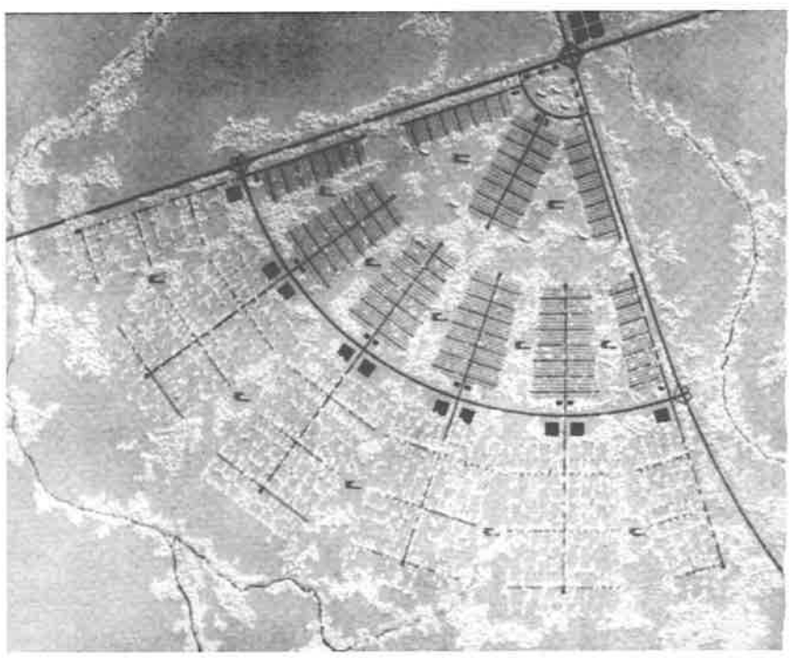
Robert Lane

The Place of Industry



Ludwig Hilberseimer, *Master Plan for Suburban Chicago*, 1949. Hilberseimer's proposal for suburban Chicago called for creating a series of fan-shaped communities with industry at the center. The geometry was based on the prevailing winds, with factories located downwind of the residences and gardens. Courtesy Avery Architectural and Fine Arts Library, Columbia University, City of New York.

Charles Sheeler, *American Landscape*. Courtesy Museum of Modern Art, New York.

Introduction: What is the place of industry in the American city?

After World War II, manufacturers whose businesses had been part of the continuous agglomeration of urban activity, vacated their loft factories for suburban "industrial parks": efficient, one-story facilities gathered in a campus setting surrounded by green, free of congestion, and free (as well) of the labor unrest of the inner city.[1]

The combination of these two seemingly contradictory ideas—industry and park—betrayed both the confused thinking of the planners and their desire to reconcile the "Garden City" with the "*Cité Industrielle.*" It betrayed as well the desire to reconcile two contradictory tendencies: the impulse to excise industry from the city and relocate it in the landscape, where it could be cleansed; and the propensity for industry to gravitate toward the center city. A series of concentric rings, at various distances from the city center, describe the points of equilibrium between the two countervailing forces pulling industry in toward and pushing it away from the center city, shown in Hilberseimer's 1949 *Master Plan for Suburban Chicago,* opposite. The outermost of these rings (the machine in the suburbs) placed industry in suburban industrial parks along the circumferential highways or "beltways" built during the late 1940s and early 1950s. The second of these rings (the machine in the city) established a beachhead for industry at the edge of the city, as urban renewal projects of the late 1950s and 1960s sponsored industrial park development in marginal neighborhoods beyond the center city. These suburban model developments have confused the identity of the edge of the city—neither city nor suburb. The third ring (the machine next door) is the perimeter of the center city itself, where planners have tried to come to terms with the desire for smaller, cleaner manufacturers to be concentrated into the economic core of the city.

The model of the suburban industrial park continues to play a major role in the industrial redevelopment strategies of American cities.[2] However, it has become increasingly difficult to reconcile this model with the changing nature of production: the marketplace, once dominated by large, vertically integrated firms, is becoming progressively more fragmented. A network of small, flexible, and interdependent manufacturers is more capable of rapid product development, providing a wider array of specialized products. The tendency for these smaller manufacturers to thrive in mixed-use situations must be reconciled with the industrial park redevelopment strategy of creating large, single-use precincts for industry in the city. Ultimately, the challenge of combining industry and housing must also be confronted. While the most ambitious attempts at combining work and living spaces are in Europe, there are numerous precedents located in the United States.

By reexamining the place of industry in the city, this research attempts to answer two questions essential to redefining the American city: Where do we live? Where do we work?

I: The Machine in the Suburbs

The geometry of the circle and the ring strategy, a recurring theme in ideal town planning, informed the location of new industrial districts after World War II. In a series of technical bulletins from the early 1960s, the Urban Land Institute, an independent real estate research organization, described the criteria that should guide the developer in choosing locations for new industrial districts. Highway accessibility topped the list, but the report cautioned that "highway sites outside the metropolitan 'fringe' area are not necessarily premium items due to the abundance of such property and the lack of adequate utilities and ser-

Suburban industrial park along beltway, aerial photograph. Courtesy Skyviews, Inc.

vices in rural areas." Rather, the report reserved its most enthusiastic endorsement for "sites along, or convenient to, circumferential beltways. . . ."[3] Given as the model example of this were the series of industrial centers developed by Cabot Cabot and Forbes along Route 128 around Boston (1949).

