Aesthetic Considerations in Urban Arterial Route Planning

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•IT HAS BEEN estimated by the National Association of Manufacturers that the year 1962 witnessed a substantial increase in the Gross National Product (GNP), rising to an estimated 555 billion dollars. This indicates that the total dollar value of the nation's goods and services increased 35 billion dollars from the estimated 520 billion in 1961.

The goods produced, and the raw materials going into their manufacture, move from point of origin to point of consumption by various transportation media. Railroads, airlines, waterways, and pipelines carry selected commodities and materials. A large proportion of the raw elements and finished products reach their markets by trucks using the nation's highways. In addition, the automobile movements occasioned by home to work and return, shopping, school, church, recreation, etc., utilize available roads and streets.

The backbone of the highway transportation network is the 41,000-mi Interstate System which should be completed by 1972. Equally important are the primary and secondary systems, and the urban extensions which participate in Federal-aid funds. The public demand for an acceleration of the reconstruction of outmoded and deteriorated sections of existing highways, in addition to superhighways and expressways, is but another manifestation of the mobility of this civilization. As a nation on wheels, the people are more or less slaves to the motor vehicle.

By 1976 it is estimated that 113 million motor vehicles will be on the highways, an increase of 52 percent. A major concern is the distribution of these automobiles and trucks. The Interstate System, when completed, will comprise approximately 1 percent of the highway mileage but will carry 20 percent of the traffic. Urban streets and thoroughfares, although only one-tenth of the road mileage, now carry more than two-fifths of the traffic.

On the Federal-aid systems, the rural mileage is now operating at 64 percent of its practical capacity. On the other hand, the urban mileage is carrying 90 percent of its practical capacity. This augurs ill for the future in terms of comfort and convenience. A trip during the home-to-work period, or traversing the central city core, is all that is needed to convince one of the need for urban improvement in practically any city.

At present, a pressing need is an effective solution to the metropolitan area transportation problem. There are a multitude of governmental jurisdictions each attempting to resolve their problems of housing, water supply, sewage disposal, roads and streets, traffic, education, recreation, health and welfare, protection of persons and property, and a myriad of other activities on a local level. Hemmed in by tax limits, restricted economic bases, and limited ability to sustain financial burdens, municipalities are avoiding the problems or are succumbing to expedients.

This is understandable. Elected or appointed officials of towns, villages, cities and counties are designated to consider and safeguard the interests of their respective communities. The problems of the entire metropolitan area are beyond their interests and horizons. The scope and complexity of the work to be done challenges effective action.

An agency that can plan for a metropolitan region and also translate proposals into action programs is essential. An important consideration is that the agency has both

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the authority and finances to construct the projects that it has determined necessary. This entails public understanding and acceptance so that required legislative action by appropriate political bodies can be obtained.

State public works or highway departments are organizations engaged in highway transportation programs. It is incumbent upon them to provide the leadership necessary to progress the Interstate and other programs to their scheduled completion. To this end, all the disciplines capable of contributing to the ultimate development should be marshalled and utilized.

Freeways, expressways, and arterial route systems located within urbanized areas have such far-reaching effects upon community structure that an understanding of urban growth and development is a requisite for proper site allocation.

COMMUNITY GROWTH AND DEVELOPMENT

The Community Concept

An outward view of the concept of a community is confined to the physical environment immediately perceptible to the senses. The evidence of community consists of the houses, stores, factories, streets with motor cars, and people moving about the streets as they pursue the task of making a living. This is, however, a restricted interpretation of the idea of community. Wherever human beings congregate the problems associated with desires, ambitions, prejudices and other social relationships will be prevalent. The basic concept of community must be broadened and made more inclusive. Individual concepts of community will probably relate to nostalgic recollections of experiences when the tempo was slower, the stress of working less dynamic, or social relations more leisurely. Unfortunately, such reminiscences are of no assistance in formulating a workable definition. Fundamentally, community implies a sense of belonging, so that the physical environment and attendant social patterns consititute the framework of its existence.

From a sociological viewpoint, a community may be viewed as an area of common living in which a variety of cooperative and competitive interests are served by a complex of institutions that makes the unit self-contained. This concept recognizes the existence of communities as urban, rural and regional entities. A significant feature of a community in this broad sense is the transcending of political boundary lines.

The Urban Scene

A perspective of the urban scene will vary in accordance with the location of the observer. A plan view from above will reveal a conglomerate mass which upon closer examination takes the form of cells or blocks. Within these cells are structures of varying form and dimension but which lack any recognizable organic relationship. Generally, a familiar rectangular street pattern will emerge. Open areas will be discernible, some green, others nondescript. These spaces may be devoted to parks, civic centers, recreation areas, or they may be idle waste land. The forces which have molded the structure of American cities can best be understood by analyzing the resulting land use patterns. Three generalized groupings have been distinguished—the concentric zone pattern, the sector pattern, and the multiple nuclei arrangement.

A municipality will present a greater concentration of structures at the central core. This nucleus will be marked by business buildings towering above the neighboring structures. Other similar nuclei may be visible at varying distances from the center, or the community may approximate a series of concentric bands. Wholesale houses, warehouses, and light manufacturing establishments may surround the central core. Interspersed among these business and industrial structures will usually be found dilapidated tenements, deteriorating rooming houses, and other structures characteristic of a blighted area or slum. Pushing outward from this zone in transition, a more inhabitable group of houses or tenements are found which may be distinguished as a worker's residential area. Beyond may be seen a better class of residences with open spaces between them. High-class apartment buildings are often distributed among the single-family residence areas within this band. Further in the distance the high-class

residential areas are discernible. Stretching out from the periphery may be a series of scalloped edges indicating the presence of large residential estates or fringe developments.

The Sector Pattern

Urban expansion may follow a pattern of sectors or a radial growth from the central core. The city in outline resembles a distorted star-shaped figure. Development occurs along transportation routes with similar types of land use clustering about an axis. A significant characteristic of the pattern is that a particular type of district, while migrating outward toward the periphery, will maintain a position in the same sector. Similar types of land use evolve radially within a quadrant instead of being scattered sporadically.

