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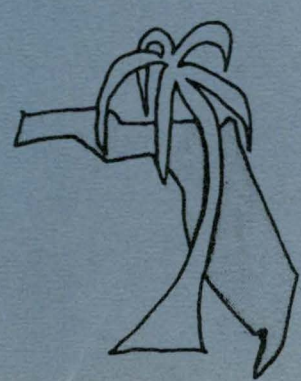

ANALYTICAL INSTITUTIONAL ECONOMICS: CHALLENGING PROBLEMS IN THE ECONOMICS OF RESOURCES FOR A NEW ENVIRONMENT

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A prominent national politician has said "The pointed heads have failed", and he is right. New programs, agencies and rules have promised much and delivered little in changed performance. There are deep conflicts over desired performance, but better information on the connection between alternative institutions and a given performance would help lower our political frustration. Can analysis supply tested predictions of the consequences of alternative institutions with respect to the environment?

Vernon Ruttan's 1971 presidential address began with the assumption of unmet demand for environmental services. From theory we know that demand could exist, but not be reflected through market institutions. From this we can't deduce that any such demand necessarily exists (and in fact I don't see strong evidence that the majority want to significantly alter their life style). But, let's put ourselves in the role of consultant to a group of environmentalists who have asked us to suggest which institutions they should seek to serve their ends. It would indeed be tragic if those who want more fish and less steel were to spend their political capital, get the rules changed and still receive no improved performance, and thus become frustrated like some other groups.

Ruttan emphasizes the role of institutions in inducing new technology that can reduce the conflict between environmental services and material outputs. This is a fundamental concept which shapes institutional research hypotheses, but technology won't solve all of our problems. Sometimes technology just shifts externalities among parties.

The classic environmental battle has been between the "bad" private industrial polluter and the "good" public fishermen. Technology can reduce this conflict. But, we are in the second generation of environmental problems which involve conflict among public users such as between fishermen and boaters or motorcycles and hikers. These are all public uses and new waste treatment or recycling technologies don't help much. Neither does public ownership, for all of these claim to be the public.

Ruttan does not paint a particularly rosy picture of available institutional alternatives for either environmental management or technological inducement. He says "The regulatory approach is a dead end " for general application (although it may have limited use for technological inducement). "I would confine subsidization, direct prohibition, and regulation to a much smaller role than in current environmental policy." [17, p. 714]

Because of his observations of the link between relative food prices and induced research in agricultural technology, he comes down hard for modification of factor and product prices to both guide resource use and technological effort.

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He prefers that this modification be implemented by some kind of decentralized decision process. He favors pollution user charges over standards and regulation, private property rights wherever possible over the common property situation, and enlargement of the scale of the firm (or governmental authority) to manage resources to account for externalities. One gets the feeling that these are preferred more out of recognition that what exists has failed some of the environmental interest groups rather than a solid prediction that the alternative will produce a given new result when actually implemented in detail. Before we can improve our predictive powers we will need to dissect the above suggestions.

INSTITUTIONAL RESEARCH: WHAT IS IT?

There is a parallel between production economics and a predictive institutional economics. In the same way that we explore the effect of alternative inputs for corn yield, I want here to explore the effect of alternative institutions for human behavior.* Do alternative institutions make a difference?

There is a part of conventional economics which constitutes its metaphysics which I hope has no parallel here. Bastardized versions of the Pareto-better rule and the Coase Rule (that property distribution makes no difference as long as there is free trade) and others are sometimes put forward as policy guidelines which claim to maximize some unobservable, mystical state called social welfare. There is now extensive literature which exposes this for the metaphysics it is. [18]

Institutions are ordered relationships among people which define their rights, exposure to the rights of others, privileges and responsibilities. I use the term property rights very broadly to cover these relationships. Institutions involve a collective choice, though it need not be explicit. Rights structure incentives and opportunity sets as well as shape people directly. Rights allow people to take advantage of opportunities as well as create and enhance them.