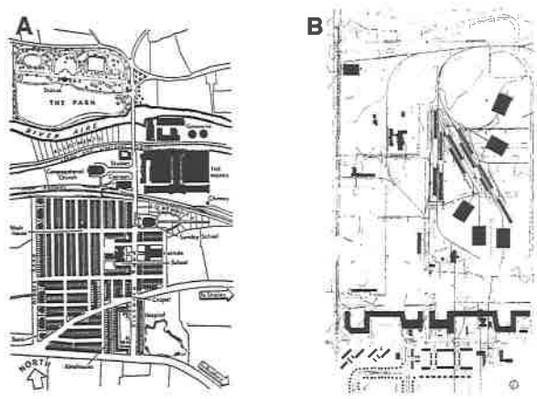
For the developer, this ring of highways represented the radius of points outside of the city but within reach of the resources and markets of the city. For a time, the "beltway" represented the compromise between the machine in the city and the machine in the suburbs.

The new manufacturing districts along the beltway, the "Industrial Parks," were essentially campuses for factories. These differed from the earlier planned urban industrial districts, such as the Clearing (1909) and Pershing Road (1916) developments of Chicago, in their reduced site coverage, complete reliance on the horizontal factory, and emphasis on appearance and landscaping. They offered large tracts of inexpensive, developable land with flexibility for expansion and convenient access. Private developers provided infrastructure for parcels large enough for horizontal factories, parking, loading, and ample landscaping. Industries in these early industrial parks were highly diversified in terms of size and type, combining compatible uses (metal working, electronics, chemical and food processing) in the same development. Their relationship to the highways encouraged the development of distribution and warehousing operations. The desire to control nuisances favored light manufacturing.

The single most important principle of industrial park planning was flexibility. Although a masterplan was necessary, the layout of the district provided for expansion through phased development so that utility extensions, street construction, and site improvements could be carried on in progressive stages or "installments." Also, individual building lots were not delineated. Instead, a block size was established. In this way, development on the block was constrained in only one dimension (the depth of the block) while the other dimension (lot width) could vary as required. Even more flexibility was possible if the streets were spaced at irregular intervals, allowing for a variety of lot depths. These principles were applied throughout the United States, from the 1952 Fair Lawn Industrial Park to Dallas's Brook Hollow Industrial District of 1954.[4]

Almost without exception, industrial districts are populated with large, single-story factories—horizontal sheds. Although the one-story factory can be found in the industrial districts of most cities, the suburban prototype was different in its virtual lack of glazing and in the inclusion of front office space, often appearing as a separate and more highly articulated volume, tacked on to the basic production shed. And unlike its urban counterpart, the horizontal factory in the industrial park was set back from the street to allow for signage, parking, and, most importantly, the landscaping that turned the district into a park. The setbacks and the overall density of the plan are such that the traditional space of the street is never achieved because the factories become object buildings, surrounded by lawn, placed without regard for the character or hierarchy of the spaces around them. The street exists solely as infrastructure, for there is no dialog between the mute facades of the horizontal sheds.

Finally, the suburban industrial park created a precinct exclusively for industry. Within the park, it was possible for the private developer to exclude any activity deemed incompatible with industry (permitted ancillary uses might include a bank or workers' club). Low site coverage and generous setbacks reduced potential conflicts with neighbors beyond the boundaries of the park. Typically, industrial districts had at most two or three points of access and these were clearly articulated as gateways and often guarded. The creation of any kind of through road was stu-



Plan of the workmen's village of Saltaire, founded in 1851, *left.* Courtesy Leonardo Benevolo, *The History of the City* (Cambridge MA: MIT Press, 1988).

Figure/Ground Plan, Ajax Industrial Park, Ajax, Ontario, 1952, *right.* A zoned city is ready-made in the country: on the top, industrial buildings disposed according to topography and utility; on the bottom, residential buildings along narrow streets; in between, commercial buildings in configurations reminiscent of Le Corbusier's "Redents."

diously avoided. Although the industrial park is now more often called a "business park" and contains a greater variety of uses (banking services, daycare, office facilities) these basic planning principles have not changed.

The desire to leave existing urban concentrations gave rise to an interesting corollary to the industrial park: "the balanced community development," containing not only industry, but commerce and housing as well.[5] Examples include the Centex Industrial Park in Elk Grove, Illinois, and the Sharpstown Industrial Park in Houston, both of 1957. These may be seen as the developers answer to the nineteenth-century factory town. One example, the Ajax Industrial Park in Ajax, Ontario (1952) reveals the degree to which dispersal and reduced density had become guiding principles of industrial district planning. It is a diagram of a zoned city, divided into three zones: to the west, industrial buildings disposed according to topography and utility; to the east, residential buildings in suburban configurations; and in between, commercial buildings in object-building configurations reminiscent of Le Corbusier's "Redents." The violent dispersal of the plan suggests only that it is easier to create open spaces than to resolve formal relationships between disparate activities, show in the figure above.

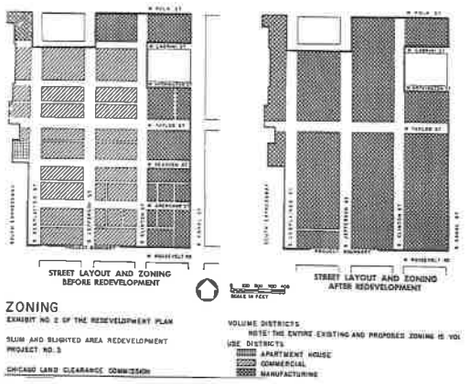
While the origins of the industrial park are foremost to be found in the suburbanization of America and a variety of practical considerations with regard to assembly-line technology and transportation, it is important to understand that there are two other dimensions to the industrial park, one political, the other aesthetic.

