landowner compensated for damage done to his or her property.

Another issue in developing an access-management program is the conflict between the state's desire to maintain the highway network and the desire of cities and towns to use the network as a basis for development. The use of local regulatory controls becomes extremely important because they are capable of severely affecting the potential success of an access-management program.

The prototype access-management program attempts to recognize these major factors and present a list of important tasks that are critical to successful program implementation. Because states vary widely in their need for access management, the task list is not intended to be exhaustive but merely representative of what a state must accomplish. Given the current environment of transportation planning, the level of effort required to accomplish these tasks will increase as access management becomes more important in future years.

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Abridgment

Accommodating Urban Development While Preserving Close-In Natural Landmarks

Romin Koebel

The importance in the life of cities of preserving open space and saving endangered natural landforms is examined. The spatial development of Columbus, Ohio, and the effort to preserve that city's natural topographic features in conjunction with development are cited as an example. The part played by the concept of transfer of development rights in preserving natural landmarks is also discussed.

Open space, plazas, and natural areas enhance environmental quality, amenity, and area ambience. In the past, cities have gone to great lengths to create open space: Georgian London laid out handsome residential squares; in Paris, French noblemen created Renaissance plazas where there had previously been urban squalor. Provision of open space has figured prominently in recent strategies to rehabilitate the quality of the spatial environment. Boston's Government Center Plaza and lower Manhattan's Chase Manhattan Plaza, carved out of the existing urban fabric, triggered dramatic economic revival by restoring confidence among investors and builders. As rehabilitated structures and new, privately financed construction quickly surrounded the new spaces, real-estate tax revenues soared.

In Columbus, Ohio, the configuration of the water-

course system and its associated landforms profoundly affected the evolving spatial pattern of the city. The original grid, aligned perpendicular to the bridge across the region's principal watercourse, established the directions of the region's two main growth shapers, High Street and Broad Street. For a while, these axes, intersecting at right angles and offset from the principal points of the compass, governed the alignments of new plats. But, as expansion continued, development began to be aligned with the all-encompassing national grid. Older pockets of development, such as outlying North Columbus with its skewed grid of small, square blocks, were enveloped by the new pattern.

"Breaks" occurred at the interfaces between different gridirons. Glen Echo Ravine, deeply indented in the bluffs above the meandering Olentangy River, was once part of a popular amusement park at the end of the streetcar line. A major break occurred where Glen Echo Ravine intervened in the path of northward development along High Street. There was conflict between the geometries of interpenetrating grids, which resulted in a wedge-shaped fracture zone with offset intersections; small, odd-shaped blocks; and a medley of incompatible uses. Although one artery is aligned to the regional grid, a second artery takes its directional cue from the diagonal slash of High Street, which is carried over the ravine on a broad earthen embankment.

Over the years, land uses in Columbus underwent major changes. In response to new demand, sites were cleared for new construction. Commodious streetcar barns gave way to a string of service stations; these, in turn, are increasingly under pressure from fast-food franchisers. To accommodate new building sites, the stream in the ravine bed was enclosed in a culvert to permit widening of the High Street embankment. Recreational tastes changed as mobility increased with the advent of the automobile. In the 1930s, as the popularity of Olentangy Park waned, a civic-minded local entrepreneur acquired that property for the purpose of developing rental housing. The site was highly prized for its accessibility and unique scenic assets. Inspired site planning took full advantage of the site's attributesits ravines and bluffs, woods and meadows. A distinguished site plan resulted: a sequence of courtyard-like spaces extending south and wrapping around the major ravine. Although it was an instant success, only the northern part of the plan for Olentangy Village was implemented. However, the site's zoning classificationapartments-is a reminder of the original intent.

There was widespread concern when a regional grocery chain announced plans to build a "superstore" with more than 500 parking spaces in the Glen Echo Ravine area. The plan involved creating a large, flat, "tabletop" site by filling in the scenic ravine. In order for the plans to go forward, a zoning change from residential to commercial was needed. Despite vocal opposition, the city council granted the change. Opposition to the scheme was led by a broad alliance of concerned citizens that called itself Citizens Against Glen Echo Rezoning. This group orchestrated a successful campaign to overturn the rezoning and, when the issue ultimately wound up on the June 1978 ballot, the zoning reverted to its residential classification.