I have adapted a basic conception from market structure research, namely the constructs of structure, conduct and performance. By structure I mean to identify institutional alternatives largely in kinds of property rights and their distribution. Conduct refers to the behavior and actions of people, firms and government agencies. Performance is in terms of final effects on the quality of life. Policy analysis requires all of these relationships, but it is useful to distinguish between the study of institutions which is concerned with the link between institutional alternatives and behavior, while production analysis studies the link between behavior and final goods and services.

Consider zero population growth. It is one thing to analyze the result of ZPG on the economy in terms of income and productivity, but quite different to establish the connection between the institutional alternative rules that result in women's behavior of having fewer babies. For example, what child-bearing behavior results from giving each woman the marketable right to bear two children? What difference does it make if the rights are initially sold to the highest bidder? The difference in side effects (e.g. marital problems or respect for law) may be the basis for

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*An equally important question is to predict the results of the process of choosing institutions (or the rules for making rules).

choice among the alternative institutions.

Or consider research on limiting fertilizer in agriculture. We need biological data on the relationship of fertilizer run-off and aquatic life. This can be combined with information on agricultural production and demand to indicate the effect on food prices and production location as a result of different levels of fertilizer use. But, this is not institutional research. One institutional alternative is a legal prohibition of fertilizer use. The question is whether this in fact will obtain the given behavior (or what other behavior it also will induce). Experience with liquor and pot prohibitions indicate that this institutional form does not always produce the implied behavior.

Analysis must not stop at the directional impacts of prohibition, taxation or contracts but continue to the nitty gritty level of just how each of these is specified in detail. For example, how will the fertilizer prohibition be policed? What level of government? Are the rules written in specific commodity terms (lbs. of fertilizer) or in terms of performance (actual fish life)? What is the incentive conditioning for the bureaucrats involved? Choice at this level may make more difference for actual behavior than whether we use prohibitions or markets.

A maximization or simulation model utilizing a production function with different constraints on fertilizer use is quite a different thing than simulating behavioral reaction to alternative institutions which influence the amount of fertilizer actually used. Most of the current policy models are incomplete because they begin with an assumed conduct and inquire of performance. This paper is directed to the relation of institutional structure to conduct.

Behavioral Assumptions. Any scientist hopes that a simple behavioral postulate will go a long way. Economists tend to inquire what conduct follows if people acted to their advantage in obtaining several selected ends. As Boulding notes, these are models of advantage and not behavior. Downs and Niskanen have developed models of bureaucratic behavior based on an assumption that bureaucrats try to maximize the size of their bureaus. Our satisfaction with such models does not make economics a market for the results of behavioral science research.

Our models "work" because we have asked so little of them. For example, William Niskanen guesses that many bureaus do not provide their output at least cost. [14] He assumes this is because agency heads can not personally capture any of the savings. His reform suggestion then is to reward an agency head several years after he leaves the agency with a portion of any cost saving accomplished while in office. Niskanen doesn't need to do any empirical research to reach his policy recommendations. However, the whole thing rests on a very slender behavioral premise. For example, even if the agency head wanted to capture some of the savings, the model begs the question of the type of bureaucratic control that allows him to implement his will. The public administration literature is full of agency head frustration. The fact that neither the agency head nor Niskanen knows just what the cost is for a given quality agency output doesn't inhibit the policy recommendation. There is no prediction of whose ox is gored. It is all very bloodless and not very instructive for a particular interest group who wants to pick the institution to best serve their interests.

Current models "work" because we seldom ask them to bear any instrumental burden related to program design. Gordan Tullock applauded Niskanen's work and

eagerly awaits testing. But, characteristic of the questions he asks are what explains the size of bureaucracies. For example, do they grow with national income or merely a function of time. Well, suppose it turns out that empirical work discovers that bureaucracies grow proportionate to income. Does that mean that we should reduce income to control bureaucracy. Such research is devoid of instrumental variables.

Man the Product. There is another important aspect to our failure to utilize behavioral information. Institutions not only affect the structure of rewards as they interact with man's behavioral bents and desires but they shape these desires. Much of what now passes for institutional analysis has no use for data on how man is himself shaped by the character of his interpersonal relations because analysts only conceive of research problems as how to structure costs and benefits to select and direct given human characteristics. (The Wisconsin research on impacts of foreign land tenure alternatives can't be understood unless this impact on human beings can be appreciated as well as the impact on fertilizer use and crop yield.)