Multiple Nuclei Arrangement

City patterns may exhibit a form in which specialized activities form nuclei which tend to arrange themselves in related functional groupings. This multiple nuclei pattern of urban evolution reflects the economic and sociological background of the community. In some instances the nuclei had spontaneous and simultaneous origin, while in others, development of separated nuclei was stimulated by expansive forces.

In each case, nucleation results from a combination of causes. Specialized activities necessitate the availability of facilities peculiar or favorable to the function performed. Similar activities exhibit agglomeration when such cohesion is beneficial. In contrast, certain unlike activities are antagonistic while others must occupy less favorable areas because of competitive economic forces. The size of a city has some bearing on the extent of nucleation—the larger the city the greater are the number and variety of nuclei.

Most cities do not exhibit a distinct outline of a single pattern but include elements of each of the community forms described.

Profile and Perspective

The city in profile presents an outline which accentuates the extreme variations in building height and bulk. The towering skyscrapers at the central business area dwarf the surrounding buildings. Roof tops form steps of varying height as manufacturing, apartment house, and residential areas progress outward toward the periphery.

A perspective of the city confronts the visitor with a bewildering pattern of ill-assorted structures adjacent to the more recently built office buildings or department stores with modern facings. The noise, the dust, the grime and the confusion of human beings scurrying to avoid motor vehicles or to reach momentarily waiting buses give the city a bizarre atmosphere. The tall buildings arranged along the travel way form canyons which deprive the lower structures of air and sunlight.

Still another facet of this scene is the portion of the city below the surface. The maze of underground wires, cables, ducts, pipes, tunnels and other service connections form a fantastic and tangled labyrinth. The pipes which convey water to the dwellings and industries, the sewers in which storm water and sewage flows to the point of disposal, the wire's which form the communication network are all essential elements of the urban community.

Urban Causation

Cities may be viewed as the suppliers of urban services to sectors of the economy. The centralization of economic activities within the urban community is the result of technological advance, modern transportation, and the complexity of present-day society. The support of cities has been summarized in three broad categories: (a) cities as central places performing comprehensive services for a surrounding area, (b) transport cities performing break-of-bulk and allied services, and (c) specialized function cities performing one service.

Central cities are the foci for tributary areas. Trade and social activities are

centered in these locations. The distributive pattern of central place communities is influenced by available resources, evenly spaced where the land base is homogeneous, unevenly distributed in areas with uneven resource distribution. Retail and wholesale trade centers are typical central places which furnish comprehensive service to surrounding territory.

Physical features are a determinant in the location of transportation routes. Cities in turn are completely dependent upon transportation facilities. The development of transport centers where break-of-bulk occurs is a familiar pattern. Where the form of transport changes, such as water to rail, the performance of break-of-bulk and allied services is inevitable. Minor changes in transport tend to stimulate the development of servicing points which serve as nuclei for city growth. Many transport cities serve as gateways to regions of specialized production. The form of transportation influences the distributive pattern of cities. Railroad development resulted in a linear pattern of communities along rail lines. The growth of the highway network and truck transportation has aided in achieving a more uniform distribution of communities.

A natural resource, such as a mineral deposit or a favorable climate and physical feature, may serve as a nucleus for the location of a city performing a specialized function such as mining, manufacturing or recreation. Such communities often serve as stimuli for the growth of ancillary services. Mass production, skilled labor, industrial acumen, and associated interdependence may cause expansion and concentration of specialized functions in a particular city. Industry localization is exemplified by the clothing, glove, furniture and automobile industries in New York City, Gloversville, Grand Rapids, and Detroit, respectively. Most cities exhibit a composite urban causation with one feature predominating.

Land Use Patterns

The central business district (CBD) is the locus for activities characteristic of white-collar type of employment. Here are found the banks, department stores, office buildings and hotels. Theaters, restaurants, variety and specialty shops, men's and women's clothing stores, and a host of service type establishments attract the city populace to the central focus. Professional offices of legal and medical practitioners, home business offices of large companies which deal in insurance, petroleum and other products will be found in buildings bearing their trademark.

It is here, or in close proximity, that the seat of government is established. The city hall is a characteristic landmark of many central business areas.

The convergence of the street system at the central hub facilitates accessibility so that all forms of transportation meet at this common center. Convenient access to both pedestrian and mass transportation movements permits the concentration of large numbers of people who are the economic support of the activities located at the center.

In some cities automobile salesrooms and used car dealers occupy areas bordering the CBD along main travel arteries.

Normally the functions and services that transcend individual use districts and serve the community at large are centralized in the main business area. This is the high-value section of the city. Land costs reach fantastic prices in comparison to those of outlying undeveloped tracts.

Surrounding the city center is an area in transition—the world of furnished rooms, the rialto of the half-world, little Hell—the slum. This is the forgotten area of American cities. Here in the anonymity of the world of furnished rooms may be found shattered hopes, shattered dreams, the malcontents, the failures, squalor and misery. The migrant, the homeless, and denizens of the underworld seek refuge in the tangled pattern. The deteriorating tenements and dilapidated residences are interspersed among warehouses, junk yards, freight houses and railroad yards.

A considerable amount of light manufacturing, wholesaling and associated activities are prevalent. Newcomers to the city and others seeking residence in close proximity to offices, places of business, or means of transportation near the city center will temporarily locate in this belt. This is a relatively low rent area but one of high or inflated land values. Absentee ownership and speculative interests hold control over the properties hoping to reap a bonanza from the land needs of an expanding CBD.

There are no common cultural patterns within the area, although a group consciousness may exist. In many instances, however, the restraints of group pressure for nonconformance are nonexistent. The implications of this belt of distinction are many. Here the meaning of status is vividly illustrated. Group cleavages, social differences, antagonistic social attitudes, the development of the gang, and other sociological patterns are the products of the environment.

Beyond the wholesale and light manufacturing district, is generally found a zone of workingmen's homes. These include multiple dwelling types which are within the rental income level of factory, industrial, and related workers. The structures are better maintained than those in the transition slum area but are of a lower classification than those in the middle-class apartment area which adjoins. The apartment house area houses a higher income group more able to afford the rentals necessary to provide a better type of residence and environment. A localized neighborhood business center serves the populace. Here many of the goods and services are available that are usually obtainable only at the CBD.

