Transferable Development Rights as a Basis for Land Use Control

Donald M. Carmichael
University of Colorado Law School

Follow this and additional works at: http://ir.law.fsu.edu/lr

Part of the Land Use Law Commons

Recommended Citation
http://ir.law.fsu.edu/lr/vol2/iss1/2

This Article is brought to you for free and open access by Scholarship Repository. It has been accepted for inclusion in Florida State University Law Review by an authorized editor of Scholarship Repository. For more information, please contact bkaplan@law.fsu.edu.
TRANSFERABLE DEVELOPMENT RIGHTS AS A BASIS FOR LAND USE CONTROL

DONALD M. CARMICHAEL*

It is manifest from this review of our decisions that there has been a growing appreciation of public needs and of the necessity of finding ground for a rational compromise between individual rights and public welfare. The settlement and consequent contraction of the public domain, the pressure of a constantly increasing density of population, the interrelation of the activities of our people and the complexity of our economic interests, have inevitably led to an increased use of the organization of society in order to protect the very bases of individual opportunity. Where, in earlier days, it was thought that only the concerns of individuals or of classes were involved, and that those of the State itself were touched only remotely, it has later been found that the fundamental interests of the State are directly affected; and that the question is... of the use of reasonable means to safeguard the economic structure upon which the good of all depends.

—Chief Justice Charles Evans Hughes

The Constitution did not impress upon the states in a rigid mold either the common-law fuedal system of land tenures or any of the modified and variant forms of tenure prevailing in the states in 1789. Rather it left them free to devise and establish their own systems of property law adapted to their varying local conditions and to the peculiar needs and desires of their inhabitants.

—Justice Wiley Rutledge

I. TWO BASIC INADEQUACIES OF POLICE POWER REGULATIONS OF LAND USE

Regulation under the police power is and will doubtless continue to be our pervasive method for governmental control of private land use decisions in this country. It has not worked well, however, due to fundamental and inherent weaknesses that may become more troublesome as new social priorities emerge.

A. The Taking Issue

Police power land use regulation typically has direct impact on

---

* Associate Professor of Law, University of Colorado. A.B., Davidson College, 1958; LL.B., University of Louisville, 1963; LL.M., University of Wisconsin, 1964.
the major expectations of individuals to develop their land as they wish. It thus directly confronts the individual landowner's powerful economic motivations for development. In broader terms, it commonly provides a curb on trends of high profit land use and growth. Despite these effects, police power regulation makes no provision for compensation to those regulated. This means that in the case of each tract of land regulated, some loss in value is ordinarily imposed, without compensation, in furtherance of the public health, safety, morals and the general welfare. These purposes are sought for the benefit of the public; the regulations are imposed by the government. The immediate and obvious impact is typically to diminish the value of privately owned property.

At precisely this point, a fundamental constitutional question is prominently raised. The United States Constitution provides: "[N]or shall private property be taken for public use, without just compensation." This provision becomes applicable to police power regulations when value diminution is imposed on private property by government regulation in the furtherance of public purposes, that is, for public use. The value diminution could be compensated by the...
government and the question thereby obviated, but this simply is not a feature of conventional police power regulation.\textsuperscript{7} The absence of compensation poses a specially troublesome "either/or" choice for the courts. Either the value diminution is tolerable and the regulation will stand, or the diminution is intolerable without compensation and is thus unconstitutional. If the latter, the regulation must be stricken.\textsuperscript{8}

The extent of value diminution that the courts will permit as an incident of police power regulations in a specific instance simply cannot be known in advance. It is an ineffable function of a group of factors including the necessity and propriety of the ends the regulation seeks to achieve,\textsuperscript{9} the percentage of value diminution under a variety of tests,\textsuperscript{10} the feasibility and level of remunerative uses left

\textsuperscript{7} But see notes 37 \& 38 infra.


\textsuperscript{9} Thus, when regulations are dominated by a nuisance-curbing function, extremely high levels of value diminution may be tolerated. Goldblatt v. Town of Hempstead, 369 U.S. 590 (1962); Hadacheck v. Sebastian, 239 U.S. 394 (1915) (brickyard in residential neighborhood, diminution from $800,000 to $60,000 upheld); Consolidated Rock Prods. Co. v. City of Los Angeles, 370 P.2d 342, 20 Cal. Rptr. 638, appeal dismissed, 371 U.S. 36 (1962) (quarry upwind of community with many people who suffered from respiratory diseases). The nuisance analogy was, of course, that adopted by the Supreme Court in its landmark decision recognizing zoning as a permissible genre of police power regulation. See Village of Euclid v. Ambler Realty Co., 272 U.S. 365, 385 (1926). Aesthetics and other forms of amenity-preserving regulation historically have been at the other end of the spectrum from nuisance regulation in terms of judicially perceived necessity and propriety, although the perception has shifted in recent times. See Thomas Cusack Co. v. City of Chicago, 242 U.S. 526 (1917); United Advertising Corp. v. Metuchen, 198 A.2d 447 (N.J. 1964); Oregon City v. Hartke, 400 P.2d 255 (Ore. 1965). See generally Anderson, Regulation of Land Use for Aesthetic Purposes—An Appraisal of People v. Stover, 15 Syracuse L. Rev. 33 (1963); Dukeminier, Zoning for Aesthetic Objectives: A Reappraisal, 20 Law \& Contemp. Prob. 218 (1955).

\textsuperscript{10} See, e.g., Goldblatt v. Town of Hempstead, 369 U.S. 590, 595-97 (1962); Commissioner of Natural Resources v. S. Volpe \& Co., 206 N.E.2d 666, 671-72 (Mass. 1965). Both cases set forth a variety of alternative bases on which diminution in value might be computed. The authors of two recent major analyses of the taking problem have noted that perhaps four major tests have been used by the courts to determine whether governmental actions were impermissibly harsh, absent compensation: (1) the early test of direct physical invasion or assumption of control; (2) the nuisance abatement test; (3) the diminution of value theory; and, finally, (4) the balancing of loss to the regulated individual against the general public good derived from the regulation. See Sax I at 46-60; Michelman, supra note 6, at 1183-201. Each test has major defects, however, and the taking problem will almost certainly continue to defy all efforts at synoptic formulation of its complexities. See Sax I, supra; Michelman, supra.
to the owner,\textsuperscript{11} the apparent individualization of onerous impact without good reason for it\textsuperscript{12} and the judicial philosophy within the particular jurisdiction. Regulations may validly force the deferment of development for a relatively short period,\textsuperscript{13} and may substantially curtail the manner and intensity of development.\textsuperscript{14} Radical curtailment, extended deferral or total denial of development, however, are typical occasions for judicial invalidation of regulation as impermissibly harsh, as a "taking" of property.\textsuperscript{15} Whenever any particularly rigorous police power regulations are proposed, the taking problem consistently dictates caution, if not timidity, in regulatory approach.\textsuperscript{16}

The tension arises, then, because land use planning as implemented by police power regulation inevitably controverts the profit motives of individual owners, which are finally and solidly bolstered by constitutional safeguards. The constitutional protection should be seen as affording each landowner a continuous, present-tense right to at least a moderately remunerative level of land use. In contrast to the individual, short-range, profit-making values inherent in the constitu-


\textsuperscript{15} For examples of judicial invalidation of zoning regulations that rendered land virtually useless, see Dooley v. Town Plan & Zoning Comm'n, 197 A.2d 770 (Conn. 1964); Morris County Land Improvement Co. v. Township of Parsippany-Troy Hills, 193 A.2d 232, 241 (N.J. 1963); Arverne Bay Constr. Co. v. Thatcher, 15 N.E.2d 587 (N.Y. 1938). For examples of judicial invalidation of efforts to effect radical deferment of development through zoning, see Corthouts v. Town of Newington, 99 A.2d 112 (Conn. 1953), noted in 52 MsC. L. Rev. 925 (1954); Board of County Supervisors v. Carper, 107 S.E.2d 990 (Va. 1959).

\textsuperscript{16} This assertion is based on personal experience in law practice, on conversations with numerous planners and attorneys active in land use controls at the local level and on the observations of several students engaged in empiric research projects in the area of land use controls. Even when schemes of land use control are based upon competent planning and legal advice, invalidation on taking grounds is recognized as a major pitfall to be guarded against, and a risk that must be run. At the local level, especially in rural areas where often neither planning nor legal advice is available at the most sophisticated levels, vague allusions to unconstitutionality and threats of litigation often suffice to cow planning boards and local legislators into acquiescence to a property owner's wishes concerning the use of his land.
tional right, planning typically seeks to further broad policies for long-range patterns of development. Emphasis is consistently on the placing and pacing of development over time—on the development of land, ordered by a variety of public value and public efficiency concerns. Between the constitutional scheme and the planning scheme, then, the frames of reference are incompatible and the tensions inevitable. Until now the practical resolution of the tension assertibly has been manifested, however, in the form of sprawling, leapfrogging, premature, ill-coordinated development, despite efforts at regulation. Massive pressure for early development, aided by the constitutional guarantee, has consistently overridden regulatory schemes that are comparatively weak, often in conceptual and administrative disarray, and that in any event operate only in the marginal areas of control clearly or apparently permissible in the face of the constitutional inhibition.

B. Unadjusted Inequities in Land Value as a Result of Regulation

A pervasive effect of the zoning process is that massive increments of land value are destroyed, created, transferred and conferred. This occurs without any effort being made or mechanism being available to adjust the highly disproportionate land valuations that are produced.\(^{17}\)

When an area is brought under zoning for the first time, it is assertible that the development potential of all the land within the area is "pooled." That is, the development potential of each tract is substantially subordinated to and merged with that of all other tracts so that the entire area may be planned and zoned as an entity. This development potential in the "zoning pool" is then allocated among various tracts within the jurisdiction by the planning and

---

\(^{17}\) Elements of this perception and a forecast of the consequences emerge with clarity in the startlingly prescient lower court opinion in Ambler Realty Co. v. Village of Euclid, 297 F. 307 (N.D. Ohio 1924), rev'd, 272 U.S. 365 (1926).

It is a futile suggestion that plaintiff's present and obvious loss from being deprived of the normal and legitimate use of its property would be compensated indirectly by benefits accruing to that land from the restrictions imposed by the ordinance on other land. It is equally futile to suppose that other property in the village will reap the benefit of the damage to plaintiff's property and that of others similarly situated. The only reasonable probability is that the property values taken from plaintiff and other owners similarly situated will simply disappear, or at best be transferred to other unrestricted sections of the Cleveland industrial area, or at the worst, to some other and far distant industrial area. So far as plaintiff is concerned, it is a pure loss . . . . In the present case, the property values are either dissipated or transferred to unknown and more or less distant owners.

Id. at 315-16.
zoning process. The process eventuates in the zoning map, which relegates each individual parcel to one or more of the gross categories of zoning uses.\footnote{18} The underlying theory would seem to be that there is some rough reciprocity of both advantages and of detriments at work throughout the district and that this justifies the pooling and reallocation function. Whether this be true in either theory or practice, the reality is that massive value shifts occur.

At the outset of the planning and zoning process, all lands within a jurisdiction, arguably, have some rough entitlement to a fair share of the development potential of a district. To be sure, some lands will initially be better suited to higher-value land uses; for example, lands with ready access to major utility corridors may be better suited to commercial or industrial development than other lands. This is not to say, however, that all other lands are totally unsuited to such high-value forms of development or that they should receive no share of the value-bonus that will derive from such uses. Neither does initial suitability fully explain another major aspect of value shifts that regularly occur as a result of zoning.\footnote{19}

Assume that several landowners hold contiguous farm properties in the path of development and that X is the fortunate one to receive commercial zoning that will allow his farm to be developed as a large neighborhood shopping center. Assume further that the lands of the remaining owners are relegated to moderate-density and low-density residential use. X now holds land worth much more per acre than that held by the remaining owners, and it has become more valuable by a rather startling process. The property of the remaining owners, when developed, will doubtless provide much of the customer base for X's commercial property and thus contribute directly to the value of his property. Further, part of the value of his tract is attributable to the guarantee of a somewhat exclusive commercial

\footnote{18} The classic exposition of the technique occurs in Village of Euclid v. Ambler Realty Co., 272 U.S. 365, 380-82 (1926).

\footnote{19} It can be argued, of course, that once the original, inequitable land value allocations are assigned by the zoning process, they are thereafter reflected in the price of the land as zoned and the question therefore becomes moot once the first round of land sales has taken place. This response begs the question in the first instance and, further, fails to take account of the frequent modifications and alterations that occur within zoning systems. In fact, it is quite assertible that the continuing potential to create, destroy, confer and transfer value within zoning systems after they are initially instituted is an operative factor underlying much of the judicial unease over the use of devices to achieve flexibility within zoning systems. See note 3 supra. See generally 1 R. Anderson, American Law of Zoning §§ 5.04-06, 5.16 (1968) (spot zoning, floating zoning); 3 id. §§ 14.46, 14.68 (use of variance). For examples of cases and literature that have grown up around the judicial quest for the chimerial comprehensive plan, see 1 id. § 5.02.
prerogative, a semi-monopoly. His tract attains this position largely because the remaining properties have been shorn of commercial development potential. Nonetheless, no effort is made to adjust this disparity in value. Owner X gets full benefit of his windfall profit, and the less fortunate landowners are left to draw long thoughts about the police power, or fate, as they prefer.

These shifts in land value have to date apparently been tolerated as an inherent by-product of the land use allocation function of zoning. This is not to say, however, that efforts to adjust these shifts are inconceivable or undesirable; part of the thrust of this article is that a system of development rights could go far toward making the needed adjustments. In addition to the historically tolerated allocations of land value, recent cases indicate a trend toward judicial approval of major new bases for police power regulation that may exacerbate the problem of inequities in land values.

The orderly pacing and placing of development has been a consistent aspiration and source of frustration for American land use regulatory systems. In a recent Maryland case, however, the court upheld the upgrading of a tract from one-half acre minimum lot size (worth between $3,500 and $8,000 per acre) to two-acre minimum lot size (worth between $2,000 and $3,500 per acre). The upgrading was imposed to make the tract part of a low-density buffer zone to preserve Olney, Maryland, as an identifiable community. The town was suitable for such preservation because of its geographical setting and natural amenities. The court held that the zoning upgrade had caused no intolerable diminution in the value of the property. The court also sustained the upgrading as an implementation of the regional planning concept by which corridors of high-density land use, radiating from Washington, D.C., would be interspersed with wedges of low-density land use to provide some relief from amorphous urban sprawl. Further, high-density municipal areas were to be buffered by low-density surrounding zones, such as the one within which plaintiff found his lands situated. In a recent New York case, the


22. Id. at 703, 705.

23. Id. at 706.

24. Id. at 703, 705. Buffer zones to ease the transition from one use district to the next have been used ever since their approval in Village of Euclid v. Ambler Realty
court upheld a municipal land use control system in which the availability of required residential zoning permits and the approval of subdivision plats were keyed to the sequential availability of various municipal services under an orderly capital improvement plan.\textsuperscript{25} The system has the potential to defer development for as long as 18 years,\textsuperscript{26} although the disappointed property owner is given tax relief and the ability to accelerate his right to develop by installing services himself.\textsuperscript{27}

These cases indicate that individual owners may find development intensity sharply curtailed and the timing of development substantially postponed because of regional planning and municipal financing considerations that in individual cases may seem quite fortuitous. It is difficult to say at present whether these cases indicate only the periphery of the permissible. They in no way address the grossly disproportionate allocation of entitlements that exist when, for reasons of planning or the public fisc, one property owner is required to wait years to develop his land, or permitted to develop only at low density, while another owner is allowed to start immediate construction of high-rises.

A second major doctrinal base is now emerging as justification for further rigorous police power regulation of land use. It too will have substantial impact on the broadly held development expectations of land owners. First, as exemplified by the ancient maxim, \textit{sic utere tuo ut alienum non laedas}, it has always been apparent that certain uses on one tract might cause spillover consequences on other tracts. Secondly, even if apparent spillover effects are not clearly present, a decision to develop land in certain ways often permanently forecloses other alternative-resource uses of that tract—land can be a marsh or a subdivision but not both, and if a subdivision, then never again a


\textsuperscript{26} Id. at 303, 334 N.Y.S.2d at 154.

\textsuperscript{27} Id. at 304, 334 N.Y.S.2d at 155-56.
marsh. Thirdly, some lands are beset by such natural hazards that to develop the land would cause risk to improvements and perhaps to human life as well. It is not uncommon for all three consequences to arise from the decision to develop a single tract. For instance, a decision to fill and develop a large marsh area may have spillover effects by diminishing the breeding ground for many forms of aquatic life in an adjoining lake, will almost certainly cause permanent elimination of that area as a marsh, and may provide such poor soil bearing capacity as to cause major damage to conventional buildings placed on the land.

Given the combination of an expanding and affluent population and the technological abilities to effect massive, nearly ubiquitous development of land, the consequences set forth above have been multiplying rapidly. This has been accompanied by the somewhat less rapid development of abilities to detect and analyze these consequences. From this synergistic milieu have emerged arresting perceptions of the degradation and depletion of resources, of widespread risks from natural hazards and of the foreclosure of future resource options. These perceptions and the scientific and legislative responses they have engendered have precipitated what recent commentators call a "quiet revolution" in our basic philosophy concerning land resources:

If one were to pinpoint any single predominant cause of the quiet revolution it is a subtle but significant change in our very concept of the term "land," a concept that underlies our whole philosophy of land use regulation. . . .

Basically, we are drawing away from the 19th century idea that land's only function is to enable its owner to make money. . . .

This concern over the interrelatedness of land uses had led to a recognition of the need to deal with entire ecological systems rather than small segments of them. . . .

. . . Increasingly the question being asked is not only, "Will this use reduce the value of surrounding land?" but "Will this make the best use of our land resources?". 29

The same authors assert that this change in philosophy is beginning to emerge powerfully in judicial thought concerning the taking issue. 30 They cite several recent cases in which extremely strict


30. BOSSelman *passim*; see F. BOSSelman & D. CALLIES, supra note 29.
police power restrictions forbidding land development have been upheld when the dominant purpose was to preserve land in its natural condition and thereby to preserve highly valuable natural resource functions of the land. The authors further assert that in such situations the diminution-in-value formulation of the taking issue recedes, and, instead, the courts justify the regulations by balancing the public interest in resource preservation against the landowner's asserted right to destroy natural equilibrium by development. In these instances the public interest in resource preservation may almost irrebuttably outweigh the individual owner's right to development, and the regulations may thus be sustained.

Although the precedent that has developed deals largely with somewhat special resources, analytic techniques exist that would enable
considerable broadening of the scope of this genre of regulations.\textsuperscript{35} These techniques could well lead to some broadening of the application of the balancing test analysis sketched above. Vexing problems of value diminution would again be raised, however. These are scarcely met at either a conceptual or visceral level by the reiteration of the balancing test.\textsuperscript{36} In practical effect, many owners will likely find development potential curtailed; some will find it virtually eliminated. This will occur under the aegis of scientific perceptions, methods of technical analysis, systems of regulation and formulations of public policy and legal doctrine that in many cases were virtually unheard of ten years ago. The redistribution of development value would be not so much a transfer of value between private property owners, as is frequently caused by zoning, but rather a reallocation of entitlements due to the interjection of newly perceived and protected public rights in developable resources. The fact that these forms of regulation may be highly meritorious and perhaps long overdue will do little to lessen the novelty or the poignancy of their impact on individual wetlands contiguous to watercourses is already one such generic category. See Candlestick Properties, Inc. v. San Francisco Bay Conservation & Dev. Comm’n, 89 Cal. Rptr. 897 (Ct. App. 1970); Just v. Marinette County, 201 N.W.2d 761 (Wis. 1972). But see State v. Johnson, 265 A.2d 711 (Me. 1970). If these cases are indicative, rigorous police power regulation to protect a generic resource category may be upheld in one state, invalidated in another and upheld to a limited extent in a third. Judicial approval will doubtlessly be highly variable.

Further, expansion of categories and extension of precedent will certainly be a halting process. For instance, given the physical realities, the lake and bay wetlands cases immediately above could scarcely be regarded as clear authority for the validity of similar anti-fill regulations concerning wetlands that do not border on and sustain ecosystems of major watercourses. Even further removed from the supportive power of the above precedents, for instance, would be similar anti-development regulations in areas that contain resource values such as groundwater recharge, marginal deer winter range or simply the support of a typical prairie and grasslands ecosystem. As resource value and exigency diminish, it is expectable that harsh regulation would undergo a correspondingly less sympathetic process of judicial review. Perhaps the taking issue would re-emerge in the diminution-of-value formulation, rather than the balancing formulation, with the more frequent occurrence of judicial invalidation of regulations.


36. As Professor Michelman cogently puts it: “But what, after all, can it mean, in a society professing the respect for persons which seems centrally implicit in liberal democratic institutions, to ‘weigh individual losses against social gains?’” Michelman, supra note 6, at 1194. Michelman argues that the balancing test merely discloses whether a regulation is efficient, not whether compensation should be forthcoming. Id. at 1194-96. Indeed the use of any very finely tuned balancing of present value diminution against longterm social opportunity costs—or a similar yardstick—seems a most elusive if not illusory undertaking.
property owners. Note that there is again apparently the prospect of widespread and possibly drastic reduction in the value of property held by some private owners, with no mechanism for adjustment or compensation.

Based on the above analysis, it seems that this country is now prepared for, and likely to enter, a new phase of efforts to control the use of land. Greater demarcation of development areas will probably occur to prevent amorphous, anonymous sprawl. Deferment of development of sizeable tracts may become prevalent based on the fiscal burdens of extending municipal services to outlying areas. Sophisticated techniques to make broad, synoptic inventories of the physical characteristics and resource functions of land may well eventuate in new generations of regulation in which density of development will be allocated in sharp variation between more and less amenable areas. For all of these reasons, sizeable areas may be kept essentially free of development or their development may be deferred for extended periods as orderly growth occurs elsewhere. Highly disproportionate land valuation would logically result from these processes, based on physical characteristics, planning and fiscal decisions that will seem highly fortuitous to the owners of individual tracts involved. Major elements of transferred value will emerge as development densities and timing are shifted about within planning districts. Some landowners may receive a bonanza of prompt development authorization while others are relegated to major postponement or substantial preclusion of development. Underneath all will lurk the taking issue.

