

## Planning for and Utilization of the Web Pattern of Physical Urban Development in Cities

THOMAS FRANK BARTON, Indiana University

In two earlier papers, (1, 2) the writer identified and described a web pattern of physically urban development consisting of: 1. business-industrial-circulation corridors with residential meshes located in urban areas and 2. a web of corridors of urban development in the countryside enclosing farm and forest lands.

This paper recommends that rather than permitting a web of business-industrial-circulation corridors to develop haphazardly, American city planning departments should design and zone a web of these corridors. There are seven primary advantages in taking this progressive and decisive planning and zoning action:

1. Aids industry by (a) providing for wider and more even distribution of business and industry throughout the urban area and thereby helping relatively to relieve congestion in the downtown; (b) permitting concentration, yet dispersal, of industry; (c) increasing the opportunity for the number of and greatly increasing the foot-frontage for strategic industrial sites fronting on (or nearby) major transportation lines and primary utility lines; and (d) making possible more efficient location of industrial districts.
2. Provides for nodal business development.
3. Permits better location of trucking terminals and warehouses.
4. Makes possible better siting of high rise apartments.
5. Enables utilities to provide more efficient, economical service.
6. Helps concentrate populations and travel destinations thereby supporting existing or potential mass transit.
7. Protects and helps make more viable and liveable neighborhood and community residential areas.

### Aid Industry

*Better city-wide distribution.* Today in many American cities too much industry is concentrated near the business-industrial core of the city or has migrated to peripheral and/or suburb locations. If too high a fraction of the city's employment opportunities is concentrated in the downtown, traffic congestions at morning rush hours will be caused primarily by too many people converging from various directions of the compass to a relatively smaller and smaller area. In contrast if relatively too many businesses and industries are located on the periphery of a large city in political suburbs, the lower income bracket group of employees finds it impossible, difficult or expensive to make their journeys to work. Moreover the central city is hard pressed to maintain a sufficiently high tax base to support city services. The zoning of a web of

business-industrial-circulation corridors not only encourages the city-wide distribution of business and industry instead of having them concentrated in large islands or on one or more edges of the downtown but such zoning will also reduce if not prevent future scatteration of these establishments on city peripheries where they may be subsequently engulfed by residential subdivisions. In contrast, industries and businesses built in these corridors are protected from encroachment and enclosure by residential sub-division promoters. Owners of industries now scattered throughout the residential areas should be instructed not to expand or make improvements in their present plants. Moreover any industries wishing to locate, expand or relocate should be helped to secure new sites in the corridors. Present owners of residences in the newly designated corridors should be advised not to improve their property and to be encouraged to find new locations. Within a few decades if not earlier the scatteration of industries in residential areas and of residences in the business-industrial corridors could be materially reduced and primarily eliminated.

*Permits concentration yet dispersal.* The web pattern with its corridors will provide an alternate choice to the management of new or expanding businesses and industries that do not wish to choose between two extremes. These extremes are: 1. staying in the downtown area or 2. locating on the edge of the city. The web pattern of corridors provides a large number of locational opportunities between the center of the city and its edges and in relation to other major considerations such as an airport or a university.

When business and industry are widely dispersed over the city in corridors, there is a greater opportunity for more people to live in the residential meshes of the web pattern and be closer to their places of employment. In this way those employed in a nearby corridor may save hours each day and have transportation costs reduced in their journeys to work and shop and to secure services and recreation. This will also relieve at least relatively downtown congestion.

*Increases strategic industrial sites.* Efficient, quick, low cost transportation is vital to most businesses and industries. The amount of land adjacent to nodal areas, produced by the junctions and crossings of several types of transportation such as highways, railways, waterways and airways is limited. However in business-industrial corridors where railroad lines, limited access expressways and subways are built roughly parallel to each other for miles and miles, the land fronting on these lines (or located within a block or two) is increased enormously. At the present time in many cities railroad lines and limited-access expressways parallel to each other or perhaps one or two miles apart extend for long distances through residential areas where their presence is considered a nuisance if not an economic and social liability. With the development of corridors: 1. transportation line right-of-ways are restricted to compact areas, 2. the transportation facilities can be coordinated to give more efficient service, 3. frontage sites for industry and to a lesser extent for business are increased by linear development

and 4. single-dwelling residential areas may be better shielded with parkways, high-rise apartments and semi-public buildings. In this manner residential land adjacent to but not fronting on transportation lines has its value increased rather than decreased.

Of course each corridor will not have a railroad, subway and elevated line but each corridor will be served by a major limited access expressway consisting of 4 to 12 lanes or more.

*Efficient location of industrial districts.* The zoning of business-industrial corridors and the provision of adequate transportation and utility facilities reduces the competition, pressure and scramble for industrial sites and encourages the sorting of industries into roughly homogeneous groups. Some industries have clean facilities, use clean raw materials and are on well-landscaped grounds. These industries desire prestigious environments and wish to be in a cluster of similar industries rather than adjacent to plants with extensive truck activity and open-lot storage of raw materials which at best give a cluttered, unsightly appearance. In the corridors tertiary industries using raw materials delivered to the plant by truck and airplane would be located in one section and secondary industries using railroad cars and ship or barge loads of coal, ores, lumber and other materials could more congenially and efficiently occupy a different one. The former could be adjacent to an airport and the latter an ocean, lake and/or river port.

#### **Encourages Nodal Business Development**

Although nearly all large cities with populations of about 250 thousand or more (as well as many cities of smaller size) have extensive commercial strips or ribbon development occupying net patterns, most of the city planning departments are attempting to discourage and/or block this development. Long-range plans shown on land use maps indicating future city goals show a hierarchy of business nodal areas ranging in size from the neighborhood through the community to the regional shopping and service areas with the apex in the downtown.