A subsequent scheme for multistory housing at the ravine's southern edge was also opposed. Instead, southward extension of Olentangy Village was advocated, and the remainder of the property-the ravine and the scenic south meadow-was envisaged as a park for the elderly. After dickering with the proposal for housing south of the ravine, the owners decided not to relinquish control of this key part of the property. In also rejecting the idea of selling the ravine as a park, they did, however, make known their intent not to proceed with any development until a master plan for the ravine was ready.

Like many cities, Columbus is endowed with unusual topographic features, islands of green that are close in and surrounded by development. As cities become more and more built up, difficult-to-develop natural sites that were leapfrogged over in the initial wave of urban expansion, such as Glen Echo Ravine, are increasingly becoming the focus of developers' attention. Because these areas are such an asset, the question that arises is, How can we avert the destruction of our dwindling legacy of privately owned, close-in natural areas and at the same time meet legitimate demands for development?

Clay (1) has called attention to the significance of breaks: abrupt switches in the direction and/or design of street patterns, where a gridiron encounters a steep hill, a valley, or a ravine or where a new gridiron clashes with an earlier one. Original grids, which were seldom large enough to accommodate growth, typically paralleled a town landing, a railroad, or a bridge-as in the case of Columbus. Many breaks, being highly accessible and visually prominent, are sites of landmark buildings. Natural landmarks and fracture zones are linked phenomena. Subsequent grids seldom merged

easily with the original grid. Breaks form psychological as well as geographic barriers. Fracture zones may be disruptive to circulation, have a blighting influence, or be slow to develop; as such they have been sought as sites for urban renewal and/or freeways.

Thus, at Glen Echo, the clashing geometries of interfacing grids left an indelible imprint: small city blocks of irregular shape, a poor circulation pattern, and a motley variety of land uses. At one point, the spatial character changes abruptly: Densities are low and structures generally single-story, and a sense of openness and of the presence of nature prevails. By contrast, to the south, densities are higher and buildings several stories high extend without setback from side lot line to side lot line. Decisive intervention is justified; the proposed strategy of deliberate change is based not only on the need to conserve the natural environment of the ravine but also on the need to reorder the spatial environment of the ravine's surroundings.

A number of approaches could be considered. Planned unit development offers an opportunity to cluster development; overall density remains the same, but microdensities are higher. But since level areas are few, the approach could jeopardize the scenic South Meadow, although some relief could be provided by downzoning.

Transfer of development rights (TDR) is another possibility (2). This concept has aroused considerable interest as a means of saving endangered land uses. Unused development rights, generally expressed in terms of floor-area ratio (FAR), are transferred to sites at less vulnerable locations (the amount of rights eligible for transfer equals the difference between existing development and the amount of rights allowed by zoning).

Despite strong interest, TDR schemes seem flawed in several ways. They may fall victim to permissive zoning and/or indiscriminately granted variances. High FAR base levels-such as those in Chicago-work against them. The difficulties are compounded if TDRs have to compete with overly generous bonus systems. Reattachment of development rights may create a new set of negative impacts elsewhere. Excessive building envelopes on undersized lots pose a threat to valid zoning rationales. The transfer of a surfeit of development rights could have forbidding three-dimensional effects, and distribution among several sites may be impractical. The prospect of complex negotiations among multiple owners could intimidate even the most skilled of negotiators. There may be a lack of appropriate, conveniently located receiving lots. Preparation of a receiving lot for construction may incur substantial costs-e.g., the cost of the demolition of existing structures. The value of development rights may fluctuate greatly between granting lots and potential receiving lots. When experience in establishing markets is lacking, how will rights be priced? It is an underlying tenet of TDR theory that protection of assets enhances area amenity and ambience; as a result, property values rise at a faster rate than they probably would otherwise. But, although the grantor thus helps to create values areawide, he or she can partake of the benefits that accrue only in a very limited way. Once development rights have been transferred from a granting site to a transferee site, the grantor no longer has an interest and is, in effect, excluded from participation in the benefits that flow from a rise in realestate values. The grantor is denied "a piece of the action". Benefits flow disproportionately to the owners of transferee sites, who derive substantial benefits from larger structures set in an enhanced environment.