Such systems could theoretically advance under the widespread use of eminent domain or compensation, through which individual landowners who are losers in the allocation and timing of development rights would be paid for the relinquishment of their development expectations. Fiscal and political reality would seem to preclude the broad adoption of such plans. Police power regulation with compensation at the borderline between regulating and taking is an alternative that likewise poses major fiscal, administrative and political problems. It seems unlikely that widespread compensation schemes

37. For descriptions and analysis of the English experiment along these lines, see Heap, An Outline of Planning Law (5th ed. 1969); Kerrigan & James, The Town and Country Planning Act, 1954 (1955); Mandelker, Green Belts and Urban Growth (1962).

38. Compensated regulation is occasionally created by the courts. See, e.g., Lomarch Corp. v. Mayor of Englewood, 237 A.2d 881 (N.J. 1968), in which the court engrafted a limited compensation principle onto the use of the official mapping device. A thorough plan for compensated regulation is constructed in Krasnowiecki & Paul, The
will be adopted, either to redress the pervasive disparities of value created by our present and emergent systems of land use controls, or to palliate the taking problem.

In short, there are no panaceas in view. Development and redevelopment will doubtless continue to be a strongly protected incident of land ownership. This incident is certainly a principal basis of expectations within our system of private ownership rights, and its destruction would not be tolerated. The question then becomes whether this incident of ownership—this constitutionally protected expectation—can be modified so as to preserve its major operative values and yet also to render it tractable to the protection of increasingly urgent social values. A modern idea and a relatively elderly body of legal precedent may combine to achieve a breakthrough.

II. SEVERABLE DEVELOPMENT RIGHTS

The modern idea is that the right to develop land may be considered a quantifiable and transferable incident of land ownership. It has been implicit in zoning since the 1920's that the right may be quantifiable. For instance, under various zoning categories a ten-acre tract may have the following quantifiable development potential: one-acre minimum lot size, single-family residential use—ten dwellings; one-fourth acre minimum lot size, single-family residential use—forty dwellings; ten unit per acre multiple-family residential use—one hundred living units.

The next step in the modern notion is that quantified development rights may be separated from rigid and direct affixation to land—that is, that development rights may be severed. Severance in the


Compensated regulation does, of course, raise extremely troublesome issues, some of which presently, and perhaps fortunately, lie dormant under the conventional taking analysis. Owners would doubtless seek compensation for diminution in land values previously created by direct public investment, or by general increases in the value of land derived from expansions of population and technology, for which the individual landowner assertibly deserves little credit. The provision for compensation might result in a great increase in the number of judicial determinations that a taking had occurred and that compensation was due. If development is imminent, it may be no more expensive to acquire clear title than to compensate for extremely rigorous regulation. Those experienced in eminent domain litigation may blanch at the prospects of myriad compensation determinations in the hands of juries. Administrative determination of awards would perhaps be preferable. The potential amounts of compensation payable would doubtless be massive, but unliquidated, posing major funding problems. The transaction costs of determining myriad compensation awards might prove intolerable.
negative sense of relinquishment of certain types of development rights has resulted consistently from zoning and from private restrictive covenants. When land is zoned for single-family residential use or is subject to covenants for the same purpose, the development right for "lower" uses, such as multiple-family, commercial and industrial uses, is severed from the land. Such negative relinquished rights are occasionally made the subject of eminent domain.\(^3\) Since negative rights are severed, however, no party acquires the affirmative ability to make use of these rights. They are simply shorn from the land, extinguished in legal effect. It is assertible, of course, that under zoning much of the value of these extinguished rights is transferred, gratis, to those relatively few owners whose land is zoned for high-density residential, commercial and industrial uses.\(^4\)

The modern idea further contemplates that affirmative rights, rather than negative rights, may be made transferable. An affirmative right of development, specific in quantity and quality, may be granted to a tract of land as is done in zoning, but in contrast to zoning, the development right may be sold or transferred by the landowner for use elsewhere, for example, on another tract of land.\(^4\)

To bring this modern notion into better focus, it is helpful to outline the manner in which development rights and the market place for them might be created. A major planning effort would come first. A large region, perhaps a state planning region, would be subjected to various analytic and planning techniques. Analysis\(^4\) of natural components would disclose areas that should be developed lightly or not at all, for reasons such as the presence of hazards (e.g., flood channels and plains, geologically unstable areas) and the performance of important natural functions (e.g., carrying floodwaters, groundwater recharge). More conventional planning analysis would reveal other factors that influence development, such as the predictable extension of sewer and water services, the impact of transportation corridors that divide an area and make subparts of it accessible, and the growth trends of existing cities and towns into satellite regions.

All these characteristics could then be superimposed by the over-

\(^3\) See, e.g., Kamrowski v. State, 142 N.W.2d 793 (Wis. 1966) (upholding the eminent domain acquisition of development rights, for scenic easement purposes).

\(^4\) See discussion p. 40 supra.

\(^4\) For discussions of the operation of this concept in limited circumstances, see Costonis, The Chicago Plan: Incentive Zoning and the Preservation of Urban Landmarks, 85 HARV. L. REV. 574 (1972); Note, Development Rights Transfer in New York City, 82 YALE L.J. 338 (1972).

\(^4\) Techniques for much of the physical inventory and analysis of the region are fully set forth in I. McHarg, supra note 35, at 31-41, 55-195.
lay mapping technique. With this technique, many clear, glassine maps of the study area are prepared on the same scale. Each factor (e.g., groundwater recharge areas, geologic hazard areas, prime agricultural lands, erosive soils) is then depicted on an individual map by coloring the areas of the map where the factor is present. The intensity of color indicates the degree to which the factor exists in various areas. Thus, if a map depicted geologic hazard areas in red, very heavy red coloring would indicate areas of maximum risk; lighter red would indicate moderate risk; very pale red, slight risk; and glassine with no coloration would indicate absence of risk. Each factor would be indicated by its own color and depicted on its own map—for example, a map with red coloring for geologic risk, a map with brown coloring for erosive soils, a map with blue coloring for groundwater recharge areas, etc. Each glassine map, then, would visually depict a factor as it occurred in varying intensity over the study area. In addition, common coding of the shade of coloration on all maps would be done so that the color shading from dark to light to clear would uniformly indicate a progression from "highly unfavorable for development," to "highly favorable for development," respectively. Using the same technique, additional sets of maps could be prepared to indicate various planning considerations such as impact of transportation corridors, existing growth trends and service areas and their extensions over time. The various glassine transparencies, thus color coded, would then be overlaid, one on top of another, and illuminated from underneath. Many maps graphically depicting many characteristics may thus be viewed and analyzed simultaneously. The result is a visual representation of the study area with numerous factors simultaneously revealed as they all, in combination, indicate suitability or unsuitability for development throughout the study area.

Rather than creating a hopeless visual hodgepodge of coloration, as might be expected, the color-coded overlay technique typically discloses that anti-development factors tend to coalesce in certain areas. The remainder of the region is thus depicted as suitable for development ranging from light to heavy intensity. Examination of such an overlay map would usually show the study region subdivided into major areas within which the bulk of development should take place. Each of these areas would typically be separated, either partially or wholly, from similar neighboring areas by strips and tracts of land on which little or no development should occur. Visually, the developable areas would appear as large islands, lightly shaded or unshaded, separated by strips and patches of darkly-colored areas.

43. See id. at 103-15 for a detailed exposition of the technique.
that would not be amenable to heavy development. Each major development area, or development island as it would appear on the map, would then be considered a "planning district"—a discrete unit of land typically embracing at least several square miles within which a comprehensive plan for development would be created.

Each development island or planning district would include its ratable share of the surrounding, darkly-colored, nondevelopable land. The principal functions of this nondevelopable land would include preservation of natural functions, prevention of naturally hazardous development, and provision of buffer zones and spatial separation between the planning districts. The purpose of allocating to each planning district its ratable share of nondevelopable lands will be discussed shortly.

Consider one such imaginary planning district and assume that it contains several square miles composed largely of farms and a few scattered residential properties and small commercial establishments. Within the district, various areas would be amenable to heavy, moderate and light development based on the inventory of natural characteristics and additional planning criteria. Land at the periphery of the district and some additional land within would be amenable to little or no development, based on the analytic processes outlined above. Orderly expansion of services and other factors would control the timing and placement of development within the district. Types of development such as residential, commercial and industrial would be arrayed over the district using either conventional zoning or devices analogous to floating zones or planned unit developments. Ultimate district development densities of various types would be worked out. The result would be that each district, within its perimeter of undeveloped land, would be planned in a manner comparable to the planning that currently takes place over an entire zoning jurisdiction.

Once planning had been done satisfactorily, the plan would be translated into development rights. To accomplish this, principal reliance would be placed on the ultimate development densities for which the district was scheduled, as expressed in quantitative terms. For simplicity's sake, assume the district is planned for 12,000 people. Using an acceptable reduction figure to compute average household size, this might mean that a total of 3,800 individual dwelling units would be allowed. Assuming that each residential development right authorized its holder to construct one dwelling unit, the next step would be to allocate development rights among the individual landowners within the district. Assume that A, B and C each owns 100 acres of land. Further assume that it has been deter-
mined by the overlay-map analytic processes mentioned above that
A's land should support no more than 25 residential units, B's should
support 100 and C's is suitable for higher density use with 175 units.
Under the present systems of planning and zoning, C's land would be
relatively valuable, B's land moderately valuable, and A could litigate
the regulation as unconstitutionally onerous or could simply absorb
the major value diminution imposed upon his property.

If development rights were used, however, this highly differential
impact on land value could be largely avoided. Since development
rights are by our definition severable and transferable, they may be
allocated among various tracts without regard to the development
densities that are actually permitted on those tracts by zoning. To re-
turn to the hypothetical, assume that the district contains 3,800 acres
and that the determination has been made to spread the 3,800 avail-
able residential unit development rights evenly over the district. A, B
and C would then each receive 100 residential unit development
rights since each owns a 100-acre tract. Because of existing density
controls, A could use only 25 of the residential unit development rights
allocated to him, but he would have 75 rights left to sell or to hold as
he chose. B could use all of his 100 rights since they correspond to his
permitted density. He could, if he wished, sell some or all of them, but
he would later have to purchase more rights if he wished to develop to
his permitted 100-unit density. C could make full use of his 100 rights
and in fact would have to purchase 75 more if he were to develop his
land to full permissible density. He might buy A's 75 surplus rights,
which would bring him up to the full density potential of 175 units.
If this occurred, A could still develop to his land's full permissible
density with his remaining 25 rights.

It is likely that the planning district would also comprise the
sole marketplace for the development rights of owners within it. Im-
portation or exportation of rights, unless quite limited, would be in-
consistent with the premise that the number of rights allocated within
a district should coincide with the densities permitted in that district,
although there might be some flexibility permitted in the application
of this principle. Within the district, owners and their development
rights would be thrown together into a common marketplace—a com-
mon pool as it were—for the purchase and sale of development rights.
This is a much more explicit, institutional version of what takes
place when zoning is instituted, but the consequences are quite
different. Despite being accorded an equal allocation of rights on a
per-acre basis in the simplified example above, some owners would

44. See cases cited notes 13, 21-33 supra.
be permitted to develop little, or perhaps not at all if they are located in a flood plain or in an inter-district buffer zone. These same results are sought frequently through zoning, but are upheld only infrequently and are often overturned by the courts as unconstitutional diminutions of the value of property. Under the development rights system, however, owners whose ability to develop is restricted pursuant to natural resources and planning decisions could nonetheless receive substantial remuneration by selling their unusable rights to others who need them. The sale of rights would not compromise the integrity of the district plan and it should obviate the taking question.

The use of development rights should also prove directly responsive to the problems of the value shifts and value inequities. It seems highly likely that the destruction, creation, transfer and bestowal of entitlements that occur within the zoning pool could be largely eliminated by development rights—certainly the major peaks and valleys would be considerably leveled. Development rights could also allay much of the value diminution caused by substantial deferral of development entitlement and by the newly emerging thrust to protect public rights in natural resources. These uses of development rights will be developed in more detail.

In addition to the present experiments with the limited-purpose use of development rights mentioned earlier, such as for scenic easements, the broad-purpose use of development rights set forth above has been introduced for consideration in at least one state legislature, and is being seriously discussed elsewhere. It finds theoretical support in existing strands of legal doctrine, some of which predate the formation of this nation. Major redefinitions of private property rights have been imposed by legislatures and approved by courts when dictated by strong public need and the peculiar realities of resource use. Common threads of precedent and fact underlie public purposes as

45. See cases cited notes 8, 15 supra.
46. See discussion and cases cited p. 41 supra.
47. For a discussion of development rights for commercial and industrial uses, see p. 102 infra.
48. See pp. 43-44 supra.
49. See p. 102 infra.
50. See note 39 supra.
52. During the past year the author has discussed this concept with several Colorado legislators and legislative draftsmen, with an eye toward the possibility of new state legislation. Also, in the author's file, under letter of transmittal dated April 2, 1973, from Frank S. Bangs, Editor, LAND USE CONTROLS QUARTERLY, American Society of Planning Officials (ASPO), Chicago, are various critiques of and amplifications on the consequences of the proposed Maryland bill prepared by the ASPO staff and others.
seemingly disparate as the erection of milldams, the formation of drainage and irrigation ditches, and the pooling and unitization of oil and gas reservoirs. To effectuate these public purposes, coordinated involvement of numerous tracts of privately owned land was necessary. Coordinated involvement in a common purpose has consistently been held to justify very substantial modification of the rights of the affected private landowners. A brief survey of these major bodies of legal precedent will help determine whether a doctrinal base exists for the creation of planning districts within which the development potential of individual tracts may be converted into transferable development rights.

III. LEGAL PRECEDENT FOR DEVELOPMENT RIGHTS

A. Early Transportation Systems

The colonies and their successor states early made consistent practice of chartering private corporations to plan, construct and maintain toll roads or turnpikes as supplements to the few roads that could be maintained by using limited public funds. It was apparent that if the corporations did not have power to lay routes as seemed best, they could be forced to detour interminably around the lands of objecting owners or be forced to pay exorbitant prices for rights-of-way. Thus, they were customarily empowered to acquire rights-of-way compulsorily, upon impartial determination and payment of compensation to the affected private landowner. State regulation required

53. See, e.g., Stanwood v. Pierce, 7 Mass. 458 (1811); Concord R.R. v. Greely, 17 N.H. 47, 62 (1845); Proprietors of the Third Turnpike Road v. Champney, 2 N.H. 199 (1820); State v. Town of Hampton, 2 N.H. 22, 24 (1819); Brief for Defendant at 60, Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45 (N.Y. Ch. 1831) (mentioning fifteen hundred turnpike, bridge and canal corporations incorporated in New York state at that time and numerous others in other states). Normally the turnpike corporations were chartered to lay roads from one town or site to another. See, e.g., Stanwood v. Pierce, supra, concerning whether a legislatively designated tollroad terminus had properly been reached.

54. See, e.g., Callender v. Marsh, 18 Mass. (1 Pick.) 418, 428 (1823); Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45, 73-74 (N.Y. Ch. 1831). Damages were typically determined by a jury or assessed by court-appointed commissioners if the parties were unable to agree. Id. See also Barre Turnpike Corp. v. Appleton, 19 Mass. (2 Pick.) 430 (1824), for review of the procedural regularity of damage assessment proceedings.

It should be noted at this point that all of the legal structures that will be explored (transportation systems, milldams, drainage and irrigation systems, and oil and gas regulation) contain major procedural due process dimensions relating to such matters as the assessment of damages for land taken in the case of the transportation systems and milldams, assessment of betterment charges in the case of drainage and irrigation districts, and computation of entitlement to shares of production with respect to oil and gas regulations. These problems will not be considered in detail, but the reader should bear in mind that beneath the substantive doctrines covered, there have constantly
the turnpike corporations to maintain the roads and controlled the fee to be charged to the public for toll road use. The public had the incontrovertible right to use the roads upon the payment of requisite fees.55 Direct right of use by the public (hereinafter referred to as "user") was thus assured. The delegation of eminent domain power to private corporations was not litigated in early times. A mixture of public necessity, public use and ratification by longstanding custom apparently rendered the practice acceptable in contemporary eyes.

The scheme of the early enabling statutes for turnpike corporations was later duplicated by many state legislatures in authorizing the construction of canals in the late 1700's and of railroads beginning in the 1820's.66 In both applications, private corporations were chartered

55. One court has described the public right as follows:

A turnpike is a public road or highway, in the popular and ordinary sense of the words, and in that sense the Legislature are to be presumed to have employed them. Turnpike roads are, in point of fact, the most public roads or highways that are known to exist, and in point of law, they are made entirely for public use, and the community have a deep interest in their construction and preservation. They are under legislative regulations, and the gates are subject to be thrown open, and the Company indicted and fined, if the road is not made and kept easy and safe for the public use.


56. In Proprietors of Sudbury Meadows v. Proprietors of Middlesex Canal, 40 Mass. (23 Pick.) 56, 49 (1839), the court alludes to the canal company's 1793 charter as a very early one of the sort. See the history of Potomac [Canal] Company, chartered in 1784 and later to become the Chesapeake and Ohio Canal Company, as set forth in Chesapeake & O. Canal Co. v. Baltimore & O.R.R., 17 Md. 1, 72-73 (1832). The brief in one early case states that the practice of chartering railroad corporations was begun by the states in 1824. Brief for Defendant at 63, Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45 (N.Y. Ch. 1831).

Canals were first used as a circumferential system to connect the waterways north and west of Boston, and to bypass lower falls on the coastal rivers. Later, much more ambitious projects were launched to connect the Hudson River with Lake Erie and Lake Champlain, and to connect the Potomac River with the Ohio Valley. See cases supra and note 58 infra. Especially in these latter instances, public enthusiasm was great, as evidenced by this ebullient language used by Chancellor Kent in giving an expansive reading to the statutory powers of the New York Canal Commissioners:

If there was ever a case in the ordinary pacific operations of government in which all petty private interests should be made subservient to the interest of an entire people, this is one. The canals were undertaken "in full confidence that the Congress of the United States, and the States equally interested with this State in the commencement, prosecution, and completion of these important works, would contribute their full proportion of the expense." We have not as yet
to lay rights-of-way, to construct and maintain facilities to transport appropriate vessels in the case of canals and, in the case of railroads, to transport the public and its goods, upon payment of regulated fees.\textsuperscript{57}

The power of eminent domain in the canal corporations was for the most part only a collateral issue in the very early cases,\textsuperscript{58} and the analogy to turnpike corporations seems to have been sufficiently convincing that the judiciary had little pause in approving this power in the canal corporations.\textsuperscript{59} Railroads presented a somewhat more difficult case, however,\textsuperscript{60} since public user was less clear\textsuperscript{61} and occurred

realized the fruits of that confidence, and we are left to bear singly the whole expense, as well as to enjoy all the honor and glory of this stupendous undertaking.

Jerome v. Ross, 7 Johns. Ch. 315, 342-43 (N.Y. Ch. 1823).

57. As to canals, see Chesapeake & O. Canal Co. v. Key, 3 D.C. 599, 605 (1829); Riddle v. Proprietors of the Locks and Canals, 7 Mass. 169 (1810); Lebanon v. Olcott, 1 N.H. 339 (1818). It does not appear that the absolute right to use railroads upon payment of requisite charges was quite as well assured initially as it was in the case of turnpikes and canals. \textit{But see Brief for Plaintiff at 48-49, Brief for Defendant at 61-62, Beckman v. Saratoga & S.R.R., 3 Paige Ch. 45 (N.Y. Ch. 1831). The problem, if there was one, did not persist.}

58. In one early Massachusetts case the eminent domain powers of a canal corporation were reviewed very briefly and approved on the analogy to the milldams. \textit{See Stevens v. Proprietors of Middlesex Canal, 12 Mass. 466, 468 (1815). In two other major, early cases, however, the conflicts were between canal corporations and other utilities, and the courts thus did not focus squarely on the private eminent domain powers of the canal corporations. Chesapeake & O. Canal Co. v. Baltimore & O.R.R., 17 Md. 1, 72-73 (1832); Proprietors of Sudbury Meadows v. Proprietors of Middlesex Canal, 40 Mass. (23 Pick.) 36, 49 (1839). \textit{See also} Scudder v. Trenton Delaware Falls Co., 1 N.J. Eq. 694, 728 (1832), in which the propriety of a milldam corporation's power to condemn a sluiceway was subsumed in the larger question of its powers to erect a milldam to which the sluiceway was appurtenant. Early, influential New York cases construed the eminent domain powers of the state Canal Commissioners under their enabling statutes, and thus did not consider private corporate use of eminent domain. \textit{See Wheelock v. Young, 4 Wend. 647 (N.Y. Sup. Ct. 1830); Jerome v. Ross, 7 Johns. Ch. 315, 342-43 (N.Y. Ch. 1823); Rogers v. Bradshaw, 20 Johns. 735, 742 (N.Y. Ct. Err. 1823). \textit{But see} Chesapeake & O. Canal Co. v. Key, 3 D.C. 599, 605 (1829), in which the court sustained corporate use of eminent domain against a protesting owner. The condemnation proceedings were overturned due to procedural irregularities. \textit{Id. at} 610-11. \textit{See also note 54 supra. The condemnee was one Francis Scott Key, appearing \textit{pro se}, whose "land of the free" sentiments may have been sorely tested by this litigation.}

59. \textit{See cases cited note 58 supra.}

60. Without a brief excursion into the context of the times, it is perhaps a bit difficult to fathom the obstacles of fact, doctrine and policy presented in the early 1830's when the courts were asked to extend to the infant railroad companies the doctrinal treatment previously accorded the power of eminent domain held by turnpike and canal corporations. In this era, railroads were literally roads making use of rails, and locomotives were extremely crude, weak and unreliable. See the terms of an early railroad grant mentioned in Bloodgood v. Mohawk & H.R.R., 18 Wend. 9, 20-21 (N.Y. Ct. Err. 1837), which authorized the railroad to use any combination of power, including animals and steam or other mechanical power. Another early railroad was expected to scale the Allegheny Mountains by using one hundred stationary steam
only in the railroads' carriages and in accordance with their schedules of operations. This contrasted with the public's ability, on turnpikes and canals, to use their own conveyances at their own convenience and for their own purposes of profit or pleasure. If this diluted public user would support eminent domain powers in the railroad corporations, why not also in theater, hotel and a host of other corporations? The power of eminent domain in the railroad corporations was nonetheless upheld. The analogy to turnpikes could be stretched this far. The direct public user was deemed sufficiently certain, the necessity of a linear right-of-way was apparent and the delegation of this transportation function from the state to private corporations was not deemed impermissible.