Near the city's extremities are found the heavy industries. Extensive land requirements preclude a close-in location, although in large or older cities, heavy industrial areas are not far removed from the urban center. These locations mark the earlier boundaries of the city. As expansion occurred the industrial area was enveloped.

Odors, fumes, noise, and similar characteristics dictate that industries be situated in the undeveloped areas near the periphery of the city. Adequate transportation facilities are a prerequisite for satisfactory industrial sites. Rail sidings from main line railroads which have a minimum of interference with street traffic circulation encourage the growth of industrial districts in the outlying regions. Modern truck transportation and the construction of highway networks have facilitated the dispersal of individual industrial plants to meet present day conditions.

The location of high-class residential districts is influenced by land values, physical features, and environmental factors. Single-family residences require sufficient land area to provide spaciousness for lawns, trees, garages, driveways and other open areas. Land costs must be reasonable if crowding is to be avoided. These residences seek high well-drained land removed from industrial nuisances or the noise of passing trains or trucks.

Beyond the single-family district may be found a suburban area devoted to land subdivisions, scattered estates, driving ranges, farm lands, an occasional industrial development and interspersed dwellings.

It will be found that most urban communities display features of each type of urban support and of the land use patterns discussed. Consequently, it is desirable to be familiar with these frameworks to evaluate properly the evolutionary forces which have conditioned a community's past development or which will influence its future growth. The uncontrolled land use pattern is not rigid but in a state of flux. City growth is reflected by a flight of population from the center outward. This causes a progressive invasion of one zone into the next so that many of the structures are discarded during the transition in land use.

Thus the city has an internal structure and a typical growth cycle which are significantly conditioned by the existing rights of ownership and speculation in land and by the competitive economic regime characteristic of contemporary American society.

This fluid pattern of land use generates many perplexing problems. The maintenance of deteriorating slum structures in the transition zone near the city center is neglected. Antisocial conditions develop which are a frequent cause of high costs for municipal services in the form of police, fire, and health protection. Premature land subdivision in the fringe areas of urban communities has resulted in the withdrawal of agricultural land from productive use, unnecessary and costly public improvements, inflated values, high governmental costs and a high per capita debt burden—results which have had repercussions in other phases of community affairs.

The eventual culmination has been widespread tax delinquency with an attendant shifting of the costs of government from these abandoned vacant parcels to the owners of improved properties.

These constantly changing land use patterns have given rise to a host of situations

that necessitate the development of soundly conceived policies in conjunction with a courageous application of effective control measures.

Community Planning

There is a difference of opinion as to the future of the cities. In some quarters it is held that today's cities are obsolete. Consequently, all conventional planning efforts are futile. Urban renewal and other resuscitation expedients may afford temporary revivification but the changing function of the city will ultimately prevail. If this premise is valid, it indicates a greater need for planning, comprehensive in character and regional in scope.

Community planning is conceived with space organization, spatial arrangement, and space relationships. The land is devoted to activities varying in character, intensity of use, and areal demands. Most of the land is in private ownership. What is the optimum arrangement of these land use areas with respect to each other considering comfort, convenience, livability, service, internal and external harmony, and the satisfaction of human wants?

The opportunity to plan a city from its inception is seldom available. Nonetheless, the search for an organic form for the new city is a continuing process. Le Corbusier proposed his skyscraper city. Hilberseimer and Milyutin advanced the linear city with continuous industrial and residential zones paralleling transportation lines, each zone separated by a greenbelt of open space. Jose Sert suggests the assembly of a group of townships composed of community cells connected by transportation arteries.

The emerging city form appears to be a regional entity combining the linear and concentric-ring patterns, having neighborhood units as basic elements with supporting ancillary and central services. Internal harmony of a neighborhood is achieved by providing an organized and balanced allotment of space for residential use, parks and playgrounds, local shops, school and church sites, and streets. The internal street system is laid out to discourage through traffic use.

A network of minor and major thoroughfares weaves the residential neighborhoods, business and industrial use areas, and central city service areas into an organic whole.

A challenging question is, which mode of living is to be preferred, happy chaos selected as a matter of free choise, or impersonal efficient, organized cellular frigidity autocratically planned and ordered?

Existing land use patterns, future trends and growth potentialities, contemplated redevelopment or urban renewal plans are of utmost importance to those responsible for planning urban arterial routes. These arteries must provide service to the community without disrupting the present patterns of community living or stifling sound redevelopment.

In replanning CBD areas care must be exercised not to pre-empt the logical corridors for arterial relief routes in a zeal to assemble plottage for a contemplated use, nor to establish traffic movements to serve individual establishments that are impediments to a free flowing artery.

The Complete Highway

The features that constitute the complete highway in non-urban locations and on parkways are just as important to urban arterial routes. The complete highway, according to the Committee on Roadside Development (1943), incorporates four basic elements into the design: utility, safety, economy and beauty.

Adequate service is essential to populated areas, the motorist on business trips, or the traveler just taking a ride. The comfort and convenience of people must be considered as fundamental.

A properly designed highway will be a safe highway insofar as engineering can make it. It will incorporate curvature appropriate to field conditions, sight distances commensurate with driving speeds, flattened side slopes, minimum grades, and, of course, adequate capacity.

Economy of construction, maintenance, and operation is a prerequisite. The competition for governmental funds demands that cost of construction be in keeping with the

type of facility, required maintenance expenditures be a minimum, and that road-user benefits be appreciable.

In the triumvirate of philosophic values—beauty, goodness, and truth—beauty is not an equal among equals. The cult of beauty is suspect. Aesthetic tendencies in engineering are taken as indicators of Sybaritic excesses. The morphology of land forms furnishes clues as to the action of natural forces in effecting change. Man-made alterations should not do violence to the natural scenic environment.

Rural highways can be fitted into the landscape so as to retain existing scenic values. The AASHO Policy on Landscape Development for the National System of Interstate Highways (1961) gives comprehensive guidelines to landscape design involving conservation of landscape features, cross-section elements, rest areas, trees, planting design, and controls. Many of the suggestions are applicable to aesthetic planning for urban arterial routes.