In the post-war period, the dispersal of the modern city had become identified not only with the regenerative value of green space, but with the political control that would come with the dispersion of urban populations. The city was, and continues to be, associated with labor radicalism and unrest, and it is certainly the case that in moving to the suburbs industrialists were escaping not only the congestion of the inner city, but its political activism. In fact, the Urban Land Institute, in its developers' checklist for industrial park site selection, advised industry builders to research the history of an area's work stoppages, labor relations, and union activity for potential development locations.[6]

As to the aesthetic dimension, art historian Leo Marx in his book *The Machine in the Garden,* documented the nation's peculiar desire to reconcile two conflicting visions of the New World in American art and literature: one, a pastoral vision of an agrarian republic, free of the social and political ills of industrialized Europe; the second, a technological vision of a nation powerful and liberated by industry. For Marx, the 1930 painting *American Landscape* by Charles Sheeler was a characteristic attempt of reconciling industry and landscape. "By superimposing order, peace and harmony upon our modern chaos," Sheeler presents the industrial landscape pastoralized.[7]

The industrial park phenomenon must be seen as a manifestation of this same American desire to reconcile the industrial and the pastoral. Interestingly, the term *industrial park* is an American term. In Europe these developments are called *industrial estates* or *planned industrial estates.* In America, the industrial park would forever be associated with clean industry, and therefore with technological progress, liberated as it was from the cramped working quarters of the industrial city.

For the next thirty years, redevelopment agencies struggled to compete with the suburban industrial park, not only in older industrial cities such as Boston, Chicago, and New York but in areas as disparate as Murfreesboro, Tennessee, and Norfolk, Virginia. If industry was to be returned to the city, it would not be the dusty and antiquated industry of the loft factory, but the clean and modern industry of the industrial park, sanitized by its tenure in the landscape.



West Central Industrial District, Chicago. Courtesy Robert E. Boley, *Industrial Districts: Principles in Practice* (Washington, D.C.: Urban Land Institute, 1962).

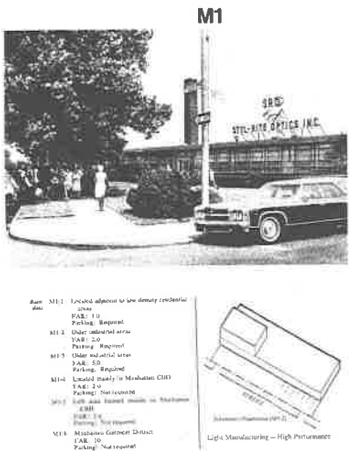
II: The Machine in the City

During the 1950s, the beltway may have represented a compromise between urban and suburban industrialization. But the tension between the two tendencies—into the city/into the landscape—remained unresolved. Although the 1940s and 1950s witnessed a great migration of industry away from the city, the centripetal force exerted by the center city was nevertheless everywhere in evidence. The Urban Land Institute showed that half of the new plants built during and after the war stayed within a 7-mile radius of central business districts, while two-thirds stayed within 10 miles. Planners expected to find fewer sites for industry near the congested centers of the densely populated older regions, but the picture was far from clear. Vacant sites close to the center were sought out in preference to the more distant suburban locations. As late as the mid-1960s, New York and other cities were concerned that not enough land was set aside for the future expansion of industry. But the principle obstacle to the return of industry, the greatly increased space requirements of horizontal factories, was yet to be overcome. Two-thirds of the new plants within a 5-mile radius of city centers covered less than 35 percent of their sites. Only 13 percent required less than 13 acres of land, a large area by dense urban standards.[8]

However, a mechanism existed for satisfying these space requirements: the urban renewal process, which reflected a dispersed model of the city promulgated by European modernism. The Zielenbau housing studies of 1931 and Le Corbusier's "Ville Contemporaine" of 1922 had profound influence on the urban renewal projects of the New Deal and post-World War II eras. Slums were cleared for housing projects that were based on the slab-block concept, which broke away from the grid of the city creating huge superblocks. In the 1950s, no public housing projects were built covering more than 20 percent of their sites, and some, such as the Farragut Houses in Brooklyn, New York, covered less than 15 percent.[9]

These housing projects provided the precedent: the urban renewal process could be used to assemble and clear sites large enough for the horizontal industrial plant, and starting in the mid-1950s and early 1960s, it was used in just this way. Of the 676 federally-assisted urban renewal projects planned or underway in 1962, 119 were industrial, covering 23 percent of the acreage of all urban renewal projects.[10]

The process of creating superblocks by "de-mapping" streets, became the model for the urban industrial park, as it remains today. By closing some streets and allowing others to remain open, the superblock represented a middle ground between the restricted access of the industrial park and the continuity of the urban street pattern. One of the first attempts at this was the West Central Industrial District in Chicago, developed in 1952 by the Chicago Land Clearance Commission (now the Department of Urban Renewal). Included in the development were manufacturers in the printing, sheet metal, and rubber goods industries. The plan allowed for relatively compact development and did not require the kinds of large, landscaped setbacks characteristic of suburban development. Existing mixed land-use patterns, however, were abandoned in favor of a completely homogeneous manufacturing zone. A photograph of this project appeared on the 1955 cover of *Commerce Magazine,* boasting "Slums like these make way for modern industrial plants." Significantly, the photograph gave no indication of the urban location. In New York City, experiments with industrial development date to 1959, when the city began to study the feasibility of an industrial park on sixteen blocks of the Flatlands section of Brooklyn. Today the industrial park is tenanted by manufacturers of electronic products, pharmaceuticals, and



Zoning for Suburban Industrial Parks. Courtesy Department of City Planning, New York City.

warehouse operations. As with later attempts, planners used the "superblock" strategy to create parcels large enough for horizontal factories, on-grade parking, and off-street loading. Existing streets were closed to create an internal circulation system separating truck traffic. Here, the attempt to duplicate the advantages of suburban development are more apparent, for the plan called for landscaped setbacks and small public courtyards and parks.