Varieties of Questions. The varieties of empirical institutional study are not much different than production research. They are cross-sectional (comparative) and time series analysis. We either compare two different "treatments" which happen to exist at the same time in two areas (including cross cultural) or we observe a given situation over time as institutions change. An example of the former is Kneese's analysis of the German genossenschaften for regional waste management compared to the Delaware River Basin Commission. [10]

An example of time series analysis is my historical study of Michigan water law [19] and the work of Hurst. [9] Directional changes in water law were correlated with major changes in the dominant political groups' needs for water in the economy. The rights of some individuals relative to the public (other individuals) shifted back and forth significantly to affect investment behavior and resource use. My critics reply that the institutional changes just went along with the changes in the economy and did little to cause or shape them. I can only agree that correlation doesn't prove causality in institutional analysis anymore than in econometric price analysis.

Perhaps the most important approach is the comparative study over time. Ciriacy-Wantrup reminds us that the real test for an institution is its ability to handle change. "Emphasis is on determining conditions for economic growth rather than on locating peaks, on avoiding dead end streets rather than computing the shortest distance and on adaptability rather than optimum adjustment." [2, p. 189] The important thing is whether it came closer to the given conduct and performance in the face of change than did another institutional alternative, not whether it was maximized at one moment of stability. Don Kanel has noted that owning or renting a farm may not make much difference under stability, but can be critical with change. We need to understand this same type of situation with respect to the environment. It has to do with whether a person has to be consulted when changes are made or whether he simply must try to make bids to others to stop the modification.

The great bulk of institutional analysis is composed of individual case studies. These are often regarded with contempt by my straight brethern as merely descriptive. Why they don't have similar contempt for the same collection

of data by the agricultural crop reporting service is ironical. These cases are the grist for the institutional analysis mill. True, they suffer by comparison since they tend to be gathered by independent reporters on different forms. Our science awaits some of the centralized and consistent (and expensive) reporting now enjoyed by price analysts.

The dynamic complexity of institutional interactions make empirical work difficult. [15] We cannot conduct completely controlled experiments and rerun them with various treatment levels. People learn and change, and what worked in a pilot experiment may fail later. Still, I am excited by what can be understood in research such as that tied to the current negative income tax experiment. In addition, I think it may be possible to get more from after the fact case studies if our theory and questions asked could be more standardized.

Another variety of institutional research sets out some process criteria and inquiry is made to see how an existing (or proposed) institution measures up. Consider the following criteria for water institutions set out by Irving Fox. It should "develop the best practicable information about the options available; provide reasonable opportunity for those affected by a decision to influence. . . the final decisions; serve a range of preferences," and etc. [6, p. 31] The similarity to the purely competitive market model is striking with its emphasis on a pluralistic structure of competition. One can count options and interest groups at a public hearing just like firms and shares of markets. This can be rather bloodless. There is a weak link between the structure and conduct. Fox makes no pretenses in this direction when he says "a program must be judged by the process through which it is decided upon rather than by some measure of the consequences of the program itself."

If he is saying that the process and its direct effect on people is one of the outputs of an institution, I agree. However, different institutions often will meet the same process criteria, but produce different environments; just like different kinds and distributions of property are consistent with pure competition, but produce different levels of employment, product mix, and income distribution.

Perhaps the grandest (and most bloodless) performance criteria of all is efficiency. For example, we can use our externality notions to conceive of the need for some basin firm to internalize waste effects and to organize production, treatment and location alternatives to minimize the cost of achieving a given stream quality. One type of study then is to inquire whether the particular institution allows for internalization. Kneese and Bower say, "In England, the Ruhr and the Delaware Basin, the interrelationship between water quality and quantity have been taken into account by putting them under the authority of one agency." [10, p. 284] While their cost minimization models are sophisticated, their institutional model is naive. Is there any empirical evidence shown that because a single authority has the nominal power to do something that it will in fact so behave? What about conflicts within the basin? There may be an optimum location of industry from stream quality cost point of view, but how about effect on local property tax base.