Urban Arterial Patterns

The New York State Department of Public Works has prepared arterial route plans for 57 cities, exclusive of New York City. These are based upon comprehensive planning studies covering the entire urbanized area. The arterial patterns consist of radial routes, inner loops, outer loops, grid systems, intersecting main thoroughfares, and combinations of those elements. Arterials are depressed below grade, at grade, and elevated as conditions dictate.

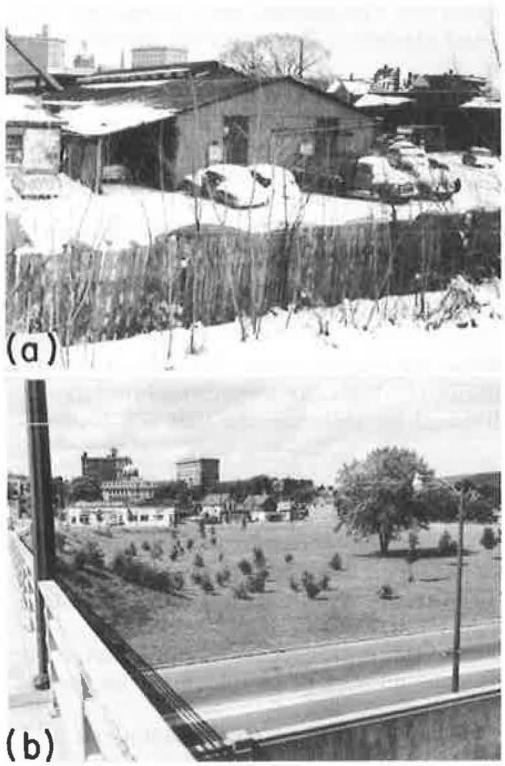

Figure 1. (a) Before: Colliers St. Bridge site looking north towards business district of Binghamton, N.Y. (b) After: same view; note new planting in foreground.

The Bi-Modal, Two-Level Central Core Area.—Until there is a change in the individual, it is unrealistic to believe that people will live in close proximity to their places of employment in order to reduce the traffic load on expressways and the urban street systems. An alternative would be to disperse the employment opportunities to locations outside the CBD or other places of concentrations. Urban renewal programs for rebuilding the core areas combined with new arterial route construction afford opportunities for bold, imaginative development.

When conditions necessitate elevated traffic ways, the elements for a bi-modal, two-level central community are available. There are already two-level highways; for example the George Washington Bridge and structures in San Francisco.

The integration of office facilities, shops, parking terminals, and service establishments with the motorway is the new exploration. Surface congestion results from attempting to accommodate unlimited volumes of people and automobiles simultaneously in a limited area.

The vehicles on an overhead arterial are already separated from ground level interferences. Why bring them down to street grade to intermingle with traffic on a local street? Keep them on their aerial way. Provide parking terminals properly located and of sufficient capacity for present and future needs. Storage lanes and ramp connections can deliver the cars to service elevators which will convey them

to their cubicle resting places. Direct passageways from the garages to department stores, office buildings and other establishments will facilitate pedestrain movement. Elevator service to ground floor and other levels will be available. This arrangement will achieve an effective separation of vehicle, pedestrian, parking, and business requirements.

The complex of motorway, stores, hotels, offices, terminals and other services must be planned and designed as an entity. Segmental development could upset the unity of design needed for successful landscape treatment.

It is possible to develop a parklike environment within an inner loop arterial complete with pathways, promenades, and sitting areas. When the open space is of sufficient area, it can be used as the site for buildings devoted to public use, such as libraries, museums, auditoriums, and governmental affairs. The grouping of governmental units, which are often scattered throughout a city, into a central location will make these services more convenient and accessible to the public. It also makes it possible to develop them into a civic center.

Figure 2. Sitting area developed along the south approach to the Colliers Street Bridge.

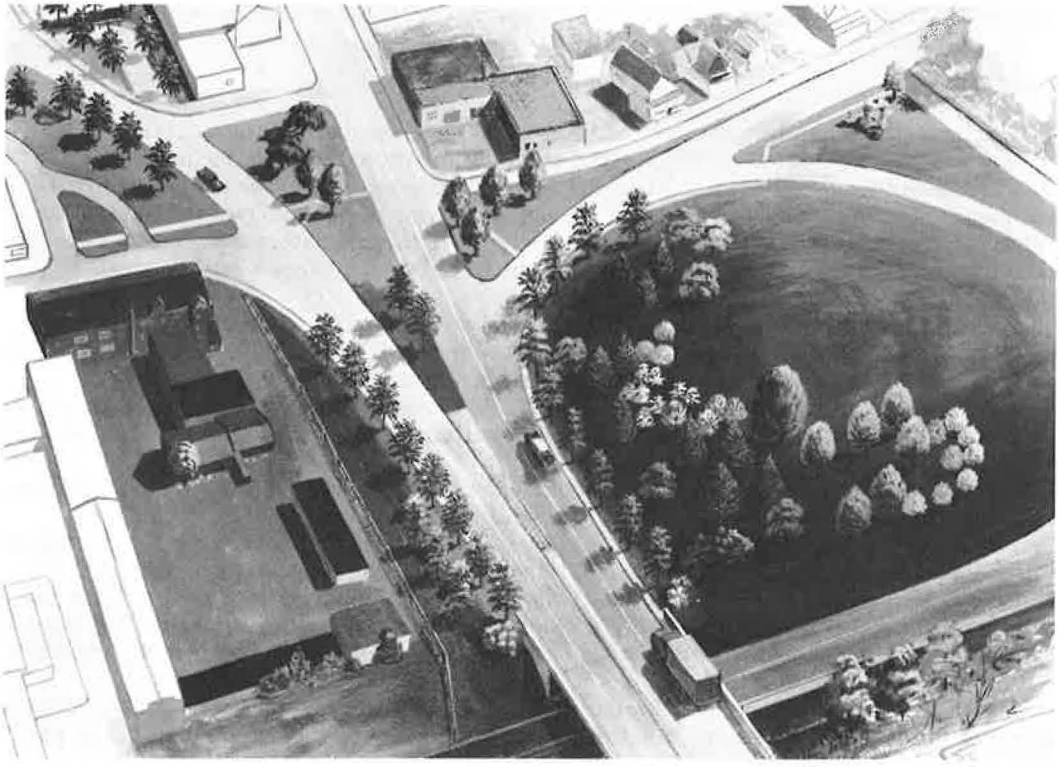

Figure 3. Sketch of Colliers Bridge looking north. Note landscape screen treatment of industrial area on left.