As some of the recent proposals in Boston (Newmarket Industrial District Plan, 1988), Chicago (the Prototype Industrial Parks Study, 1987) and New York (Rheingold and Mid-Bronx Industrial Parks, 1987 and 1988) demonstrate, planners continue to rely on the suburban industrial park—free of congestion and surrounded by green—for new urban industrial development.[11] The industrial park concept continues to appeal to planners because of the image it suggests of a clean, modern development; it appears as a separated precinct where industrialists are protected from other uses and beyond which residential neighbors are protected from the real and perceived nuisances of industry.

However, it remains for city planners to determine how the discontinuous and homogenous suburban industrial park can be integrated into the continuous and heterogeneous fabric of the traditional city. The fact that industrial park planning tends to be open-ended, capable of being extended into the landscape indefinitely, must be reconciled with the finite and limited order of the traditional city. And it remains today for city planners to resolve the ultimate contradiction, rife with formal and political implications, of the urban/suburban industrial park: whether the new development is meant to be part of the city or a secure precinct isolated from the community.

The destructive effects of the tower-in-the-park housing projects of the 1960s gave way to smaller scale, incremental, and contextual urban renewal projects in which urban design goals played important roles. While the urban renewal process can create special requirements, the reality is that these plans do not go far beyond what the existing zoning requires and, unfortunately, the zoning continues to reflect the preference for the kind of low-density development associated with the suburban industrial park. The requirements for off-street loading and parking guarantee that a horizontal factory will be built that only covers half or two-thirds of a site.[12] Because there are few regulations dealing with opposing street walls, within a manufacturing district or along its edge one is likely to find a row of houses on one side of the street and a massive, blank masonry wall on the other. Industrial zoning reflects the suburban value of dispersal—buffering industrial uses from the rest of the city by creating open space—but rarely contributes to the quality of this space.

The Urban/Suburban Industrial Park: Bathgate

The Bathgate Industrial Park, located next to the Cross Bronx Expressway in the South Bronx, New York, is the paradigm of the urban/suburban industrial park. It represents both the potential and the limitations of a planning strategy that attempts to bring industry into the city and yet keep it apart. It is comprised of seven buildings, each about 70,000 square feet, on a two-block by four-block site, about 22 acres of land. The buildings were constructed by the New York Port Authority, 1986-1988.

The design responds to the constraints of an urban location: the buildings are built out to three of the four sides of the blocks on which they are located and the building footprints follow the shallow curvature of the Third Avenue street wall. But suburban planning principles dominate. The buildings cover only two-thirds of their blocks, leaving the rest open for parking, truck loading,

Bathgate Industrial Park, Bronx, New York. Courtesy Port Authority of New York and New Jersey.

and landscaping. High-mast security lights tower above the complex. The buildings themselves are suburban prototypes: large. open-plan masonry shells with little or no glazing, except for the entry and the front-office mezzanine. Most importantly, the project suggests that, as in the suburbs, a secure precinct for industry has been created in the city, and by so doing, the industrialists are protected from the problems of the rundown neighborhood. The complex is completely inward-looking, with all entrances and glazing facing the park interior. In the words of the Economic Development Corporation's (EDC) marketing literature, "Bathgate combines all the advantages of a well supervised suburban industrial park with a prime urban location."[13] But as the sparse area plan reveals, Bathgate cannot possibly offer the advantages of an urban location if such advantages include access to business support services, housing, places for recreation, and access to other manufacturers. Ironically, it became necessary to build within the park a business assistance center containing photocopying services, mail services, daycare, and a cafeteria, the very things one would expect to find in an urban industrial neighborhood.

Bathgate has been a success as economic redevelopment. The buildings have been continuously occupied by some seven firms, including printers, and manufacturers of aircraft supplies, generic drugs and computer hardware. Combined, they employ about 1,550 people, many of them residents of the Bronx. But it has not been a catalyst for urban renewal. The community resents the fortress-like presence of the complex with its fencing and round-the-clock security patrols. The hard, windowless edge that it presents to the community cuts it off from its context, becoming an obstacle rather than a stimulus for adjacent development.

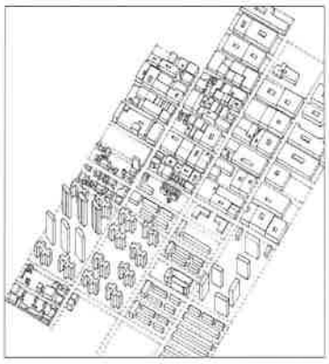
In 1967 the area was characterized by the urban density identified with New York's active manufacturing neighborhoods. Today, the area is characterized by the kind of sparse development that has become the unfortunate hallmark of the South Bronx. A comparison between figure-ground drawings from 1967 and 1989 suggests that it is not the factory that has been urbanized, but the neighborhood that has been suburbanized.

A Typology of Industrial Parks:

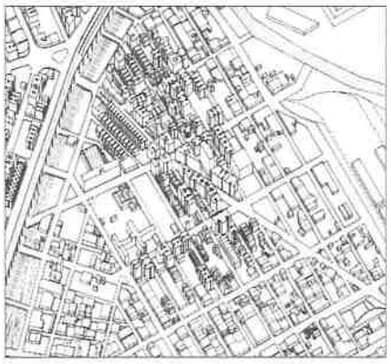
The industrial park concept has come to embrace not only new developments based on the suburban model, but older manufacturing neighborhoods as well. These become "In-Place" industrial parks, with edges that are often no more than lines on a map, administrative rather than physical entities. Nevertheless, they satisfy the need for the city to be both understood and administered in terms of zones. They satisfy as well the contradictory desires for industry to be at once a part of the city and yet insulated from it. Signage and fencing are used to demarcate a discrete precinct on an otherwise continuous grid of streets. The three configurations described below illustrate the degree to which industrial parks can be integrated with or separated from their surroundings.

