would have interest in the Rouge as a mecca for study.

3. A Commercial Node

A Commercial Node which includes a proposed mix of facilities, including office, hotel, convention facilities and a high-speed rail transit station in the vicinity of the Administration Building would be implemented between 1995 and 2005. (See **Figure 47**)

This development component would build on the development market created by the adjacent Fairlane development, and take advantage of the activity generated by the cultural tourism and the new trade and shipping uses on site. The 1985 Dearborn Master Plan concluded that "a need exists in metropolitan Detroit for additional hotel and convention center space to serve small and mid-sized conventions and to serve as support for large conventions at Cobo Hall."[173] A small convention is defined as 200 in attendance and mid-size conventions as between 200 and 5,000 in attendance. Such convention facilities would have to provide exhibit and meeting space of 100,000 square feet or less, adjacent hotel/motel accommodations, amenities such as entertainment and visitor attractions and convenient access to freeways or airport. In addition, the Master Plan discusses the need for a performing arts center which "could serve all of the community arts in Dearborn, but could also be integrated into the new convention center....as a resource for conventions."[174] Such activity is already in evidence in the Dearborn area. In April, the National Association of Iron and Steel Engineers recently held their three day spring conference at the Hyatt Regency. After technical presentations at the hotel the 1,000 participants visited Rouge Steel and the Double Eagle Coating Company.[175]

A commercial node at the Rouge could provide all of the amenities necessary for such activity. Utilizing the historic Kahn Administration Building as a center piece, a mixed use node could be developed which includes Hotel, Convention, Auditorium and Office facilities as well as additional transportation links to the area. The increased cultural tourism and the business activity associated with the Multi-Modal freight facility, and

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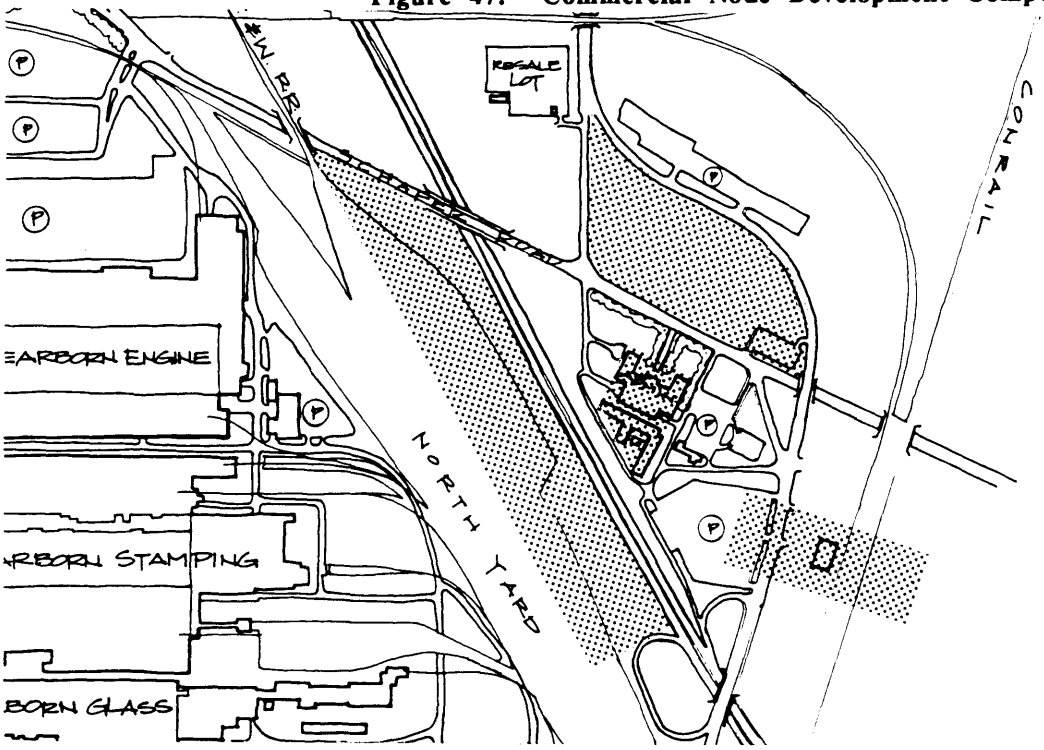
[173] Master Plan for the City of Dearborn, 1985, Ibid, p. 56
[174] Ibid, p. 23
[175] Dearborn Times-Herald, April 17, 1991.

Figure 47: Commercial Node Development Component



the office and light industrial uses in the area could support this use. The location of the node is optimal for several reasons. It is recommended to be located at that corner of the site, as this is the logical continuation of the Fairlane Development, the most recent projects of which abut the Rouge site. It is adjacent to the Rouge North Yards, which, because of reduced freight traffic to the site, could easily be reduced by 30 percent in order to make land available for new development. It is adjacent to the Conrail right of way, which offers a unique opportunity to development a transportation station for the proposed Detroit to Ann Arbor (and possibly Chicago) high-speed rail link, which, when complete, would carry commuters, and potentially conventioneers and visitors, right past the Rouge site. The 1985 Dearborn Master Plan encourages the development of a high-speed rail terminal to take advantage of this link to Ann Arbor and predicts 4.5 million riders on such a line.[176] It may be to the advantage of Ford to become involved with financing this high speed rail project in return for development air rights along the right of way at the Dearborn terminals. Dearborn currently has one Conrail passenger terminal, located behind the Civic Center on Michigan Avenue, the Rouge terminal would be the second. Development planning

[176]Master Plan for the City of Dearborn, 1985, p. 102.

at the node could include some provision for revitalization and linkage to the East Dearborn Central Business District which is adjacent down Schaeffer.

