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THE "NEW" COMPETITION FOR LAND AND SOME IMPLICATIONS FOR PUBLIC POLICY*

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I

CHANGES IN THE COMPETITION FOR LAND

One of the central problems for public land policy is economic change. Of particular interest at the present juncture are changes in the competition for land that are related to urbanization and industrialization.

In the West, demands for land by urban-industrial development and by irrigated agriculture must be regarded for economic analysis as "rival" or "competitive" demands.[1] The level alluvial valleys and plains are the only—and usually scarce—location for irrigated agriculture. Agriculture has created and supported high land values relative to the surrounding areas not suited for irrigation because of topography and soils. Still, in terms of private economics, under the existing ground rules set by public land policy, these same valleys and plains are the most desirable location for subdivisions—especially those consisting of assembly-line dwellings—and for industry, transportation, and communication. In net value product per acre, these are "higher" land uses than irrigated agriculture—except greenhouses and certain horticultural enterprises. Thus, at the margin of urban-industrial development, irrigated agriculture is quickly priced out of the land market.

Since World War II, only a small part of the rapid urban and industrial expansion in California has taken place on the five least productive land classes, which are not suited for irrigation.[2] Most of the expansion has taken place on the three best land classes, which

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1. Because of the occasion for which this paper was first prepared, the focus is on California. But the problems dealt with are acute—or soon will be—in most other western states.

2. Based on the eight land capability classes employed by the U.S. Soil Conservation Service.

are suited for irrigation, and especially on Class I—the prime irrigable land. On this land, the leapfrogging of subdivisions has rendered far more land unusable for irrigated agriculture than is actually used for urban development.

A good illustration is the Santa Clara Valley, just south of San Francisco Bay. Until recently, this valley was famous for its production of high-quality fruits and vegetables. It is estimated that if urban expansion since 1947 were placed in one continuous parcel, that parcel would consist of twenty-six square miles. In actuality, there exists not a single square mile in a 200-square mile valley that has not been invaded by at least one subdivision.[3] Irrigated agriculture has largely been replaced. The impact on the organization of water management has recently been investigated.[4]

Most irrigated coastal valleys and plains between San Francisco and San Diego are in a state of development similar to that of the Santa Clara Valley. The Central Valley, backbone of California's irrigated agriculture, is in the initial stages of urbanization, especially around Marysville, Sacramento, Fresno, and Bakersfield. Even the irrigated desert valleys, such as the Antelope and the Coachella, have become susceptible to urbanization because of the rapid growth and improvement of air conditioning.

Freeways and airports are increasingly important competitors for irrigated land—both directly in terms of their own land requirements and as factors encouraging the leapfrogging of urban and industrial development. Freeways and airports have a strong preference for level topography. In California, such level land exists as alluvial valleys and plains. Efforts which have been made by agricultural interests to locate the main freeways in the Central Valley outside the prime irrigable land have not been successful.

Irrigated land is significant for the economy of California because of the high productivity per acre possible through irrigation as compared with other types of agriculture. The net value product per acre of irrigated land is about four times that of cultivated non-irrigated land and about twenty times that of rangeland.[5] Through feed production, and in several other ways, irrigated agriculture

3. Wood & Heller, California Going, Going . . . Our State's Struggle to Remain Beautiful and Productive (1962).

4. S. Smith, The Public District in Integrating Ground and Surface Water Management: A Case Study in Santa Clara County (University of California, Giannini Foundation Research Report No. 252, 1962).

5. Ciriacy-Wantrup, *Major Economics Forces Affecting Agriculture with Particular Reference to California*, 18 Hilgardia 1 (Giannini Foundation Paper No. 121, 1947).

contributes to the productivity of nonirrigated land. Irrigated land is the foundation for California's highly developed processing industries.

In addition to increasing the competition for land between irrigated agriculture on one side and subdivisions, freeways, and airports on the other, urbanization and industrialization have brought about a great increase in the demands for land for various types of outdoor recreation. Potentially, this demand for land has complementary, as well as competitive, relations to the demand for land by agriculture, forestry, and grazing.[6] Under present land policies, competitive relations predominate.