Kneese does note that the different countries have variations in membership on their decision boards. Some have direct industry representation and others vary by the degree of local government representation. So what? How do these

variations affect actual conduct? No empirical observations are offered, so we really don't know what effect the genossenschaften would have if imported to the Delaware. Simply checking off whether the institution has the capacity for efficient internalization and employment of all management options and how many groups sit on the governing body is only nominally empirical. The actual impact on behavior remains a mystery. Alas, much of our institutional research doesn't ask the important questions. We satisfy our curiosity before we get down to conflicts of interest including the biggest one of all, the effect on who gets to decide what level of stream quality we are going to apply our cost minimization model to in the first place. I do not say the above with critical smugness, I have already noted the difficulty of getting what I want.

INSTITUTIONAL ALTERNATIVES AND RESEARCHABLE HYPOTHESES

T. W. Schultz has noted, "It is hard to believe that institutions. . . are protected by Nature in ways which make them immune to economic analysis. The analytical job is to specify their functions, measure their influence, and determine when they are efficient. To get on with this task requires a theoretical approach from which testable hypotheses can be derived, and these hypotheses . . . will lead to empirically supported propositions pertaining to the economic performance of these institutions." [21, p. 115] This section is devoted to this challenge in spite of the empirical problems already noted.

If we are to make any progress we must have a useful set of concepts and linkages. I shall note four major categories. One of our basic institutions is private property rights exchangeable in the market. Efforts to facilitate trade by making rights clear and by reducing transaction costs is an important area of research. A second is the redistribution of such rights. Turning to governmental transactions, we can also speak of the rules of trade and bargaining among governments--levels and agencies. And, parallel to redistribution of market rights we can also redistribute governmental rights and change the rules of administration. These will be examined in turn.

1. Facilitate Private Trade to Remove Pareto-relevant Externalities

When a man is hungry he only has to trade something he owns for food owned by someone else. Price is a measure of the relative power of the two mean (what each owns and their alternatives). If something inhibits Pareto-better trade such as nonspecification of ownership or something which makes trade impossible or costly, we can try to remove it. Historically we can observe how as resources rise in value, people attempt to have themselves declared the owner (of what was once simply nature).

One possible way to lower market transaction costs is to enlarge the scale of the firm through purchase of externally affected units. This can be seen in the privately developed new towns where one firm tries to capture all of the rents created by any part of the development. The effect on conduct and performance as to the quality of communities developed has been studied. Sometimes further government help is needed to acquire large acreages from holdout (and up) owners of key parcels. Effects of use of eminent domain for private purposes is predictable and has a long history.

Some goods have high costs of exclusion and free rider problems prevent private market trade. Purchase and sale (charges) by public agents will be discussed below in item four.

The Pareto-better logic is a powerful inhibition to empirical research into the detailed consequences of trade prohibitions, because they are so undesirable in the abstract. Yet, there are other dimensions to consider. Exposure to the military draft is an individual responsibility and trade is prohibited because of its effect on the legitimation of the whole process. [33]

Another consideration stems from the interrelation of market and governmental power. [18] What is the effect of allowing firms with great power in one area (e.g. public utilities) to acquire firms in another (real estate)? Can we distinguish between cost advantages of market power enhanced by political power, from that derived from superior skill and knowledge?

Too frequently, our inquisitiveness stops when we cleverly determine a method to appropriate and trade rights individually. For example, consider ocean fishing rights. Everyone knows that treating the ocean as a commons is destructive of the resource and that limitation of use by gear limitations is inefficient. A common "finding" then is that marketable quotas are in order. But, who gets them? Coase's logic indicates it doesn't make any difference for resource use as long as rights are tradeable at negligible cost. This leads some to conclude "that making the better choice between two sets of property rights is a minor matter as compared to the need to establish some set of rights". [25, p. 58] This is not an empirical finding, but a bald value judgement. Minor matter indeed! I hope scholars will not let their research agendas be constrained by this dicta. Transactions costs for many goods and demanders will never be zero and even when they are people will be interested in income distribution as an institutional performance variable. For example, institutional analysis can answer what difference it makes if air "ownership" is shifted from phosphate manufacturers to nearby citrus farmers. Thomas Crocker found in a Florida case, that income distribution, land values and pollution emissions changed significantly as the manufacturer bought out farmers and adjusted their process, as opposed to the former case where farmers had to organize to buy out the polluter. [4] We will not be able to predict the magnitude of these changes unless we know farmer market transactions costs which are a function of grower group size and solidarity. Alternatively, if public purchase of pollution rights is used, we will need information on the function under alternative voting rules. Institutional analysis can utilize such behavioral data just like an agricultural production function utilizes agronomic data to construct a production cost curve.

