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TWO ESSAYS ON THE ECONOMIC ROLE OF GOVERNMENT

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ABSTRACT

TWO ESSAYS ON THE ECONOMIC ROLE OF GOVERNMENT

By

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Perhaps the most important flaw in much of the externality literature is that the analysis is done in a partial equilibrium framework, and hence does not capture the sectoral interactions, or the feedback upon different factors, that can be studied in a general equilibrium framework. Further, Pigouvian taxes and subsidies must be viewed within the context of a revenue system with many other tax instruments. In the first essay, I analyze these issues using a computational general equilibrium model. The polluting industries in the model emit pollution which harms both other industries and consumers.

An increase in a Pigouvian tax results in a much lower Marginal Welfare Cost than do similar increases in labor income taxes, output taxes, and sales taxes. Simulations comparing the effects of Pigouvian taxes and subsidies show that a Pigouvian tax generates a larger welfare improvement per unit of pollution reduction than does a Pigouvian subsidy with labor income tax replacement, while the opposite result holds when a lump-sum replacement tax is used. These results hinge on the second-best effects operative within the model due to existing tax distortions in the economy.

The second essay uses the technique of deconstruction to examine five of the seminal works in the legal-economic literature dealing with the takings clause of the Fifth Amendment to the United States Constitution. The view taken here is that law is a language, or rhetoric, and that the authors examined here are persuading an audience toward a particular result. As such, their results are seen as derivative of several phenomena, including theories of property and government, metaphors, fictions, conceptions of fairness and efficiency, ideology, and appeals to authority.

The deconstructive approach brings these phenomena into the foreground and examines their implications for takings cases. The rule advocated by each author is shown to be selectively chosen, reflecting that author's view of the world, with no more a priori claim to correctness than any other rule. Further, these rules are shown to be either internally consistent or not universally applicable, so that the claims of comprehensiveness and universality made by the authors are in doubt.

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Charles Ballard has also played a major role in the completion of this dissertation. He has shown great patience in teaching me the technique of computational general equilibrium modelling, provided insightful comments on my work, and urged me to think more deeply about the issues I am examining.

I would also like to thank the other two members of my committee, John Goddeeris and Larry Martin. Their helpful comments have resulted in greater clarity and depth of exposition of the issues involved in these essays.

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INTRODUCTION

This dissertation consists of two essays in the general area of the economic role of government. The first essay uses the technique of computational general equilibrium analysis to examine the effects of Pigouvian taxes, Pigouvian subsidies, and other tax instruments in an economy with air pollution externalities. The second essay examines five of the seminal works in the legal-economic literature on the Fifth Amendment takings clause of the United States Constitution. Rather than constructing a new view of the takings clause, this essay deconstructs these five seminal works and the proposed legal rules embodied within them.

As the reader may have surmised, these are two very different essays, using vastly different techniques of analysis. Indeed, it may be somewhat surprising that two such seemingly divergent essays are included in the same dissertation. Yet, if one holds to a broad-based view of the economic role of government, these two essays are not too far removed. The government affects economic activity in at least three ways: through monetary policy, fiscal policy, and the legal system. The first essay deals primarily with the fiscal policy arm of government, examining the welfare effects of various tax instruments on the United States economy. The second essay deals with the effects of the legal system on economic activity through the resolution of takings cases.

Aside from the fact that both of these essays deal with the economic role of government, there is an additional and very fundamental commonality between them. Both of these essays deal with the subject of rights determination. The first essay deals extensively with the issue of the relative benefits of Pigouvian taxes and subsidies. A Pigouvian tax is a tax levied on the pollution emissions of a firm, and has the effect of causing that firm to install pollution abatement equipment in order to reduce its tax bill. A Pigouvian subsidy is a subsidy paid to the polluting firm based on the amount that it reduces its emissions. In the case of a Pigouvian tax, the firm essentially does not have the right to pollute, and thus it must pay a price (the Pigouvian tax) for the privilege of doing so. The Pigouvian subsidy, by way of contrast, essentially gives the firm the right to pollute, but offers to pay the firm (through the Pigouvian subsidy) if the firm is willing to moderate its exercise of that right. In this essay, the welfare effects of Pigouvian taxes and subsidies are compared, and in finding that one causes a larger welfare gain than the other, a judgment is made as to rights, i.e., that the Pigouvian instrument that causes a larger welfare gain should be adopted, and thus that firms should or should not have the right to pollute.

This essay also makes judgments as to rights on a somewhat different level. Comparisons are drawn between the welfare effects of small increases in labor income taxes, output taxes, sales taxes, and Pigouvian taxes. When these welfare effects are compared, and conclusions are drawn regarding the preferred revenue instrument(s), we are dealing with rights determination. If the the results show that Pigouvian taxes result in smaller welfare losses than labor income

taxes, and the conclusion is drawn that a larger portion of government revenue should be taken from Pigouvian taxes and less from labor income taxes, we are expanding the scope of the rights of laborers against government over labor income, and reducing the rights of polluting firms against government over the firms' income.

The second essay is, at its most fundamental level, about the rights-determination process. In rendering decisions on takings cases, the courts are deciding whether the government action in question was a taking of private property, for which compensation is owed, or a legitimate exercise of the police power, for which no compensation is due. If the court rules that a taking has occurred, and that compensation is thus due to the injured party, then the court is saying that the injured party did have a right against government for that particular action. If, on the other hand, the court rules that the government was acting within the bounds of its police-power capacity, then the injured party is said not to have a right against government for that particular action. Thus, rights are being determined between individuals and between individuals and government.

While both of these essays are about the rights-determination process, they use vastly differing techniques of analysis in examining the process. The first essay uses a computer simulation model to examine the welfare effects of various tax instruments, while the second essay uses the tools of literary criticism to examine the rights-determination criteria set forth in five of the seminal works in the takings literature. What these techniques have in common is that each offers a new way of examining the problem at hand. As such, it is hoped

that through them, these two essays will further the analysis and debate within these two areas of the economic role of government.

ESSAY ONE: THE EFFICIENCY EFFECTS OF PIGOUVIAN TAXES, PIGOUVIAN SUBSIDIES, AND OTHER TAX INSTRUMENTS IN A COMPUTATIONAL GENERAL EQUILIBRIUM MODEL

I. Introduction

The planet on which we live has only a finite capacity either to provide resources to us or to absorb wastes from us. Therefore, the earth is best viewed as a closed system.[1] This is the central insight that led to the development of environmental economics.

This view of the environment bears a remarkable similarity to the view of the economy taken by Walras (1874) and many others. The interactions among sectors of the economy are sufficiently important that it is often best to account for them by using a general equilibrium model. General equilibrium analysis casts the economy as a closed system, which is modelled conveniently as a system of simultaneous equations.

The phenomenon of environmental pollution can be seen as a fundamentally general equilibrium phenomenon. Surprisingly, however, much of the work in environmental economics has failed to deal with sectoral interactions.[2] In addition, applied general equilibrium analyses of taxes, tariffs, etc., run the risk of ignoring some very

1. An eloquent early treatment can be found in Kenneth Boulding (1966).
2. Peter Victor (1972) uses input-output models to represent interactions among sectors. Stuart Mestelman (1982) has examined the effects of Pigouvian taxes and subsidies in a two-sector general equilibrium model. His model and results are discussed below. The present paper goes considerably further by building a general equilibrium model of the entire economy and tax system.

important interactions if they abstract from externalities. However, very few of the papers in the burgeoning literature on computational general equilibrium (CGE) analysis make any attempt to deal with pollution externalities.[3]

This paper develops and employs a CGE model of the United States economy, in which certain types of pollution externalities are included explicitly. The focus of the paper is on the efficiency effects of taxes and subsidies in the presence of such externalities.

This paper provides the first general equilibrium estimates of the efficiency effects of Pigouvian taxes and subsidies. Arthur Cecil Pigou (1932) was the first well-known economist to observe that externalities cause marginal private product and marginal social product to diverge. Pigou evidently believed that transaction costs were too high to allow for a negotiated solution to the externality problem (192-195). As a result, Pigou advocated state intervention in the form of corrective taxes or subsidies as a means of dealing with the externality problem:

> It is plain that the divergence between private and social net product of the kinds we have so far been considering ... cannot be mitigated by a modification of the contractual relation between any two contracting parties, because the divergence arises out of a service or disservice rendered to persons other than the contracting parties. It is, however, possible for the state, if it so chooses, to remove the divergence in any field by "extraordinary encouragements" or "extraordinary restraints" upon investments in that field. The most obvious forms which these encouragements and restraints may assume are, of course, those of bounties and taxes (Pigou 1932, 192).

Much of the recent literature on externalities has centered on the debate over the relative merits of the Pigouvian tax/subsidy approach to

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3. For example, none of the nearly 100 works referenced in the survey by John Shoven and John Whalley (1984) deals with environmental issues in a substantial way. However, a few European authors have used CGE techniques to address environmental concerns. See, for example, Gunter Stephan (1988).

externality correction and the property rights approach of Ronald H. Coase (1960). Coase takes the position that bargaining between the affected parties, not taxes or subsidies, is the optimal treatment of the externality problem. Coase focused on the reciprocal nature of externalities, and the need to assign property rights rather than imposing taxes or subsidies. The major result of Coase's analysis has come to be called the "Coase Theorem," and may be described as follows:

> under idealized conditions when market transactions costs are zero and where income effects are not relevant, the allocational results of voluntarily negotiated agreements will be invariant over differing assignments of property rights among the parties to the interaction (Mercuro and Ryan 1984, 57).

In the more realistic case of non-zero transaction costs, however, Coase recognizes that the initial assignment of property rights does affect the final allocation of resources (Coase 1960, 16). Further, Coase does not completely rule out the use of corrective taxes and/or subsidies when transaction costs are non-zero. Rather, the outcomes generated by various schemes for dealing with externalities should be compared in terms of their effects on total output and the quality of life (Coase 1960, 43).

While the Coasian solution may apply in some cases,[4] the focus in this paper is on the effects of Pigouvian taxes and subsidies on pollution externalities and on the economy as a whole.

There is an early literature in which it is suggested that a correctly specified set of subsidies is equivalent to a correctly specified set of taxes in sustaining the optimal level of an externality generating activity in a competitive market system.[5] This assertion has, however, been shown to be incorrect. Morton Kamien, Nancy

4. See, for example, Steven Cheung (1973).
5. See, for example, William Baumol (1965), 104.

Schwartz, and F. T. Dolbear (1966) have shown that the use of subsidies may cause a firm to overproduce initially in order to qualify for a larger subsidy. David Bramhall and Edwin Mills (1966) have noted, moreover, that a firm which could not operate profitably under a tax may be able to operate profitably under a subsidy.

William Baumol and Wallace Oates (1988), while acknowledging the result of Bramhall and Mills, are able to show that

> other things being equal, no other decision of the profit maximizing firm [besides deciding whether or not to operate] will be influenced by the choice between the two fiscal measures, provided the marginal tax and subsidy rates are equal (Baumol and Oates 1988, 217).

It is at the industry level where Baumol and Oates are able to show the most significant differential effects of taxes and subsidies:

> In a competitive industry, where polluting emissions are a fixed and rising function of the level of industry output, equal tax and subsidy rates will normally <u>not</u> lead to the same output levels or to reductions in total industry emissions. Other things being equal, the subsidy will yield an output and emission level not only greater than those that would occur under the tax, but greater than they would be in the absence of either a tax or a subsidy (Baumol and Oates 1988, 222, emphasis in original).[6]

The reasoning behind this proposition is intuitive. While the subsidy does reduce the level of emissions per firm, it also attracts new firms into the industry in numbers great enough to more than offset the emissions reductions of individual firms. However, these results were derived within a partial equilibrium framework with no provision for direct abatement by the polluting firms.

Stuart Mestelman (1982) examines the effects of Pigouvian taxes and subsidies on output and pollution levels in a general equilibrium framework. He uses a simple two-sector general equilibrium model with

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6. Of course other things are not equal, which reinforces the importance of studying these issues in a general equilibrium framework.

"producer-producer" externalities and no abatement technology. He finds that the output of the industry receiving a subsidy does indeed fall in some cases, although not to the extent that occurs under a Pigouvain tax. This result occurs because of the relative price adjustments that occur in a general equilibrium framework which are not taken into account when partial equilibrium analysis is used.

Baumol and Oates (1988) examine the relative effects of Pigouvian taxes and subsidies in a partial equilibrium model where explicit abatement is allowed. They show that Pigouvian taxes lead to reduced output and emission levels. Under a subsidy scheme, industry output increases, as in the case where abatement is not allowed for. However, the level of emissions may either increase or decrease, depending on the size of the output effect relative to the abatement effect (Baumol and Oates 1988, 224-228).

An important reason why the effects of Pigouvian taxes and subsidies may differ is the presence of general equilibrium interactions among the polluting sectors, the other sectors, and all elements of the tax system. The actual level of the externality, and hence the Pigouvian tax or subsidy, depends on the actual equilibrium and hence on all of the tax rates and other parameters of the economy. This also holds in the other direction. This gives rise to second-best considerations which can only be dealt with adequately in a general equilibrium framework.[7]

Pigouvian taxes and subsidies must be viewed within the context of a revenue system with many other tax instruments. If the government has a fixed revenue requirement, the imposition of a Pigouvian tax will

7. For an extensive theoretical example of these issues, see Agnar Sandmo (1975).

allow other tax rates to be reduced, while a subsidy will require other tax rates to rise. The effect of a Pigouvian tax is to reduce an existing distortion without creating a new one. Even if the Pigouvian subsidy were not to attract new firms into the industry, so that it would decrease pollution unambiguously, it still would impose an extra revenue requirement on the government. An increase in taxes to finance the subsidy will impose a welfare loss which will at least partially offset the gain from the reduced pollution. Thus, a Pigouvian subsidy may or may not reduce pollution, and it will likely exacerbate other tax distortions. The Pigouvian tax, on the other hand, not only reduces pollution, but also allows for the reduction of tax distortions.[8]

In addition to providing estimates of the effects of Pigouvian remedies on economic welfare, this paper provides estimates of the efficiency effects of labor, output, and sales taxes. These calculations have been made before in many CGE models, but never in one with pollution externalities. These welfare cost estimates are then compared with those that would emerge from a model in which externalities are not incorporated. The inclusion of externalities does

8. While Mestelman's (1982) analysis is certainly an improvement over partial equilibrium approaches, there are several important drawbacks to his analysis. First, his model has only two sectors, which to some extent diminishes the richness of sectoral interactions that occur in the economy in response to Pigouvian taxes and subsidies. Second, he deals only with "producer-producer" externalities, whereas "producer-consumer" externalities also have very significant effects in society. Third, Pigouvian instruments are the only distortionary tax instruments used in his model. Fourth, there is no abatement technology in his model, which, as we will see below, has a significant impact on the evaluation of Pigouvian taxes versus subsidies. Finally, he does not undertake any type of analysis of the effects of taxes and subsidies on societal welfare. Since the effects of Pigouvian taxes and subsidies in a general equilibrium system are not limited to effects on the level of pollution alone, such welfare evaluations are important.

have some significant effects on the results, which further illustrates the importance of modelling externalities in a general equilibrium framework.

In this paper, these issues are analyzed using an 18-sector CGE model. The focus here is on both "producer-producer" externalities (i.e., the damage done to the structure of production as a result of industrial pollution) and "producer-consumer" externalities. The data used here indicate that eight of the producing sectors generate sufficient pollution to have an adverse effect on the structure of production in the economy. It is assumed that these same eight sectors generate the "producer-consumer" externalities.

As in most CGE models, each sector is modelled as if it consisted of a single competitive firm. Thus, the possibility of entry into the industry, mentioned earlier, does not arise in this model. Also, it is assumed that the government correctly selects the reference level of pollution for the Pigouvian subsidy. That is, the benchmark level of pollution against which improvements under a subsidy scheme are measured will be set on the basis of the firms's emissions over some period in time. If the polluters had knowledge of this, they might increase their emission levels in order to qualify for a higher subsidy.[9] For the benchmark to be set correctly, it must be set against that level of pollution where the firm is operating optimally and does not anticipate potential subsidies. For these two reasons, the results reported here may understate the advantage of a Pigouvian tax over a Pigouvian subsidy.

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9. See, for example, Baumol and Oates (1989), 212 at note 3.

Two types of experiments are undertaken. The first is what Richard Musgrave (1959) calls a "balanced-budget incidence" experiment. In this case, the level of government exhaustive expenditure (government purchases of producer outputs, and labor and capital services) is increased, and a tax is levied in order to maintain government budget balance. The second case is called "differential incidence." In this case, the overall level of government expenditure remains constant. Thus, when one tax is increased, some other tax can be reduced. In this paper, changes in labor income taxes and lump-sum taxes are used to preserve equal revenue yield.

The results from the balanced-budget incidence simulations indicate that Pigouvian taxes generate negative marginal welfare costs, i.e., the reduction in the level of the externality generating activity leads to a welfare improvement. In the differential incidence case, Pigouvian taxes are shown to generate greater welfare improvement per unit of pollution reduction than do Pigouvian subsidies under a regime of labor income tax replacement, while the opposite result holds under lump-sum tax replacement.

Not surprisingly, the precise welfare estimates depend on the size of the Pigouvian tax or subsidy and on the parameters of the abatement cost functions in the polluting industries (although the basic qualitative conclusions are not affected). Some sensitivity analysis is provided with respect to these parameters. In addition, as indicated by the earlier discussion, the precise estimates of the effects of Pigouvian remedies depend upon all of the other parameters throughout the general equilibrium economy. Sensitivity analysis is provided with respect to some of the key parameters. Some of the interactive effects

are illustrated with a discussion of how the welfare results are affected by the labor supply elasticities, the elasticity of substitution in production, and the form of the consumer's utility function. (Again, however, the qualitative character of the results is not grossly affected by these parameter changes.)

Pigouvian taxes and subsidies provide an incentive for the firm to abate pollution directly by expending resources on pollution control equipment. Other taxes do not give this type of incentive. However, direct control of pollution through the adoption of abatement technology is only one of two mechanisms by which pollution can be reduced. The other mechanism is a reduction in the output of the polluting industry. This can occur as a result of a wide variety of policy changes. Thus, any tax that leads to a reduction in the outputs of polluting industries can reduce pollution, even if that tax is not Pigouvian as such. The marginal welfare costs of labor income taxes, output taxes, and sales taxes are less here than they are in an otherwise identical model in which pollution does not change when outputs change.

The next section sets out the model and discusses parameter choices and calibration techniques. Results follow in Section III. Section IV concludes the essay.

II. Specification of the Model

A. Model Structure

Much of the basic structure of the model is borrowed from the GEMTAP model described in detail in Charles Ballard, Don Fullerton, John Shoven, and John Whalley (1985).

The present model differs from GEMTAP in two main ways. First, the present model is a static, one-period model. A static model does

capture many of the important effects, and it simplifies the analysis considerably. In future work, dynamic considerations may be included.[10] In order to remove the dynamic aspects of GEMTAP, the consumer's decision problem is simplified. In GEMTAP, the consumer's initial decision deals with whether to consume or save. Here, it is assumed that all of the consumer's income is spent contemporaneously, so that the consumer's utility function does not need an outer nest describing present/future choice. The consumer's CES utility function now has two nests rather than three. The outer nest, which is CES, specifies the consumer's choice between leisure and consumption goods, while the inner nest, which is Stone-Geary, specifies the division of aggregate goods consumption among 17 goods. The second change needed to convert to a static model involves assuming that all of the consumer's net money income is devoted to consumption expenditure.[11]

The second major way in which this model differs from GEMTAP is, of course, the presence of externalities. We can distinguish between two basic types of negative externality. In the first case, the externalities affect the production process. (The archetype is the power plant which emits smoke, which then makes it more difficult for the laundry firm to produce clean shirts.) In the other case, the externalities affect consumers directly. (The archetype is the smoky

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10. Relevant examples include changes in abatement technology over time, situations in which the effects of pollution depend on cumulative amounts, and changes in the relationship between pollution abatement and the productivity slowdown. For a discussion of the effects on productivity, see Wayne Gray (1987).
11. An alternative would be to keep the investment in the model as such, and to assume that the consumer derives utility not only from food, clothing, etc., but also from newly-produced warehouses and drill presses. Neither alternative is problem-free.

power plant which causes emphysema in some members of the nearby community.) Both types of externalities are investigated.

As in GEMTAP, producers are assumed to create value added by combining labor and capital according to constant elasticity of substitution (CES) functions of the form

$$(1) \quad VA = \phi[\delta L^{(\sigma-1)/\sigma} + (1 - \delta)K^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}$$

for each industry, where δ is the share of labor in the production of a unit of output, ϕ is a scaling parameter, L and K are the inputs of labor and capital services, and σ is the elasticity of substitution in production.

The industries of the model also use the outputs of other industries through a matrix of input-output coefficients. The model uses an 18 X 18 coefficient input-output matrix with the columns giving the intermediate input requirements per unit of output. Each of the producer goods is used directly for net exports and for exhaustive government expenditures.

Firm behavior is characterized by cost minimization, subject to the production function. The firm's problem is thus

$$\min_{L,K} \quad P_L^* L + P_K^* K$$

$$\text{s.t.} \quad VA = \phi[\delta L^{(\sigma-1)/\sigma} + (1-\delta)K^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}$$

$$VA = 1$$

where P_L^* and P_K^* are the gross-of-tax prices of labor and capital services, respectively. Manipulation of the first-order conditions for

cost minimization yields factor demand functions per unit of value added of the form

$$(2) \quad L^* = \frac{1}{\phi}\left[\delta + (1-\delta)\left(\frac{(1-\delta)P_L^*}{\delta P_K^*}\right)^{\sigma-1}\right]^{\sigma/(\sigma-1)}$$

and

$$(3) \quad K^* = \frac{1}{\phi}\left[\delta\left(\frac{\delta P_K^*}{(1-\delta)P_L^*}\right)^{\sigma-1} + (1-\delta)\right]^{\sigma/(\sigma-1)}.$$

Given the parameters ϕ, δ, and σ for each industry, the net-of-tax price and the tax rates are used to calculate the gross-of-tax prices for labor and capital. Thus, the tax rates distort the firm's factor input decisions. It should be noted that the data used here are in value terms. Since I am interested in both price and quantity effects, a units convention is adopted that tells us, for example, what constitues a unit of labor and a unit of capital. A physical unit of a factor is defined as that amount which earns an equilibrium income of one dollar, net of all taxes, in any of its alternative uses. Similarly, a physical unit of a commodity is defined as the amount that in equilibrium sells for one dollar, net of all consumer taxes and subsidies.[12]

While the data set for the model has 10 consumer groups, the consumer side of the model is aggregated here so that there is only one consumer. The consumer in the model has a nested CES utility function. The outer nest characterizes the consumer's labor/leisure choice, which is defined over leisure, 1, and discretionary goods consumption, X^*. This utility function takes the form

12. See Ballard, Fullerton, Shoven, and Whalley (1985), 114.

$$(4)\quad U = [\beta^{1/\epsilon}1^{(\epsilon-1)/\epsilon} + (1-\beta)^{1/\epsilon}X^{*(\epsilon-1)/\epsilon}]^{\epsilon/(\epsilon-1)} - (1-A^*)(HD/P^*),$$

Where ϵ is the elasticity of substitution between labor and leisure, β is a weighting parameter, A^* is the percentage reduction in total pollution, HD is the value of health damage resulting from pollution, and P^* is the ideal price index (see Mathematical Appendix). The relationship between pollution and health damage is assumed to be linear. While this may be a simplification of reality, if health damage in society increases at an increasing rate with the level of pollution, the beneficial effects of taxes and subsidies on health damage may be understated here. The budget constraint says that the net-of-tax value of the consumer's labor and capital endowments, plus transfers, must be equal to expenditure on goods and leisure. Thus,

$$(5)\quad P_1E + P_K K(1-t_K) + TR = P_1 1 + PX^* + \varphi,$$

where P_1 is the price of leisure or the net wage, P_K is the gross-of-tax price of capital services, t_K is the capital tax rate, K is the consumer's endowment of capital, E is the consumer's leisure endowment, TR is the value of transfers recieved, P is the price of consumption goods, and φ is the sum of the values of required purchases from the Stone-Geary inner nest. Maximizing (4) with respect to (5) yields demand functions for leisure and consumption goods of the form

$$(6)\quad X^* = \frac{(1-\beta)(I-\varphi)}{P^{\epsilon}Z}$$

and

$$(7) \quad 1 = \frac{\beta(I-\varphi)}{P_1^{\epsilon} Z} ,$$

where I is the net value of endowments plus tranfers, and

$$(8) \quad Z = \beta P_1^{1-\epsilon} + (1-\beta)P^{1-\epsilon}$$

Consumer expenditure is divided among 17 consumer goods. The transformation of producer goods into consumer goods is represented by a matrix of fixed coefficients. This procedure is necessary because the goods classification of the consumer expenditure data is different from the classification of the outputs of the production sectors.

The inner nest of the utility function specifies the consumer's choice among the 17 consumption goods. The consumers have a Stone-Geary subutility function of the form

$$(9) \quad X^* = \prod_{i=1}^{17} (X_i - \omega_i)^{\alpha_i},$$

where X_i is the consumption of good i, ω_i is the minimum required consumption of good i, and α_i is the Cobb-Douglas expenditure share for good i. The budget constraint in this case states that the consumer's net money income should equal gross expenditure on the 17 consumer goods:

$$(10) \quad P_1(E-1) + P_K K(1-t_K) + TR = \sum_{i=1}^{17} P_i' X_i,$$

where the prime notation indicates that prices are gross of consumer sales taxes, i.e., $P_i' = P_i(1+t_i)$. Constrained maximization of the subutility function provides factor demands of the form

$$(11) \quad X_i = \omega_i + \frac{\alpha_i(I_x-\varphi)}{P_i'} ,$$

where I_x is the consumer's net money income and

$$\varphi = \sum_{i=1}^{17} P_i'\omega_i .$$

The modelling of taxes and calculation of tax rates are also drawn from the GEMTAP model. The consumer possesses endowments of labor and captial, and pays taxes on both types of factor income. The consumer also pays taxes on her consumption of goods. In the base case situation, the resulting tax revenue is used to finance transfer payments and exhaustive government expenditures. The transfer payments enter the consumer's private budget constraint, and thus can be spent either on goods or on leisure. In this model, government exhaustive expenditures are separable from the consumer's private goods utility function. In the words of David Wildasin (1984), exhaustive government expenditures and private consumption are "ordinary independents." This is a simple version of the standard treatment of exhaustive government expenditure that is used in many CGE simulation models.[13]

Producer-producer externalities can be modelled in a variety of ways. Here, they are modelled so that the externality makes it

13. See, for example, Alan Auerbach, Laurence Kotlikoff, and Jonathan Skinner (1983), or Ballard, Fullerton, Shoven, and Whalley (1985).

necessary for firms to use more intermediate inputs than they would otherwise have to use. Gross output for each industry i is given by

$$(12) \quad X_i = \sum_{i=1}^{n} a_{ij}X_j + d_i \ ,$$

where the X's are gross outputs, the a_{ij}'s are the coefficients of the input-output matrix (i.e., the amount of good i necessary to produce one unit of good j), the d's are final demands, and n is the number of producer goods sectors. To capture the effects of externalities on the input-output process, the input-output coefficient, a_{ij}, is broken into two terms:

$$(13) \quad a_{ij} = a_{ij}' + \sum_{k=1}^{n} \tau_{ik}X_k \ .$$

The term a_{ij}' is the coefficient of the input-output matrix abstracting from externality effects. The factor τ tells us the amount by which a unit of output of the polluting sector, X_k, "hurts" production in sector i, by making it necessary to use more inputs to produce gross output. (The laundry has to use more detergent when washing shirts in order to get them clean.) Substituting (13) into (12) gives us the following expression for the gross output of each industry i:

$$(14) \quad X_i = \sum_{j=1}^{n} (a_{ij}' + \sum_{k=1}^{n} \tau_{ik}X_k) + d_i \ .$$

Thus, in the presence of externalities, more intermediate inputs are required to produce a unit of output than when no externality is

present.[14] The breakdown of a_{ij} into its pollution and nonpollution components is shown in Table 1.

In the usual case of a fixed-coefficient input-output structure, it is possible to invert the (I-A) matrix immediately in order to determine the gross outputs necessary to satisfy both intermediate and final demands. Here, however, the input-output structure changes when outputs change. A Gauss-Seidel procedure is employed at every iteration of the computational algorithm to assure that outputs are of the correct magnitude.[15]

This structure is sufficient to capture the fact that the harm done by a polluting industry will change when the output of that industry changes. To complete the analysis, the firm's decision about whether to adopt abatement technology in the presence of a Pigouvian tax or subsidy must be specified. A Pigouvian tax is levied on the quantity of pollution emitted by the firm. However, the firm's decision variable is the amount of change in pollution per unit of output. The firm's problem is to choose the amount of abatement that minimizes the total pollution-related costs, which consist of taxes/subsidies and abatement costs.

In the case of a tax, we have

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14. The effects of intermediate good inputs in the input-output structure are exhibited in the column sums of the input-output matrix. I have chosen to illustrate the effects of externalities using the row sum because the discussion of the input-output matrix is usually in terms of row sums.
15. The initial equilibrium level of output for each industry in the economy differs from the initial "guess" as to the output level. The Gauss-Seidel iterative procedure employed here uses the actual equilibrium level of output for each industry as the "guess" for the next iteration. When the "guess" for iteration i is equal to the actual level of output for iteration i, a tatonnement equilibrium occurs.

$$(15) \quad \min_{D'} \; tQD + C(-D',Q),$$

or

$$(15') \quad \min_{D'} \; tQ(D_0 + D') + C(-D',Q),$$

where t is the Pigouvian tax rate, Q is the quantity of output, D is pollution per unit of output, D' is the change in pollution per unit of output, and C is the abatement cost function. The firm's tax bill will decrease if it produces less output or undertakes explicit abatement.

Differentiating with respect to D', we have

$$(16) \quad tQ = \frac{dC}{dD'} .$$

That is, the marginal benefit to the firm from abatement is tQ, the reduction in the tax. This must be set equal to the marginal cost of abatement.

The firm that faces a Pigouvian subsidy will make an equivalent choice (abstracting from the complications discussed above). If s is the subsidy rate, the firm faces the problem:

$$(17) \quad \min_{D'} \; -sQ(D_0 + D') + C(-D',Q) .$$

This leads to

$$(18) \quad sQ = \frac{dC}{dD'} .$$

While the two cases give the firm the same marginal incentives, they have different revenue effects, both in sign and in magnitude. The tax generates revenue on all pollution, whereas the subsidy applies only to reductions in pollution. Thus, for small changes in pollution, the absolute value of the tax revenue will be much larger than the absolute value of the subsidy payments.

In order to satisfy the second-order conditions for the firm's abatement choice, we require that the marginal cost of abatement must be increasing.[16] The specification adopted is

$$(19) \quad C = Q\mu(-D')^{\theta} \ .$$

For any value of θ, the parameter μ is computed from industry-level data on abatement and abatement costs. It is assumed that abatement takes the form of purchases of labor and capital by the firm. In the central case, the share of each factor in the abatement process is taken from industry-level data, and these shares range from 0.00 to 0.897 (in terms of the share of labor in the abatement process).[17] Experiments are conducted to explore the sensitivity of the results to different factor intensities and different values of θ.

B. Data

Most of the data used here are for the United States economy for the year 1983. The data relating to the effects of pollution are described below. The rest of the data are described in Karl Scholz (1987). Table 2 provides a classification of industrial sectors used in

16. Because taxes are linear, increasing marginal cost of abatement is required in order to get a determinate solution. If nonlinear taxes were used, constant marginal cost of abatement would be sufficient. The former method is chosen to simplify the analysis.
17. See United States Environmental Protection Agency (1979), 2-40 through 2-232.

the model and Table 3 provides a classification of the consumer goods used in the model. In most cases, Scholz's data for 1983 were collected using the same methodology as was used for the 1973 data set described in Ballard, Fullerton, Shoven, and Whalley (1985). I will describe this data briefly.

The data on labor and capital income are taken from the Treasury Department's Merged Income Tax Files for 1983. Labor income consists of wages, salaries and tips, insurance paid by employers, and a percentage of partnership income. Capital income consists of private pensions, dividend income, taxable and nontaxable interest income, net business income, farm income, rental income, long- and short-term capital gains, royalty income, small business corporate income, imputed net rent on owner-occupied homes, miscellaneous capital income, alimony and other income, and a percentage of partnership income.

Data on income tax rates and payments are also taken from the Treasury Department's Merged Income Tax Files. Data on consumer taxes paid are taken from the July 1986 Survey of Current Business[18] and consist of consumer sales taxes and consumer taxes for alcohol, tobacco, utilities, and gas and fuels. The data on labor factor taxes paid are also taken from the Survey of Current Business. These payments are the sum of employer contributions to Old Age Survivors Disability and Health Insurance (OASDHI), and self-employed contributions to OASDHI. The data on capital factor taxes paid consist of the sum of corporate income taxes (taken from the Survey of Current Business), corporate franchise taxes, and industrial property taxes (taken from Bureau of Economic Analysis data). The data on output taxes paid are taken from the

18. Unless otherwise noted, all subsequent references to the Survey of Current Business are also to the July 1986 edition.

Commerce Department's National Income Division. Output taxes paid consist of commodity taxes, licenses (hunting and fishing, building permits, corporate franchise, alcohol, public utility, assessments, and other indirect business taxes), rents and royalties, special assessments, and fines. Intermediate input taxes paid are motor vehicle taxes that were paid in each industry. These are taken from Bureau of Economic Analysis tables.

Data on government purchases are taken from the Survey of Current Business. Government purchases consist of purchases of producer outputs, labor, and capital services. The government pays taxes on its use of labor and capital services. Transfer payments consist of the sum of unemployment compensation, Aid to Families with Dependent Children, Supplemental Security Income, federal and state retirement payments, workers compensation, veterans' benefits, Social Security, and food stamps. These data are taken from the Treasury Department's Merged Income Tax Files.

The structure of intermediate production is taken from the input-output tables for the United States economy, published by the Survey of Current Business. The 85 industries listed in these tables are aggregated to Scholz's 19. These are listed in Table 2.