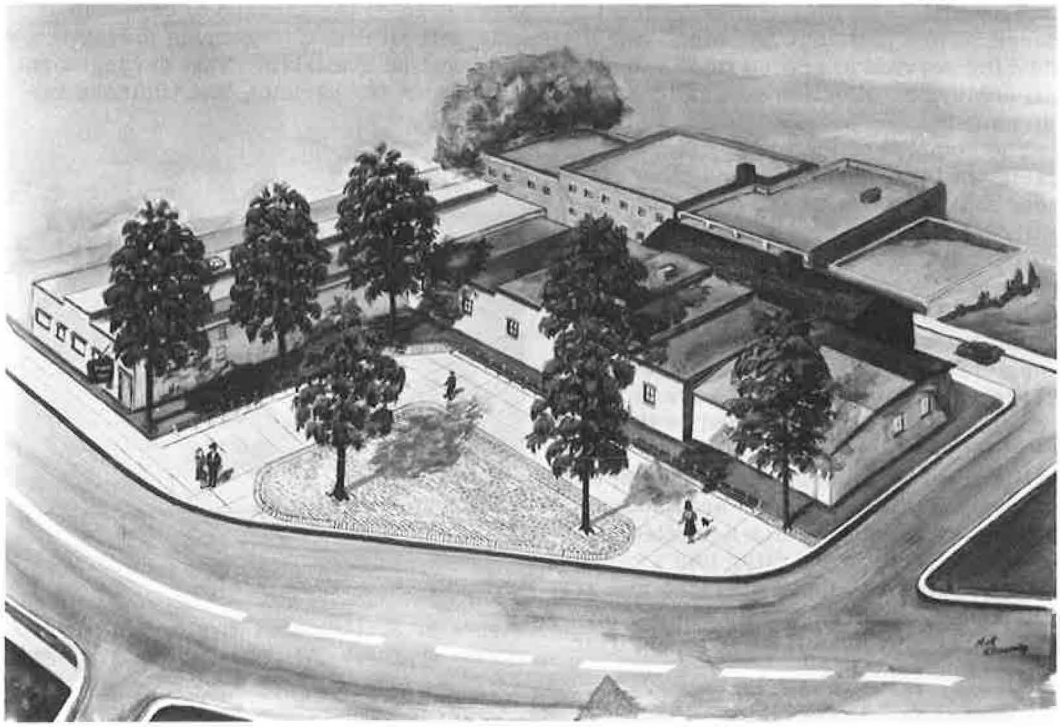

Figure 4. Sitting area perspective of north bridge approach utilizing small triangle in business district right-of-way.

The pedestrian can be protected against inclement weather by constructing underground passageways from terminals and selected locations to the various buildings. Overhangs cantilevered from the buildings and covered passages would protect those walking along the store fronts. An electrically-driven surface conveyance using the sidewalk area would be available for those who wish to ride rather than walk. The arrangements can be modified to fit other arterial route patterns while retaining the basic concept.

In the meantime the motorist on his elevated roadway can explore, with bird's eye clarity, the casual ground scene or the drab rooftops with their innumerable protusions, maze of clothes lines, pigeon roosts, sunning mats, and junk piles.

But this panorama is going to be changed. The new motorways will be constructed across the rooftops, through buildings, along building faces, or soaring in the open all as an integrated grand design.

A new roofscape will appear. Rooftop gardens with lawns, shrubs, trees, pathways, sitting areas, and pools will replace the present dreary-gray monotony.

The 3½-acre Kaiser Center Roof Garden in Oakland and the Equitable Plaza Mall in Pittsburgh transformed garage rooftops into an enchanting parklike environment. Similar treatment of adjacent roof spaces can create "the parkway in the sky" for the motorist. In addition, the bordering roof gardens or "parklets" will create a pleasant outlook for building tenants and provide comfort and enjoyment for shoppers, workers, and sightseers.

There is a world within and a world without—bathed in light and shadows—an exciting world of motion, color, form, function, and gaiety for the landscape architect to pattern and mold.

The Surface Level Arterial.—Surface level arterials afford streetscape possibilities of such scope that various art forms and techniques can be applied to achieve aesthetic

enhancement. The task of the landscape architect is to obtain a totally integrated artery—one possessing fluidity of section and alignment, and harmony with the invironment. This total integration is a fusion of the dynamic and the static. The canvas is a continuous one; the backdrop everchanging. The motorist and his passengers, the strolling pedestrian, the purposeful walker, the residents of bordering apartment dwellings, and the business houses with their customers are the viewers and the viewed.

Aesthetic awareness of the human organism is psychologically rooted. The psychological process follows the familiar S-I-R equation of stimulation, integration, and reaction. The range and character of personal experience will have an affect upon the level of aesthetic recognition and appreciation.

Aesthetic Elements

The basic principles of landscape design may be summarized as unity, balance, proportion and scale, accent, rhythm, repetition and sequence, and focalization. These principles have been termed "forms of order" because they are utilized to help organize space into pleasing relationships. Masses of data cannot be fed into computers that will automatically create the perfect landscape design.

The landscape architect should walk and ride the selected alignment in both directions in company with the design engineer. He can appraise for himself any restrictions on curvature, grades, and construction before making suggestions for aesthetic improvement. The engineering survey will give the location of structures and other physical features. The landscape designer should re-observe the roadway scene to determine the space organization relationships along the borders and within the scope of its influence. He will require a continuous sequential visualization using photographs, sketches or Thiel's space establishment element position indicators. He will note dominant points and foci of interest such as gas holders and water spheres, public or historic buildings, distinctive examples of architecture, streams and bridges, monuments, tree-shaded areas and shelters, open spaces, plain greenery, street scenes, colorful and interesting window displays, walkways, and the permanent background of skyscape.