2. Reallocate Privately Owned Pareto-irrelevant Externalities

When the fat have all the chips, it is going to be hard for the lean to eat no matter how negligible are transaction costs. Our language is value loaded, because hunger in this case is Pareto-irrelevant. I believe that the country (world?) is in danger of social upheaval and that the big issue is property distribution and participation in control. This will not be solved by research which finds a way to get everything owned and traded at no cost.

Do we have a body of empirical findings to inform public decision on effects of the original and subsequent reallocation of private property rights? All valuable things now and in the future are not already owned. New items come to our attention as tastes and technology change. We should design some studies to predict the consequences of alternative distributions of the vestures of rights in new goods. The rich will want them sold to the highest bidder (or use political power to have themselves declared the owner). If receipts of sale of our resources (electro-magnetic spectrum, etc.) were distributed as dividends to everyone it might help shore up a minimum income (Henry George reborn!). We might study the consequences of redistribution via taxes compared to changed property rights.

There is much current criticism of the market as an institution because of observed distributive effects. Must we move to another institution entirely or could the desired performance be achieved by redistribution of private property rights? Some markets seem to have their own dynamics for concentrating wealth, but a periodic redistribution may be preferable to non-markets which have their problems too.

If we dare study Pareto-irrelevant change, what predictions are important? There is an empirical base to the conservatism of the courts, since at some point uncertainty as to rights makes planning a long term investment impossible. Yet, the distinction between an unconstitutional "taking" requiring compensation and a reasonable use of the police power needs examination.

Various legislative changes in land use rights have been repulsed by the courts. Take for example commercial sign ordinances which have a tough time in the courts unless a safety hazard can be shown. The hesitation of the courts is not necessarily based on the magnitude of the values involved. Some signs have little value. Compare this with the great values involved in zoning. Everyday, millions of dollars are given to some and denied others and the courts scarsely blink an eye. It should be possible empirically to determine how much rights can change before the uncertainty affects investment of various kinds. If this were available the courts would need to develop some systematic rationale for the great present disparities in the value of redistribution which required compensation or not. We can also trace out the consequences in different resource areas of the present distinctions.

If the courts will loosen up a bit, some innovative legislation might be possible. The competition to acquire the land appreciation connected with rezoning often frustrates public land use plans. A Maryland State Senator has proposed that county governments should decide the total amount of land to be developed and then assign this amount as marketable rights to all present landowners proportionate to their holdings. (An alternative would be to assign it to all citizens or the county government.) A developer would not only need zoning but the development rights. While one can theoretically trace out some of the consequences of such proposals, they have a tendency to produce some unpredicted results. While the English trial is relevant, our knowledge will be limited until we actually experiment more with these and other alternative institutions such as special land value capital gains taxes.

Of course, we could dispense with public land use planning entirely and turn to overt private plans. A study of Houston suggests that private land use controls

via deed restrictions can do much of what zoning does. [22] Some of the differences in Houston and other cities are instructive and might be larger if public land use plans were actually implemented anywhere.

Courts and legislatures also make a curious distinction between technological and pecuniary externalities. If I keep pigs on my residential area lot, the courts tend to enjoin without compensation. But, if a competitor destroys the value of my property by creation of a cheaper product, no one hears the cry of anguish. Our cavalier attitude is shaped by theory which suggests that it is for the good of the consumer and any way, all resources are mobile and if these owners are smart, they can move without loss. So, when the government invested in cotton irrigation in the Southwest and destroyed fixed assets in the old South, no court stood in the way. Some of the consequences are becoming clear. [8, Ch. 6] More research is needed on the effects of mere pecuniary externalities. They may be the source of many unintended grants (transfers) from the poor to the rich.