At one extreme are neighborhoods such as Spring Creek in Brooklyn, where the one-story industrial buildings are adjacent to tower-in-the-park housing projects, producing a virtual figure/ground reversal between the residential and industrial areas. The coincidence of massing, land-use, and zoning makes the boundary of the industrial park readily apparent. In these places, the urban fabric has become discontinuous in the extreme: an undefined landscape filled with object buildings confronts a grid of streets lined with blank, masonry walls.

At the other extreme are neighborhoods such as Hunt's Point in the Bronx. If at Spring Creek the boundaries of the



Spring Creek Industrial Park, Brooklyn, New York. Axonometric diagram.



Port Morris Industrial Park, Bronx, New York. Axonometric diagram.

East New York Industrial Park, Brooklyn, New York. Axonometric diagram.

industrial area are readily apparent, here the uniform density combines with mixed-use blocks at the developments' edges to make the boundaries of the industrial park unclear. As in many of the older, successful manufacturing neighborhoods, such as Hunter's Point, this area conforms to traditional ideas about urban densities and building concentrations in the city.

A third configuration is the most problematic. It is exemplified by East New York, but it is characteristic of many of the places where New York City is using urban renewal for industrial redevelopment. As at Port Morris, the boundaries of the industrial park are unclear, and a broad correspondence between zoning and land-use breaks down at the edges. However, here it is not uniform density, but a uniform lack of density created by inner-city devastation that makes the boundaries unclear. Despite signs over the major streets that announce entry, the industrial park is without physical form.

Both the older "In-Place" industrial parks and the new suburban model developments in New York City vary tremendously in scale, context, and the socioeconomic profile of the neighborhoods in which they reside. However, as the figure/ground studies reveal, they are all characterized by the tremendous contrast in scale and density between the residential and industrial buildings. This contrast is at least a partial measure of the disintegration of the city and the dislocation of industry

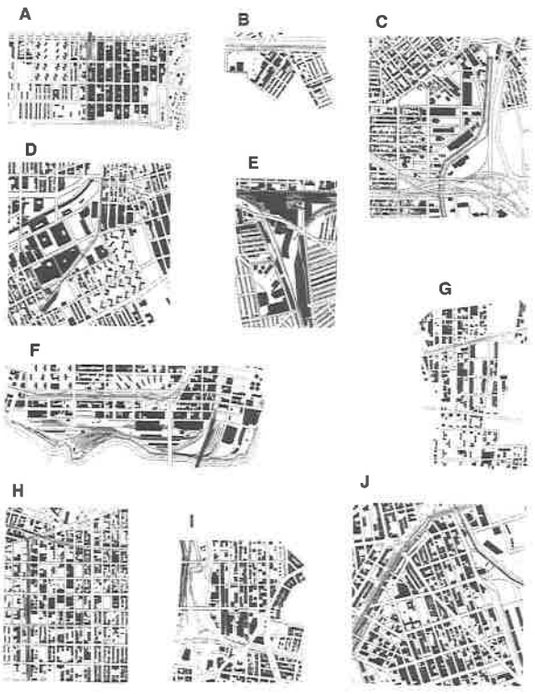
In the end, formal problems are inseparable from economic, social, and political ones. Not surprisingly, most of the existing and planned industrial parks are located in the most neglected inner-city neighborhoods, where population has declined dramatically over the last thirty years. Richard Plunz felt compelled to describe these areas as "The New York Ring," revealing once more the tendency to abstract the city in terms of a concentric geometry whose origin is at the epicenter of the city.[14]

Now, beyond the center city, a new kind of "ring" has begun to develop, one which contains both housing and industry. But the density of this ring, neither urban nor suburban, insures that the only thing industry and housing will share is the center of the city as a point of reference.

III: The Machine Next Door

If there is indeed a "New York Ring," then it will soon be completed in an ironic way. The mayor's office has proposed to remove the restrictions against large-scale retail business locating within manufacturing zones. This would make it possible for a new building type—the suburban "superstore" (IKEA, Home Depot)—to locate to many tracts of underutilized manufacturing land that surround the city.[15] If approved, a suburban configuration would be transplanted to the edge of the city. Finally, all three of the traditional land-use categories—residential, manufacturing, and commercial—would be represented in their respective non-urban configurations: the "tower in the park," the industrial park, and the suburban superstore. Will this new assemblage confuse the identity of the city edge?

Perhaps the "industrial park" problem needs to be redefined entirely. If industry is really meant to remain part of the city, then perhaps the goal of creating a "district," however well-integrated, is no longer appropriate. Planners in New York City find that "Location in high crime neighborhoods or areas which have experienced blight and disinvestment seems to undermine other positive factors, such as good access to major highways . . . ,"[16] calling into question the strategy of placing suburban-style industrial parks in dilapidated urban renewal areas. At the same time, the apparent need to quarantine manufacturing in industrial parks is no longer justified as technology continues to blur the old land-use categories and to make



Figure/Ground Studies of existing New York City Industrial Parks, 1993.

a) Spring Creek, Brooklyn, New York
b) Springfield Gardens, Queens, New York
c) Zerega, Bronx, New York
d) Flatlands, Brooklyn, New York
e) Jamaica, Queens, New York
f) Port Morris (South), Bronx, New York
g) Bathgate, Bronx, New York
h) East New York, Brooklyn, New York
i) Mid-Bronx, Brooklyn, New York
j) Port Morris (North), Bronx, New York

many new industrial processes compatible with commerce and housing, such as printing, electronic assembly, and jewelry manufacture.