One implication for land policy of these changes in the competition for land relates to the needed type of land-use planning. Planning for urban development can no longer be separated from planning for agriculture, forestry, water, and other natural resources. There is little contact and no co-ordination, either academically or administratively, between urban and natural-resources planning. A new breed of planner needs to be added who is not merely concerned with the internal problems of metropolitan regions but also is fully cognizant of the problems of the nonurban hinterland. By the same token, those concerned with natural-resources planning must first consider the land hunger of the megalopolis. This new breed of planner is already emerging. They may come from various backgrounds in the applied natural sciences, such as landscape design, engineering, architecture, and geography, but their common denominator is a thorough understanding of the tools of the social sciences—especially economics and law.

Another implication for land policy which follows from the increasing competition for land by urban and industrial uses is the irreversibility of the results. Previously, when competition for land meant merely that one agricultural use replaced another, or that agriculture replaced grazing, or that grasslands replaced forest and chapparal, these results were not necessarily irreversible. Before the large-scale use of concrete in subdivisions, freeways, and airports, the landscape was not irreversibly changed even by settlements and roads.

Irreversibility in the results of the "new" competition for land

6. Ciriacy-Wantrup, Multiple Use as a Concept for Water and Range Policy, in Water and Range Resources and Economic Development of the West 1 (Report No. 9, Conference Proceedings of the Committee on the Economics of Water Resources Development and the Committee on the Economics of Range Use and Development of the Western Agricultural Economics Research Council, 1961).

raises some interesting and significant questions for land policy: Do the public and the private interests coincide in the replacement of irrigated agriculture by urban-industrial development? Are social losses involved in the irreversible urbanization of prime irrigable land? If a decision were made by public land policy to divert urban-industrial development away from the prime irrigable land, what would be the costs? What about the allocation of such costs among the public and the private sectors of the economy? Are there tools of land policy to bring about and guide such diversion? An attempt to answer these questions requires a careful examination of the framework, the objectives, and the tools of land policy.

II

THE FRAMEWORK OF LAND POLICY

Let us start with the framework, the basic assumptions of land policy. Control of California's 100 million acres is divided equally between private and public land managers.[7] However, nearly all urban and agricultural uses and use of the most productive forest and grassland lie within the private sector. We may assume that this state of affairs will continue. It follows that land policy must operate to a large extent through influencing the decisions of private land managers. Such influence can be accomplished in two major ways:

Land policy can operate through the economic forces which determine private decision making. Such forces are, for example, the price system, credit, taxation, highway and water development, and the institutions governing the ownership, selling, and leasing of land. Purposeful modification of these forces will be called here the "indirect tools" of land policy. At present, these economic forces are too often obstacles rather than tools of land policy.

Apart from these "indirect tools," the policy maker has available other devices which, as a shorthand expression, we will call "direct tools." These do not operate through the profit motive of private land managers, as do the indirect tools, but through laws, ordinances, and regulations which constrain or directly compel private decisions. Zoning, easements, pest-control regulations, and eminent-domain proceedings are examples. Administration of public lands

7. Federal government—47 million acres; state and local governments—3 million acres; private ownership—50 million acres.

in federal, state, or county ownership can also be regarded as a direct tool of land policy.

Frequently, when land policy is discussed, attention is focused on the direct tools and especially on the fee-simple acquisition and the administration of public land. Such a narrow point of view amounts to an abdication of land policy because it neglects the most important sector of land-use decisions and the most important set of policy tools. On the other hand, the significance of indirect tools requires that the motivation and behavior of private land managers be thoroughly understood. This is why familiarity with the social sciences was suggested above as a prerequisite in the training of the modern land-use planner.

III

THE OBJECTIVES OF LAND POLICY

Let us turn now to the objectives of land policy. The general objectives of all public policies are usually expressed as maximizing of some value or quantity such as national income, social net benefit, or public interest. As a first approximation, we may say that the basic objective of California land policy is to maximize the contribution of *all* land uses to the social welfare of the state.

The apparent simplicity of such a formulation, however, hides significant complexities. In order to maximize a quantity—the contribution to social welfare—it must be expressed in measurable and comparable units.