Powerful firms and unions seldom take pecuniary externalities lying down. Research should be directed to the net costs if these losses were publicly shared rather than borne in featherbedding and the like. A case in point is the unemployment effects of pollution controls and plant closings. Do employees have job rights and what difference does it make to third parties as to the institution chosen for their protection?

To conclude this portion I can't do better than Joan Robinson who says "we have not got a theory of distribution". [16, p. 9] We never will have until we understand the impact of property institutions.

3. Facilitate Governmental Trade

The fact that governments and their agencies trade as do private parties has led to a rash of imperialistic advance of economists into public administration. The issues here parallel those in private trade of making rights clear, reducing transaction costs, and enlarging the scale of the firm (agency).

An example of lack of clarity in ownership rights can be seen in the issue of massive interbasin water transfer. Currently states bargain with each other in terms of getting their share of the Federal water development budget in exchange for political cooperation in transfers. If rights were clearer and marketable, the water rich Northwest might just sell its rights and use the money for education and hospitals rather than more Federal water projects. If the dry states had to buy the water directly, they might not take so much.

There are those that believe that private ownership is always superior to public when there is no exclusion problem. Armen Alchian hypothesizes that "the differences between public and private ownership arises from the inability of a public owner to sell his share of public ownership. . ." [1, p. 822] This is not unrelated to Niskanen's suggestion that agency heads should be able to appropriate some of their potential agency cost savings. Empirical studies have been made of the performance of stock vs. mutual savings and loan associations. [13] Other work comparing public and private golf courses and utilities might be productive if performance variables include not only profit differences, but technological change, employment of minorities and environmental impact.

The requirements for environmental impact statements in the National Environmental Protection Act (NEPA) go a long way to reduce transaction costs between some people and their government. Groups which found it expensive to organize and obtain information now have it handed to them. One major impact of NEPA is that its procedural and informational requirements are subject to court review upon citizen complaint. Research might establish the consequences if rules for water development benefit cost analysis were subject to court review. It might make the agencies take more seriously some of the provisions in the new Water Resources Council principles and standards. Rights of citizen recourse in the face of administrative decisions are keys in effecting behavior.

Turning back to intergovernmental trade, we are in an era of symbolic worship of intergovernmental cooperation. I say symbolic because while many urge it, we do little seriously to set forth the rules for this interaction. In the private market there are elaborate rules for fair trade and what one can do to get agreement to a contract. The NEPA informational requirements are one of the few areas where fraud in public agency bargaining is defined. There are few publicly established rules governing the bargaining within the Water Resources Council or any of its river basin commissions. The situation seems no better around the world, for Craine's English study reports, "Apparently little attention has been given to the rules by which River Authorities arrive at decisions" [3, p. 116] The law doesn't even say whether majority rule or unanimity is required.

This lack is also prevalent when governments buy public services from each other. Contract purchase by independent cities can achieve economies of scale without requiring political consolidation. [24] While studies have been made of the Lakewood plan in the Los Angeles area, the lack of public rules governing these contracts gives us little empirical knowledge of the consequences of alternatives. Research in this area is consistent with Ruttan's call for decentralized decision systems. The available studies are not conclusive in comparing the results of the Dade County consolidation and the Los Angeles contract system.

People seem to choose up sides in support of organizational reform largely in terms of the institution's own internal truth and beauty rather than knowledge of substantive performance. This is no less true of local government than Federal resource agency consolidation. Supporters of a given proposal often are strange bedfellows which suggests that support is based on poor prediction of effects. (I have summarized the limited knowledge of reorganization effects of the water agencies elsewhere.) [20]

4. Re-Allocate Pareto-irrelevant Externalities Among Publics

While resource giveaways have been the primary historical method of reallocating public property rights, it is not the only device. Everytime the government changes its administration rules for the use of public resources, it changes the access of different individuals as surely as if private rights were confiscated (reallocated).

What kind of rights does a given group have in public regulatory rules or use and lease of public property (including charges)? If somebody damages my canoe I can sue, but if motorcycles are allowed to spoil my use of a publicly owned park, I typically have no court claim. Research is needed on the consequences of this

and the possibility for interpreting administrative rules as actionable property. This is especially critical over time as taste and technology change.