By the mid-1830's the use of eminent domain by private transportation corporations had received initial approval in influential jurisdictions. The power was limited in its exercise to acquisition of rights-of-way and necessary appurtenant lands. Direct public user helped justify the judicial approval, but a broader concept also began to emerge. The canals and especially the railroads were major technological breakthroughs promising immense multiplier effects in open-engines. See Chesapeake & O. Canal Co. v. Baltimore & O.R.R., 17 Md. 1, 34 (1832). Further, most early railroad charters were for short lines connecting specified towns or waterways. See, e.g., routes detailed in Bloodgood v. Mohawk & H.R.R., 18 Wend. 9 (N.Y. Ct. Err. 1837); and the Massachusetts process of awarding charters for the completion of portions of the routes that would eventually link Boston with Providence, R.I. and with the Hudson River, as described in Boston Water Power Co. v. Boston & Worcester R.R., 40 Mass. (23 Pick.) 360, 363-65 (1839). The railroads, as considered by the courts in the earliest cases, were at best an alternative to and modest improvement over tollroads and canals. See generally Chesapeake & O. Canal Co. v. Baltimore & O.R.R., 17 Md. 1, 72-73 (1832). There is no indication in the lengthy briefs and opinions in that case whether the railroad or the canals were thought in 1832 to have the better chance of scaling the mountains and connecting the Potomac and Ohio basins.


62. See Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45, 74 (N.Y. Ch. 1831); Bloodgood v. Mohawk & H.R.R., 18 Wend. 9, 15-16 (N.Y. Ct. Err. 1837). To make this distinction more intelligible to a modern reader, it is the 19th century public-user equivalent to the current automobile driver's resistance when told that he should utilize mass transit and leave the car at home.

63. Baltimore & O.R.R. v. Van Ness, 4 D.C. (4 Cranch.) 595 (1835); Concord R.R. v. Greely, 17 N.H. 47 (1845); Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45, 60 (N.Y. Ch. 1831); Bloodgood v. Mohawk & H.R.R., 18 Wend. 9, 20-21 (N.Y. Ct. Err. 1837) (scrutinizing closely and construing the regularity of the condemnation procedure involved). In the first railroad case considered in Massachusetts, the propriety of eminent domain in a railroad corporation was not raised by the condemnee. See Carpenter v. County Comm'r's, 38 Mass. (21 Pick.) 258 (1838). The next two cases considered involved the powers of railroad corporations vis-a-vis those of a turnpike, see Newburyport Turnpike Corp. v. Eastern R.R., 40 Mass. (23 Pick.) 326 (1839), and of a large dam proprietor, see Boston Water Power Co. v. Boston & W.R.R., 40 Mass. (23 Pick.) 360, 363-65 (1839). The propriety of the railroads' eminent domain powers was tacitly approved.
ing new territory and allowing the massive rapid transport of goods, people, mails and troops in time of war. None of this was lost on the courts, and the "public use" served by canals and railroads became a mixture of two doctrines. Public user was present, but second and strongly ascendant was the interpretation of "public use" as general public utility and benefit, perhaps tantamount to a felt necessity given the tremendous impetus of the times toward commercial, industrial and territorial expansion.

64. In witness whereof, the following is set forth at length for fanciers of florid panygeric, 19th century variety:

Railroads are not only of great public use in the ordinary business transactions of the citizen, but they may be more advantageously used than turnpike roads for national purposes; ... for the transportation of mails, and the rapid dissemination of intelligence, which is the life of liberty, and more than any other mode of conveyance, they tend to annihilate distance, bringing in effect places far distant near to each other: tending in their magic influence to the extension of personal acquaintance, the enlargement of business relations, and cementing more firmly the bond of fellowship and union between the inhabitants of the States. Next to the moral lever power of the press, should be ranked the beneficial influence of railroads in their effects upon the vast and increasing business relations of the nation, and the promoting, sustaining and perpetuating the happiness, prosperity and liberty of the people.


65. In New York, the "public use as public utility" doctrine received its clearest early formulation as it concerned railroads. Public use may mean that property is possessed and used directly by the government, as was the case with the major New York canals but not with the railroads. See notes 56-58 supra. The New York courts then were obliged to formulate a manageable public-use doctrine that would legitimate the power of eminent domain in the railroads against the immediate background of cases involving that power in the state-owned canal system.

The rationale adopted was a mixture of deference to legislative judgment and acceptance of at least a moderate amount of legislatively-decreed public utility as sufficient:

[I]f the Legislature should attempt thus to transfer the property of one individual to another, where there could be no pretense of benefit to the public by such exchange, it would probably be a violation of the contract by which the land was granted by the government to the individual, or to those under whom he claimed title, and repugnant to the Constitution of the United States. But if the public interest can be in any way promoted by the taking of private property, it must rest in the wisdom of the Legislature to determine whether the benefit to the public will be of sufficient importance to render it expedient for them to exercise the right of eminent domain, and to authorize an interference with the private rights of individuals for that purpose.

Beekman v. Saratoga & S.R.R., 3 Paige Ch. 45, 73 (N.Y. Ch. 1831). To justify the exercise of the right of eminent domain, there must be a necessity, or at least an evident utility on the part of the public. Bloodgood v. Mohawk & H.R.R., 18 Wend. 9, 20-21 (N.Y. Ct. Err. 1837).

Perhaps the most thorough and useful analysis of public use as public purpose contained in 19th century case law may be found in Varner v. Martin, 21 W. Va. 534 (1883). After discussing a first class of cases in which the government acquires land by eminent domain, Judge Green continued:

The second class of cases to which I have alluded is where the property is
Summary of the Relation of Legal Doctrine to Development Rights.—
This brief survey of the private use of eminent domain by the early transportation corporations simply serves to trace to their beginnings the doctrines that will be developed subsequently. It is not suggested that eminent domain be used for either the creation or the acquisition of development rights. The concern of this article is with the various theories justifying the assemblage of rights in individually owned tracts, as was done to create transportation rights-of-way. This power of assemblage by eminent domain, finally questionable in the hands of the infant railroad corporations, was justified by a substantial expansion of precedent—that of public utility to bolster the sagging reality of public user. The public utility contemplated was the expected multiplier effect on state and national development if transportation technology, in the hands of its corporate promoters, were given the “forward march” with eminent domain to clear the trail. Of course the evolution of the substantive content of the “public utility” concept will be closely examined in the following sections, for this concept has changed radically over time.

B. The Milldam Acts

Of antiquity equal to that of the turnpikes was the colonial prac-

in the direct use and occupation of a private person or of a private corporation, and the general public have only an indirect and qualified use of the property condemned, or perhaps no use probably of any kind of the property condemned, but simply derives from its use by the owner for his private purposes some indirect advantage, as by the promotion of the general prosperity of the community.

... I think we can show from the decisions, that a person or corporation claiming to belong to this second class, and to have legislative authority to condemn lands, must first show, that he or they are possessed of each and all of these three qualifications. First, the general public must have a definite and fixed use of the property to be condemned, a use independent of the will of the private person or private corporation in whom the title of the property when condemned will be vested; a public use which cannot be defeated by such private owner, but which public use continues to be guarded and controlled by the general public through laws passed by the Legislature; second, this public use must be clearly a needful one for the public, one which cannot be given up without obvious general loss and inconvenience; third, it must be impossible, or very difficult at least, to secure the same public uses and purposes in any other way than by authorizing the condemnation of private property.

If any one of these essentials are wanting, the courts will declare the act of the Legislature authorizing such condemnation of private property to be unconstitutional, because it would amount to taking private property for private and not for public uses.

Id. at 555-56. In this case the court held unconstitutional a statute authorizing the use of eminent domain to acquire private rights-of-way. See Hairston v. Danville & W. Ry., 208 U.S. 598 (1908), as an example of judicial review of an alleged use of railroad eminent domain for a private purpose, i.e., to acquire a spur right-of-way to serve one factory.
tice by which a private owner on a stream could erect a dam to harness
the water power and thus create special rights in himself. Almost in-
evitably, the lands of upper streamcourse owners were flooded by the
resulting pond. Had their right to exclusive possession of their prop-
erties been inviolable, they could have sued to have the dam torn
down and their properties freed of the pond’s encroachment. As in
the case of the transportation systems, a dissident private owner would
thus have had obstructionist or “holdup” rights against a beneficial re-
source use. From at least the early 1700’s, however, in many states the
upstream owners were confined by statute to actions solely for damages
resulting from the flooding, thereby leaving dam, pond and energy
production intact.

Most early usage of this sort was to power grist mills. Millers
operated under state regulation obliging them to grind the grain of
all comers, in turn, as fine as could be, with exaction of a statutory
share of the flour produced as the fee. In this sense, public user of the

140, 151 (1906); Head v. Amoskeag Mfg. Co., 113 U.S. 9, 16-20 (1885); Talbot v. Hud-
son, 82 Mass. (16 Gray) 417, 426 (1860); Hatch v. Dwight, 17 Mass. 289 (1821) (in-
volving an “ancient” milldam); Brief for Petitioner at 447-51, Great Falls Mfg. Co. v.
Fernald, 47 N.H. 444 (1867); Varner v. Martin, 21 W. Va. 534, 544-46 (1883) (stating
that the practice in Virginia antedates 1700).

67. See Head v. Amoskeag Mfg. Co., 113 U.S. 9, 16-20 (1885); Stowell v. Flagg,
11 Mass. 364 (1814), in which the effect of the Massachusetts act on common
law remedies was first decided; Bates v. Weymouth Iron Co., 62 Mass. (8 Cush.) 548
(1851); Jordan v. Woodward, 40 Me. 317 (1855); Bassett v. Salisbury Mfg. Co., 47 N.H.
426 (1867). In addition to the problem of physical invasion, it is certain that the mill-
ponds were a nuisance in the neighborhood on frequent occasions. See Ryerson v.
Brown, 35 Mich. Rpts. 333, 341 (1877). Despite the statutes, the flowage right had some
substantive limitations. The flooded upstream owner could apparently construct dikes
on his firm land to turn back the waters of the pond. See Storm v. Manchaug Co., 95
Mass. (13 Allen) 10, 13-14 (1866). The Massachusetts act was held not to authorize dam-
ing on one stream if the water impounded was to be diverted to create power

Co., 113 U.S. 9, 16-20 (1885); Jordan v. Woodward, 40 Me. 317 (1855); Scudder v. Trenton
Del. Falls Co., 1 N.J.Eq. 694, 728 (1892). This is not to say, of course, that there was
not much litigation over the application of the acts to particular factual situations. See
e.g., Storm v. Manchaug Co., 95 Mass. (13 Allen) 10, 13 (1866); Bates v. Weymouth
Iron Co., 62 Mass. (8 Cush.) 548 (1851). Other lawsuits challenged the validity of dam-
aff’d, 113 U.S. 9 (1885); Ash v. Cummings, 50 N.H. 591 (1872) (common law tort
action not barred until damage proceedings conducted and award paid). Failure to pro-
vide for damages caused by flooding of lands by a private corporation chartered by the
state was the ground for invalidation in the celebrated case of Pumpelly v. Green Bay
Co., 80 U.S. 166 (1871).

of water grist-mills were by these acts made as it were public servants.” Lest we feel
undue sympathy for these flour-encrusted drudges, one miller per mill was exempted
mill was guaranteed as it was of the turnpikes. Public user combined with the virtually indispensible public utility of grist mills to make secure this early usage of the mill acts. Here again was the grant of the power of eminent domain to a private individual to further a resource use, with regulated participation guaranteed to the public and with compensation paid for unavoidable damages to the property of other owners.

In the earliest judicial consideration of the milldam acts, shortly after 1800, the courts relied heavily on the longstanding use and ratification of the acts by custom, admitting that, were the practice novel, it might be a dubious one. Indeed, courts in a few states later confined the milldam prerogative to grist mills alone, stating that these were recognized and regulated as public utilities with public user guaranteed and that other types of mills without guaranteed public user failed to satisfy the public user requirement necessary to entitle them to powers of eminent domain. In some New England states,


70. The Massachusetts court stated:

I cannot help thinking that this statute was incautiously copied from the ancient colonial and provincial acts, which were passed when the use of mills, from the scarcity of them, bore a much greater value, compared to the land used for the purposes of agriculture, than at present. But with this we have nothing to do. As the law is, so we must declare it.


Whether, if this were an original question, this legislation would be considered as trenching too closely upon the great principle, which gives security to private rights, it seems now too late to inquire, such legislation having been in full operation in this state a century and a half.

Murdock v. Stickney, 62 Mass. (8 Cush.) 113, 117 (1851). See also Jordan v. Woodward, 40 Me. 317, 323 (1855), expressing similar reflections. In New Hampshire, the constitutionality of the milldam acts was not squarely raised and clearly decided until Ash v. Cummings, 50 N.H. 591 (1872), in which a similar approach was taken.

71. Initially, dictum appeared in cases indicating that the use of these acts in certain cases might pose grave state constitutional questions. See Hay v. Cohoes Co., 2 N.Y. 159 (1849); Harding v. Goodlett, 11 Tenn. 40, 53-54 (1832). See also Sadler v. Langham, 34 Ala. 311 (1859). Thereafter invalidation on state constitutional grounds first occurred in three nearly simultaneous cases: Loughbridge v. Harris, 42 Ga. 500 (1871); Ryerson v. Brown, 35 Mich. Rpts. 333 (1877); Tyler v. Beacher, 44 Vt. 648 (1871). In each of these cases, the court stressed that the statutes would have authorized the use of eminent domain for general milldam purposes, and not solely for grist mills. Ryerson v. Brown contains a most useful discussion on the realities of resource use that might persuade the judiciary to uphold an act in one era, while invalidating it in another:

An examination of the adjudged cases will show that the courts, in looking about for the public use that was to be accommodated by the [milldam] statute, have sometimes attached considerable importance to the fact that the general
improvement of mill-sites, as property possessing great value if improved, and often nearly worthless if not improved, would largely conduce to the prosperity of the state. This is especially true of the decisions in those states where water power is most abundant, and where, partly because of a somewhat sterile soil, manufactures have attracted a larger proportion than in other states, of the capital, skill and labor of the community. In this state it is doubtful if such legislation would add at all to the aggregate of property. Numerous fine mill-sites in the populous counties of the state still remain unimproved, not because of any difficulty in obtaining the necessary permission to flow, but because the power is not in demand.

... If the act were limited in its scope to manufactures which are of local necessity, as grist-mills are in a new country not yet penetrated by railroads, the question would be somewhat different from what it is now. But even in such case it would be essential that the statute should require the use to be public in fact; in other words, that it should contain provisions entitling the public to accommodations. A flouring mill in this state may grind exclusively the wheat of Wisconsin, and sell the product exclusively in Europe; and it is manifest that in such a case the proprietor can have no valid claim to the interposition of the law to compel his neighbor to sell a business site to him, any more than could the manufacturer of shoes or the retailer of groceries.

... If, however, the use to which the property is to be devoted were one which would justify an exercise of the power, it would still be imperative that a necessity should exist for its exercise. All the authorities require that there should be a necessity for the appropriation in order to supply some public want, or to advance some public policy; the object to be accomplished must be one which otherwise is impracticable.

The opinion then considered an earlier milldam act, upon which the statute under consideration was patterned. Ryerson v. Brown, supra at 337-39. Judge Campbell, concurring, stressed the changes in the state's economy:

The territory was then in a state of almost complete isolation. Until the Erie canal was completed the expense of bringing steam machinery so great a distance would have been ruinous, and in the condition of the local roads it would have been impracticable. Emigrants [sic] were coming in rapidly and mills were necessary for their existence. Towns could not be maintained or even built without them. Water mills were the only ones of any utility in such communities, and their necessity was urgent. They were undoubtedly as indispensable as roads, and in fact very commonly preceded them. The judgment of the legislature was in complete accordance with the facts. 

... The declaration of necessity in 1824 was no more significant than the finding that no further necessity existed in 1828, and this was no doubt owing to the introduction of steam. Any stream which is capable of furnishing water power is still more capable of furnishing water for running steam machinery; and any one who has the right to use running water at his steam mill is independent of riparian owners above him.

Id. at 345-46 (Campbell, J., concurring).

These passages illustrate that, although the physical reality of resource use remained constant (a dammer necessarily flooded an upstream riparian owner), the social need for the resource use shifted. Thus the earlier grist milldam statute effective between 1824 and 1828 would apparently have been valid in that era, but in 1877, the court in the instant case invalidated a general milldam statute. Also note that the progress of technology effected a complete reversal in doctrine—the perfection of steam power eliminated the dependency on water power for milling. We asserted earlier that, in a comparable manner, the interaction of technology, population expansion and affluence
however, courts in early cases uncritically reviewed use of the milldam acts to foster mills for a wide range of industrial use, many of them purely private to the mill proprietors and lacking the element of public user that grist mills had.\textsuperscript{72} In these states, public user receded to nearly an irrelevance, and the multiplier effect of general-purpose mill energy on the industrial and employment base of the state was elevated to the level of adequate justification for conferring the power of eminent domain on private individuals and corporations.\textsuperscript{73}

have so precipitated abilities to alter and develop land that a fundamental shift in the perception of land resources and their preservation is necessary. See p. 43 \textit{supra}. Compare Township of Burlington v. Beasley, 94 U.S. 310 (1876), \textit{with} Osborne v. County of Adams, 106 U.S. 181 (1882), involving the propriety of issuing internal improvement bonds under state statutes in order to fund steam-powered grist mills.

72. Thus, Hatch \textit{v.} Dwight, 17 Mass. 289 (1821), involved a milldam said to be ancient, from which the water power was used to power a corn and hide mill. The court took no exception to the hide mill use. Boston \& Roxbury Mill Dam Corp. \textit{v.} Newman, 29 Mass. (12 Pick.) 467 (1832), involved a charter for a major dam across one of the necks of Boston harbor, which was to carry a roadway on top and to tap tidal ebb and flow, thereby generating sufficient diurnal energy to support a mill with energy equivalent to 20 pairs of millstones. In holding that the corporation validly held eminent domain powers to remove encroachments in the tidal basin, the court failed to make any distinction between grist mills and the general purpose energy source at hand and instead gave its approval to the public utility of the project in the following terms:

\textit{Here was a creation of an immense perpetual mill power, as well as a safe and commodious avenue, in and over the waste waters of the ocean and adjoining to a great city.}

We should be at a loss to imagine any undertaking of an individual or association of persons with a view to private emolument, in which the public had a more certain and direct interest and benefit. \textit{Id.} at 476. \textit{See also} Jordan \textit{v.} Woodward, 40 Me. 317 (1855); Brief for Petitioners at 447-51, Great Falls Mfg. Co. \textit{v.} Fernald, 47 N.H. 444 (1867).

73. \textit{See} Varner \textit{v.} Martin, 21 W. Va. 534 (1883); \textit{note} 65 \textit{supra}; cases cited \textit{note} 72 \textit{supra}. The perspective from the New Hampshire bench is aptly stated in Great Falls Mfg. Co. \textit{v.} Fernald, 47 N.H. 444, 460 (1867):

Our soil and climate forbid us to enter into competition with the great producing States of the Union, in the sale of such agricultural productions as are sent to the great markets of the country; we are purchasers, and not vendors, of such productions. The prosperity of the farmer mainly depends with us on having close at hand a market for such products of his farm as cannot be advantageously transported for long distances, and in which he does not come into competition with the great producers of the West. Such a market can be furnished only by his neighbors, who are engaged in mechanical and manufacturing pursuits. The farmer, therefore, has an obvious and deep interest in those pursuits; and large manufacturing establishments not only afford a market for agricultural productions, but give profitable employment to great numbers of men and women, disburse large sums of money, and create a new demand for wood, timber, and other commodities.

Similar sentiments were expressed by the New Jersey court in Scudder \textit{v.} Trenton Del. Falls Co., 1 N.J.Eq. 694, 728-29 (1832):

May we not, in considering what shall be deemed a public use and benefit, look at the objects, the purposes, and the results of the undertaking? The water
A variant justification began to emerge as well, however. The Massachusetts courts, perhaps troubled by the full implications of the public utility analysis, carefully examined the nature of the property right taken from the flooded upstream owner. The right was stated to be more in the nature of an easement than a fee simple absolute, and it was further determined, in effect, that all riparian property was held subject to this commonly known, potentially preemptive power about to be created, will be sufficient for the erection of seventy mills, and factories, and other works dependent on such power. It will be located at the seat of government, at the head of tide water, and in a flourishing and populous district of country. It will be no experiment in a country like ours; and, judging from the results in other places, we may make a sufficiently accurate calculation as to the result here. Take the town of Paterson as an example. The water power there is in the hands of individuals—a company like this. They are under no obligation to lease or sell any mills or privileges to the public; and yet see the result of a few years' operation. Paterson is now the manufacturing emporium of the state, with a population of eight thousand souls. It has increased the value of property in all that district of country; opened a market for the produce of the soil, and given a stimulus to industry of every kind. May we not hope that a similar benefit may be experienced here?