Cities such as New York have one important strength: the so-called "agglomeration economies" of an urban location. These are the economies that result from proximity among firms involved in complementary activities, from access to design, marketing, and sales infrastructure, and from proximity to the market. These advantages are especially important for emerging industries involved in the development of high-end, short production-run items, where the cost in the finished product is less important than the quality of the design and the ability to market it quickly. This is true of the older mixed-use neighborhoods such as East Williamsburg and Hunter's Point, where firms benefit from the security of an active area, the availability of local labor, their location near the home of the owner, and their proximity to the market for sales and service.[17]

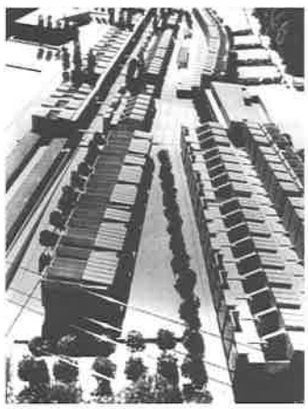
If industry is to be truly concentrated in the urban economy, then it will be necessary to regulate the city at a smaller scale and to develop regulations that can admit the flexible and organic nature of the "city." If this is so, then housing and industry will have to be combined at a scale unprecedented in industrial district planning.

In Europe, a number of industrial/residential mixed-use projects have gone up, notably a 1986 development by Rudolphe Luscher in Fribourg, Switzerland. Located at the edge of an existing industrial district, a substantial grade change enables the scheme to be layered in plan and section: a row of industrial shops is followed by a row of buildings containing residences over industrial shops, and this, in turn, is followed by a row of residential buildings. An industrial aesthetic dominates.

A more conservative model is the 1985 Bruges Place in Camden, England, by Jestico and Whiles, which combines small-scale industrial shops with duplex apartments. Access to the residential units is from the second level of a central courtyard. This project has been successful but street-level activity has been hampered by parking and loading and by the tendency for the industrial spaces to be occupied by larger manufacturers. These larger tenants require only a single entrance rather than the multiple entrances and office fronts envisioned by the designers. The planning, and especially the imagery, belie the kind of nostalgia for the pre-industrial city that Leon Krier demonstrates in his masterplan for Poundbury.

The Arts and Crafts settlements or Artisan's villages in the Modena region of northern Italy have played a major role in Italy's Industrial Renaissance of the 1970s and 1980s, and it was there that flexible production methods were first pioneered. Within the individual settlements, a wide variety of small manufacturers form a network in which companies are both competitive with and complementary to one another. Rather than producing a single product from start to finish (vertical integration), companies provide each other with intermediate products. This enables them to respond quickly to market changes and to make short production runs profitable. The settlements themselves, in turn, form a "polycentric grid" throughout the region.[18]

These models are relevant because they combine housing and industry at a scale that is commensurate with the American industrial park. They also rely on the horizontal shed as the basic factory type, which seems to be a practical necessity for new districts in American cities. The "Ca' Bassa Settlement," built between 1979 and 1982, is representative of those developments organized on the basis of a module for housing that is then doubled to accommodate



Rudolphe Luscher, industrial/residential project in Fribourg, Switzerland. Courtesy *Architectural Review,* March 1989.

the industrial buildings. The mezzanine level of the factory corresponds to the first floor of the residential buildings, with offices below. By combining the two uses, the residential buildings can be used to modulate the otherwise unarticulated volume of the horizontal shed.

In the United States, there have also been some attempts at combining housing and industry, although few have been realized. The 1987 Gowanus Canal Development Study by the Pratt Institute attempted to create the kinds of adjacencies between factories, stores, and houses that exist in New York's traditional manufacturing neighborhoods. The Gowanus Canal is a narrow inland waterway that serves as an industrial extension of the Brooklyn waterfront. Despite the loss of half of its manufacturing jobs over the past two decades and the desperate need for renewal, the canal is still a viable manufacturing area.

Citing the success of recent Italian experiments of similar nature, the Gowanus plan proposed a network of small, flexible manufacturers using technologically-advanced production methods compatible with housing. Housing and industry would coexist on almost every block and, at some sites, they would be part of a single structure. The strategy at each of these sites was to place medium-rise housing on a one-story-high plinth with parking and recreational space above. A stepped plaza provides the transition from the plinth level to a continuous esplanade along the edge of the canal. Manufacturing is housed within the plinth, a flexible open-plan space capable of being subdivided as requirements change.[19]

Combining housing and industry is also the focus of "Architectural Designs for Industrial Preservation," a study prepared by the Chicago Association of Neighborhood Development Organizations in 1988.[20] This study addresses the architectural issues associated with converting older buildings into multiple tenant "vertical industrial parks."

Two of the case studies take the notion of integrating housing and industry to its logical conclusion by combining them in a single building. Perhaps the most interesting example is the Cuneo Press Building. Here, a building with an unusual footprint, a sliver building five times as long as it is wide, is subdivided for smaller industrial users. The upper floors are then divided into apartments for workers. The proposal calls for a laundry, a small grocery store, and shared common space for the occupants.

Finally, in the United States there have been a number of experiments with artist live/work spaces. Zoning regulations in New York and elsewhere have been tailored to allow artist "pioneers" to live in manufacturing districts. While technically not industrial/residential mixed-use, these projects provide valuable lessons on which to build. Berkeley has been especially progressive in this regard, and one 1993 project, Westside Place by Kirk Peterson, takes advantage of these liberal zoning rules. Built in the middle of a low-rise industrial area, not unlike many of New York's manufacturing areas, the project provides for duplex residential units built over double height studios. It is not difficult to imagine that the studio space provided here could become space for an artisan-scale manufacturer.

