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Dale Goble

University of Idaho, College of Law, gobled@uidaho.edu

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SOLAR ACCESS AND PROPERTY RIGHTS: REPLY TO A "MAVERICK" ANALYSIS

by Dale D. Goble*

In a recent article published in this journal,¹ Professor Stephen Williams argued that the existing literature on solar energy presents a "skewed vision" of the legal obstacles to providing solar energy systems with access to direct sunlight. This is the result, he concludes, of viewing the problem solely as an energy issue—a view that "readily leads to neglect of the real costs entailed by the legal changes . . . proposed to smooth the path of solar energy."² To correct this perceived imbalance, Williams advances an alternative approach: the application of a property rights analysis drawn from welfare economics theory. He poses the issue in terms of the efficiency of existing property concepts as they relate to the problem of solar access, and he examines whether these concepts are "as effective as they might be in bringing about the maximization of the value of *all* the resources at stake when solar access is in conflict with other land uses."³

The market basis of this approach has a strong emotional appeal. In its reliance on the market, Williams' method initially appears to avoid overt coercion, thus obviating the conflicts that frequently arise with the use of more obviously political forms of decisionmaking. The conflicts, however, are not eliminated, but only obscured: a decision to rely upon the market is itself inherently political.⁴

This does not mean that the decision cannot be justified or that the market may not be the best solution. Williams, however, does not offer such a justification. Instead, he presents his arguments as objective reality: gravity makes apples fall and the market—if left to its own devices—will lead us all to an economic Garden of Eden. But

* A.B., Columbia College (1970); J.D., University of Oregon (1978). I would like to thank C. Edwin Baker and Carol C. Bradford for their thoughtful review of an earlier draft of this article.

1. Williams, *Solar Access and Property Rights: A Maverick Analysis*, 11 CONN. L. REV. 430 (1979).

2. *Id.* at 431.

3. *Id.*

4. See generally Baker, *The Ideology of the Economic Analysis of Law*, 5 PHILOSOPHY & PUB. AFF. 3 (1975).

neither welfare economics nor its property rights progeny is physics. Their propositions are not scientifically verifiable;⁵ they are hypothetical ethical judgments. The distinction is crucial: physics is descriptive and predictive; welfare economics is prescriptive and normative. Thus, while it is possible to test a proposition from the realm of physics, a proposition from welfare economics can be "tested" only by examining its assumptions. Welfare economics is a branch of theology.⁶

There is nothing inherently wrong with this. However, by consistently ignoring these basic assumptions and normative judgments, Williams' prescriptive statements assume an air of unwarranted objectivity. The result is an analysis that is at least as skewed as, and far less self-conscious than, the one he criticizes.⁷ This reply is offered as an antidote to Williams' apparent objectivity—as a buyer's guide, in the phrase of one economist, to economic analysis as a potentially defective product.⁸ Accordingly, the purpose of this article is to examine the assumptions and normative judgments inherent in Williams' analysis.

This reply is in three sections. Sections I and II examine two groups of assumptions—"perfection assumptions" and "neutrality assumptions." The final section applies the results of the first two sections to Williams' conclusions on the advisability of adopting alternative property right structures.

I. PERFECTION ASSUMPTIONS

Williams' central thesis is that "the market value of any solar access rights that a parcel might enjoy will incorporate any advantages

5. Nagel, *Assumptions in Economic Theory*, 53 AM. ECON. REV. (Papers & Proc.) 211 (1963).

6. As the most active welfare economics theorist noted: "Efficiency statements [are] . . . to be understood as normative statements, and welfare propositions . . . rest ultimately on an ethical basis." Mishan, *The Futility of Pareto-Efficient Distributions*, 62 AM. ECON. REV. 971, 972 (1972). Mishan has also commented that "so remote is the likelihood of testing welfare implications that one is tempted to relinquish the orthodox methodology and have recourse to an admittedly inferior method . . . of attempting to ascertain the validity of the premises." E. MISHAN, *A Survey of Welfare Economics*, in WELFARE ECONOMICS 11, 15-16 (2d ed. 1969).

7. "So long as a proposition of welfare economics is phrased in the form: 'If you accept certain judgments (and certain, often unbelievable, factual assumptions), then you should do this,' it is unobjectionable. But it is not usable unless we accept both the judgments and the assumptions." Junger, *A Recipe for Bad Water: Welfare Economics and Nuisance Law Mixed Well*, 27 CASE W.L. REV. 3, 29 (1976).

8. See Polinsky, *Economic Analysis as a Potentially Defective Product: A Buyer's Guide to Posner's Economic Analysis of Law*, 87 HARV. L. REV. 1655 (1974).

that solar energy has in relation to other energy resources."⁹ This belief is supported explicitly by the argument that in calculating the value of access rights, individuals will determine all of the costs associated with other energy resources, *e.g.*, their price, availability, and likelihood of disruption. These costs will be reflected in the value of a parcel with access. Thus, to maximize the value of all the resources present, it is necessary only to "maximize the value of the *land* affected by the conflict in uses."¹⁰

The central role of prices in this argument should be apparent: they are the medium that allows the parties to determine the relative values involved. It is at this point that Williams' thesis relies upon a number of implicit and often questionable assumptions concerning the conditions necessary for a perfect market. Only such a perfect market will generate "correct" prices. Thus, in the absence of a perfect market, the individual who is faced with inconsistent land uses may make a decision based on faulty information.¹¹

Although Williams does note qualifications to his thesis,¹² the difficulties inherent in his market-based approach are both more general and more pervasive than his article suggests. These difficulties are illuminated by a brief examination of the conditions required for a perfect market.

In constructing market theory, economists have adopted a num-

9. Williams, *supra* note 1, at 432.

10. *Id.* at 431.

11. To take an obvious example, the present price controls on domestic oil subsidize its consumption. If a barrel of oil sells on the world market for \$23, but domestic oil can be sold for only \$9, the solar energy sufficient to replace a barrel of oil is undervalued by at least \$14. Arguably the undervaluation is far greater because the value that should be considered is the replacement value rather than the market value. The replacement cost—the cost of a barrel of synthetic oil, for example—is much greater than the current market price. Even at market prices, however, the subsidization is staggering: almost \$15 billion per year. See Stobaugh, *After the Peak: The Threat of Imported Oil*, in ENERGY FUTURE 16, 46 (1979).

In addition to such indirect subsidies, there have been massive direct subsidies to both fossil and nuclear fuels. These have totaled more than \$120 billion. See Stobaugh & Yergin, *The End of Easy Oil*, in ENERGY FUTURE 3, 11 (1979). Such direct subsidies are reflected in taxes rather than energy bills and thus do not provide the market signals that price and market theories require.

12. In addition to price controls, Williams notes three other "concerns" with fossil and nuclear fuels that "might qualify" his thesis: the presence of environmental externalities, concern for the welfare of future generations, and national security problems resulting from our increasing dependence on imported energy. Williams, *supra* note 1, at 432-36.

ber of simplifying assumptions,¹³ only three of which will be examined here: perfect knowledge, no externalities, and no transaction costs.

A. *Imperfect Knowledge*

The most striking false assumption is that of perfect knowledge. Every economic agent is assumed to have complete, accurate, and costless knowledge of all relevant factors for all times. In determining the value of solar access, for example, an individual must know not only the present price of all other energy resources, but also their prices at all points in the future.¹⁴ Since humans are not omniscient, this assumption is false.

The uneven distribution of information among individuals often presents more significant problems than does a uniform lack of knowledge.¹⁵ Solar energy, for example, faces substantial impediments because of its novelty. While most people have at least a general familiarity with the economics of conventional fuels—if only through the size of their utility bills—few have a corresponding knowledge of solar energy.¹⁶

B. *Externalities*

An “externality” is any beneficial or harmful effect on another person resulting from an action where an actor does not include the effect in the cost calculations of the action.¹⁷ For example, A owns a

13. See generally J. DE V. GRAAFF, *THEORETICAL WELFARE ECONOMICS* 142-54 (1957); S. NATH, *A REAPPRAISAL OF WELFARE ECONOMICS* 28 (1969).