Two decades after Proprietors of Sudbury Meadows v. Proprietors of Middlesex Canal, 40 Mass. (23 Pick.) 36 (1839), the canal had doubtlessly been largely supplanted by improved roads and railroads. The meadow proprietors, armed with a new special statute, wished to free their lands of the waters cast back by the canal company's dam, approved in the earlier decision. The court allowed this to be done in Talbot v. Hudson, 82 Mass. (16 Gray) 417 (1860). In commenting on the vagaries that the meadows had undergone at the hands of the proprietors operating under various special legislative acts, the court delivered the following pronouncement:

It is certainly difficult to see any good reason for making a discrimination... [as to the legislative conferment of the powers of eminent domain] between different branches of industry. If it is lawful and constitutional to advance the manufacturing or mechanical interests of a section of the State by allowing individuals acting primarily for their own profit to take private property [referring to the milldam acts], there would seem to be little, if any, room for doubt as to the authority of the legislature, acting as the representatives of the whole people, to make a similar appropriation by their own immediate agents [the proprietors of the meadows] in order to promote the agricultural interests of a large territory.

Id. at 427. This, of course, illustrates precisely the troublesome ultimate extension of the doctrine of public utility as public use. The power in the hands of the meadow proprietors may be explicable by the drainage precedents to be considered next. See pp. 67-76 infra. But if any corporation qua corporation acts for the "public use" in the sense of generalized public utility, or is a legitimate representative of a generic segment of the economy as set over against other such segments (e.g., agriculture versus manufacturing), it is most difficult to see where the limits may be drawn in conferring eminent domain powers on corporations. Indeed, as will be noted briefly later, in many western states these powers are widely conferred on corporations and individuals, albeit for limited purposes. See p. 75 infra.

74. The flowage right is characterized as an easement or servitude in Otis Co. v. Ludlow Mfg. Co., 201 U.S. 140, 153-54 (1906); Bates v. Weymouth Iron Co., 62 Mass. (8 Cush.) 548, 555 (1851); Boston & Roxbury Mill Dam Corp. v. Newman, 29 Mass. (12 Pick.) 467, 482-83 (1832). It is clear from these cases that the dammer did not acquire the fee in lands flowed, but only the right of encroachment as long as the dam and pond existed.
easement that might be created under the operation of the hoary mill-dam acts. It was well-settled that riparian owners had mutual, correlative rights in the use of the stream water as it flowed past their various properties. The dammer's inchoate easement was characterized as a permissible instance of the adjustment of these mutual rights among the owners along a streamcourse. This rationale is quite dubious on one level, for the adjustment of true correlative rights in a flow resource can hardly be equated with the unilateral, preemptive right in one owner to dam and consequently to flood upstream owners. A mirror-image justification exists, however. Were upstream owners able to stand firm on property rights and block or seek unconscionable reparations from a dam builder, development of the innate energy of the watercourse would consistently be deterred or blocked. This "adjustment" of rights should perhaps be understood as giving any owner, and therefore all owners equally, the opportunity to move first in erecting a dam. The first owner to exercise this right then preempted its exercise by his upstream neighbors along the level of his millpond. And this preemption was necessarily accompanied by the

---


76. See cases cited note 75 supra. This included the right to make use of its natural gravitational fall for power generation purposes.

77. See Otis Co. v. Ludlow Mfg. Co., 201 U.S. 140, 153-54 (1906); Bates v. Weymouth Iron Co., 62 Mass. (8 Cush.) 548, 553 (1851); Murdock v. Stickney, 62 Mass. (8 Cush.) 113, 116 (1851). In the eyes of the Massachusetts courts the milldam acts were a form of police power regulation, not of eminent domain. See Murdock v. Stickney, supra. The effect of the acts was to adjust rights that were correlative, or held in common among owners along affected portions of a stream. See Fiske v. Framingham Mfg. Co., 29 Mass. (12 Pick.) 68, 70-72 (1884); Bates v. Weymouth Iron Co., supra at 552-53. But cf. Talbot v. Hudson, 82 Mass. (16 Gray) 417, 426 (1860), indicating that the Massachusetts act could be considered an exercise of the power of eminent domain; the case is cited to this effect in Head v. Amoskeag Mfg. Co., 113 U.S. 9, 19 (1885). See also discussion, note 79 infra.

78. The case in which this rationale was firmly adopted was Cary v. Daniels, 49 Mass. (8 Met.) 466, 477 (1844):

It seems to follow, as a necessary consequence from these [physical principles of damming] . . . that in such case, the proprietor who first erects his dam for such a [milling] purpose has a right to maintain it, as against the proprietors above and below; and to this extent, prior occupancy gives a prior title to such use. It is a profitable, beneficial, and reasonable use, and therefore one which he has a right to make. . . . For the same reason, the proprietor below cannot erect a dam in such a manner as to raise the water and obstruct the wheels of the first occupant. He had an equal right with the proprietor below to a reasonable use of the stream; he had made only a reasonable use of it; his appropriation to that extent, being justifiable and prior in time, necessarily prevents the proprietor below from raising the water, without interfering with a rightful use already made; and it is therefore not an injury to him. Such appears to be the nature and extent of the prior and exclusive right, which one proprietor acquires by a prior reasonable appropriation of the use of the water in its fall; and it
occupancy of overflowed lands. Viewed in this somewhat tortuous light, the milldam acts were characterized in Massachusetts not as invoking the power of eminent domain, but as legitimate police power regulations for the adjustment and furtherance of rights held in common by riparian owners along a stream.  

When the United States Supreme Court finally considered the matter, it reviewed and upheld a New Hampshire milldam statute on the basis of the rationale developed in the Massachusetts courts. The Court analogized the affected ownership rights to those of tenants in common. Statutory and common law devices existed for breaking a deadlock when tenants in common did not agree on the use of their property. These precedents were cited as relevant, if not controlling, in support of the milldam acts, which were thus characterized as legitimate uses of police power regulation. Although a substantial twisting of fact is needed to compare a disagreement among co-tenants to the act of a dammer in casting pond waters onto the properties of private results, not from any originally superior legal right, but from a legitimate exercise of his own common right, the effect of which is, de facto, to supersede and prevent a like use by other proprietors originally having the same common right.

Note from the above excerpt that due to physical reality, the dam had a preemptive effect both upstream and down. A downstream owner was precluded from erecting a dam that would push water against the dam of an upstream owner, thereby pro tanto reducing the vertical fall of water available to the upstream dammer for water power purposes. The dammer likewise preempted vertical fall along the level of his millpond as far as it extended upstream. Viewed in this light, the “property” subjected to prior appropriation was perhaps the vertical fall of water, with the flowage of land then viewed as a subordinate incident of the appropriation. No compensation was payable under the act for destruction of that portion of the market value of riparian lands attributable to adaptability for mill purposes. Fuller v. Chicopee Mfg. Co., 82 Mass. (16 Gray) 43 (1860).

For a compendious and detailed statement of the effects and operations of the Massachusetts act, see Brief for Plaintiff at 141-47, Otis Co. v. Ludlow Mfg. Co., 201 U.S. 140 (1906).

79. See Head v. Amoskeag Mfg. Co., 113 U.S. 9, 21-23 (1885). This characterization in Head had the important consequence of enabling the Supreme Court to deal with the case as involving an exercise of the police power. See note 77 supra. The Court explicitly refrained from treating the case as one involving the power of eminent domain, Head v. Amoskeag, supra at 20-21; by so doing the Court avoided the need to determine the propriety of the delegation of eminent domain to private individuals under the public-use-as-public-utility rationale. Going beyond the narrowly stated basis of the case (adjustment of rights held in common), it seems unquestionable that the police power may be exercised for the general adjustment of private rights on grounds of public utility and benefit, whereas these grounds are a highly suspect basis for the bestowal of eminent domain powers on individuals and corporations. See note 73 supra.


81. Id.; see notes 73, 77, 79 supra.
The question of public purpose did not deter the Supreme Court. The question having been long settled in the courts and legislature of New Hampshire and by customary practice in the state, the Supreme Court considered the matter so properly resolved and determined that it presented no question of federal constitutional rights. When no blatant violation of federal constitutional guarantees is presented, and the public purpose question is resolved in light of local circumstances, exigencies or custom, this posture of the Supreme Court in ratifying local practice is not unusual.

Summary of the Relation of Legal Doctrine to Development Rights.

—The cluster of legal precedents surrounding the milldam acts is useful for two principal purposes. First, in several jurisdictions the perceived multiplier effect of water power on the employment and industrial base of the state served to advance the public-use-as-public-utility concept with such vigor that the multiplier effect became a sufficient justification for placing eminent domain powers in the hands of private dammers. We suggest later that proper management of land resources by use of development rights may produce major, beneficial multiplier effects. While there is no proposal that any use of eminent domain be made in this connection, it should be remembered that the multiplier effect of resource use and exigencies of that use in the case of milldams have been held sufficient to justify the private use of eminent domain in some states.

Second, the courts developed the doctrine that the milldam statutes were reasonable police power regulations for the adjustment and protection of the exercise of the correlative rights of individual owners that arose from their shared relation to a common resource. In the case of milldams, the absolute physical necessity of flooding upstream owners (and their converse ability to block dams or demand an exorbitant price) perhaps eased the application of this doctrine. Subsequently, more refined and tenuous versions of the doctrine of correlative rights in a commonly shared resource use will be discussed; it is one of the cornerstones of the proposed development rights system.

C. Major Drainage and Irrigation Projects

Although drainage and irrigation projects sought diametrically opposite physical results, they went forward under comparable legal
structures and evoked similar judicial response. They will be considered together.

Drainage and irrigation required large amounts of front-end capital for the construction of facilities that would produce chiefly deferred benefits. Government could properly have paid these initial costs but did not typically do so in the 1800’s, creating instead legal structures for private-sector enterprise to accomplish these ends.\(^8\) With both drainage and irrigation, there was relatively little actual acquisition of property. Transportation systems and millponds were characterized by actual physical occupancy of affected properties. Drainage and irrigation districts also occupied property, for example, for rights-of-way, dams and reservoirs,\(^8\) but the vast majority of properties affected were those benefited by the projects, not those occupied by them.

The legal mechanisms widely adopted to effect these projects were created by statute and were relatively straightforward in structure. Upon petition to a local court by the qualifying owners of a stated percentage of lands within a proposed district, commissioners

---

83. Drainage of marshes and overflowed lands was a practice in the Eastern States from very early times. See, e.g., statutes and practices discussed in Willson v. Black Bird Creek Marsh Co., 27 U.S. (2 Pet.) 245 (1829) (involving a Willson drainage corporation); Proprietors of Sudbury Meadows v. Proprietors of Middlesex Canal, 40 Mass. (23 Pick.) 36 (1839); Hoagland v. Wurts, 41 N.J.L. 175, 179 (1879) (terming special legislation for the drainage of meadows “a branch of legislation that has existed in this state from the earliest times”); Coster v. Tide Water Co., 18 N.J. Eq. 54, 69 (1866) (mentioning that the court had been referred to hundreds of private drainage acts in New York and New Jersey); Belknap v. Belknap, 2 Johns. Ch. 463 (N.Y. Ch. 1817); Phillips v. Thompson, 1 Johns. Ch. 130 (N.Y. Ch. 1814). In tidal areas and along some of the inland rivers, drainage was accomplished by building levees to repel the onslaught of tides or floods. United States v. Lynah, 188 U.S. 445 (1903) (involving a levee); Eldridge v. Trezevant, 160 U.S. 452 (1896) (involving Louisiana levee practices); Willson v. Black Bird Creek Marsh Co., supra; Coster v. Tide Water Co., supra. Widespread irrigation arose only as the West was settled, and then largely west of the 100th principal meridian. See, e.g., Lake Koen Navigation, Reservoir & Irrigation Co. v. Klein, 65 P. 684 (Kan. 1901), discussing a statutory scheme indicating legislative intent to authorize irrigation in Kansas west of the 99th meridian.

84. See, e.g., the following cases involving powers in a district to condemn a right-of-way for the conveyance of water: O’Neill v. Leamer, 239 U.S. 244 (1915); Merrill v. Southside Irrigation Co., 44 P. 720 (Cal. 1896); to condemn a portion of an existing irrigation canal: Portneuf Irrigating Co. v. Budge, 100 P. 1046 (Idaho 1909); to condemn bottomland for a reservoir: Lake Koen Navigation, Reservoir & Irrigation Co. v. Klein, 65 P. 684 (Kan. 1901); Paxton & Hershey Irrigating Canal & Land Co. v. Farmers’ & Merchants’ Irrigation & Land Co., 64 N.W. 343 (Neb. 1895). In usages such as these, of course, the districts held powers of eminent domain and proceeded under them. When drainage involved the land of but a few individuals, infliction of impact outside of the drainage area, as by interfering with the water supply of established mills, raised troublesome problems of the private use of eminent domain. See Belknap v. Belknap, 2 Johns. Ch. 463 (N.Y. Ch. 1817) (decided on ultra vires grounds); but such powers were granted in the special act under review in Phillips v. Thompson, 1 Johns. Ch. 130 (N.Y. Ch. 1814).
were appointed and empowered by the court to investigate and report on the economic feasibility of the project and the territorial extent of the proposed district. One or more hearings were held to consider the economic and physical feasibility of the project, to set boundaries of the project area and to assess charges on a ratable basis against the properties within the project in accordance with the expected benefits. Notice to affected property owners was given and there was the right of appeal from contested determinations.85

The startling, basic premise of these acts was that a majority of property owners could by vote, under statutory authorization and court supervision, impose their vision of desirable land use on an objecting minority. The imposition was in part physical and in part financial. In the case of drainage, the majoritarian imposition caused the alteration of the physical characteristics of the lands involved. There would have been no way to exclude any interior landholdings from the effects of a lowered water table, something a rice grower, for instance, might have wished. As with the milldams, then, an unwilling owner was clearly shorn of the ability to block the project on grounds that the physical nature of his land might not be altered without his consent.86 Within an irrigation district, by contrast, there would have

85. See generally the statutory structures under review, and statutes and cases cited in Lake Shore & M.S. Ry. v. Clough, 242 U.S. 375 (1917); O'Neill v. Leamer, 239 U.S. 244 (1915); Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896); Wurts v. Hoagland, 114 U.S. 606 (1885); Hagar v. Reclamation Dist. No. 108, 111 U.S. 701 (1884); In re Bonds of Madera Irrigation Dist., 28 P. 272 (Cal. 1891); Lake Koen Navigation, Reservoir & Irrigation Co. v. Klein, 65 P. 684 (Kan. 1901); Coomes v. Burt, 39 Mass. (22 Pick.) 422 (1839); Lundberg v. Green River Irrigation Dist., 119 P. 1039 (Utah 1911). All of these cases contain review of various aspects of due process requirements surrounding the formation of districts and the levy of betterment assessments.

86. This was assumed, sub silentio, in Wurts v. Hoagland, 114 U.S. 606 (1885); Hagar v. Reclamation Dist. No. 108, 111 U.S. 701 (1884). The author has found no case in which physical alteration of drained land was raised and treated as an issue separate from larger questions of the validity of overall public purposes served by drainage projects. An owner's denial that he was receiving any benefits, see note 87 infra, did not raise the issue. Physical alteration offsite, such as reduced water flow to milldams, was treated in a few cases. See, e.g., Belknap v. Belknap, 2 Johns. Ch. 130 (N.Y. Ch. 1814); Phillips v. Thompson, 1 Johns. Ch. 180 (N.Y. Ch. 1814). The closest approach to direct discussion of the issue is that of Beasley, C.J., in Hoagland v. Wurts, 41 N.J.L. 175, 177-79 (1879):

If the law in question were defensible alone on the ground that it is an emanation of the legislative power in its ordinary exercise, I should be constrained to yield my assent to . . . [the contention that the statute is invalid]. There is nothing that I know of in the nature of legislation that could stand as a warrant for such an enactment. To make this evident, all we have to do is to realize fully the character of the authority thus assumed. The purpose of the law is to enable one set of land owners to compel another set to co-operate, against their will, to drain that body of meadow land in which they have separate interests. The persons thus coerced manifestly suffer an invasion of their
been no inevitable alteration in the physical nature of property (ignoring generalized effects such as seepage and a somewhat raised water table). As a physical reality, an owner could have elected not to use any project water while continuing his nonirrigated uses without disruption.87

Despite the sharp difference in the inevitability of physical effects

ordinary proprietary rights. Why should they thus be forced either to improve their own land or help to improve the land of others? . . .

But, nevertheless, I think this act, with respect to its general scope and operation, is to be vindicated. The right to appoint methods for the drainage of meadows has been a branch of legislation that has existed in this state from the earliest times, and has been so frequently exercised and acknowledged, that it has become a part of the local common law.

The physical necessity of draining the land of all owners within a drainage district is mentioned in Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 163-64 (1896).
87. The dissident owner's asserted right to do precisely this was reviewed in Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896). Mrs. Bradley's property was susceptible of beneficial use without the necessity of water for irrigation and had for several years been used for beneficial purposes other than cultivation by irrigation. Id. at 166. It was nonetheless assessed for irrigation benefit in the amount of §51.91, and when Mrs. Bradley refused to pay the assessment, the land was sold to collect the amount. Id. at 121-23.

Contrasting the necessity of physical invasion in the case of milldams and the necessity of physical alteration in the case of drainage districts, Mrs. Bradley argued that she was being compelled to take and pay for water whether she wanted it or not, without any physical necessity for the compulsion. Brief for Appellees at 137-39, Fallbrook Irrigation Dist. v. Bradley, supra. The Supreme Court did not agree:

If land which can, to a certain extent, be beneficially used without artificial irrigation, may yet be so much improved by it that it will be thereby and for its original use substantially benefited, and, in addition to the former use, though not in exclusion of it, if it can then be put to other and more remunerative uses, we think it erroneous to say that the furnishing of artificial irrigation to that kind of land cannot be, in a legal sense, a public improvement, or the use of the water a public use.

Id. at 167. In so holding, the Supreme Court relied heavily on an earlier California case that approved the inclusion of the city of Modesto within an irrigation district although many improved properties within the city would assertibly receive no benefit from the availability of irrigation water. Board of Directors of Modesto Irrigation Dist. v. Tregea, 26 P. 237 (Cal. 1891). The Supreme Court interpreted as includable within the irrigation district all lands that in their natural state were susceptible of receiving benefits from irrigation. Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 164-67 (1896), citing Board of Directors of Modesto Irrigation Dist. v. Tregea, 26 P. 237, 241-42 (Cal. 1891). Thus, under statutory mandate by the California Legislature, as approved by the courts, the physical reality that an owner could have refused to participate in an irrigation district gave way to the legal reality that he could not do so. Interestingly, the Supreme Court bolstered this approach by noting that an owner, having been compelled to take a share of irrigation project water and pay for the benefits thereby conferred, was at liberty to sell or assign any irrigation water in excess of his needs and thus to offset or perhaps to recoup the amount of the assessment. Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 162-63 (1896). This is comparable to the ability of a property owner to sell development rights.
on lands caused by drainage and irrigation, compulsory charges computed on the basis of "benefits" received were assessed on all "benefited" properties within both types of districts. From the perspective of physical reality, there was no compelling reason for this to have been so, at least in the case of irrigation districts. In fact the assessment process, especially as applied within irrigation districts, apparently reflected a decision grounded more in fiscal reality than in any unalterable exigency arising from the reality of resource use. An owner of lands to be drained, protesting that he did not want the physical nature of his property altered, could not block the project. Short of blockage, however, he might be seeking a "free ride," that is, to receive the immediate and inevitable benefits of the drainage from which he could not be excluded, while being excused from paying any of the costs because of his protestation that he neither wanted nor would receive any "benefit." The free-rider situation does not exist as clearly in the irrigation case, since owners not desiring irrigation water could certainly have been allowed to deal themselves out by binding contract. Ambiguously in the case of drainage and more clearly in the case of irrigation, it can be asserted that the principal use of the assessment for "benefits" was to compel the assemblage of front-end capital without which the projects could not have been undertaken by private sector activity.

Two further points need mention. By statutory definition, districts could typically include only lands that would be benefited by a common form of reclamation. The actual delineation of the area to be included within a district was frequently a highly judgmental matter, however. Terrain elevations and the gravity-flow characteristic of water were to some extent determinative, but with improvements in construction abilities and pumping technology, and the resultant increases in project size, choices arose and were made concerning the inclusion of major additional areas within projects.

Further, determination of the value of project benefits to particular tracts was highly subjective and often precipitated intense controversy. Benefits could not be pure fiction—a desert could not be charged with

88. See generally notes 85 & 87 supra.
89. See note 87 supra.
90. See note 85 supra.
91. See, e.g., Board of Directors of Modesto Irrigation Dist. v. Tregea, 26 P. 237, 244 (Cal. 1891), in which the decision was belatedly made to exclude 28,000 acres from the originally proposed 108,000-acre district. In this case an offer of proof was made, which the court held was correctly rejected, that the inclusion of Modesto within the district was a gerrymander to assemble enough favorable votes from city residents to override the opposition of outlying farmers to the formation of the district. Id. at 243.
a drainage assessment, nor a swamp with irrigation benefits. Short of this, however, intermediate cases involving marginal benefit were quite troublesome. For example, a tract arable for many purposes under natural rainfall might receive only slight benefit from irrigation, or an owner might protest with complete sincerity that he wanted no irrigation water and would relinquish all rights to it. Within the gross structural frameworks for delimiting districts and establishing assessment rates, then, there existed many difficult individual situations in which finely tuned and totally persuasive objectivity was an elusive goal.