Epilogue

The Information revolution has made it necessary to redefine the meaning of "infrastructure." The productive capacity of the city is no longer measured solely in terms of miles of highway, railroad cars of freight per day, or tons of cargo, but in "numbers of international transmissions," "deployment of digital switches" and "miles of fiber optic cable." As if to make this technology more accessible and less abstract, the terminology of the traditional city is overlaid upon this electronic infrastructure so that "port"

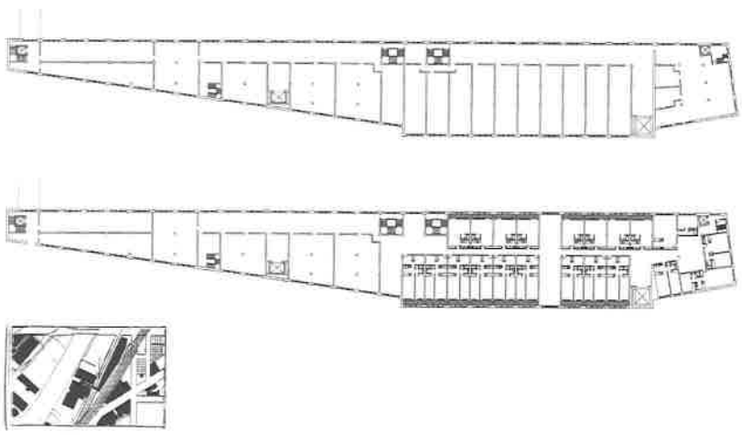
Industrial settlements in Italy's Modena region, where residences and horizontal factories are combined.

becomes "teleport" and highways become "information highways."

The graphic device of the figure/ground drawing has been used here as a measure of the city's continuity and, by extension, urbanity. Has the Information Revolution made "adjacency," in the physical sense described by the figure/ground drawing, irrelevant? If so, then the entire debate over the dispersed and concentrated models of the city will be reframed, and the violent explosion of the Ajax Industrial Park will seem less shocking.

But if the example of the recent Italian industrial renaissance is indicative, physical adjacency will continue to be important. It is not that the electronic media revolution has not had a profound impact on manufacturing, but ultimately the end product, the tangible component, must be physically installed, assembled, or transported. If physical adjacency is still important for manufacturing, then the place of industry in the city may continue to be a parameter by which we measure our commitment to traditional urbanism.

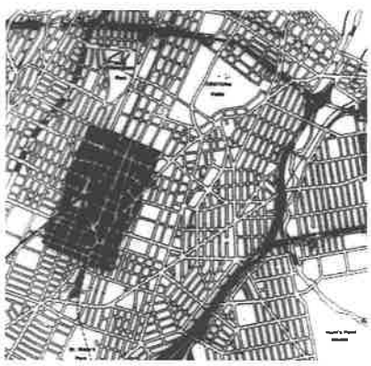
In fact, the result of this technological revolution may be the very opposite of what intuitively it seemed it might be; that rather than favoring the tendency for the machine to move farther into the landscape, it will instead be a centripetal force, drawing industry into the city at a smaller scale but in a greater density than ever before. In fact, in New York City, the single most reliable measure of industrial job density is proximity to the Central Business District, with 63 percent of the industrial employment within a 3-mile radius of midtown Manhattan. This concentration of manufacturing suggests that we will not be locating industry on a series of ever-collapsing rings, whether the beltways of industrial out-migration or the ring of peripheral "urban-suburban" industrial parks. Instead we will describe the place of industry in the American city in terms of the machine next door.



Cuneo Press Building, Chicago, IL., 1988. Plans of light manufacturing and residential floors.