14. Because of the importance of the Mideast to such calculations, the individual also must know the future course of political developments in an area which has witnessed “a half-dozen wars, a dozen revolutions, and innumerable assassinations [*sic*] and territorial disputes” in the last thirty years and one which is undergoing the most rapid cultural transition in history. Stobaugh & Yergin, *supra* note 11, at 5.

15. “[T]he critical impact of information on the optimal allocation . . . is not merely its presence or absence but its inequality among economic agents.” Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation*, in 1 JOINT ECON. COMM., 91ST CONG., 1ST SESS., *THE ANALYSIS AND EVALUATION OF PUBLIC EXPENDITURES: THE PPB SYSTEM* 47, 55 (Comm. Print 1969).

16. For example, the fact that it is now generally less expensive to heat water for domestic purposes with the sun rather than with electricity is not widely known. See 1 OFFICE OF TECHNOLOGY ASSESSMENT, UNITED STATES CONGRESS, *APPLICATION OF SOLAR ENERGY TO TODAY'S ENERGY NEEDS* 3-4 (1978). One result is that fewer solar water heaters are installed than the relative costs would justify.

17. See P. SAMUELSON, *ECONOMICS* 476-85 (10th ed. 1976).

coal-fired boiler that is used to generate electricity. *B*, *A*'s neighbor, operates a laundry. *B* hangs the clothes outside to dry where they are frequently soiled by soot from *A*'s plant. The soot is external to *A*'s cost calculations; it simply blows away. As a result, the soot's cost—the value of the resources that must be used to remedy the problem, *e.g.*, the cost of rewashing the clothes, purchasing dryers, or installing a pollution-control device—is not included in the price that *A* charges for electricity. Instead, *A* has passed this cost to *B*.

The economic effect of externalities is an inefficient allocation of resources since in a perfect market there would be no externalities. *A*, for instance, would "internalize" all externalities. However, since *A* is able to pass some of the costs of producing electricity to *B*, the price of electricity does not include its full production costs; the market is imperfect. As a result, too much electricity—and too much pollution—is produced in comparison to products that generate no externalities.¹⁸

Williams' response to these problems is sophistical. While acknowledging that there are residual environmental effects and risks in using fossil and nuclear fuels, he nevertheless concludes that the "mere fact of residual environmental damage does not prove that energy products fail to reflect environmental costs."¹⁹ Unfortunately, this conclusion begs several fundamental issues.

The question is not whether energy products reflect environmental costs, but whether they reflect all costs. If they do not, the market

18. See generally Bator, *The Anatomy of Market Failure*, 72 Q.J. ECON. 351, 356-63 (1968); Mishan, *The Postwar Literature on Externalities: An Interpretive Essay*, 9 J. ECON. LITERATURE 1 (1971); Randall, *Coasian Externality Theory in a Policy Context*, 14 NAT. RESOURCES J. 35 (1974).

19. Williams, *supra* note 1, at 433-34. Williams supports his conclusion casuistically by assuming that the cost of implementing existing environmental regulations is greater than the value of their benefits:

[I]f production and distribution of 100 kilowatt hours of electricity impose 25¢ of uncorrected environmental damage, but the producer has incurred costs of \$1.00 in eradicating 75¢ worth of damage, it seems that on a net basis the activity has involved no environmental costs not reflected in the price.

Id. at 434. Williams does not, however, present any evidence to support his apparently empirical hypothesis. Rather, he attacks the Environmental Protection Agency for refusing to "conduct meaningful cost-benefit studies of its regulations." *Id.* at 434 n.13. Williams' touching belief in the possibility and utility of "meaningful cost-benefit studies" is a corollary of his faith in welfare economics. Unfortunately, however, "no widely accepted method of assessing benefits exists." Starr, Rudman & Whipple, *Philosophical Basis for Risk Analysis*, 1 ANN. REV. ENERGY 629, 638 (1976). See generally Goble, *Increasing the Use of the Sun: A Potential Role for the Energy Utilities*, 14 TULSA L.J. 63, 67-71 (1978).

allocation will be less than optimal. It is possible that a nonmarket solution such as pollution-control legislation will produce a more efficient and socially desirable outcome. Thus, in the presence of uncorrected externalities, there is no *a priori* reason for preferring a market allocation to a nonmarket one.

In addition, Williams fails to take into account nonenvironmental externalities, such as the social unrest generated by antinuclear activities. This type of externality imposes costs that are not reflected in the price of nuclear-generated electricity.²⁰

Thus, the externalities issues are far more complex and pervasive than Williams' brief discussion indicates. Their impact on his central thesis is also more significant than his argument acknowledges: the presence of externalities indicates that the market allocation is not efficient.²¹

C. *Transaction Costs*

A reader familiar with recent literature on property rights might object at this point that these criticisms must be rejected or at least modified by the Coase Theorem.²² Professor Coase has claimed that under specified assumptions the initial assignment of entitlements (*i.e.*, property rights and liability rules) does not affect the market's allocation of resources. Regardless of the initial assignment, resources will be shifted to their most valuable use. Thus, a frictionless market will produce an efficient allocation.

To return to the dirty laundry hypothetical, assume that there are two possible solutions: a pollution-control device costing \$90 and clothes dryers costing \$100. According to the Theorem, regardless of the initial entitlement (*i.e.*, whether *A* holds a right to pollute or *B* is

20. Not even all of the quantifiable costs are reflected in utility bills. The costs of policing, arresting, jailing, feeding, and prosecuting demonstrators, for example, do not fall on those constructing or operating nuclear plants, but on local taxpayers. While such costs can be quantified, any attempt to place a monetary value on the political polarization and loss of social consensus would be highly speculative.

Nuclear energy may also impose other, even more significant nonenvironmental externalities. For example, there is an increasing body of analysis that plausibly argues that the security requirements of a nuclear society are incompatible with political democracy. Compare Weinberg, *Social Institutions and Nuclear Energy*, 177 *Sci.* 27, 33-34 (1972), with Comment, *Policing Plutonium: The Civil Liberties Fallout*, 10 *HARV. C.R.-C.L. L. REV.* 369 (1975).

21. See Mishan, *The Economics of Disamenity*, 14 *NAT. RESOURCES J.* 55, 57 (1974).

22. Coase, *The Problem of Social Cost*, 3 *J.L. & ECON.* 1 (1960). Although Williams does not explicitly employ the Theorem in his analysis, he does recognize that it is merely an alternative formulation of his approach. Williams, *supra* note 1, at 431 n.3.

entitled to be free from pollution) a perfect market will produce an efficient allocation of the resources involved. *B* will pay *A* between \$90 and \$100 to install the device if *B* is not entitled to be free from pollution. If *A* is not entitled to pollute, on the other hand, *A* will install the device because *B* will be unwilling to sell the entitlement for less than \$100. Thus, ignoring the distributional effects—which according to Coase do not affect production—the externality will be corrected, and the market's allocation will be efficient without governmental intervention.

The assumptions underlying the Theorem, however, render it "invalid or irrelevant in all practical cases."²³ The most important assumption is that transactions are costless.²⁴ Transaction costs²⁵ may be minimal in some real markets, but they are never zero—if only because of the time required for the parties to reach an agreement.²⁶

The impact of transaction costs can be readily demonstrated. If *A*, the plant operator, is not liable for the effects of the soot and the transaction costs exceed \$10, no agreement will be reached. The cost of the pollution-control device (\$90) plus the transaction costs is greater than the cost of the dryers (\$100). The result is an inefficient allocation.