92. See, e.g., Myles Salt Co. v. Iberia Drainage Dist., 239 U.S. 478 (1916), in which the drainage district for a low lying coastal area attempted to embrace and to assess for drainage betterments a geologically anomalous "island" that rose to a height of 175 feet above the plain, suffered from excessive drainage and erosion under natural circumstances, and happened to be the most valuable single piece of property within the district. The Supreme Court struck down the inclusion and assessment of the "island" within the district in the following language:

It is to be remembered that a drainage district has the special purpose of the improvement of particular property and when it is so formed to include property which is not and cannot be benefited directly or indirectly, including it only that it may pay for the benefit to other property, there is an abuse of power and an act of confiscation.

Id. at 485.

On a broader level, the determination that lands within the district would benefit from the proposed system of drainage or irrigation was a jurisdictional one—it was one of the threshold questions that required an affirmative answer before a drainage or irrigation district could be created under the typical statute. See Lake Shore & M.S. Ry. v. Clough, 242 U.S. 375 (1917); Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 175-78 (1896).

93. Perhaps the best general statement is to be found in Hagar v. Reclamation Dist. No. 108, 111 U.S. 701, 705 (1884):

The expense of such works may be charged against parties specially benefited, and be made a lien upon their property. All that is required in such cases is that the charges shall be apportioned in some just and reasonable mode, according to the benefit received. Absolute equality in imposing them may not be reached; only an approximation to it may be attainable. If no direct and invidious discrimination in favor of certain persons to the prejudice of others be made, it is not a valid objection to the mode pursued that, to some extent, inequalities may arise.

In a specific situation, the Supreme Court of California, in Board of Directors of Modesto Irrigation Dist. v. Tregesa, 26 P. 257, 242 (Cal. 1891), had this to say:

If this objection was good ground for excluding the city from the district, it is probable that no district could ever be successfully organized; for, in the nature of things, an irrigation district must cover an extensive tract of land, and, no matter how purely rural and agricultural the community may be, there must exist here and there within its limits a shop or warehouse covering a limited extent of ground that can derive no direct benefit from the use of water for irrigation.

It is assertible that the courts foresaw and moved to forestall a plethora of suits on the merits by individuals whose lands had been assessed by drainage and irrigation districts. In any event, the judicial approach of the United States Supreme Court was:
The basic analogue adopted by the courts in approving the legal structure of these districts was the variation on taxation known as the "special assessment," through which a charge is assessed against property for a benefit peculiarly conferred on the property by a public or quasi-public expenditure. The use of the doctrine in this context is a bit more startling than it may first appear. The levy of a monetary assessment may not seem like the "taking" of property that occurred with milledams and railroads. It is certainly not an immediate physical occupancy. The charge was assessed against the land, however, and in the event of nonpayment the land could be sold to satisfy the charge. The special assessment had the potential to eventuate in seizure of the land of a financially hard-pressed owner. And the monetary charge (and actual physical alteration in the case of drainage) was imposed by majoritarian action. It would certainly seem an unheard-of proposition if the owners of the majority of homes in a block could elect an expensive scheme of neighborhood improvement, perhaps make alterations to a dissenting owner's pro-

(1) to give initial broad review to the validity of the purposes and general structure of the districts, see, e.g., Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896); Wurts v. Hoagland, 114 U.S. 606 (1885); Hagar v. Reclamation Dist. No. 108, 111 U.S. 701 (1884); (2) to decide additional cases that related specifically to assessment procedures and theories, see, e.g., Houck v. Little River Drainage Dist., 239 U.S. 254 (1915); O'Neill v. Leamer, 239 U.S. 244 (1915); (3) to stake the outer limits of permissible inequities in assessments, see, e.g., Myles Salt Co. v. Iberia Drainage Dist., 239 U.S. 478 (1915); and (4) thereafter to leave the matter with inferior courts with a strong presumption of administrative regularity in proceedings within the districts, see, e.g., Houck v. Little River Drainage Dist., 239 U.S. 254 (1915).

94. Hagar v. Reclamation Dist. No. 108, 111 U.S. 701, 704-06 (1884). See also Houck v. Little River Drainage Dist., 239 U.S. 254, 264-65 (1915); Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 176-78 (1896); excerpt from Hagar, note 93 supra. But cf. Wurts v. Hoagland, 114 U.S. 606, 611, 614 (1885), in which the Supreme Court appears to adopt the rationale, developed in the New Jersey courts, that statutes authorizing the formation of drainage districts by majority action of the affected landowners were based on the police power and not on the power of taxation, despite the ability of the districts to assess each owner for betterments. See also the excerpt from Wurts, note 86 supra. A second species of drainage statute used in New Jersey chartered private corporations to drain marshes, thereby producing general public benefit as well as special private benefit to landowners within the drained areas. In reviewing the powers of these chartered drainage corporations the New Jersey courts had held that private inholders could not constitutionally be assessed for costs of improvements in amounts greater than the actual benefits conferred on their properties. Costs greater than the amount of private benefits conferred were required to be levied on the public at large, on the theory that these costs had created only public benefit. Tide-water Co. v. Coster, 18 N.J.Eq. 518, 526-31 (N.J. Ct. Err. 1866). This was, of course, an application of taxation doctrines.

95. See, e.g., Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896); Hagar v. Reclamation Dist. No. 108, 111 U.S. 701 (1884), both of which involved actions by landowners to block the forced sale of their property to satisfy betterment charges assessed by the districts within which the properties were situated.
perty, and impose a ratable share of sizeable costs on his property, with the ability to compel sale of the property to pay the charge if necessary. Yet this, from the point of view of a dissident property owner, is just what was done under the drainage and irrigation statutes. The judicial approval of these very considerable modifications of individual property rights may perhaps be best understood in light of the interaction of several factors—the definition of public “use” adopted, the peculiarities of the resource to be put to public “use” and the underlying capital funding problem.

When 5,000 acres of bog were drained or arid land irrigated, it was clear that the general public did not have the direct right of a user in the benefits created as it had in the case of turnpikes, canals, railroads and grist mills. Direct use of the benefits was confined to the owners of the affected tracts. The judicial response to this problem was that the user, to be public, need not inevitably create practical user benefits in the entire public. For instance, an isolated rural school district including but a few farm homesteads was nevertheless unarguably a public use. In the case of drainage and irrigation as well, a proper public user constituency was felt to derive from the land-related status of property owners within the district benefited by the improvement. This line of reasoning was coupled with another line of analysis discussed previously—that relating to public “use” in terms of public utility and efficiency. It will be recalled that enabling statutes considered here inevitably contain explicit or implicit legislative findings that drainage and irrigation districts are conducive to the productive good of the state involved. In reviewing such statutes, courts ratified the legislative determination of public utility and added their own endorsements to the general prosperity expected to flow from the utilization of the drainage or irrigation statutes under review.

96. For a comparable judicial characterization of the results, see excerpt quoted note 86 supra.

97. O’Neill v. Leamer, 239 U.S. 244 (1915); Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 160-63 (1896); Hagar v. Reclamation Dist. No. 108, 111 U.S. 701, 704-06 (1884); In re Madera Irrigation Dist., 28 P. 272 (Cal. 1891). The analysis of public benefits versus private benefits that arose in New Jersey courts, see note 94 supra, involved a massive drainage project in the flat coastal plains of that state. See Tide-water Co. v. Coster, 18 N.J.Eq. 518, 520-21 (N.J. Ct. Err. 1866). The project involved a marsh covering about one-fourth of Hudson County and several thousand acres in Union County, New Jersey. This marsh was comparatively useless and undevelopable in its natural condition, and it was exceedingly difficult to construct roads and railroads across the marsh to connect the towns on its borders. Id.

98. Drainage could, of course, typically be justified as protecting public health. See Leovy v. United States, 177 U.S. 621 (1900).

We think that the trial court might well take judicial notice that the public health is deeply concerned in the reclamation of swamp and overflowed lands.
The resources involved in these districts were of a peculiar character, consisting of individually owned tracts of land in roughly common situations due to topographic and hydrologic conditions. Private tracts of land otherwise unrelated were thus thrown together into a forced, cooperative unit due to their common situation and reclamation potential. Here, as in the case of the milldam acts, individual properties sharing a common resource-use potential were blocked into a unit delimited by the resource use, and individual rights in the tracts of land involved were diminished radically in furtherance of the development of the resource. This common-resource or common-

If there is any fact which may be supposed to be known by everybody, and, therefore, by the courts, it is that swamps and stagnant waters are the cause of malarial and malignant fevers, and that the police power is never more legitimately exercised than in removing such nuisances.

Id. at 636.

In Hagar v. Reclamation Dist. No. 108, 111 U.S. 701, 704 (1884), the Supreme Court coupled community prosperity with community health as legitimate ends that might be served by drainage. Then in Wurts v. Hoagland, 114 U.S. 606, 613 (1885), reliance on the public health justification was omitted, and the rationale of the beneficial development of commonly-situated properties was espoused. The Court next used the dual rationales of commonly-situated property and public utility in Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896). In upholding the state legislature's determination of public utility, the Court stated:

While the consideration that the work of irrigation must be abandoned if the use of the water may not be held to be or constitute a public use is not to be regarded as conclusive in favor of such use, yet that fact is in this case a most important consideration. Millions of acres of land otherwise cultivable must be left in their present arid and worthless condition, and an effectual obstacle will therefore remain in the way of the advance of a large portion of the State in material wealth and prosperity. To irrigate and thus to bring into possible cultivation these large masses of otherwise worthless lands would seem to be a public purpose and a matter of public interest, not confined to the landowners, or even to any one section of the State.

Id. at 161.

99. In the final analysis, the substantive power of the drainage and irrigation districts to block up similarly situated lands seems to be based on the police power. The special assessment analogy provided the necessary doctrinal base for the assessment of betterment charges. See note 94 supra. It was solely relied upon in Hagar v. Reclamation Dist. No. 108, 111 U.S. 701 (1884), and no mention was made therein of the common resource or common property theory. Head v. Amoskeag Mfg. Co., 113 U.S. 9 (1885), did not reach the Court until the following year.

In Head the Court clearly adopted the common property analogies and cited drainage district cases as invoking this rationale for regulation. Id. at 21-26.

In Wurts v. Hoagland, 114 U.S. 606 (1885), the Court incorporated into its conceptual scheme the New Jersey doctrine that drainage statutes authorizing majoritarian action by landowners within a district were based on the police power. See note 94 supra. As the Court had done earlier in Head, the Court in Wurts posited the existence of a generic category of resources that due to commonality of situation and exigency of development might be validly subjected to the peculiar genre of police power regulation under review. 114 U.S. at 611, 614.

In Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112, 163 (1896), the Court swept
property theory was in fact directly adopted by the Supreme Court in major cases dealing with both drainage and irrigation districts:

If it be essential or material for the prosperity of the community, and if the improvement be one in which all the landowners have to a certain extent a common interest, and the improvement cannot be accomplished without the concurrence of all or nearly all of such owners by reason of the peculiar natural condition of the tract sought to be reclaimed, then such reclamation may be made and the land rendered useful to all and at their joint expense. In such case the absolute right of each individual owner of land must yield to a certain extent or be modified by corresponding rights on the part of other owners for what is declared upon the whole to be for the public benefit.100

Parenthetically, in some of the Western States the intensely predominant value and the exigencies of the use of certain resources produced a logical conclusion of one theme previously noted—the power of eminent domain was accorded to one private individual over the lands of another for specified purposes such as conveying water and ore. The immense value and multiplier effect on the local economies from resource use and the frequent ability of a dissident landowner to effect total blockage of a neighbor’s use combined to justify the conferral of eminent domain powers on private individuals.101

irrigation districts into this generic category of resources. Taking these cases together, it is fair to say that this category of resources is subject to regulation under a specialized branch of the police power that permits the use of elements of eminent domain or special assessment if necessary to accomplish the purposes at hand and to achieve rough equity among the various property owners involved. See p. 77 infra.


101. See, e.g., Strickley v. Highland Boy Gold Mining Co., 200 U.S. 527 (1906) (upholding a Utah statute authorizing acquisition of private right-of-way to carry ore); Clark v. Nash, 198 U.S. 361 (1905) (upholding a Utah statute that permitted one individual to acquire a right-of-way across lands of another where necessary to convey irrigation water); Oury v. Goodwin, 26 P. 376 (Ariz. 1891) (private right-of-way for irrigation); Dayton Gold & Silver Mining Co. v. Seawell, 11 Nev. 394 (1876) (private mining right-of-way). The following excerpt gives a flavor of the spirit and realities of the times in which these acts were passed and upheld:

Mining is the greatest of the industrial pursuits in this state. All other interests are subservient to it. Our mountains are almost barren timber, and our valley lands could never be made profitable for agricultural purposes except for the fact of a home market having been created by the mining developments in different sections of the state. The mining and milling interests give employment to many men, and the benefits derived from this business are distributed as much, and sometimes more, among the laboring classes than with the owners of the mines and mills. The mines are fixed by the laws of nature, and are often
It must be noted again, however, that the inevitable effects of shared resource use and project impact diminished greatly from the case within the drainage districts to the case within the irrigation districts. In fact, it is arguable that in the case of irrigation districts the capital funding motive is clearly dominant, supported only weakly by the majoritarian nature of the action and scarcely at all by any inevitability of common resource use. In the case of the transportation systems and milldams, physical invasion of property was unavoidable and compensation was paid. Within the drainage districts, alteration of all properties and conferment of "benefit" was inevitable and charges were assessed accordingly. A dissident irrigation district owner was not allowed to avoid inclusion, however, as he clearly could have done contractually. Instead, he was made a compulsory contributor to the capitalization of the unwanted project.\textsuperscript{102} The majoritarian winners thus not only received their vision of desirable resource use, but also they were permitted to dip into the losers' pockets to help fund the accomplishment of this vision.

\textit{Summary of the Relation of Legal Doctrine to Development Rights.}—Drainage and irrigation districts furnish the first example we have encountered of the assemblage of large tracts of land, as would have to be done with the planning districts that we suggest. Public utility in the sense of multiplier effect of resources being put to use is again a dominant notion.\textsuperscript{103} The community of interest in

\begin{quote}
found in places almost inaccessible. . . . Now it so happens, or, at least, is liable to happen, that individuals, by securing a title to the barren lands adjacent to the mines, mills or works, have it within their power, by unreasonably refusing to part with their lands for a just and fair compensation, which capital is always willing to give without litigation, to greatly embarrass if not entirely defeat the business of mining in such localities. . . . Nature has denied to this state many of the advantages which other states possess; but by way of compensation to her citizens has placed at their doors the richest and most extensive silver deposits ever yet discovered. The present prosperity of the state is entirely due to the mining developments already made, and the entire people of the state are directly interested in having the future developments unobstructed by the obstinate action of any individual or individuals.
\end{quote}

\textit{Id.} at 409-10. To allay a nagging sense of \textit{deja vu}, see the comparable rationale expressed as to the New Hampshire milldam act, note 73 \textit{supra}.


103. We should note the radical reversal in perceptions of the social value of resources, as between the materials covered in notes 83-102 \textit{supra}, and the extremely recent resource-preservation cases at notes 29-54 \textit{supra}. The perception that underlies the milldam cases, the drainage and irrigation districts cases and the private right-of-way cases from the Western States was that land and natural resources were being wasted unless they were promptly developed and thus made part of the productive capital stock of society. The perception in the recent preservation cases is that society is best served over the productive long haul if at least certain types of critical land resources (\textit{e.g.} wetlands) are saved from development and left to fulfill
the resource use supports the judicial invocation of the commonly-owned property analogy. Of more immediate relevance to the consideration of development rights is the fact that ownership and use of the affected lands remained in their respective individual owners. Lands were not taken by occupancy as with railroads and milldams. In the development rights scheme, lands would likewise remain in the hands of their owners. The drainage and irrigation districts, however, by making services available, were empowered to assess and to collect a related charge commensurate with the “benefit” conferred on individual owners. In planning districts making use of development rights, there could result benefits of greatly improved planning analysis and control and much more equitable distribution of development entitlements. Exigencies and commonality of resource use within the development rights districts would certainly seem as high as those found adequate to justify the assessment processes of the irrigation districts. In contrast to assessments, however, as will be discussed later, it could well be that the net monetary returns would be higher on land developed by use of development rights than under present practices. It would then seem that the development district approach would find strong justification from the drainage and irrigation district precedents and in fact might be considered an even more acceptable device than were they.

D. Oil and Gas Production Regulations

The next major body of precedent, and perhaps the most informative, arose around the development of oil and gas resources. Oil and gas commonly occur together within a rather extensive geologic stratum (a “pool,” “formation,” “reservoir” or “field”) that underlies their vital natural functions. The rapidity and extent of this policy shift are best illustrated by the situation described in Candlestick Properties, Inc. v. San Francisco Bay Conservation & Dev. Comm’n, 89 Cal. Rptr. 897 (Ct. App. 1970). The marshland there involved had been included in a drainage and reclamation district created in 1955 under legislative finding that “compelling economic necessity exists for the reclaiming . . . of tidelands . . . [which] now serves no useful purpose for industry, commerce or navigation.” Id. at 901. That is a fair statement of the dominant philosophy of the 19th and first half of the 20th centuries in this nation. Yet the marshland was now included within the jurisdiction of the Commission, whose 1965 enabling statute described the Bay as “the most valuable single natural resource of an entire region” and mandated the protection of “the present shoreline and body of San Francisco Bay to the maximum extent possible.” Id. at 900-01. See discussion of the impact of this rapid reversal of policies on the broadly held expectations of landowners, pp. 43-46 supra. The author’s conviction of the need for these new policies, coupled with concern at the diminution of values and disappointments of landowners expectations that will result, are two of the principal motivations for writing of this article.

104. See pp. 102-03 infra.
numerous surface property holdings. Oil and gas are both to some extent migratory within the pool, typically being drawn toward areas of low pressure such as those created when pressure is lowered around a producing well. Because of numerous factors, it is impossible to recover all oil and gas from a pool. Initial production ("primary production" or "primary recovery") typically relies on the connate pressure ("energy") within the reservoir to drive gas and some oil to the surface. This energy is often at least partially in the form of gas contained within the stratum in the liquid state under extreme pressure. When the gas is brought to the surface, pressure is reduced and the gas changes from liquid to gaseous form.\footnote{105}

As connate energy from gas or other sources is depleted, production slows and then stops, with much oil and some gas left in place. Pumping may then be used for additional recovery. The amount of oil and gas left in place after primary recovery often depends to a considerable extent on how wisely primary recovery operations are conducted throughout the formation, that is, on whether the connate energy forces are harnessed to produce as much gas and oil as possible before their depletion. After primary recovery, relatively expensive "secondary recovery" operations may be possible by reinjecting pressuring agents into the stratum to drive some of the remaining oil to selected recovery wells. Even after secondary recovery, much oil usually remains in place.\footnote{106}

Early production practices in this country were simply an all-out race. Each property owner produced as fast as possible to get as much oil and gas from his property and to drain as much from his neighbors' property as he could. This process was assisted and goaded by the courts' early characterization of oil and gas as fugitive resources, comparable to wild animals, and not belonging to anyone until "captured," that is, reduced to possession.\footnote{107} Under the strict rule of cap-

\footnote{105. See generally 1 H. Williams & C. Meyers, Oil and Gas Law §§ 101-04 (1959) [hereinafter cited as H. Williams & C. Meyers].}

\footnote{106. See generally 1 R. Myers, The Law of Pooling and Unitization, Voluntary-Compulsory §§ 2.01-05 (2d ed. 1967) [hereinafter cited as R. Myers]; 6 H. Williams & C. Meyers § 901. Primary recovery is ordinarily thought of as that production yielded solely by the connate energy of the reservoir. Secondary recovery is thought of as commencing after primary recovery has stopped, or nearly so. The line between the two is not always clear, however, because some of the same techniques may be used in both phases of production. For instance, injection of substances to maintain or stimulate reservoir energy may occur during primary recovery (e.g., reinjection or "cycling" of gas produced, or certain types of water injection), and may also be used during secondary recovery operations (e.g., certain types of water injection). Pressure maintenance during primary recovery may raise the same needs for unitization that are the hallmark of conventional secondary recovery operations.}

\footnote{107. See State v. Ohio Oil Co., 49 N.E. 809 (Ind. 1898); Townsend v. State, 47 N.E. 19 (Ind. 1897); Westmoreland & Cambria Natural Gas Co. v. DeWitt, 18 A. 724 (Pa. 1889).}
ture, rapid production of oil and gas was not considered the taking of another's property. In fact, it made sense for one owner to produce as rapidly as possible in order to capture as much oil and gas as possible, thereby making it his property. As many wells as possible would be drilled as close to property lines as possible in order to drain oil and gas from under neighboring land. Each neighbor did the same, so that boundary wells "offset" each other, from one property to the next. It has been said that before regulations were imposed on the famous East Texas pool, offset wells in many areas resembled picket fences along the boundary lines. Happy mass slurf.

The results of these practices soon became quite apparent. First, connate reservoir energy was depleted with extreme rapidity, with gas often simply being vented into the atmosphere once it had served the immediate purpose of bringing the more valuable oil to the surface. The rapid depletion of reservoir energy often left trapped in place much oil that would have been produced by connate energy had

This bizarre characterization was produced by two factors. First, because of the limited technical information of the times, the courts apparently thought that oil and gas were literally as migratory as wild game or underground water. Second, given this perception, the courts were obliged to fit oil and gas into one of the available common law classifications of property rights, and the category of property rights in wild animals was early selected as a controlling analogy. See State v. Ohio Oil Co., supra; Townsend v. State, supra; Westmoreland & Cambria Natural Gas Co. v. DeWitt, supra. See cases cited in note 107 supra. That is to say, no party had individual property rights in oil and gas until it had been captured by bringing it to the surface and reducing it to possession and control. While in repose under an owner's land, oil and gas were a part of the land and in some inchoate sense "belonged" to the owner. See Brown v. Spilman, 155 U.S. 665, 669-70 (1895). If drawn away by a neighbor's well on his property and reduced by him to possession, they then became the property of the neighbor as captor. See note 116 infra.