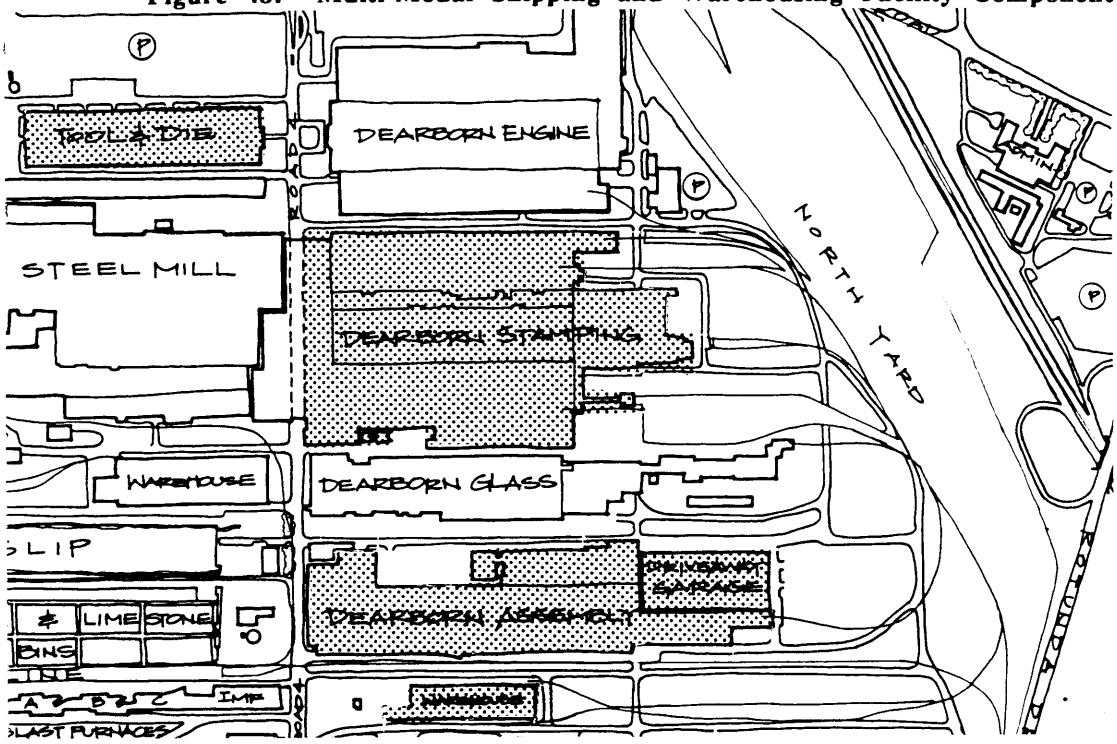
The Ford Parts and Services Division currently occupies the Administration building. This use could be transferred to new office space in the development. The Historic Administration Building could then assume a fuller role in the cultural development, providing space for visitor services exhibitions. The proposed auditorium could serve as the home of the Dearborn Symphony and local theater groups, becoming a major civic performance facility. It could also serve as the center for the film and other media presentations of the Rouge. These programmed uses would further emphasize the new rail connection to the site.

4. Multi-Modal Shipping and Warehousing Facility

A Multi-Modal Shipping and Warehousing Facility built around the existing rail, highway, and water access and infrastructure resource of the site. Such a facility would inject new economic activity of a sufficient scale to reuse the potentially underutilized capacity and facilities of the Stamping, Tool & Die, Frame and Assembly plants, while continuing to serve the on-going manufacturing functions of the Glass and Engine Plants as well as Rouge Steel. Such a facility would be planned and implemented as facilities become available, perhaps between 2000 and 2010. (See **Figure 48**)

This economic development component of the strategy would focus on the replacement of the Rouge's economic role in South Eastern Michigan. This is achieved by identifying the complex's inherent strengths and the reuse of existing infrastructure. The Rouge contains excellent infrastructure in terms of rail junctions, classification yards and other rail facilities, as well as a large fleet of locomotives and trucks. The strategy builds on the initial logic in the location of the site and its relationship to major land, rail, water and air shipping routes in order to develop and reprogram a major portion of the site for its future use as a Multi-modal shipping facility. A Multi-Modal Trans shipping Facility contains infrastructure, facilities and services that support Truck, Rail and Air and Waterborne freight. The facility focuses on the site's access to