A more significant problem is the frequent asymmetry of transaction costs. For example, if *B* is a group of homeowners rather than a laundry owner, there will be additional costs incurred because of the need for negotiation among the members of the group.²⁷ Moreover,

23. Randall, *Welfare, Efficiency, and the Distribution of Rights*, in *PERSPECTIVES OF PROPERTY* 25, 27 (1972).

24. See Coase, *supra* note 22, at 8. This raises an obvious but often neglected point: The Theorem is theoretically neutral *vis-a-vis* the initial assignment of entitlements. Since the market will allocate the resources efficiently regardless of the initial assignment, it should be of little importance to unreconstructed Coasians whether the entitlement is to obstruct or receive sunlight. Posner and other Coasians have sought to circumvent this by positing that the "right *should be* assigned to the party whose use is the more valuable." R. POSNER, *ECONOMIC ANALYSIS OF LAW* 18 (1972) (emphasis added). On the circularity of this approach, see notes 53-55 *infra* and accompanying text.

25. "Transaction costs" are the costs of reaching an agreement. They include the cost of information, of actual negotiations, and of memorializing and enforcing any agreement.

26. See generally Calabresi, *Transaction Costs, Resource Allocation and Liability Rules—A Comment*, 11 J.L. & ECON. 67 (1968). Thus, remedying information or externality problems involves transaction costs. In one sense, the Theorem merely transforms information and externality problems into transaction costs problems, and then assumes them away.

27. As Arrow has stressed: "It is not the presence of bargaining costs *per se* but

some members of *B* may refuse to participate, hoping that the other members will buy the pollution-control device and thus confer a benefit on the holdouts at no cost to them.²⁸ The presence and asymmetries of transaction costs help to explain "why market solutions to significant externality problems are seldom observed."²⁹

In a world of frequently asymmetrical transaction costs, initial property entitlements can have a significant effect in two ways. First, the presence of transaction costs may effectively preclude a bargained alteration of the initial position. Second, the initial position will often determine the magnitude of the costs.³⁰

Although Williams recognizes the significance of transaction costs, he optimistically minimizes their importance.³¹ Such optimism is problematic, however, when one considers both the novelty of solar energy³² and its kinetic nature.

In general, novelty can increase transaction costs by increasing information expenses asymmetrically. For example, even in the most promising situation involving new, large single-developer tracts, there are transaction costs. While the developer can assure individual parcels with access through the use of subdivision restrictions, he must

their bias that is relevant." Arrow, *supra* note 15, at 51.

Transaction costs can be asymmetrical even in bargaining between individuals. While information on the cost of the dryers is likely to be relatively inexpensive, information on the pollution control will probably be much more costly because of the need of matching the device to the particular generating system. This information would be more accessible (and thus less costly) to *A* than to *B*. As a result, *B* is more likely to install dryers (an inefficient allocation).

28. See generally Calabresi & Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1106-08 (1972); E. MISHAN, *Pareto Optimality and the Law*, in WELFARE ECONOMICS 225 (2d ed. 1969).

29. Randall, *supra* note 23, at 27.

30. These two points have been borne out by the only available empirical study on the relationship of transaction costs and externalities. See Crocker, *Externalities, Property Rights, and Transaction Costs: An Empirical Study*, 14 J.L. & ECON. 451, 464 (1971).

These conclusions should not be surprising. Indeed, most lawyers have a general familiarity with the underlying rationale from nuisance law or from such products liability rubrics as "enterprise liability." The basic policy conclusion was aptly stated by Justice Traynor: "[P]ublic policy demands that responsibility be fixed wherever it will most effectively reduce the hazards to life and health inherent in defective products that reach the market. It is evident that the manufacturer can anticipate some hazards and guard against the recurrence of others, as the public cannot." *Escola v. Coca Cola Bottling Co.*, 24 Cal. 2d 453, 462, 150 P.2d 436, 440-41 (1944) (Traynor, J., concurring). Translating the terminology, because a manufacturer has lower transaction costs, it is in the position to make any necessary changes at a lower total cost.

31. Williams, *supra* note 1, at 437-40.

32. See generally notes 15 & 16 *supra* and accompanying text.

initially decide to build a solar subdivision—a decision that probably represents a major change in how he has previously built homes. The cost of such inertia should not be underestimated.³³

The second type of problem results largely from the apparent diurnal and annual motion of the sun which produces a constantly shifting pattern of shadows.³⁴ Williams appears to have ignored this problem when he concluded that “in the typical established residential zone, someone seeking reasonable assurances of solar access will [generally] have to deal only with one neighbor to the south.”³⁵ While generalizations are difficult because of the wide variety of housing, vegetation, and street orientation patterns, in traditional rectangular-grid developments objects on five adjoining lots may shade portions of the solar owner’s parcel during the day. A high-rise structure would shade an even larger area. The possibility of negotiating with several neighbors increases both the magnitude of the transaction costs and the potential for holdouts.³⁶

33. See generally Hirshberg & Schoen, *Barriers to the Widespread Utilization of Residential Solar Energy: The Prospects for Solar Energy in the U.S. Housing Industry*, 5 POL’Y SCI. 453 (1974). The developer may have to educate his potential customers as well as himself. The housing industry “is highly sensitive to initial investments (*first cost* of its products) . . . Solar devices which have lower operating costs but higher initial investment costs than other energy systems could . . . be expected to meet industry resistance.” *Id.* at 458. It may also produce consumer resistance—at least until the concepts of life-cycle costing become more familiar. Finally, unlike other types of subdivision restrictions, solar access covenants must be tailored to the idiosyncratic conditions of the particular area. Drafting unique restrictions for each parcel will increase costs. See Myers, *Solar Access Rights in Residential Developments*, 24 PRAC. LAW. 13 (1978).

34. See generally S. KRAEMER, *SOLAR LAW* 197-206 (1978).

35. Williams, *supra* note 1, at 438. Williams apparently bases this conclusion at least partially on the existing “legal and economic limits on construction heights.” *Id.* at 440. Over all but the very short run, however, such limitations are largely chimerical. The individual landowner, for example, has no rights in an existing zoning classification: “zoning regulations are not contracts by government and may be modified.” *Reichelderfer v. Quinn*, 287 U.S. 315, 323 (1932). Cf. *Cain v. American Nat’l Bank & Trust Co.*, 26 Ill. App. 3d 574, 579-80, 325 N.E.2d 799, 804 (1975) (finding that the plaintiff had no common law right to light, the court concluded: “Consequently, even though the 1957 Chicago Zoning Ordinance [now] permits defendants to deprive plaintiffs of air [and] light . . . that ordinance does not change or modify any duty owed to plaintiffs,” and thus no action can be maintained). As a result, zoning ordinances are frequently changed. See Comment, *Solar Rights: Guaranteeing a Place in the Sun*, 57 OR. L. REV. 94, 123 n.116 (1977).

36. See notes 27 & 28 *supra* and accompanying text. See also Miller, *Legal Obstacles to Decentralized Solar Energy Technologies*, 1 SOLAR L. REP. 595, 603 (1979). Even if Williams’ assumption that the solar owner will have to negotiate with only one landowner is granted, his conclusions do not necessarily follow. While the situation may indeed be a “bilateral monopoly,” Williams, *supra* note 1, at 438, the relationship is char-

The complexity of the sun's motion also increases transaction costs in another way. Under current law, a landowner must purchase easements from neighbors in order to be assured of solar access. Since easements are interests in real property, their transfers must satisfy feudal conveyancing requirements³⁷ which will generally require the services of at least one lawyer. While these costs may be reduced gradually, solar easements "will remain difficult to describe because of the relationship of the sun to the earth."³⁸ The cost of drawing up an agreement that must contain a mass of detailed and technical information varying with the idiosyncratic features of the particular parcels is likely to remain relatively high.