The 19 goods produced by the industries do not correspond to the commodities purchased by consumers. The aggregate consumption vector for household final demands, derived from the Survey of Current Business, contains 17 commodities rather than the 19 industry outputs. To accommodate these different classifications, producer goods are converted into consumer goods by a fixed-coefficient, 19 X 17 Z matrix, estimated from the May 1984 Survey of Current Business. Personal con-

sumption expenditures are derived by multiplying the Z matrix by the vector of consumer purchases. Table 3 provides a classification of the consumer goods used in the model.

Before these data can be used, they must be adjusted to reflect the assumption that the economy was in equilibrium in 1983. Demands must equal supplies for all goods and factors of production, factor payments must be equal to factor incomes, government receipts must equal government expenditures, all industries must earn zero profits, and so on. In addition, certain consistency requirements between the input-output matrix, the matrix of goods consumption for consumers, and the matrix of conversion between producer and consumer goods must be satisfied. The methodology for these adjustments is described in Ballard, Fullerton, Shoven, and Whalley (1985, 113-122).

As mentioned above, the damage done by pollution affects the receiving firm through the input-output structure. Ideally, then, one would like to have data showing the effects of pollution on the input-output structure of the entire U.S. economy. I am not aware of any data source that includes this information. What I do have is an input-output matrix for the state of West Virginia which shows the effects of air pollution abatement on the input-output coefficients for that state.[19] In order to apply these data in my model, it is thus necessary to assume that the effects of pollution in the West Virginia economy are similar to those for the entire nation.

Two things should be noted regarding the Miernyck and Sears data. First, it reflects the reduction in emissions of particulates and sulfates from stationary sources. It excludes damages from other types

19. See Willam H. Miernyck and John T. Sears (1974).

of air pollution emitted from stationary sources, all pollution from mobile sources (such as automobiles), water pollution, and soil pollution.

Second, there is one anomaly in the data that is of sufficient importance to require an adjustment for this experiment. No automobiles were manufactured in West Virginia at the time that the time that Miernyck and Sears did their study, so that the data do not reflect any information for the motor vehicles sector of the Scholz data. Consequently, the motor vehicles industry has been combined with the metals and machinery industry. Thus, the model has only 18 industries, versus 19 in the Scholz data. However, I recognize that merely reducing the number of sectors does not overcome the problem of mismeasurement in this case. Both because not all types of pollution are included in the model, and because at least one important sector is omitted from the data, the damage done to the economy by pollution may be understated, with the result that the efficiency gains associated with Pigouvian remedies are likely to be understated. The procedures used in adopting the Miernyck and Sears data to the model are described in the Data Appendix.

The data for the damage done to the consumer's utility function are taken from Lester B. Lave and Eugene P. Seskin (1977). Their "best" estimate of the health benefits of abatement is 16.1 billion (1973) dollars for particulate and sulfate emissions from stationary sources (Lave and Seskin 1977, 225). Several adjustments had to be made to these data, and these adjustments are described in the Data Appendix. The sum of these adustments gives a value for total health damages of 49.45 billion (1983) dollars.

The data used to compute the parameters of the abatement cost function are taken from Robert W. Crandall (1983). The methodology employed in adopting these data to the model is described in the Data Appendix.

C. Parameter Selection

In this paper, many of the simulation experiments involve switching labor income taxes with Pigouvian taxes or subsidies. Thus, the labor supply elasticities for the various consumer groups are important for the results of the model. The econometric literature on labor supply estimation has grown tremendously in the past 15 years. Extensive reviews can be found in Mark Killingsworth (1983), Michael Keeley (1981), and Gary Burtless (1987). The various strands of the literature seem to conclude that the labor supply responses of males are rather inelastic, and often slightly backward-bending. The literature also indicates that female labor supply is positively elastic. Unfortunately, there is wide variation in the magnitudes of the estimates of female labor supply responses.

For the purposes of the model, I want a weighted average of male and female responses. Since males still account for well over half of the labor value-added in the economy, the overall elasticity will be closer to the lower values for males. Experiments are performed using uncompensated elasticities in the range of 0.15 to 0.55. The compensated elasticity can be varied, while holding constant the uncompensated elasticty, by altering the consumer's leisure endowment parameter. An uncompensated elasticity of 0.15 and a compensated elasticity of 0.35 are used for the central case..

The values of the elasticity of substitution in production used here are those employed in the GEMTAP model, and are based on the survey by Vern Caddy (1976). These differ by industry, although they all fall in the range of 0.5 to 1.0, and the weighted average is approximately 0.92. The sensitivity of the results to the elasticity of substitution in production is explored by examining the effects of values ten percent higher and ten percent lower than those based on Caddy's estimation.

Recall from equation (19), above, that the abatement cost function takes the form

$$C = Q\mu(-D')^{\theta}.$$

The marginal cost of abatement is thus given by

$$\frac{dC}{dD'} = \theta Q\mu(-D')^{\theta-1}.$$

Because D (pollution per unit of output) is 1.0 in the base case, -D' lies between 0.0 and 1.0 over a large range of Pigouvian taxes. Thus, the total cost of pollution abatement is decreasing in θ. Because the marginal cost of pollution abatement is assumed to be increasing in -D', the form of -D' necessitates that θ be greater than 1.0. For most of the simulations, θ is set equal to 1.25. Since the choice of $\theta = 1.25$ implies rather restrictive abatement technology, the results may understate the advantage of a Pigouvian tax over other revenue instruments. The sensitivity of the results to the value of θ is explored by considering values of θ over the range 1.10 to 2.0.

D. Calibration, Simulations, and Welfare Evaluation

As is customary in CGE models, the technique of calibration is employed here. Once the various elasticities have been selected, the model is calibrated by selecting the parameters that are consistent with the elasticities and which replicate the data. It is assumed that the consumer maximizes utility and that producers minimize cost. A units convention is adopted, so that the factor prices (gross of personal income taxes but net of industry-level factor taxes) are unity. On the basis of these data and assumptions, it is possible to select a mutually consistent set of utility function and production function parameters. Details for most of these procedures are found in the Mathematical Appendix. An extensive discussion of calibration techniques can be found in Ballard, Fullerton, Shoven, and Whalley (1985).

Once the parameters of the utility and production functions have been selected, the model is ready to perform simulations. First, a "base-case" simulation is undertaken. As a result of calibration procedures, it is always true that factor prices are unitary in the base case. Data on prices and quantities from the base case are saved so that they can be used later for welfare evaluation.

After the base case has been calculated, a "revised- case" simulation is undertaken. The revised case uses the same behavioral parameters as the corresponding base-case simulation. The difference is that certain tax parameters are changed. The revised-case equilibrium is calculated using a version of the tatonnement algorithm suggested by Larry Kimbell and Glenn Harrison (1984). After the revised-case equilibrium has been calculated, the resulting prices and quantities are

compared with those that emerged from the base-case simulation, and welfare comparisons are made.

Two types of revised-case simulations are undertaken. The first is a balanced-budget, marginal welfare cost (MWC) calculation. Here, tax rates are raised by a small amount, and the additional revenues are used in a balanced-budget fashion to finance increased exhaustive government expenditures. The MWC is given by

$$(20) \quad MWC = - \frac{\text{Change in Consumer Welfare}}{\text{Change in Government Revenue}} - 1 ,$$

where the change in the level of consumer welfare is given by the equivalent variation. The second type of revised-case simulation leads to an excess burden calculation of the differential type. Here, a particular distortionary tax is reduced, and the original level of government revenue is achieved by imposing a replacement tax. Again, the change in consumer welfare is given by the equivalent variation. John Kay (1980) argues that the equivalent variation is superior to the compensating variation for sequential welfare comparisons of this type. In any event, since most of the changes studied here are small, the differences between the compensating and equivalent variations are quite small. However, for the larger changes studied here, the equivalent variation is also used.

III. Results

I am concerned not only with the effects of Pigouvian taxes and subsidies in a general equilibrium context, but also with the effects of other taxes in a model with externalites. I will report on sets of simulations, with each set based on a particular set of parameters.

Every set of simulations shares the same model structure and the 1983 data; the sets differ in the elasticity parameters chosen.

Most of the calculations reported here are for small changes in tax policy, so that I am calculating marginal welfare costs. This makes the paper comparable with earlier work such as Charles Stuart (1984) and Ballard (1987). However, the model is certainly capable of calculating the effects of "large" policy changes, and some results from simulations using "large" Pigouvian taxes and subsidies are reported.

The general equilibrium model provides information on the changes in prices and quantities for all goods and factors, as well as with many other pieces of information. For the sake of brevity, only a small subset of this information is reported in this discussion. Additional details are available from the author.

A. Balanced-Budget Incidence: Labor Income Taxes

First, I will describe the results for my "central case." Here, the uncompensated labor supply elasticity is 0.15, the compensated elasticity is 0.35, and $\theta = 1.25$. I begin with the results from a balanced-budget increase in labor income taxes. These results are comparable with those from earlier studies, and will help to place my results in context. This will be followed by the results for balanced-budget increases in output taxes and sales taxes. By examining these results first, the importance of studying Pigouvian taxes in a general equilibrium framework will be more clearly understood.

I simulate a one-percent increase in labor income tax rates, which then finances an increase in government exhaustive expenditures. Government spending in the model is according to constant expenditure shares, as in GEMTAP. Since the marginal policy changes simulated here

lead to rather small changes in prices, the additional government demands are nearly proportional to the demands in the base case. As expected for a positive labor supply elasticity, the increased tax leads to a reduction in labor supply. This is accompanied by small changes in gross factor prices. Since producer prices move with the weighted average of factor prices in this case, the movements of producer prices are very small. The marginal welfare cost of this small labor income tax increase is 9.45 cents per dollar of additional government expenditure.[20]

Labor taxes and other distorting taxes can be viewed as having an indirect Pigouvian component. Any tax that leads to a reduction in the quantity of output from the polluting sectors will have lower welfare costs in a model that incorporates pollution externalities than in one that does not. The MWC of 9.45 cents comes from the standard version of the model in which the input-output matrix is flexible (i.e., where the input-output coefficients vary with the level of output, as in equation (14), above). Without flexible coefficients (i.e., where the input-output coefficients do not vary with the level of output, as in equation (12), above), the reductions in output brought about by the policy change do not lead to a reduction in pollution, and thus do not lead to a reduction in the input-output requirements. The indirect Pigouvian component is isolated by specifying fixed input-output coefficients and removing the abatement effect of producer-consumer externalities from

20. This MWC is in the region of the 9.00 cent MWC reported by Stuart (1984) and the 9.90 cent MWC reported by Ballard (1987) for their central cases. These earlier results come from static models that are much more highly aggregated than the model employed here. It apprears that the level of disaggregation does not necessarily lead to significant changes in the MWCs, so long as the underlying model structure and parameters are similar.

the consumer's utility function. Henceforth, this will be referred to as the "no-abatement" version of the model. The MWC without these abatement effects is 10.42 cents.

By comparing this 10.42 cent MWC with the 9.45 cent MWC generated by the standard version of the model, we see that by not incorporating externalities, the MWC of a small increase in labor income taxes is overstated by about ten percent. Moreover, since several major forms of pollution, and hence the beneficial effects of their reduced emissions, are not incorporated into the model, the difference in the MWC's may be understated. Thus, the earlier literature, because it does not incorporate externalities, may overstate the welfare cost of a small increase in labor income taxes.

Simulations were run to test the sensitivity of the results to the Stone-Geary subutility function. In these experiments, the Stone-Geary subutility fuction was replaced with one of Cobb-Douglas form. The MWC here for a one percent increase in labor income taxes is 13.03 cents. This MWC is about 38 percent higher than the 9.45 cent MWC generated using the Stone-Geary function, indicating that the model is rather sensitive to the form of the subutility function. The higher MWC generated in the Cobb-Douglas case comports with my intuition, since the Cobb-Douglas is a less restrictive functional form (since the Stone-Geary form results in lower own-price elasticities of demand than the Cobb-Douglas form).[21]

Sensitivity analysis was also done with respect to the elasticity of subsitution in production. When the elasticity of substitution in

21. The own-price demand elasticities in the Cobb-Douglas case are -1.0 for all goods. In the Stone-Geary case, all of the own-price demand elasticities are less than -1.0 in absolute value.

production is increased by ten percent for each industry, the MWC generated by a one-percent increase in labor income taxes is 9.71 cents, a small increase over the 9.45 cent MWC generated by the central case elasticities of substitution in production. This result is as expected, since a higher MWC is expected when the structure of production is more elastic. When the elasticity of substitution in production is decreased by ten percent, the MWC of a one-percent increase in labor income taxes is 9.18 cents. As expected, this is slightly lower than the central case result, since the structure of production has become less elastic.

B. Balanced-Budget Incidence: Output and Sales Taxes

Simulations were also run for a one-percent increase in the existing output tax rates on polluting industries.[22] Certain severance taxes, occupation and business taxes, license fees, and public utility taxes are modelled as ad valorem output taxes. These output tax simulations serve two purposes. First, it is expected that the output tax will have an indirect Pigouvian component, and hence a low MWC, because of its direct effect on reducing the output of the polluting industries. In my central case simulation, the MWC is -10.46 cents, indicating a small welfare gain. The central case simulation using the no-abatement version of the model yields a MWC of -7.31 cents. Thus, the MWC is overstated by about 30 percent in the no-abatement version of the model. Further, this differential may be understated because not all types of pollutants are included in this model. The second purpose that these output tax simulations for polluting industries serve is to isolate the output effect of pollution reduction from the abatement effect. This will be explored in Section C below.

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22. For a list of the polluting industries, see Table 2, above.

Simulations were also run for a one-percent increase in output taxes for all industries. The MWC is 11.81 cents in the standard version of the model and 11.94 cents in the no-abatement version. The indirect Pigouvian component is smaller here, as expected, since the tax increase is levied on all industries, and hence the distortionary component of the tax increase is large relative to the pollution-reduction component.

It is also interesting to look at the effects of a one-percent increase in output tax rates for all of the nonpolluting industries. Here, the MWC is 18.63 cents in the standard version of the model and 18.74 cents in the no-abatement version of the model. As expected, the size of the MWC here is similar to the difference between the MWCs for output tax increases levied on the polluting industries and on all industries. The small divergence is due to the differential general equilibrium effects of taxes on different groups of industries. There is a small indirect Pigouvian component here because the output tax increase levied on the nonpolluting industries has second-order effects that reduce the output levels of the polluting industries.

Sensitivity analysis with respect to the form of the subutility function, done by replacing the Stone-Geary subutility function with one of Cobb-Douglas form, gives a MWC of -4.47 cents for a one-percent increase in output tax rates for the polluting industries, a MWC of 17.10 cents for a one-percent increase in output tax rates for all industries, and a MWC of 24.70 cents for a one-percent increase in output tax rates for all nonpolluting industries. In each case, the MWC is higher in the Cobb-Douglas case than in the Stone-Geary case (57 percent in the case where the tax is levied only on polluting

industries, 45 percent in the case where the tax is levied on all industries, and 33 percent in the case where the tax is levied only on the nonpolluting industries), as expected.

A ten-percent increase in the elasticity of substitution in production for all industries gives MWCs of -10.22 cents, 12.01 cents, and 18.83 cents for a one-percent increase in output taxes levied on polluting industries, on all industries, and on only the nonpolluting industries, respectively. The MWCs are higher here than under the standard specification of the model, as expected, since the structure of production is more elastic here. A ten percent decrease in the elasticity of substitution in production for all industries gives MWCs of -10.67 cents, 11.58 cents, and 18.42 cents for a one-percent increase in output tax rates for polluting industries, all industries, and nonpolluting industries, respectively. The MWCs here are lower than under the standard specification of the model, as expected, since the structure of production is less elastic.

Consumer sales taxes may also be expected to have an indirect Pigouvian component. A one-percent increase in consumer sales tax rates for all goods gives a MWC of 7.33 cents in the standard version of the model and a MWC of 8.91 cents in the no-abatement version, a difference of 21.6 percent.[23] Once again, we see the significant indirect Pigouvian component operative in taxes which affect the level of production in the economy. This illustrates the importance of modelling externalities in a general equilibrium framework.

The MWC for a one-percent increase in sales tax rates when a Cobb-Douglas subutility function is used is 13.21 cents, an increase of 80

23. Again, this difference may be understated because not all pollutants are incorporated into the model.

percent over the Stone-Geary case. As expected, this differential is greater than that from increases in output taxes or labor income taxes because sales taxes impact directly on consumer demands, and it is the differential demand elasticities that set the Cobb-Douglas and Stone-Geary functions apart. A 10 percent increase in the elasticity of substitution in production yields a MWC of 7.74 cents for a one-percent increase in sales taxes, while a ten-percent decrease in the elasticity of substitution in production yields a MWC of 6.94 cents. Again, the MWC rises with the elasticity of substitution in production.

C. Balanced-Budget Incidence: Pigouvian Taxes

Next, I consider a balanced-budget increase in government spending, financed by small Pigouvian taxes in each of the eight polluting sectors. In the case of a Pigouvian tax, producer prices move substantially more than under the labor tax experiment described above, since the Pigouvian tax has effects similar to those of an ordinary output tax. There are two effects on prices from a Pigouvian tax. First, a reduction in pollution as the result of abatement exerts downward pressure on the prices of outputs produced by the firms harmed by pollution, as fewer producer good inputs are required to meet a given level of final demand. Second, the Pigouvian tax exerts direct upward pressure on the prices of polluting firms, and hence indirect upward pressure on the prices of all firms by making the purchase of producer good inputs more expensive. Further, the polluting firms must purchase labor and capital inputs in order to abate, which puts additional upward pressure on output prices. The net effect is that prices rise; thus, the cost-increasing effect on prices outweighs the efficiency effect.

The increase in output prices causes the real wage to fall, leading to a corresponding reduction in labor supply in this case with a positive uncompensated labor supply elasticity. Consumer utility declines. However, the increase in government expenditure is larger than the dollar value of the loss of consumer utility, the result being a MWC of -49.31 cents, a substantial welfare gain.

A very interesting story here comes from comparing the MWCs of the Pigouvian and labor income tax increases. The large difference in the welfare effects of these tax changes comes from the distortion-removing effect of the Pigouvian tax. That is, the Pigouvian tax, by causing the firm to reduce its pollution, corrects an existing distortion in the economy. The labor tax increase, however, has the effect of exacerbating an existing distortion in the economy, without reducing the externality to the extent of the Pigouvian tax. The beneficial effect of the labor tax change (acting on the input-output structure and the level of health damage through a reduction in the output of the polluting firms) are small, relative to the effects of a Pigouvian tax.

Experiments were undertaken to test the sensitivity of this result to the factor intensity of abatement. Recall that the factor intensities (in terms of labor's share in the abatement process) taken from industry data range from 0.00 to 0.897.[24] To test the sensitivity, experiments were run in which all industries use only labor to abate and in which all industries use only capital to abate. In the case where only labor is used in the abatement process, the MWC of a small Pigouvian tax is -49.26 cents, while in the case where only capital is used to abate, the MWC is -49.24 cents. Clearly, the results

24. See note 19, above.

are not greatly sensitive to the factor intensity of the abatement technology. This may be because the amounts of labor and capital used in the abatement process are so small, relative to the total supplies of labor and capital, that abatement undertaken in response to a Pigouvian tax exerts very little direct effect on the prices of labor and capital.

Experiments were also undertaken to test the sensitivity of the results to θ (the exponent in the abatement cost function), using values of 1.10, 1.20, 1.50, and 2.0 for θ. These results are shown in Table 4. The results are sensitive to θ, as expected, and support my intuition that as the marginal cost of abatement rises, less abatement is undertaken, which exerts upward pressure on the MWC. For example, for θ = 1.10, the MWC is -32.65 cents, while for θ = 1.50, the MWC is -1.72 dollars.[25] As the marginal cost of abatement rises, less abatement is undertaken for a given increase in the Pigouvian tax rate. This leads to a higher level of Pigouvian tax payments and correspondingly higher prices, accompanied by falling output levels. The greater is the marginal cost of abatement, the higher are prices and the more output levels fall. This translates into lower net real wages and smaller utility gains (larger utility losses). While the increased Pigouvian tax revenue exerts downward pressure on the MWC, this revenue effect is outweighed by these other effects.

Experiments were also done to test the sensitivity of the results to μ, the scaling term in the abatement cost function. When the value of μ for each polluting industry is increased by ten percent, the MWC of a small Pigouvian tax is -43.96 cents, while a ten-percent decrease in μ for each of the polluting industries gives a MWC of -58.12 cents. Com-

25. Recall that the cost of abatement is decreasing in h because -D' lies between 0.0 and 1.0. See p. , above.

paring these results with the -49.31 cent MWC from the central case, we see that as μ rises (i.e., as the marginal cost of abatement rises), the MWC of the Pigouvian tax rises.

As noted above, a Pigouvian tax causes a reduction in the level of pollution through an output effect and through a direct abatement effect. These two components can be isolated by comparing the MWC's of Pigouvian taxes and output tax increases levied on all polluting industries. Since the MWC of an output tax increase levied on the polluting industries in the central case is -10.46 cents and the MWC of the Pigouvian tax in my central case is -49.31 cents, we can see that the abatement effect on the MWC is large, as expected. Of course, this differential depends on the assumptions as to the form of the abatement technology. To the extent that abatement is more or less costly, this differential will be smaller or larger.

The MWC from a Pigouvian tax increase can also be broken down into producer-producer and producer-consumer components. The MWC from the model without producer-consumer abatement is -37.21 cents. Comparing this with the MWC above shows that 12.10 cents, or about 25 percent of the welfare gain, is due to the reduction in health damage to consumers.

The results from sensitivity analysis with respect to the form of the subutility function and the elasticity of substitution in production are consistent with those reported above for increases in labor income, output, and sales taxes. When the Stone-Geary subutility function is replaced by the Cobb-Douglas form, the MWC of a small Pigouvian tax is -48.72 cents. The MWC of a small Pigouvian tax is -49.14 cents for a ten-percent increase in the elasticity of substitution in production, and -49.45 cents for a ten-percent decrease in the elasticity of

substitution in production. Again, as the elasticity of substitution in production increases, the MWC also increases, since the structure of production becomes more elastic.

Simulations were also run for larger Pigouvian tax rates. The size of the welfare gain increases with the Pigouvian tax rate. As the Pigouvian tax rate rises, the amount by which the beneficial effects of abatement outweigh the adverse effects of higher taxes on prices increases. That is, the Pigouvian tax acts more like a Pigouvian tax and less like an output tax as the Pigouvian tax rate increases.

Figure 1 and Table 5 show the relationship between the MWCs and the uncompensated labor supply elasticity. The compensated labor supply elasticity is held constant at 0.35. As the graph shows, the MWCs associated with small increases in Pigouvian taxes, output taxes, sales taxes, or labor income taxes are sensitive to the level of the uncompensated labor supply elasticity. In all cases, the MWC rises monotonically with the uncompensated labor supply elasticity.

The reason why the MWC for an increase in labor income taxes is a function of the uncompensated labor supply elasticity is discussed in Ballard (1987). In a balanced-budget experiment of this sort, the overall level of government spending is changed, so that income effects are relevant. Only if we assume that the additional government exhaustive expenditure is a perfect substitute for cash do we get the Harberger-type result that the efficiency costs will depend chiefly on compensated elasticities. In the model considered here, exhaustive government expenditure is not modelled as a perfect substitute for cash.

Therefore, it is the uncompensated labor supply elasticity that is of central interest.

As seen in Figure 1, the MWC of an increase in output taxes rises with the uncompensated labor supply elasticity. As in the case of an increase in labor income taxes, the real net wage falls. Here, however, the source of the reduction is the increase in product prices brought about by the output tax. This leads to changes in labor supply and to welfare effects that are similar to those observed for labor taxes. The MWC is negative over a large range of uncompensated elasticities (see Figure 1) due to the reduction in pollution that accompanies an output tax increase. The MWC of sales taxes is also sensitive to the uncompensated labor supply elasticity, and the reasoning behind this is analogous to that of the output tax case.

The MWC of an increase in Pigouvian taxes rises with the uncompensated labor supply elasticity. The reasons for this relationship are similar to those for the relationship between labor supply elasticities and the efficiency of output taxes described above. Thus, we can view the MWC of a Pigouvian tax as consisting of two components. The first is the "pure" effect of the Pigouvian tax. The

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26. See Anthony Atkinson and Nicholas Stern (1974), espe-cially at 123. If two additional requirements are satisfied, the MWC from a labor income tax will be zero when the uncompensated labor supply elasticity is zero. The first requirement is that the labor taxes be proportional. The second is that there be no other tax distortions (so that second-order changes in tax revenue collected from other sources to not occur). The first of these requirements is met here, but the second is not. In an earlier paper (Ballard and Medema 1988a), a much simpler model was used. In the simple model, labor taxes were the only distortionary taxes in the base. In that situation, the graph of the MWC as a function of the uncompensated labor supply elasticity did indeed go through the origin.

second is an indirect effect from interactions with the other aspects of the economy.

Thus, the sensitivity analysis performed with respect to the uncompensated labor supply elasticity shows that the interactions with the labor market are important. I maintain that all other aspects of the model have at least some effect on the measurement of the MWC of a Pigouvian tax, as well. These results highlight the advantages of studying Pigouvian taxes in a general equilibrium framework.

D. Differential Incidence: Pigouvian Taxes and Subsidies

Now I consider the differential incidence experiments. The comparison is between the welfare improvements per unit of pollution reduction for Pigouvian taxes and subsidies, since taxes and subsidies lead to different levels of reduction in total pollution. In the first set of experiments, labor income taxes are reduced when a Pigouvian tax is imposed, and increased in order to finance a Pigouvian subsidy, in order to maintain equal revenue yield. The results are shown in Table 6. The results show that both Pigouvian taxes and subsidies lead to welfare improvements. However, if we hold constant the marginal incentive to abate pollution, the welfare improvement is smaller for a Pigouvian subsidy than for a Pigouvian tax. In my central case, the Pigouvian tax is 16.10 percent more efficient than the Pigouvian subsidy.

The Pigouvian tax increase, by causing a reduction in labor income taxes, reduces a distortion in the labor market as well as in the output market. Increasing a Pigouvian subsidy, however, exacerbates the labor market distortion, relative to the Pigouvian tax case, while reducing

the output market distortion. That is, there is a social cost involved in using distortionary taxes to finance a Pigouvian subsidy.

As θ increases (i.e., as the marginal cost of abatement falls), the abatement effects of a Pigouvian tax increase relative to the revenue effects. In the balanced-budget incidence case, this increases the size of the welfare gain for a given set of labor supply elasticities. In the differential incidence case, the effects of Pigouvian remedies on labor market distortions (resulting from the labor income tax replacement) are reduced because of the smaller revenue effects. For larger values of θ, the welfare advantage of the Pigouvian tax over the Pigouvian subsidy is reduced, falling as low as 0.85 percent, when $\theta = 2.0$. These results are shown in Table 7.

Sensitivity analysis conducted with respect to μ, the scaling term in the abatement cost function, also indicates that the welfare advantage of a Pigouvian tax over a Pigouvian subsidy increases with the marginal cost of abatement. When μ is increased by ten percent, the Pigouvian tax leads to a 17.73 percent larger welfare gain than a Pigouvian subsidy, while for a ten-percent decrease in μ, the differential is 14.47 percent.

The results also indicate that the percentage by which the welfare improvement of a Pigouvian tax exceeds that of a Pigouvian subsidy increases substantially as the compensated labor supply elasticity increases, as we expect in a differential incidence experiment (see Ballard 1987). The results of this differential incidence experiment are not sensitive to the value of the uncompensated labor supply elasticity.

Simulations were also run using a lump-sum replacement tax. Because lump-sum taxes are non-distortionary (at least at a first order), this allows me to determine how much of the welfare advantage of the Pigouvian tax over the subsidy is due to the differential revenue effects of labor income tax replacement and how much is due to Pigouvian tax- and subsidy-specific effects. When moving from labor income tax replacement to lump-sum tax replacement, the large distortion-removing effect of Pigouvian taxes on the labor market disappears. At the same time, the small distortion-exacerbating effect of Pigouvian subsidies on the labor market also disappears. Thus, we are left with "pure" Pigouvian tax and subsidy effects (at least at the first order).

The simulations using lump-sum tax replacement lead to the result that Pigouvian subsidies are more efficient than Pigouvian taxes. These results are shown in Table 6. For the central case parameter values, a Pigouvian tax causes a welfare gain that is about 56 percent smaller than that which results from the Pigouvian subsidy. Although this result is surprising, and runs counter to the previous literature on Pigouvian taxes and subsidies (see above), it is very easily explained, and illustrates the importance both of evaluating Pigouvian taxes and subsidies in a general equilibrium framework and of including abatement technology in the model.

The traditional story is that subsidies cause entry into the industry, which causes industry output levels to rise to such an extent that total pollution increases. This is not the case here. Recall that equal Pigouvian tax and subsidy rates lead to equal abatement incentives. While it is true that the total reduction in pollution is smaller under a Pigouvian subsidy than under a tax, the percentage

reduction in total pollution is only slightly smaller for the Pigouvian subsidy, even though the entry effects of the subsidy are present here (since the production technology is characterized by constant returns to scale). The reduction in output is much smaller in the subsidy case. The Pigouvian tax causes prices to rise, and hence output levels fall. In the case of the subsidy, however, subsidy revenue exceeds the cost of abatement. Since this is a general equilibrium model with perfectly competitive industries, this causes prices to fall and output levels to rise, relative to the Pigouvian tax case. However, the differential output effects are small relative to the direct abatement effects, the result being that the percentage reduction in total pollution is similar for taxes and subsidies.

Furthermore, the differential pollution reduction effects are only one component of the welfare analysis. While pollution reduction benefits consumers ceteris paribus, the effects of taxes and subsidies on relative prices and output levels are also important. In comparing Pigouvian taxes and subsidies, there are three effects that concern us: abatement effects; revenue effects (from the form of the replacement tax); and indirect effects on prices, output levels, and abatement. Since the Pigouvian tax and subsidy give the same marginal incentive to abate pollution in these experiments, their differential welfare effects come from their differing indirect effects on prices, output levels, and abatement, as well as the revenue effects from the replacement tax. When a lump-sum replacement tax is used (so that revenue effects are irrelevant, at least at a first order), there are two types of existing distortion in the economy that especially concern us -- pollution damage and existing distortionary taxes on polluting industries. The pollution

damage distortion implies that too much output is being produced, relative to the nondistortionary optimum, while the distortion caused by existing taxes in the economy implies that too little output is being produced, relative to the nondistortionary optimum. These second-best effects play an important role in determining the results.

When the marginal incentive to abate is held constant, we can view the differences between Pigouvian taxes and subsidies as being similar to the differences between output taxes and subsidies. In order to determine which of the above-mentioned distortions dominates the results, simulations were run in which output taxes and subsidies equal in magnitude to the Pigouvian taxes and subsidies (in the sense that they collect the same amount of revenue) are imposed, and in which a lump-sum replacement tax was used. Since a lump-sum replacement tax is nondistortionary at a first order, revenue effects are largely irrelevant here. Recall that the net-of-tax prices of outputs in the base case are 1.0. The output tax increase resulted in higher prices (1.00216) and lower output levels (output falls by .09428 percent) than in the base case, and welfare decreases (the equivalent variation (EV) is -496.98). The output subsidy, on the other hand, caused prices to fall (.99998), output levels to rise (by .00096 percent), and a small welfare gain (EV = 7.43). It is not surprising that the absolute value of the EV under the output subsidy is much smaller than that under the output tax, since the value of subsidy payments is about one percent of the value of the revenue raised through the output tax increase. These results indicate that it is the distortionary effect of existing output taxes that dominates the results. That is, the output tax increase exacerbates the distortion in the economy resulting from existing output

taxes, while the output subsidy reduces the same distortion. If the pollution damage distortion were to dominate the results, the output tax would have caused a welfare gain (lower output levels reduce pollution damage) and the output subsidy would have caused a welfare loss (higher output levels lead to more pollution damage). Thus, the indirect Pigouvian component here is small, relative to the effect of existing tax distortions.

Analogous reasoning applies in the Pigouvian tax and subsidy case where lump-sum tax replacement is used. Since these experiments involve Pigouvian taxes and subsidies levied at the same rate, the direct abatement effect is held constant. Therefore, differences in the results must stem from other types of differences between taxes and subsidies, such as those described above for output taxes and subsidies. The Pigouvian tax increase results in higher prices (1.00212), while the Pigouvian subsidy results in lower prices (.99970). Both the Pigouvian tax and the Pigouvian subsidy lead to reduced levels of output in the economy. However, the reduction in output under the Pigouvian tax (.10700 percent) is much larger than that which occurs under the Pigouvian subsidy (.00257 percent). The Pigouvian tax results in a smaller welfare gain (EV = 437.00) than does the Pigouvian subsidy (EV = 1001.27) because the Pigouvian tax exacerbates the existing tax distortions in the economy to a much greater extent than does the Pigouvian subsidy. Again, the indirect Pigouvian component is small here relative to the effect of existing tax distortions.

The direct abatement effects of the Pigouvian taxes and subsidies can be isolated by comparing the welfare effects of Pigouvian taxes and output taxes, and of Pigouvian subsidies and output subsidies. Since a

lump-sum replacement tax is used, and since we are comparing output taxes with equal revenue Pigouvian taxes and output subsidies with equal revenue Pigouvian subsidies, the indirect price, output, and abatement effects are essentially held constant here. Subtracting the EV for the output tax from that for the Pigouvian tax gives a difference of 933.98, while the difference between the EVs' for the Pigouvian subsidy and the output subsidy is 993.84. These differences, then, give an idea of the effect of direct abatement on the change in welfare. The effects of abatement on welfare are very similar for Pigouvian taxes and subsidies, as expected, since the marginal incentive to abate is identical in each case. Notice also that the abatement effects are sufficiently large to more than offset the negative welfare effects caused by the effect of the Pigouvian tax on existing tax distortions in the economy. Thus, while the existing tax distortions dominate the pollution distortions when the direct abatement incentives are held constant, it is the reduction in the pollution distortion, resulting from direct abatement, that dominates when abatement is taken into account.