Figure 48: Multi-Modal Shipping and Warehousing Facility Component

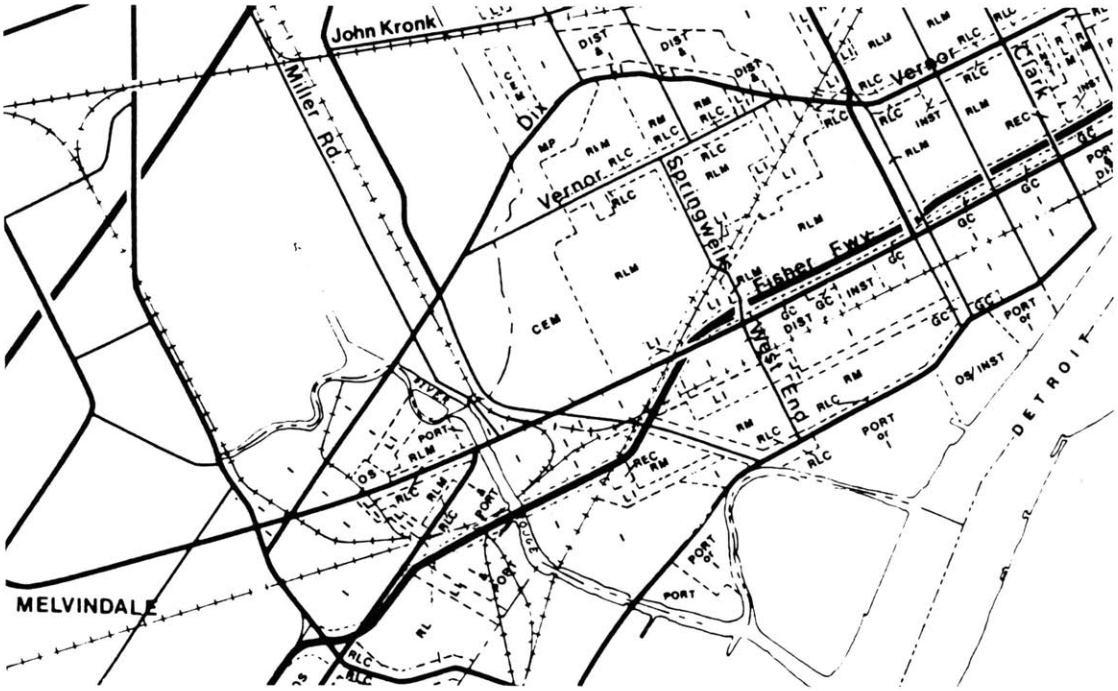


ports, rail facilities, truck terminals, pipelines, international crossings, and associated support facilities and organizations. This proximity to highways, rail terminals, airports, and water as well as the proximity to Canada to take advantage of the Free Trade agreements with Canada and Mexico and the future formation of the North American Common market.

Several macro factors could support such a direction. The recent free trade agreement with Canada, already the United States largest trading partner, and the pending agreement with Mexico, point to the predicted formation of a North American Common Market. Metropolitan Detroit is well positioned to take advantage of increased trade activities. Recently, Toledo has focused regional development in this way. One of the primary recommendations of the Detroit Master Plan of Policies was "special attention to freight transportation intermodal linkages, and continuing improvement in freight transportation links to Canada."[177] The master plan also recommends that the freight and port facilities be upgraded to one of the major economic assets of the city and that

177 Ibid, p. 10.

Figure 49: Detroit Riverfront Future Land Use



future land uses along the Detroit River and the Rouge be devoted to Port facilities. **(See Figure 49)** These areas on the map which are designated "PORT" include both owner-use port terminals along the Detroit and Rouge Rivers. These include industries which require wharfs, docks and piers exclusively for the handling of their own raw and finished material or products, and For-Hire Port Terminals, whose facilities are available to the general public. These areas are currently used by all overseas cargo ships which handle general cargo, bulk cargo, and have an international trade zone of four to five acres. Such future development could position the area for increased trade and freight activity. There was also discussion of a multi-modal facility for Detroit, but this project has not proceeded.

The Detroit Foreign Trade Zone currently has two general purpose zones, on Clark Street in the Southwest Sector of the city and the other on the premises of the Woodfab Company on Chase Street in Dearborn. There are also two manufacturing sub-zones at the Ford Tractor Plant in Romeo and the Chrysler Jefferson Avenue Plant, though this plant was recently closed. The advantage of a Foreign Trade Zone (FTZ) is that foreign and domestic merchandise may enter the area without formal Customs entry, payment

of Customs duties, general quota restrictions, payment of government excise taxes, or thorough examination. Merchandise brought into the zone may be stored, tested, repackaged, displayed, repaired, manipulated, mixed, assembled, manufactured, or destroyed.[178] If a product is exported, no Customs duty is ever paid and components may be used that are normally subject to quotas. If the product is imported, U. S. Customs duty and excise taxes are not due until time of physical removal from the zone, at which time the goods may be in a classification such that the duty or tax is lower than would have been the case for merchandise as originally brought into the zone. If the company were to pursue the creation of an FTZ, Ford could utilize these activities to its advantage at the Rouge and create a new economy for the facility. Such a strategy could help the company to achieve cash flow savings, adjust tariff classifications, repair or destroy defective merchandise, sell or destroy scrap, expedite labeling, marking or invoicing, lower transportation expense, utilize merchandise normally restricted by quotas, exhibit goods to buyers, and limit insurance expense. Goods could also be reprocessed or remanufactured for a lower tariff classification, or for reshipment outside the country without paying U. S. Customs duties.[179]

The research director of the Greater Detroit Chamber of Commerce BAEC noted that "Water borne freight is not of critical importance to Detroit. What is of importance is truck and rail freight from or to the east coast container ports."[180] While the Rouge should probably develop a FTZ on site for activity with Canada and Mexico, the facility could also focus on the functions of transferring, processing and warehousing of domestic goods to regional and national markets. It is here that the Rouge would be of primary advantage, as it is situated at the confluence of a major interstate highway systems-I-94 running east-west and I-75 running north-south, and three major rail lines, the Grand Trunk Western, the Chesapeake and Ohio, and the Conrail Corridor. In addition, it has the option of providing water access to the Detroit River and the Great Lakes (to either Chicago or Toledo and the St. Lawrence Seaway). While truck freight is important, rail and waterborne freight is still of necessity for bulk shipping. To this day, despite the evolution of the unit train for bulk commodities such as iron ore