Thus, the obstacles to a perfect market—the lack of perfect knowledge, the presence of externalities, and the irreducible quantum of transaction costs—demonstrate that the actual market for solar access will depart significantly from the theoretical market. The public has less information on solar energy and thus must expend more resources to learn about it. Fossil and nuclear fuels create substantial environmental and social externalities that are not reflected in their prices. Finally, because of novelty, inertia, and multiparty negotiations, transaction costs will be high. More importantly, because each of these impediments increases the cost of solar energy, each is biased in the same direction. Since these costs fall upon the person seeking to secure access, many theoretically efficient transactions will not take place. The result, in short, is a systematic bias that is impeding a transition to solar energy.³⁹

acterized by grossly unequal bargaining power. The solar owner (S) has no leverage on the neighbor (N) because S can buy from no one else. While N can sell to no one else, N's position is not worsened by holding out for an exorbitant price. Williams understates this problem, perhaps because he identifies opportunity income with actual income. See generally Kelman, *Consumption Theory, Production Theory, and Ideology in the Coase Theorem*, 52 S. CAL. L. REV. 669 (1979).

37. See, e.g., *Miller v. Lawlor*, 245 Iowa 1144, 66 N.W.2d 267 (1954).

38. S. KRAEMER, *supra* note 34, at 42. Ironically, Williams cites Kraemer to support his conclusion that standardized forms will reduce drafting costs. Williams, *supra* note 1, at 438 n.22. While Kraemer offers some forms, he is far less sanguine about the utility of easements as the method for assuring solar access: "Lawyers, engineers, land planners, title companies and others have expressed concern over the complexity required to write a solar easement containing highly detailed, technical information . . . *New solutions are required for a new problem.*" S. KRAEMER, *supra* note 34, at 42 (emphasis added).

39. Williams does recognize this problem: "The present law may be said to disfavor solar energy in the sense that the burden of overcoming transaction costs is always on the person seeking solar access." Williams, *supra* note 1, at 457. Characteristically, how-

D. *Second Best*

The presence of market imperfections does not, however, adduce a crystalline policy recommendation. This is the result of what economists call the Theory of Second Best.⁴⁰ While a strict formulation relies heavily on rather abstruse mathematics, the Theory is the economic analogue of the Heisenberg Uncertainty Principle: In any condition that is the result of a number of variables over which the actor does not have complete control or knowledge, it is impossible to predict with certainty the result of changing any but not all variables. Or again, whenever a market departs significantly from perfection, remedying only some of the defects may actually reduce total efficiency.

The Theory is a cautionary tale on economic hubris, not a prohibition against action in a world where omniscience is rare. In many cases intervention may improve efficiency at a lower cost than would the operation of the market. Something close to this conclusion justifies pollution-control legislation, for example.⁴¹ Similarly, the Theory actually supports actions which increase imperfections in some areas. Patents, for example, can be defended for increasing longrun efficiency by stimulating inventions, even though they reduce shortrun efficiency by restricting economically relevant information.⁴²

The Theory reveals another fundamental point. In this less-than-perfect world, a decision to rely upon or to intervene in an imperfect market cannot be made solely or even primarily on market criteria. The decision can be justified only by examining a wide range of factors, of which market concerns may be among the least important.

II. NEUTRALITY ASSUMPTIONS

Up to this point, the analysis has focused on the market as a factual issue: Does the model accurately reflect actual markets? The focus now shifts to the market as an ethical model: Does the model's normative content provide an explanation for the observed bias?

ever, he immediately qualifies this statement by arguing that "[o]f course, in many cases it will not be necessary . . . for the solar user to incur any transaction costs at all." *Id.* at 457 n.65.

40. Lipsey & Lancaster, *The General Theory of Second Best*, 24 *REV. ECON. STUD.* 11 (1957).

41. See Calabresi, *supra* note 26, at 69-70.

42. See also Epstein, "Theory of Second Best" in *Operation: A Comment on the 1976 Modification of the Electrical Equipment Consent Decrees*, 22 *ANTITRUST BULL.* 503 (1977).

Welfare economists, despite the apparently prescriptive content of "welfare," modestly claim that their concern is with allocation (*i.e.*, how resources are assigned to a particular use) and not with distribution (*i.e.*, how things are apportioned among people).⁴³ This is a magical dividing line: positive (*i.e.*, "scientific") economics to one side, ethics and politics to the other. The supposed divide, however, is merely a rhetorical ploy concealing a number of questionable normative assumptions and judgments. These assumptions may be correct, but any analysis that systematically obscures or denies its normative content is at best dissembling and at worst dishonest.

A. *The Assumption That Efficiency Is Distributionally Neutral*

The normative content of welfare economics is wrapped up in the concept of "efficiency." This concept is employed as the primary evaluative criterion for examining different allocations. Williams uses the term as a measure of a particular entitlement "in bringing about the maximization of the value of *all* the resources at stake."⁴⁴ This informal definition is a corollary of the more formal one generally accepted by property rights analysts: "Efficiency is a technical term: it means exploiting economic resources in such a way that human satisfaction as measured by aggregate consumer willingness to pay for goods and services is maximized."⁴⁵ Although the term initially ap-

43. For example, Posner admits that an "economist cannot tell us whether . . . consumer satisfaction should be the *dominant value* of society." R. POSNER, *supra* note 24, at 4-5 (emphasis added). This admission is the result of the assumption that it is impossible to make interpersonal comparisons without an explicit ethical standard. Another assumption, however, is also required to reach this general conclusion: All distributional goals are based on comparisons of individual's relative welfare. Both assumptions are open to question. See I.M.D. LITTLE, *A CRITIQUE OF WELFARE ECONOMICS* 51-57 (2d paperbound ed. 1973); Baker, *Posner's Privacy Mystery and the Failure of Economic Analysis of Law*, 12 GA. L. REV. 475 (1978).

44. Williams, *supra* note 1, at 431.

45. R. POSNER, *supra* note 24, at 4. Up to this point, this article has avoided introducing the more arcane analytic tools and terminology of welfare economics. There has been no explicit discussion of indifference curves, or Edgeworth boxes, for example. However, it is now necessary to introduce briefly "Pareto optimality," the formal construct for the concept of efficiency. Pareto optimality is the supposedly nonnormative basis for the great divide between allocation and distribution: "There is an *objective* criterion for choosing a 'good' act . . . namely, that if, for any change in circumstances, no one is made *worse* off and at least one person is made *better* off, then it can be unambiguously asserted that the *general welfare* is improved . . ." Johnson, *An Optimal State Water Law: Fixed Water Rights and Flexible Market Prices*, 57 VA. L. REV. 345, 348-49 (1971) (emphasis added). The difficulty of constructing an objective standard that requires such ethical concepts as "better" and "worse" should be appar-

pears to be a scientifically objective and ethically neutral standard, closer scrutiny reveals that it is actually biased and normative.⁴⁶

These limitations result from the almost tautological interweaving of definitions that make up the concept. "Efficiency" is the maximization of value. "Value" is measured through the market by willingness to pay.⁴⁷ Willingness to pay, however, is at least partially a function of ability to pay which, in turn, is dependent upon the existing in-

ent. The leading theoretical welfare economist is more explicit. He lists Pareto optimality among the three "ethical judgments" underlying welfare economics. See E. MISHAN, *A Survey of Welfare Economics*, *supra* note 6, at 13-14. Its ethical or normative nature is the subject of this section.

It should also be apparent that Pareto optimality is an exceedingly trivial standard. By definition it is applicable to few if any real-world situations since the vast majority of resource reallocations will produce losers and gainers. In an attempt to extend the criterion to more realistic situations, a weakened test has been suggested. Under this standard, a change "is favorably viewed if the gains enjoyed by winners exceed the losses experienced by the losers. Where [this] test is met, the winners *would be able* to compensate the losers *if transaction costs between the parties were zero.*" Williams, *supra* note 1, at 456 n.64 (emphasis added). Four points are worth noting. First, the standard is at least as normative as the more stringent version. Second, if compensation is not paid—and the criterion does not require actual payment—any consensus that the stringent test is unobjectionable disappears. At a minimum, the losers can be expected to object. Third, if compensation is paid, there will be a new distribution of wealth, and the allocation that initially satisfied the weak test may no longer be optimal. In fact, the old allocation may now be optimal. The result will be a continual shifting between the two allocations. See E. MISHAN, *A Re-appraisal of the Principles of Resource Allocation*, in *WELFARE ECONOMICS* 117, 122-25 (2d ed. 1969). Fourth, transaction costs will never be zero and will frequently be astronomical in such reallocations. The weakened criterion thus does not significantly advance the utility of applying an "efficiency," or Pareto optimality, standard.