Indeed, there was often no other rational choice in the matter, for when a new field came in, a frenzied rush usually occurred to capitalize on the early, high-energy phase of the field's production, called "flush" production. All owners were compelled to join the race and sell the oil for whatever price it would fetch, or lose the bulk of the producible oil under their properties to drainage from neighbors. See Ely, The Conservation of Oil, 51 Harv. L. Rev. 1209, 1220-21 (1938). A contemporary observer gave this description:

When once man has started things, this property is mobile, so that the contest cannot be a leisurely procedure in the courts but of necessity becomes a strenuous fight on the ground, with drilling rigs and crews racing to reach the oil first and to reduce to actual possession the elusive and fugitive property. The ordinary workings of the economic law of supply and demand find no chance in the business of producing petroleum. The decision to drill does not wait on market reports; demand for the product is rarely a factor in influencing the development of oil property—simply the desire to get the oil before someone else gets it. Thus, as in no other activity, the oil industry throws financial conservatism and business sagacity to the winds and indulges in the primitive instincts of the chase.

Work, Conservation's Need of Legal Advice, 52 Reports of the Am. Bar Ass'n 570 (1927).
the energy been released more slowly. The waste, then, was often treble-energy inefficiently expended, gas vented and oil needlessly left in place. Secondly, in the early days of this century, full production so exceeded limited demand that prices plummeted and much oil was simply and intentionally spilled on the ground. Finally, the widespread practice of boundary-line drilling, compelling neighbors to do the same to offset the drainage, constituted an immense over-investment in unneeded wells to the extent of an estimated $160,000,000 in the East Texas field alone. Significantly fewer wells would have been adequate and probably much more efficient in terms of total primary recovery.

The earliest oil and gas regulation cases to come to the attention of the United States Supreme Court involved efforts of the states to halt the gross waste of reservoir energy and of gas in particular. The first case arose when Indiana passed a statute forbidding either gas or oil to flow into the open air from a well for more than two days after the well was brought in. Much of central Indiana overlay a reservoir containing gas and some oil, and the gas was used for cheap, 110. See generally Ely, supra note 109, at 1218-22, depicting and documenting production practices and their consequences. There the estimate is made that rapid, unregulated production may leave trapped in place between 75% and 90% of the oil, much of which might have been produced by wisely conducted primary recovery operations. Id. at 1220. For a review of production practices and their consequences, see Sterling v. Constantin, 287 U.S. 378, 388-92, 396-98 (1932) (upholding injunction restraining Governor of Texas and military officials from enforcing military orders restricting production from plaintiff's oil wells in East Texas field, martial law having been declared for this purpose); Champlin Ref. Co. v. Corporation Comm'n, 286 U.S. 210, 226-32 (1932); Bandini Petroleum Co. v. Superior Court, 284 U.S. 8, 16-18 (1931); Walls v. Midland Carbon Co., 254 U.S. 300, 310-14 (1920); Ohio Oil Co. v. Indiana, 177 U.S. 190, 201, 211 (1900).

111. See Ely, supra note 109, at 1213-14, describing the drop in oil prices from ninety cents to ten cents per barrel when the East Texas field was brought in and commenced production at the rate of a million barrels per day in 1930-1931. See also Champlin Ref. Co. v. Corporation Comm'n, 286 U.S. 210, 226-32 (1932); Hardwicke, Legal History of Proration of Oil Production in Texas, 56 Tex. Bar Ass'n Reports 99, 104-05 (1937); discussion, note 107 supra. The reality was that huge quantities of oil commanding very low prices could not be stored above ground economically. In the race for production during the early phase of a field's operations, however, the choices were simple: a man could let the neighbors drain his property, or he could produce as rapidly as possible, as the neighbors were doing, store oil as best he could temporarily, sell as much as possible and dump the rest. As noted in Champlin Ref. Co. v. Corporation Comm'n, supra at 226-32, some Oklahoma operators in those fields, not having pipeline connections, were forced to store their production in earthen reservoirs or let it run at large.

112. Ely, supra note 109, at 1232-33. The author also cites estimates of between 4,000 and 5,000 unnecessary wells drilled annually in that era, at a drilling cost of between $80 and $100 million. Id.

113. Ohio Oil Co. v. Indiana, 177 U.S. 190, 190-92 (1900).
clean heat and light.\textsuperscript{114} Companies dealing solely in oil had recently entered the field, were massively and rapidly depleting the gas pressure in order to force to the surface relatively small quantities of oil and were venting the gas into the atmosphere.\textsuperscript{115} The Supreme Court concentrated on whether a state could legitimately engage in this genre of regulation of privately owned oil and gas.\textsuperscript{116} The Court admitted that under the common law rule of capture, each surface owner over a reservoir was at liberty to reduce to possession, without violating the rights of neighbors,\textsuperscript{117} as much of the gas and oil as possible. However, the Court characterized the oil and gas as a common fund that did not become an individual landowner's property until captured.\textsuperscript{118} It then approved the statute as a valid regulation of the availability of the common fund to all the owners of lands overlying it:

But there is a co-equal right in . . . all [owners] to take from a common source of supply, the two substances which in the nature of things are united, though separate. It follows from the essence of their right and from the situation of the things, as to which it can be exerted, that the use by one of his power to seek to convert a part of the common fund to actual possession may result in an undue proportion being attributed to one of the possessors . . . or more, to the annihilation of the rights of the remainder. Hence it is that the legislative power, from the peculiar nature of the right and the objects upon which it is to be exerted, can be manifested for the purpose of protecting all the collective owners, by securing a just distribution, to arise from the enjoyment, by them, of their privilege

\begin{itemize}
\item \textsuperscript{114} Id. at 192-95.
\item \textsuperscript{115} Id. at 195-97.
\item \textsuperscript{116} The Court held oil and gas to be “private property” in a peculiar sense. It conducted a brief review of the common law doctrine, developed in Indiana and other states, that analogized oil and gas to wild animals. Id. at 203-08; see note 107 supra. It was settled, however, that wild animals were public things subject to the absolute control of the state, which could allow, regulate, or wholly forbid their capture. Geer v. Connecticut, 161 U.S. 519 (1896). The Court in Ohio Oil noted not only this, but the further distinction that while all members of the public were empowered to capture wild animals, that is, to reduce a portion of this peculiar public property to possession by capturing an animal, in the case of oil and gas only the owners of land overlying a reservoir had the right to capture the oil and gas beneath their lands. 177 U.S. at 209. In this sense, the surface owners within an oil and gas field were held to have the exclusive right to reduce to possession the underlying oil and gas. On this basis, then, oil and gas in place were held to be private property—a pool resource, subject to the exclusive, composite right of all overlying surface owners to reduce the resource to possession, but the individual property of no one surface owner until reduced to possession by that owner. Id.
\item \textsuperscript{117} 177 U.S. at 204-06.
\item \textsuperscript{118} Id. at 209-10.
\end{itemize}
to reduce to possession, and to reach the like end by preventing waste.\textsuperscript{119}

The Court, therefore, held that the statutory prohibition did not constitute a taking of the property of the oil companies, although the statute's operation would likely put the companies out of business.\textsuperscript{120} Thus, oil and gas fields were brought into the fold of resources that, because of their nature, might be pronounced by legislatures and ratified by the judiciary as creating a scheme of common relations among otherwise unrelated individual landowners. This case also provides the authoritative basis for the existence of correlative rights among the owners of land overlying an oil and gas field.\textsuperscript{121} To the earlier list of three evils of heavy, wasteful oil and gas production, must now be added a fourth: violation of the correlative rights of other owners to share in field energy and to produce a ratable share of oil and gas.

In \textit{Walls v. Midland Carbon Co.},\textsuperscript{122} the Supreme Court upheld a Wyoming statute that in practical effect forbade the use of natural gas for the manufacture of carbon black from wells within ten miles of an incorporated town or an industrial plant. The statute accomplished this by prohibiting the use of gas, within the stated ten-mile radius, for manufacturing processes in which the heat potential of extracted oil and gas, the impairment of the productive capacity of the reservoir as a common source of supply, malicious depletion of the common source of supply and violation of the right of others to a fair opportunity to produce oil and gas. See \textit{Ohio Oil Co. v. Indiana}, 177 U.S. 190 (1900); \textit{Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co.}, 57 N.E. 912 (Ind. 1900); \textit{Louisville Gas Co. v. Kentucky Heating Co.}, 77 S.W. 368 (Ky. 1903). See generally Kuntz, supra note 119. The doctrine may offer additional grounds for an action by one landowner against another to recover damages caused by the negligent waste of oil and gas. See \textit{Elliff v. Texon Drilling Co.}, 210 S.W.2d 558 (Tex.), on remand, 216 S.W.2d 824 (Tex. Civ. App. 1948); 62 \textit{Harv. L. Rev.} 146 (1948); 27 \textit{Texas L. Rev.} 549 (1949). See also \textit{Louisville Gas Co. v. Kentucky Heating Co.}, 111 S.W. 374 (Ky. 1908).

119. \textit{Id. See generally 1 H. Williams & C. Meyers §§ 204.4, 204.6-.7; Kuntz, Correlative Rights in Oil and Gas, 30 Miss. L.J. 1 (1958).

120. 177 U.S. at 199, 211-12.

121. \textit{See generally 1 H. Williams & C. Meyers §§ 204.4, 204.6-.7; Kuntz, supra note 119}. There exists some slender precedent under the capture doctrine for entitlement of owners to ratable shares of production, as suggested in \textit{Union Gas & Oil Co. v. Fyffe}, 294 S.W. 176 (Ky. 1927), and to prevent totally preemptive drainage by a neighbor, \textit{Ross v. Damm}, 270 N.W. 722 (Mich. 1936), but it was the correlative rights doctrine that furnished a firm basis for judicial adjustment of rights among owners within a field. When applied by the courts, the doctrine has been used to prevent gross wasting of extracted oil and gas, the impairment of the productive capacity of the reservoir as a common source of supply, malicious depletion of the common source of supply and violation of the right of others to a fair opportunity to produce oil and gas. See \textit{Ohio Oil Co. v. Indiana}, 177 U.S. 190 (1900); \textit{Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co.}, 57 N.E. 912 (Ind. 1900); \textit{Louisville Gas Co. v. Kentucky Heating Co.}, 77 S.W. 368 (Ky. 1903). See generally Kuntz, supra note 119. The doctrine may offer additional grounds for an action by one landowner against another to recover damages caused by the negligent waste of oil and gas. See \textit{Elliff v. Texon Drilling Co.}, 210 S.W.2d 558 (Tex.), on remand, 216 S.W.2d 824 (Tex. Civ. App. 1948); 62 \textit{Harv. L. Rev.} 146 (1948); 27 \textit{Texas L. Rev.} 549 (1949). See also \textit{Louisville Gas Co. v. Kentucky Heating Co.}, 111 S.W. 374 (Ky. 1908).

122. 254 U.S. 300, 309-10 (1920). In the interim the Court had sustained a New York statute that in effect forbade the pumping of percolating, naturally carbonated waters for the purpose of extracting and selling the gas, when the de-gassed water was then wasted. \textit{Lindsley v. Natural Carbonic Gas Co.}, 220 U.S. 61, 77 (1911).
was not fully and actually used. The statute further forbade any owner or lessee of a well to sell gas for the manufacture of carbon black. The carbon black companies had been using massive amounts of gas in an inefficient process to recover carbon black and types of gasoline. Although the Court accepted the company's averment that this use was more remunerative than the prices the gas would have brought in the area for fuel purposes, the statute was upheld against a variety of constitutional objections as legitimately accommodating coexisting rights by the limitation of one right so that other rights might be enjoyed, and as protecting the interests of the community. The Court characterized this, and the previously approved Indiana statute, as valid interpositions of state police power to prevent both waste and disproportionate use of either gas or oil by one owner. The Court thus approved the Wyoming statute as a legitimate adjustment to preserve various rights in the resources of the state. The case involved not only the relative worth of gas as a source of carbon black versus its value as a fuel source, but also the fact that the carbon black plant would have exhausted the reservoir in about three years, while consumption of the gas for fuel purposes would have lasted at least ten years. The legislature thus considered not only present comparative values but also the desirability of alternative resource uses over time. The Court in approving this action noted that necessarily there was presented to the judgment and policy of the State a comparison of utilities which involved, as well, the preservation of the natural resources of the State, and the equal participation in them by the people of the State. And the duration of this utility was for the consideration of the State, and we do not think that the State was required by the Constitution of the United States to stand idly by while these resources were disproportionately used, or used in such way that tended to their depletion, having no power of interference.
Interim Note on the Relation of Legal Doctrines to Development Rights.—A basic purpose of this article is to suggest a system by which the states can defensibly and confidently do exactly what was done in these early oil regulation statutes—give valid legal enactment to systems of stated preferences for selected uses of resources over time. The legislative preference in both cases was for gas to be used as a fuel source. This use was "preferred" over that of gas as productive energy for oil extraction in Ohio Oil Co. v. Indiana and over that of gas for its carbon black potential in Walls v. Midland Carbon Co.¹³⁰

When the Indiana and Wyoming legislatures thus preferred one use value over another in these two instances, they resolved a conflict between alternative use values that inhered in a single resource. Because of its common-source nature, however, the gas resource under regulation had the effect of linking separately owned tracts into an interrelated web of correlative rights. Legislatively preferred resource uses create somewhat comparable linkages of separate properties in the case of rights-of-way for transportation uses,¹³¹ of the ponds necessary for millennium energy uses¹³² and of the districts necessary to support the construction of drainage and irrigation facilities.¹³³ Legislatures prefer and impose one of two alternative resource uses in other contexts, for example, when separately owned properties are linked by a shared externality.¹³⁴ In fact, under the analysis suggested by Professor Sax, webs of externalities inextricably link lands, waters and their resource values.¹³⁵ In specialized cases, development may create

source to raise oil, and thus inferentially over the heat potential of the oil thus raised. Id.

¹³⁰. Because of the particularized nature of the resource uses pursued by the Ohio Oil Co. and Midland Carbon Co., the legislative preferment of the fuel value of the gas resource apparently forced the companies out of the business of using the gas for their chosen purposes. Thus most of the value of their specialized on-site production facilities was destroyed. By contrast, the other gas producers were protected in their extraction of the gas as a fuel resource, and they retained full and perhaps enhanced use of their production facilities. The legislative preferment of one use of a common pool resource was thus an inevitable preferment of the established expectations and investment of one user group over those of another. The preferment may have been rational, beneficial and economically efficient, but these facts are not responsive to the question, "Why shouldn't the losers in such situations be compensated?" This problem is explored extensively in Sax I; Michelman, supra note 6, at 1193-1201, 1236-44; and Sax II, where variations on the issue are raised.

¹³¹. See pp. 53-57 supra.

¹³². See pp. 58-66 supra.

¹³³. See pp. 66-67 supra.

¹³⁴. The classic example is Miller v. Schoene, 276 U.S. 272 (1928), in which one farmer's cedar trees, which served as host for but were not harmed by cedar rust, were ordered destroyed, essentially without compensation, to prevent destruction of nearby apple orchards from communication of the rust.

¹³⁵. Sax II at 151-61.
such grave, widespread external consequences that legislatures may validly prefer and impose the alternative use of nondevelopment, without compensation. Such forms of onerous regulation might be characterized and justified as instances of valid legislative preferment of certain uses, in order to adjust and to protect the correlative but conflicting rights of numerous owners to avoid or impose externalities. Viewed in this light, externalities from the particular use of one resource may cause the destruction or waste of both similar and different resource values in the hands of other owners. The externality web forms a common pool.

All of this discussion relates to the development rights concept in two ways. First, the covert effect of zoning is to create a common pool of development entitlements within a zoning district. All owners within this pool would have roughly correlative entitlement to a fair share of the pooled development potential. Secondly, at the present time and within the proposed development districts, preferments of particular land uses would be imposed on various tracts in the form of the regulation of development density, type and timing. These preferments would be based both on reallocation of development entitlements from the zoning pool, and on avoidance of harm to the externality web or pool. Incommensurable land values would result. By use of development rights, however, an adjustment of the inequities in land value resulting from the imposition of land use preferments could be accomplished.

Despite the approval of these statutes, and the obvious evils of the rule of capture as an operational policy, more pervasive state efforts to regulate the production of gas and oil came slowly. There were, of course, major pressures against any such regulation from industry, which was perhaps dissatisfied with the situation as it existed but not certain that regulation would effect a cure. Two major forms of regulation eventuated, however: pooling and unitization.

Pooling seeks systematic prevention of the physical and economic waste that occurs when each owner drills as many wells and produces as much oil and gas as he wishes. It also protects the correlative rights of landowners over a reservoir. First, based on physical data, a determination is made of the density of wells necessary to produce a reservoir fully and efficiently under primary recovery.
methods. It may be determined, for instance, that one well in the center of each 160-acre quarter section would adequately and wisely produce the reservoir. Each such 160-acre tract is often referred to as a drilling unit, and in modern practice the reservoir would be divided into drilling units by the state oil and gas regulatory authority, ordinarily following government survey lines. Normally, one well is permitted near the center of each drilling unit. If \( A \) owns 320 acres, he may find that his land has been divided into two 160-acre units, each entitled to one well. If \( A, B, C \) and \( D \) each own contiguous 40-acre quarter-quarters, they may find that their land has been blocked into one 160-acre drilling unit, entitled to be developed by only one well.\(^{140}\)

Controlling the number and spacing of wells, however, is only part of the process. Further control must be exercised over the rate of production so that each drilling unit, and thus the entire field, produces at a controlled rate.\(^{141}\) This rate should serve the multiple objectives of maximum recovery of resources under primary recovery operations, protection of the correlative and peculiar rights of owners under a variety of criteria, and production of that field's share of larger production quotas established by state and federal production regulation structures. These various objectives persistently tend toward mutual inconsistency but are nonetheless brought into some rough accord so that each drilling unit is given an allowable rate of production (an "allowable").\(^{142}\) This system is also referred to as proration-

\(^{140}\) Id. See generally 5 W. Summers, The Law of Oil and Gas \$ 951 (1966) [hereinafter cited as W. Summers]; 6 H. Williams & C. Meyers \$\$ 902-07, 923-24. The basic structure was approved in Patterson v. Stanolind Oil & Gas Co., 305 U.S. 376 (1939).

Interestingly, from a development rights perspective, the first pooling acts were municipal ordinances, passed and upheld as exercises of the zoning power, by which municipalities sought to confine oil and gas wells to a density of one per city block, or less. See Marrs v. City of Oxford, 24 F.2d 541 (D. Kan. 1928), aff'd, 32 F.2d 134 (8th Cir.), cert. denied, 280 U.S. 573 (1929). The Oxford ordinance required that all lot owners within the block be allowed to participate in the proceeds of production on a ratable basis, and in direct effect made the right to develop oil and gas a transferable development right within a market place defined as one city block. 24 F.2d at 544. The ordinances were held valid as a legal curbing of nuisances, 24 F.2d at 546-47; 32 F.2d at 139-40, and as adjusting and protecting correlative rights. 24 F.2d at 548-49, 32 F.2d at 140. See also Adkins v. City of West Frankfort, 51 F. Supp. 532 (E.D. Ill. 1943) (ordinance generally upheld, but invalidated because of provision imposing absolute liability on operator regardless of legal liability for any harm caused); Tysco Oil Co. v. Railroad Comm'n, 12 F. Supp. 195 (S.D. Tex. 1935); Sovereign Oil Corp. v. Fenton, 114 P.2d 18 (Cal. Ct. App. 1941); Thompson v. Johnson-Kemnitz Drilling Co., 145 P.2d 422 (Okla. 1943).

\(^{141}\) See generally 5 W. Summers \$ 951; 6 H. Williams & C. Meyers \$\$ 902-07, 923, 925.

\(^{142}\) See generally 1 R. Myers \$\$ 1.01(6)-(7); 6 H. Williams & C. Meyers \$\$ 970; 7 id.
ing, with each well being awarded a prorated share of field-wide production.

Unitization refers to the operation of the entire reservoir, or a major part of it, as an entity, without regard to patterns of surface ownership. Certain types of highly beneficial operations virtually require unitization. For instance, it is possible to maintain pressures within a producing stratum by reinjecting gas that is brought to the surface in the production of oil. Costs and expectable returns are such, however, that typically no single owner would undertake this activity unless his neighbors did likewise or agreed to cooperate in the project in some manner. Otherwise, substantial portions of the owner’s reinjection costs would inure to his neighbors’ benefit (another instance of the free-rider situation). Again, once primary recovery has been exhausted, it may be economically feasible to inject water along a line of wells and to establish a water flood driving oil

14-16, 474-75; Comment, Proration in Texas: Conservation or Confiscation?, 11 Sw. L.J. 186 (1957). The simplest method to allocate production among various tracts is one based upon surface acreage. See, e.g., Humble Oil & Ref. Co. v. Welborn, 62 So. 2d 211 (Miss. 1953), and statutes reviewed therein. This formula is perhaps too simple to reflect accurately the variations in richness and recoverability of oil and gas deposits over a field. Frequently, therefore, complex formulae are used in an attempt to reflect two or more factors. In Woody v. State Corporation Comm’n, 265 P.2d 1102 (Okla. 1954), the court upheld a formula that allocated 50% of production on a per-acreage basis, and 50% of production on the basis of the saturated hydrocarbon pore space underlying various tracts. Obviously the allocation might have been made on a 60/40 or even 90/10 basis. Where all tracts have previously been developed, allocation may be based on records of prior production. Commissioner v. Belridge Oil Co., 27 T.C. 1044, aff’d, 267 F.2d 291 (9th Cir. 1959). There are some reported instances of formulae that are designed to change after a certain amount of production has been obtained, so that some parties receive a larger share of early production (e.g., first one million barrels), and a smaller share thereafter, see, e.g., Kingwood Oil Co. v. Bell, 244 F.2d 115 (7th Cir. 1957). Extremely imaginative approaches to such formulae are often taken when either pooling or unitization is being accomplished by private contract between several producers. State regulatory agencies may have some latitude to use multiple factors in formulae, see, e.g., Humble Oil & Ref. Co. v. Welborn, 62 So. 2d 211 (Miss. 1953); Woody v. State Corporation Comm’n, supra, but agency orders must finally mesh with the general and specific statutory criteria under which the agencies operate. See, e.g., Continental Oil Co. v. Oil Conservation Comm’n, 373 P.2d 809 (N.M. 1962) (agency order invalid as lacking factual base required by statute). For a discussion of the possibility of allocating development rights using complex formulae such as the ones discussed here, see pp. 100-01 infra.