For some of the social benefits associated with land use, values are established in monetary terms in the marketplace. But the system of market prices has several basic defects which make prices unreliable as indicators of social welfare. These defects are not simple; they are difficult to remedy and cannot be discussed here.[8]

Frequently, market prices are difficult to obtain. For example, how can one measure the contribution to social welfare of outdoor recreation and compare it with that of types of housing or systems of communication?

The public interest in one area may conflict with that in another. For example, the maximum income from all land uses may not be obtainable with the income distribution and size of farms which may

8. The implications for resource policy are discussed in Ciriacy-Wantrup, *Philosophy and Objectives of Watershed Policy*, in Economics of Watershed Planning 1 (Tolley & Riggs ed. 1960); Ciriacy-Wantrup, *Conservation and Resource Programming*, 37 Land Economics 105 (1961).

be desirable. To deal with this problem, a policy objective is usually maximized under institutional, tecnological, and other constraints. But this device has conceptual and operational weaknesses.[9]

The problem of quantitative definition and measurement of a policy objective is an area where more research is badly needed. Such research should ascertain to what extent various forms of social benefit-cost analysis, which have been applied to water-resources development, can also help in problems related to urban development. The planning of communication systems and of recreational opportunities are prime examples.

Apart from the difficulties inherent in quantitative definition and measurement of the social contribution by various alternative patterns of land use, there is the issue of the extent of such contributions over time. We are concerned here not with the contribution of land policy to social welfare in the present or the next decade but with the 1980's and beyond.

This brings immediately to mind the problem of irreversibility in relation to projections of future social needs.[10] The latter are so uncertain that only the directions of change and possibly the rates of change in ordinal terms can be projected.[11] In view of this difficulty, added to the ones just mentioned, one may suggest that the objectives of land policy should be reformulated in a way that takes these difficulties explicitly into account.

There is no need to go into the technical aspects of such a reformulation, which lie in the field of uncertainty economics and game theory.[12] Suffice it to say that the objectives of land policy—and of many other public policies—can often be compared to the objectives of an insurance policy against serious losses that resist quantitative measurement. Here the objective is not to maximize a definite quantitative net gain but to choose premium payments and benefits in such a way that maximum possible losses are minimized. As a special case of this strategy, a "safe minimum standard" of present performance specified in such a way that maximum possible future losses are avoided is frequently a valid and relevant objective of policy.[13] Such an objective is equally well suited for the private as for the public sector of the economy.

9. For details, see the literature cited in this section.

10. See text at 254-55, *supra*.

11. Ciriacy-Wantrup, *Conceptual Problems in Projecting the Demand for Land and Water*, in Modern Land Policy 41 (Land Economics Institute, 1960).

12. For a discussion of this reformulation and its application, see Ciriacy-Wantrup, Resource Conservation: Economics and Policies (2d ed. 1963).

13. *Id.* at chapter 18.

IV

AN ILLUSTRATION: THE CONSERVATION OF CALIFORNIA'S PRIME IRRIGABLE LAND

An illustration may help to clarify this reformulation of the objectives of land policy. The land-policy problem with which this paper is mainly concerned is the irreversible loss of prime irrigable land when agricultural use is replaced by subdivisions, industries, freeways, and airports. Some questions were already raised[14] regarding whether and in what way the conservation of prime irrigable land for agricultural uses should be regarded as an objective of land policy. The answers are by no means self-evident.

At the outset, one needs to make assumptions with respect to future water supply. It is very difficult to make meaningful statements about California land policy without considering, at the same time, water policy. Let us consider two alternative assumptions regarding future water supply.

First, we may assume that, in view of limited water supply, agricultural use of water will have to be curtailed in favor of urban and industrial uses. It has long been recognized that the marginal value product of water in these latter uses is higher than in irrigation uses. Under this assumption, the gradual encroachment of urban development on irrigated agriculture can be regarded as a self-regulating adjustment to water scarcity. Average per-acre water requirements of irrigated crops and of subdivisions are not greatly different. This adjustment is also painless to individual irrigation enterprises. In fact, they generally will make a capital gain in the adjustment process. The gain per acre will tend to increase as use of the remaining irrigable land is intensified. In conclusion, under our first assumption, land policy must be concerned not so much with the conservation as with orderly transformation of irrigable land into urban and industrial uses.