46. See Baker, *supra* note 4.

47. "Value" is a slippery term. The author of a standard treatise begins the section entitled "Concepts of Value" by quoting Humpty Dumpty's famous dictum from Lewis Carroll's *Through the Looking Glass*: "'When I use a word,' Humpty Dumpty said, in a rather scornful tone, 'it means just what I choose it to mean—neither more nor less.'" 1 J. BONBRIGHT, *VALUATION OF PROPERTY* 3 (1937). Williams does not provide a definition of "value." Because of his desire to structure the discussion in terms of land values, he instead defines "market value": "Market value is fundamentally the discounted current value of the expected net income stream from the property" where "income" is understood to include nonpecuniary "values." Williams, *supra* note 1, at 432 n.4. While this approach initially appears promising and does serve to emphasize the fact that solar access will affect land values, it creates analytic difficulties. His discussion of the comparative values of access and intensive (obstructive) land uses, for example, is unduly muddled by his unwillingness to compare the values directly. See *id.* at 443. Williams' procedure is analogous to adding x (the value of the "raw" land) to both sides of an equation—it is not incorrect, but it does complicate the problem without materially aiding in its solution.

Rather than belabor these difficulties further, it seems best to simply follow Posner: "Value . . . is defined by willingness to pay." R. POSNER, *supra* note 24, at 4. In any event, Williams' definition can be demonstrated to reduce to Posner's.

come and wealth (entitlements) distribution.⁴⁸ "Efficiency" thus serves to do little more than reify the existing distribution. That is, property rights, as "the set of economic and social relations defining the position of each individual with respect to the utilization of scarce resources,"⁴⁹ determine the roles and relative status of individuals in the market and thus the "efficient" allocation of resources by the market.⁵⁰

Three points are now apparent. First, calling a particular allocation "efficient" is not saying much. To assert that the allocation is efficient because it is the outcome that would be the result in a perfect market, after initially assuming that a perfect market is the only form of allocation that produces efficiency, is tautological. Nevertheless, this is the result of the interrelated definitions built into the term.⁵¹

Denominating an allocation "efficient" is unenlightening in another way. Since "efficiency" is a function of the initial distribution, a change in the distribution also alters the efficient outcome. If economists are to avoid interpersonal comparisons, however, they cannot compare alternative but equally efficient allocations.⁵²

Finally, since entitlements determine efficiency, Williams' goal of using efficiency to determine entitlements⁵³ is a meaningless charade. As Archimedes concluded long ago, an independent leverage point is required to move the world. But Williams does not offer an independent point. Rather, he implicitly assumes the economic status quo and proceeds to discover that what is, is very nearly the best: "all transfers that occur will be beneficial ones."⁵⁴ The conclusion is

48. Even Posner recognizes that "[w]illingness to pay is . . . a function of the existing distribution of income and wealth in the society." R. POSNER, *supra* note 24, at 4.

49. Furubotn & Pejovich, *Property Rights and Economic Theory: A Survey of Recent Literature*, 10 J. ECON. LITERATURE 1137, 1139 (1972) (footnote omitted).

50. See Baker, *supra* note 43. For example, C likes oranges and D likes apples. C, however, is wealthy while D is poor. Oranges will thus have a higher "value" than apples because C is willing and able to pay more for them. Therefore, an allocation of more resources to the production of oranges is justified as "efficient" because of their greater value. If the relative wealth of C and D is reversed, however, the production of more apples is efficient. As Warren Samuels bluntly stated: "Rights specify efficiency, efficiency does not specify rights." Samuels, *The Coase Theorem and the Study of Law and Economics*, 14 NAT. RESOURCES J. 1, 9 (1974).

51. Here, as elsewhere, welfare economists frequently disregard their apparently rigorous definitions and use terms in their popular sense. It is difficult, for example, to question the value of "competence" or "effectiveness"—two synonyms for "efficient." It is, however, much easier to question a standard based on ability to pay.

52. See E. MISHAN, *A Re-appraisal of the Principles of Resource Allocation*, *supra* note 45, at 133-34. See also Randall, *supra* note 23, at 28.

53. See Williams, *supra* note 1, at 431.

54. *Id.* at 437.

merely the elaboration of his initial adoption of the existing distribution. In some situations this would present no major problems. However, when the key issue is what the distribution of entitlements should be, "an analysis that must assume an existing distribution cannot provide guidance."⁵⁵

The ease and apparently nonprescriptive air of his conclusion reveal the ideological bias implicit in Williams' argument. As two economists bluntly concluded: "Economists persist in traditional neoclassical welfare analysis for one very basic reason. It is an elaborate apology for the [economic] status quo."⁵⁶

B. *The Assumption That Efficiency Is Taste Neutral*

In addition to the implicit assumption that efficiency is a distributionally neutral standard, there is another troublesome assumption: that it is taste neutral. This is commonly phrased as a belief that preferences are not determined by the market—an "immaculate conception" theory of tastes in Kenneth Boulding's phrase.⁵⁷ This is a questionable position since the genetic component in tastes is relatively small. Beyond such basic needs as food and shelter, tastes are acquired; even the *method* of satisfying the limited basic needs has a substantial learned component. In the long run "people's tastes are . . . too much influenced by what is being produced and consumed, and by what has been produced and consumed in the past, to make the assumptions that they are independent anything but a hollow pretence."⁵⁸

In addition to existing and historical production and consumption, the existing entitlements play a large role in determining preferences. Liability rules, for example, inevitably affect taste. Similarly, "a change in the general system of property must affect the way people behave."⁵⁹ Thus, once again, Williams' implicit adoption of the existing entitlement structure precludes him from making a non-normative comparison of alternative entitlements.

55. Baker, *supra* note 43, at 476.

56. d'Arge & Hunt, *Economic Orthodoxy and Externalities Revisited*, 1 ENV'TL AFF. 845, 851 (1972).

57. K. BOULDING, *ECONOMICS AS A SCIENCE* 118 (1970).

58. I.M.D. LITTLE, *supra* note 43, at 50. Producers now largely determine what will be produced rather than consumers making this determination through the market. Galbraith, *Economics as a System of Belief*, 60 AM. ECON. REV. (Papers & Proc.) 469 (1970). As a result, the assumption that individuals are the best judges of their own welfare becomes a dubious starting point, and "the foundation necessary to enable economists to infer and measure increases in individual or social welfare crumbles up in these circumstances." E. MISHAN, *THE COSTS OF ECONOMIC GROWTH* 112 (1967).

59. Furubotn & Pejovich, *supra* note 49, at 1139.

Williams' acceptance of the status quo is an informatively static position: political action is taboo.⁶⁰ He supports this restrictive position by arguing that "property rights *should* be settled and free from tinkering" to "afford the owner personal psychological security and a measure of independence."⁶¹ A strict application of this principle would render the law incapable of responding to changing conditions since most legal changes have some impact on existing property entitlements. Entitlements, however, do change. And in fact, the recognition of a "new" entitlement may result from the same desire to provide the psychological security and measured independence that Williams invokes to support his stationary vision.⁶²

This argument is merely a facet of Williams' refusal to confront the distributional issues implicit in *any* entitlement system.⁶³ It is a particularly weak justification when the issue is what the entitlement structure should be. It is further weakened when offered as a counterargument to the conclusion that the social situation has changed and that the law should be modified to reflect the new reality—the thrust of the articles that Williams dismisses as "skewed." When the central issue is what type of society we want to become, fundamental democratic propositions argue for a determination in an arena where the outcome will be the result of "one person, one vote" rather than of the efficiency standard of "one dollar, one vote"—particularly when dollar votes can be bought with advertising.