When a labor income replacement tax is used rather than a lump-sum replacement tax, an additional distortionary element enters the picture. In this case, existing labor income taxes are reduced when a Pigouvian tax is imposed, and increased in order to finance a Pigouvian subsidy. Again, recall that the marginal incentive to abate is equal for the Pigouvian tax and subsidy, so that we are dealing with revenue effects and indirect effects on prices, quantities, and abatement. While the Pigouvian tax exacerbates the distortion in the economy resulting from existing taxes (output falls by .03673 percent), it reduces the labor market distortion through the reduction in labor income taxes. Note,

however, that the reduction in labor income taxes exerts upward pressure on the net-of-tax real wage, and hence on labor supply and output levels. This, in turn, reduces the extent to which the increase in output prices resulting from the Pigouvian tax exacerbates the distortion from existing taxes. The Pigouvian subsidy, by way of contrast, exacerbates the labor market distortion (due to the increase in labor income taxes necessary to finance the subsidy) and also exacerbates the existing tax distortion in the economy (output falls by .00019 percent). Note, however, that the reduction in output is much smaller under the Pigouvian subsidy than under the Pigouvian tax, so that the distortion-exacerbating effect of the tax is much greater than that of the subsidy. Since the level of the Pigouvian subsidy payments, and hence the increase in labor income taxes necessary to finance them, is small (51.82 million dollars) the extent of the exacerbation of the labor market distortion is small. The Pigouvian tax revenue, and hence the reduction in labor income taxes, is large (5.12 billion dollars), however, and the reduction in the labor market distortion is sufficiently large that it outweighs the distorting output market effect. The end result is that the welfare gain from a Pigouvian tax (EV = 1191.04) is larger than that from a Pigouvian subsidy (EV = 1025.88) by about 16 percent when labor income tax replacement is used.

These results come from experiments using the central case elasticity values of 0.15 for the uncompensated labor supply elasticity and 0.35 for the compensated labor supply elasticity. We would expect that the effects on the labor market distortion are sensitive to the labor supply elasticities used, that smaller elasticities would reduce the differential between the welfare effects of Pigouvian taxes and

subsidies when labor income tax replacement is used. This result is expected because the less elastic is labor supply, the smaller is the response of the labor market to a change in the net-of-tax real wage. Thus, the labor income tax reduction that accompanies a Pigouvian tax increase will have a smaller distortion-reducing effect on the labor market when labor supply is less elastic. Similarly, the labor income tax increase that finances the Pigouvian subsidy will have a smaller distortion-increasing effect on the labor market when labor supply is less elastic. Further, for labor supply elasticity values close to zero, we would expect that the Pigouvian tax will result in a smaller welfare gain than a Pigouvian subsidy, since the revenue effects of labor income tax replacement will become similar to those resulting from lump-sum tax replacement.

The results of sensitivity analysis with respect to the labor supply elasticities confirm these expectations. The amount by which the welfare gain from a Pigouvian tax exceeds that from a Pigouvian subsidy increases as the compensated labor supply elasticity increases, as we expect in a differential incidence experiment. These results are shown in Table 6. For example, when the uncompensated labor supply elasticity is 0.15 and the uncompensated labor supply elasticity is 0.55, the welfare gain from a Pigouvian tax (EV = 1265.83) about 26 percent greater than that from a Pigouvian subsidy (EV = 1004.38), as opposed to the 16 percent differential when the uncompensated and compensated labor supply elasticities are 0.15 and 0.35, respectively. Further, for labor supply elasticity values close to zero, the Pigouvian subsidy does indeed lead to a larger welfare gain than the Pigouvian tax. For an uncompensated labor supply elasticity of 0.00 and a compensated labor

supply elasticity of 0.05, the EV from a Pigouvian tax is 989.19, while the EV from a Pigouvian subsidy is 996.66.

In the case of a lump-sum replacement tax, the percentage by which the welfare improvement of a Pigouvian subsidy exceeds that of a Pigouvian tax increases with the compensated labor supply elasticity. Since the lump-sum replacement tax is non-distortionary (at least at a first-order), the direct effects of the Pigouvian tax and subsidy are what concern us here. The Pigouvian tax causes prices to rise, which leads to a decrease in the real wage and a corresponding reduction in labor supply. The Pigouvian subsidy, by way of contrast, causes prices to fall, leading to an increase in the real wage and a corresponding increase in labor supply. These effects on the labor market are exacerbated as the compensated labor supply elasticity increases. The results are not highly sensitive to the uncompensated labor supply elasticity.

These results illustrate the importance of general equilibrium modelling and of incorporating abatement technology into the model, vis-a-vis the traditional story which uses partial equilibrium analysis and no abatement technology, and Baumol and Oates' (1988) partial equilibrium analysis in the presence of abatement technology. First, by not using general equilibrium analysis, these earlier results abstract from the relative price adjustments that may cause output levels to fall rather than rise under a subsidy scheme. Second, by incorporating abatement technology into the model, we see that total pollution levels will almost certainly fall in the subsidy case, since output increases of the magnitude necessary to offset the abatement effects are unlikely to occur.[27] Thus, while Baumol and Oates find that the effect of a

27. For example, if the relationship between pollution and output were linear, a subsidy which induced firms to abate 50 percent would

subsidy on industry emissions is indeterminate in the presence of abatement technology, these results provide evidence that a subsidy will almost certainly cause emission levels to fall. Third, earlier analyses looked only at the effects of these programs on the levels of output and pollution. Since pollution is only one aspect of social welfare and since output effects have implications for social welfare beyond the level of pollution, general equilibrium analysis allows us to see that the differential output and price effects on welfare may outweigh the differential effects on pollution, so that the improvement in social welfare under a subsidy may be greater than that which occurs under a tax.

Finally, while so much of the above general equilibrium analysis contradicts the traditional stories about the relative efficiency of Pigouvian taxes and subsidies, it is the general equilibrium nature of this analysis that in the end vindicates the traditional result that Pigouvian taxes are indeed more efficient than subsidies -- but for a much different reason. The results which show that subsidies are more efficient than taxes are generated using a lump-sum replacement tax, which is non-distortionary (at least at a first order). However, the money used to finance a Pigouvian subsidy scheme is likely to come out of general revenues, the vast majority of which are raised from distortionary taxes. Thus, while the lump-sum replacement tax case provides evidence that subsidies are more efficient than taxes (by basically abstracting from revenue effects), the labor income tax

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require that industry size more than double in order for total pollution to increase. Even if the relation between pollution and output were non-linear, the output increase necessary to generate an increase in total pollution would have to be very large, and it is highly unlikely that a subsidy would induce entry to this great an extent.

replacement results, which allow Pigouvian taxes to reduce other distortionary taxes while subsidies must be financed by distortionary taxes, show that the differential revenue effects are likely to outweigh the differential abatement effects, so that Pigouvian taxes are indeed more efficient than Pigouvian subsidies. Again, this illustrates the importance of modelling these issues in a general equilibrium framework.

IV. Conclusion

This paper demonstrates that a Pigouvian tax may be preferred both as a revenue instrument and as a method of externality correction. The results from the balanced-budget incidence simulations indicate that an increase in a Pigouvian tax leads to a significant welfare improvement. The results also indicate that the MWC of an increase in a Pigouvian tax is significantly lower than the MWC of an increase in labor income taxes, output taxes, or sales taxes. This result comes from the large pollution-reducing effect of the Pigouvian tax relative to that of the other taxes. The results also show that labor income taxes, output taxes, and sales taxes have an indirect Pigouvian component, the level of which may well be understated here for reasons discussed above. These taxes cause the firms to reduce output, and hence the level of pollution damage, which results in a lower MWC than in a model without externalities.

The differential incidence simulations provide evidence that a Pigouvian tax is indeed more efficient than a Pigouvian subsidy, but for a much different reason than that offered by the earlier literature. Using a lump sum replacement tax, I have shown that a Pigouvian subsidy may be more efficient than a Pigouvian tax. This result comes from the incorporation of abatement technology into the model; the use of general

equilibrium analysis, which captures the effects of sectoral interactions; and the undertaking of welfare evaluation, which recognizes the beneficial nature of the price and output effects that occur under a Pigouvian subsidy scheme relative to a tax scheme. The use of a distortionary labor income replacement tax, however, shows that the differential revenue effects may outweigh the differential direct effects of taxes and subsidies on welfare, so that Pigouvian taxes are indeed more efficient than Pigouvian subsidies. All of these results illustrate the importance of modelling these issues in a general equilibrium framework.

Figure 1

Marginal Welfare Costs of Various Taxes

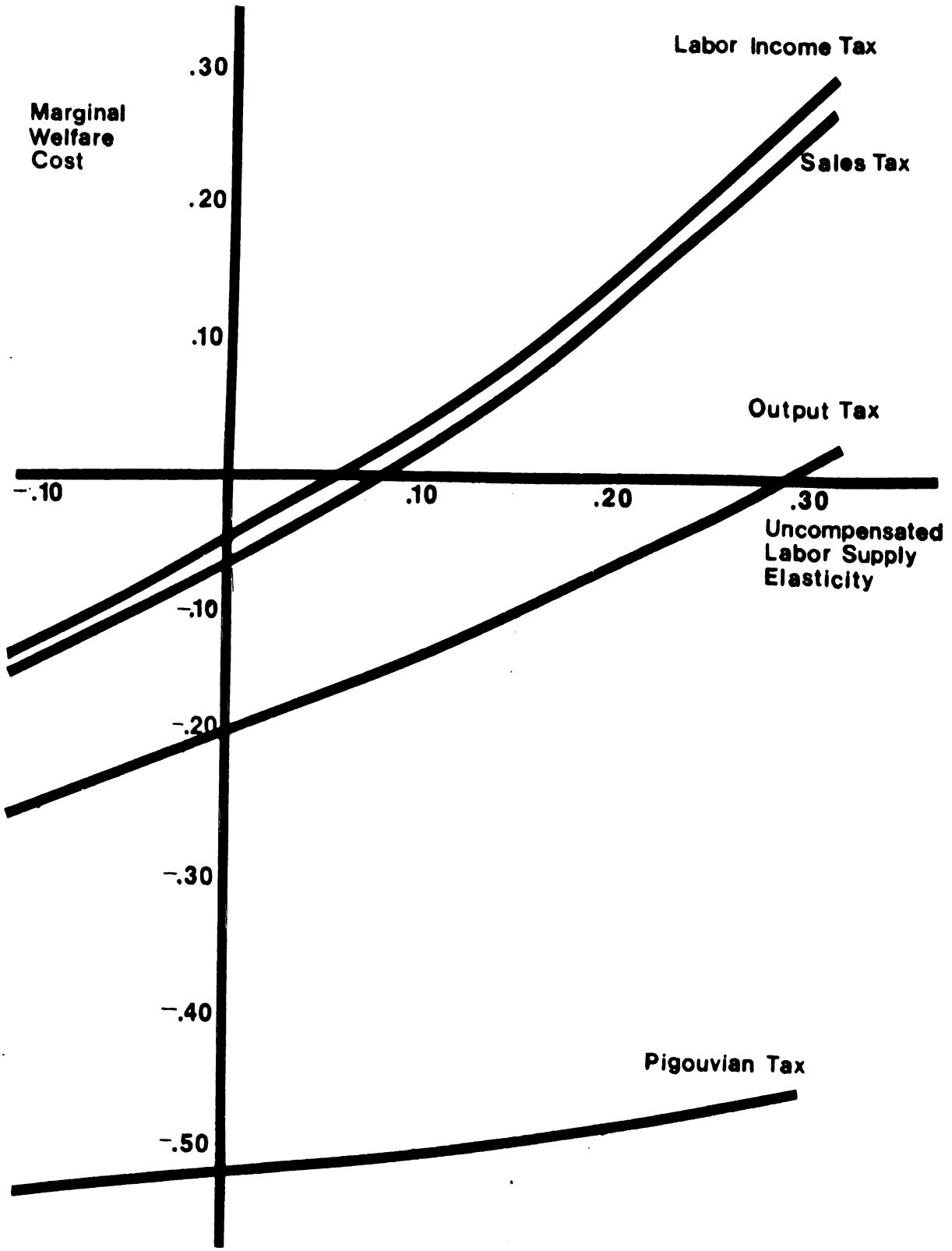

Table 1

Breakdown of Input-Output Coefficients

Industry	a_{ij}	a_{ij}'	$a_{ij} - a_{ij}'$
1	.74033	.73980	.00053
2	.60416	.63083	.00933
3	.46029	.46020	.00009
4	.45652	.45175	.00477
5	.77887	.77803	.00084
6	.70204	.70204	.00000
7	.64211	.64209	.00002
8	.80524	.73349	.07175
9	.72200	.71383	.00817
10	.57883	.57858	.00025
11	.67684	.67305	.00379
12	.48789	.48789	.00000
13	.54255	.51240	.03015
14	.23637	.23588	.00049
15	.39376	.38836	.00540
16	.40492	.40492	.00000
17	.41954	.41947	.00007
18	.39895	.39895	.00000

Table 2

Classification of Industrial Sectors in the Model

Producer Goods
(Industries)

1. Agriculture, forestry, and fisheries
2. Mining*
3. Crude Petroleum and Gas
4. Contract Construction
5. Food and tobacco*
6. Textiles, apparel, and leather
7. Paper and printing
8. Petroleum*
9. Chemicals, rubber, and plastics*
10. Lumber, furniture, stone, clay, and glass*
11. Metals, machinery, instruments, and miscellaneous manufacturing*
12. Transportation equipment and ordnance*
13. Transportation, communications, and utilities*
14. Trade
15. Finance and insurance
16. Real Estate
17. Services
18. Government Enterprises

* The Miernyck and Sears data indicate that these industries generate sufficient amounts of industrial pollution to affect the structure of intermediate production in the economy, as described in the text.

Table 3

Classification of Consumer Goods in the Model

Consumer Goods (Expenditure Categories)
1. Food
2. Alcohol
3. Tobacco
4. Household goods and utilities
5. Shelter
6. Furnishings
7. Appliances
8. Apparel
9. Public Transportation
10. New and used cars, fees and maintenance
11. Cash contributions and personal care
12. Financial Services
13. Reading and entertainment
14. Household operations
15. Gasoline and motor oil
16. Health care
17. Education

Table 4

Sensitivity of Pigouvian Tax to θ

Value of θ	Marignal Welfare Cost of Pigouvian Tax
1.10	-32.65
1.20	-39.01
1.25	-49.31
1.50	-171.60
2.00	-608.51

Table 5

Marginal Welfare Costs of Various Taxes

Tax	-0.10	0.00	0.10	0.15	0.20	0.30
Labor	-12.65	-4.78	4.73	9.45	15.29	28.79
Output (Polluters)	-24.68	-19.60	-13.67	-10.46	-6.80	1.22
Output (All Industries)	-12.33	-3.95	6.23	11.81	18.08	32.53
Output (Nonpolluters)	-8.80	0.55	12.09	18.63	26.23	44.05
Sales	-13.98	-6.59	2.34	7.33	13.08	26.19
Pigouvian	-52.23	-51.17	-49.97	-49.31	-48.60	-46.90

Table 6

Welfare Effects of Pigouvian Taxes and Subsidies

	0.25	0.35	0.45	0.55
Labor Income Tax Replacement:				
Pigouvian Tax	1141.42	1191.04	1233.00	1265.83
Pigouvian Subsidy	1035.77	1025.88	1015.03	1004.38
Lump-Sum Tax Replacement:				
Pigouvian Tax	568.08	437.00	326.52	237.80
Pigouvian Subsidy	1013.36	1001.27	991.35	983.62

Table 7

Sensitivity of Pigouvian Taxes and Subsidies to θ

	Labor Income Tax Replacement		Lump-Sum Tax Replacement	
Value of θ	Tax	Subsidy	Tax	Subsidy
1.10	1217.37	944.77	-63.07	928.57
1.20	1200.95	1004.65	300.71	982.33
1.25	1191.04	1025.88	437.00	1001.27
1.50	1149.89	1082.77	834.90	1051.49
2.00	1117.43	1108.01	1042.55	1072.67

APPENDICES

APPENDIX A: DATA APPENDIX

A. Pollution Damage in the Input-Output Structure

The input-output coefficents for the state of West Virginia are taken from Miernyck and Sears (1974) These coefficients were calculated from survey data for the year 1965. Miernyck and Sears then projected these coefficients to their 1975 levels, and the pollution-related effects on the coefficients were isolated by estimating the level of pollution in the early 1970s assuming full compliance with the Clean Air Act of 1970.

The procedures in adopting the Miernyck and Sears data to the model are as follows. First, the percentage change between the pre- and post-abatement input-output coefficients was calculated for each sector affected by pollution. These percentage changes reflect 90 percent abatement of particulate emissions (Miernyck and Sears 1974, 15) and 20 percent abatement of sulfate emissions (Miernyck and Sears 1974, 20). Because some of these percentage changes in the coefficients were negative, the second step was to impose a lower bound of zero on these percentage changes. Third, because some of these changes seemed implausibly large, an upper bound of 50 percent was imposed.[28] These restrictions have been imposed in order to isolate as much as possible the effects of pollution damage on the input-output structure. There likely are second-order effects reflected in the changes in these coef-

28. For example, the amount of refined petroleum products necessary to produce a unit of output in the metals and machinery industry fell by 159 percent after the pollution regulations were put into effect. Because it is unlikely that all of this change was due to the reduction in pollution, this percentage change was restricted to 50 percent in the model.

ficients, such as substitution from more- to less-expensive inputs. To the extent that these effects are large, they may bias the results somewhat.

The concern here is with the total level of pollution damage. Since the data reflect the benefits of partial abatement, these percentage changes had to be scaled up to reflect 100 percent abatement. In the scaling process, I assume that pollution damage is a linear function of the level of pollution. Finally, these percentage changes, most of which are less than one percent, were used to calculate the level of damages within the input-output structure of the model. This was done by multiplying the percentage change in each West Virginia input-output coefficient by the corresponding coefficient from the GEMTAP data set. The number that emerges is the portion of the input-output coefficient that reflects pollution damage, which, in terms of equation (13), is

$$\sum_{k=1}^{n} \tau_{ik} X_k .$$

Next, this pollution damage term for each coefficient was separated into its output (X_k) and damage per unit of output (τ_{ik}) components. This was done by dividing the damage term by the total output from the k polluting industries. Thus, in the base case, τ_{ik} is identical for all polluting industries. In more descriptive terms, a unit of pollution from any source does the same level of damage to a receiving industry as a unit of pollution from any other source.

Since τ_{ik} reflects the damage to the input-output coefficient from a unit of output, it must be separated into components which reflect the

damage from each unit of pollution that results from a unit of output from polluting industry k. That is,

$$r_{ik} = D_k r_{ik}',$$

where D_k is the amount of pollution emitted per unit of output of polluting industry k. I assume that pollution per unit of output for each industry, D_k, is equal to 1.0 in the base case. While it is likely that the amount of pollution emitted per unit of output does differ across industries, this assumption is made to simplify the analysis. This assumption may have some effect on the distribution of abatement benefits across industries.

Thus, the economy is modelled as if no attempt were being made to reduce pollution. In fact, the regulatory approach adopted in the United States does result in substantial abatement of pollution. An interesting extension of the present analysis would involve a comparison of the regulatory approach with the Pigouvian approach.

B. Pollution Damage in the Consumer's Utility Function

The data for the damage done to the consumer's utility function are taken from Lester B. Lave and Eugene P. Seskin (1977). Their "best" estimate of the health benefits of abatement is 16.1 billion (1973) dollars for particulate and sulfate emissions from stationary sources (Lave and Seskin 1977, 225).

Several adjustments had to be made to these data. First, since the data reflect the benefits from 58 percent abatement of particulate emissions and 88 percent abatement of sulfate emissions,[29] the 16.1

29. The percentages of sulfate and particulate abatement reflected in the data differ between the Miernyck and Sears data and the Lave and Seskin data because each deals with a different time period and a different regulatory regime.

billion dollar estimate had to be scaled upward to reflect the benefits of 100 percent abatement. Second, since the model uses 1983 data, this estimate was adjusted to 1983 dollars. The sum of these adjustments gives a value for health damages from pollution of 49.45 billion (1983) dollars. Finally, exploiting the homotheticity of the utility function in the model, this dollar amount was converted into utility by dividing by the ideal price index. This is shown in the Mathematical Appendix.

As in the "producer-producer" externality case, each unit of output produced by the polluting industries is associated with one unit of pollution in the base case. As a result, a one-unit reduction in output by any of the polluting industries has the same effect on reducing health damage as does a one-unit reduction in output by any other polluting industry.

C. The Abatement Cost Function

The data used to compute the parameters of the abatement cost fuction for each industry are taken from Robert W. Crandall (1983). There does not appear to be much published data relating abatement costs to the level of pollution abated, and as a result, certain simplifying assumptions had to be made. Recall from equation (19) that the abatement cost function is given by

$$C = Q\mu(-D')^{\theta}.$$

Crandall presents data from the steel industry which gives the cost of removing 24.94 grams out of the 27.53 grams of total suspended particulates emitted with every kilogram of steel produced. These emissions numbers were then adjusted to reflect the normalization of pollution per unit of output (D) to 1.0 in the base case. Thus, the

pre-abatement level of emissions (27.53 grams) becomes 1.0 units of pollution per unit of output, and the post-abatement level of emissions (27.53 - 24.94 = 2.59) becomes .094 units of pollution per unit of output. Subtracting the post-abatement level of pollution from the pre-abatement level of pollution gives the value of -D': .906 units of pollution per unit of output.

Next, a value is chosen for θ, and based on values of C, Q, and -D' from the data, μ is computed. Because I was able to find data which showed the actual level and cost of abatement for the steel industry only, it was necessary to use other methods to determine the parameters of the abatement cost functions of the other polluting industries. First, θ was assumed to be the same for all polluting industries. Table 3-1 in Crandall (1983, 36-37) shows the costs of abatement in dollars per metric ton of pollutants removed for the various polluting industries. For each of the polluting industries in the model, the ratio of that industry's cost of abating one metric ton of pollutants to the cost to the steel industry of abating one metric ton of pollutants was calculated. This ratio for each polluting industry was then multiplied by the value of μ for the steel industry in order to get the value of μ for that polluting industry. These values for μ and θ are then used in the revised case, incombination with a Pigouvian tax, to determine the level of abatement, and then the cost of the level of abatement undertaken.

APPENDIX B: MATHEMATICAL APPENDIX

A. The Structure of Consumer Utility and Welfare Evaluation

The consumer in the model has a nested CES utility function. The inner nest is a Stone-Geary function defining the consumer's choice over the m consumption goods. The outer nest characterizes the consumer's labor-leisure choice, which is defined over leisure, l, and discretionary goods consumption, X^*. This utility function takes the form

$$(A\text{-}1) \quad U = [\beta^{1/\epsilon} l^{(\epsilon-1)/\epsilon} + (1-\beta)^{1/\epsilon} X^{*(\epsilon-1)/\epsilon}]^{\epsilon/(\epsilon-1)} - (1-A^*)(HD/P^*),$$

where ϵ is the elasticity of substitution between labor and leisure, β is a weighting parameter, A^* is the percentage reduction in total pollution, HD is the value of health damage resulting from pollution, and P^* is the ideal price index (see equation (A-8), below). The budget constraint says that the net-of-tax value of the consumer's labor and capital endowments, plus transfers, must be equal to expenditure on goods and leisure. Thus,

$$(A\text{-}2) \quad P_l E + P_K K(1-t_K) + TR = P_l l + PX^* + \varphi$$

where P_l is the price of leisure or the net wage, P_K is the gross-of-tax price of capital services, t_K is the capital tax rate, K is the consumer's endowment of capital, E is the consumer's leisure endowment, TR is the value of transfers recieved, P is the price of consumption goods, and φ is the sum of the values of required purchases. Maximizing

(A-1) with respect to (A-2) yields demand functions for consumption goods and leisure of the form

$$(A\text{-}3) \quad X^* = \frac{(1-\beta)(I-\varphi)}{P^{\epsilon}Z}$$

and

$$(A\text{-}4) \quad l = \frac{\beta(I-\varphi)}{P_1{}^{\epsilon}Z} ,$$

where I is the net value of endowments plus tranfers, and

$$(A\text{-}5) \quad Z = \beta P_1{}^{1-\epsilon} + (1-\beta)P^{1-\epsilon} .$$

Inserting demand functions (A-3) and (A-4) into the utility function, (A-1), allows me to solve for the indirect utility function, V:

$$(A\text{-}6) \quad V = (I-\varphi)[\beta P_1{}^{1-\epsilon} + (1-\beta)P^{1-\epsilon}]^{1/(\epsilon-1)} .$$

The income solution of the utility function is the expenditure function, E:

$$(A\text{-}7) \quad E = V[\beta P_1{}^{1-\epsilon} + (1-\beta)P^{1-\epsilon}]^{1/(1-\epsilon)} .$$

Since we are dealing with a homothetic function, we have the property that expenditure equals utility multiplied by the ideal price index, P^*, where

$$(A\text{-}8) \quad P^* = [\beta P_1{}^{1-\epsilon} + (1-\beta)P^{1-\epsilon}]^{1/(1-\epsilon)} .$$

For welfare evaluation purposes, I use P^* from the revised case in constructing the compensating variation, and I use P^* from the base case in constructing the equivalent variation.

Thus, the compensating variation is

$$(A\text{-}9) \quad CV = (V_b - V_r)P_r^*,$$

and the equivalent variation is

$$(A\text{-}10) \quad EV = (V_b - V_r)P_b^*.$$

In each case, the subscript b denotes base case and the subscript r denotes revised case.

The inner nest of the utility function specifies the consumer's choice among m consumption goods. (In this case, m = 17.) The consumer has a Stone-Geary subutility function of the form

$$(A\text{-}11) \quad X^* = \prod_{i=1}^{m} (x_i - \omega_i)^{\alpha_i},$$

where X_i is the consumption of good i, ω_i is the minimum required consumption of good i, and α_i is the Cobb-Douglas expenditure share for good i. The budget constraint in this case states that the consumer's net money income should equal gross expenditure on the m consumer goods:

$$(A\text{-}12) \quad P_1(E-1) + P_K K(1-t_K) + TR = \sum_{i=1}^{m} P_i' X_i,$$

where the prime notation indicates that prices are gross of consumer sales taxes, i.e., $P_i' = P_i(1+t_i)$. Constrained maximization of the subutility function provides consumer good demands of the form

$$(A\text{-}13) \quad X_i = \omega_i + \frac{\alpha_i(I_x - \varphi)}{Pi'} ,$$

where I_x is the consumer's net money income and

$$\varphi = \sum_{i=1}^{m} P_i'\omega_i .$$

We can get the indirect utility function by substituting the demand functions described by (A-13) into the subutility function (A-11):

$$(A\text{-}14) \quad X^* = \prod_{i=1}^{m} \omega_i + \frac{\alpha_i(I_x - \varphi)}{P'_i} \alpha_i .$$

Because the sum of expenditure shares is unity, we have

$$(A\text{-}15) \quad X^* = (I_x - \varphi) \prod_{i=1}^{m} \frac{\alpha_i}{P'_i} \alpha_i .$$

The expenditure function is the income solution of the subutility function:

$$(A\text{-}16) \quad I_x - \varphi = X^* \prod_{i=1}^{m} \frac{P'_i}{\alpha_i} \alpha_i$$

We are again dealing with a homothetic function, so that expenditure equals utility multiplied by the ideal price index. The price index for the composite X^* is denoted by P:

$$(A\text{-}17) \quad P = \prod_{i=1}^{m} \frac{P'_i}{\alpha_i} \alpha_i$$

This price index is then used as an input to the consumer's labor-leisure choice (see equations (A-2) through (A-8)).

B. Calibration of the Utility Function Parameters

First, I consider the calibration of the consumer's utility function to a set of labor supply parameters. Rewriting the leisure demand function, (A-4), we have

$$(A\text{-}18) \quad l = \frac{\beta(I-\varphi)}{P_l[\beta P_l^{1-\epsilon} + (1-\beta)P^{1-\epsilon}]},$$

where

$$(A\text{-}19) \quad I = P_l E + P_K K(1-t_K) + TR.$$

Differentiating with respect to P_l, the net wage, yields

$$(A\text{-}20) \quad \frac{dl}{dP_l} = \frac{\beta E}{P_l^{\epsilon} Z} - \frac{l\beta(1-\epsilon)}{P_l^{\epsilon} Z} - \frac{l\epsilon}{P_l}.$$

The leisure demand elasticity, ψ, is given by

$$(A\text{-}21) \quad \psi = \frac{dl}{dP_l}\frac{P_l}{l}.$$

Multiplying (A-20) by P_l/l and using (A-18), (A-21) becomes

$$(A\text{-}22) \quad \psi = \frac{P_l E}{I-\varphi} - \frac{P_l l(1-\epsilon)}{I-\varphi} - \epsilon.$$

Solving for ϵ, we get

$$\text{(A-23)} \qquad \epsilon = \frac{\frac{P_1 E}{I-\varphi} - \frac{P_1 l}{I-\varphi} - \psi}{1 - \frac{P_1 l}{I-\varphi}} .$$

In order to carry out calculations such as those of equation (A-23), there must be some method of determining the units in which quantities are measured, so that the data (which come in dollar values) can be separated into prices and quantities. I adopt a units convention such that factor prices (gross of income taxes but net of factor taxes at the industry level) are unitary.

The wage elasticity of labor demand, ψ, thus comes directly from the labor supply elasticity and the assumption about the ratio of l to E. This ratio is also important in controlling the compensated labor supply elasticity. As l/E increases, so does the income effect. Thus, holding constant the uncompensated labor supply elasticity, an increase in l/E means that the compensated labor supply elasticity will rise. An iterative procedure is used to find the value of l/E for each of the uncompensated and compensated elasticity pairs for which simulations are performed.

Given a value of ψ, I can solve for β. First, dividing (A-3) by (A-4) gives

$$\text{(A-24)} \qquad \frac{X^*}{l} = \frac{1-\beta}{\beta} \frac{P_1^{\epsilon}}{P^{\epsilon}} .$$

Rearranging this expression, we get

$$(A\text{-}25) \quad \beta = (1-\beta)\frac{1}{X^*}\frac{P_1^{\epsilon}}{P^{\epsilon}} .$$

Solving for β, we have

$$(A\text{-}26) \quad \beta = \frac{1P_1^{\epsilon}/X^*P^{\epsilon}}{1 + (1P_1^{\epsilon}/X^*P^{\epsilon})} .$$

C. The Structure of Production

Firms are assumed to create value-added by combining labor and capital according to constant elasticity of substitution (CES) functions of the form

$$(A\text{-}27) \quad VA = \phi[\delta L^{(\sigma-1)/\sigma} + (1 - \delta)K^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)},$$

where δ is the share of labor in the production of a unit of output, ϕ is a scaling parameter, L and K are the inputs of labor and capital services, and σ is the elasticity of substitution in production.

Firm behavior is characterized by cost-minimization, subject to the production function. The firm's problem is thus

$$\min_{L,K} \; P_L^*L + P_K^*K$$

$$\text{s.t.} \quad \phi[\delta L^{(\sigma-1)/\sigma} + (1-\delta)K^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}$$

where P_L^* and P_K^* are the gross-of-tax prices of labor and capital services, respectively. Manipulation of the first-order conditions for cost-minimization gives

$$(A\text{-}28) \quad \frac{P_K^*}{P_L^*} = \frac{1-\delta}{\delta}\frac{K^{-1/\sigma}}{L^{-1/\sigma}} .$$

This, in turn, leads to factor demand functions per unit of output of the form

$$(A\text{-}29) \quad \frac{L}{X} = \frac{1}{\phi}\left[\delta + (1-\delta)\left(\frac{(1-\delta)P_L^*}{\delta P_K^*}\right)^{\sigma-1}\right]^{\sigma/(\sigma-1)}$$

and

$$(A\text{-}30) \quad \frac{K}{X} = \frac{1}{\phi}\left[\delta\left(\frac{\delta P_K^*}{(1-\delta)P_L^*}\right)^{\sigma-1} + (1-\delta)\right]^{\sigma/(\sigma-1)}.$$

D. Calibration of Production Function Parameters

Given the value of σ, we can solve for the values of δ and ϕ that are consistent with the data. Solving (A-28) for δ gives

$$(A\text{-}31) \quad \delta = \frac{P_L^* L^{1/\sigma} / P_K^* K^{1/\sigma}}{1 + [P_L^* L^{1/\sigma} / P_K^* K^{1/\sigma}]}.$$

When δ is known, we can solve for ϕ. The zero-profit condition for firm j is

$$(A\text{-}32) \quad P_j X_j = P_L^* L_j + P_K^* K_j + \sum_{i=1}^{n} a_{ij} P_i X_i,$$

where P_j is the price of good j (net of output taxes), P_i is the price of producer good input i to firm j, n is the number of production sectors (here, n = 18), a_{ij} is the input-output coefficient of input good i into firm j's output, and X_i is the output of sector i. Using (A-28), (A-32) can be rewritten as

$$(A\text{-}33)\quad P_j\{\phi_j[\delta_j L_j^{(\sigma-1)/\sigma} + (1-\delta_j)K_j^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}\} = P_L^* L_j + P_K^* K_j + \sum_{i=1}^{n} a_{ij} P_i X_i.$$

Solving this for ϕ_j gives

$$(A\text{-}34)\quad \phi_j = \frac{P_L^* L_j + P_K^* K_j + \sum_{i=1}^{n} a_{ij} P_i X_i}{P_j[\delta_j L_j^{(\sigma-1)/\sigma} + (1-\delta_j)K_j^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}},$$

or, since factor and product prices are equal to 1.0 by the units convention,

$$(A\text{-}35)\quad \phi_j = \frac{(1+t_L)L_j + (1+t_K)K_j + \sum_{i=1}^{n} a_{ij} X_i}{(1-t_j)[\delta_j L_j^{(\sigma-1)/\sigma} + (1-\delta_j)K_j^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}}.$$

where t_L and t_K are the factor tax rates on labor and capital services and t_j is the output tax rate.