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[178]FTZ which engage in manufacturing activities are now commonly referred to as "Enterprise Zones."
[179]Detroit Master Plan, 1987, See discussion p. 373-375.
[180]Discussion with Jack Steiner, Research Director of the Greater Detroit Chamber of Commerce, March 28, 1991.

and coal, water is by far the cheaper mode for bulk. If desirable, is also enough land area at the Rouge to develop a Short Take off and Landing Airport (STOLport) which could engage in airborne freight activity and could eventually accommodate the projected technology of Verti-Ports which will handle freight planes with vertical take off and landing capability. The Rouge Transportation Services Division has performed and coordinated these activities for all of the operating divisions at the Rouge. Under the new strategy, Ford could form a separate subsidiary which would act as a common carrier serving the remaining Ford manufacturing facilities as well as new concerns in the area and around the nation, and function as an independent profit center for the company.

In conjunction with the services component, there is an opportunity for subdividing existing manufacturing space for light industrial and distribution/warehousing operations. A recent assessment of the Midwest Industrial market reveals that, "it continues to reflect, generally, a more efficient industrial America, with manufacturers and distributors shrinking their operations and inventory space requirements. The trend has been away from the 1 to 2 million square foot heavy facilities to light industrial and distribution/warehousing operations with space needs generally ranging from 20,000 to 200,000 square feet."[181] This subdivision and renovation activity could be focused on the Stamping, Tool & Die, and Assembly plants, if and when they become available for reuse. These plants, especially Stamping, are centrally located and in close proximity to the North Yards for rail connections and to Road 4 for waterborne and truck freight activity. Since warehousing is a much diminished activity in modern industrial practices, the company could focus on attracting light industry in the processing of traditional regional finished parts related to the automobile industry, but also specialize in attracting emerging industries in the area such as food processing and distribution, and other high technology industries such as robotics and advanced material handling technologies which seem to be emerging in the region, particularly Ann Arbor.

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[181]Corporate Properties, Ltd. Marketing Recommendation, AM General "Chippewa Facility", South Bend, Indiana, Providence RI, 1990.

4. Recommended Process

A master planning process for the cultural development strategy should begin immediately in conjunction with the facility and operations planning efforts that are underway. Timing is critical, as operations such as Assembly have only been committed to through 1993, which indicates that corporate decisions are now being made as to whether model years after that will be produced at the Rouge. If other plants are under consideration for shut down or conversion, now is the time to begin considering their future. Even against the backdrop of historic financial losses for the company, and perhaps because of them, resources should be devoted to this important planning activity. The timing of the initiation of this master planning process is not only critical but opportune, as it coincides with many important corporate and local anniversaries. This summer, the UAW Local 600 will celebrate its 50th anniversary of the first contract with Ford in 1941. It plans a week long celebration which will be centered at the Rouge. In the spring of 1992, the Rouge itself will celebrate its 75th year, followed in 1993 with the 90th anniversary of the Ford Motor Company, and the 100th anniversary of the invention of the automobile in 1996. The turn of the century will bring the 300th anniversary of the City of Detroit (2001) and the 100th anniversary of Ford (2003). Planning and implementation of the redevelopment of the Rouge can and should be an important part of all of these celebrations.

The Ford Motor Company, as the property owner, and the party with the most to gain or lose on the future of the facility, should take the lead. Historically, the company has been involved in the planning efforts in the city and the region. It is time that Ford once again assumes this progressive role. The innovations and growth of Ford built the automotive industry in Detroit, so it seems appropriate that the company should play a lead role in its revitalization. Ford has always been innovative, in technology and product and now it can be innovative in its redevelopment of its most important facility. The company has recently returned to the themes of tradition and history in its corporate advertising, emphasizing a tradition of quality and even using the historic logo for its corporate identity. This investment in history need not be a superficial media strategy. It can include the physical and cultural history of its most important manufacturing facility as a living resource. This is an opportunity to interpret the power and influence

of industry in a palpable way. In the July 1985 Master Plan for the Rouge, the company pondered the advantages and disadvantages of "recycling" the Rouge property. Under disadvantages, the plan lists, among other items, "Loss of the Rouge complex as a symbol of corporate strength" and "Loss of a certain element of local prestige." Under the advantages, the plan lists, "Enhancement of the company's world-wide image as an up-to-date corporation."[182] Ford must decide where it stands on the Rouge, and what the redevelopment of the complex can mean. A master plan such as the one suggested could establish a direction for the Rouge which is of mutual benefit to the company and community.