Williams' acceptance of the existing entitlement structure effectively precludes him from using his property rights analysis to reach meaningful conclusions about either the value of alternative entitlements or the more fundamental question of proper social goals. Since the existing entitlements have a major effect on individual preferences and on the resulting "efficient" resource allocation, neither market preferences nor efficiency provides the required objective leverage point.

60. This position is manifest in his attack on the presumptions of the existing literature on access. He criticizes the authors for their skewed vision in concluding that "it is conceptually and constitutionally possible" to remove the barriers to solar energy through political means. Williams, *supra* note 1, at 431.

61. *Id.* at 458 (emphasis added) (footnote omitted). This argument, however, can be severely twisted. Cf. *State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363 (1977) (Rehnquist, J.) (overruling *Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973)) ("It is surprising, to say the least, to find [this] nearly unanimous recent [decision] swept away in the name of *stare decisis*." 429 U.S. at 383 (Marshall, J., dissenting)).

62. See, e.g., *Goldberg v. Kelly*, 397 U.S. 254 (1970); Reich, *The New Property*, 73 *YALE L.J.* 733 (1964).

63. See generally Samuels, *Interrelations Between Legal and Economic Processes*, 14 *J.L. & ECON.* 435 (1971).

III. WHAT IS, IS VERY NEARLY THE BEST

With these biases implicit in his analytic framework, it is hardly surprising that Williams concludes that what is, is very nearly the best. The "what is," is easements and restrictive covenants; the "very nearly" is to be remedied by legislative action thereby producing the best of all possible results. While he does not specify precisely what legislative action is suitable, he seems to favor some form of subsidization of solar energy so that it can compete in the market with the already heavily subsidized conventional fuels.⁶⁴

Williams is more explicit about the other half of the couplet in his assertion that "a restructuring of current property concepts presents serious difficulties."⁶⁵ In reaching this conclusion, Williams applies his property rights analysis to the law of nuisance, spite fences, prior appropriation, prescription, and zoning. Only two of his proposed solutions, nuisance and prior appropriation, will be examined. Since the arguments supporting these approaches have been presented elsewhere,⁶⁶ they will not be reviewed here.

A. Nuisance Law

Williams advances four main arguments against the extension of common law nuisance concepts to situations involving a deprivation of solar access. The first focuses on a perceived factual distinction. In the ordinary nuisance action, offensive emissions often affect a substantial number of landowners.⁶⁷ Solar access situations, on the other hand, generally involve only two parties. The large number of affected parties in traditional nuisance situations increases transaction costs, creates potential holdout problems,⁶⁸ and thereby precludes the parties from reaching a voluntary agreement. A court, however, is able to cut through these problems and produce the efficient solution that transaction costs prevented the market from achieving.⁶⁹

64. Williams does cite with approval the recent enactment of federal tax incentives. Williams, *supra* note 1, at 457 n.66.

65. *Id.* at 457.

66. See generally Comment, *Obstruction of Sunlight as a Private Nuisance*, 65 CALIF. L. REV. 94 (1977); Comment, *Securing Solar Rights: Easements, Nuisance, or Zoning?*, 3 COLUM. J. ENV'T'L L. 112 (1976); Comment, *Solar Rights: Guaranteeing a Place in the Sun*, 57 OR. L. REV. 94 (1977); Comment, *The Allocation of Sunlight: Solar Rights and the Prior Appropriation Doctrine*, 47 U. COLO. L. REV. 421 (1976).

67. Williams, *supra* note 1, at 441.

68. See notes 27 & 28 *supra* and accompanying text.

69. The example Williams provides demonstrates several interesting points on the

Since access cases do not present similar transaction cost problems, Williams argues that courts reasonably might conclude that their refusal to recognize a common law right to solar access on a nuisance theory will be remedied by the market in "a large fraction of the instances" where access is efficient.⁷⁰

The argument thus is inextricably tied to Williams' conclusions that access will require only two-party negotiations that will have relatively low transaction costs. Given the apparent solar motion, however, it is far from clear that most transactions will involve only two landowners.⁷¹ Even if only two parties are involved, their relative bargaining positions are strikingly unequal.⁷² Transaction costs are also likely to remain high in any event because of novelty, inertia, and drafting complexities.⁷³ Thus, even if the number of people in-

application of property rights economics to legal issues. First, in his hypothetical, ten landowners each suffer \$1,500 in losses due to the pollution. The emissions could be eliminated for \$10,000. Williams concludes, therefore, that "the situation contains the potential for a bargain." Williams, *supra* note 1, at 441. That is, the landowners could pay the polluter between \$10,000 and \$15,000 to stop polluting! While the court might enjoin the polluter, require him to pay damages, or both, it would not require the landowners to pay—but then, wealth transfers are not important to property rights analysts.

Second, Williams has implicitly adopted the approach of Posner's *Economic Analysis of Law*: Judges are trying to do what is "efficient." See R. POSNER, *supra* note 24. For example, Williams notes that nuisance law creates difficulties because courts seek "to achieve utilitarian outcomes by imposing a value-maximizing [*i.e.*, efficient] outcome on disputing parties." Williams, *supra* note 1, at 444 n.38. Proponents of this position find support for their hypothesis by demonstrating that the results are generally efficient. Such demonstrations, however, have reversed the cause-and-effect linkage. The court in Williams' hypothetical, for example, is determining a distribution of entitlements either to pollute or to be free from pollution. Since the distribution largely determines efficiency, declaring the results of an entitlement distribution to be efficient is not very enlightening. See notes 45-52 *supra* and accompanying text. Cf. Samuels, *supra* note 50, at 9 ("Given the structure of rights there will be or tend to be an optimal solution specific thereto. Change the structure of rights and there will be or tend to be a changed solution.").

Third, ironically both property rights analysts and their radical critics are arguing that courts do the same thing—only their terminology differs. Property rights analysts speak of judges being "efficient"; radicals speak of them as reinforcing the "class structure" of the existing social system. To the extent that both terms are reducible to the system of property entitlements, however, they are synonymous.

Finally, Williams assumes that the status quo ante entitlement is one to pollute. This presumption is also common in the economic analysis of law. It seems that "economics" and "ecology" have only etymology in common. See generally note 22 *supra* and accompanying text.

70. Williams, *supra* note 1, at 441.

71. See notes 34-36 *supra* and accompanying text.

72. See note 36 *supra*.

73. See notes 33 & 34, 37 *supra* and accompanying text.

volved differs, both nuisance actions and solar access share a common economic problem: transaction costs are likely to preclude many bargains. Furthermore, even accepting Williams' conclusions on relative transaction costs does not necessitate accepting his conclusion on the impropriety of extending nuisance law. As he acknowledges, in situations where transaction costs are low, "most of the problems associated with importing nuisance . . . concepts to solar access issues would not be present."⁷⁴ *But it is only in low-transaction-cost situations that the market is not biased against solar access.*⁷⁵

Williams' second argument is that the present lack of a nuisance action to protect solar access may be traceable to "a rough judicial assessment of the comparative values at stake."⁷⁶ Since "value" reflects the existing entitlement structure,⁷⁷ however, it is of limited utility in answering questions of whether that structure should be modified. In addition, Williams recognizes that such historical value comparisons must be qualified by "modern increases in the relative value of solar energy."⁷⁸

The third argument that Williams advances is that the recognition of a new cause of action, and the entitlement that it would imply, would involve an additional cost resulting from "the consequences of erroneous judgments."⁷⁹ His argument on this point is revealing. He compares his ideal market, where only "occasional lunacies" lead to incorrect valuations of access,⁸⁰ to real-world judges who unfortunately cannot "costlessly acquire perfect knowledge."⁸¹ Even laying aside such technical limitations, Williams' argument is unpersuasive. There does not appear to be any intrinsic reason why courts would have greater problems assigning a value to access rights than to any other property interest. Furthermore, even the market produces a certain degree of error since some efficient access agreements will not

74. Williams, *supra* note 1, at 457 n.65.

75. See note 39 *supra* and accompanying text.

76. Williams, *supra* note 1, at 442. Cf. *Klein v. Gehrung*, 25 Tex. 232, 243 (Supp. 1860) ("The consequence of an admission of the right [to acquire easements of light by prescription] would be, that the occupants of low and inferior houses . . . would acquire rights . . . which might render useless and waste the most valuable lots for business purposes or residences . . ."). The judge in *Klein* was obviously unfamiliar with the implications of the Coase Theorem.