After solving for these behavioral parameters for any given set of endowments and government tax and expenditure parameters, we are ready to perform simulations and make welfare comparisons.

BIBLIOGRAPHY

BIBLIOGRAPHY

Atkinson, Anthony B., and Nicholas H. Stern. 1974. "Pigou, Taxaton and Public Goods." Review of Economic Studies 41 (January): 119-128.

Auerbach, Anthony J., Lawrence J. Kotlikoff, and J. Skinner. 1983. "The Efficiency Gains from Dynamic Tax Reform." International Economic Review 24 (February): 81-100.

Ballard, Charles L. 1987. "Marginal Welfare Cost Calculations: Differential Analysis vs Balanced-Budget Analysis." Mimeo, Michigan State University (December).

Ballard, Charles L., Donald Fullerton, John B. Shoven, and John Whalley. 1985. A General Equilibrium Model for Tax Policy Evaluation. Chicago: University of Chicago Press.

Ballard, Charles L., and Steven G. Medema. 1988a. "The Efficiency Effects of Pigouvian Taxes and Subsidies: A Computational General Equilibrium Approach." Mimeo, Michigan State University (March).

Ballard, Charles L., and Steven G. Medema. 1988b. "The Efficiency Effects of Pigouvian Taxes and Subsidies: A Computational General Equilibrium Approach." Mimeo, Michigan State University (November).

Baumol, William J. 1965. Welfare Economics and the Theory of the State. Cambridge, MA: Harvard University Press.

Baumol, William J., and Wallace E. Oates. 1988. The Theory of Environmental Policy, 2d ed. New York: Cambridge University Press.

Boulding, Kenneth E. 1966. "The Economics of the Coming Spaceship Earth." In Environmental Quality in a Growing Economy, edited by Henry Jarret. Washington, D.C.: Johns Hopkins University Press for Resources for the Future, Inc.

Bramhall, David F., and Edwin S. Mills. 1966. "A Note on the Asymmetry between Fees and Payments." Water Resources Research 2 (Third Quarter): 615-616.

Burtless, Gary. 1987. "The Work Response to a Guaranteed Income: A Survey of Experimental Evidence." In Lessons from the Income Maintenance Experiments, edited by Alice H. Munnell. Federal Reserve Bank of Boston Conference Series Number 30.

Caddy, Vern. 1976. "Empirical Estimation of the Elasticity of Substitution: A Review." Preliminary Working Paper OP-09, Impact Project. Industrial Assistance Commission, Melbourne, Australia.

Cheung, Steven N. S.1973. "The Fable of the Bees: An Empir-ical Investigation." Journal of Law and Economics 16 (April): 11-33.

Coase, Ronald H. 1960. "The Problem of Social Cost." Journal of Law and Economics 3 (October): 1-44.

Crandall, Robert W. 1983. Controlling Industrial Pollution. Washington, D.C.: The Brookings Institution.

Fisher, Anthony C. 1981. Resource and Environmental Economics. New York: Cambridge University Press.

Gray, Wayne B. 1987. "The Cost of Regulation: OSHA, EPA, and the Productivity Slowdown." American Economic Review 77 (December): 998-1006.

Kamien, Morton, Nancy Schwartz, and F. Trenery Dolbear. 1966. "Asymmetry Between Bribes and Charges." Water Resources Research 2 (First Quarter): 147-157.

Kay, John. 1980. "The Deadweight Loss from a Tax System." Journal of Public Economics 13 (February): 111-119.

Keeley, Michael C. 1981. Labor Supply and Public Policy. New York: Academic Press.

Killingsworth, Mark. 1983. Labor Supply. New York: Cambridge University Press.

Kimbell, Larry J., and Glenn W. Harrison. 1984. "General Equilibrium Analysis of Regional Fiscal Incidence." In Applied General Equilibrium Analysis, edited by Herbert E. Scarf and John B. Shoven. New York: Cambridge University Press.

Lave, Lester B., and Eugene P. Seskin. 1977. Air Pollution and Human Health. Baltimore: The Johns Hopkins University Press.

Mercuro, Nicholas, and Timothy P. Ryan. 1984. Law, Economics and Public Policy. Greenwich, CT: JAI Press.

Mestelman, Stuart. 1982. "Production Externalities and Corrective Subsidies: A General Equilibrium Analysis." Journal of Environmental Economics and Management 9 (June): 186-193.

Miernyck, William H., and John T. Sears. 1974. Air Pollution Abatement and Regional Economic Development. Lexington, MA: D.C. Heath and Co.

Musgrave, Richard A. 1959. The Theory of Public Finance. New York: McGraw-Hill.

Pigou, Arthur C. 1932. The Economics of Welfare. London: Macmillan.

Sandmo, Agnar. 1975. "Optimal Taxation in the Presence of Externalities." Swedish Journal of Economics 77 (March): 86-98.

Scholtz, John K. 1987. "Documentation for the 1983 General Equilibrium Data Set." Mimeo, Stanford University.

Shoven, John B., and John Whalley. 1984. "Applied General Equilibrium Models of Taxation and International Trade." Journal of Economic Literature 22 (September): 1007-1051.

Stephan, Gunter. 1988. "Economic Impact of Emission Stan-dards: A Computational Approach to Waste Water Treatment in Western Europe." In Welfare and Efficiency in Public Economics, edited by D. Boes, M. Rose, and Ch. Seidl. Berlin: Springer-Verlag.

Stuart, Charles E. 1984. "Welfare Costs Per Dollar of Addi-tional Tax Revenue in the United States." American Economic Review 74 (June): 352-362.

United States Environmental Protection Agency. 1979. Resources and Pollution Control. Washington, D.C.

Victor, Peter A. 1972. Pollution: Economy and Environment. Toronto: University of Toronto Press.

Walras, Leon. 1874. Elements d'economie politique pure. Lausanne: Corbaz. [Translated as Elements of Pure Economics, trans. William Jaffe. London: Allen and Unwin, 1954.]

Wildasin, David E. 1984. "On Public Good Provision with Distortionary Taxation." Economic Inquiry 22 (April): 227-243.

ESSAY TWO: LEVELS OF DISCOURSE IN THE LEGAL-ECONOMIC ANALYSIS OF THE TAKING ISSUE

I. Introduction

The "takings" clause of the Fifth Amendment to the United States Constitution reads "nor shall private property be taken for public use, without just compensation." Any analysis of this clause must answer the following questions: What constitutes "private property?" When is property said to be "taken?" What constitutes "public use?" What is, and how do we determine, "just compensation?" The answers that have been given to these questions over time, both by the courts and by academics, have been many and diverse.

The taking issue is important because it involves defining the limits of government power over individual holdings of wealth, and the definition of rights between individuals and between individuals and government. The fundamental issue here is the determination of when government is and is not required to pay compensation when it interferes with these holdings. That is, what separates a compensable taking from a legitimate exercise of the police power?

Historicially, courts have tended to use one of two criteria in resolving these cases: the physical-invasion test or the diminution-of-value test. The physical-invasion test mandates that compensation be paid when the government literally takes physical possession of an individual's holdings. If physical possession does not take place, then compensation is not due. For example, if the government seizes Alpha's

land to build a highway, the physical-invasion test says that compensation is due. If the government imposes a regulation that the earth below a certain parcel of land may not be mined, then the physical-invasion approach suggests that compensation is not due to the mining company which owns the land because the mining company still has possession of the land for alternative uses.

Under the diminution-of-value approach, a taking is said to have occurred, and compensation is owed, when government actions "substantially" reduce the value of a person's holdings. Thus, in the case of the mining company described above, if, in the view of the court, the value of the company's holding has been "substantially" reduced, compensation is due. If, however, the loss is deemed "small" by the court, then compensation is not due.

The scholarly literature on the taking issue can be seen as a response to this traditional practice on the part of the courts, a practice which has led to seemingly identical cases being decided in opposing ways. A myriad of alternative approaches to the taking issue have been proposed, perhaps the most well-known of which are those proposed by Frank I. Michelman (1967), Joseph L. Sax (1964, 1971), Lawrence Berger (1974), Bruce A. Ackerman (1977), and Richard A. Epstein (1985). These authors are of one mind on the definition of the problem at hand: how does the court distinguish between a government "taking" of private property, for which compensation is owed, and a legitimate exercise of the police power, for which no compensation is due?[1] Each of these authors takes a specific view of the taking issue, and in doing so, puts forth a specific interpretation of the takings clause, a new

1. See Michelman (1967, 1166), Sax (1971, 149), Berger (1974, 166), Ackerman (1977, 1), and Epstein (1985, 3).

way of defining rights between individuals or between individuals and government. In doing so, each author is setting forth rules for judges to use in deciding takings cases. Each makes a valuable contribution to the debate surrounding the clause, in that the number of ways that one can think about resolving takings cases is increased.

This essay is an analysis of the literature presenting interpretations of the takings clause. These interpretations are not judged to be "right" or "wrong" on the basis of some presumed constitutional "truth," but are analyzed using the tools of discourse analysis. The analysis of the writers examined is viewed as discourse, as a way of speaking about the world. Analysis and results are seen as derivative of several phenomena, which include but are not limited to (i) unspoken underlying premises to which the author is giving effect, (ii) metaphors, (iii) legal fictions, (iv) philosophies of government and property, (v) appeals to authority, and (vi) terms that are necessarily given selective substantive content.

A. Law as Language

James Boyd White has said that law "is most usefully and completely seen as a branch of rhetoric" (White 1985, 28). That is, law is a language, a way of speaking about and describing the world.

> Every scientist or scholar, regardless of field, relies on the common devices of rhetoric: on metaphors, invocations of authority, and appeals to audiences -- themselves creatures of rhetoric (Nelson, Megill, and McCloskey 1987, 4).

For the matter at hand, the taking issue, the various scholars analyzed use language to set forth rules for resolving disputes, that is, for defining rights. In doing so, each is offering both (1) a specific interpretation of constitutional text and (2) a specific construction of social reality:

> What characterizes legal discourse is that it is in a double sense (both substantively and procedurally) constitutive in nature: it creates a set of questions that reciprocally define and depend upon a world of thought and action; it creates a set of roles and voices by which meanings will be established and shared. In creating both a set of topics and a set of occasions and methods for public speech it does much to constitute us as a community and as a polity. In all of this it has its own ways of working, which are to be found not in the rules that seem to be at the center of the structure, but in the culture that determines how these rules are to be read and talked about (White 1985, 71).

Each author is trying to persuade toward a specific rule, or a specific interpretation of a rule, and hence toward a corresponding definition of reality which gives rise to a particular social construction of reality, and as Chaim Perelman says,

> As soon as a communication tries to influence one or more persons, to orient their thinking, to excite or calm their emotions, to guide their actions, it belongs in the realm of rhetoric (Perelman 1982, 162).[2]

The important issue here is deciding what to make of this language. Several different stories are being told, yet we and the courts must choose among them (and others) in determining how to resolve disputes. In doing so, we must recognize that each storyteller is engaged in a process which Donald Schon calls "naming and framing":

> Each story conveys a very different view of reality and represents a special way of seeing. From a situation that is vague ambiguous, and indeterminate ..., each story selects and names different features and relations which become the "things" of the

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2. Jerry Frug says that

> We should abandon the traditional search for the basis of legal argument because no such basis can be found, and we should replace such a search with a focus on the legal argument's effects, in particular, on its attempt to persuade. I suggest, in other words, that we look at legal argument as an example of rhetoric. A rhetorical analysis of legal argument involves examining its elements, ... not in terms of how they support the argument's conclusion but in terms of how they form attitudes or induce actions in others (Frug 1988, 872).

That is, we must look at how these elements of legal argument serve the function of social control.

> story .... Each story places the features is has selected within the frame of a particular context ....
>
> Each story constructs its view of social reality through a complementary process of naming and framing (Schon 1979, 264).

The terms "private property," "taken," "public use," and "just compensation" are defined in different ways by different authors -- meaning is being made, not discovered. These definitions are selected out of a range of possible choices, each of which weights certain features heavily and excludes others.[3] Thus, in defining terms, choice is being made through putative discoveries.

None of these definitions is a priori correct; each, rather, depends on the acceptance of a specific definition of reality, of a set of values and presuppositions. Moreover, "every definition implicitly admits that some other definition is possible; otherwise, there would be no need to define in the first place" (Perelman 1982, xiii). Further,

> A description wich seems neutral reveals itself as one-sided when brought up against a different description, the selective character of which is indicated by [the qualities] to which one chooses to give prominence (Perelman 1982, 45).

There is, then, an inexorable necessity of choice, choice as to how terms are to be defined, as to which cases fit into the rule which is the outcome of these definitions, and hence as to who will have rights and who will be exposed to the exercise of those rights.

This raises the issue of perception. Perception is, by its very nature, selective. Each person, consciously or not, brings the forces of ideology, culture, and habit to a problem. Each of these, in turn, channel one's perception of words, actions, benefits, costs, and so on. These are viewed from a particular position, and as such channel

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3. See Bernard S. Jackson (1985), 46, and Christopher D. Stone (1988), 156.

perception. Selective perception is operative in the interpretation of texts, in the formulation of rules, and in the application of these rules.

B. Interpretation

Each of the authors examined here is engaged in constitutional interpretation. Each is positing a different rule for determining whether a taking has occurred, and hence each is interpreting and applying the Constitution in a different way. It may be said that the meaning of constitutional text, and hence the takings clause, comes from a literal reading of the text. But what is a literal reading? One still faces the problem of imputing definitions to terms, and in doing so one is making a choice. Hence, there is no such thing as an uneqivocally conclusively dispositive literal reading of the clause.

A reader does not come to the text as a blank slate; rather, the reader brings along a particular set of intellectual baggage. Thus, as Karl Mannheim says, objects are perceived "from the perspective of a particular social setting, that is, 'ideology' is part of the human condition" (Hekman 1986, 66). In Gadamerian terms, "Understanding a text ... is always an interpretation and all interpretation takes place in the medium of language" (Hekman 1986, 110). Moreover, "language has no independent life apart from the world that comes to language within it" (Hekman 1986, 110). Hence,

> Understanding is not a mysterious communion of the souls in which the interpreter grasps the subjective intention of the author. Rather, it is a fusion of the author's horizon with that of the interpreter (Hekman 1986, 111).

Man cannot, then, stand outside of the influences of culture and ideology in interpreting a text. The cultural and historical contexts of both writer and interpreter are important here (Hekman 1986, 148).

Phillip Kissam says that the prejudgments and prejudices which critical readers bring to the text are "desirable in a pluralistic world" (Kissam 1988, 249-250). This may or may not be true. What is more important is that these prejudgments and prejudices are inevitable. The danger comes if one fails to recognize that

> When observers are regarded as detached -- passive, neutral observers of the reality [or text] they report upon -- then much remains hidden. We do not see the influence of the observer upon the observed. We do not see the control of the agenda of what will be considered valid questions and legitimate answers. Even what counts as truth has supressive side effects (Ball 1985, 8-9).

Interpretation, then, masks or obfuscates, bringing certain things into the foreground and pushing other things into the background.

In telling a story, each writer invokes authority. This authority may be framers' intention, science, justice, or some sort of naturalistic basis. In doing so, the author is attempting to persuade, since there is no reason to invoke authority other than for persuasive purposes. Yet, as Richard K. Sherwin notes,

> there are no independent or invariant principles of order guaranteeing the authority of a given interpretation. There are only attempts to explain and justify particular understandings, to give plausible persuasive reasons in their behalf. The way I interpret experience [or texts] engages my own and others' historic presuppositions. There are but "interpretations" that require critical reflection, or reinterpretation, in the present context (Sherwin 1988b, 740).[4]

Selective perception, then, is always present in interpretation, and it is the role of the reader to discover both this and the prejudices which give rise to it.

C. Metaphor

The use of metaphor is pervasive in the language of the law. The metaphor is a powerful tool, linking A with B and in the process

4. See also White (1985), 101-104.

transforming both A and B. Metaphor is not necessarily an evil. Aristotle believed that metaphors are primarily ornamental (Ortony 1979, 3). Metaphor serves the twin purposes of categorization and convenience. But whether good, evil, or somewhere in between, the metaphor is useful as a persuasive device, as it "derives its normative force from certain purposes and values, certain normative images which have long been powerful in our culture" (Schon 1979, 265-266).

It is typically the case, however, that the metaphor is used to persuade toward the author's position,[5] and as a result it is important that the metaphor be closely analyzed. Metaphors may be used to disguise or mask the advocacy of a specific normative agenda, through appeals to normative values and images, through the evoking of emotion. "At stake here," says Sherwin, "is the issue of power or coercion, through deceitful manipulation or plot, versus legitimate authority, through open and sincere persuasion" (Sherwin 1988a, 583). Given what has been said above, however, one my wonder whether there can be persuasion that is "open" and "sincere." What one person believes is open and sincere may be seen by another as deceitful manipulation.

The metaphor that may be said to dominate, or overarch, the literature analyzed in this paper is what Milner S. Ball calls law as a "bulwark of freedom":

> The controlling conceptual metaphor that rules us largely unremarked -- and that is destructive to the degree that it

5. Lon L. Fuller says that if you "eliminate metaphor from the law ... you have reduced its power to convince and convert" (Fuller 1967, 24). It should be noted that not all metaphors are deliberate. In some cases, people believe that metaphors are real, and hence do not realize that they are using a metaphor. This does not, however, detract from the metaphor's persuasive effects on the reader, and indeed may even increase them if the reader, like the author, does not realize that a metaphor is being used.

> exercises a monopoly in jurisprudence -- is: law is the bulwark of freedon. Accoring to this metaphor, "we" are preserved from "them" or "it" by law. Law is a defensive works ... (Ball 1985, 23).

He goes on to say that

> Law as a bulwark is found in association with related metaphors that together make up a constellation, or mythology, or ideology, or conceptual way of experiencing life, or ... a family of metaphors. The metaphors kin to law as bulwark tend to the individualistic and competitive: life as struggle, society as contract, politics as battlefield or marketplace, and nature as resource. Within this constellation, humans are by nature individuals with conflicting self-interests. They seek achievement through a struggle in which each tries to master himself, his fellows, and his world. Fulfillment lies in competitive success. Wealth distinguishes winners from losers. Because individuals pursue their own interests and because resources are limited, the war of each against all is always near at hand. It is avoided by temporary armastice of contending wills. Lasting justice is at best ideal. Law settles for stability. It defends holdings allowing them to be exhibited and increased. Man is alien individual, nature is resource, and law is bulwark.
>
> I name this family of metaphors ... Fortress America (Ball 1985, 120-121).

Although this may be a somewhat radical characterization of the law, this family of metaphors is pervasive in the literature on the takings clause, and indeed in the takings clause itself. The problem, however, is that, as Ball notes, while law at least in part serves to protect the powerless, the law-as-bulwark metaphor serves to mask much of the dominance of the more powerful over the less powerful (Ball 1985, 25). Further, this metaphor serves to sanction the control necessary to bring about a certain set of freedoms.

D. Legal Fictions

Very much related to the metaphor is the fiction. Lon L. Fuller defines legal fictions as statements made by writers and judges which "they know to be false" (Fuller 1967, 1). A fiction differs from a metaphor in that while the metaphor posits viewing A as if it were (in

whole or in part) B, the fiction says that A is B where this is known to be false. Of course it is also true that a metaphor may over time come to be transformed into a fiction, as the "as if" becomes "is." While people do have some reservations about the use of fictions, they are generally seen as useful enabling devices, especially once the fiction has been in place for some time. A fiction attenuates a much more complicated argument and hence is obfuscatory. By saying that A is B when such is not the case, elements are transferred from B to A which serve to reinforce what the author wants A to be. In doing so, various attributes of A are concealed, pushed out of the way because they are undesirable for the purpose at hand. The fiction is a persuasive device, used for introducing selective positions or selective definitions of whose interests are to count, and hence as an aid in determining rights.

The idea of what constitues a fiction can be stated either broadly or narrowly. The narrow conception of a fiction applies to specific terms or phrases, such as "the corporation is a person."[6] A broader conception holds that the law, legal institutions, and legal concepts are fictions. Pierre J. J. Oliver (1975, 45) notes that Bentham conceived of fictions in this way. Of particular importance here is Bentham's conception of rights as fictions:

> "The word right, is the name of a fictitious entity; one of those objects, the existence of which is feigned for the purpose of discourse, by a fiction so necessary, that without it human discourse could not be carried on. A man is said to have it, to hold it, to possess it, to acquire it, to lose it. It is thus spoken of as if it were a portion of matter such as a man may take into his hand, keep it for a time, and let it go again" (Bentham (1928), quoted in Oliver 1975, 45).

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6. See Samuels (1987), 113-129.

Oliver himself, however, does not hold to such a broad conception of fictions (Oliver 1975, 47). He says that the concept of a person "possessing rights" is a metaphor, a symbol which "express[es] our conception of legal reality" (Oliver 1975, 69). But whether metaphor or fiction, the images evoked by the term "rights" are powerful.

E. Discourse, Deconstruction, and Choice

Each author is using words to construct a specific reality vis-a-vis the taking issue. In doing so, each author is doing several things: (i) applying a specific hermeneutic to the constitutional text; (ii) invoking authority; (iii) using metaphors; (iv) using fictions; (v) giving effect to his particular view of the world, and especially ideology (this includes particular philosophies of government and property). In creating this reality, moreover, each author is also creating and defining rights, that is, legislating. This rights-creating/legislating process is part of the social construction of reality, since reality is constructed through rights.

In all of the foregoing, choice is being made between alternatives: this hermeneutic versus than that one, appeal to the authority of science versus that of nature, and so on. None of these choices is conclusively a priori correct, and none can be labelled conclusively incorrect. Thus, there is no one conclusive resolution to the taking problem. What is important is the necessity of choice and the fact that all choices are made selectively.

While each of the authors examined here offers a specific construction of reality, this paper offers a deconstruction of each of these realities. The deconstructive process makes us aware of the selectivity that necessarily gives rise to each construction of reality,

that there are choices, also equally selective, that can give rise to a different construction of reality. Deconstruction involves an examination of both the rhetoric, or discourse, and the substance (methodology, logic, and so on) of the author's analysis. The stress here is on language, and where substantive points of contention arise, the emphasis is on alternatives (and the choice among them), not on correctness or incorrectness.

It cannot be emphasized enough that the selectivity referred to throughout this discussion, selectivity with regard to the interpretation of texts, definitions of terms, and inter alia the formulation and application of rules, is not an evil. Rather, it is necessarily operative, an inevitable part of the necessity of choice problem. It is equally important, however, that this selectivity be brought out into the open, for if the court is going to apply a rule, and hence determine rights, the reality that is being given effect to must be seen for what it really is (and is not). It is not so much that each author "fails" to accomplish a solution to the taking problem; rather, each "fails," and all will inevitably "fail," to arrive at an unequivocally conclusive solution.[7]

This essay is about the taking problem -- the criteria by which a taking of property, which requires compensation, is to be distinguished from a valid exercise of the police power, which does not require compensation. Its novelty lies in the examination and deconstruction of the discourse of five of the most seminal authors on this issue: Frank Michelman (1967), Joseph Sax (1971), Lawrence Berger (1974), Bruce A. Ackerman (1977), and Richard Epstein (1985). By taking the view that

7. See Samuels and Mercuro (1981), 212.

law is a language, discourse analysis offer a new and different way of looking at the analysis of each of these authors. The approach here is agnostic, although the author does have some opinions regarding the resolution of the taking problem. Inevitably, there are certain biases in the analysis, for this author, like those analyzed here, carries his own set of intellectual baggage to the problem. The reader is thus encouraged to deconstruct as he or she goes along.

F. A Note to the Economist Reader

The project undertaken here is not unlike what Donald N. McCloskey (1985) has done within the field of economics.[8] Economics, like law, can be viewed as a language, with its own particular set of metaphors, fictions, appeals to authority, and so on. Economists use these devices to persuade an audience (their fellow economists) that the analysis they undertake and the conclusions they reach have validity within the discipline. As McCloskey says in the Exordium to his book, "The subject is the conversation economists have among themselves, for the purposes of persuading each other that the interest elasticity of demand for investment is zero or that the money supply is controlled by the Federal Reserve" (McCloskey 1985, xviii). He goes on to say that "the conclusions are of more than academic interest. ... [because they] affect the lives of other people ... on a large scale" (McCloskey 1985, xviii). The same can certainly be said of law. Further,

> The service that literature can do for economics is to offer literary criticism as a model for self-understanding. Literary criticism does not merely pass judgments of good or bad; in its

8. Besides McCloskey's (1985) book, a good source on the rhetoric of economics is Arjo Klamer, Donald N. McCloskey, and Robert M. Solow, eds. (1988) The Consequences of Economic Rhetoric. This volume contains papers presented at the conference on the Rhetoric of Economics at Wellesley College in the Spring of 1986.

> more recent forms the question hardly seems to arise. Chiefly it is concern-ed with making readers see how poets and novelists accomplish their results. An economic criticism of the sort exercised below [i.e., in his book] is not a way of passing judgment on economics. It is a way of showing how it accomplishes its results. It applies the devices of literary criticism to the literature of economics (McCloskey 1985, xix).

In this essay, I undertake a similar type of analysis of the literature on the takings clause. McCloskey points out that not many economists think in this way, although this type of analysis is more common in other disciplines (among which he includes law) (xix).

The analysis of rhetoric, then, allows one to examine the conversations that economists, lawyers, mathematicians, and so on have amongst themselves, or how they persuade. As McCloskey says,

> a rhetorical criticism of economics is an invitation to take thought. What, one asks in a rhetorical manner, is the root metaphor of my work? Do I really have evi-dence for its aptness? I have appealed to authority here: is it a good one? There my formal language claims the objectivity of science: is the point I am making really up to it? Here I am making a quantita-tive argument: what are my conversational standards of bigness? Should I simulate the results mathematically, to show that they have a quantitative bite? I appeal to "theoretical reasons" in this argument: do I mean pretty diagrams? In what way exactly are they pretty? I depend heavily on introspection for that point: how can I increase my confidence that my audience has the same introspection? ... What role do definitions play in my argument? How can I refine my argument to appeal to the argument <u>a fortiori</u> (McCloskey 1985, 52-53)?

The use of persuasive devices in economics can be illustrated by looking at those used in applied work. If the t-statistic for a variable is "insignificant," the author may accept the variable anyway, appealing to theoretically compelling reasons he has to back up his claim that the variable really is significant for the matter at hand. On the other hand, the economist will readily support the importance of variables which have "high" t-statistics to defend her results and her theory against some other view (i.e., to persuade the audience that her

theory is correct). The subordination of theory to a statistical result or of a statistical result to a theory is a method of persuading toward the validity of one's result through an appeal to the authority of one or the other.

Economics also has its own set of metaphors. Prominent examples are the invisible hand, rational economic man, elasticity, and equilibrium, just to name a few. Some of the metaphors used by economists are taken from the physical sciences. Such metaphors add persuasive force to an argument through their appeals to the realm of hard science.

Law, like economics, has its own particular language, with its associated metaphors, fictions, appeals to authority, and so on. Lawyers, like economists, can be seen as trying to persuade toward a certain result, engaged as they are in a search for a Holy Grail. With regard to this paper, each author can be seen as persuading toward what he sees as <u>the</u> correct interpretation of the takings clause. The form of persuasion here differs somewhat from that in economics. The author does not say "assume w, x, and y, and on the basis of these assumptions we can derive z." Rather, the argument takes the form: "The terms w, x, and y mean the following. Therefore the correct legal rule is z." Their analysis can thus be seen as persuasion that these are the correct definitions of w, x, and y, and that z follows from these definitions and hence is <u>the</u> correct legal rule. For example, a Lockean definition of property derives its persuasive force from the idea that rights are "natural," that they exist in the state of nature rather than being derived from government or from somewhere else. The naturalistic

metaphor is a very persuasive one, but it is only one way of looking at the concept of property.

Economic analysis has made substantial inroads into the field of law over the last fifteen years. Indeed, there is now a subfield called "law and economics." Economic analysis (particularly the idea of efficiency) appears several times in the analysis of the authors examined here. This will be somewhat familiar ground for the economist reading this paper. The use of economic tools in legal theory can be seen as a persuasive device. The arguments made by McCloskey carry over into the legal application of economic reasoning. Further, this use of economic reasoning can be seen as a persuasive device operating within the field of law to justify a particular assignment of legal rights. Arguments for assigning rights to Alpha rather than Beta are sometimes justified on economic efficiency grounds, as opposed to fairness (somehow defined -- some of which definitions appear in the welfare economics literature) or some other criterion.

With regard to the "non-economic" arguments made by the authors analyzed here, the economist who is not trained in law will be on somewhat unfamiliar ground. As will become clear in the paper, these authors can be seen as persuading toward a determinate result, a single "correct" view of the takings clause. What I am doing here is analyzing how they are trying to persuade toward their particular rules, just as McCloskey has done with the rhetoric of economics.

G. A Note on the Circularity of Efficiency Arguments

The reader will notice that several of the authors examined here make claims that rights should be determined on the basis of efficiency, where efficiency is defined (depending on the author) as the excess of

benefits over costs, the maximization of the value of output, the minimization of costs, or the maximization of wealth. The reader will also notice that this author claims that the use of such efficiency criteria is circular, that one cannot determine rights solely on the basis of efficiency. This argument is elucidated at this point in the text in order to (a) aid the reader as she makes her way through the text and (b) simplify matters so that the argument does not have to be repeated at each point in the text where it applies.

Suppose that there are n potential rights in society, that n-1 of these rights have been defined, and that the matter at hand is for the court to settle a takings case and determine the nth right. The enumeration of the values of benefits, costs, output, prices, wealth, willingness to pay, and so on requires a basis for determining these measures, that is, the market. However, to have a market, one must first define rights. Thus, in order to use an efficiency measure (i.e., to make efficiency calcluations) to determine rights, some initial distribution of the n-1 rights must exist, and an assumption must be made as to who possesses the nth right. As a theoretical matter, then, to say that rights can be determined solely on the basis of efficiency is circular.

As a practical matter, there are several important associated considerations which are relevant to the application of an efficiency criterion. First, there is the index number problem. The concern here is with the price measures that are to be used in determining benefits, costs, the value of output, and so on. The price structure may differ depending on whether Alpha or Beta is assumed to have the right in question. As a result of this, one may not necessarily be able to

compare the two outcomes that result from the efficiency calculations. The extent to which prices differ under the two initial assumptions about rights depends on the nature of the rights in question, and in any case is an empirical matter. Some evaluators may think that the differential is large, others may think it small. Correspondingly, some may think that one cannot, then, compare the two outcomes, while others may believe that the price structure differential is so small that it is permissible to do so. (Of course, if we had perfect information, we could just plug it all into the computer and see whether the differential is large or small. Unfortunately, we do not have perfect information.) If one accepts the position that in certain cases the price structure differential is too large to compare the two results (for example, in the case of the emancipation of the slaves, considered by some as the largest uncompensated taking in United States history), then an efficiency criterion cannot serve as a universal rule for deciding takings cases, and we are left, to a greater or lesser extent, with a case-by-case approach to takings cases, the very phenomenon that the efficiency approaches were proposed to replace.

A second important consideration here is the treatment of the n-1 other rights in society; that is, all of those rights in society except for the one to be determined in the case at hand. There are two possibilities here: (a) the judge may take the status quo structure of these n-1 rights as given and procede (along with an assumption about the nth right) to calculate benefits and costs on that basis; or (b) the judge may "open up" the structure of these n-1 rights, on the supposition that the status quo distribution of rights is either incorrect (and some other structure is more correct) or at least that

the status quo structure of rights has no prior claim to correctness and that other possible rights structures should be looked at as well. As both a theoretical matter and a practical matter, the circularity element here is very evident, since almost any outcome could result, depending on the treatment of these n-1 rights. If such is the case, the ability of an efficiency criterion to yield a single, determinate result is highly questionable. It may be argued, however, that such considerations are not important, that, on a positive level, judges do not evaluate the other n-1 rights on an "open" basis, and that, on a normative level, they should not. There is certainly some merit to this claim, but others may believe that judges should indeed evaluate all possible structures of these n-1 rights (perhaps because the status quo structure of these rights reflects the outcomes of an historical asymmetry of the distribution of power in society, a distribution which is somehow considered "unfair"), and that there is no a priori basis for saying that any of these claims is right or wrong. Yet, regardless of the determination of what judges should do in this regard, the circularity problem remains: efficiency alone cannot be used to determine rights; some initial distribution of rights must be assumed in order to make the efficiency calculations, and the outcome will reflect this initial assumption regarding the structure of rights.

Finally, there is the matter of the assumption as to the nth right, the right in question in the takings case. What is the significance of the fact that an assumption must be made with regard to the assignment of the nth right (along with the other n-1 rights) before the efficiency calculations can be made? Here, we will step away from the problems of "opening up" the structure of the n-1 other rights by

granting the assumption that only the status quo structure of these n-1 rights matters for the purpose of efficiency calculations. As a purely theoretical matter, the circularity argument still holds, since rights cannot be determined on the basis of efficiency alone, but also require an assumed prior specification of rights. As a purely practical matter, the question may be raised as to whether it really matters, in terms of the outcome of the efficiency calculations, whether the nth right is assumed to be assigned to Alpha or to Beta. That is, it may be said that, first, the differences in the price structure between the two initial assumptions as to the nth right are small enough that it is possible to compare the two results, and, second, that except for "unusual" cases, the decision as to the efficient assignment of the nth right will be invariant under the alternative initial assumptions about that right.

Perhaps the most important practical matter with regard to the assumed initial specification of the nth right is the extent to which reversals are "unusual." That is, how often will the rights determination that is based on efficiency calculations which assume that Alpha possesses the nth right give an outcome directly opposed to that under which Beta is assumed to have the initial right. Those who consider the possibility of such reversals to be more likely will have a different view of the usefulness of an efficiency criterion than will those who believe that reversals will be very uncommon. Yet, it bears repeating that the authors examined here are seeking universally applicable criteria which lead to single, determinate outcomes in all cases, in order to replace the case-by-case approach. Given the possibility of reversals in some cases, and even assuming away the

potential problems with the effects of differing price structures and the treatment of the other n-1 rights, these efficiency criteria are likely to be somewhat less than universally applicable, and as such require, to a greater or lesser extent, the use of a case-by-case approach.