If Ford is reluctant to lead the process, then it is time for the union and the community to pursue the initiation of the process. The history of the area, particularly as it relates to industrial history, is of major importance and should not be lost as a resource, but used as the economic engine to help revitalize the economy and the physical environment. The union's concerns and interests are focused, understandably, on retention of jobs and function and reinvestment in at the Rouge. The union's official position regarding the Rouge is that Ford continue automobile production there, if not the Mustang, then another model. But this is not at odds with the creation of new uses on the site, particularly the cultural development component. Moreover, the UAW is currently actively engaged in interpreting its own history. This July, Local 600 is planning a week long celebration of the 50th anniversary of the first contract with Ford, with events at the Rouge. Steve Wyatt of Region 1A which includes the Rouge, teaches an 8 hour labor history class about UAW Local 600 to the various plants at the facility. The course, which he developed in conjunction with Steve Babson of Wayne State University and the Detroit Labor History project, is also given at other plants. In recent years, a proposal was made to eliminate the overpass at Gate 4, scene of the Battle of the Overpass in 1937, and create an underground pedestrian tunnel under Miller Road. The proposal was quickly shelved, as the union considers this overpass as sacred ground, important to their history. Reinforcing the importance of Local 600 and the symbolic importance of the Rouge, when Nelson Mandela visited Detroit during June of 1990, he spoke at the Dearborn Assembly Plant.

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[182]Ford Land Development Corporation, The Rouge Complex An Outline for Orderly Evolution, July 29, 1985, p. OP-1084.

The local community, as well, is focused on the retention of jobs and purpose at the Rouge. Of primary concern is erosion of the tax base, though environmental issues surrounding the polluted state of the Rouge River is also of concern. However, the history of the Rouge is also of interest, In the recent City of Dearborn Master Plan, sentiment about the Rouge is clear. It states, "One of the most important image-creating elements in the city is the historic Ford Rouge plant. This industrial facility is important not only because of its massive size and physical appearance, but also because it has been and continues as a center of economic and labor activity in southeastern Michigan. For many workers and their families, the Ford Rouge plant is considered Dearborn's most important feature."[183] The Master Plan also explicitly states that "Future planning should emphasize the historic importance of the Ford Motor Company Rouge Plant and other historic industries in the city. These historic places of employment should be linked to Henry Ford Museum and convention and hotel facilities in the city."[184] Residents should form a collective agenda on the importance is of this facility to the meaning and history of their community. Perhaps the recently formed Ford Heritage Association could play a central role in organizing the efforts and goals of the community in regard to cultural heritage. The complex makes an important contribution to municipal financing, but it represents more than a continuing cash flow, on both economic and cultural terms. A recent editorial in the Dearborn Times-Herald speculated, "Dearborn needs Ford, but, on the other hand, what would Ford do with the Rouge if they were to abandon it entirely?"[185] Instead of speculating about the fate of the complex, the community should engage in discussion and initiate a meaningful planning process with Ford.

Despite the restrictions of economic depression and political infighting that exists to prevent this type of activity, throughout my research I have found numerous individuals and organization, both public and private with a strong desire to preserve and interpret the region's industrial history for both cultural and economic benefit to the region. In addition, virtually everyone in the area has some association with the Rouge, either directly or indirectly. The potential for information and participation,

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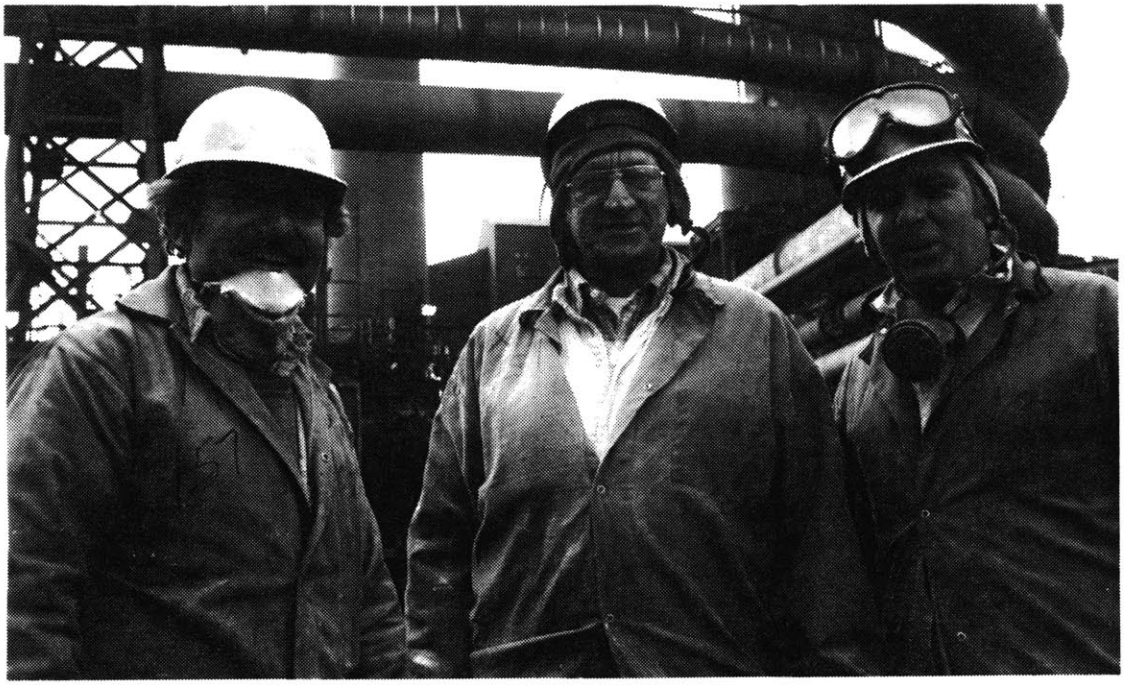
[183]Master Plan for the City of Dearborn, 1985, Ibid, p. 83

[184]Ibid, p. 16.