143. This process, known as “recycling,” is described in 1 H. WILLIAMS & C. MEYERS § 104. Water produced from wells may also be recycled. Id.

144. See, e.g., Union Pac. R.R. v. Oil & Gas Conservation Comm’n, 284 P.2d 242 (Colo. 1955), in which the Colorado regulatory agency, not having power to order unitization, apparently sought to force it nonetheless by ordering that gas produced with the oil from a particular reservoir must be returned to the reservoir and in effect must be recycled. The order was stricken down as ultra vires, but unitization would undoubtedly have followed had it been upheld.
before it across the reservoir for recovery at distant wells. Unless the reservoir is operated as a unit, water flooding may be done only piece-meal and under considerable handicap. At worst, owners of injection wells may get little return over the expenses of injection, and non-participating neighbors may reap an undeserved bonanza of oil flushed onto their properties by the water flood. Often under such circumstances secondary recovery will not take place. In addition to the use of unitization to facilitate secondary recovery, primary recovery may often be optimized if the reservoir is unitized.

Either pooling or unitization on a limited basis may be effected by contract among private individuals. It is strong testimony to the efficiency of these devices that they have been arranged by private contract in the face of seemingly overwhelming practical and legal impediments.

Following the particularized regulation reflected in the Indiana and Wyoming cases, the modern era of regulation began in 1919 when the Railroad Commission of Texas, that state's oil and gas conservation agency, promulgated its rule 37, requiring the spacing of wells at minimum intervals of 300 feet and no closer than 150 feet to property lines. This was upheld as a reasonable exercise of the police power to prevent unnecessary fire hazards and waste.

Cases such as the above illustrate the difficulties of achieving voluntary unitization, even when it seems an act of financial insanity to resist it, although the possibility of exorbitant exactions by nonparticipating holdout owners always lurks in the background of such cases. Despite such difficulties, the major treatises recount numerous examples of voluntary unitization and give samples of the legal documents by which such agreements are governed. See generally 1 R. Myers §§ 2.06, 3.01, 4, 6.01, 8.02; 5 W. Summers §§ 952-53, 955-72; 6 H. Williams & C. Meyers §§ 904, 910-11, 921, 938.

146. Railroad Comm'n rule 37, November 26, 1919, as amended, was upheld in Brown v. Humble Oil & Ref. Co., 83 S.W.2d 935, rehearing denied, 87 S.W.2d 1069 (Tex. 1935). For a summary history of the rule, see Hardwicke, Oil-Well Spacing Regulations & Protection of Property Rights in Texas, 51 Texas L. Rev. 99 (1952). The rule

145. For examples of secondary recovery operations pursued without unitization, see Tidewater Oil Co. v. Jackson, 320 F.2d 157 (10th Cir. 1963), and Railroad Comm'n v. Manziel, 361 S.W.2d 560 (Tex. 1962). Such situations arise when owners of sufficient tracts decide to pursue secondary recovery operations within their extensive landholdings, operating some of their wells for injection and some for recovery. For a description of difficulties that holdouts caused to an attempted unitization program, see Prutzman, Fletcher, Miller, Cage, Keith & Winn, Chronicle of Creating a Fieldwide Unit, in South-Western Legal Foundation, Fifth National Institute for Petroleum Landmen 77, 126-27 (1964), cited in 6 H. Williams & C. Meyers § 910, at 88-89. See generally 6 H. Williams & C. Meyers §§ 901, 905, 912.
servation agencies were granted authority to subdivide a field into drilling units, representing the maximum area that could be drained economically and efficiently by one well. The result was that when several owners held land within one unit, their interests were pooled. One received permission to drill and the others participated in the profits or losses. This system has been consistently approved by the courts as violating neither the contractual nor fourteenth amendment rights of the complaining owner.148

Prorationing has likewise been upheld. Under California regulations, for instance, prorationing took the form of controlling the gas-to-oil ratio permitted during production. As in the Indiana case, one way to get the lion's share of oil was to produce extremely rapidly, using a disproportionate amount of gas to bring the oil to the surface and also to produce a low pressure point towards which oil and gas would migrate from the properties of neighbors. Control of the production ratio of gas-to-oil was a practical way to curb this practice, and with it the waste of gas or reservoir energy of underground oil trapped in place by avoidable pressure differentials, and to curb the disproportionate production of one owner over others. Regulation of the gas-to-oil ratio was approved by the Supreme Court as a valid form of police power regulation to protect both correlative rights and the interests of the public that resources not be wasted.149

Marketplace and competitive realities soon dictated more sophisticated forms of control. In the early days of oil production, a tremendous competitive edge was enjoyed in Oklahoma by oil companies with integrated operations in which their wells connected directly to oil pipelines and to refineries.150 Integrated operators produced at a rapid pace into their pipelines, and although using all of the oil and gas they produced, they were causing waste of reservoir energy and of the full amount of oil recoverable by primary recovery.151 In addition, they had virtually preempted the local market.152 In order to produce any fair share of oil, non-integrated operators were forced to pump and then store oil in large earthen reservoirs, awaiting transpor-

148. See Panhandle E. Pipe Line Co. v. Isaacson, 255 F.2d 669 (10th Cir. 1958); Patterson v. Stanolind Oil & Gas Co., 77 P.2d 93 (Okla. 1938), appeal dismissed, 305 U.S. 376 (1939). For compendious listings of the state statutes and discussions of their impact, see 1 R. Myers §§ 6.01, 8.01; 5 W. Summers §§ 1000-51; 6 H. Williams & C. Meyers §§ 905.1-2, 934.

149. See Bandini Petroleum Co. v. Superior Court, 284 U.S. 8, 21-22 (1931).


151. Id. at 223.

152. Id. at 226-30.
tation by truck or other limited means. Leakage, spoilage and fires resulted.\textsuperscript{153} Responding to this situation, the Oklahoma Legislature passed a statute prohibiting petroleum "waste," defined, in addition to its ordinary meanings, to include economic, underground and surface waste, and waste incident to production in excess of transportation or marketing facilities or reasonable market demand. This statute further provided that when full production from a reservoir could be had only under circumstances constituting waste as statutorily defined, production would be reduced. Under limited production situations, each producer could take only that proportion of the limited quantity of production possible, without causing waste, as his share of full production bore to full production throughout the reservoir.\textsuperscript{154}

To illustrate, assume that full reservoir production is 1,000 barrels per day, and A's well operating at full production will produce 500 barrels per day, or 50 percent of reservoir full production. Assume further that the rate of reservoir production possible without waste (within market demand) is only 600 barrels per day. A's well's proportionate share of the permissible production would then be reduced to 300 barrels per day, 50 percent of permitted production. Noting that the statute and administrative order being reviewed did not involve price fixing or interference with interstate commerce,\textsuperscript{155} the Supreme Court upheld this market-demand prorationing as reasonable to protect correlative rights and to prevent waste.\textsuperscript{156}

The body of precedent that developed around pooling practices is also regarded as essentially approving the basic readjustments of rights caused by unitization. Unitization was long advocated by some persons inside and many persons outside the industry as a highly desirable, if not indispensable, form of regulation. But it also met with considerable resistance. In the 1930's and 1940's, experiments with unitization by private contract were attempted.\textsuperscript{157} The first compulsory unitization statute was enacted in Oklahoma in 1945 and was later upheld in the courts.\textsuperscript{158} Others followed this lead, with 25 states

\textsuperscript{153} Id.
\textsuperscript{155} 286 U.S. at 232-35; see Williams v. Standard Oil Co., 278 U.S. 235 (1929).
\textsuperscript{157} See generally J. R. Myers §§ 1.02, 8.01, 8.02.
enacting permissive unitization statutes (to avoid state anti-trust problems) and 19 states enacting compulsory unitization statutes.\textsuperscript{159} Statutes enabling compulsory pooling and those enabling compulsory unitization operate in comparable manner. Compulsory pooling statutes typically presuppose the existence of drilling or spacing units and explicitly permit voluntary pooling. If voluntary pooling does not occur, owners of interests in lands or in some cases the state regulatory agency may initiate proceedings for compulsory pooling. Typically, a petition is filed that may contain information on the proposed tract, the proposed locations of the well, an enumeration of the owners of all interests, the reasons necessitating pooling, proposed methods for bearing costs and the proposed apportionment of production. Notice is then given to all affected owners, an administrative hearing is held and a pooling order issued. Only one well will be drilled on the unit, despite the fact that many parties may have an interest in the unit, and the unit driller or "operator" is usually designated in the order, with other parties losing the right to drill on their own land. The fundamental aim is that each owner receive his just and equitable share of production.\textsuperscript{160} Major variations exist among the states with respect to the rights of those interest owners who do not wish to pay their ratable costs of drilling a well on the unit. If a dry well is drilled, some statutes immunize nonparticipating owners from any assessment for its costs.\textsuperscript{161} If a producing well comes in, some statutes allow owners who have previously refused to make contributions to the speculative well-drilling effort, to participate in the production of the well upon payment of a penalty fee to those who initially bore the costs of successful drilling.\textsuperscript{162}

Compulsory unitization statutes likewise provide for initiation of proceedings by interested parties and occasionally by the regulatory agency. After filing of the petition, which contains information very

\textsuperscript{159} For compilations of state statutes, see 1 R. Myers §§ 6.01-07, 8.02; 2 id. §§ 15.11-17; 5 W. Summers §§ 1000-51, 1058 (the last section contains excerpts from a useful report describing the implementation and frequency of use of the statutes in various states, based upon reports issued by state governors in the mid-1960's); 6 H. Williams & C. Meyers §§ 911-12, 934.

\textsuperscript{160} See generally 1 R. Myers §§ 8.01, 9; 6 H. Williams & C. Meyers §§ 905, 940-48.

\textsuperscript{161} The problem of the non-contributing co-owner may be caused by the co-owner's financial inability to contribute his share, or a financially able co-owner may for a variety of reasons prefer that his fellow owners use their money and none of his in what he may regard as a speculative drilling venture. Typical statutes that immunize a non-contributing co-owner from a ratable share of the expenses of drilling a dry well provide that the ratable share of his expense may only be deducted from production actually achieved by a well. See, e.g., Colo. Rev. Stat. Ann. § 100-6-4 (1963). Similar state statutes are cited in 6 H. Williams & C. Meyers § 905.2.

\textsuperscript{162} See 6 H. Williams & C. Meyers § 905.2; pp 92-93 infra.
similar to that contained in petitions for pooling, notice is given to all owners of interests in the lands involved and a hearing is held. As a result of the hearing, and before an order may be issued, the agency must find that unitization is necessary to effectuate the statutory purposes, that unitized operations are physically feasible, that these operations will yield more return than their costs, that they are for the common good within the affected area and that fair and equitable provisions will be made to protect the various ownership interests in the unit. In contrast to pooling orders, unitization orders must often be approved by a high percentage (two-thirds or more) of various categories of interest holders within a stated period after the entry of the order; without such ratification the order fails. The order must, of course, cover a common source of supply and it typically contains or advert to a detailed plan of unitized operations that includes the method by which costs and production are to be allocated.163

Dissident owners whose interests have been compulsorily pooled or unitized are subjected to an extreme abridgment of property rights. Of course, only the oil and gas right is affected. This is a discrete and severable right, however, as development rights would be under the proposed scheme. Moreover, if oil and gas development is at least moderately profitable, this incident may be the predominately valuable attribute of the land, perhaps worth much more than the entire balance of the fee interest.164 The right to develop oil and gas is taken from the property owner and granted to the pool operator or to the committee charged with operating a unitized field. The development right is thus typically placed in the hands of others and is communitized.165 The owner’s property interest in oil and gas under his land and

163. See generally 1 R. Myers §§ 8.02, 9; 6 H. Williams & C. Meyers §§ 912-13, 940-48.

164. See note 146 supra; 39 CAN. B. Rev. 275, 282-83 (1961), discussing litigation over a quarter section of Canadian land that overlay $5,000,000 of oil and gas. Devotees of The Beverly Hillbillies will need no substantiating citations.

165. To this point there has been no discussion of the formidable complexity into which the ownership interests in oil and gas are customarily subdivided, but now there will be limited discussion in order to clarify the text. Typically, a property owner does not himself develop oil and gas, but leases the minerals to an operator for development. The customary lease is for a primary term of a few years, with a provision for indefinite extension as long as oil and gas production may last. Most leases contain various provisions to prod the lessee (often called the “operator”) to explore for and develop the oil and gas. The lease usually provides that the owner will receive a royalty of one-eighth of all oil and gas produced, free and clear of production costs, which the lessee bears. See generally 1 H. Williams & C. Meyers § 202. Prior to granting a lease, the landowner does not ordinarily expect to undertake actual physical development of the oil and gas but does expect to determine when and if these resources will be developed, who the lessee will be and what provisions the lease will contain. These latter expectations are the ones that may be very substantially affected by pooling or unitization.
his ability to seek its capture have, in fact, been converted into fractional interests ultimately expressed in the dollars-and-cents costs and profits of operations conducted by others. The decisions of the operators must, of course, conform to the specific charges contained in the orders under which pooled or unitized operations are carried out, and the decisions are appealable by dissatisfied owners.166

Although the individual owner may participate in the expenses and profits of development, the terms and timing may be quite onerous to particular owners. If, for instance, an owner of a pooled interest is not able to raise the necessary capital to participate in the costs of drilling, he may be relegated to the peculiar status of being his own lessor. He then receives the customary one-eighth royalty from the production attributable to his interest, and the operator of the pooled unit receives the conventional lessee's seven-eighths of production, subject to costs of production.167 Again the pooled owner may find that an existing oil and gas lease on his property has been extended indefinitely, even in the face of nearly total inaction by his lessee, if the operator of the pool brings in a producing well on a pooled unit covering even a miniscule fraction of the owner's land.168 An owner within an area of unitized operations may be required to surrender his wells to the unit, taking credit for their value. But if his wells are

Assume that lands owned by A, B and C, are included within a pooled unit, that A has leased his oil and gas to AL (lessee of A), that B had leased to BL and that C has not leased his lands. Assume that AL has been designated unit operator and expects to begin development promptly. A very sketchy delineation of the impact on the rights of the parties would be the following: A's lessee continues as operator, but under duty to conduct operations with the interests of all parties in mind. 6 H. WILLIAMS & C. MEYERS §§ 990-92. B and BL are relegated to the sidelines, with some limited voice in, and the ability to seek review of, administrative orders and the operating decisions made by AL. Id. §§ 941, 946, 948, 950-57, 976, 990-92. C, presently without a lessee, might become an operator by contributing to well-drilling costs, but if he does not wish to do this, he may be forced to become a lessor of AL. See Anderson v. Corporation Comm'n, 327 P.2d 699 (Okla. 1957). He otherwise enjoys the same limited decision-making and the appeal rights as B and BL.

Unitization frequently involves many tracts and consequently causes the extreme diminution of an owner's control over his resources. Although his right to seek review is preserved, he has become only one among many owners who participate in the development decisions that are eventually made. See generally 6 H. WILLIAMS & C. MEYERS §§ 948, 976. A significant exception exists if the statute being used is the type that allows dissident owners to avoid participating in a unitization program for the lands that surround them. In this case, the rights of the non-unitized holdouts must be protected, often with considerable reduction in the total effectiveness of the unitization plan. Id. §§ 934, 937. Further, not all states have compulsory unitization statutes, Texas being a notable example.

166. See note 165 supra.
producing from two or more strata, the unit proprietors may choose to shut down production from non-unitized strata without paying any compensation. Formulae for the distribution of production proceeds vary greatly and are typically based on multiple criteria that are highly judgemental, both individually and in their interactive effects. Examples of such criteria are allocation on the basis of surface acreage ownership, allocation on the basis of the number of wells in place or allowed to produce and allocation that reflects the varying richness of the deposits beneath various surface landholdings underlying a common pool. These examples scarcely begin to catalogue the results that may occur from pooling and unitization. The fundamental reality is that someone other than the owner makes the basic decisions about the development of a highly and sometimes preeminent-ly valuable resource of the owner's land.

Results such as those mentioned above are frequently produced and judicially condoned by widely used systems of police power regulation of oil and gas production. Much of the basic structure of the regulatory systems, the thrust and validity of the public purposes they might serve and the degree of impact they might inflict on the rights of regulated property owners were approved by the United States Supreme Court. The statutes reviewed by these decisions were generated by notoriously chaotic and immensely destructive situations that arose within the oil and gas industry. The realities of these situations and the potential enormity of the resulting resource destruction were not at all lost on the courts. The shift to the correlative-rights doctrine as a conceptual justification for the control of oil and gas production was an almost inevitable result of the pernicious consequences arising under the doctrine of capture. The shift also eased vexatious constitutional questions. Public interest of utmost gravity was involved in the prevention of the massive, multiple wastes and of the destruction of valuable, nonrenewable resources. It is possible, in fact, that public in-

169. West Edmond Hunton Lime Unit v. Stanolind Oil & Gas Co., 193 F.2d 818 (10th Cir. 1951), cert. denied, 343 U.S. 920 (1952). It is not uncommon for several oil-rich strata to exist at varying depths underneath a tract, like the layers of frosting in a layer cake. A well may then be completed to produce from two or more strata simultaneously. If only one stratum is unitized, the well owner may wish to continue production from the non-unitized stratum that is also being tapped by his well. Permission to do so was denied in the principal case, and the unit operators were allowed to close down production from the non-unitized stratum.


171. For an exhaustive analysis of myriad further consequences, see 1 R. Myers §§ 10, 13, 14; 6 H. Williams & C. Meyers §§ 950-64, 980-84.

172. See generally notes 109-12 supra.
terest alone would have sufficed to justify the regulations in the eyes of the courts, without the admixture of the correlative-rights analysis. In any event, the urgent necessity for these regulations

173. An alternative proposition is that most of the oil and gas regulations examined might have been sustained solely on the basis that they protected correlative rights, without the admixture of the public interest justification. Either proposition elicits the same response—it is difficult to delineate the fracture line between protecting correlative rights and protecting broader public interests. To the extent that distinct "public interest" components exist in the oil and gas regulatory systems examined, they often seem to consist of an extension of policies that give generalized protection to correlative rights. If this be so, it may be traced to the process by which correlative rights are defined.

The doctrine of correlative rights has no inherent normative content. Until some benchmarks of permissible resource use or individual entitlement are supplied, the lowest common denominator of individual greed seems a perfectly appropriate operative norm. Once this standard is rejected as unsatisfactory, however, it is difficult to imagine any substitute norm that is not conducive toward long-term public interests, if these are defined in terms of resource conservation. "Public interest" itself must of course be fleshed in with substantive content, not an inconsiderable problem.

One authority has suggested:

[T]he correlative rights of owners in a common source of [oil and gas] supply include: (1) the right against waste of extracted substances, (2) the right against spoilage of the common source of supply, (3) the right against malicious depletion of the common source of supply, (4) the right to a fair opportunity to extract oil or gas.

Kuntz, Correlative Rights in Oil and Gas, 30 Miss. L.J. 1, 2 (1958).

The standards are incomplete, however. They lack any solid referents in terms of acceptable uses, production processes and consumptive rates for the common resource. These referents must be supplied by the courts, the legislature or perhaps by consensus among the owners involved. The referents, in the form of standards or rules, will then comprise the substantive content of the correlative rights of the owners. However supplied, and whatever their substantive content, the rules governing the exercise of correlative rights inevitably have a highly contextual aura about them. The context from which they derive and to which they must apply is that of numerous owners exercising rights in a resource. The owners in a sense constitute a mini-public. Specific regulation of their exercise of correlative rights is thus pro tanto "public" in its focus from the outset and simply cannot be shorn of this "public" content. Thus between regulations to adjust correlative rights and regulations that safeguard general "public" interest, there is a troublesome blurring of a commonly shared thrust toward resources conservation.

At the extreme ends of the regulatory spectrum, public interest and correlative rights may be in sharp conflict. Permitting the exercise of correlative rights by "flush" production would violate any public policies of resource conservation, whereas regulations to preserve the resource by forbidding its production would "adjust" correlative rights only in the sense of denying their exercise. Short of such extremes, it is clear that regulations frequently constrain the exercise of correlative rights much further than the owners would have done on a purely consensual basis. Also, some regulations are characterized by a special sensitivity toward correlative rights, as in Champlin Ref. Co. v. Corporation Comm'n, 286 U.S. 210 (1932). In that case, a simple prohibition against earthen storage and oil spillage would have prevented the major waste involved, but with considerable violence to the correlative rights of the nonpipelining operators, who would have subsequently been closed. Despite such instances, however, in the middle ground of moderate production regulation it seems that the furtherance
clearly gave them strong momentum toward favorable review in the early Supreme Court cases. It is assertible that this momentum and the strength of the early decisions remain operative as a background reality in the judicial review of oil and gas conservation legislation to this day. This is not to say, however, that agency actions will not be promptly overturned if in excess of the statutory base of authority or that statutes unsuited to the service of legitimate conservation ends will not be stricken by the courts.174

Coupled with this momentum, as a reality of the judicial review process, is the complexity of the regulatory proceedings under review. Statutory policies are often individually meritorious and mutually inconsistent.175 Regulation is accomplished after extended hearing processes. The property interests regulated are typically subdivided with as much complexity as is anywhere known under our system of laws.176 The physical processes of oil and gas production being regulated are often obscure, highly debatable and intensely controversial.177 Given these pragmatic considerations, it is typical for courts to approve regulations that are patently less than perfect but that have been issued as a result of the informed best judgment of the regulatory agencies.178 This situation is similar to that existing in the delineation of public interests and the generalized adjustment of correlative rights often tend to coincide considerably.