II. Frank Michelman's Utility and Fairness

A. Some Preliminaries

Frank Michelman's (1967)[9] description of the compensation problem is typical: "If deliberate governmental activity forseeably entails some injurious impact on an established prior interest, how can we ... avoid concluding at once that compensation is in order? Where is the occasion for further classifying such impacts into those which are and those which are not 'takings'" (1166). That is, what separates a "taking" (which requires compensation) from a valid exercise of the "police power" (which does not require compensation)? Further, he asks, "how many dollars compose the 'just compensation' which must be paid when 'property' is, admittedly, being 'taken'" (1167)? These questions further "seem to derive from a broader question: When a social decision to redirect economic resources entails painfully obvious opportunity costs, how shall these ultimately be distributed among all the members of society" (1168-1169)?

But there is a further issue beyond those which Michelman notes. All government action entails redistribution from one party to another -- that is, has opportunity costs to someone. All costs are not "painfully obvious," and those which are are only so subject to a specific interpretation of reality. The end result is that not all losses

9. Unless otherwise noted, all page citations in this section are to Michelman (1967).

are compensated, and the compensation problem is the determination, selectively done, of which losses will be compensated and which will not. That is, there is an inexorable necessity of choice, and any rule applied to the compensation problem manifests a particular outcome of the choice process.[10] No rule, standard, or criterion is a priori correct; rather, it is a matter of choice as to whose interests are and are not to count. Further, the choice as to when the criterion chosen is and is not to be applied is arbitrary and selective. Hence the importance of analyzing discourse: each author is trying to persuade an audience, through the use of words, of the virtues of the rule or standard he or she advocates (chooses), that is, that rights should be defined in this way rather than that. Each is, then, legislating.

The starting point for Michelman's analysis rests on two premises: (1) that case-by-case adjudication should be abandoned as "the prime method for refining society's compensation practices" (1171), and (2) "that the attempt to formulate rules of decision for compensability cases has, with suggestive consistency, yielded results which are ethically unsatisfying" (1171). This leads him to hypothesize that "decisional rules simply cannot be formulated which will yield other than a partial, imperfect, unsatisfactory solution and still be consonant with judicial action" (1171).

An examination of the compensation problem, according to Michelman, must be based on an understanding of the beliefs of society that result in the requirement of compensation for some governmentally imposed harms and not for others. Michelman identifies the "'evil'" (1224) to be combatted by requiring compensation in some cases as

10. See Joseph Vining (1986), Chapter 8.

> the capacity of some collective actions to imply that someone may be subjected to immediately disadvantageous or painful treatment for no other apparent reason, and in accordance with no other apparent principle, than that someone else's claim to satisfaction has been ranked as intrinsically superior to his own (1225).

In light of this, Michelman argues that

> the only "test" for compensability which is "correct" in the sense of being directly responsive to society's purpose in engaging in a compensation practice is the test of fairness: is it fair to effectuate this social measure without granting this claim to compensation for private loss thereby inflicted (1171-1172)?

Michelman, then, will attempt to show that it is fairness that is at the base of society's demand that certain government actions entail compensation for losses incurred. But fairness is not the only possible basis for the presence of the takings clause. Another possibility is "right versus wrong," as evidenced in Richard Epstein's (1985) analysis discussed below. That is, it may be said that it is just wrong for government to take an individual's property without compensation because the property belongs to the individual as a natural right. Michelman's analysis is thus an exercise in persuading the audience that it is fairness that underlies the takings clause.[11]

Michelman claims that provision for compensation is made in some cases in order to avoid the problem (real or perceived) that A's claim to satisfaction is ranked intrinsically superior to B's. But this claim is obfuscatory. Any rule or criterion that is chosen will involve giving effect to certain interests at the expense of others. A number of possible rules or criteria may be chosen. The choice of any rule or criterion is necessarily selective, a function of the view of the world, and especially the ideology, of those who do the choosing. Any choice,

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11. Of course, a further issue is what constitutes fairness. This is discussed in detail below.

being selective, ranks one person's (or class of persons's) satisfaction as superior to another's.

We must, then, according to Michelman, look for the social purposes which determine the decision about collective intervention in the market (1172-1173).[12] One prominent social purpose is "efficiency," i.e., altering the use of social resources in such a way that the welfare of society as a whole is increased. Michelman defines an efficient proposed change as one which "after negotiated compensations have been promised by those who stand to gain from the proposal to those who stand to lose by it, ... can win unanimous approval" (1173).

Michelman further states that any change which can garner unanimous approval is "a 'gainful' (efficient) one in the only ethically sure sense" (1218, emphasis added).[13] What is an "ethically sure sense?" All ethical statements are by their very nature normative and subjective, and hence nothing is ethically sure apart from an antecedent normative premise regarding the "correct" system of ethics. Further, as this author has stated elsewhere,[14] efficiency is a metaphor. It is a scientific metaphor with a mechanistic, logical ring to it.[15] Efficiency flows out of rational maximizing behavior on the part of individual agents. This image of agents as rational maximizers, as used

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12. This ignores the fact that government is always inter-vening in the market. The actual question is what changes in the interests to which government gives effect will be allowed to take place.
13. For a discussion of the implications of unanimity, see Buchanan and Tullock (1962).
14. See Medema (1989).
15. According to Giuseppa Saccaro-Battisti, mechanistic metaphors intend to describe the properties of the political structure by comparisons with an efficient man-made mechanism; generally, they refer to the rationality of human efficiency and to the inten-tional self-conscious will of people participating in the political organization (Saccaro-Battisti 1983, 34).

in many quarters, tends to filter out each individual's psychological and sociological makeup, as well as the role of habit and custom, and substitutes a one-dimensional man.[16] This use of scientific metaphor presumably lends credibility to the analysis, and is an example of the movement by lawyer-economists to make law more rigourous (moving toward the status of science) through the application of economic methods. Efficiency is "good" or "desirable" because it is in some sense scientific. It is a rhetorical device, not a description of reality, and as prescription, it is selective.

Our ethical sensiblities would seem to dictate, according to Michelman, that potential Pareto-improving collective actions be accompanied by actual compensation.[17] Such is not the case, however. Rather it is best to allow for nonenforcement of certain compensation claims.[18] The primary reason for selective nonenforcement[19] is that requiring "full compensation to every interest which is disproportionately burdened by a social measure dictated by efficiency would call a halt to the collective pursuit of efficiency" (1178). Costs of administering the compensation apparatus and of identifying <u>all</u> gains and losses, along with the economic destabilization that would be caused by prohibitively high taxes needed to raise the necessary revenues, make

16. For an interesting rhetorical perspective on the assumption of rationality, see Klamer (1987).
17. This is what economists call a pure Pareto improvement. See Boadway and Wildasin (1984), 14-17.
18. This is what economists call a potential Pareto im-provement. See Boadway and Wildasin (1984), 14-17. It is highly questionable whether potential-Pareto-improving changes could garner unanimous support.
19. The other (less important, he says) reason is that in the long run, logrolling will make all individual accounts come out even (1177-1178). This, too is a linguistic device, a pure assertion with no guarantee that this evening out process will actually take place or even tend to take place.

the full compensation of all claims unfeasible (1178-1179). Of course, if one does not accept the normative premise that collective action should be undertaken in the pursuit of efficiency, then one will simply reject the foregoing analysis.

It is important to note, however, that Michelman recognizes, to a certain extent, the necessity of choice inherent in the compensation problem, and advocates efficiency as the decision-making criterion with the caveat that, from an ethical standpoint, logrolling will even out gains and losses in the long run. This leads Michelman to the conclusion that

> if efficiency were the only generally accepted criterion for judging governmental action which has the effect of reallocating resources, ... we would have a strong case for a compensation rule admitting of no exceptions except, perhaps, "impossibility" (meaning extreme impracticability) (1181).

But it is not preordained that logrolling will equate benefits and burdens over the long run. Logrolling is a much deeper phenomenon than one that simply evens out gains and losses over the long run. It is often a tool of power preservation, used by legislators to keep themselves in office. To the extent that individual parties or small and only nominally powerful groups are harmed, the logrolling process will be unlikely to take their interests into account. It is the entrenched power structure in society which often affects the outcomes of legislative processes, and to the extent that there is continuity in the demands of this power structure, the "evenness" which Michelman attributes to logrolling is unlikely to occur.[20]

Efficiency cannot be said to be the only goal or social purpose lying behind governmental reallocation of resources; there are also

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20. See Samuels and Mercuro (1980), 121.

distributional considerations. Michelman claims that there must be standards "which enable us to differentiate between intrinsically acceptable redistributive effects and those which seem, prima facie, to call for either compensation or special justification" (1182). What is acceptable, for Michelman, is redistribution that is not "arbitrary" and which can "command general intuitive agreement" (1182). Programs that satisfy these criteria are those whose purpose is to redistribute from the better off to the worse off.[21] But this may be no less arbitrary than redistribution from lawyers to economists. Redistribution which has an equalizing tendency is only non-arbitrary subject to a particular view of the world and its associated conception of fairness (i.e., a particular social welfare function), both of which are themselves selective. Indeed, as will be seen below, Epstein's analysis leads him to conclude that social welfare programs of the type that Michelman deems noncompensable (1182) do indeed require compensation.

Michelman further assumes, although he does not make this assumption explicit, that the correct interpretation of the takings clause allows for the rejection of compensation claims (i.e., a decision as to what constitutes a valid use of the "police power") according to what is "practical," non-arbitrary, and can "command general and intuitive agreement." This is certainly only one possible way of interpreting the takings clause, a particular hermeneutic. So again, Michelman's claims regarding the compensation problem are problematic, contingent on the use of a specific theory of constitutional interpretation.

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21. But this leaves the problem of setting the boundaries for who is considered "better off" and who is considered "worse off." Any set of boundaries is arbitrary and selective, as is the determination of who fits into each of these categories.

Michelman next discusses the standard criteria for analyzing takings cases in order to show, consistent with his premise stated above, "that none of the standard criteria yields a sound and self-sufficient rule of decision -- that each of them, when attempts are made to erect it into a general principle, is either seriously misguided, ruinously incomplete, or uselessly overbroad" (1184). These standard criteria are (1) physical invasion,[22] (2) diminution of value,[23] (3) balancing social gains against private losses,[24] and (4) private fault versus public benefit.[25] Yet, the misguided, incomplete, overbroad (or underbroad) nature of these standard criteria afflicts any criterion, rule, or standard that conflicts with one's view of the world. Under initial premises which differ from those set forth by Michelman, these

22. The physical invasion test mandates compensation for a physical takeover, by the government, of the claimant's property. See, for example, Transportation Co. v. Chicago 99 U.S. 635, 642 (1878). Michelman's basic point here is that it is nonsensical to demand compensation for all physical invasions but not for harms caused by "non-physical" violations.
23. Under the diminution of value test, the amount or degree of harm is the determinant of compensability. The most often cited representative opinion, as Michelman notes (1190, footnote 53), is that of Justice Holmes in Pennsylvania Coal Co. v. Mahon 260 U.S. 393 (1922). While not denying that the size of the loss is an important factor to consider, and that indeed, the greater is the loss, the more compelling is the case for compensation, Michelman objects that "it is one thing to admit the relevance of the size factor, and quit another to convert that factor into the conclusive litmus" (1191).
24. Under this test, police power requirements are said to be satisfied (i.e., no compensation is due) if gains to society outweigh individual losses (i.e., if the measure results in a potential Pareto improvement). For an application of this criterion, see Rochester Business Institute, Inc. v. City of Rochester 25 App. Div. 2d 97, 267 N. Y. S. 2d 274 (1966). For Michelman's arguments against this criterion, see 1194.
25. The private fault versus public benefit criterion mandates compensation "when the public helps itself to good at private expense, but not when the public requires one of its members to stop making a nuisance of himself" (1196). See, for example, the dissent of Justice Brandeis in Pennsylvania Coal Co. v. Mahon 260 U.S. 393, 417 (1922). For Michelman's arguments against this criterion, see 1201.

rules might not be afflicted with these problems, while Michelman's own resolution of the compensation problem would be shown to be subject to those very problems. Labeling alternative rules as arbitrary, misguided, incomplete, or overbroad (or underbroad) obfuscates the fact that the same charges may be levied against the rule being advocated.

B. Theories of Property

Michelman next turns to building or finding a theory of compensation practice, "looking for a clear and convincing statement of the purposes of the compensation practice, in a form which shows us how to state with precision the variables which ought to determine compensability" (1203, emphasis in original). The key here is to be found in examining the idea of property, where the idea of property means "the pattern of behavioral assumptions and ethical values which have come to be associated with institutions dictating some degree of permanence of distribution" (1203, emphasis in original). But any conclusions regarding the compensation principle are inextricably bound up in the theory of property that underlies the analysis, and the theory of property chosen manifests a particular view of the world and, especially, ideology. Thus, "clearness," "convincingness," and "precision" are not globally clear, convincing, and precise; rather, they are problematic, contingent on the adoption of, and adherence to, a particular view of the world.

1) "Desert" and "Personality" Theories

Michelman defines a "desert" theory as "one which justifies property by appeal to an ethical postulate about individual merit, asserting that property is desirable because under its regime individuals are able to get and keep what is due them" (1203).

Michelman cites Lockean natural rights theory as an example of a "desert" theory. He dismisses the "desert" theories as inappropriate for use in analyzing the compensation problem because they stand "in marked contrast to our own notably contingent and relative doctrines of ownership" (1204): "Once one admits that compensation need not be paid every time the fruits of a man's labor are devalued by collective action, Lockean labor-desert theory is of no use as such" (1204-1205, emphasis in original). Thus, Michelman is starting with the twin premises that ownership is "contingent and relative" and that compensation need not be paid every time one's goods are devalued. Certain things which come under one's sphere of ownership are not property, since if they were, compensation would be required. It is important to notice what Michelman is doing here: he is choosing a theory of property on the basis of what he believes should constitute a correct interpretation of the takings clause (i.e., that compensation is not always required), rather than interpreting the takings clause on the basis of a particular theory of property.[26] This further illustrates the contingency of analysis relating to the compensation principle.

Michelman's dismissal of "personality" theories follows a similar line. Michelman identifies Bosanquet's (1895) theory as representative here: "property furnishes the external matrix which makes possible the achievement of an integrated, purposive internal life, a unified as distinguished from episodic life experience" (1205). The problem with "personality" theories, according to Michelman, is that they "cannot

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26. Epstein (1985), on the other hand, does the latter. See below. Either way, we have the problem of the hermeneutic circle: one cannot interpret the parts apart from the influence of the whole, but one cannot interpret the whole apart from the influence of the parts.

tell us which redistributions -- out of all which may occur within a system in which permanency and security remain the underlying assumptions -- are particularly to be deprecated" (1205). Here, too, Michelman is judging the merits of a view of property on the basis of a theory of the compensation principle.

2) Social Functionary Theories

> Under social functionary theories,
>
> Private ownership is desirable simply because production cannot be expected to go forward, or consumption to be enjoyed, unless resources and product are first distributed into the separate, authoritative governance of determinate persons (1206),

and,

> all they seem to require is that stewardships over identifiable resources be accorded sufficient continuity so that the beneficial effects of order, pride, responsibility, and management may be felt (1208).

Here, the problem, for Michelman, is the opposite of that above: "social functionary theories are not offended by redistributions as such, but the refusal to pay compensation may entail certain risks or undermine the pride of ownership" (1208). But this insight comes not from the social functionary theories of property, but from the utilitarian theory of property. As we will see below, it is the utilitarian camp in which Michelman lands, and he uses utilitarian theory to aid him in choosing between alternative theories. He is not presenting and choosing between alternative theories; instead, he is describing the alternatives and rejecting them on the basis of the premises that certain cases are noncompensable and that the theories are not efficient or compatible with utilitarian property theory.[27]

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27. It should be noted that Michelman emphasizes that neither "desert" and "personality" theories nor social functionary theories have among their primary goals the output of satisfactions. It bears repeating that his selection of an

3) Utilitarian Theories

Michelman's description of utilitarian property theory draws heavily on Hobbes and Bentham:

> Property ... is most aptly regarded as the collection of rules which are presently accepted as governing the exploitation and enjoyment of resources. So regarded, property becomes a "basis of expectations" founded on existing rules ... (1211-1212).

Reflecting his (and Hobbes's) emphasis on the need for order, Michelman says that only through adherence to such a set of rules "can we hope for a minimally acceptable level of productivity" (1212),[28] since "Any unpredictable redistribution is potentially destructive of society's material wellbeing" (1212). This is a conservative theory of rights, but less so than natural rights theory. Michelman goes on to say that

> The problem, then, is to show that utilitarian property theory, applied with the utmost consistency, does not require payment of compensation in every case of social action which is disappointing to justified, investment-backed expectations (1213, emphasis in original).

This does not present a problem, according to Michelman, as long as utilitarians will agree

> that productivity cannot be measured except in terms of individual satisfactions; that maximizing such satisfactions depends ... on sound allocating; that ... the soundest of allocations cannot be reached without some collective control; and that the necessary collective adjustments of market-determined activity are bound to occasion disappointment to justified expectations, under circumstances in which it would be practically impossible to arrive at a comprehensive set of apparently "correct" compensation settlements (1213).

Social measures which increase welfare sufficiently to offset losses due to frustrated justified expectations would therefore not require compensation.

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appropriate theory of property rests on the proposition that it should have efficiency as its primary goal.

28. Notice the close resemblance between this statement and the social functionary theories of property described above.

Utility theory satisfies Michelman's twin criteria that not all losses resulting from collective action should be compensated and that efficiency is the primary goal of social, economic, and legal processes. It bears repeating, however, that these are normative premises, selected out of a myriad of possible normative premises, for choosing a theory of property and for constructing a theory of the compensation principle. Other initial premises would be likely to lead to other conclusions (as we will see below), and all of them are open to selective application. Michelman has again chosen a theory of property based on a particular view of the compensation principle, rather than interpreting the takings clause on the basis of a certain theory of property. While his method is not a priori incorrect, it is not the only method, and his conclusions are contingent on his method (as are all conclusions).

C. Utility, Fairness, and Compensation

That discourse as persuasion is an important element in analyzing legal texts is obvious from the first sentence in Michelman's analysis of how the utilitarian outcome allows one to separate compensable from noncompensable collective activities: "A strictly utilitarian argument leading to the specific identification of 'compensable' occasions would have a quasi-mathematical structure" (1214). Michelman rests his appeal for a utilitarian decision rule at least in part on its "quasi-mathematical" nature. In doing so, he is appealing to the legitimating fuction that mathematics imposes on a theory, lending it "scientific" justification as being the correct way to analyze a problem. Mathematics is simply a language and, as such, has no more claim to correctness, truth, or legitimacy than any other language. In practice, however, mathematics has tended to become much more than this. It has

become, in some quarters within the social sciences, a vehicle for status and legitimation, with the absence of mathematics relegating a discipline or a theory to the status of "non-science," thereby making it less legitimate.

Michelman says that three factors must be examined when considering the optimal utilitarian outcome: efficiency gains, demoralization costs, and settlement costs. Efficiency gains are measured by the excess of benefits over losses resulting from a change, where benefits are measured by the dollar amount the gainer is willing to pay to secure the change and losses are measured by the dollar amount that the loser would demand to avoid the change (1214).

Several things should be noted regarding the use of efficiency gains. First, there is the problem of circularity.[29] Rights must be assigned before an efficiency measure can be used, and thus one cannot use efficiency alone to <u>determine</u> the structure of rights. Efficiency calculations may take the status quo structure of rights as given and deal only with movement from that point, thereby ignoring the underlying forces which give rise to the initial structure of rights. Because of the index number problem, one cannot necessarily compare two results. The circularity problem is broken, but not solved, by making a choice as to whose interests are to be given effect, and hence how rights are to be defined. Second, benefits and costs are selectively perceived, both due to the role of ideology operating on the lenses through which the evaluator examines benefits and costs and because of unequal access to government. Third, there is a moral hazard problem in determining how much the parties involved "are willing to pay" for or "demand to avoid"

29. See the discussion of the circularity problem, above.

the change. This problem occurs because those who are harmed are the only ones who know the subjective value of their harm, and they can inflate this value when reporting it to the court in order to garner a windfall gain. Finally, as described above, the word "efficiency" is a metaphor which may obfuscate the fact that certain interests are given effect at the expense of others.

Michelman argues that positive efficiency gains are desirable in a utilitarian system (1214-1215). The flip side of this is that they may not be desirable in a non-utilitarian system, so that the desirability of efficiency gains depends upon adopting a utilitarian view of the world (toward which he is persuading us with his scientific rhetoric based on its efficiency properties).

Michelman defines demoralization costs as

> the total of (1) the dollar value necessary to offset disutilities which accrue to losers and their sympathizers specifically from the realization that no compensation is offered, and (2) the present capitalized dollar value of lost future production (reflecting either impaired incentives or social unrest) caused by demoralization of uncompensated losers, their sympathizers, and other observers disturbed by the thought that they themselves may be subjected to similar treatment on some other occasion (1214).

Demoralization costs are imputed from responses of "ordinarily cognizant and sensitive members of society" (1215-1216). But, the determination of who makes up this group of people will directly drive the results obtained, since these criteria, and hence the determination of demoralization costs by those who satisfy the criteria, are selectively perceived. What constitutes "ordinarily cognizant and sensitive" is a function of one's view of the world, rather than an obvious <u>a priori</u> distinction. Further, demoralization costs may differ, depending on the initial presumed structure of rights. This applies to settlement costs

as well. Optimization along these lines through judicial decisions gives effect to judicial determination of rights.

Settlement costs are measured by "the dollar value of the time, effort, and resources which would be required in order to reach compensation settlements adequate to avoid demoralization costs" (1214).

The evaluation of demoralization and settlement costs is fraught with the same selective perception and moral hazard problems that pertain to efficiency gains. "Sentimental value" is just one problematic example of the problems involved in evaluating settlement costs.

From purely utilitarian considerations, the compensation rule that emerges is that compensation must be paid whenever settlement costs are lower than both demoralization costs and efficiency gains (1215). What Michelman fails to realize, however, is that government determines its portion of the settlement costs. This gives the legislature or judiciary virtual carte blanche in determining what cases will be compensated. Moreover, any outcome engendered by the use of this rule reflects the inexorable selective perception of benefits and costs.

If compensation is presumed to rest on strictly utilitarian grounds (i.e., minimizing demoralization costs which have adverse effects on the production of goods and services), an implicit assumption is that what appear to be deliberate government-induced losses have adverse effects that "have a special counterproductive potency" beyond those from other types of losses (e.g., from the market) (1216). The need for compensation arises because people fear being systematically, as opposed to randomly, exploited. People can adjust adequately to randomly determined losses, says Michelman, but not to deliberate and

systematically determined losses.[30] Thus, compensation serves the psychic balm function of quieting people's unease about the possibility of being strategically exploited (1217).

One can assume that Michelman would categorize market-determined losses as random. To categorize market-determined losses as random, however, is to mask the forces that lie behind the operation of the market, such as law. Market-generated outcomes are reflective of the prevailing power structure in society which forms, operates through, and enforces market behavior. Further, many "markets" are administered, and their outcomes are certainly not random; rather they are somewhat systematic. Yet such losses are not compensable here.

Moreover, there is no a priori reason to expect that the marginal utility of a one dollar loss resulting from collective action is different than that from a one dollar loss due to, say, a flood. Michelman is making the explicit assumption that these marginal utilities do differ (1216), but this is not an assumption inherent in utilitarianism. It is due to the selectivity permitted, if not abetted, by his discourse.

Michelman says, however, that it is not the purpose of his essay to make a case for utilitarian ethics (1218). Considerations of fairness are also very important in deciding on compensability. He adopts the Rawlsian concept of "justice as fairness" and adapts it to the compensation principle. Rawls's analysis leads him to formulate the following two principles: first, that social arrangements should "assure to each participant the maximum liberty consistent with like liberty on the part of every other participant" (1220), and second, that

30. But this is, after all, an assumption.

> an arrangement entailing differences in treatment is just so long as (a) everyone has a chance to attain the positions to which differential treatments attach, and (b) the arrangement can reasonably be supposed to work out to the advantage of every participant, and especially the one to whom accrues the least advantageous treatment provided for by the arrangement in question (1220).

Rawls's two principles would be applied to a test of justice as follows:

> Analogous to the equal liberty principle would be a rule forbidding all efficiency-motivated social undertakings, which have the prima facie effect of impairing "liberties" unequally, unless corrective measures are employed to equalize impacts. The second principle, however, would permit a departure from this uncompromising rule of full compensation if it could be shown that some other rule should be expected to work out best for each person insofar as his interests are affected by the social undertakings giving rise to occasions of compensation (1221).

Thus,

> A decision not to compensate is not unfair so long as the disappointed claimant ought to be able to appreciate how such decisions might fit into a consistent practice which holds forth a lesser long run risk to people like him than would any consistent practice which is naturally suggested by the opposite decision (1223).

Several important things should be noted regarding Michelman's conception of a fair compensation rule. The first is the imputation of rationality to individuals. (He does this tacitly in the above quote, and does so explicitly on 1229.)[31] The problems with this are discussed above and will not be repeated here.[32] If it is determined that compensation is not due when the government removes one of Alpha's property rights, resulting in what Alpha perceives to be a substantial loss, can we really expect that Alpha will just shrug her shoulders and say that the outcome is for the best in the long run? Perhaps so, but one thinks not.

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31. "... the rational actors of the fairness model must be expected to see that the relevant comparison is between large losses and small losses -- not between those which are and are not accompanied by partial evictions" (1229).
32. See above.

Second, as regards the equal liberty principle, it cannot be objectively determined whether liberties are impaired unequally. Furthermore, the status quo structure of entitlements is assumed here to be the "correct" one. Without this assumption, it could be said that the decision against change impairs the liberties of those who would be benefitted by the change. Selective perception and unequal access to government are again operative here.

Finally, there is the problem of adopting the Rawlsian conception of "justice as fairness." The voluminous literature critical of the Rawlsian position should be sufficient testimony to the fact that numerous criteria of fairness could be employed.[33] Differing criteria of fairness will obviously lead to differing implications as to when compensation is and is not due. What constitutes a fair compensation rule is thus tautological with one's conception of fairness.

While it is possible that the utilitarian and fairness approaches will yield divergent results in some cases, Michelman says they will often yield similar results. The reason is that the long run risks with which the fairness doctrine is concerned will clearly be minimized by requiring compensation when settlement costs are low, when efficiency gains are dubious, and when demoralization costs are high. This is exactly the rule advocated by the utilitarian approach. The use of the Rawlsian conception of fairness thus leads to the same compensation rule as the utilitarian approach. The rhetorical doors this opens are not lost on Michelman, who goes on to subsume both the fairness and utility approaches under the word "fairness" in order "to signify that apparent evenhandedness which a utilitarian approach may be understood as

33. See, for example, Berger's (1974) fairness criterion described below.

requiring" (1226). These considerations emphasize even more the need to recognize that there are alternative conceptions of fairness, conceptions which would not have the same utilitarian implications for the compensation principle.[34] One cannot simply say that in most cases the fairness and utilitarian outcomes are identical, or that utilitarian outcomes are "fair," since fairness is a highly normative and selectively defined concept. This definition of fairness, then, buys him the utilitarian outcome and the fairness outcome -- he gets "quasi-mathematical," scientific status, and still gets "fairness."

Michelman acknowledges the problems involved in getting adequate information to make an "objective" fairness judgment. The judge's decision will necessarily be subjective:

> His judgment will have to reflect his answer to the question: ought the affected individual to find this challenged decision acceptable because principles which can be said to be manifested in it promise risk-minimizing results over the long run (1248-1249)[35]

The likely result will be the emergence of a set of "partial, imperfect, or overbroad surrogate rules" from which judges may choose in order to gloss over the fact that they are simply telling the plaintiff that his sensation of having been victimized is incorrect (1249). The judge, then, determines the result he believes to be fair, and the "rule" chosen is used as a prop to

> imbue that decision with the appearance of ordinariness and impersonality, thereby enabling the judge to decide the "correct" issue (that of fairness) without being intolerably dictatorial or smug about it (1249-1250).[36]

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34. Moreover, if a different conception of efficiency, such as Pareto optimality, were used, we may not get this equivalence.
35. This, of course, assumes that the judge adheres to a Rawlsian conception of fairness.
36. Frederick Schauer makes a similar point: "it is difficult to deny the existence of decisionmakers who consult the rules only to

But since any conception of fairness adopted by the court is selective, the citation of a particular rule as the basis for the decision becomes a mask for the selective implicit definition of fairness employed to decide the case. Again, ideology and selective perception play a prominent role.

Since the courts cannot be counted on to decide cases based on the fairness principle, Michelman says that a rule must be found which closely approximates the results of the fairness principle. Not surprisingly, Michelman suggests the utilitarian approach. Such a rule might state that compensation is due only in cases of "(a) physical occupation, or (b) a nearly total destruction of some previously crystallized value which did not originate under clearly speculative or hazardous conditions" (the diminution of value approach) (1250). Both the physical-occupation and the diminution-of-value approaches are consistent with the utilitarian view as set forth by Michelman.[37] Michelman offers this defense of his rule:

> Such a rule would be workable; it would be internally consistent; and it would be ethically inoffensive so far as it goes. True, its cutoff points are arbitrary, and it completely disregards some significant but less discernable dimensions of fairness. But these attributes in the rule would merely refect its function as a rule for courts to use in the partial performance of a task for which judicial capabilities are not fully adequate (1250-1251, emphasis in original).

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create post hoc rationalizations" (Schauer 1988, 530). White makes this point somewhat more strongly:

> One great vice of theory in the law is that it disguises the true power that the judge actually has, which it is his true task to exercise and to justify, under a pretense that the result is compelled by one or another intellectual system (White 1985, 123).

Elsewhere, he says that "Honesty requires the judge to acknowledge that his own acts of choosing cannot be wholly explained or justified" (White 1984, 269). Given the inexorable necessity of choice with regard to rules or precedents applied to a case, it seems that we cannot escape from post hoc rationalizations.

37. See Michelman (1967), 1226-1234.

This position, too, has its problems. First, the rule is ethically inoffensive only if one assumes that the population holds to a Rawlsian conception of fairness. If such a conception is not held, then we are left with workability and internal consistency. For example, Epstein (1985) likely considers his Lockean natural rights approach to be fair, but yet his rule implies a far wider-reaching compensation practice than does Michelman's. There are numerous possible rules, both much broader and much narrower than Michelman's, that satisfy the criteria of workability and internal consistency. Further, the terms "workable," "internally consistent," "ethically inoffensive," "arbitrary," "for courts to use," "partial performance," and "not fully adequate" merely obfuscate the fact that a decision rule is selectively chosen.

Thus, wrapping property and the judicial process in a blanket of Rawlsian fairness and utilitarian calculus is no more "correct" than any of the other approaches that could be formulated. Ironically, Michelman unknowingly points this out in the passage quoted just above. The choice of fiber for the blanket is just as ideology-driven as the objects around which the blanket is wrapped.

III. Joseph Sax's Private Property and Public Rights

A. The Scope of Property

Joseph Sax (1971)[38] attempts to break away from the traditional notion of property rights which deals solely with activities that take place within the physical boundaries of a user's property. Under traditional property rights theory,

38. Unless otherwise noted, all page citations in this section are to Sax (1971).

> Nearly every attempt to regulate the private use of land, water, and air resources may be claimed to violate the takings clause. This conflict, along with other aspects of the campaign for environmental quality, suggests the need for a reconsideration of the notion of property rights (149-150).

Sax goes on to note, moreover, that "The abandon with which private resource users have been permitted to degrade our natural resources may be attributable in large measure to our limited conception of property rights" (150, emphasis added). Sax is making the assumption, then, that environmental quality, somehow defined, is antecedent to an individual's claim to the use of his or her land. To say that people "degrade our natural resources" with "abandon," presumes that by using one's own land as one sees fit one is operating in a careless manner, and that others have some claim on natural resources ("our natural resources") that is ethically superior to that of the landowner.

What needs to be recognized, says Sax, is that property is "an interdependent network of competing uses, rather than ... a number of independent and isolated entities" (150), and that we should

> put aside both the idea that ownership of property necessarily implies a government guarantee to profit from it when and as the owner in his sole discretion wishes, and also the idea that the rights of property can be identified merely by looking to the effects within the the boundary lines of a single owner ... (169).

Judicial recognition of this conception of property rights would necessitate an overhaul in the way that takings cases are decided and in the creation and recognition of rights. It is important to note, however, that Sax is making a normative assumption here about how property should be defined. This assumption, in turn, plays an important role in his proposed solution to the compensation problem.

In taking this position, Sax recognizes the dual nature of all rights, property and non-property. Physical property boundaries are not

the true boundaries of the effects of one's use of property. The exercise of a property right by Alpha is a limitation on the activity of Beta, and thus may be a use of, or demand upon, property beyond the physical border of Alpha's property. Thus, demands of freedom to use one's property arise from both sides of a dispute, e.g., the strip miner desires to mine on his or her property, while the homeowner adjacent to the mine desires to live in a pollution-free environment. One cannot say that one party rather than another is causing the harm, since the homeowner's presence and desire for a pollution-free environment is as much a cause of the harm as the owner whose factory is emitting the pollutants, which are only harmful subject to a competing use.[39]

As Sax notes, the implications of this for the takings clause are enormous. A ruling in favor of the mining company could be seen as taking private property from the homeowner, while a ruling in favor of the homeowner could be seen as taking property from the miner. A decision rendered for either side, then, would require compensation. This would be both a great expansion in the present scope of the takings clause and an enormous drain on the government treasury. Yet it is a logical implication of the nature of externalities and rights (153). The fact that it is not followed points to the selective nature of compensation resolution, which functions to determine rights. Sax claims that compensation law has dealt with this problem by assuming that "the government's action affects only the party who loses because of the regulation imposed" (154). Thus,

> It hardly seems appropriate, when government intercedes to settle the conflict, to find that a "taking" has occurred simply because the uses one owner was formerly able to make within <u>his</u> boundaries have been curtailed (154-155, emphasis in original).