[185]Dearborn Times-Herald, Wednesday, September 12, 1990, p.4.

both through oral histories, serious scholarship, or other contributions, is tremendous. What seems vital to the process is a catalyzing force to bring all of these disparate resources and interests together on common ground and rally them behind cohesive direction for the future. Ford could assume this catalyzing role, a master planning process can provide the platform for various views and issues, and the reconstruction of the Rouge could be the focus of the efforts.



5. Recommended Participants

The recommended scenario proposes four different development components, implying the need for four different planning and implementation projects. Therefore, the processes and participants involved in the future of the Rouge will be diverse. In order for the process to begin, Ford Motor Company must initiate a master planning effort . To guide this overall effort, a Master Plan Steering Committee should be created. The master plan steering committee should include members from each of the major stake holders: Ford, Rouge Steel, the UAW, the City and residents of Dearborn. Because of the important association the project would have with Greenfield Village/Henry Ford Museum, and the ultimate synergies for operation, the steering committee could also include the President of the Edison Institute. Each of the stakeholders would have two members representing it on the Steering Committee, so for instance, Ford would be represented by an individual from the NAAO organization and an individual from Ford Land Development. The UAW would be represented at the Local 600 level and perhaps the Regional level, and the city of Dearborn would be represented by the Mayor, the planning director, or a city councilperson, and a citizen at large, perhaps

one that lives in the Salina neighborhood. Ford would also establish an agreement with the City of Dearborn for designating the complex as a PDA. The planning department and the City Council would ultimately confirm the acceptance the master plan for the facility. Ford should supply the funding for the initial master planning study. Each of the four development components will require different study and implementation plans and would require different funding mechanisms. As mentioned before, Ford Land Development should lead the master planning effort, acting as project manager, controlling the RFP process and managing consultants for the project. Thereafter, each of the four development components could be pursued with different groups and consultants, though a steering committee would have to oversee and coordinate all activities, as they are separate yet interrelated, and each has the potential of interacting with or impacting the success of the others. Task forces which include more participants are recommended for each of the four development components.

1. **Rouge Steel** currently has a planning committee for its operational needs. Ford Land Development has met with Rouge Steel periodically to ascertain their needs at the facility. This should continue throughout the master planning effort. It is assumed that the planning activity for Rouge Steel, except when it involves connection to the cultural development on the site, would remain an internal operating expense.

2. The **Cultural Development** component would require a specific planning process. This process would require, in addition to the Master Plan Steering Committee, a Task Force for the planning and implementation process.
The Task Force would include appropriate members of local, regional and state government, authorities on local, labor and industrial history, as well as local residents. Fortunately, there are rich resources waiting to be tapped for such an activity. Within the region, the numerous educational and cultural institutions have scholars as well as extensive archival collections for dedication to this activity. Educational institutions such as Wayne State University, the University of Detroit and the University of Michigan have long been a source of research and scholarship on the topics of business, industrial and labor history. There are a number of libraries and archival collections which exist in the region, as well as established organizations engaged in the interpretation of labor and industrial history. There are also local organizations

interested in the economic and cultural development of the area, such as the Dearborn Chamber of Commerce, Dearborn Historical Museum Association, the Dearborn Arts Council, and the Dearborn Orchestral Society whose contributions would be of value. Such organizations are not only a resource during the planning process but offer the possibility of assuming responsibilities for various aspects of the cultural development. Design and Planning consultants would be required to bring the visions of the Steering committee and the Task Force to a formal plan and agenda for implementation. The National Park Services Midwestern office in Omaha, Nebraska, would serve as a technical consultant to the project. A series of public meetings should also be incorporated into this component of the master plan. The Congressman of the 16th Michigan District, currently Congressman John Dingell, would act as an official booster of the project and would ultimately write and argue for the legislation which would create the heritage area. The cost of funding the cultural development study could be borne by Ford and the City of Dearborn, with some federal funding contribution from NPS.

The Urban Connection portion of the cultural development study would require the cooperation of several state, regional and local agencies and groups. As the discussion of Detroit's political infrastructure implies, the groups which could be of assistance to such a planning strategy are fragmented and have no regional decision making power. Unification of macro level public sector efforts would be essential. Since no real regional planning authority or agency exists, a regional Task Force made up of representatives from State agencies such as the Bureau of History, Department of Commerce, Deptartment of Transportation, and the Michigan Council for the Humanities,[186] as well as SEMCOG, and various City and private groups including the economic development interests such as New Detroit, Greater Detroit Chamber of Commerce. This Task Force should direct the planning and implementation efforts for the Urban Connection portion of the plan. The study for the Urban Connections project could be partially funded by the attractions linked and through a joint fund to which the members of the regional Task Force contributes.

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[186]If MCH is dissolved, this role could be assumed by the Michigan Alliance for the Conservation of Cultural Heritage, a non-profit group which formed in 1988.

3. The planning and implementation of the mixed-use **Commercial Node** should be managed by Ford Land Development and overseen by the Master Plan Steering Committee. Ford Land could proceed with this project much the way in which they have developed other commercial projects in the Fairlane Development. It may be to their advantage to identify the node with Fairlane. The project would require some coordination with ConRail for the High Speed Rail terminal. The planning process should also include representatives from the East Dearborn Central Business District to ensure that any future development would augment and boost the commercial uses in the adjacent district.