Unless an equitable distribution of benefits is assured, TDR systems are unlikely to win acceptance. Designers of TDR systems must recognize a basic reality of urban land development-that the ability to participate in value

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capture is a powerful motivating force. Through an effective pricing mechanism, grantors should be adequately compensated for opportunities forgone. Owners of candidate granting lots ought not to be cast involuntarily in the role of magnanimous benefactor.

Indications are that TDR approaches have a better chance of winning acceptance if the following conditions can be met: if (a) development rights can be transferred between lots of common ownership; (b) granting and receiving lots are in close proximity to one another and real-estate values are comparable; (c) there are no competing bonus systems; (d) demand for higherdensity development at candidate receiving lots is substantial and floor-area ratios set a limit on the development allowed by rights; (e) transfers are guided by an urban design framework plan; and (f) receiving lots are of a size and shape that allow additional development rights to be absorbed without creating negative externalities.

The proposed strategy is a synthesis of several regulatory techniques: transfers of development rights, traditional zoning, and the city's powers in relation to urban redevelopment, including the power of eminent domain. As indicated, the availability of transferee lots is critical. Such lots should meet specific criteria with regard to location, size, and shape. Urban renewal provides a basis for creating workable receiving lots. Several steps are involved: land assembly, selective demolition, reparceling, and parcel disposition. Zoning controls help in establishing the preconditions for an effective market in development rights. Development must conform to bulk specifications defined for each individual parcel in a comprehensive area plan. However, since only a limited amount of development is assigned as of right, developers must acquire additional rights to meet envelope specifications. A demand for development rights is created; transfers of development rights ensure that the demand can be met. In the Glen Echo Ravine case, the redevelopment area is designated as a receiving zone and the open spaces at Glen Echo are designated as a granting zone. Developers are assured of a source of development rights and owners of a market.

Area values appreciate at an accelerated rate as a result of preservation of natural features, and urban re-

newal controls development in accordance with an urban design framework plan. However, the success of the strategy hinges on whether landmark owners perceive the incentive as sufficiently attractive. The strategy seeks to assure landmark owners a commensurate share in accelerating area values by establishing patterns of common ownership in both receiving and granting zones. Rather than having to forgo opportunities to engage in development, which is the case when development rights are sold, owners are provided an opportunity for ongoing participation in the development process. Landmark owners may shift development potential away from the to-be-protected area to sites they own in the receiving zone; through the redevelopment area parcel-disposition process, owners acquire strategic parcels to which development rights may be conveyed in amounts sufficient to fill designated envelope specifications.

This approach will increase incentives to preserve the Glen Echo Ravine and expand the array of options by providing an alternative to the sale of development rights. It will thus enable participation in the type of development that takes full advantage of the urban design potential inherent in protecting scenic assets. It will thus permit landmark owners to participate in the economic benefits that flow from a built environment that is superior in quality to that achievable under conventional development patterns.

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Urban Blight and Highways in the Central Cities: Theoretical and Practical Perspectives

Arthur Politano

A basis is provided for a better understanding of the causes of urban blight and the relation between urban blight and highways. A literature review on the causes of urban blight is presented, and examples of mitigative measures taken in various cities are described. Several federal programs that could be, or are being, used to fund revitalization and development efforts in central cities are briefly discussed. The President's urban policy, enunciated on March 27, 1978, proposes to "improve the urban physical environment and the cultural and aesthetic aspects of urban life." To guide any effort to revitalize central cities, the literature should be examined to ascertain the causes of blight. Given the coexistence of urban blight and highways in many American cities, it behooves