39. See Coase (1960).

Sax is, then, declaring a certain class of cases to be non-takings. This, however, obscures the necessity of choice inherent in the compensation problem. Some decision making criterion must be chosen, but the choice is necessarily selective, being conditioned on the chooser's view of social reality. Thus, whether a particular criterion is "appropriate" is subject to one's view of social reality. Since no such view has an a priori claim to "truth" or "correctness," one cannot conclusively say that traditional practice is bad or incorrect.

It is important to note what Sax does not say here. If one subscribes to the view that property is property because it is protected by government, then a decision between competing uses is a declaration of one owner's interest as property and the other owner's interest as non-property. Indeed, this is the fundamental point to be made here. In such cases, government is not depriving one party of a right; it is, rather, declaring Alpha to have a right and Beta to not have a right. Beta is thus exposed to Alpha's exercise of this right.

B. Public Rights

Sax also wishes to expand the scope of the takings clause and of compensation practice through the recognition that public rights are on a par with private rights: "At present, the idea that public rights can prevail over private rights appears in the law only sporadically, as in navigation servitude, public nuisance, and the public trust doctrines" (155). Public rights should be recognized in such things as flood control, erosion, the structure of the economy, scenic areas, and areas which are historically and scientifically valuable (158-159). The rationale for this position is that diffusely held interests should have

as much claim to the resource base as do narrow or concentrated holdings.[40]

Several things should be noted here. First, this is, at the very least, a normative assumption; at the very most, it is a fiction which says that many are to be treated as if they were one.[41] Second, if one believes that a right is a right because it is protected by government, then Sax's scenario of public rights competing with private rights involves a "fictional" use of the word right, since the public and private claims are merely "interests" until one or the other is given the force of law. This use of a fiction (treating an "interest" as if it were a "right") imbues the public claim with added legitimacy by giving it the status of a right. Third, what is a "public" right (interest)? Does "public" mean unanimity (aside from the opposing private claim in the case at hand)? Majority? Some sub-majority percentage? Any such distinction is selective, while at the same time it would greatly affect the range of possible claims. That is, what constitutes a public interest is subject to selective perception and definition, as there is a strong tendency for Alpha to equate her agenda with the "public" interest, while claiming that Beta's agenda promotes "private" interests. Fourth, regarding issues such as flood control when there is

40. It is the concept of public rights that is the major force in Sax's repudiation of his earlier analysis of the taking issue [Sax (1964)]. In his earlier paper, he sets up a dichotomy between the government acting in its arbitral capacity and government acting in its entrepreneurial capacity. Losses owing to the latter were said to require compensation while losses result-ing from the former were not, owing to their police power justification. Regarding this, Sax says that "Much of what was formerly deemed a taking is better seen as an exercise of the police power in vindication of ... 'public rights'" (Sax 1971, 151). This provides a telling illustration of the necessity of choice in the resolution of the taking problem.

41. This is not unlike the fiction of the corporation as a person. See Samuels and Miller (1987).

a single upper-lying landowner and a collection of lower-lying landowners, the public right (interest) issue raised by Sax is a false one. The public right (interest) here is merely the collection of private rights (interests) of the affected individuals in their land. Sax is raising a selective distinction here, that these rights are somehow public rather than private, and hence their vindication does not require compensation. That diffusely held interests have traditionally not been deemed superior apart from the areas which Sax cites merely points to the role of selective perception in identifying benefits and costs, rather than necessarily implying a systematic dismissal of publicly held interests.[42]

Thus, under a prevention-cost minimizing decision criterion, if the cost to the mining company of keeping the adjoining property pollution free is less than the cost to the owner of the adjoining property, it should not matter, in terms of which party the burden is assigned to, whether the adjoining parcel is a single parcel owned by one person or many parcels owned by many persons. These diffusely held interests, then, should be recognized as public rights, and should be recognized within the social decision making process. Further, to assure compensation to a private property owner when a decision is rendered in favor of a more general public claim and to deny compensation when a decision is rendered against the public claim is to skew the political resolution of conflicts and deny the recognition of

42. If the courts were to follow Sax's dictum and declare public rights in the structure of the economy, the revenue-related problems involved in compensation would be immense. Every additional dollar of government expenditure, or change in government expenditure from one use to another, changes relative prices (including the returns to labor and capital) in the economy. The government would, under Sax's criterion (see below), be required to compensate owners for these losses.

public rights (159-160). What Sax desires to do, then, in the analysis presented above, is "to put competing resource-users in a position of equality when each of them seeks to make a use that involves some imposition (spillover) on his neighbors, and those demands are in conflict" (161).

C. Takings and the Police Power

The key distinction to be made in distinguishing between a "taking" and a legitimate use of the "police power" is, according to Sax, whether conflict-creating spillovers are present. Spillovers are said to occur in (i) cases where Alpha's use of his property results in a physical restriction on the uses to which others can put their land (161); (ii) cases of "the use of a common to which another landowner has an equal right" (161);[43] and (iii) cases of a use of property that "affects the health or well-being of others ... or a use of property that imposes an affirmative obligation on the community" (162).

The implications of this analysis for the compensation problem are simple:

> The only appropriate question in determining whether or not compensation is due is whether the owner is being prohibited from making a use of his land that has no conflict-creating spillover effects. If the answer is affirmative, compensation is due for the value of land for that use (164).

This compensation criterion protects private property from redistributions that would merely benefit a neighbor's property interest

43. Sax's claim that each has an "equal right" is a rhetorical device which masks a crucial distinction between rights and interests. The other landowner does not have an "equal right," but rather a "competing interest." The decision, made by the court, between these competing interests, assigns the status of right to one use and that of duty to the other use, based on a criterion which gives superior status to one of the competing interests. Further, to say that two interests are equal is selective, since the value of these interests cannot be discerned with certainty.

or make society better off (that is, no spillovers, as Sax defines them, are removed) (166). Note that if an interest is not property until it is protected, then this statement is circular. What is important here is that choices are made which provide an escape from, but do not solve, the circularity problem. Further, this rule would provide for compensation in cases of discriminatory government action -- when the government chooses to impose the loss on A when it could just as easily have imposed the loss on B, C, D, ... who are situated similarly to A (169).[44]

The question remains how to decide between conflicting interests in the spillover cases, or, more fundamentally, on what basis certain interests should be given the status of property and others not. Sax is very clear in this regard:

> It is the main view of this article that the goal of a system which regulates property rights should be the maximization of the output of the entire resource base upon which competing claims of right are dependant, rather than the maintenance of the profitability of individual parcels of property. As a rule of thumb, it may be said that the proper decision as to competing property uses which involve spillover effects is that which a rational single owner would make if he were responsible for the entire network of resources affected, and if the distribution of gains and losses among the parcels of his land were a matter of indifference to him (172, emphasis added).

Several things should be noted with regard to this rule. First, to say that output maximization alone should be used to determine rights is circular. Output maximization requires a prior specification of the structure of rights, and thus one cannot determine rights on the basis

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44. But in the case of spillovers, the government could just as easily impose the loss on Beta as on Alpha (the dual nature of externalities). It seems that in such cases compensation should be paid on the grounds of discriminatory government action. However, Sax says that no compensation is due in the case of spillovers, and hence is selective as to when discriminatory government actions should and should not require compensation.

of output maximization alone. Further, once this structure of rights is changed, the form of the output maximization decision may also change. Since the output maximizing outcome is a function of the structure of rights which underlies it, it is circular to say that output maximization should determine the rights assignment. This circularity is broken, but not solved, by making an assumption that allows one to define rights.

Second, determining an output maximizing solution requires a weighing of benefits and costs. Benefits and costs, however, are selectively perceived. Sax indirectly (and incompletely) acknowledges this when he says that information for making such evaluations is incomplete. He goes on to say, however, that time will increase the government's information set, so that in the long run correct choices will be made (175). This, however, misses the main point. Benefits and costs will continue to be selectively perceived by those who control government. This selective perception is a function of ideology, and can be used to advance the desired program of those in power. The government's information set, then, will be internally limited.

Selective perception is also operative in the identification of spillovers. Identifying spillovers involves identifying benefits and costs, and since benefits and costs are selectively perceived, so are spillovers. The identification of spillovers determines whether a government action is a legitimate exercise of the "police power" or a compensable taking, and thus is a matter of considerable importance. Thus the spillover-versus-no-spillover decision will not lead to an "objective" determination as to whether a taking has occurred. That spillovers are selectively perceived can be seen merely by examining

Sax's criteria for what constitutes a spillover. It is certainly possible to define spillovers much more broadly than Sax has. Indeed, it may be said that any use that Alpha makes of his property has spillover effects since that land cannot then be used by Beta. Further, the ambiguity of each of these spillover criteria leaves the door wide open for selective application. As regards the third criterion, the "health or well-being of others" can be given a broad or narrow interpretation, and such interpretations are largely ideology-driven.

To take one of Sax's examples, assume that an upper-lying landowner is prohibited from mining on his land because of spillovers onto a lower-lying landowner. Sax says that the legislature cannot require the mine-owner's land to be used as a parking lot for the lower landowners (who own, say, a shopping mall located on their land) without payment of compensation, since to do so would require the miner to forgo profit from a use which does not cause spillovers (e.g., since he is prohibited from mining, he could open a gas station on the land). Compensation is required, according to Sax, because "the [upper] landowner has a constitutional right to make those uses [which do not cause spillovers]" (163, emphasis added), even though such uses "may adversely affect the usefulness of the lower land which badly needs additional parking space" (163).

Two things should be noted here. First, to say that the upper landowner has a "constitutional right" to make uses of his property which do not cause spillovers is incorrect. Such is the case only subject to a specific interpretation of the takings clause. Moreover, some may say that right does not exist unless it is protected by government -- i.e., unless the court says it exists. Second, and more

importantly, Sax's acknowledgement that such uses "may adversely affect the usefulness of the lower land" is an acknowledgement that spillovers are in fact occurring, and that, according to Sax's rule, compensation is not due to the upper owner if the court decides that the lower owner may use the upper owner's land for a parking lot. This serves to further emphasize the ubiquitous nature of spillovers and the selective perception that attends their definition and identification. One could make the case, then, that Sax's compensation rule would result in all losses being noncompensable.

Finally, this is a selectively chosen decision rule (as all decision rules are), embodying, as it does, the value judgment that "maximization of total net benefits is a principle goal of the property system" (174). It does not necessarily promote "equality of treatment among competing resource uses" (167) any more than does a rule which addresses only the party that is being harmed by the government's restriction. Sax solves the necessity-of-choice problem by giving uses which are more "valuable" (in dollar terms) superior status, claiming that distributional issues are not important. This, however, is selective, both in the choice of an efficiency criterion and in giving effect to the price structure which itself is a function of the existing distribution of rights. Other criteria may lead to opposing results. Suppose that the maximization of total net benefits gives the right to be free from pollution to the homeowners who built their homes next to an existing brickyard. A first-in-time rule would yield the opposite result. Moreover, a first-in-time rule may well mandate compensation in such cases, as the spillover-versus-no-spillover distinction is not relevant.

Further, Sax is making the assumption that "rationality" is an important and determinate concept which should govern human affairs, and that judges can infer what a rational single owner would decide. The problems with this assumption are dealt with in the discussion of Michelman above, and will not be repeated here.[45] The choice of the spillover versus no-spillover criterion, the choice of an output-maximizing decision rule in the presence of spillovers, and the selective perception and identification of what constitutes a spillover, renders invalid Sax's claim that this criterion "prevents a use of property from being restricted without compensation simply because a neighboring demand would provide a greater net benefit to the society" (162).

D. The Costs of Accommodation

The problem that remains, according to Sax, is that of allocating the costs of accommodating the regulation (177). That is, if it is determined that the output-maximizing solution to the upper- versus lower-landowner conflict is that the lower landowner has a right to be free of the pollution caused by the upper owner, who should bear the cost of removing the pollution? There are two possible choices: (1) the regulated party, and (2) the beneficiary of the regulation. As in the case of the spillover decision rule, it cannot be said who is causing the harm, so the costs of accommodation cannot be assigned on this basis (177).[46]

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45. See above. See also Klamer (1987).
46. James Buchanan and William Stubblebine (1962), in discussing the Pigouvian tax/subidy approach to externality correction, say that both parties should be taxed (or receive a subsidy) so that all external costs are internalized to the parties in question (383). The general consensus among economists, however, is that this view is incorrect.

The appropriate rule for deciding on the allocation of these costs is to assign the costs to

> that constituency which, if charged with the cost of accomodating the conflict, would have a large stake in a lower cost solution, and which is capable of organizing to cope with the problem (182).

That is, the costs should be assigned to the least-cost avoider.

Again, several important things should be noted regarding this rule. First, the same circularity problems that afflict the output-maximizing criterion are operative with regard to this least-cost allocation rule.[47]

Second, since benefits and costs are selectively perceived, there is no conclusive way to identify the least-cost avoider. An important example of this is the distinction between long-run and short-run cost-minimization. If one assumes that the rule is to assign costs to parties who are least-cost avoiders over the long run, then short-run interests are assumed to be inferior to long-run interests. Of course, the converse holds if the rule is to minimize costs in the short run.[48] Either way, one is making a choice as to whose interests are to count (for example, in the social discount rate chosen), a distinction that is selective, since neither the long run nor the short run has an *a priori* claim over the other.

Third, the least-cost avoider decision rule has no prior claim to legitimacy over any other rule. Its claim to legitimacy is contingent on the adoption of a particular view of the world. Thus, this rule has no more claim for adoption than a rule that assigns costs to the regulated parties in all cases, one which assigns costs to the bene-

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47. See above.
48. Of course the short- versus long-run problem is not an issue if the same party is the lower-cost avoider in both the long and the short run.

fitted party in all cases, or one which does not deal with cost-based criteria (such as a first-in-time rule). While invoking the image of "cost-minimization" does have a certain rhetorical appeal in some quarters (creating the image of "scientific" analysis through the use of economic methods), it is rhetoric, and not truth. The elevation of this rule over others is thus selective.

Finally, the juxtaposition of this cost allocation rule with the spillover rule reveals perhaps the most important illustration of the selectivity in Sax's analysis. Two things should be recalled here: (1) the court, in deciding between Alpha and Beta in a spillover case, assigns the right to be free of pollution to Alpha and hence the exposure to that right to Beta;[49] (2) the first decision made is that concerning rights vis-a-vis the spillover, and the second decision is how to allocate the costs of accommodation. If the court then allocates the costs of accommodation to Alpha, it is saying that Alpha has a right to be free from pollution, but that Alpha must erect a barrier around his property or pay Beta to install pollution abatement equipment in order to experience this freedom. In such a case, Alpha's right is vacuous; indeed, Alpha has no right at all. If Alpha has the "right" to be free from pollution, then Beta must either reduce the level of emissions or strike a bargain with Alpha to pay for the value of the damage that Alpha incurs from the pollution. Thus, to assign a right to Alpha and then allocate the costs of accomodation to Alpha is to deny the right which was given to Alpha in the first place.

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49. Of course, the court may decide that Beta has the right to pollute and that Alpha has an exposure to the exercise of that right. For the sake of brevity, only the former case is discussed here. The reasoning for the latter case is analagous.

IV. Lawrence Berger's First-in-Time Approach

A. The Goals of a Compensation System

Lawrence Berger (1974)[50] defines the compensation problem as follows: "When should the government pay compensation to those persons it harms in [its] various activities" (166)? In light of this, Berger attempts, in his analysis, "to define the goals a compensation system should accomplish, to critically evaluate the prior proposals in light of those goals, and finally to propose a theory which more nearly approaches them" (166). It should be recognized, however, that Berger's criticisms of other proposals/theories and the theory he proposes hinge crucially on the goals he sets forth for a compensation system. He implicitly admits as much in the passage quoted above when he speaks of defining the goals that a compensation system should accomplish. To the extent that one does or does not accept his goals (and, correspondingly, his constitutional interpretation), his own theory and his criticisms of other theories have more or less conclusivity.

Berger says that any compensation system should satisfy the fundamental goals of fairness and efficiency. "First and foremost," says Berger, "the result must be fair" (167). While acknowledging that the term "fair" is difficult to define, Berger says that a decision is fair if it is in basic accord with the community's sense of justice (167). This, however, leaves wide open the interpretation of what offends the community's sense of injustice. One's perception of what the community believes is just is colored by one's view of the world (and especially ideology), and hence is selectively perceived. Moreover, there is the question as to what constitues the "community."

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50. Unless otherwise noted, all page citations in this section are to Berger (1974).

It is unlikely that all members of a community hold to the same conception of justice.

How do we then determine which conception should be the determining one? Presumably, Berger's answer would be that one which has the greatest amount of support (which may or may not constitute a majority of the community's population). In giving effect to this sense of justice, the court would be (and Berger is) elevating the interests of one group over other groups for the simple reason that more people believe one way than any other way. This is but one way of discerning justice, and as such may subject the many to the tyranny of a few. Further, defining fairness as that which comports with the community's sense of justice is only one out of many definitions of fairness that could be chosen, and it has no prior claim to legitimacy over any other definition. Finally, there is no a priori reason why fairness should be the primary goal of a compensation system.[51] The selectivity element is operative in all of this.

The second goal of a compensation system, according to Berger, should be economic efficiency. He follows Ellickson (1973) here in defining the efficient result as the one which minimizes the sum of (i) nuisance costs (generated by harmful externalities), (ii) prevention costs (includes non-administrative costs and opportunity costs incurred by the creator or the victim of a nuisance to reduce the level of nuisance

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51. Interestingly, Berger claims that Sax's (1964) compensation criterion based on the distinction between government acting in its enterprise capacity (requires compensation) and government acting in its arbitral capacity (does not require compensation) is "unfair" because the public would view this enterprise versus arbitral distinction as arbitrary (179). Yet, Berger fails to realize that the same is true of his selection of fairness and efficiency as compensation criteria and of his selection of one definition of fairness over other possibilities.

costs), and (iii) administrative costs (the public and private costs of gathering information, negotiating, writing laws, enforcing laws, and arranging for the execution of nuisance-control measures) (169). Again, several things should be noted with regard to the efficiency argument. First, as discussed above, these costs cannot be determined apart from an underlying structure of rights. Therefore, to say that rights can be determined solely on the basis of which assignment of rights leads to the most efficient (or cost-minimizing) result is circular.[52] Second, it must be recognized that benefits and costs are selectively perceived. Thus, a particular cost-minimizing outcome is cost-minimizing only relative to those persons whose costs are given effect to. The parties whose costs are given effect to are determined by the perspective (ideology) of the observer/evaluator and by the parties's access to government, which is asymmetrically distributed across persons.[53] Third, this is only one of several possible efficiency criteria that could be used, and different efficiency measures may lead to different outcomes. Fourth, as established above,[54] the efficiency criterion has no prior claim to legitimacy for resolving the compensation problem apart from a particular view of the world. The invocation of the efficiency argument can be seen as persuasion toward, and a manifestation of, a particular view of the world through its appeal to economic/scientific rigor.

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52. Again, people break, but do not solve, the circularity problem by making an assumption that allows them to determine rights.
53. Berger objects to Michelman's efficiency criterion based in part on the problem of calculating demoralization and settlement costs. Yet, he does not acknowledge that the same problems apply to his own cost-based criterion.
54. See the discussions of Michelman and Sax, above.

B. The First-in-Time Approach

Berger advocates a first-in-time approach to the compensation problem. Stated most simply, this approach says that if a prior lawful activity is harmed by a subsequent lawful activity, both fairness and efficiency demand that the costs of eliminating the harm to the earlier lawful activity should be borne by the subsequent activity. More specifically,

> Every realty owner should be protected in his reasonable expectations as of the time of his purchase or other detrimental act with respect to the property with regard to those variables under government control that affect its value. If at that time the owner did not know or should not have known of government plans for an act which later substantially decreased the value of his property, then compensation should be paid. The effect of this rule would be to internalize to the state the costs of the uncontemplated changes it initiates, thus preventing it from unfairly visiting them upon others (196, emphasis added).

Thus, only if reasonable expectations have not been violated do we have a legitimate exercise of the "police power." Otherwise, the government activity is a "taking," and hence compensation is due. Although Berger does not mention this, the first-in-time rule tends to give very narrow scope to the "police power."

Berger treats gains arising from government activity symmetrically:

> If at the time of his purchase the owner did not know and should not have known of government plans for an act which later substantially increased the value of his property, then he ought to pay the windfall increase in value to the government (196).

Several things should be noted here. First, what is meant by the terms "reasonable expectations," "should not have known," and "substantially decreased?" These terms are subject to selective perception, definition, and application, and hence can be used to justify almost any decision that comports with the judge's view of the

world. Since the definition of these terms determines when compensation is and is not due, and therefore who has what rights, the importance of, and selectivity inherent in, the content given to these terms cannot be overstated. Second, this criterion is only "fair" subject to a specific conception of fairness. For example, if one believes that fairness means equality of wealth, then an assignment of rights based on harming the party whose wealth is greater is the fair rule, regardless of who was first in time.[55] Third, even if we were to allow that the community's sense of justice is the definition of fairness that should be used, to the extent that the "community's" conception of fairness cannot be discerned with certainty, and is nonetheless selectively perceived, one cannot say that this compensation rule is inherently "fair." Fourth, the first-in-time rule presumes that "time" should be the operative concept regarding land use, and that "first" should be the specific application with regard to time. This is essentially a Lockean natural rights theory view of property. Yet, time itself, and being first-in-time, have no conclusive prior claim to legitimacy as defining concepts for the resolution of the compensation problem. Instead, such a rule legitimizes and reinforces the status quo structure of rights where there is no conclusive a priori reason for doing so. Further, the treatment of new rights (those which do not exist in the state of nature, such as new technology) is problematical under a first-in-time rule, since these rights inevitably impinge on other rights. A first-in-time rule seems to comport well with Western ideology, but this

55. Of course, there is also selective perception operative in determining who has greater wealth, and in whether we should evaluate the wealth of each party based on the pre- or post-compensation price structure.

merely serves to emphasize the role of ideology in the resolution of the compensation problem.

Berger says that the first-in-time rule also has economic efficiency advantages. The internalization to government of both the positive and the negative externalities that result from its activity (by requiring government to compensate for negative externalities and be compensated for positive externalities it generates) encourages efficient and discourages inefficient uses of resources. The circularity and selective perception problems operative here have been dicussed extensively above, and will not be repeated here.[56] But even if one were to overlook these problems with efficiency and make it a goal of the compensation system, there is no reason to expect that a first-in-time rule would be the most efficient rule. There is no independent test that would conclusively determine the most efficient rule because the efficiency of a rule depends on rights, which are the object of determination. The argument may be made that, since the primary goal of the system is fairness, these other possible rules do not satisfy the goals of the compensation system because they fail to satisfy the fairness criterion. But, the choice of a fairness criterion is selective, and by no means conclusive.

A further problem remains. Berger claims that even if reasonable expectations have been violated, compensation is due only for losses "considerably greater than the reasonable costs to the government of administering the claim" (224).[57] Correspondingly, repayment is due

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56. See above.
57. Berger would require that the losses be at least 50 percent greater than the administrative costs (224, at note 140). He admits that the choice of this percentage is "arbitrary" (224, at note 140), but does not seem to recognize the strong implications

only for substantial individual gains (209). Berger says that "This notion should be imported into the law of compensation for the sole purpose of efficiency" (201). One result of this would be that not all of the benefits and costs of government activity are internalized to government. Yet, this is exactly the basis on which he criticized several other compensation rules for being inefficient.[58] Further, while individual losses may be small, aggregate losses may be substantial.[59] If compensation is not mandated in such cases, then what Berger calls inefficient projects may be undertaken. Moreover, since benefits and costs are selectively perceived, there is no conclusive way of determining whether the losses fit the criterion of "substantiality." His analysis is thus not internally consistent. The form of the measurement of losses is also important. If losses are measured in absolute dollar terms, as they are under Berger's rule, then only the rich will have "substantial" losses. It is questionable whether this comports with the community's sense of justice. One could reasonably make the case that Berger's fairness criterion (i.e., the community's sense of justice) should require that losses be measured relative to some measure of personal wealth rather than in absolute terms.

Finally, since "non-substantial" losses are not compensable even in cases where reasonable expectations have been violated (i.e., when the owner did not know, and should not have known), Berger is violating

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of this arbitrary choice for the determination of who is and who is not compensated.

58. See, for example, his discussion of the physical invasion and noxious use tests on 170-175.

59. There is also the question of whether the value of losses should be calculated based on the pre- or post-compensation price structure. A decision either way is selective in that it gives effect to certain rights and not others, and the magnitude of the difference in the size of the losses may be substantial.

his own requirements for a compensation system, requirements on the basis of which he dismisses numerous other approaches to the compensation problem.[60] Recall that Berger says that a "fair" rule is that which satisfies the community's sense of justice (167), and that the community's sense of justice demands that reasonable expectations be protected (174).[61] But since his "substantial harm" rule violates reasonable expectations, the rule cannot be said to be fair. However, Berger says that "First and foremost the result must be fair" (167). Thus, Berger is violating his own requirements for the compensation system by selectively applying his fairness doctrine, that is, by placing efficiency above fairness in some cases.[62]

There are two major elements in Berger's compensation rule that contradict his earlier analysis of the taking problem, contradictions of which he is seemingly unaware. Berger does not say that these are exceptions to his earlier statements, and hence does not seem to be aware of their contradictory nature. First, he says that compensation should be paid for government projects necessitating physical invasions of property, even if the harmed party knew, or should have known, about the project (223-224). There are two problems with this rule: (i) it violates his fairness requirement (or, if one wishes to make the case that physical invasions are unfair, it selectively elevates physical

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60. See 166-191.
61. Berger <u>does</u> continue to maintain that fairness demands that reasonable expectations be protected in his discussion of hypothetical examples (see especially 218-222) and in his conclusion to the paper (222).
62. It was noted above that there is no <u>a priori</u> reason why fairness should be made the primary requirement of the compensation system, as Berger does on 167. Similarly, there is no <u>a priori</u> reason for making efficiency the primary requirement, as Berger does on 201. This contradiction in Berger's analysis further emphasizes that to give primacy to one or the other is to act selectively in the face of a rights-creation problem with no conclusive answer.

invasions above reasonable expectations within the fairness criterion); (ii) it makes an arbitrary distinction between physical invasions and substantial diminutions in value. Second, he says that no compensation is due for any losses (whether or not the harmed party knew, or should have known) "resulting from its [the government project's] creation of a more advantageous vehicle for competitors to operate" (224). This also violates his fairness requirement. Moreover, Berger, in doing this, is reifying the competitive market process, and the role of ideology and selective perception here is evident.

The limits placed on the scope of property also play a crucial role in the evaluation of benefits and costs. For example, if an unemployed person gets a job as the result of a government project, should she be required to pay back to the government the excess of income over her unemployment benefits? Similarly what about a firm that does a "substantial" amount of business with the government as the result of a government project or program? Should this increase in its profits (which would be reflected in the capitalized value of its assets/property) be paid to the government? What about a new entrant to the labor market as the result of a government program which lowers everyone's wage? Any distinction made between such cases (either because of the type of government activity or because of the degree of the benefit or harm incurred) is necessarily selective. What is needed is an analysis of where the goal of (re)distribution fits into the compensation problem. All of this merely serves to illustrate the selective perception of what constitutes property and what correspondingly qualifies as an externality to be dealt with within the compensation framework.

Berger's analysis illustrates the same problems that afflict the other theories examined here, problems that are generic to the whole exercise. His first-in-time theory of property rights reifies the status quo; his conception of fairness is selective, being only one of several possible choices; and the efficiency calculations reflect the circularity and selective perception that is pervasive in attempting to resolve the taking problem. Moreover, Berger's hypothetical applications are found, in some cases, to violate his own requirements for a compensation rule. Most importantly though, the rules set down by Berger are so vague in their language that they will generate/permit almost any outcome that is congruent with the world view of the decisionmaker. His rhetorical appeals to requirements of fairness and efficiency, and to the use of a first-in-time rule, are merely appeals, having no conclusive prior claim to legitimacy over any other criteria. Again, all of this is generic to the resolution of the compensation problem.

V. Bruce Ackerman on the Compensation Problem

Bruce Ackerman's (1977)[63] analysis of the compensation problem takes as its starting point the "legal problem [that] arises at the point where capitalist economy and activist state collide" (1). In the activist state, citizens are required to make sacrifices in order to further the public good. The issue at hand is "When may they justly demand that the state compensate them for the financial sacrifices they are called upon to make" (1)?

63. Unless otherwise noted, all page citations in this section are to Ackerman (1977).

As noted above,[64] a major purpose of analyzing the discourse of this literature is that the authors are putting forth theories for courts to use. There is no mistaking Ackerman's position that a comprehensive theory is needed:

> Indeed, in many conversations on the subject, I have not encountered a single lawyer, judge, or scholar who views existing case-law as anything but a chaos of confused argument which ought to be set right if one only knew how (8).

Apropos of this, Ackerman sets forth the following thesis:

> In order to decide whether compensation law is basically sound or ripe for sweeping change it is necessary first to choose between two fundamentally different ways of thinking about law, each of which has its roots in our present legal culture (4).

These two different ways of thinking about law are what Ackerman calls "Scientific Policymaking" and "Ordinary Observing." We will see that the Scientific Policymaker will advocate a "substantial revision" in the current compensation law (although Scientific Policymakers are somewhat heterogeneous amongst themselves), while Ordinary Observers will have little problem with the existing structure of the law (4). Not only do these two groups suggest different ways of dealing with the compensation problem, they also differ as to the fundamental question to be asked with respect to the compensation problem.

A. Definitions and Ideal Types

Ackerman's comparison of ways of dealing with the compensation problem takes place at two levels: (i) the way in which legal language is understood, and (ii) the ultimate objective of legal analysis.

Legal language, according to Ackerman, can be understood in one of two ways. First, understanding can be "Ordinary." In this case, "legal

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64. See above.

language cannot be understood unless its roots in the ordinary talk of non-lawyers are constantly kept in mind" (10), and

> recourse to everyday, nonlegal ways of speaking can be expected to reveal the basic structure and animating concerns of legal analysis -- stripped of the excessive technicality generated by special pleading and adversary confrontation (10).[65]

The second way of understanding language is "Scientific":

> the Scientist conceives the distinctive constituents of legal discourse to be a set of technical legal concepts whose meanings are set in relation to one another by clear definitions without continuing reliance upon the way similar-sounding concepts are deployed in non-legal talk (10-11).

For the Scientist, an appeal to ordinary talk is "the surest sign of muddle" (11).

Ackerman also posits two different objectives for legal analysis, Policymaking and Observing. Policymakers are defined as

> those who understand the legal system to contain, in addition to rules, a relatively small number of general principles describing the abstract ideals which the legal system is understood to further. It is this statement of principle, presumed by the Policymaker to form a self-consistent whole, which I shall call a Comprehensive View (11, footnotes omitted).

Ackerman goes on to say that

> the function of the Comprehensive View is to provide a set of standards by which Policymakers may determine the proper content of legal rules and evaluate the performance of the legal system as a whole. It follows that when a Policymaker is forced to judge the merits of competing rules in the course of making a legally binding decision, he will select the rule which -- in his best judgment -- best conforms to the Comprehensive View he has imputed to the legal system (11).

Observing, according to Ackerman, posits a radically different objective for legal analysis. For the Observer,

> the test of a sound legal rule is the extent to which it vindicates the practices and expectations imbedded in, and generated by, dominant social institutions. It follows that when an Observer is forced to judge the merits of competing rules in the course of making a legally binding decision, ... [he] will ...

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65. White (1985) adovcates a similar approach. See especially 96.

> seek to identify the norms that in fact govern proper conduct within hte existing structure of social institutions ... [and] will then select the legal rule which, in his best judgment, best supports these institutionally based norms (12).[66]

Ackerman next turns to a discussion of the two ideal types that will be used in his analysis. First, there is the Scientific Policymaker, who Ackerman defines as

> an analyst who (a) manipulates technical legal concepts so as to illuminate (b) the relationship between disputed legal rules and the Comprehensive View he understands to govern the legal system (15).[67]

The Ordinary Observer, on the other hand,

> is an analyst who (a) elaborates the concepts of nonlegal conversation so as to illuminate (b) the relationship between disputed legal rules and the structure of social expectations he understands to prevail in dominant social practice (15).

There are, of course, the possibilities of Ordinary Policymaking and Scientific Observing, but Ackerman dismisses these as not sufficiently fruitful to require serious analysis.[68]

B. Discourse, Definitions, and Ideal Types

The persuasive force of discourse in Ackerman's analysis finds perhaps its most glowing example in his distinction between "Scientific" and "Ordinary" language. Scientific language is raised above Ordinary language merely by virtue of its being more technical (i.e., more "scientific"). The labels themselves have substantial persuasive force. Yet, there is no conclusive a priori reason why ostensibly "Scientific"

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66. Ackerman does acknowledge that the Policymaking and Observing positions may not be mutually exclusive, since institutionally-based expectations may be understood to be organized around a Comprehensive View. See Ackerman (1977), 12-13. But this misses half of the point since, as will be discussed below, Ordinary Observing (in whatever form it takes) is just a particular Comprehensive View.
67. Ackerman says that Law and Economics is an example of a Scientific Policymaking approach. See Ackerman (1977), 196-197 at note 20.
68. See Ackerman (1977), 17-20.

methods should hold any more sway in law than "Ordinary" (or, less rhetorically vivid, "traditional") modes of analysis. Whichever does dominate is selective, and functions selectively. Scientific jargon may obfuscate certain important concepts that may not be obfuscated by Ordinary language (e.g., an efficiency argument may obscure the fact that there are distributional issues involved in takings cases). Of course the converse also holds (e.g., a first-possession rule vis-a-vis the status quo and new rights). "Science" has an aura though not necessarily the reality of precision and completeness that accompanies whatever is put under its banner, whether the theory is complete or not.