Alternatively, we may assume that future water supply will be sufficient for urban-industrial development *and* for the maintenance of agriculture on the prime irrigable land. This assumption is in accord with the projections of future water supply by the California Department of Water Resources. There is some doubt whether such projections can be based solely on the transfer of northern California water to the south—even if such transfer is regarded as

14. See text at 253-55, *supra*.

desirable and politically feasible.[15] But in view of other sources—especially the Columbia River—and technological developments in desalinization and reuse of water, and in view of the increasing popularity of a "public utility concept" of water development, we may accept here this alternative assumption regarding future water supply.

Acceptance of this assumption does not imply acceptance of some existing projections regarding the *timing* in the construction of future water-supply systems. On strictly economic grounds, deferment of some features of these systems may well be desirable. But because of the irreversibility already stressed, conservation of prime irrigable land is a *present* issue for land policy. A decision on this issue cannot be deferred.

Under our second assumption, a continuing or, more likely, accelerating disappearance of prime irrigable land will lead to an avoidable social loss—or benefit foregone—which would seriously affect the economy of the state. The loss consists of the direct and indirect social net value product of California's irrigation economy. A valid quantitative estimate of this loss, decade by decade, until a saturation point of urbanization and industrialization has been reached, would be rather difficult. But, in accordance with our reformulation of the objectives of land policy, we are mainly interested in the order of magnitude of maximum possible losses as compared with that of the "insurance premium" that must be paid to guard against them. There can be little doubt in this case that the maximum possible losses are high.

The insurance premium consists of the higher construction costs necessitated if urban-industrial development is diverted from the alluvial plains to the benches, to the foothills, and to rocky and otherwise inferior soils. Irrigated valleys in California are surrounded by ample land of this type. Higher construction costs on these lands may be partly or fully offset by savings in social overhead for flood control, drainage, and sewage disposal. Other important offsets are the greater amenities made possible by the "poorer" sites for many aspects of urban life. Here also a quantitative estimate of costs and offsets over several decades would be of questionable validity. There is, however, some evidence that, in balance, the costs are not too high and are likely to decrease in the future.

15. The problematic aspects concern the California "Area of Origin" legislation and the effects on fishery resources. Adequate solution of these problems will reduce the amount of water available for transfer.

In California, some of the better housing developments on the benches and in the foothills have proved quite profitable for subdividers. Admittedly, the alluvial valleys will remain the most profitable land for the dismal sprawl of cheap, assembly-line, individual dwellings. But in other parts of the country, private enterprise has successfully provided attractive low-cost housing of a land-saving type.

In a special case which the author had occasion to study recently, conservation of prime irrigable land is the deliberate result of private decision making. Land-use planning on the 90,000-acre Irvine Ranch in southern California involves conservation of a contiguous large tract of prime irrigable land for agriculture. On the same ranch, urban development is intensified on the benches, the foothills, and the inferior soils. Such planning appears profitable from the private viewpoint. But most private enterprises in land management are not large enough to plan "as if" they were a public body.

Planning for urban development on the Irvine Ranch includes industrial parks. These parks of light, technologically highly developed industries are located on the benches and foothills not suited for irrigation. If present trends continue, future industrial development in California will emphasize this same type of industry. Its location outside of the prime irrigable land presents no difficulties and many advantages.

Equipment and techniques to move earth cheaply and on a large scale are rapidly developing. Sometimes this technological development has not resulted in conservation—for example, when scenic values are destroyed in highway construction. But through lowering the costs of diverting subdivisions and freeways away from the prime irrigable land, conservation benefits will accrue from this development—as has already occurred through lowering the costs of terracing and leveling, both of which are important aids in soil conservation.

In conclusion, under our second assumption, one may suggest that the insurance premium to be paid is of such an order of magnitude as compared with that of benefits that it can well be considered a rational present and continuous social investment.