Voting Rules. Perhaps the most basic reallocations of public rights involve constitutional rights when representation on various public bodies is established. Ed Haefele has summarized some of the theoretical research on voting rules and applied it to environmental issues.[7] For selected cases it is possible to predict how certain voting rules (e.g. number of seats and number of votes per person) affect which alternative policy wins, given a postulated distribution of preferences. This is similar to that game theory where if you can know the behavior of others, your best strategy can be calculated. This is useful and suggestive theory, but it is not empirical research. For prediction, we need knowledge of the actual distribution of preferences and behavior (not to mention all the variables involved in the effect of different formulations of the issues and control of the agenda). Thus, we are a long way from being able to advise a particular interest group of what rules it should support to maximize its preference realization.

Haefele does suggest some of the possible effects of having river basin quality control commission members selected by election rather than appointment by the governor. There must be a host of variations of this type in resource management institutions which might yield important insight. Our old normative rules are of little help. Democracy is our political equivalent of the free market, but it doesn't help us decide boundary questions for voting. Since normative theory is of no help, lets get on with empirical work and see what difference alternative bases for representation really make, so people can make their own moral choice of who is their brother with intelligence.

These are the institutional decisions which determine the actual stream quality level that our cost minimization models are applied to. J. H. Dales, one of the early proponents of a water control board to determine water quality and to issue tradeable quotas for discharge, made this question clear when he said, "Being largely ignorant of the principles of public administration, I shall sidestep the important questions of how many Board members there should be, how long each should serve, and what their qualifications should be." [5, p. 77-78] No institutional economics worthy of the name can sidestep these issues.

In summary, the rules of access to government, administrative procedure, bargaining within and between governments (and with the public) can also be thought of as property rights. They constitute an important part of each individual's wealth holding. We need to inquire of the consequences if they were granted the same access to the courts for their protection as are individual property rights.

CONCLUSIONS

We must be careful not to become obsessed with the size of the goods pile (or the number of whopping cranes) but keep our eye on man, the final product. (While some argue that nature has rights too, nature is silent when men speak in its name.) Institution s shape the goods which shape men, and they also directly affect men. At least since Marx, we should understand that institutions which define human interrelationships directly affect the character of man. The need for behavioral data to link institutions to actual conduct should be clear. We need theories of behavior and not just advantage.

One troublesome aspect of institutions creating man is that we may be too far gone to pick the institutional changes that could save us (assuming we could agree on what salvation is) even if we knew the structure and conduct connections. This problem is my interpretation of Ruttan's judgement that "it is much more important to concern ourselves with deterioration in the sociopolitical environment than of the physical environment."

While I have little confidence in our current institutional predictive ability in many areas and for many behavioral consequences, I am relatively confident that major change in the environment calls for major change in institutions. We have fooled people into thinking that a bit more enforcement, or another commission or consolidated agency will make a difference. While I'm not sure the majority really want a big change in their life style, a bit more zoning and regulation won't do it. It will require major changes in property definition and distribution and careful attention to the details of implementation.

The mythology of welfare economics which has barred research interest in some institutional questions (e.g. pecuniary externality and Pareto-irrelevancies) has been cleared away (often for the nth time). We do have some concepts for categorizing alternative institutions relating people to each other as they manage resources and create new technology and people.

The four classes of institutional relationships outlined above have alternatives within and the mix among classes is also variable. It is tough to separate out the effect of variation in private property definition but it may be downright maddening to trace the synergistic effects of various combinations of private and public administrative rules and the details of implementation. Yet, this is our challenge if we are to be able to supply warranted predictions of the consequences of alternative institutions.

Wantrup assures us that "an analytically oriented institutional economics is . . . an aid in classifying and directing policy." Myrdal says "I believe that the next ten or fifteen years will see a radical redirection of our research efforts towards institutional economics. . . focusing on the equality issue and taking into due account social and economic stratification, the political forces anchored in these institutions and in peoples' attitudes, and the productivity consequences. . . ." [12, p. 459] But, if we are going to solve some of the tough empirical, experimental problems it will only be done in the field and not in our ivory offices or at holiday meetings. I look forward to seeing you there.

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