Further, it cannot be said, as Ackerman does in the passage quoted above,[69] that the meanings of technical legal concepts "are set in relation to one another by clear definitions without continuing reliance upon the way similar-sounding concepts are deployed in nonlegal talk" (10-11, emphasis added). Since these technical terms have their origins in nonlegal talk (e.g., "efficiency" and "rationality"), the legal and nonlegal aspects of these words cannot necessarily be pulled apart (i.e., are selective in their construction, development, and use). Moreover, the use of nonlegal words to describe technical legal concepts is a persuasive device -- either metaphor or fiction -- used to appeal to the reader or claimant by lending scientific status to terms that she is used to hearing.

All of this is not to say that Ordinary analysis is a panacea. It has its own set of problems, not the least of which is the restrictive shackles put on judicial decision- making because of the necessity of viewing terms in layman's fashion when, in fact, there may be reason to

69. See above.

do otherwise. Further, there is a strong element of selectivity in defining what constitutes "Ordinary."[70]

The Policymaking and Observing dichotomy is also fraught with problems. First, the selection of a Comprehensive View to be imposed upon the legal system is necessarily selective. No particular Comprehensive View has a conclusive a priori claim to legitimacy or "correctness." Any particular Comprehensive View is a manifestation of one's view of the world, and especially ideology, allowing judges to make whatever decisions comport with their ideology or view of the world, regardless of the beliefs of members of society. Interestingly, Ackerman says that

> For Policymakers, of course, the mere fact that social practices do not as a whole conform to a single determinate Comprehensive View does not count as a reason for giving up the enterprise of thinking about the legal system as if it were so organized (13-14, emphasis in original).

Here, Ackerman is attempting to construct a dichotomy between social practices and the legal system when, in fact, no such dichotomy exists, each being part and parcel of the other. Moreover, he is, in the passage just quoted, implicitly admitting that the Comprehensive View is

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70. Jackson says that

> any ... social or cultural values to which common terminology refers are institutionalised and perhaps inevitably transformed by the fact of legal encoding .... For certainly, it creates the appearance of a direct reference by law to contemporary socio-cultural values. As such, it may be regarded, depending on one's ideological viewpoint, either as a necessary and legitimate instrument directed towards social cohesion, or a means of legitimation of an alien, oppressive system (Jackson 1985, 49).

White is also relevant here:

> Except in the plainest cases the function of the ordinary meanings of the terms used in legal rules is not to determine a necessary result but to establish the uncertain boundaries of permissible decision ... (White 1985, 67).

at best a metaphor, and at worst a fiction, since he is proposing that the Policymaker look at the legal system as if it were organized under a single determinate Comprehensive View.

The distinction between Policymaking and Observing is inconclusive and amenable to selective perception on at least two levels. First, Observing is just a particular Comprehensive View, the Comprehensive View being the reification of the status quo. By denying Comprehensive View status to Ordinary Observing, Ackerman is saying that it is somehow incomplete or selective vis-a-vis what he classifies as a Comprehensive View, when, in fact, this criticism applies to all Comprehensive Views. It is certainly the case that a Comprehensive View directs attention toward certain organizing principles and attempts to formulate a consistent, systematic approach to resolving disputes. At the same time, however, the term "Comprehensive View" imbues any decision made with an aura of completeness and wholeness, thus obfuscating the selectivity involved in choosing and applying a particular Comprehensive View. Second, the Observing judge is making policy just as much as is the Policymaker, regardless of whether one accepts Ackerman's position that Observing is not a particular Comprehensive View.

Finally, any Policymaking outcome is tautological with the Comprehensive View that gives rise to it, rather than being "correct" in any conclusively and independently determinate sense.

The selectivity problems involved in the Observer's decision making process should be evident. Recall that the Observer chooses a legal rule based on "the extent to which it vindicates the practices and expectations imbedded in, and generated by, dominant social institutions" (12). Selectivity is operative here on at least two

levels. First, there is the selectivity involved in determining the dominant social institutions from a complex and heterogeneous set. Second, the determination of the practices and expectations imbedded in and generated by these institutions is both selective and tautological with the determination of the dominant set of social institutions.[71] Third, the decision as to which legal rule fits best with the practices and expectations generated by these social institutions is selective, a function of both world view and ideology. Again, then, the legal rule chosen is both selective and tautological with the determination of dominant social practices, institutions, and expectations.

C. Scientific Policymaking and the Compensation Problem

1) Some Preliminaries

There are two basic questions involved in the Scientific Policymaker's approach to the compensation problem. First, with regard to property,

> The real question for the law -- scientifically understood -- is not to identify "the" rights of "the" property owner through some mysterious intuitive process but to determine in whose bundle one or another right may best be put (27).

Notice how this elevates techincal jargon over the "mysterious intuitive process" of non-techincal jargon when, in fact, both are "mysterious" and selective and the choice of one or the other is necessarily selective. The second question deals with the question of compensation:

> Should [the harmed party] be left bearing the entire loss associated with the legal change or should this loss be spread among some or all of his fellow citizens (30)?

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71. Michael J. Shapiro says that
> When social scientists let the existing structure of domination speak through their mouths, the alternative policy responses proferred for meeting the "situation" are predetermined by the interests that consitute "the situation" to begin with (Shapiro 1987, 376).

The answers to these questions lie in the Comprehensive View which the judge imputes to the legal system and her view of the limits of her role.

Ackerman sets down two basic roles for, or categories of, judges: they may practice restraint, or they may be innovative. The realistically restrained judge "believes that judges should decide disputes as if they were living in a society with well-ordered ... institutions" (36, emphasis in original), where well-ordered institutions are those which generally perform in a way which is consistent with the Comprehensive View imputed to the legal system (35). The innovative judge, on the other hand, believes that our society is not well-ordered, that this should be taken account of in judicial decision making, and that the judge's role is to use "his judicial office to improve the existing legal state of affairs" (36). The role of selective perception here -- in the determination of what constitutes "well-ordered," of whether or not society is well-ordered, and of what constitutes an improvement in the current state of legal affairs -- cannot be overemphasized.

The restrained judge assumes (i) that the distribution of income which prevails prior to the harm-causing government activity is consistent with the Comprehensive View she imputes to the legal system (37); (ii) that the legislature and other non-judicial organs of government[72] generally operate in a manner consistent with the imputed Comprehensive View (37); and (iii) that "litigants, as good citizens, recognize that they are living in a well-ordered society and so will accept disadvantageous official decisions without a deep sense of

72. From now on, the term "legislature" will be used to encompass all non-judicial organs of government.

grievance, unless they have special reason to believe that they are involved in one of the exceptional cases in which the system has malfunctioned" (38). The innovative judge will deny all of these propositions (37-38). All of this, of course, is selective.

How does the judge go about choosing a Comprehensive View? Ackerman's answer is at once both illuminating and obfuscatory:

> it is at this point that perhaps the deepest challenge arises for those who wish to make good on the promise of Scientific Policymaking. For it is possible to imagine any number of Comprehensive Views -- Marxist, Maoist, Existentialist, Absurdist -- that a judge could potentially invoke to interpret the decisive concept of "just compensation" to be found in the constitutional text. Yet in making this choice, a judge surely is not entitled to roam the range of Comprehensive Views with the aim of selecting the one that suits his personal fancy. Instead, whatever his own predilections, the judge's choice of a <u>legally</u> binding Comprehensive View must be limited in a very constraining fashion (41, emphasis in original).

Yet, Ackerman does not try to answer the question of what these limits are. Rather, he chooses to focus on

> the ideas that are in fact powerful forces in the <u>present</u> legal culture -- to explore the basic tensions in our <u>existing</u> legal system through an exploration of the compensation clause of our <u>existing</u> Constitution (41-42, emphasis in original).

According to Ackerman, these currently dominant ideas are the Utilitarian and the Kantian views of society.

But while Ackerman claims that he will not attempt to answer the question as to the range of "permissible" Comprehensive Views, he in fact does just that by limiting his discussion to the Utilitarian and Kantian Comprehensive Views. In choosing to discuss only these two cases on the grounds of their dominance in current practice, Ackerman is engaging in a reification of (some might less generously say an apology for) the status quo. Further, while this dominance among Policymakers is the grounds for their claim to status, Ackerman devotes his entire

book to elevating Scientific Policymaking over Ordinary Observing despite the dominance of Ordinary Observing in both past and current judicial practice. Thus, his appeal to the present dominance of Utilitarian and Kantian views among Scientific Policymakers is itself legislative. All of this not withstanding, to restrict the range of permissible Comprehensive Views is selective, the choice of these limits being governed largely by one's ideology and one's view of the world.

2) The Utilitarian View of the Compensation Problem

a) The Restrained Judge

Recall that the restrained judge sees the world as generally consistent with the Comprehensive View. Thus, she is unlikely to overturn a decision rendered by the legislature. It remains to determine in what cases the restrained judge will overturn a legislative decision and award compensation to the claimant.

Ackerman's analysis here parallels that of Michelman.[73] According to Ackerman, the restrained judge will adhere to the following rule:

> if the sum of uncertainty and disaffection costs is greater than the process costs involved in administering a compensation scheme, the [claimants] should be paid even [if] the court believes them to be wrong on the merits (47).

The more uncertain is the judge about the Utilitarian merits of a given legislative action, the more likely she will be to overturn it on the basis of citizen disaffection. By basing the decision on citizen disaffection costs, the restrained judge can signal to the legislature that it is approaching the boundaries of the Comprehensive View (48).

The problems here are essentially the same as those described in the discussion of Michelman above.[74] Especially important in this

73. See Michelman (1967) and the discussion of Michelman, above.
74. See above.

regard are: (i) citizen disaffection costs are subject to false reporting by the harmed parties (the moral hazard problem) and to selective perception by judges; (ii) the selective perception of uncertainty costs; and (iii) selective perception of the utilitarian merits of the legislation that is being challenged. The evaluation of these costs and benefits will be in large part determined by how well they comport with the judge's Comprehensive View, which is itself selectively chosen.

b) The Innovative Judge

Ackerman classifies the works of Sax (1964, 1971) and Berger (1974) as innovative interpretations of the clause. Recall that the innovative judge does not believe that the world operates in a manner consistent with the Comprehensive View. Thus, this judge believes that one or more of (i) the distribution of income/structure of property rights, (ii) the non-judicial organs of government, and (iii) the citizenry in general do not conform to the Comprehensive View.

The innovative judge sees several potential problems with the results of the non-judicial government organs. First, it may be assumed

> that, in general, government enterprises involving large bureaucracies and vast resources tend to self-aggrandizement. That is, they will systematically wish to pursue, and succeed in mobilizing resources for, projects that are not justified on a sober Utilitarian cost-benefit analysis (50-51).

It may further be the case that in deciding between similarly situated property owners in determining on whom to place the burden of a project, the government will be swayed by bribes or other partisan actions, thus causing a great deal of citizen disaffection (52). In either case, it is very plausible for the judge to find that compensation is owed. By having a wide-ranging compensation scheme, the costs that government

imposes upon the harmed parties would be internalized to government (51).

Again, the judge's perception of the benefits and costs (i.e., whether or not the project can be justified under a "sober Utilitarian cost-benefit analysis") and of the extent to which partisan motives play a role in the legislature's decision is selective, being largely a function of the judge's Comprehensive View, the choice of which is itself selective. We have, then, the problem of the hermeneutic circle, as benefits, costs, and partisanship cannnot be ascertained apart from the influence of the judge's Comprehenseive view, while at the same time the judge is trying to determine whether the challenged decision fits into the Comprehensive View. The problem of the hermeneutic circle is broken, but not solved, by an assumption that Alpha should have rights and Beta should not.

The innovative judge may also take the position that the status quo structure of property rights (i.e., the structure prior to the government project giving rise to compensation claims) is not utility maximizing. If the judge believes that the legislature generally acts in a manner consistent with the Comprehensive View, then she will likely deny compensation, deferring to the legislature's judgment that changing the distribution of property rights will increase overall utility (57-58). If, on the other hand, the innovative judge believes that she, rather than the legislature, is better able to assess the place of the status quo structure of property rights in the Utilitarian scheme, she will be more likely to skew her decisions toward the group given the most weight in <u>her</u> Utilitarian calculus. If, for example, the judge assumed that the marginal utility of an additional dollar of income

declines as income rises, her decisions will be skewed toward the interests of the poor, unless the losses to the rich were sufficient to offset the gains to the poor (59-60). Alternatively, the judge may decide to allow compensation only in exceptional cases,

> thereby indicating to the general population that undue reliance on the existing distribution of property relationships is not a part of the long-run, utility-maximizing solution to society's welfare problem (60).

Two problems should be noted here. First, selective perception is operative with regard to the weights given to the interests of various groups and to the selection of those groups in the Utilitarian calculus. This, in turn, will affect both the decision as to whether the status quo structure of rights is utility maximizing and as to what interests are given effect to if the status quo is deemed not to be utility maximizing. Of course the circularity problems imbedded in all of this should also be evident.[75]

The innovative judge may believe "that substantial numbers of his fellow citizens do not necessarily evaluate social conflict in the way that good Utilitarians should" (60). If so, then the judge may be inclined to compensate these parties even though their causes may not be justified on Utilitarian grounds. On the other hand, the judge may decide not to compensate because she may find that Utilitarian gains outweigh the harm perceived by the injured non-Utilitarians (60-64). Selectivity problems are pervasive here.

3) The Kantian View of the Compensation Problem

In contrast to the Utilitarian appeals to the general utility of a particular measure, the Kantian Policymaker views fellow citizens not as the means to an end, as Utilitarians do, but rather as ends in

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75. See the discussion of circularity problems, above.

themselves (71-72). The problem for the Kantian judge is that in most takings cases the rights of some are sacrificed for the good of others (72-73).

The restrained Kantian judge, placing special weight on the interests of the harmed parties, will tend toward awarding compensation in cases where the process costs associated with administering a compensation system are not so high as to offset the benefits of the measure in question. To the extent that the process costs or net benefits in question are open to reasonable dispute, however, the restrained judge will defer to the decision of the legislature (73-77).

The problems here parallel those with the restrained Utilitarian interpretation, with one addition. The Kantian judge, by placing extra weight on the claim of the injured party, is brushing aside the "cause-of-the-harm" problem (the dual nature of externalities).[76] The Kantian definition of harm, and the associated reification of the status quo, are selective, as are the contents of any Comprehensive View.

Ackerman claims that Kantian judges will have a higher propensity toward activism than their Utilitarian counterparts. The Kantians will have a hard time believing that the political process is well-ordered, since outcomes in which some gain at the expense of others are common, but incompatible with the Kantian view of a well-ordered society (78). The activist Kantian judge will be likely to decide compensation issues in a way that conforms with her Comprehensive View, awarding compensation to those parties who are injured by government programs which benefit some at the expense of others. This is not conclusively a

76. See Coase (1960).

priori incorrect; rather, some Comprehensive View is necessary, but the choice of any one over others is necessarily selective.

The problems here are evident once one recognizes that every government action benefits some at the expense of others. In all such cases, then, the Kantian would be required to award compensation, which, in turn, would cause severe fiscal problems. Any rule which attempted to discriminate among these cases would necessarily be selective.

D. Ordinary Observing and the Compensation Problem

As described above, the Ordinary Observer views legal language as a form of Ordinary language and believes that legal decision-making should support social expectations which arise out of the dominant social institutions. Ackerman acknowledges the difficulty of determining the dominant social institutions and the Ordinary way of talking (94-96). Indeed, referring to both Scientific Policymaking and Ordinary Observing, Ackerman says that "It is enough for lawyers that a method seem plausible, rather than that it be warranted as foolproof" (96). Yet it is possible to go further than Ackerman does: given the selective nature of all that is involved with resolving the compensation problem, there is no foolproof method for doing so. Further, the fact that there is no foolproof method adds weight to the argument that the choice of any particular method is necessarily selective.

The Ordinary Observer's conception of property is far narrower that that of the Scientific Policymaker. According to Ackerman, the Ordinary Observer views property as a thing, and a particular thing is said to belong to Alpha when:

> (a) [Alpha] may, without negative social sanction, use the thing in lots more ways than others can; and (b) others need a specially compelling reason if they hope to escape the negative social

> sanctions that are normally visited upon those who use another's thing without receiving his permission (99-100).

This conception of property is much narrower than the bundle of rights conception held by the Scientific Policymaker.

Regarding the taking issue, the Ordinary Observing judge will want to know the following:

> 1. Has the state taken one of [Alpha's] things away from him?
>
> 2. If a taking has occurred, can it be justified on the ground that it was necessary to stop [Alpha] from engaging in conduct he ought, as a well-socialized adult, to have recognized as unduly harmful to others (102)?

Ackerman correctly notes that defining "undue harm" will give the courts trouble, but says that the courts will have to resolve these difficulties to the the best of their abilities (102). The problem is deeper than this, however, as no criterion of "undue harm" has any conclusive prior claim to legitimacy and thus any definition will be selectively perceived. The definition of "undue harm" has major implications for compensation practice, which further magnifies the problems involved with what is necessarily a selective definition. The foregoing also applies to the determination of what constitutes (or who is) a "well-socialized adult."

The restrained Observing judge will overturn a legislative decision only when she believes that it is "plainly" inconsistent with the "dominant pattern of institutionalized expectations" (107). The innovative Observing judge does not believe that all legislative outcomes will follow the pattern of dominant institutionalized social expectations. As a result, the judge will closely examine each case to see if it departs from these expectations (107), and if it does, the judge will award compensation to the injured party. Of course selective

perception is operative in identifying the extent to which each case is at variance with the dominant social expectations (and also what it means to be "plainly" at variance with social expectations), as well as in defining what these expectations are.

E. The Ideal Types in Practice

The outcomes of takings cases under the Scientific Policymaking and Ordinary Observing approaches will be diametrically opposed in many instances.[77] That this is so should be obvious just from examining the definition of the term "property" associated with each approach.

For the Ordinary Observer, property is viewed as a "thing," and hence the range of compensible losses will be limited to losses involving "things." This conception of property is reflected in the commonly used physical invasion and diminution-of-value approaches. In determining whether a compensation is due, the judge will attempt to discern whether something that Alpha recognizes as his own (and which the public would recognize as belonging to Alpha) has been removed from his possession or so severely restricted in use as to effectively not be his thing anymore.

For example, if Alpha's restaurant is (i) seized, destroyed, or effectively rendered useless by (ii) a government action which is not within the limits of the Ordinary definition of legitimate government involvement in society, and (iii) Alpha has not been acting in a manner that should be recognized as unduly harmful, then Alpha should be compensated for the value of the thing taken. If, however, the government built a highway that diverted traffic from Alpha's restaurant, then

77. For a fuller elaboration of the contents of this section, see Ackerman (1977) Chapter 6, 113-167.

compensation would not be due since Alpha still has possession of his thing, the restaurant.

The Scientific Policymaking judge would see matters somewhat differently. In the case of the new highway, the value of Alpha's restaurant will decrease, and it may be that compensation is owed for this loss in value. While the determination of when compensation is owed varies with the Comprehensive View imputed to the legal system, the key is that property is seen as a bundle of rights owned by Alpha, rather than as "things" in Alpha's possession. Thus, when the value of Alpha's wealth has been reduced by some government activity, it may well be that compensation is due, regardless of whether Alpha retains possession of the "thing" in question.

F. Choosing

In applying their theories to the compensation problem, both the Scientific Policymaker and the Ordinary Observer are implicitly making the claim that it is their theory which is embodied in the takings clause of the Constitution. The problematic nature of this point is not lost on Ackerman:

> neither side can point to the language of the Constitution itself as decisively indicating that one or the other approach has superior textual support. Indeed, the present problem serves as an excellent example of the failure of literalism as a technique of constitutional interpretation (103).

He goes on to say that

> It is, I think, quite pointless to decide which of these readings qualifies as the Constitution's "plain meaning." Both are elaborations of the text; neither is a complete fabrication; each is, in short, an interpretation, whose ultimate validity rests upon the value of the form of legal culture which gives the interpretation meaning (103, emphasis in original).

The point that Ackerman is making here is that there is a necessity of choice as to what view of the world is applied to the takings clause.

It is in this sense that Ackerman is remiss in not defining Ordinary Observing as a Comprehensive View. Ackerman fails to acknowledge the necessarily selective nature of this initial choice, that people seem to be searching for a Holy Grail where none exists, that interpretations encompass, but also tend to mask, choice. This is, indeed, the most fundamental problem with the literature on the taking issue.

Ackerman also is guilty of not giving the necessity of choice, with its associated problems of selectivity and arbitrariness, its full due. The necessity of choice proceeds at several levels beyong that of Scientific Policymaking versus Ordinary Observing. There is the choice of a Comprehensive View, which Ackerman selectively restricts to the Kantian or the Utilitarian (or, of what constitutes the dominant social institutions and the expectations which are consistent with them); the choice of seeing the world as generally consistent with the Comprehensive View (or the expectations generated by the dominant social institutions), or not; and the choice as to what benifits and costs are given effect to (or whether the issue at hand really violates social expectations). Perception in all of these areas will necessarily be selective, and hence the outcomes will reflect the selective nature of perception and choice.

From a purely theoretical perspective, this selectivity is inevitable. The issue here is the development of a compensation system for the courts to use. The choices made are crucial when one realizes their impacts on compensation practice. The choices made at each level result in profoundly different compensation schemes. Hence, the distribution of property rights and incomes in society will vary as one choice rather than another is made. Thus, <u>any</u> compensation scheme awards

compensation to some and not to others on the basis of what is necessarily a selectively chosen and applied criterion.

VI. Richard Epstein's Lockean Approach

Richard Epstein's (1985)[78] treatise on the taking issue has almost certainly generated more controversy than any other scholarly work on the issue.[79] That his work is a radical departure from both established judicial practice and other scholarly works on the issue is evidenced in the following passage:

> This book is about the conflict between original constitutional design and the expansion of state power. At a general level it argues that the system of limited government and private property is not elastic enough to accomodate the massive reforms of the New Deal or those reforms that preceded or followed it. I argue that the eminent domain clause and parallel clauses in the Constitution render constitutionally infirm or suspect many of the heralded reforms and institutions of the twentieth century: zoning, rent control, worker's compensation laws, transfer payments, progressive taxation. Where these governmental innovations do survive in principle, it is often in a truncated and limited form (x).

An examination of Epstein's discourse will show, however, that everything is not as neat and tidy as Epstein indicates in the above-quoted passage.

A. Property and the State

Epstein is very clear about his approach to the compensation problem: "the political tradition in which I operate, and to which the takings clause itself is bound, rests upon a theory of 'natural rights'" (5). In light of this, "The question of governance is how natural rights over labor and property can be preserved in form and enhanced in value by the exercise of political power ..." (3), where by "preserved

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78. Unless otherwise noted, all page citations in this section are to Epstein (1985).
79. See, for example, the symposium on the book in the University of Miami Law Review.

in form," Epstein means that relative entitlements should be protected (4).

A fundamental element in Epstein's anaysis is his espousal of a Lockean natural rights theory of property, that first possession gives Alpha a "natural" right to a piece of property. Such a theory of property has strong implications for the role of the state:

> at the core all theories of natural rights reject the idea that private property and personal liberty are the sole creations of the state, which itself is only other people given extraordinary powers. Quite the opposite, a natural rights theory asserts that the end of the state is to protect liberty and property, as these conceptions are understood independent of and prior to the formation of the state. No rights are justified in a normative way simple because the state chooses to protect them, as a matter of grace (5).

Since Epstein's analysis hinges so crucially on the Lockean natural rights conception of property, it is important to examine this theory closely. First, there is nothing inherently "natural" about any theory of rights. Applying the term "natural" is merely using a rhetorical device to inspire the belief that that which is said to be "natural" is in some sense "correct."[80] Labelling the first-possession

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80. This is what Giuseppa Saccaro-Battisti labels an "organic" metaphor:

> The persuasive power of organic metaphors is based on the belief that the order of nature is unquestionable and good because it has its origin in a higher power. Therefore, this ... kind of metaphor conveys the idea that in order to lead a better life one must conform to the laws of natural necessity (Saccaro-Battisti 1983, 34).

Or, as Ball says,

> Natural law seeks to overcome desire with reason, arbitrariness with law. However, it makes normative claims for reason which reason cannot bear. We do not agree about what is reasonable. Natural law appeals to standards, but there are no universally accepted standards (Ball 1985, 128).

Berger and Luckmann point to the human creation of the social order:

> Social order cannot be derived from the laws of nature. Both its genesis (social order is the result of past human activity) and its existence at any point in time (social

rule "natural" obfuscates the fact that the existing structure of rights is determined by the asymmetrical power structure in society, that not all persons have equal access to rights.

A second problem here is Epstein's insistence that rights are not created by the state, but rather are prior to and independent of it. Any sort of rights which exist in the state of nature (i.e., prior to government) are freely violable, since there is no collective means of protecting these "rights." Rights, as such, are thus devoid of content in the state of nature.[81] If one takes the position that a right is a right, and therefore property is property, <u>because</u> it is protected',[82] the state is always operative -- it sets the limits of rights by definition. Thus, to say that any restrictions that the state places on rights constitute a taking (65) means that the state must compensate all persons other than Alpha when it gives Alpha the initial right. To claim that government is not operative here merely masks the necessity of government in order to promote a laissez-faire agenda. The question is not, then, one of more versus less government, but whose interests government gives effect to and whether government can change the interests to which it has previously given effect. Epstein attempts to reify the status quo structure of rights by assuming it to be in some

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order exists only insofar as human activity continues to produce it) is a human product (Berger and Luckmann 1966, 52).

81. Emile Durkheim says that

> Human passions stop only before a moral power they respect. If all authority of this kind is wanting, the law of the strongest prevails, and latent or active, the state of war is necessarily chronic.
>
> That such anarchy is an unhealthy phenomenon is quite evident, since it runs counter to the aim of society, which is to suppress, or at least to moderate, war among men, subordinating the law of the strongest to a higher law (Durkheim 1933, 3).

82. See, for example, Vining (1986), 163-164.

sense "natural" or "correct" apart from government, when in fact no such claim can be conclusively made.

B. Constitutional Interpretation

Epstein recognizes that an analysis of the takings clause rest on a particular interpretation of the Constitution. While the other authors analyzed here do not do much in the way of explicitly discussing theories of constitutional interpretation, Epstein devotes an entire chapter of his book to the subject. The importance of such discussion lies in the fact that judges

> must be able to provide authoritative interpretations of the constitutional text that are not simply manifestations of their own private beliefs about what legislation should accomplish. In order for judges to make principled interpretations, the language of the Constitution must be clear and precise enough to bind even those who disagree with what it says ... (19-20).

It is this author's position, however, that Epstein is doing exactly that which he says judges should not do -- interpreting the takings clause in a way that simply manifests his own private beliefs about what legislation should accomplish. Of course, this also applies to the other authors examined here.

An interpretation of the takings clause rests on the definitions given to the terms "private property," "taken," "public use," and "just compensation." Epstein's approach to defining these terms is what Ackerman[83] calls "Ordinary":

> The community of understanding that lends meaning to the Constitution comes of necessity from outside the text, in the way these words are used in ordinary discourse by persons who are educated in the normal social and cultural discourse of their own time (20).[84]

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83. For a fuller elaboration of the contents of this section, see Ackerman (1977) Chapter 6, 113-167.

84. But see the passage from Jackson (1985), quoted in note 70, above.

The problems with the ordinary approach to language have been discussed above in the section on Ackerman.[85] First, there is no conclusive a priori reason why ordinary language should be used rather than some other form of language. Second, there are the matters of what consitutes "ordinary," who are the "persons educated in the normal social and cultural discourse of their own time," and what constitutes this discourse. Third, Epstein is assuming that "normal social and cultural discourse" embodies a Lockean natural rights view of property, which is selective.

Epstein recognizes the point that determining an ordinary definition of property is somewhat vague. Yet, he is content to use the Lockean conception, claiming that it will lead to the correct result in most cases (21-24), and that "some asserted definitions are just wrong ..." (24). In doing so, he is essentially making property a fiction (although he would not say so), calling it Lockean for the purposes of legal decision making when in fact it is vague.

Epstein also rebels against the idea that constitutional interpretation should evolve over time "in fundamental ways simply because there are changes in taste or technology" (25). He claims that "stable and unique meanings are possible in principle and usually obtainable in fact" (24).[86] But this seems to contradict Epstein's claim that ordinary usage should be used to define terms. Changes in tastes and technology should not, according to Epstein, be cause for changing constitutional interpretation. Yet, it is precisely these

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85. See above.

86. Contrast this with White's statement that

> As for the reader, he or she knows that over time words change their meaning and values shift, that expectations as to form evolve. All of this is bound to have an effect on the reading of the text (White 1985, 88-89).

changes that cause changes in the ordinary use of a word. Moreover, the fact that a definition is stable and unique (but recall that since Epstein admits that language is vague there can be no unique meaning) does not make it correct. The dominant meaning of a term in ordinary usage is often a function of the status quo power structure in society, and to say that such definitions are unique and worthy of protection is just to reinforce the status quo power structure in society, since meaning is largely structure-specific.[87] One need go no further than the legal treatment of the corporation to find an example of this. The entrenched corporate power structure of the day succeeded in getting the corporation defined as a person at law, a legal fiction with wide-ranging implications for the legal-economic structure of society.[88]

The following quotes are offered both to illustrate the selective nature of Epstein's hermeneutic and to illustate its confused and contradictory contents:

> words have regular, disciplined meanings ... (25).

This statement reflects a specific hermeneutic (chosen out of many). There is also the problem of inferring these meanings, which is selective.

> There may be a debate over whether the framers introduced the eminent domain clause to protect markets or autonomy or both. But in the end, greater progress will be made by assuming that the clause is designed to do what it says, to ensure that private property is not taken for public use without just compensation (26, emphasis added).

There are three points to be made here. First, progress for whom? Second, he is "assuming," but assuming is selective and normative; the natural rights conception of property is, then, "assumed" to be the

87. See Samuels and Mercuro (1980), 121.
88. See Samuels (1987).

correct one, but assumption necessarily underscores the problematic nature of a priori correctness. Third, to say that the clause is designed to "do what it says" is to say nothing, since the Constitution says nothing apart from a specific hermeneutic.

In arguing against framers' intent as a hermeneutic device, Epstein says that

> Where the number of parties is large and the divergence of views is great, the best evidence of textual intention is the language of the text itself (27),

that

> The dominant loyalty is to the text as written and not to the framers' views of the consequences it entailed (28),

and that

> the best way to answer the question [as to whether something is a compensable taking] is to take a detailed look at the challenged practices to see how they tie into the eminent domain clause, treated as a self-contained intellectual proposition (28).

But if the framers had divergent views as to what the takings clause meant, would this not be equally true of ordinary language? Further, given the divergence in framers' views, how can one say that ordinary language is the best or correct way to interpret meaning? And again, one cannot say that "the best evidence of textual intention is the text itself," or that the takings clause is a "self-contained intellectual proposition," since this language is nothing apart from a specific interpretation.

In a similar vein, Epstein says that "The rules that govern analysis should emerge from the interpretation of the text, rather than be imposed upon it" (30). This represents a fundamental misunderstanding of the nature of the hermeneutic process, since interpretation is by its very nature a matter of "imposing" meaning

rather than meaning "emerging" from the text, especially if one discards the notion of author's intent, as Epstein (at least some of the time) does. Epstein is imposing "ordinary" meaning onto the words of the text; these meanings do not emerge form the text. This is why there is an interpretation problem to begin with. The point is that Epstein (and the others) are trying to establish a privileged interpretation, which involves selective emphasis on certain premises and a corresponding deemphasis of others.

It should also be noted that while Epstein, as mentioned above,[89] disparages the use of historical sources to define the meaning of terms in the text, he goes on to say that

> [historical sources] are extremely helpful in allowing us to understand the standard meanings of ordinary language as embodied in constitutional text, but they are a very imperfect tool for isolating the collective purposes and hidden agendas that secured its passage. They are of even less value in evaluating particular institutional arrangements that must be scrutinized under the clause (29).

He goes on to say that "the Constitution draws on the basic theory developed by Locke" (31).

What is one to make of this? Epstein is willing to allow the use of historical sources for this, but not for that, appealing to historical sources that generate an interpretation of the takings clause which conforms with his Libertarian view of the world. Epstein is using a very selective hermeneutic in order to bend the Constitution into a Lockean natural rights framework.

89. See above and Epstein (1985), 26-28.

C. Takings

The above discussion of Epstein's theories of state, property, and constitutional interpretation make fairly clear what Epstein will and will not describe as a taking. Epstein goes even further:

> What constitutes a taking of private property is a question that admits to a rigid logical answer, so it is always possible to judge which judicial decisions are clearly right or clearly wrong. On this question ... there is simply no room for intellectual disagreement or for judicial deference to the legislature. Once property is taken, if there is no police power justification, compensation must be provided (85).

This statement is just plain wrong. It is only after one has accepted a particular theory of property as the correct one that one can possibly have a rigid, logical answer to what constitutes a taking (and even then, selective perception makes this suspect). No judicial decision is "clearly right or clearly wrong" apart from a particular interpretation. The fact that the scholarly works described above and countless judicial opinions are greatly at variance with Epstein's theory[90] is testimony to the fact that nothing is clear here except that things are unclear -- and also inconclusive and subject to selective perception. One can derive answers vastly different from Epstein's simply by replacing his Lockean view of the world with another view, no one of which is conclusively a priori correct.

Congruent with his claim that there is no real distinction between public and private law,[91] Epstein attempts to establish that the same ideas that govern tort law should also govern takings law:

> On Lockean principles the government stands no better than the citizens it represents on whether property has been taken, so a simple test determines, not the ultimate liability of the government, but whether its actions are brought within the purview

90. See also the roundtable discussion in symposium in the University of Miami Law Review.
91. See Epstein (1985), ix-x.

> of the eminent domain clause. Would the government action be treated as a taking of private property if it had been performed by some private party? If so, there is a taking of private property and we must examine further to determine whether compensation must be paid (36, emphasis in original).[92]

This, of course, is a fiction which says that government is an individual, and which hence equates government actions with those of individuals (again, not unlike the fiction of the corporation as a person), modified by a narrow definition of the police power. All of this rests on the Lockean theory of government which espouses this fiction.

For Epstein, property consists in the bundle of rights held by the owner rather than in "things" alone. When any of the rights held by the owner of the bundle are diminished, a taking has occurred. Thus, he asserts that

> The takings clause says, "Nor shall private property be taken for public use, without just compensation." It means, "nor shall private property, in whole or in part, be taken for public use without just compensation" (58, emphasis added).