It is our thesis, of course, that the use of development rights would in comparable manner tend simultaneously toward the adjustment of correlative rights, which assertibly exist within, but are unaccounted for by, our present zoning system, and toward the furtherance of broad public interests in land use. See pp. 84-85 supra; pp. 104-06 infra.


175. For discussion of tension and overlap between the protection of correlative rights and the furtherance of conservation interests, see note 174 supra.

176. See note 165 supra.

177. See, e.g., Railroad Comm'n v. Rowan & Nichols Oil Co., 310 U.S. 573 (1940). The Supreme Court there observed:
The record is redolent with familiar dogmatic assertions by experts equally confident of contradictory contentions. These touch matters of geography and geology and physics and engineering. No less is there conflict in the evidence as to the solidity of respondent's apprehension that there will be drainage of the oil beneath its surface by neighboring wells. The Commission's experts insist that threat, if existent at all, is speculative, and that the Commission's power of continuous oversight is readily available for relief if real danger should arise in the future.

Plainly these are not issues for our arbitrament.

Id. at 583.

178. The Supreme Court has stated:
The state was confronted with its general problem of proration and with the special relation to it of the small tracts in the particular configuration of the
and assessment processes relating to drainage and irrigation districts noted earlier.  

Summary of the Relation of Legal Doctrines to Development Rights.—Precedents provided by oil and gas regulation mesh well with much of the doctrinal base necessary to provide legal justification for development rights. The common pool of an oil and gas reservoir is quite analogous to the common pool of development potential that already exists covertly within present zoning practices and that should be overtly institutionalized by using development rights within planning districts. It is true that present practices within the zoning pool of development potential may not be comparable to the ability of the Ohio Oil Company or the Midland Carbon Company to effect unilateral seizure of a grossly disproportionate share of resources at immediate prejudice to fellow owners and to the resource itself. As noted, however, highly disproportionate treatment is accorded various owners within a zoning pool. Some are relegated to extremely low-value land uses, while a few are zoned for extremely high value use. And note that these gross inequities result from the acts of the government itself. They are the inadvertent and collateral, but presently inevitable, results of our police power regulation of land use. By contrast, the Indiana and Wyoming cases dealt with disproportionate use resulting solely from individual rapacity. Certainly it must be as permissible for the government to redress disproportionate entitlements resulting inadvertently from its own regulatory acts, as it is for the government to redress disproportions caused by individual rapacity. This is precisely what would be possible by the use of development rights.

The prevention of waste was a major justification of oil and gas regulations. It may seem that present land development practices, which could be controlled by the development rights approach, do not generate the intense, obvious levels of waste that early oil and gas production practices generated. Land development practices do,

East Texas field. It has chosen to meet these problems through the day-to-day exertions of a body specially entrusted with the task because presumably competent to deal with it. In striking the balances that have to be struck with the complicated and subtle factors that must enter into such judgments, the Commission has observed established procedure. If the history of proration is any guide, the present order is but one more item in a continuous series of adjustments. It is not for the federal courts to supplant the Commission's judgment even in the face of convincing proof that a different result would have been better.

Id. at 589-84.

179. See discussion and authorities cited at notes 87-96 and accompanying text supra.

180. See notes 110-29 and accompanying text supra.

181. See pp. 35-53 supra.
however, cause widespread waste with grave short- and long-term societal consequences. Development in areas of natural hazards, development of land that has high alternative values, the total amount of land consumed by development, premature development, development out of phase with provision of services and many more examples might be cited. These are categories of massive, ubiquitous waste that occur despite the present systems of landuse regulation. They would all be directly amenable to much more effective, purposive control under a development rights system than they are at present. Indeed, the use of development rights may be the best, if not the only, way to effect simultaneous control of these numerous, major, interrelated problems. A case can fairly be made, then, that waste-prevention ends served by a development rights system are not at all incommensurate with those served by the oil and gas regulatory structures we have discussed.

The impact of a development rights system on landowners is comparable to, and may in some senses be considerably less than, the impact under compulsory pooling and unitization. When oil and gas occur in any particular abundance, they may be the preeminent monetary attribute of land value.\(^{182}\) Pooling implies the strong likelihood, and unitization the near certainty, that the development decision and its execution will be stripped from the owner by administrative process, albeit with rights to appeal both the administrative decision and its implementation. And we have seen situations as extreme as that where a nonparticipating owner on a drilling unit is reduced to being his own lessor, that is, to receiving a one-eighth royalty of his own minerals, while the administratively appointed lessee receives the other seven-eighths.\(^{183}\) By contrast, the use of development rights should alleviate the more confiscatory aspects of present zoning practices, would leave the development and sale-of-rights decision in the owner's hands, and could well result in greater total profit from development in the typical planning district.

Finally it should be noted that each of the categories discussed above (protection of correlative rights, prevention of waste, furtherance of proper resource development) may by itself serve as a proper basis for regulation. In the case of development rights, as in the case of oil and gas regulation, however, the justifications for regulation are not isolated and unrelated. Rather, the various purposes coincide powerfully to form an extremely strong, multiple justification for the

\(^{182}\) See notes 146 & 167 supra.

\(^{183}\) See pp. 92-98 supra.
proposed regulatory structure.

IV. A FURTHER LOOK AT DEVELOPMENT RIGHTS

Initially we set out the theories and events that are prompting serious consideration of the creation of severable development rights, and of marketplaces for such rights within defined development districts. Next we took a brief excursion through major areas of legal precedent that might be mustered to support such a system. It is now time to consider in greater detail how a development rights system might be structured, and whether it seriously can be asserted that such a system could survive judicial review.

Our earlier discussion stopped after development rights had been hypothetically delineated, and residential rights allocated throughout a district on a per-acre basis. It should be noted that the delineation of development districts is based on a mixture of natural factors (drainage ways and natural hazard areas, for example) and planning considerations (transportation links and marketing areas of established commercial centers, for example). The delineation of districts is thus a judgmental process in which the realities of resource use are combined with a variety of other criteria. Courts have approved similar processes in defining other types of districts, such as drainage and irrigation districts and oil and gas spacing units and unitized fields. It seems a fair conclusion that the process for delineating planning districts would also receive judicial approval as founded on rational, defensible planning criteria and natural factors.

Turning now to a more detailed analysis of the development rights structure within a district, it is again worth noting that under the system as it was described earlier, zoning and planning would continue in effect, albeit enhanced by some of the new techniques for analyzing natural amenability for development. Assume that a very simplified district is composed of three tracts of 100 acres each, owned by A, B and C, and that planning and zoning lead to a determination that A's tract should support no more than 25 residential units, B's should support 100 units, and C's 175 units. With permissible density thus determined by planning and zoning processes, the question then becomes one of allocating transferable development rights to each property owner. As previously noted, the question of permitted density is distinct and separate from the question of allocating development rights.

184. See pp. 89-47 supra.
185. See note 171 supra.
186. See pp. 52-53 supra.
187. Id.
rights. In fact, it is this further process of allocating development rights independent of permitted density that eliminates the great inequities in the current practice of zoning. Under the allocation of rights, each owner receives a ratable share in the district's total development potential, whether or not he may fully use that share on his own property. Various formulae could be used as a basis for this allocation:

FORMULA I.—The decision could be made to allocate total development rights evenly over the district on a simple per-acreage basis. Using the hypothetical, 300 dwelling units may be placed on the 300 acres owned by A, B and C, although the permitted densities vary among their tracts. If the 300 units were converted into 300 development rights and allocated on a per-acre basis, this would be the result:

<table>
<thead>
<tr>
<th>Owner</th>
<th>Acres</th>
<th>Development Rights</th>
<th>Allowed Density in Number of Units</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>100</td>
<td>25</td>
<td>holds 75 unusable or surplus rights</td>
</tr>
<tr>
<td>B</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>holds rights necessary for allowable development density</td>
</tr>
<tr>
<td>C</td>
<td>100</td>
<td>100</td>
<td>175</td>
<td>75 rights short of number needed to meet allowable density</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>

After the allocation of rights, the owners are free to do as they wish. A may develop at any density up to 25 units and sell his surplus rights, he may elect to sell all 100 rights and forego development unless he later buys more rights or he may elect to retain all 100 rights although he can use only 25. B and C have similar choices. If C wishes to develop to the permitted density of 175 units, he must purchase additional rights. In practice, of course, there would be many rights in the hands of many owners and a ready market for them.

FORMULA II.—It might be decided that a simple per-acre basis of allocation is inequitable. For instance, if A's 100 acres are largely swamp, he has perhaps never had develop-
ment expectations comparable to those of C, who owns 100 acres of land that are well-suited to development. It might then be decided that this situation should be reflected in the allocation of the 300 development rights. It could be decided to allocate 70% of the rights (70% x 300 = 210 rights) on the basis of acreage and 30% of the rights (30% x 300 = 90 rights) on the basis of amenability of land to development. Many possible procedures might be used to divide these 90 rights among A, B and C. For instance, assume that on a one-to-ten scale, A’s land was ranked two (low) in terms of development amenability, B’s land was ranked five (amenable) and C’s land eight (highly amenable). The ratings could then be added (2 + 5 + 8 = 15) to produce the denominator of a fraction over which would be placed each individual rating: A, 2/15 (weighted share) x 90 (available rights keyed to amenability) = 12 rights; B, 5/15 x 90 = 30 rights; C, 8/15 x 90 = 48 rights. Many other processes and formulae might yield different, more agreeable results, but this one serves for illustration. Allocation of all 300 rights would occur as follows using this approach:

<table>
<thead>
<tr>
<th>Owner</th>
<th>Acres</th>
<th>General Development (210 rights)</th>
<th>Amenity Development Rights (90 rights)</th>
<th>Total Development Rights</th>
<th>Allowed Density</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>70</td>
<td>12</td>
<td>82</td>
<td>25</td>
<td>holds 57 surplus rights</td>
</tr>
<tr>
<td>B</td>
<td>100</td>
<td>70</td>
<td>30</td>
<td>100</td>
<td>100</td>
<td>holds sufficient rights</td>
</tr>
<tr>
<td>C</td>
<td>100</td>
<td>70</td>
<td>48</td>
<td>118</td>
<td>175</td>
<td>needs 57 additional rights</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>210 + 90 = 300</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(This formula would work equally well if, for example, harm to resource functions or impact on the externality web was the criterion applied.)

The impact of amenability as a factor in the rights-allocation process could be altered by allowing it to operate on more or less than 30 percent of the available rights. Various other factors could
be introduced into allocation computations by applying similar formulae to percentage blocs of rights; the comparative equities of owners thus could be adequately reflected. Rather sophisticated computations of this sort have been a common and judicially approved practice in computing oil and gas allowables and in apportioning production among numerous individual tracts in unitized oil fields.\textsuperscript{188}

Rights might also be time-phased. There could be classes of rights that would be usable presently, or in five, ten or fifteen years. Assuming that various areas within the district were scheduled for time phased development at comparable time intervals,\textsuperscript{189} manipulation of the allocation of timed rights could have interesting consequences. If property owners whose lands were scheduled for belated development were allocated a relatively sizeable share of early maturing rights, they could sell these and receive present remuneration although actual development of their lands would occur in the future.

Special treatment might well be accorded to commercial and industrial rights. Local service industries and commercial uses have the odd characteristic that much of their value is due to localized population buildup that supports them.\textsuperscript{190} Their profitability depends upon neighboring residential development. Perhaps the local service industry and commercial development rights should then be allocated evenly throughout a district, or perhaps on a mixed formula reflecting both the acreage and the permissible density of each parcel. General areas appropriate as sites for such uses could then be identified by performance standards or floating-zone techniques. The planning agency might then publish a prospectus to developers on the kind of facility desired, such as a neighborhood shopping center. The prospectus would contain various criteria and performance standards that would aid developers to bid on the project. After the planning authority screening, eligible bids could be explained to and voted upon by the landowners within the area to be served by the shopping center. The developer elected by majority vote would then purchase service and commercial industry rights from the property owners at the price stated in his bid and proceed with development.

Alternatively, the planning agency might hold all industrial and commercial rights in reserve and phase industrial and commercial development as needed, using competitive bidding. Proceeds resulting from the sale of industrial and commercial rights could then be distributed to landowners over an appropriate area, perhaps reflecting

\textsuperscript{188} See notes 142 & 170 supra.
\textsuperscript{189} See discussion and cases cited pp. 41-42, 93-94 supra.
\textsuperscript{190} See pp. 40-41 supra.
various aspects of externality theory. The result in either case would be comparable to a special assessment system in reverse, with monetary benefits generated and distributed.

These systems would serve to redistribute the profits from high-value commercial and industrial zoning that presently accrue to a few fortunate landowners, at least in part at the expense of the vast bulk of landowners whose land is zoned residential. Beyond this kind of redistribution, it is anticipated that the net profit derived from total development within the district may be higher under a development rights system than under present practices. Development rights are transferable and thus ideally suited for use in, for example, cluster zoning or planned unit developments. Under these devices, development densities allocated to a particular tract may be clustered together, instead of spread uniformly on cookie-cutter lots. Clustering leaves part of a tract undeveloped, and within the developed portion, achieves economic efficiencies by permitting shorter roads and utility conduits, by the erection of townhouses or more dense multiple dwellings and by a variety of other cost-saving techniques.\footnote{191}

Such practices often become more desirable when more land area is included, and it can thus be good practice to block several tracts for common development. This can be and is done presently but could be aided and even promoted by a development rights system. The process of assembling tracts would at least be expedited if the landowners were accustomed to thinking in terms of the purchase and sale of development rights at the going rate within the development district. A fixed number of rights, each with readily ascertainable value, should puncture the assertions of inflated value that landowners presently make and should thus facilitate negotiations for the assemblage of tracts. Beyond this, a variety of incentives might be offered. For instance, assume that several contiguous landowners have combined their holdings and intended to undertake a common development project that is highly desirable from a planning perspective. In addition to being allowed to cluster densities, they might be allowed to make use of the service and commercial industry rights represented by their combined tracts. Further, they might be given a small density and development rights bonus out of a limited fund reserved for such purposes.\footnote{192}


\footnote{192. A logical extension of incentives to encourage the blocking up of tracts for common development would be to suggest devices for the compulsory unitization of tracts of land for development purposes. See generally pp. 85-94 supra, discussing...}
V. Conclusion

The preceding thoughts are but a tentative outline of how a development rights system might function. Structures such as those sketched would be a major step forward from existing legal precedent. That is not to say, however, that they would be alien to existing precedent or inconceivable under it.

Each of the areas of precedent surveyed earlier involved pressing social values. These values derived from resource uses involving numerous tracts of privately owned land. Furtherance of the valued resource uses required that the full attributes of individual ownership be modified by or subordinated to a legislatively imposed form of limited common ownership. This the courts approved in various instances as permissible usage of the powers of eminent domain, taxation and police power regulation. The fundamental rationales behind these exercises of governmental power were the proper and needful development of resources, the prevention of the waste of resources and the protection and furtherance of correlative ownership rights in commonly enjoyed resources. Perhaps the best epithet by which to characterize the net effect of such permissible regulation on the rights of individual owners is from Mr. Justice Holmes—that such systems must be conducive to an “average reciprocity of advantage.”

It is a fair question whether the shift to development rights is not a more rigorous, onerous cure than is necessary. Could not the problems depicted be overcome by less drastic means?

Ill-timed, land-consumptive, sprawling development may be at least partially controlled by zoning techniques and by adroit manipulations of the availability of services. Development of naturally these practices with respect to oil and gas production. The existence of transferable development rights should facilitate the unitization of land for development purposes by making the owner’s rights more specific and certain. Other advantages suggest themselves, along with additional doctrinal extensions, but it seems impolitic to explore these until the fundamental notion of development rights gains some acceptance and experience in use.

193. Jackman v. Rosenbaum Co., 260 U.S. 22, 30 (1922), in which the Court approved a Pennsylvania statute authorizing a property owner constructing a party wall to demolish and rebuild a neighbor’s boundaryline wall, if it could not be incorporated into the new party wall; liability to the neighbor arose only in case of negligence during the operation. The Court at one point analogized the statute to those reviewed in Wurts v. Hoagland, 114 U.S. 606 (1885), and Fallbrook Irrigation Dist. v. Bradley, 164 U.S. 112 (1896), characterizing all as involving the police power. 260 U.S. at 30. See note 99 supra. Later in the opinion, however, the Court observed that the statute codified the rights of party-wall owners as understood from colonial times in Pennsylvania and, as settled laws of property, did not involve any invocation of the police power. Id. at 31. We previously noted judicial leniency toward ancient practices and their statutory codifications in the case of turnpikes, pp. 53-55 supra, and in the case of milldam acts, pp. 58-60 supra.
hazardous or valuable areas may be partially controlled by special regulations. Open space may be purchased by a variety of techniques, assuming that funds are available. Some sort of compensation mechanism might be engrafted onto police power controls to avoid the taking issue and to adjust some of the shifts that occur in land value. The reply to these suggestions is that each is a partial and piecemeal response and that each contains major if not incapacitating flaws. The problems addressed are interrelated and must be confronted as such. The use of a wide array of control devices, even if all were individually effective, presupposes that each device will be managed to achieve maximum potential effect and that the devices will be properly coordinated to achieve interrelated ends. Experienced observers of local governmental efforts to regulate land use will likely be skeptical on both counts. By contrast, the development rights system gives promise of providing a unified method that can simultaneously confront and curb all of the major problems that have been discussed.

Conversion of the development potential of land ownership into development rights would probably require action by the state legislature. The evils to be avoided by such legislation would need to be stated clearly and credibly, and backed by major studies. Planners and natural and social scientists would have to be heavily involved in these efforts. The studies should demonstrate in the most lucid manner possible the costs and wastes of present development practices—for example, the consumption of land area, the development of areas that should be preserved or left undeveloped, and the public capital costs of scattered and sprawling development. Both short- and long-term waste of land resources should be depicted fully, vividly and accurately, perhaps with analogies drawn to the practices that once existed in oil and gas production. The studies should further show how these wastes could be curbed by the utilization of development rights. Major effort should be made to demonstrate that the present waste of resources may have compound effects in the future by foreclosing options and preventing multiplier effects of resource use.

The discussion of detrimental effects (waste) to be avoided should be complemented by a well-documented analysis of desirable ends to be gained by better regulation. It may very well be that if present practices are altered, not only will waste be avoided but positive resource multiplier effects will be preserved or set into motion. For instance, preservation of groundwater recharge areas from development may not simply preserve an aquifer. It may also allow the development of groundwater-based agriculture that produces crops, preserves open space and encourages wildlife propagation.
Other studies should concentrate on the correlative rights of numerous landowners as they are presently served by zoning and as they might be better served by the development rights system. The assertions made in this article about the destruction, creation, transfer and bestowal of value by zoning practices should be fully verified and documented. Special attention should be given to the precise dimensions of the taking problem. In both cases, the adjustments of entitlements and the avoidance of inequities that would hopefully result from the use of development rights should be fully explored. Additionally, special studies should be made of the economies possible through such devices as cluster development, planned unit development and any similar systems that may have emerged, in order to depict fully the economies of development that are possible using the transfer methods implicit in the development rights system. Throughout the suggested studies, analogies should be drawn to the protection and furtherance of correlative rights that have been approved in legal precedent.

An interdisciplinary team of economists, experienced land developers, financiers, planners, lawyers and physical scientists should be assigned the task of developing several model structures for (1) the creation and precise legal and technical definition of development rights, including a thorough analysis of tax consequences and recording problems, and (2) management of the market place structure for the sale and exchange of development rights. In constructing these models, the team should consider whether a development rights system would be adaptable to areas that are partially or fully developed. Additional considerations include whether total development densities within a district could be estimated at the outset and density figures maintained inviolate thereafter as a basis for the number of development rights allocated, whether blocs of rights must be held in reserve for later allocation and whether dividend bonuses of rights might be allocated among the holders of rights if density figures were revised upwards. Provisions to deter the speculative acquisition of large blocs of rights might also be needed. These lines of inquiry are but a partial listing of potential difficulties that would have to be analyzed. A major line of inquiry, perhaps to be addressed initially by this team and eventually by the legislature, is that of the structural nature, precise powers and accountability of the planning agency that will run the districts. For it is apparent that the development rights system would envisage a planning agency with control and management powers far beyond any that presently exist in this country.

The various model structures developed by the team should be subjected to the most intense and probing analysis possible, with
an eye toward developing a final model that offers the best chance of functioning desirably and predictably. The model chosen should give the best possible assurance of proper internal functioning and should also be clearly calculated to serve the goals discussed earlier—prevention of identified resource wastes, protection of values by wise land management and protection of correlative rights of landowners.

The planning studies and the selected development rights model should then be presented to the legislature, accompanied by a proposed statute carefully drafted to translate the model into law. Plans should also be laid to generate impetus for the passage of the statute. Once passage is achieved, any early court cases that present fundamental questions and opportunity for review of the basic structure and purposes of the development rights system must be very carefully and ably shepherded through the appellate courts to assure favorable decision.

Legal precedent exists in sufficient breadth and strength to provide strong encouragement to those considering development rights systems as methods of widespread land use control. Judicial approval is not assured but can realistically be hoped for if the systems are well considered and well structured, if they are clearly responsive to the major short- and long-term wastes of land and other resources that occur under the present systems of land use controls, and if their impact on the rights of individual landowners is in clear furtherance both of demonstrable public interests and of the correlative rights and entitlements of individual owners. The fundamental obstacles to such a plan are more those of legislative perception and resolve, resource exigency, political reality and the creation of workable planning and marketing structures, than of legal precedent.