77. See notes 47-50 *supra* and accompanying text.

78. Williams, *supra* note 1, at 443.

79. *Id.* at 444.

80. *Id.* at 437.

81. *Id.* at 444.

be made because of transaction costs.⁸² A decision to reverse the market bias thus does not seem assailable unless it can be demonstrated that errors would be far more frequent and damaging. Williams does not offer such evidence.

Williams also argues that the recognition of a new nuisance action would increase both governmental and private litigation costs: "This paucity of cases is so quiet a virtue that it may be overlooked. Yet the vice which all of the proposed changes would entail is significant: litigation over whether a solar user has some legal right . . . and over the scope of the right."⁸³ Although his argument has some merit, it has two primary weaknesses. First, it ignores the costs of the present no-entitlement situation. There are, for example, a number of social costs, such as pollution, that would be reduced by increased reliance on solar energy. The market does not account for such costs because of their unfocused impact. Second, the paucity of cases may be the result of the current historical situation rather than a lack of litigious owners of solar energy systems. The number of systems is relatively small; most have been in place for a very short period and it is therefore unlikely that vegetation would have grown or new construction started. There is evidence to support this reasoning in the fact that solar access cases are now being filed.⁸⁴ Thus, Williams' conclusion may be premature.

Finally, many of Williams' arguments would be circumvented or severely restricted by the enactment of a statute declaring the shading of solar collectors to be a public nuisance.⁸⁵ The statute, by limit-

82. *Id.* at 437.

83. *Id.* at 453. *See also id.* at 444.

84. A suit was recently brought in Hawaii, for example, to enjoin the construction of a high-rise building that obstructed sunlight flowing to a solar collector. The court "regrettably" denied the injunction, commenting that government encouragement of solar energy "doesn't do much good . . . without access to the sun." *Siu v. McCully-Citron Co.*, Honolulu Star-Bulletin, Nov. 4, 1978, § A, at 9, col. 4 (Hawaii Cir. Ct. Nov. 3, 1978). *See also* G. HAYES, SOLAR ACCESS LAW 9 (1979); 1 SOLAR L. REP. 245 (1979); 1 SOLAR L. REP. 542 (1979).

85. California has enacted such a statute. It specifies that the shading of more than "10 percent of the collector absorption area" of a collector located in compliance with the statute is a public nuisance. It also provides enforcement procedures and certain exemptions and exceptions. CAL. PUB. RES. CODE §§ 25980-25986 (West Supp. 1979). In his discussion of zoning, Williams cites this statute as an example of a "device that suffers from insufficient attention to relevant variables." Williams, *supra* note 1, at 455 n.61. His concern is that the statute is not sufficiently flexible. For example, it "makes no allowance . . . for the loss inflicted on the person proposing new construction that would shade the solar device." *Id.* First, the statute applies only to vegetation; construction is not prohibited. Second, since the statute does not preclude subsequent transfers between the solar owner and the potential obstructor, his argument is, within the frame-

ing the number of factors to be considered, would obviate many of the difficulties of balancing the value of solar access against the value of obstruction. It would also reduce erroneous judgments because it would be a legislative determination that access was the more important value. Finally, a statutory approach would result in reduced litigation expenses since the right to access and its scope would be specified. In effect, the statute would merely restructure the existing entitlements, thus altering the theoretically efficient allocation. To the extent that Williams' general analysis is correct, therefore, the market will be unimpaired.

B. *Prior Appropriation*

Williams' analysis of the prior appropriation doctrine is even more problematic. A significant amount of the difficulties stems from his literalness. Despite his recognition that the appropriation doctrine has been cited only as a useful analogy, he argues that it is difficult, for example, to imagine a diversion of sunlight.⁸⁶ An analogy, however, requires only similarity, not identity.⁸⁷

Williams' difficulties are further compounded by his reluctance to look beyond the common-law features of the doctrine. While the common law remains the basis for western water law, significant and readily applicable modifications were made when most western states shifted to a statutory permit system early in this century. The mod-

work of his own market analysis, nonsensical—but revealing. The statute merely shifts transaction costs. Any new construction should still be able to proceed if it is efficient.

86. Williams, *supra* note 1, at 448-49.

87. Unfortunately, this literal-mindedness is shared by several commentators. See, e.g., ENVIRONMENTAL LAW INSTITUTE, LEGAL BARRIERS TO SOLAR HEATING AND COOLING OF BUILDINGS 27 (1977); S. KRAEMER, *supra* note 34, at 151. The degree of identity that Williams seems to require would, for example, render the concept of "precedent" largely meaningless. Edward Levi has summarized the problem confronting legal logic:

The problem for the law is: When will it be just to treat different cases as though they were the same? A working legal system must therefore be willing to pick out key similarities and to reason from them to the justice of applying a common classification. . . .

But this kind of reasoning is open to the charge that it is classifying things as equal when they are somewhat different. . . . In a sense all reasoning is of this type, but there is an additional requirement which compels the legal process to be this way. Not only do new situations arise, but in addition peoples' wants change.

E. LEVI, AN INTRODUCTION TO LEGAL REASONING 3-4 (paperbound ed. 1949) (footnote omitted).

ern permit systems offer the most comprehensive model for developing solar access rights.⁸⁸

Williams presents three arguments against adapting the appropriation doctrine. The first is a perceived definitional problem. Largely because of the historical context in which it developed, the appropriation doctrine initially focused on the physical diversion of water from a stream as the crucial factor. Its role, however, was largely evidentiary. In the absence of local governments, diversion was proof of an intent to appropriate.⁸⁹ While courts continue to speak of diversion, the doctrine has been legislatively modified.⁹⁰ Applying the evidentiary purpose of the diversion requirement to solar energy should present few difficulties: the person applies for a permit and installs the collector.⁹¹

The second and third arguments, that the doctrine would encourage premature development and that it would result in wasteful uses, both involve a misunderstanding of the central concept of the prior appropriation doctrine—"beneficial use." The fundamental nature of the concept is captured in the frequently iterated maxim that

88. Probably the most modern and well-reasoned system is one recently adopted by Alaska. See ALASKA STAT. §§ 46.15.030-.130 (1979). For an access permit system modeled on the appropriation system, see Goble, *Solar Access: Evaluation of Present Statutes and Proposed Legislation*, in Proceedings of Solar 79 Northwest 172 (Aug. 10-12, 1979).

89.

To constitute an appropriation, therefore, there must co-exist "the intent to take, accompanied by some open, physical demonstration of the intent, and for some valuable use." *McDonald & Blackburn v. Bear River and Auburn Water and Mining Co.*, 13 Cal. 220, 232-33 (1859). The outward manifestation is most often evidenced by a diversion of the water from its natural source prior to the use; . . . but it can also be evidenced in other ways, for example, as in this case, by watering livestock directly from the source . . . or as in other cases by placing water wheels into a stream in order to use the flowage as power to operate a mill located on the bank.

Hunter v. United States, 388 F.2d 148, 153 (9th Cir. 1967). See also *Genoa v. Westfall*, 141 Colo. 533, 349 P.2d 370 (1960).