The selectivity of this hermeneutic should be obvious.

Epstein follows William Blackstone[93] in maintaining that the rights of ownership are the rights of possession, use, and disposition (58-59), and that these rights

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92. Elsewhere, Epstein says that "there is no principled distinction between torts and takings" (44).

93. William Blackstone says that
> The third absolute right, inherent in every Englishman, is that of property: which consists in the free use, enjoyment, and disposal of all his acquisitions, without any control or diminution, save only by the laws of the land (Blackstone 1765, Book 1, 134, emphasis added).

The caveat "save only by the laws of the land" would seem to give the legislature and judges virtual carte blanche in rights determination. Blackstone speaks briefly of the limits on the legislature and judges here (134-136), but any definition of these limits is necessarily selective.

> lie at the core of a comprehensive and coherent idea of ownership. The right way to think about these incidents is to ask what ownership means if any of them are removed (60).

But at a deeper level, one can ask what any of these so-called "rights" mean if the authority of the state which lies behind them is removed. The answer is nothing -- they would be freely violable. This calls into question his claim that rights are prior to, and independent of, the state.[94] There is also the problem of new rights, which do not exist in nature, such as rights in new technology. The creation/privileging of new rights impedes the rights of others and thus causes an inevitable taking. Further, Epstein's invocation of Blackstone and other historical sources here[95] is selective and arbitrary, given what he says elsewhere.[96]

Epstein also claims that

> Linking rights of possession, use, and disposition into a single bundle of rights offers powerful utilitarian advantages. More complex schemes only lead to indefinite specifications of the original rights, which in turn hamper the coordinated use and transfer of all resources (61).

Here and elsewhere,[97] Epstein appeals to the Utilitarian benefits of adopting a Lockean natural rights theory of property. Yet if natural rights is <u>the</u> correct theory, as Epstein maintains, then there is no need for an appeal to Utilitarian considerations. Further, a Utilitarian framework may well support some other theory of property as being in some sense more beneficial to society. Equally important is that elsewhere in the text, Epstein dismisses the courts' use of what he calls "crude utilitarian calculations" (115) as "wholly inappropriate to

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94. See above and Epstein (1985), 5-6.
95. See Epstein (1985), 22-23, 58-59. Indeed, Epstein says that "Blackstone's account of private property explains what the term means in the eminent domain clause" (23).
96. See above.
97. See, for example, Epstein (1985), 52-53, 67, 217.

the internal logic of the clause" (115). Yet in the passage quoted above, he is extolling the Utilitarian virtues of his theory of property. Epstein's invocation of Utilitarian concerns is thus selective, and is essentially a persuasive device.

The rights of possession, use, and disposition imply that any full or partial interference with any of these by government constitutes a taking. This includes full or partial destruction (37-39), full or partial interference with use and enjoyment (47-51), and consequential damages (those resulting from the initial government wrong) (51-56).

Regarding consequential damages, Epstein says that:

> If the destruction of property itself is a taking under the eminent domain clause, then the infliction of consequetial losses is a partial taking that the clause also reaches. As a matter of justice, the individual plaintiff is not made whole when these consequential losses are systematically ignored. As a matter of general social welfare, the rule invites the government to embark on programs where the expected losses exceed the probable social gains, making all persons net losers in the long run (53).

But Epstein is selective here in the content he gives to consequential damages. If he is to be consistent, they would apply to damages caused by government "rights" as well as by government "wrongs," since in both cases government causes damages to what he conceives of as property. The most telling implications of a consistent consequential damages rule arise in the case of the market economy. Epstein does not recognize losses arising from the activity of the market economy as compensable (112). Yet, it is government that supports and channels the market system. Thus, any losses resulting from the market (e.g., unemployment and increases in goods prices which are not returned to consumers through higher incomes in pro rata fashion) are ultimately consequences of government activity, and hence should be compensated if a consequential damages rule is to be applied consistently.

Epstein is also inconsistent in his application of the Lockean first-possession rule. In discussing this rule, he says that

> The idea of property embraces the absolute right to exclude .... Nothing, therefor, allows the state to place conditions upon the owner's right to admit or exclude .... The restrictions that the state places upon the exclusive possession of land constitute a partial taking for which compensation is prima facie required (65, emphasis added).

Regarding water rights, however, Epstein says that

> the initial distribution of rights in and over water cannot be specified as precisely as for ordinary real estate or chattels (67),

and that

> one can assume that some easement for the benefit of the public at large does exist, whether by long-standing custom or by some more overtly utilitarian view (69).

Thus, Epstein differentiates between rights in water and rights in other things, dropping his first-possession rule on the grounds of custom or Utilitarian concerns. Epstein also seems willing to allow some physical invasions to go uncompensated because they are small in nature and hence would generate huge administration costs in the aggregate (229-245). Yet, elsewhere in the book he says that "Neither the due process clause nor the takings clause draws any distinction among the types of property interests they protect" (143). But if a first-possession rule is to be consistently applied, it must pertain to water rights as well as rights in land, etc., and to small invasions as well as large ones. Such selective (and ideology-based) use of the first-possession rule renders it vacuous, since if first-possession claims can be denied for water rights, they can just as legitimately be denied for rights in anything else. Interestingly, in discussing the uneven precedent regarding water rights cases, Epstein says that

> These decisions powerfully illustrate the unacceptable tendency to create two sets of property rules in eminent domain cases, one for ordinary people and one that yields unprincipled advantages to the government (72).

Yet, Epstein himself is engaging in the "unacceptable tendency to create two sets of property rules" when he applies a first-possession rule to all cases except water rights.

Epstein also criticizes what he sees as an artificial distinction between harm done to one party and harm done to many. Regardless of the number of parties involved, government actions which harm individual rights are takings. Out of this, Epstein derives perhaps his most controversial assertion, and hence it is worth quoting him at length.

> All regulations, all taxes, and all modifications of liability rules are takings of private property prima facie compensable by the state.
>
> The reasons for this comprehensive approach stem in part from the function of the eminent domain clause. Any theory of constitutional review that covers one form of government behavior while excluding the others invites enormous slippage at the margins. Those who are in control of the state will find the unregulated forms of conduct effective substitutes for those initiatives called into question under the takings clause. Instead of providing a bulwark against the exercises of government power, a narrow construction of the eminent domain clause simply encourages government officials to redirect their behavior to those forms of exploitation that are beyond constitutional review. No comprehensive theory of government control can tolerate such loopholes for legislative action. As the literal application of the eminent domain clause is consistent with its purpose, there is no warrant for confining its application to isolated takings (95-96).

Several things should be noted here. First, Epstein's own application does that which he says no theory should do -- "covers one form of government behavior while excluding the others," the "others" being water rights cases and market-determined losses. Second, he invokes a "literal application of the eminent domain clause" where no such thing exists. Nothing is literal, but rather is a matter of inter-

pretation to which the reader brings her own set of intellectual baggage.

Third, to be consistent, Epstein must apply his theory that all changes in liability rules require compensation for changes in all legal rules. Thus, if Roe v. Wade[98] were reversed, compensation would be due to physicians and operators of abortion clinics for the loss of income due to the removal of their ability to legally perform abortions.

Fourth, Epstein claims that government activities which go beyond what he deems legitimate (the night-watchman state) are "exploitation." This should be seen for what it is -- a rhetorical device used selectively in advocacy of his laissez-faire ideology.

D. The Police Power

Epstein's theory of the police power offers another case of an interesting contradiction with things stated elsewhere in his text. Although the police power is not specifically dealt with in the Constitution,[99] Epstein says that it

> involves those grants of power to the federal and state government that survive the explicit limitations found in the Constitution. Although most limitations on government power are stated in categorical terms, the police power is a universal part of constitutional discourse that qualifies the explicit text. ... The basic theory [of representative government] demands that the police power be read into the Constitution, no matter how stringent the standard of necessary implications for unwritten terms (107-108).

But elsewhere, as seen above, Epstein says that "rules ... should emerge from the interpretation of the text, rather than be imposed upon it" (30), that the "dominant loyalty is to the text as written" (28), and that "the best evidence of textual intention is the language of the text

98. 410 U.S. 113 (1973).
99. Indeed, Epstein acknowledges that the term is not even mentioned (107).

itself" (27). In light of this sort of hermeneutic, it is ironic that Epstein wants to insert a police power provision into the takings clause. He makes appeals to the historical nature of some form of police power or another (107-108), but this is just another example of his selective use of historical sources. The use of historical sources will always be selective, since historical sources can be found to support a wide range of positions. However, Epstein takes selectivity a step further, saying that one can use historical sources to determine some things but not others. While the former type of selection is inevitable and cannot be criticized on any conclusive a priori grounds, the latter smacks of ideology-driven arbitrariness.

It should be noted that I am not, here, claiming that the exercise of the police power is unconstitutional. Far from it. Rather, I am suggesting that Epstein's analysis of it is inconsistent with the hermeneutic he employs. He is, as described above, employing a selective hermeneutic to squeeze Lockean theories of property and the state out of the constitutional text. Yet, since he claims that "the dominant loyalty is to the text as written" and that "the best evidence of textual intention is the language of the text itself," his hermeneutic seems to deny him any role for the police power.

Epstein sees what he views as an uneasy trend in the application of the police power from the traditional protection of the health, safety, morals, and general welfare of the public to an anything-goes attitude on the part of the courts (108-109). Both of these conceptions are too broad for Epstein. He maintains that "The sole function of the police power is to protect individual liberty and private property against all manifestations of force and fraud" (112), and that the

operative question is whether the government's action is "an attempt to control the defendant's wrong or to provide a public benefit" (121). The former is a legitimate use of the police power, while the latter is a taking which should be compensated (123).

This is obviously a very limited conception of the police power. Further, the determination of what constitutes force or fraud is selective. For example, Epstein says that harms incurred due to losses in the market are not legitimate grounds for use of the police power[100] (112), but since the economy does not consist of agents with equal endowments of power, some of these losses may be said to be due to force (e.g., owners may be able to hold out longer than workers, or conversely).

Another example here is the nuisance case. Epstein advocates the physical invasion test to determine who has rights in the nuisance case. In the case of people moving in around an existing brickyard and building homes, he says that the brickyard owner is at fault and should be enjoined because the smoke from his factory is being forced on the neighbors. Hence, the "coming to the harm" problem is no problem. Yet, it could just as easily be said that the homeowners who move in are forcing pollution damage to occur where none had occurred before, that they are, by building their homes, violating the rights of the brickmaker by force. Moreover, Epstein is again selectively permitting an exception to his first-possession rule, since the physical-invasion and first-possession rules are not identical in all cases.

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100. This is not surprising, since in the previous sentence he says that market-determined losses are not within the scope of the takings clause (112).

Epstein's definition of the police power is just one of many that could be imposed upon the Constitution. It is Epstein's Lockean priors that lead to his limited conception of the police power, but since there is no treatment of the police power in the Constitution, imposing a Lockean conception is highly selective, probably (but not necessarily) more so that imposing Lockean definitions on the terms of the takings clause itself.

E. Public Use and Just Compensation

Epstein's definition of what constitutes "public use" is somewhat broader than his definition of the police power, but not overly so. His definition is closely tied to his theory of just compensation in that no group should have more than a pro rata interest in any public benefit that results from a taking. Again, this flows out of his Lockean conception of the state (162-164).

According to Epstein, the economic theory of public goods can be used to solve the problem of what constitutes public use:

> The advantage of economic theory ... is that it allows us to express more explicitly ideas whose full implications may have been imperfectly understood. It is an aid to the original interpretation hat takes the words "public use" and shows the consequences that flow from their use. While all of these consequences were doubtless not specifically intended by the framers, the doctrine that emerges is consistent with the general pattern of their argument and the words in which they expressed it. The language of public use invites the theory of public goods (166).

Here, Epstein is speaking of what economists call "pure" public goods.[101] However, he says that this definition is a bit too narrow, that certain other uses (what economists call "impure" public goods[102]), such as highways and parks, are also legitimate uses. In the end,

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101. See Boadway and Wildasin (1984), 85-104.
102. See Boadway and Wildasin (1984), 85-104.

Epstein says that "For the question of public use, public right of access is sufficient to allow the state to go forward" (169).

It is interesting to note that while Epstein says "The language of public use invites the theory of [pure] public goods," he allows impure public goods to crash the party. Further, to insist that pure public goods theory is "consistent with the general pattern of [the framers'] argument and the words in which they expressed it" is somewhat curious, since the words of the takings clause say nothing at all about what constitutes public use. On this ground, no definition of public use is necessarily and conclusively inconsistent with the constitutional text.

Epstein's invocation of economic theory here is also surprising, since elsewhere in the text he says that the

> fatal preoccupation with questions of value is wholly inconsistent with any theory of property rights (115),[103]

and that

> the court's crude utilitarian calculations are wholly inappropriate to the internal logic of the clause (115).

Thus, Epstein is saying that it is legitimate to invoke economic theory in defining public use, but not so for defining property. Moreover, if one accepts Ackerman's distinction between Scientific and Ordinary language, Epstein's invocation of economic theory here is contrary to his own claim that the takings clause should be interpreted through the glasses of ordinary language. His use of economic theory, then, is selective, being based on those aspects of it which comport with his Lockean views of property and the state. It is a persuasive device and nothing else.

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103. But there is an entire literature on the economics of property rights. See, for example, Cooter and Ulen (1988), Demsetz (1967), Furubotn and Pejovich (1972), Hirsch (1988), and Pejovich (1972).

Epstein also invokes economic theory in defining "just compensation":

> In principle, the demand of just compensation is satisfied when two conditions occur simultaneously: (1) the total size of the pie -- the sum of the value of all ownership and personal rights -- is maintained or increased; and (2) the size of each individual slice of the pie is maintained or increased as well (196-197).

From Epstein's public use criterion, (1) and (2) must reflect pro rata distribution of any net social surplus. More strongly stated,

> if the state could have perfect knowledge of each person's private preferences, then the eminent domain clause would necessarily forbid any taking of private property which did not maintain or increase the overall level of social wealth (200, emphasis in original).

Thus, "The clause seems to embody a constitutional Pareto criterion ..." (201).[104]

Again, Epstein is selective in invoking economic theory. But, as discussed above,[105] using the Pareto criterion to determine rights is circular. Further, since Epstein himself correctly admits that the constitutional language is vague, one cannot say conclusively that the eminent domain clause "seems to embody a constitutional Pareto criterion," or that it "would necessarily forbid any taking ... which did not maintain or increase the overall level of social wealth." All of this is selective.

As the number of parties to a taking increases, Epstein says it is likely that the harmed parties will receive implicit in-kind compensation. In such cases, explicit compensation is improper if the implicit compensation is sufficient to cover the damage done (96). However, the determination as to whether and to what extent implicit in-

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104. For an elaboration of the Pareto criterion, see Boadway and Wildasin (1984), 14-17.
105. See above.

kind compensation exists is selective. For example, Epstein claims that pure public goods provide such compensation (166-169), but that such is not so in the case of welfare programs, since some benefit at the expense of others (308). Yet, the argument could be made that welfare programs provide order in society where it otherwise might not exist, thus raising a strong case that compensation is indeed pro rata.

As noted above,[106] Epstein considers all regulations to be takings. This conclusion is straightforward once one accepts his definition of the police power. As a result, he says that

> The New Deal <u>is</u> inconsistent with the principles of limited government and the constitutional provisions designed to secure that end (281, emphasis in original).

But where is it written that the Constitution is designed to secure the end of limited government as Epstein defines it? Further, and more importantly, what constitutes "limited government?" Any definition of the limits of government in this regard is selective. Further, the term "limited government" is a misnomer, since government is omnipresent, enforcing the existing structure of rights in society. The term "limited government" is thus a rhetorical device which is used to reify the status quo structure of rights and to control/channel legal rights.

Epstein also regards all taxes as takings (95). He invokes the constitutional grant to government of the powers to tax "to provide for the common Defence and general Welfare of the United States" (U.S. Constitution, article 1, section 8, clause 1, quoted in Epstein, 295), and draws the following conclusion:

> The structure of the clause suggests that the proper objects of taxation are limited in nature, while the references to "common defense" and "general welfare" reinforce the kinship between the constitutional constraint and the standard economic accounts of

106. See above.

> public goods. Indeed, the "general welfare" of the United States is not an unlimited grant of power; it should be read narrowly, in parallel to the other two heads, public debt and common defense, and in sharp opposition to any system of coerced transfer payments between citizens (295).

But why should the "general welfare" be interpreted narrowly? How does one narrowly interpret the "common defense?" Why do transfer payments not promote the general welfare?[107] This equating of general welfare with pure public goods is yet another example of selective interpretation and the ideology-driven nature of the hermeneutic process.

Epstein claims that a flat tax used to finance what he deems legitimate public uses will result in implicit in-kind compensation according to pro rata shares (299). Progressive taxation does not generate pro rata implicit compensation, however, since "a dollar is a dollar, regardless of the source" (299). If Epstein were to make one of his (selective) appeals to Utilitarian considerations here, he would be assuming that the marginal utility of an extra dollar of income is constant over all levels of income, a questionable assumption. Further, a flat tax is progressive in the sense that total payments rise with income. Thus, only if we assume that the benefits of public goods rise with income (and at the same rate as income) do we get the result that implicit in-kind compensation from a flat tax is according to pro rata shares.

Epstein also, as noted above, considers all transfer payments to be compensable takings, and hence believes that they should be eliminated as unconstitutional. Indeed, he claims that transfer

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107. Perhaps under a Utilitarian calculus they would not, but there is no a priori reason why the general welfare should be defined in Utilitarian terms.

payments fail on all three grounds of the takings clause -- private property, public use, and just compensation:

> The basic rules of private property are inconsistent with any form of welfare benefits (322);
>
> the public use limitation ... prohibits state-coerced transfers of property (including money) from A to B (307);
>
> There is no perfect overlap between the parties who pay and the parties who collect. ... A complete ban on transfer programs removes the need to pass on the compensation issue, on which the program will be shipwrecked in any event (308).

But all of this reflects a selective reading of what constitutes private property, public use, and just compensation, as well as the "general welfare." To see the ideology-driven nature of this proposed ban on welfare payments, one needs look no further than the following passage:

> If one has the courage to follow a course of action to its conclusion, then the process can be expedited to provide overall gains so large that they will swamp any distributional losses (329).

Yet, Epstein has been maintaining all along that distributional impacts are of paramount importance when what he defines as property has been taken. Yet, when it comes to the elimination of welfare programs, distributional issues are not so important. Further, under a more broad conception of property rights, such as that of Reich,[108] the elimination of transfer payments may well be deemed a compensable taking.

VII. Conclusion

Where does all of the foregoing leave the taking problem? Five different resolutions of the taking problem have been examined above and the discourse of each has been analyzed. Rules have been offered based on fairness, efficiency, and natural rights concerns. What is perhaps

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108. Reich (1964) advocates property rights in government largesse, the result being that when a person is deprived of such rights, she should be compensated.

most important here is that each of these criteria is different, reflecting a different interpretation of the takings clause. Certainly, each of these authors believes that he has to a greater or lesser extent discovered truth -- the criterion that should be used to settle disputes and hence to create rights. The key word here is "should;" had each of these authors discovered "Truth," there would be five identical criteria being advocated and there would be no need for this paper. It seems, however, that the academic literature, and indeed the taking issue itself, has not moved beyond the "chaos of confused argument" that Ackerman (1977, 8) says describes case-law. Analysis of the discourse underlying each of these criteria is needed both to see where each author is coming from and to determine the direction in which the adjudication of takings cases should go.

Each of these authors is telling a story; each is offering a specific construction of reality, which defines and is defined by rights. Each would have us accept his typification as the "correct" one. We are left, then, with a choice, a choice among these citeria and others in determining how to resolve the taking problem. The necessity of choice is at the heart of the matter of rights creation.

Michelman, Sax, Berger, and Ackerman all incorporate efficiency elements into their analysis. Recognition of the metaphorical nature of efficiency arguments leads to the realization that these authors are invoking the banner of science to justify their analysis. This masks the fact that there is no a priori basis for an efficiency rule in the language of the takings clause. But neither is there language in the clause which denies the validity of efficiency concerns as a basis for judicial decision making. In light of this, it is necessary to analyze

what it is one accepts when one chooses an efficiency criterion as the basis for law.

The efficiency metaphor involves an appeal to science for legitimation, which somehow, in the current academic environment across disciplines, is often seen as more correct than ostensibly non-scientific methods. But as described above, this metaphor tends to obfuscate many important factors in its drive toward scientific status for law. First, it is plagued by circularity problems which are broken, but not solved, by making an assumption as to whose interests count. Second, it assumes that all that matters is whether the project causes a net gain in social utility or output. Third, the judicial evaluation of benefits and costs is fraught with problems of selective perception, due to the influence of ideology and the view of social reality held by the judge. Selective perception is not a bad thing; it is a fact of life and an inevitable component of any resolution of the taking issue. But at the same time, it is important to realize that it exists and that there are multiple possible outcomes that may be generated under an efficiency criterion.

The image of fairness is explicitly invoked by Michelman and Berger in their analyses. Michelman adopts a Rawlsian conception of fairness, while Berger defines fairness as that which comports with the community's sense of justice. Each of these conceptions of justice has its own set of problems, described in detail above.[109] What is most important here is that the choice between these (and other) conceptions of fairness is arbitrary. Neither can be objectively said to be "Fair" apart from a specific view of reality, none of which has a conclusively

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109. See above.

dispositive prior claim over any other. There can be little doubt that fairness is at the heart of the takings clause. The problem lies in the definintion of fairness that is to be used in judicial decision making. Indeed, it is likely that Sax, Ackerman, and Epstein all believe that the criteria they advocate are fair, even though they do not undertake the in-depth analysis of fairness that Michelman and Berger do. Again, we are left with the necessity of choice, choice as to what constitutes fairness. Any choice is selective, both in its definition of fairness and in the application of the particular fairness rule chosen.[110]

Berger and Epstein both put forth first-possession rules for deciding takings cases. Berger justifies the use of a first-possession rule on the grounds of efficiency and fairness, while Epstein's justification is that first-possession endows the owner with a natural right. Epstein also makes some utilitarian claims for this rule (although he does so only selectively), but if a person has a natural right in something there is no need for utilitarian justification. His utilitarian claims are merely a rhetorical device. The concept of natural rights is also rhetorical; it is a metaphor, invoking the authority of some higher power. Moreover, each fails to deal with the creation of new rights, each of which limits old rights. This is problematic to the first-in-time approach.

That these invocations of fairness, efficiency, and natural rights are merely devices of legitimation for a first-possession rule is seen in the internal contradictions in the analyses of Berger and Epstein. Each offers exceptions to the first-possession rule.[111] In doing so,

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110. That is, in the determination of whether the outcome is fair based on the definition of fairness chosen.
111. See above.

Berger violates his own fairness rule, while Epstein violates the natural rights he claims inhere in first-possession. This is another illustration of the selective and ideology-driven nature of the formulation of legal rules. By setting down a rule and then allowing for exceptions for this or that, the rule becomes devoid of content, for no particular case has any more claim to exemption from the rule than any other case.

Ball's (1985) law-as-bulwark metaphor, while certainly pervasive in the rhetoric analyzed here, finds perhaps its most glowing example in the consensus among all of these authors regarding market-generated losses. While several different criteria have been offered here, none of the authors is willing to protect market-generated losses. Yet, government is pervasive in the market -- it forms, operates through, and enforces market behavior. Given this, a very strong case can be made that each of the criteria formulated by these authors would entail compensation for some, if not all, of these losses. That this is not recognized by these authors is not surprising, given the primacy of the market in Western culture. But it is selective, and points to the ideology-driven nature of the formulation of legal rules.

Thus, we are left where we started, with the thirteen words of the takings clause and five different stories that attempt to interpret it. Terms have been defined, rules set forth. That these rules differ simply illustrates the fact that the choice of a decision rule or criterion is necessarily selective:

> One is apt to be puzzled, disturbed, and stimulated to reflection by the telling of several different stories about the same situation, when each story is internally coherent and compelling in its own terms but different from, and perhaps incompatible with, all the others. Such a multiplicity of conflicting stories about the situation makes it dramatically apparent that we are

> dealing not with "reality" but with various ways of making sense of a reality (Schon 1979, 267).[112]

Any rule or criterion is contingent on the adoption of a particular view of the world. Each author is using language to persuade an audience that his rule, and hence his view of the world, is the correct one. But no rule or view of the world is necessarily a priori correct. Rather, we are faced with choices, among rules, among views of reality, and among persuasive devices, choices which the formalistic concept of a legal rule obfuscates:

> One view of the vice of formalism takes that vice to be one of deception, either of oneself or of others. To disguise a choice in the language of definitional inexorability obscures that choice and thus obstructs questions of how it was made and whether it could have been made differently. The use of the word "formalism" in this sense hinges on the existence of a term ... whose contested application generates the choice. Some terms, like "liberty" and "equality" [and the terms relevant to the takings clause], are pervasively indeterminate. It is not that such terms have no content whatsoever; it is that every application, every concretization, every instantiation requires the addition of supplementary premises to apply the general term to specific cases. Therefore, any application of that term that denies the choice made among various eligible supplementary premises is formalistic in this sense (Schauer 1988, 513-514, emphasis in original).

The necessity of choice is pervasive, and this must be recognized. All claims are normative, and must be judged accordingly, for

> Only with awareness of the plot that would take us in, of the textual or personal prejudices, of the hidden or conflicting regulative concepts or normative ideals that shape and inform narrative, can we deliberately articulate reasons explaining and justifying specific normative endorsements (Sherwin 1988a, 592).

A further problem lies in the application of these rules by judges. The selective nature of choosing one rule over another and the selective perception operative in applications of the chosen rule have been discussed at length. Given all of the foregoing, the primary rule

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112. Of course not all of the criteria presented here are internally coherent, owing to the exceptions that they allow. See above.

seems to be that there are no conclusive rules, since each of the rules advocated either has certain exceptions to it or is sufficiently vague that judges have virtual carte blanche in deciding the outcome of a given case.

It seems that we are no closer to resolving the controversy surrounding the taking issue than we were when the first volley was fired. What is important to realize, however, is that whatever rule is chosen and however it is applied, a choice has been made and society has been remade in a particular fashion through the (re)creation of rights. Analysis of the discourse underlying the rules being advocated leads to a greater awareness of the choices being made and where these rules and choices may take us.

BIBLIOGRAPHY

BIBLIOGRAPHY

Ackerman, Bruce A. 1977. Private Property and the Constitution. New Haven: Yale University Press.

Ball, Milner S. 1985. Lying Down Together: Law, Metaphor, and Theology. Madison: University of Wisconsin Press.

Bentham, Jeremy. 1928. A Comment on the Commentaries. London: Oxford University Press.

Berger, Lawrence. 1974. "A Policy Analysis of the Takings Issue." New York University Law Review 49 (May-June): 165-226.

Berger, Peter L., and Thomas Luckman. 1966. The Social Construction of Reality. Garder City, NY: Doubleday and Co.

Blackstone, William. 1765. Commentaries on the Laws of England. Chicago: University of Chicago Press.

Boadway, Robin W., and David E. Wildasin. 1984. Public Sector Economics. 2d ed. Boston: Little, Brown and Company.

Bosanquet, Bernard. 1895. "The Principle of Private Property." In Aspects of the Social Problem, edited by Bernard Bosanquet, 308-318. New York: Macmillan and Co.

Buchanan, James M., and Gordon Tullock. 1962. The Calculus of Consent. Ann Arbor, MI: The University of Michigan Press.

Coase, Ronald H. 1960. "The Problem of Social Cost." Journal of Law and Economics 3 (October): 1-44.

Cooter, Robert, and Thomas Ulen. 1988. Law and Economics. Glenview, IL: Scott, Foresman and Company.

Demsetz, Harold. 1967. "Toward a Theory of Property Rights." American Economic Review 62 (May): 347-359.

Durkheim, Emile. 1933. The Division of Labor in Society. Translated by George Simpson. Glencoe, IL: The Free Press.

Ellickson, Robert C. 1973. "Alternatives to Zoning: Covenants, Nuisance Rules, and Fines as Land Use Controls." University of Chicago Law Review 40 (Summer): 681-781.

Epstein, Richard A. 1985. Takings: Private Property and the Power of Eminent Domain. Cambridge: Harvard University Press.

Frug, Jerry. 1988. "Argument as Character." Stanford Law Review 40 (April): 869-927.

Fuller, Lon L. 1967. Legal Fictions. Stanford, CA: Stanford University Press.

Furubotn, Eirik G., and Svetozar Pejovich. 1972. "Property Rights and Economic Theory: A Survey of the Recent Literature." Journal of Economic Literature 10 (December): 1137-1162.

Grey, Thomas C. 1980. "The Disintegration of Property." In Property, edited by J. Roland Pennock and John W. Chapman, 69-85. New York: New York University Press.

Hekman, Susan J. 1986. Hermeneutics and the Sociology of Knowledge. Notre Dame: University of Notre Dame Press.

Hirsch, Werner Z. 1988. Law and Economics: An Introductory Analysis. 2d ed. New York: Academic Press.

Jackson, Bernard S. 1985. Semiotics and Legal Theory. London: Routledge and Kegan Paul.

Kissam, Phillip C. 1988. "The Evaluation of Legal Scholarship." Washington Law Review 63 (April): 221-255.

Klamer, Arjo. 1987. "As If Economists and Their Subjects Were Rational." In The Rhetoric of the Human Sciences: Language and Argument in Scholarship and Public Affairs, edited by John S. Nelson, Allan Megill, and Donald N. McCloskey, 163-183. Madison: University of Wisconsin Press.

Klamer, Arjo, Donald N. McCloskey, and Robert M. Solow, eds. 1988. The Consequences of Economic Rhetoric. New York: Cambridge University Press.

McCloskey, Donald N. 1985. The Rhetoric of Economics. Madison: University of Wisconsin Press.

Medema, Steven G. 1989. "Discourse and the Institutional Approach to Law and Economics: Factors which Separate the Institutional Approach to Law and Economics from Alternative Approaches." Journal of Economic Issues (forthcoming).

Michelman, Frank I. 1967. "Property, Utility, and Fairness: Comments on the Ethical Foundations of 'Just Compensation' Law." Harvard Law Review 80 (April): 1165-1258.

Nelson, John S., Allan Megill, and Donald N. McCloskey. 1987. "Rhetoric of Inquiry." In The Rhetoric of the Human Sciences: Language and Argument in Scholarship and Public Affairs, edited by John S.

Nelson, Allan Megill, and Donald N. McCloskey, 3-18. Madison: University of Wisconsin Press.

Oliver, Pierre J.J. 1975. Legal Fictions in Practice and Legal Science. Rotterdam: Rotterdam University Press.

Ortony, Andrew. 1979. "Metaphor: A Multidimensional Problem." In Metaphor and Thought, edited by Andrew Ortony, 1-16. Cambridge: Cambridge University Press.

Pejovich, Svetozar. 1972. "Towards an Economic Theory of the Creation and Specification of Property Rights." Review of Social Economy 30 (September): 309-325.

Perelman, Chaim. 1982. The Realm of Rhetoric. Notre Dame: University of Notre Dame Press.

Reich, Charles A. 1964. "The New Property." The Yale Law Journal 73 (April): 733-787.

Saccaro-Battisti, Giuseppa. 1983. "Changing Metaphors of Political Structures." Journal of the History of Ideas 44 (January-March): 31-54.

Samuels, Warren J. 1987. "The Idea of the Corporation as a Person: On the Normative Significance of Judicial Language." In Corporations and Society: Power and Responsibility, edited by Warren J. Samuels and Arthur S. Miller, 113-129. New York: Greenwood Press.

Samuels, Warren J., and Nicholas Mercuro. 1980. "The Role and Resolution of the Compensation Principle in Society: Part Two -- The Resolution." Research in Law and Economics 2 JAI Press.

Samuels, Warren J., and Nicholas Mercuro. 1981. "The Role of the Compensation Principle in Society." In Law and Economics: An Institutional Perspective, edited by Warren J. Samuels and A. Allan Schmid, 210-247. Boston: Kluwer-Nijhoff Publishing.

Samuels, Warren J., and Arthur S. Miller, eds. 1987. Corporations and Society: Power and Responsibility. New York: Greenwood Press.

Sax, Joseph L. 1964. "Takings and the Police Power." The Yale Law Journal 74 (November): 36-76.

Sax, Joseph L. 1971. "Takings, Private Property and Public Rights." The Yale Law Journal 81 (December): 149-186.

Schauer, Frederick. 1988. "Formalism." The Yale Law Journal 97 (March): 509-548.

Schon, Donald A. 1979. "Generative Metaphor: A Perspective on Problem-Setting in Social Policy." In Metaphor and Thought, edited by Andrew Ortony, 254-283. Cambridge: Cambridge University Press.

Shapiro, Michael J. 1987. "The Rhetoric of Social Science: The Political Responsibilities of the Scholar." In The Rhetoric of the Human Sciences: Language and Argument in Scholarship and Public Affairs, edited by John S. Nelson, Allan Megill, and Donald N. McCloskey, 363-380. Madison: University of Wisconsin Press.

Sherwin, Richard K. 1988a. "A Matter of Voice and Plot: Belief and Suspicion in Legal Storytelling." Michigan Law Review 87 (December): 543-612.

Sherwin, Richard K. 1988b. "Dialects and Dominance: A Study of Rhetorical Fields in the Law of Confessions." University of Pennsylvania Law Review 136 (January): 729-849.

Stone, Christopher D. 1988. Earth and Other Ethics. New York: Harper and Row Publishers.

Symposium on Richard Epstein's Takings: Private Property and the Power of Eminent Domain. 1986. University of Miami Law Review 41 (November).

Vining, Joseph. 1986. The Authoritative and the Authoritarian. Chicago: The University of Chicago Press.

White, James B. 1984. When Words Lose Their Meaning: Constitutions and Reconstitutions of Language, Character, and Community. Chicago: The University of Chicago Press.

White, James B. 1985. Heracles Bow: Essays on the Rhetoric and Poetics of the Law. Madison: University of Wisconsin Press.