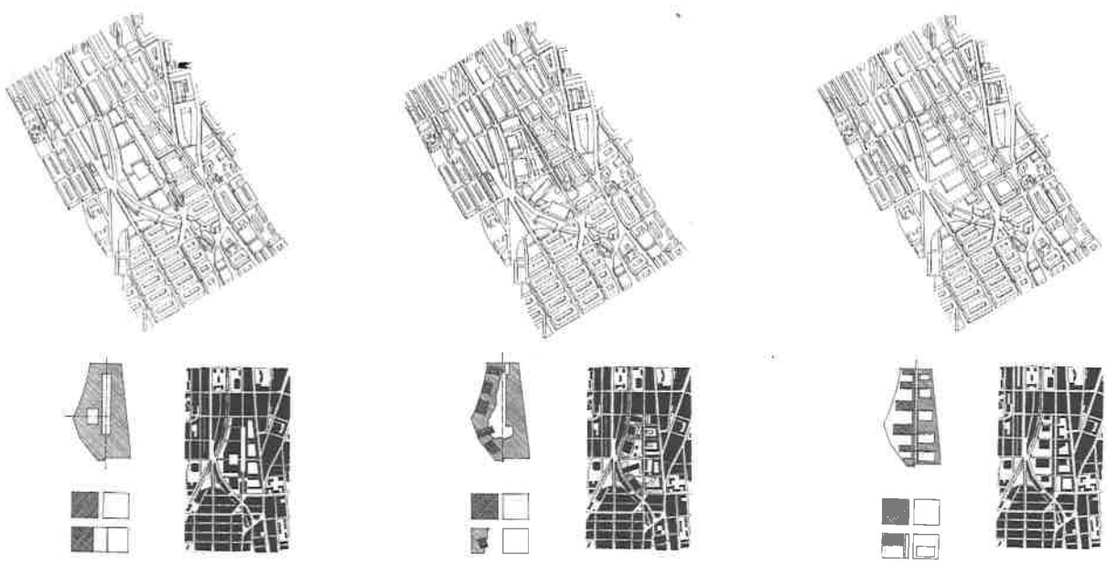
notes

1. United Nations, "Physical Planning of Industrial Estates," New York, 1962. The study documented that while the multistory, "flatted factory" was the standard for industrial redevelopment in Europe and other countries, in the United States, the suburban industrial park is used almost without exception.
2. Robert E. Boley, *Industrial Districts: Principles in Practice* (Washington, DC: Urban Land Institute, 1962), 10.
3. Ibid., 71–82.
4. The issue of providing moderately-priced housing within a reasonable distance of industry became a political as well as an economic issue. Many suburban towns courted the industries that were leaving the city, but in order not to import urban social and economic ills, they used exclusionary zoning practices to prohibit moderately-priced housing suitable for industrial workers. Law suits successfully challenged these restrictions, but these controversies could be avoided if the developers built entire ready-made communities from scratch. See Frank S. So and Judith Getzels, eds., *Practice of Local Government Planning* (Washington, DC: International City County Management Association in cooperation with the American Planning Association, 1988), 264–65.
5. Boley, *Industrial Districts*, 24.
6. Leo Marx, *The Machine in the Garden* (New York: Oxford University Press, 1964), 356.
7. Dorothy A. Muney, *Space for Industry: An Analysis of Site and Location Requirements* (Washington, DC: Urban Land Institute, 1954), 11–26.
8. Richard Plunz, *A History of Housing in New York City: Dwelling Type and Social Change in the American Metropolis* (New York: Columbia University Press, 1990), 220–27, 267–68.
9. Ibid., 183.
10. Boston Economic Development and Industrial Corporation, "Newmarket Industrial District Plan—A Neighborhood Revitalization Plan," Boston, MA, 1988; and Department of Economic Development, "Prototype Industrial Parks," Chicago, IL, 1987.
11. Department of City Planning, New York City, "Zoning Resolution of the City of New York."
12. New York City Public Development Corporation, "Development Projects," New York, 1989, 1988–89, 5.
13. Plunz, *Housing in New York City*, 322–324.
14. Department of City Planning, New York City, "City-Wide Industry Study, Zoning Technical Report," New York, 1993, iii–x.
15. Department of City Planning, New York City, "City-Wide Industry Study, Geographic Atlas of Industrial Areas—Part One," New York, 1993, 21.
16. Ibid.
17. "Artisans Villages in Emilia Romagna," in *Parametro* (Faenza: Faenza Editrice S.p.A., 1988).
18. Pratt Institute Center for Community and Environmental Development, "The Gowanus Canal Development Study," Brooklyn, NY, 1987.
19. Chicago Associates Planners and Architects, "Architectural Designs for Industrial Preservation," Chicago Association of Neighborhood Development Organizations, 1988.
20. Department of City Planning, New York City, "Geographic Atlas," 18.



Morrisania: The Industrial Park Reconsidered

Robert Lane

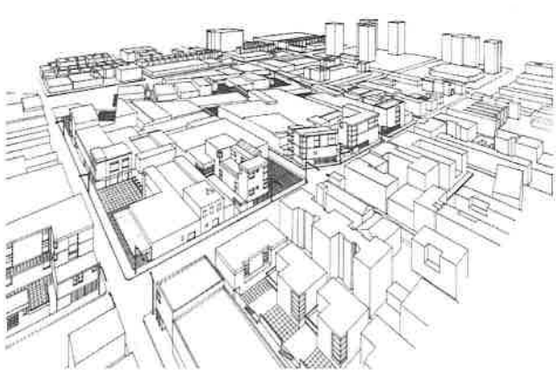


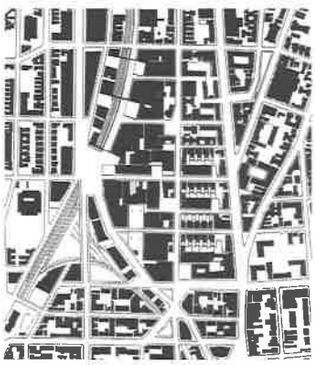
Left to right:

Perspective view looking north-west at residential buildings fronting factories

Perspective view looking north along Washington Avenue showing factories to the west and mixed-use perimeter blocks to the east.

Perspective view looking north-east into mixed-use perimeter blocks





Morrisania, at the center of the South Bronx, is the site for a new industrial park redevelopment project. The City is planning a single-use district—one-story horizontal factories covering two-thirds of their sites, with the one-third reserved for parking and off-loading. This alternative proposal suggests ways in which the absolute separation of housing and industry can be compromised in favor of a more finely-scaled mix of activities. By so doing, this proposal resolves the community's desire for additional housing with the City's desire for industrial redevelopment and re-integrated industry. This creates a development that is part of, rather than separated from, the urban fabric.

Three Partis: These partis demonstrate that urban design can be part of industrial park design even while accepting the basic propositions of industrial district planning: the absolute separation of housing and industry and reliance on the one-story, horizontal factory.

1. Urban Place: Industry and housing confront each other across the public space of a new, widened Washington Avenue. It exploits the capacity of this factory type to create the density and the horizontal continuity into which streets and other spaces may be cut.

2. Green Space: Industry and housing confront each other across the space of a true industrial "park". Here, as in the suburban industrial park, the industrial buildings remain object buildings surrounded by green. However, in this scheme, the park begins to be urbanized, creating a tree-lined boulevard along Washington Avenue.

3. Residential Boulevard: Industry and housing confront each other across a spine of residential buildings along Washington Avenue. The staggered plan sets up a dynamic in which the green space of the perimeter blocks is extended west across Washington Avenue while small-scale industrial uses are extended east, penetrating the perimeter blocks.

This proposal incorporates elements of each of these three partis and especially the third. Housing and industry are combined in two ways. Along the west side of Washington Avenue, blocks of housing are placed in front of, or intersect with, factories. The residential buildings modulate what would otherwise remain the unarticulated factory-boxes and maintain the character of Washington Avenue as an important residential spine. East of Washington Avenue smaller industrial buildings, constructed on the module of the housing, would penetrate the residential perimeter blocks. The grade change between Washington and Third avenues would enable the space within the perimeter block to be divided along its length, creating both private backyards for the housing and semi-public space along the side of the factory.