90. See, e.g., COLO. REV. STAT. § 37-92-103(3) to (4) (1973) (manmade diversion requirement of common law no longer required for a finding of appropriation or prior appropriation); OR. REV. STAT. § 536.410 (1979) (appropriation defined merely as beneficial use).

91. Williams thus misses the point in concluding that the diversion "requirements" would force the court to "become embroiled in case-by-case determination of comparative values." Williams, *supra* note 1, at 449. Even if one assumes that Williams is correct in concluding that courts would have difficulty in defining what constitutes an appropriation of solar access, the issue would be one of formulating and applying a definition, not one of comparing values.

beneficial use is the basis, the measure, and the limit of the right to use water.⁹² That is, water can be appropriated only for a beneficial use;⁹³ no right to water in excess of the amount that can be beneficially used is valid;⁹⁴ and if water is no longer being beneficially used, the right is lost.⁹⁵

Williams' argument that adopting an appropriation permit system will lead to premature development that cannot be "economically justified apart from enabling [the developer] to secure additional property rights,"⁹⁶ ignores the beneficial use limitation. Unless the use is beneficial, no right accrues.⁹⁷ The argument also ignores the fundamental distinction between *siting* a collector and *assuring access* to it.⁹⁸ Thus while his argument might be telling against certain siting rules, it has only minimal impact on the problem of assuring a properly sited collector with solar access.

As Williams acknowledges, his argument that an appropriation permit system would promote wasteful uses is a weak one since the market would cure any waste. Whatever the waste problems may be in water law, "the appropriation doctrine may pose less of a problem for solar access than for water."⁹⁹

92. See, e.g., COLO. REV. STAT. § 37-92-103(4) (1973). See also 1 W. HUTCHINS, *WATER RIGHTS LAW IN THE NINETEEN WESTERN STATES* 438-42 (1971).

93. "The concept that use of . . . water must be made for beneficial purposes is fundamental in western water jurisprudence." 1 W. HUTCHINS, *supra* note 92, at 438. See also *In re Filippini*, 66 Nev. 17, 202 P.2d 535 (1949); *Dalton v. Kelsey*, 58 Or. 244, 114 P. 464 (1911).

94. "An excessive diversion of water for any purpose cannot be regarded as a diversion for a beneficial use. In so far as the diversion exceeds the amount reasonably necessary for beneficial purposes, it is contrary to the policy of the law . . . and confers no title, no matter for how long continued." *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 3 Cal. 2d 489, 547, 45 P.2d 972, 997 (1935). See also *Ide v. United States*, 263 U.S. 497 (1924); *Fourzan v. Curtis*, 43 Ariz. 140, 29 P.2d 722 (1934); 1 W. HUTCHINS, *supra* note 92, at 491-515.

95. "What is beneficial use at one time may, because of changed conditions, become a waste of water at a later time." *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 3 Cal. 2d at 567, 45 P.2d at 1007. See also *Conrow v. Huffine*, 48 Mont. 437, 138 P. 1094 (1914); *Crawford v. Lehi Irrigation Co.*, 10 Utah 2d 165, 350 P.2d 147 (1960).

96. Williams, *supra* note 1, at 449.

97. As one court noted: "[T]he rights acquired by the appropriator must be exercised with reference to the general condition of the country and the necessities of the community and not for the purpose of obtaining a monopoly of water. . . ." *Hewitt v. Story*, 64 F. 510, 515 (9th Cir. 1894).

98. The failure to recognize this distinction has plagued the legal discourse on the access issue. The two issues have been treated as synonymous. *But see Goble, A Note on Solar Access*, 2 SOLAR L. REP. ____ (1980). See also S. KRAEMER, *supra* note 34, at 123.

99. Williams, *supra* note 1, at 451.

Thus, at least for nuisance law and the prior appropriation doctrine, it appears unlikely that an alteration of the entitlement structure would produce serious difficulties. As Williams notes, the problems that he foresees would not be present when transaction costs are low.¹⁰⁰ But only when transaction costs are zero is the market unbiased against solar energy. A change in the entitlement structure can, therefore, be expected to increase the number of solar energy systems by shifting the burden of transaction costs.

CONCLUSION

It is characteristic of the age in which we live to think too much in terms of economics, to see things too predominantly in their economic aspect; and this is especially true of the American people. There is no more important prerequisite to clear thinking in regard to economics itself than is recognition of its limited place among human interests at large.¹⁰¹

Williams sets out to correct the "skewed vision" that he believes pervades the legal literature on assuring access to sunlight. Unlike the challenged vision, he makes no explicit appeal for a political resolution of the problem. Instead, his arguments concern more mundane matters. Williams merely applies a property rights analysis to the issue and reaches an apparently objective conclusion: A change in the property rights structure to facilitate solar access will reduce efficiency and lead to a misallocation of other valuable resources.

The air of objectivity is, however, unwarranted. It serves to obscure the shaky ethical and factual foundations on which his argument is erected. Before his conclusions can be accepted it is necessary to make at least three Kierkegaardian leaps of faith.

First, the blatantly ethical vision of the world inherent in welfare economics must be accepted. It is a world without love or envy, peopled by rational, atomistic *homo oeconomicus*. As one economist protested, if the viewpoint of welfare economics "had to compete in the marketplace for ethical ideas it could not . . . long survive."¹⁰²

100. *Id.* at 457 n.65. It should be remembered that Williams argues that this is the overwhelming majority of instances.

101. F. KNIGHT, *THE ECONOMIC ORGANIZATION* 3 (1951).

102. Alexander, *Human Values and Economists' Values*, in *HUMAN VALUES AND ECONOMIC POLICY* 101, 108 (S. Hook ed. 1967). This belief has been echoed in less emotional tones by most theoretical welfare economists. See, e.g., J. DE V. GRAAFF, *supra* note 13, at 1 ("Theoretical welfare economics proceeds from a number of definite assumptions, factual and ethical, which are seldom stated explicitly. If their nature were

Second, it is necessary to believe that the present distribution of wealth, entitlements, and income are—if not the best possible—at least the best attainable. Since rights specify efficiency (rather than efficiency specifying rights), Williams' goal of using efficiency to evaluate alternative entitlements is chimerical.

Finally, it is necessary to affirm the existence of a miraculous allocative machine—the perfect market—that even its most fervent proponents do not pretend actually exists. Until omniscience is a human birthright, it cannot exist. Perhaps with Tertullian it is best to simply proclaim: “[I]t must be believed, because it is absurd.”¹⁰³

Welfare economics and its property rights progeny thus are far closer to a branch of theology than to a branch of physics. The danger, however, is that the apparently value-free jargon of the laissez-faire priests will obscure this.

This is not to say that economics has no role in human affairs or that it has nothing to offer to the energy debate. Economists are eminently qualified to offer evidence on the employment impact or capital requirements of alternatives, for example. But on the teleological question—what is the most socially desirable energy policy—they have precious little to offer.

The Harvard Business School—hardly a bastion of anticapitalist loonies—recently challenged the belief that the market should be left to supply the amount and types of energy that society wants. In language that applies equally to solar energy, the report argued:

[An] obstacle to productive conservation may be summarized by the maxim, Let the market do its work. Proponents of this view say that the present levels of conservation activity are a rational response to present energy prices. In other words, price will determine the extent of conservation But that is not enough. Even if prices did begin to rise substantially tomorrow, conservation would still be seriously hampered by political and social barriers. . . . Excessive faith in the market tends to obscure the difficulties and requirements of the needed transition away from the world of imported oil.¹⁰⁴

more widely appreciated . . . it is improbable that the conventional conclusions of welfare theory would continue to be stated with as little caution as is at present the custom.”).

103. TERTULLIAN, DE CARNE CHRISTI 5, quoted in Pagels, *The Threat of the Gnostics*, N.Y. REV. BOOKS, Nov. 8, 1979, at 37, 37.

104. Yergin, *Conservation: The Key Energy Source*, in ENERGY FUTURE 136, 141 (1979) (footnote omitted).