In order to avoid misunderstanding, it may be well to add that the reasoning presented here does not necessarily favor conservation of agricultural or wildland islands within metropolitan regions. This is a problem of "green belts" and other types of "lungs" as an integral part of urban development. It is an entirely different ob-

jective of land policy, which should be supported by a different kind of economic reasoning and carried out by a different set of tools. We are concerned here with the conservation of large contiguous blocks of prime irrigable land as one of the permanent economic foundations of the state. Such conservation need not interfere with continuing urbanization and industrialization; California has abundant land resources for these uses. Prime irrigable land, on the other hand, is scarce.

If a land-policy decision along these lines is made, the question arises: "Which sector of the economy should pay the insurance premium?" To what extent, for example, should increases in construction costs be allocated to the subdivider, the homeowner, or the tenant? What about equity to the owner of irrigable land who may have to forego a private capital gain? Is there justification for public participation in bearing the burden of the insurance premium? Which public should be involved—federal, state, or local—and in what proportions? These are questions to which research by competent people should be directed immediately.

To a large extent, the answer to these questions depends on the type of tool employed by land policy to influence the location of urban and industrial development. Therefore, let us turn our attention next to the tools of land policy.

V

THE TOOLS OF LAND POLICY

Within the space limits of a single paper, it is clearly impossible to consider thoroughly all tools of land policy or even merely those which have been mentioned as examples.[16] I should like, therefore, to take up two tools which appear especially significant for the present purpose. Taxation, one of the most important of the indirect tools, and easements, a promising direct tool, will be appraised with respect to their helpfulness for influencing the allocation of land between agricultural and urban-industrial uses.

A. Taxation in Combination with Zoning

Many attempts have been made in California and elsewhere to use taxation as a tool to prevent, to slow down, and to direct the transformation of agricultural land into subdivisions. The general

16. See text at 255-56, *supra*. For a more comprehensive discussion, see Ciriacy-Wantrup, Resource Conservation: Economics and Policies, at chs. 7-15 (2d ed. 1963).

procedure is to set up special tax districts in connection with zoning ordinances. More recently, deferment of taxes on agricultural properties for a certain number of years, under certain conditions, has been proposed without relation to zoning.[17] This proposal was defeated at the polls.

The best-known example in California for the taxation-zoning approach is Santa Clara County, comprising the valley of the same name. Santa Clara County was the first county in California that adopted a master plan (1934). Zoning ordinances with the objective of maintaining green belts were enacted in 1953 and 1955 on the basis of the then existing state enabling laws. In 1955, the state enacted the more specific "Green Belt Exclusion Law"[18] and in 1957 the closely related "Agricultural Assessment Law."[19]

The main objective of these measures of land policy in the Santa Clara Valley was not the conservation of prime irrigable land but an orderly transition from agricultural to urban land use. Still, several conclusions can be drawn from this experience with respect to the taxation-zoning approach to the conservation of prime irrigable land.

First, constitutional provisions make it difficult to assess at a lower level those agricultural properties which are most affected by the increase in land values due to urbanization. In California, the general constitutional provisions requiring uniformity in taxation are applied in the laws through the "no reasonable probability" limitation. This limitation provides that land in order to qualify for lower assessment must have no reasonable probability of changing from agricultural to urban use. Some states—Connecticut, Florida, Maryland, and New Jersey—have recently tried to remedy this situation by statute or constitutional amendment. Similar proposals have been discussed in California. It is difficult, however, to define permanent, bona fide agricultural use in such a way that lower assessment does not merely reduce the carrying charges for land speculators.

Second, zoning does not prevent eventual urbanization because farmers themselves usually favor a repeal of zoning ordinances when expected capital gains from urbanization become attractive. In other words, zoning has proved a politically unstable protection of agricultural use in the path of urban expansion. While zoning

17. Proposition 4 on the California state ballot of November 6, 1962.
18. Cal. Gov't Code § 35009.
19. Cal. Gov't Code § 402.5.

ordinances are in effect, they encourage leapfrogging if the zoning districts are discontinuous.