4. The planning and implementation of the **Multi-Modal Shipping and Warehousing Facility** should be overseen by the Master Plan Steering Committee, but also should include a Task Force comprised of representatives from each of the Operating Divisions involved. This representation should include members of plant management and UAW Local 600 in each of the plants involved. The project management for this planning should be given to the transportation services unit at the Rouge, as it is this unit that will eventually operate the Multi-Modal facility if Ford decides to pursue the creation of another division to act as a common carrier.

Postscript

Cities and desire...

"In the center of Fedora, that gray stone metropolis, stands a metal building with a crystal globe in every room. Looking into each globe, you see a blue city, the model of a different Fedora. These are the forms the city could have taken if, for one reason or another, it had not become what we see today. In every age someone, looking at Fedora as it was, imagined a way of making it the ideal city, but while he constructed his miniature model, Fedora was already no longer the same as before, and what had been until yesterday a possible future became only a toy in a glass globe.

On the map of your empire, O Great Khan, there must be room both for the big, stone Fedora and the little Fedoras in glass globes. Not because they are all equally real, but because all are only assumptions. The one contains what is accepted as necessary when it is not yet so; the others, what is imagined as possible and, a moment later, is possible no longer."[1]

Italo Calvino

[1]Italo Calvino, Invisible Cities, New York: Harcourt Brace Jovanovich, 1974, p. 32-33.

Urban environments change-this is a surety, a given. The forces that shape and transform the city are disparate: natural forces, man made interventions, the visions and acts of individuals, the collective will. As Kevin Lynch observes, "Environments change. In the midst of these events, people remember the past and imagine the future."[1] The condition of stasis does not exist in the urban context. The industrial landscape and its place in the urban context is no exception. By its definition, it may be the one piece of the man-made environment that is more apt to change than any other current land use. Its form, function and location are dictated by market demands and advancing technologies that are more and more the products of a global society.

The Rouge, from its inception, has been in a state of change, and change will continue to occur. The complex has grown, contracted, and even at this moment is in a state of transformation. That it will change is a given. How it will change, how this change will proceed and manifest itself, who will catalyze and manage this change, is impossible to predict. There are as many futures, and visions of the future, for the Rouge as there are individuals who may consider the issue, or who may pass the site and idly wonder where it came from or what it may become.

Urban change typically emerges from some kind of process, and this planning process is a dynamic one. It does not occur in a vacuum, nor can it ignore the passage of time, and the implications of such passage. It yields, from its very nature, a pluralistic forum, into which new information or constituent desires are injected. All of these inputs help to mold the process as well as the possible results. From this dynamic process there emerges a different solution at any given period of time. Circumstances change, windows of opportunity open and close, alliances are formed and dissolved, information becomes available or is suppressed, commitments are made and retracted.

This dynamic process produces a dilemma for those engaged in the disciplines of Urban Design and Planning. This dilemma can be characterized by a certain tension which exists between what one can imagine and what one can control or effect. This is particularly true when the problems involve economic, physical and social decay.

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[1]Kevin Lynch, What Time is This Place?, p. 190

Julian Beinart has observed in regard to this tension: "how big the tasks are and how blunt our tools are." While it is impossible to predict the outcome of this dynamic process, the process of change and its increments, are not completely beyond our influence. It is possible to form the basis for the process-to dictate its base values and objectives, to take a theoretical position on how it should proceed and which groups it should involve. In doing so, we manage the process of change and influence the possible outcome to a certain extent.

Base values of conservation, making wise use of resources, and participation in the planning process, are valid and defendable premises on which to base the reconstruction process. The impacts of the decline of industry-socially, economically, physically-on our cities is well documented. Reversing these effects or halting the change in industry is unlikely, though adopting a stance on how we as a society address the issue of industrial obsolescence is a viable alternative for action. Such a social and theoretical stance has implications not only for the landscape of today, but the landscape of future generations as well. If these attitudes becomes a basic value in the consciousness of society, it will eventually effect the way in which we build new, thus effecting the future of reuse as well.

The results of reconstruction efforts for the industrial landscape are mixed, each producing various positive and negative impacts, each satisfying various constituencies to certain extents, each with different formal and programmatic results. Some reconstruction processes have pluralistic goals and involvements, though most do not. The results of the participatory processes are ultimately superior in the long term. Partnerships which emerge between the public and private sectors are proven to be profitable in a number of ways. Such partnerships are achievable when both parties approach the situation with clear understanding and respect for the others' views and values. No party gains, if the process is not at least engaged in, or if economic value is not enhanced in the long term sense.

I have attempted to portray the status of the 20th century industrial landscape- a landscape in transition. I have presented a wide variety of the efforts and resources-though many more exist that are not discussed here-that are being devoted to the issue

of the reconstruction of the industrial landscape. Commendable efforts are occurring around the world and in our own country. Derelict and abandoned industrial landscapes are once again infused with activity and rejuvenated both physically and programmatically to contain productive use once again. Governments, communities, unions and the private sector are trading their tentative or hostile relationships for cooperative ones in which joint sharing of cost and responsibility yields joint benefit. Nature and technology have granted us yet another reprieve for the reclamation of the exploited natural environment. For these reasons, we should be encouraged and optimistic. However, we should be cautiously optimistic, since many of the costs and benefits of these approaches, as well as their associated impacts, have yet to be identified and evaluated. We should take into consideration the best of these examples and tailor them to meet the needs of individual sites, constituencies and process goals.