Selecting elements to be utilized and how to build them into the streetscape is the art of the landscape architect. Which are worth preserving? Which should be screened or accented? How to use to advantage seasonal changes in line, mass, and color. His is the art of revealment and concealment. He must give the road a personality, a unique individualism. He must create the totally integrated highway in scale with the localized urban environment. Every opportunity to accomplish this end result must be utilized.

Pathways and Beyond.—To the landscape architect experienced in park design the interrelationship of roads and paths is well understood. On arterial ways, the pedestrian is normally excluded. There are circumstances where deviation from this policy is warranted.

In Binghamton, N.Y., an arterial route borders the Susquehanna River. For a portion of its length the stream is concealed from the motorist by an earthen flood control levee. The levee changes to a concrete wall through a built-up section of the city and resumes the earthen section beyond the developed river frontage. The top of the earth levee is an excellent location for a footpath. It affords attractive views of the river. The footpath leads to the river's edge where many pedestrians relax and fish.

Apartment houses, residences, and business establishments front on an arterial street connection facing the river and the concrete flood wall. The area between the wall and the street has been developed as a park strip with tree and shrub plantings. On a ramp approach, a small sitting area has been built for use of the adjacent residences. Another sitting area sheltered by tree plantings has been provided near a bridge approach section in the midst of a solidly built-up business area. This refuge from business cares during the noonday period appears to be a welcome installation. Aesthetically the green foliage offsets the somber grayness of the buildings.

A barrier-type fence was used to control encroachment and for safety purposes. Any open space available has been quickly used as a play area by children, sometimes to the detriment of the plantings. At street intersections along both business and residential properties, a wooden parkway type of railing has been substituted for woven wire fence.

Structures in the Landscape. —What about the aesthetic treatment of structures, particularly bridges? Aesthetic treatment must be differentiated from embellishment. A bridge, because of its prominence in the landscape, needs special attention. There must be unity and harmony in the relationship of line, mass, and material of the structure itself and the larger entity, the roadway. The bridge structure has two values in a landscape. It punctuates space and is a unifying linkage in the landscape. In flat topography the approaches merit special attention. Contour grading and appropriate plantings will aid in obtaining a pleasing landscape effect.

Commercial Signs. —A feature to which the landscape architect must give serious thought on a business district arterial is commercial advertising. This does not refer to outdoor billboards, but to the normal business and store front advertising. Here is what should be viewed as a spectacular new art form.

As the artist has progressed from one school of expression to another, he has deepened his source of inspiration. He has departed from the purely imitative naturalistic form. In its place, there is the nonobjective abstraction of color, shape and arrangement.

Here is a medium of expression—glass tubing, banks of light sources, colored light, reflectorized sheets and paints—available for experimentation. It has been left to commercial exploitation. Some of the results are garish, raucous, and loud,

Rather than decry what is not liked, it would be more appropriate to remold it to what is desired. If a painting by a master depicted "Man Blowing Smoke Rings," it would be taken as a work of art. Is it not just as appropriate to accept as an artistic expression, a similar composition in which the figure blows visible smoke rings into the atmosphere?

Commercial signing is an accepted way of American economic life. The landscape architect can exert a beneficial influence on the advertiser. He will have to accept a dual responsibility. First, he will have to modify advertising displays to be in better taste and more in scale with the structure of which they are a part. Second, he will have to integrate these displays into the urban scene. They can open up a colorful changing panorama.

Urban Arterial, Industrial Areas. —Urban arterial routes in central city industrial areas afford opportunities for aesthetic rehabilitation of the environment. The characteristic atmosphere in the older areas is reminiscent of a veritable wasteland. Smoke and smog contaminate the air; untreated industrial wastes pollute streams and lakes. The cold, depressing effect of the surroundings leads people to shun the area unless necessity demands their presence.

Van Vleck Road (Route 48) from the New York State Thruway into the downtown area of Syracuse services the New York State Exposition, steel mills, and other industries along its borders. The pollution in Onondaga Lake rendered it useless for recreation purposes. Solvay process waste beds cover an area of 521 acres bordering the lake and rise to a 75-ft elevation above the lake level.

A northwest arterial connection was designed to meet traffic demands and to serve the area. The entire problem was studied with a view to reclaiming the lake potential and revitalizing the area. The final plan developed includes a lake-front park and needed parking areas. The proposed park development posed two conditions: how best to utilize the spoil beds, and the development of the ribbon area along the lake shore to the north.

A portion of the main spoil area opposite the State fair grounds was used as a parking area. The remainder to the lake edge was proposed for development as a golf course. The plan included a restaurant, a recreational area with an overlook for viewing acquatic sports, an acquatic stadium and theater, and active sports areas. At the southern tip, a passive recreational area was proposed. The area could include a botanical garden and parade grounds. The old spoil bed (about 53 acres) to the south, nearest to the city, was proposed as a city park with overlooks, park walks, sitting areas, active sports recreational facilities, and parking spaces.

It was suggested that the shore area to the north be stripped and the material used to provide a covering mat for the spoil areas to encourage the growth of vegetation. After stripping an area it could be brought to final elevation by hydraulic fill from the lake and blanketed with the stripped and stockpiled topsoil.

The northwest shore area was proposed as a ribbon park development similar to the easterly end. A park road would connect to the northwest arterial at several points. Two beach developments were proposed with bathhouse facilities and other recreational features.

The proposed plan presents a comprehensive lake-front park development with active and passive recreational facilities suitable for all ages. An integral part of the plan is a six-lane divided urban arterial route connecting the New York Thruway with downtown Syracuse.

The arterial connection has been constructed with a consequent improvement in the physical environment and traffic service. A major parking area, with a capacity for 16,000 cars, has been built adjacent to the State fair grounds. The construction of a new sewage treatment plant is helping abate the lake pollution.

The park development awaits the decision of the local authorities and industries involved as to the sequence of development and a project time schedule.

Circumstances do not always permit aesthetic treatment to the scale contemplated on the northwest arterial connection in Syracuse. The severity of outlook in industrial areas demands that landscape enhancement be achieved to as great a degree as economically feasible. The planting of shade trees along the margins of the artery and group plantings in small parklike rest areas will afford a welcome relief from a barren landscape. In some cases industrial complexes possess architectural characteristics that make them interesting elements in the highway scene.