Third, the burden of property taxes is only one factor among several others which make it difficult to continue irrigated agriculture in the rural-urban fringe. Impending urbanization reduces the incentive to invest in proper maintenance of irrigation systems. In surface irrigation, each individual enterprise is a part of a larger system. This system is disrupted by leapfrogging, urban scatteration, and roads. An urban neighborhood puts serious limitations on the use of insecticides and fertilizers. Crops suffer from smog, trespass, and vandalism. Tax relief, therefore, is a necessary but not a sufficient condition for continuity of agriculture. Taxation at present is an obstacle to the objectives of land policy we are discussing. This obstacle should be removed, but it would be an illusion to expect that such removal by itself would bring about the desired objectives.

In conclusion, the experience with taxation and zoning in the Santa Clara Valley is not encouraging if the land-policy objective is the conservation of prime irrigable land for agricultural uses.

B. Social Overhead: Dependent or Independent Variable in Urbanization?

It is sometimes suggested that the effects of zoning can be strengthened by withholding social overhead such as roads, schools, and public utilities from areas for which urbanization is not desired. Social overhead is part of a master plan. There is no indication that withholding of social overhead is politically more stable than zoning or other features of the plan. Under the American systems of local government and of providing public utilities largely through private enterprise, the supply of social overhead is highly responsive to the demand by organized local groups. Such supply must be regarded as a dependent rather than an independent variable in urbanization.

The question may be raised of whether this situation holds also on the state level. It is sometimes suggested that California's urbanization problems should be attacked through the State Water Plan. Proposals are made in all seriousness to "control" the urbanization of southern California through limiting the southward transportation of northern water.

There can be little disagreement that for an undeveloped region, the provision of social overhead, if boldly undertaken under pro-

pitious conditions, is strategic for economic development. Many illustrations for this could be cited. But for a highly developed region with strong metropolitan areas and important urban nuclei outside of these areas, development of water-supply systems must be regarded economically and politically as a dependent rather than independent variable in urbanization. Furthermore, for the objectives of land policy we are discussing, it is meaningless to suggest that urbanization could be controlled through the water supply; as shown elsewhere, the water supply available through displacement of agriculture is one of the major economic attractions for the urbanization of prime irrigable land.[20]

C. Easements

Let us turn, therefore, to another tool of land policy which provides tax relief, which is politically more stable than zoning, and to which constitutional and other limitations apply in different ways than to taxation. This tool is the acquisition of public easements over private land.

Use of easements in connection with communication systems, airports, and public utilities is well established. Easements for open space, parks, and highways are common.[21] Some states, especially Wisconsin, have pioneered with recreational easements for hunting and fishing.[22] Conservation easements are mentioned in the literature in connection with open-space easements.[23] But, so far as I am aware, such easements have not been used for the conservation of large blocks of prime irrigable land. Such easements may be acquired by the state or by local governments under state enabling laws. For the purpose under discussion, the planning and guidance of acquisition are best undertaken on the state level.

Conservation easements may be acquired through voluntary sale

20. Ciriacy-Wantrup, *Projections of Water Requirements in the Economics of Water Policy*, 43 J. of Farm Economics 197 (1961).

21. In California, the "Open Space Act" of 1959 [Cal. Gov't Code §§ 6950-54] authorized cities and counties to acquire land outright or the development right or easements to provide open-space areas. Such areas are defined as:

> any space characterized by (1) great natural scenic beauty or (2) whose existing openness, natural condition, or present state of use, if sustained, would enhance the present or potential value of abutting or surrounding development, or would maintain or enhance the conservation of natural or scenic resources.

22. Jordahl, *Conservation and Scenic Easements: An Experience Resume*, 39 Land Economics 343 (1963).

23. Whyte, Securing Open Space for Urban America: Conservation Easements 45 (Urban Land Institute, Technical Bulletin No. 36, 1959).

or through eminent domain. In California, voluntary sale is open to challenge because the constitution prohibits the legislature from making gifts of public funds.[24] In both cases, therefore, a public interest must be shown to exist. It is the argument of this paper that a public interest exists if the purpose of land policy is the conservation of prime irrigable land for agricultural uses.