If land were zoned and developed as business-industrial corridors, business could be more easily and justifiably restricted to corridor junctions with the regional centers at the major junctions and the community centers at the secondary junctions. The same transportation and utility systems would serve both urban land-use functions—business and industry. Ribbon development should be reduced and discouraged and in time primarily eliminated. Zoning would prevent industry from occupying nodal corridor junctions which provide strategic sites for retail, service and recreational establishments. Moreover zoning would prevent retail establishments from occupying scattered sites that become dispersed in a nuisance fashion among the industries.

#### **Better Location of Truck Terminals and Warehouses**

Without business-industrial corridors strategic sites for trucking terminals and warehouses wax and wane. Moreover in some cities the

zoning departments are attempting to concentrate these facilities in one large area on one side of the downtown. However different types of trucking terminal and warehouses should be grouped in districts adjacent to the types of businesses and industries they service. Warehouses could be located in the corridors fronting on or within a few blocks of limited access expressways, railroad lines and water transport or airfields.

### **Siting High-Rise Apartment Districts**

With the businesses, industries, and transportation concentrated in corridors which enclose the residential meshes, at least two general types of high rise apartment sites become available. These may be found adjacent to and flanking the corridors or near the center of the communities enclosed in the meshes. The writer would like to see many of the high rise apartments occupying an open-space greenbelt of parkways which would help to screen the corridors. Some of the more expensive high-rise apartments could overlook the better landscaped industrial districts. Apartments for the less affluent and perhaps hand and semi-skilled laborers could be located adjacent to the secondary industries where their employment is located. No attempt would be made to segregate income groups. The primary criterion would be to locate types of apartment house suitable for the non-management employees as near potential places of employment as possible so as to reduce the time spent in going to and from work.

Bicycling and walking to work which is so commonplace in Europe would then become potentially possible for many here in the United States. If this type of travel were adopted, automobile traffic could be relatively reduced and perhaps the worker's health improved.

### **More Efficient Utility Service**

If retail, wholesale, service and industrial establishments were located in corridors with high-rise apartments flanking them, utility managements might become believers in the philosophy that a "little bit of heaven or paradise" can exist on earth. These corridors then would become the sites of the primary arterials of water, sewage, gas, electricity, telephone and other services. Tributary lines would connect the single-house, duplex and townhouse apartment residential areas in the meshes with the primary lines in the corridors. This would relatively reduce both construction and maintenance costs and provide better service. For example, better pressures could be maintained in water systems and periods of interrupted service reduced. The present-day maze of utility requirements found in many cities hinders efficient management. Business-industrial corridor development would help bring order out of chaos.

### **Mass Transit**

Billions of words have been written to support the theme that gasoline-engine traffic is choking and doing almost irreparable damage to not only the downtowns but entire large cities. And many urban leaders ask why mass transit is not economical and feasible? Still others in thought-

less exasperation recommend that mass transit be subsidized by governmental funds. Such people apparently forget that mass transit lines are going out of business each decade because most people prefer to use their own car rather than mass transit. Such transit is only feasible when large numbers of people wish to use such transportation to reach a concentration of mass destinations. It is interesting to note that one of the largest cities in North America, where mass transit has been relatively successful, has adopted a long-range plan for developing through zoning business-industrial corridors.

### Permits Community Development

By designing the location of the corridors, the size of the residential areas enclosed by such may be controlled to the extent that each mesh would have large enough space for at least several (four to five) neighborhoods and one community. Some residential meshes may have several communities. But the areas for these neighborhoods and communities should be ample to accommodate single-house, duplex and town apartments, as well as neighborhood and community schools, play grounds and shopping centers.

Unplanned yet rapidly developing web patterns of business-industrial corridors have enclosed or are slicing through residential areas dividing and subdividing neighborhoods and communities. These unplanned and non-designed corridors are yearly destroying billions of dollars in undeterminable residential values and destroying or helping to block community development.

### Conclusion

The writer's paper entitled "The Web Hypothesis of Physical Urban Growth" (2) was written primarily to call attention to and to identify a new hypothesis or generalization concerning the physical pattern of city growth, and to show how the urban web pattern with its business-industrial threads or corridors encloses, and as growth continues, subdivides residential areas and produces residential islands of various sizes. The partially-enclosed residential areas both within and on the periphery of the web pattern indicate that additional subdivisions of residential areas will occur.

Although written in November, 1966, that paper contained the following two paragraphs:

"Even in its initial step (of formation), this hypothesis may aid city planning by: 1. helping to justify the planning and constructing of both city and private services in the new primary arteries on fringes of the geographic city before the construction of stores, offices and factories begins, 2. supplying a defense for the zoning of land along the primary arterials for business and industry and 3. zoning the location of business-industrial corridors to regulate the size of residential communities so that these may be more economical and viable.

In fact, the development of multiple distribution systems—of streets and transit lines; water, storm water and gas lines; below-surface telephone and electrical wires and other forms of transportation, utilities and communication both public and private—may provide the means of helping control patterns of urban development.”

And after these preceding two paragraphs were written the writer obtained a copy of *The Comprehensive Plan of Chicago* in which “Corridors of High Accessibility” with associated “Industrial Areas” are shown (3).

This paper has stressed seven major advantages of zoning a city-wide pattern of business-industrial-circulation corridors for: 1. long-established cities, 2. potential urban areas on the peripheries of cities, 3. megalopolises and 4. potential large new cities (over 100,000 population).

#### Literature Cited

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