Plants and Plantings.—The process of plant selection and placement should be governed in part by the timing requirement of specific areas. Vistas and enframement desirable in open country, may be used only in the broadest sense in urban plantings.

It may be desirable to transmit neighborhood characteristics to the traveler with special plantings, composed to stimulate interest in the immediate area. The reverse may be true. A screen may be called for, designed to limit the view of the observer until passage through the area has been completed. Thus, disturbing elements in the urban scene may be modified by plants and planting to increase the safety of the facility.

Driver guidance, related to the intricacies of interchange design, can be provided by proper plant composition used to accentuate the primary directions of travel. Alerting the traveler to anticipate a change can be accomplished with appropriate plantings.

Mass plantings in marginal areas can be designed to give a particular character to the facility, much as a single tree in colonial times served to designate a meeting place in a common. The planning should incorporate the required maintenance features, aesthetics, and economies common to urban arterial ways.

Treatment of median areas in an urban complex does not often permit planting other than that which can be integrated with maintenance practices. This usually limits the major treatment to turf areas and narrow band plantings to restrict traffic and segregate movement. Strong approaches within this sector will call for accent plantings of major importance.

An urban arterial route constructed to engineering standards of excellence in quality of materials and workmanship might give satisfaction. It cannot, however, kindle that exuberant feeling of pleasure that goes with a highway combining both practicability and a sense of order and fitness with the living environment. Aesthetic unity evokes a pleasurable emotion because of the quality of beauty. Santayana states, "Beauty is pleasure regarded as the quality of a thing." Proper space organization and utilization achieve economic unity as well as aesthetic completeness.

The resulting attractiveness is a community asset. Hammer says, "Attractiveness attracts dollars." With the CBD encountering keen competition from decentralized shopping plazas, the need for improving the business area environment is paramount. Urban arterial route construction can play an important role in this endeavor.

In a visual inventory of the urban scene, it is possible to detail the perceptual reaction to such an extent that the analytic result will have limited practical application. An evaluation of the aesthetic unity of individual scenes, a series of views, segments between critical points, or an entire artery is desired. On the basis of his observations, a landscape architect can suggest appropriate community action.

The use of a beauty potential would be of considerable interest in the evaluation process. The range of values would have to be adjusted to the judgment factors associated with each degree of beauty. However, Hubbard says, "Beauty can exist in one degree only, perfect beauty; ugliness, being disunity, can exist in all degrees, from what might be called beauty with a flaw to disunity so complete that the mind can hardly grasp the dissimilar mass of detail as forming one entity at all."

Today, it is being more and more realized that natural scenic beauty must not only be protected, but enhanced. Regions possessing distinctive scenic values should be made accessible so that they can be readily reached by the motorist. New York is in process of establishing a system of scenic and historic highways to preserve the beauty of the State for all the people. Cities can do no less. They must be made more attractive. They must be humanized, for cities are for people. The landscape architect has a vital role in the rehabilitation process.

In the words of the late Daniel H. Burnham, "Make no little plans; they have no magic to stir men's blood and probably will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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Appendix

CHARACTERISTICS OF URBAN ARTERIAL ROUTE PLANTINGS CITY OF BINGHAMTON, NEW YORK

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1. The westerly approach to the city

Pennsylvania Avenue Bridge area:

Treatment: parkway type in quadrants.

Major trees. Northern Red Oak-largest of the species used, typical rugged oak appearance. This tree will develop faster to typify the species than other oaks. It is indigenous to the area. The summer leaf is a deep lustrous green. The fall coloring is a rich red with the leaves remaining on the tree longer than for associated species. These trees were planted where they could develop into a natural form with little maintenance other than some fertilizing.

Ginkgo-(Maiden hair tree) we used only two of this species. The form of this tree is interesting. Its branching habit is different from native species being rather open and irregular with leaves mounted in almost mathematical precision. The distinct shape of the leaf and its summer color of light green arouses the interest of passersby. The fall color is a brilliant yellow. This species is almost devoid of insect and disease troubles. It can withstand air polution.

Red Maple-this native species was used along the moist dike areas. It develops rapidly into a round head crown and attains good size under favorable conditions. It silver grey bark contrasts nicely with the blood-red foliage of early fall. This is the glamour girl of our fall color in this area.

Sugar Maple-was also used in this area to a lesser degree.

The Honey Locust-a tree of major proportions with a picturesque irregular head and dark bark. The leaflets of this species are smaller than the native black locust resembling somewhat the southern Mimosa tree so famous as an ornamental from Washington, D.C., south. The honey locust is hardy, a rapid grower, providing light shade. The small leaflets eliminate the need for leaf pickup after falling.

Flowering Japanese Crabapples- were used along the lower portions of the ramps and open areas to provide color during the spring season. The floral effect of the varieties used vary from white of the Arnolds crab to pink and deep pink of the Floribunda and Hopa crabs. These trees will attain a height of 15 ft or more and vary in crowning effect from semi-upright to spreading horizontally. The fall fruit consists of miniature apples varying in color from deep red to translucent orange. The trees were massed in groups to create a greater floral display. This planting method also reduces moving costs by making machine mowing possible.

Hawthorn Trees-used to plant the slopes adjoining the bridge abutments lend themselves to the extremes in exposure found about these structures. The species (cockspur thorn) has a showy white spring floral effect. The leaves are shiny green during the summer changing to orange hues during the fall season. Vandals have been discouraged from sleigh riding on slopes where Hawthorn is planted. The trees as a specimen will attain a height of 20 ft. They are long lived and take on an oriental habit that is particularly interesting during the winter when the branches are laden with snow.

Flowering Dogwood was used in groups along the north ramp where climatic and especially wind conditions are less severe. This tree is neat, twiggy, with a heavy floral effect, and leaved with deep green half folded leaves all summer which turn a startling red in the fall. The bright clustered red fruit contrasts nicely with the green crown until the birds are attracted by the food supply.

2. Passing under the Pennsylvania Avenue underpass and proceeding easterly: The character of the planting changes from informal area landscaping to transpose into a street tree, planting as we approach South Washington Street. Honey Locusts was used along the north and south sides of the main line. A variety of Honey Locusts known as Moraine was used on the bridge approaches where sidewalks were constructed and some shade was required. The Moraine locust is a sterile variety of the native honey locust and has the same favorable characteristics.