It is sometimes suggested by urban planners that the acquisition of the fee-simple right is less complicated, of greater advantage to the public later on, and not much more expensive than the acquisition of easements. This is quite true if the acquisition concerns permanent open space without much private development (green belts) or space to be developed later under public control. In the latter case, the fee-simple acquisition would assure effective control and simplify the problem of compensation. Furthermore, the increase in land value due to the development would accrue to the public. In the present case, however, important private uses will continue. High land values are created and supported by these uses. In our case, therefore, it is more economical for the public to acquire easement rather than fee-simple rights.

For the objective of land policy under discussion, easements must be purchased in perpetuity. Experience tends to indicate that the purchase price per acre of a perpetual easement is not significantly higher than that for a twenty-year easement.

Conservation easements would go a long way to solve the tax problem for individual irrigation enterprises when land values are affected by potential urbanization. Since development rights would be no longer vested in the private owner, he could not constitutionally be assessed for them. This, in itself, will constitute a strong inducement toward voluntary sale of conservation easements.

Voluntary sale would, of course, be influenced by the economic value placed on the development rights which are given up. This is the most crucial problem of conservation easements. It poses a real challenge to economics as an academic discipline, to the legal profession, and to the practical administrator.

Appraisal of individual strands of the bundle of private property rights that relate to an acre of land is not uncommon. Special problems, however, are created by the fact that conservation easements must be acquired simultaneously for large blocks of irrigable land.

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24. For a more detailed discussion of these problems, see *Preservation of Open Spaces Through Scenic Easements in Green Belt Zoning*, 12 Stan. L. Rev. 638 (1959-1960).

Should allowance be made for different dates at which individual parcels would have become ripe for urban development? Should geographical factors, such as distance to existing urban centers, be taken into account in combination with market transactions as benchmarks? In what way should other basic factors—climate, soils, and groundwater supply—be taken into account in valuation? What legal, political, and administrative safeguards should be built into the procedures of appraising and taking conservation easements? Should such safeguards be developed in analogy to those already existing in the procedures used to establish special public districts with the powers of taxation and eminent domain? Research by the social sciences is badly needed to answer these questions.

Such research would also benefit the use of other types of easements. Recreational easements are an example. It would be rather wasteful if California should neglect the contribution private lands could make in satisfying the increase in the demand for outdoor recreation that can be expected during the coming decades. Such contribution will not be forthcoming without reimbursement to the private land manager. The purchase or lease of recreational easements by the state is one of several alternative approaches to this problem. The state could recover these costs through fees charged for recreational uses. California has been backward in this area of land policy as compared with other states such as Wisconsin.

CONCLUSION

In the West, a "new" competition for land is becoming of far-reaching social significance. This is the competition for prime irrigable land between agriculture on one side and subdivisions, industries, freeways, and airports on the other. At the margin of urban-industrial development, irrigated agriculture is quickly priced out of the land market by these "higher" land uses. This change in land use is irreversible. In California, the replacement of irrigated agriculture has progressed farthest and raises some acute and interesting problems for public land policy.

If the general objectives of land policy as formulated in these pages are accepted, and if the more optimistic of two alternative assumptions regarding future water supply discussed here is fulfilled, conservation of large contiguous blocks of prime irrigable land for agriculture appears in the long-run public interest. The social costs for diverting urban-industrial development to land classes not suited for irrigation are of such an order of magnitude

as compared with that of maximum possible social losses threatened by the continuation and probable acceleration of present trends that these costs can be regarded as a rational present social investment for avoiding such losses in the future. Under our assumption regarding water supply, conservation of large contiguous blocks of prime irrigable land for agriculture does not interfere with urban-industrial development.

Several tools of land policy are appraised with respect to their effectiveness in diverting urban-industrial development from the prime irrigable land. The usual taxation-zoning approach has several serious shortcomings for this purpose. Likewise, controlling urbanization through social overhead appears of doubtful effectiveness in the present case. Thus far, conservation easements have not been used for the particular objective of land policy discussed here. But the economic-legal characteristics of conservation easements and the experience with them in realizing other objectives of public policy suggest that they may be well suited for the objective of conserving large contiguous blocks of prime irrigable land for agriculture.