I have presented the story of the Rouge and its context and simulated a process for its reconstruction. The Rouge is of significance on numerous levels-historically, culturally, economically, socially, symbolically. It carries the multidimensional value that can serve as a basis for a rich master planning process and assure an equally rich result. Through this dynamic process, the Rouge can once again become a symbol-not only of the industrial past, but of its present and future-and as a symbol of the manner in which we collectively address the issue of industrial obsolescence and reconstruction. Such a symbol would be of considerable value, even if it is only understood and embraced on a local level.

Rethinking the industrial landscape is a complex issue, at the center of which is how we define ourselves as a nation, and how we view our collective goals, standard of living, and political, social and environmental ethic. But this is all the more reason, even in a time of economic austerity, to devote our best efforts, our best resources, to the issue. In doing so we must attempt to perceive these landscapes as the opportunities that they represent, infused with the multidimensional value which is inherent in them. I have presented an enabling methodology, a basis for next steps in the process of reconstruction. It is one "imagined as possible" future for the Rouge. My hope is to stimulate enough interest to catalyze a planning process, which will, certainly, produce many other possible futures for the Rouge.

Postscript

Resources

Major Collections

The Henry Ford Museum Library and Archives at the Henry Ford Museum and Greenfield Village, Dearborn, Michigan,
Cynthia Read-Miller, Curator Archives and Library Department

The Ford Industrial Archives, Redford, Michigan,
Darleen A. Flaherty, Archivist

The Walter P. Reuther Library, Archives of Labor and Urban Affairs and the UAW Collection, Wayne State University, Detroit, Michigan,
William LeFevre, Archivist

The Ford Film Collection, the National Archives, Washington, DC

The National Automotive History Collection, Detroit Public Library,
Ronald Grantz, Curator

Interviews

Academic (MIT)

Prof. Lawrence Vale, Department of Urban Studies and Planning
John de Moncheaux, Dean, School of Architecture and Planning
Lois Craig, Associate Dean, School of Architecture and Planning
Prof. Micheal Wheeler, Department of Urban Studies and Planning
Prof. Leo Marx, Program in Sceince, Technology and Society
Prof. Merritt Roe Smith, Program in Sceince, Technology and Society

Academic (other than MIT)

Prof. Charles Hyde, Industrial and Labor History, Wayne State University
Prof. John M. Staudenmaier, S.J., History of Technology, University of Detroit
Prof. David L. Lewis, School of Business Administration, University of Michigan
Prof. Robert E. Johnson, College of Architecture and Planning, Architecture and Planning Research Laboratory, Univ. of Michigan
Prof. Margaret Dewar, Urban Studies and Planning, Univ. of Michigan
Prof. John Rivette, Labor and Industrial Relations, Michigan State University
John Stuart, PhD Student, Industial and Labor History, Wayne State University
Prof. John Mullin, University of Massachusetts-Amherest

Public Sector/Non-Profit Organizations

Michigan State Department, Bureau of History:
Catherine Eckert, Department Head, Preservation
Michigan History Magazine, Roger L. Rosentreter, Editor

Michigan Department of Natural Resources
Jim Linton, Unit Chief, Environmental Response Division, Superfund Section
Jami McLain, Environmental Response Division

Michigan Council for the Humanities
Michigan Alliance for the Preservation of Cultural Heritage
Executive Director, Ronald Means

Michigan Labor History Society, Detroit, Michigan

Detroit Labor History Tours
Ron Alphern and Steve Babson

City of Dearborn, Michigan:
John J. Nagy, City Planner

City of Detroit, Michigan, Planning Department

HPDEVCO, Highland Park, Michigan:
Harriet B. Saperstein, President.

Wayne County Parks Department, Ford Heritage Trails Project,
Nancy Watkins, Project Director

Southeastern Michigan Council of Governments (SEMCOG)
Jim Thomas, Information Officer

National Landmarks Program, Commercial and Industrial Sites, Keeper of the Register

National Trust for Historic Preservation, Boston Office

Environmental Protection Agency RCRA Superfund Hotline

Society for Industrial Archeaology, National Museum of American History,
Smithsonian Institution, Washington, DC

Association for State and Local History, Nashville Tennesee

Private Sector

Alfred Kahn Associates, Inc.:
Joseph Bedway, Public Relations/Marketing
David Marchionna, Associate

Ford Motor Company:
George R. Bodurow, North American Automotive Operations General Services, Retired
Wayne S. Doran, Chairman, Ford Motor Land Development Corporation
Bob Day, Director of Public Affairs, Ford Motor Land Development Corporation
Joseph F. Derkowski, Architectural Services Manager, Ford Motor Land Development Corportation
David M. Caplan, Manufacturing Public Affairs, North American Automotive Operations
Dan Ericson, Ford Photographic Services, World Headquarters

The United Automobile Workers Union (UAW):
Steve Wyatt, Region 1A
Marc Baldwin, Research Department

Motor Vehicle Manufacturers Association
Mr. Robert Roach, Director of Communications
Mr. James Wren, Automotive Historian

Greater Detroit Chamber of Commerce
Business Attraction and Expansion Council,
Jack Steiner, Research Director

National Association of Industrial and Office Parks:
Dorothy P. Gray, Information Center Manager

Donald Hunter, Economic Development Consultant, Annapolis, Maryland - formerly with Zucelli/Hunter Associates (ZHA)

Corporate Properties, Ltd.:
Peter Roth

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