3. Crossing South Washington Street the mainline east and west bound lanes were planted with Sugar Maples to duplicate the street tree character of this portion of the arterial. The sugar maple is the official state tree and was the tree generally selected by the early inhabitants of the area to set out along the highways fronting their lands. It is a long lived (over 100 years) hardy shade tree providing shade during the summers and our most dramatic fall color display varying from yellow to red during October. The open area south of the west bound lane was planted as a parkway planting to give composition to the area and act as a screen against the commercial structures in this area.

Pines, Austrian and White pine were used to lend a year round effect to this planting. The Austrian Pine is extremely hardy, it has a rugged appearance with rather stiff branches supporting long two needled folicles. The cones occur in cluster, are persistent for a number of years and add to the interest of this tree as a decorative species. It is relatively free from insect and disease attack.

4. South approach to Collier Street bridge:

The pedestrian walks were planted to Moraine Locust. Because of the nature of the material in these made areas and the general exposure, smaller caliper trees were used. The vigorous growth of young stock will succeed where larger trees might fail. About six years will be required for these trees to put on enough volume growth to provide the effect anticipated.

5. Crossing the bridge in a northerly direction either side of the bridge approaches were lined with Moraine Honey Locust to give an allé effect toward the main business section. The large open area to the right was planted with a combination of major and minor trees to moderate the barrenness created by the new construction. The meadow area was planted with groups of flowering crabs, a mass of flowering dogwood, intermingled with oak and pine to form a natural overstory. Maples were used to an advantage, sugar maples in the dryer areas and groups of red maple where spring waters will mean wet feet. Once again the slopes about the bridge abutments were planted to Hawthorn. These are shale slopes where only hardy native trees will survive.

Shrubs were avoided again in this area for ease of maintenance.

6. The Brandywine from Robinson Street to Frederick Street was planted with major size Honey locust as a street tree type planting. The soil conditions along this portion of the arterial are artificial being made up of ashes, by-product leather strippings. It was necessary to prepare oversized tree pits here to circumvent the possibility of chemical contamination. This tree used in a mixed commercial and industrial area will aid in the identification of the arterial route. The honey locust is hardy and will tolerate wet conditions which periodically occur in this section of the city. This tree also can occupy space along the highway in harmony with overhead utilities and lighting systems.

7. The Bevier Street bridge where a limited planting was attempted. Along the bridge fills, along the toe of slope Norway Maples were used. This low headed tree has a tenacious root system adaptable to the poor soil existing about this structure. Placement was spaced to reduce the starkness of this structure. Along the westerly slopes and flats we were able to use some flowercrabs to add interest to the area during the spring season. A sitting area adjoining State Street was planted to Norway Maple to provide a maximum shade effect. These were placed to eventually replace some Elm in the area which we will probably lose to Dutch Elm disease.

Abutting the railroad property to the east a screen planting of Laurel Willow was used. This species is a rapid grower but will not attain the major proportions characteristic of the weeping willow. The dark shiny green leaves give almost an overgreen effect during the summer. The species is native to the northeastern U. S. but is not common to this area. The soil moisture conditions of the planted locations should favor the development of this tree.

The limited space along the easterly side of Brandywine where the railroad property the north bound lane caused us to reduce screen planting technique to a minimum. Some grouping of flowering crabs was possible and an occasional major tree such as honey locust, pine or oak was used. Native hedge rows of grey stemmed dogwood supplemented our planting.

A concentration of oak, maple and pine was used to form a major screen planting along the westerly side of the Brandywine. These trees were planted with masses of Hawthorne to act as filler screen plants for the equipment storage yard area. The planting will eventually put on enough volume growth to act as a screen to maintain the driver's attention to his driving instead of diverting it toward the unattractiveness of this storage yard.

8. The large swamp area along the easterly side of the Brandywine was planted with species that are adaptable to very wet conditions. The red maple and willow are principally used where dry hummocks protruded, the Hawthorne was again used to provide some eye level interest. When these trees size up enough to make dense crowns, native water birds and associated field birds will move into the area. Towards the northerly portions of this swamp area sugar maple was added to the major tree species used in an effort to screen out some billboards on private property.

The westerly right of way on this fill section had to be carefully planted to avoid drowning the plants and at the same time being careful not to interfere with visibility. A combination of hawthorn, willow, white pine, red maple and some honey locust was used in this area to provide some interesting group plantings along this flat plain.

9. The interchange at Chenango Street the standard Honey Locust was used which will eventually provide shade for the pedestrians using these sidewalks. Because of the exposure on the Hillcrest side of the bridge, Norway Maple was used along the adjoining streets.

Some bittersweet was pocketed along the gravel slopes to form a modified slope and ground cover planting. This species has the habit of layer rooting itself to reproduce species. The fall fruiting effect will be visible against the structure. White pine was used to frame the bridge approach from the south. No other planting was attempted in this area due to the cementatious nature of the gravel and the lack of adequate soil moisture to sustain plant life.

A headlight glare problem existed at the southbound access to the Brandywine. Here shrubs and minor trees were used to increase the safety of this area. Shrubs consisting of viburnum and fragrant sumac were utilized in the north sector of this interchange where the traffic divides to go to Chenango Street or south along the Brandywine. The viburnum will attain a height of eight feet and is twiggy enough to provide a winter headlight glare barrier. Both plants have distinctive fall coloring. The viburnum will also provide a spring floral effect.

Flowering dogwood was used in this flat. Clump types were selected to aid in controlling headlight glare where greater height was required than could be provided by the shrubs. In the more open areas groupings of Red oak, sugar maple, white pine, Austrian pine, Honey locust were used to duplicate the northeastern U. S. Hardwood type and add interest and color to this area.

The base of the slope near the abutments and moving back along the bridge slope was planted to a group of flowering crabs and hawthorn where exposure increased the hazard to plant survival.

Along the westerly access, the slope ends in the swamp-type open area that is inundated in the spring flood periods. This was lined with white willow, a species noted for its interesting twig color changing habits of early spring before the leaves appear. It later develops into a picturesque tree sometimes attaining a height of 50 ft.