

# The Values Jury to Aid Natural Resource Decisions

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## I. INTRODUCTION

Congressional legislation emphasizes that public resource allocation should reflect the values citizens assign to those resources.<sup>1</sup> Yet, information about assigned values and preferences of members of the public, including economic measures of value, required by decision makers is often incomplete or unavailable. Existing sources of information about the public's values, for use in resource allocation decisions and damage assessment, include existing markets, public surveys (including contingent valuation), and public involvement. Each of these sources has serious limitations.

Although markets are valuable sources of economic values for goods traded in those markets or for nonmarket goods (such as recreation) whose use relies on consumption of goods traded in established markets, the values of some public goods are not available from market information. The benefits of some public goods are external to market transactions and financial accounts, though they often concern legally defined, but unprotectable rights.

One solution to the lack of markets for public goods is to rely on public surveys. The contingent valuation (CV) method is often used, for example, to estimate economic values for public goods. CV is apparently the only technical means available for estimating "passive use" existence values which, according to the U.S. Court of Appeals (1989), ought to be included in damage assessment, and the court has ruled that CV is an appropriate method for estimating passive use values. One problem affecting CV and other public survey procedures is that many members of the general public are not well informed about the issues or the good to be valued, and it is not possible to convey the facts involved with complex natural resource decisions or goods adequately in the time available. Thus, the responses may reflect inadequate understand-

ing of the issues or the nature of the goods, and may therefore be overly sensitive to unintended influences (Fischhoff and Furby 1988; Brown and Slovic 1988).

Another source of public input to natural resource decisions is the public involvement process, where government agencies involve interested citizens through meetings, stakeholder negotiations, and other public review procedures. Persons with sufficient interest in the outcome participate in this public involvement process, which is both a strength and a weakness—a strength because it utilizes the input of relatively well-informed citizens, and a weakness because the public involvement process is susceptible to manipulation by well-organized interest groups. Those with effective power and much to gain or lose will make their opinions known, and the larger public can only hope that a variety of effective interest groups, representing the full diversity of public opinion, takes part in the public involvement process.

A less commonly mentioned concern about existing sources of information on the public's assigned values, whether markets, surveys, or public involvement, is that they tend to emphasize the personal preferences of individuals or groups rather than their judgments of what is best for society at large. The larger social good is expected to arise from the aggregation of information

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<sup>1</sup> In national forest and range management, for example, the Multiple Use-Sustained Yield Act of 1960, the Renewable Resources Planning Act of 1974, the Federal Land Policy and Management Act of 1976, and the National Forest Management Act of 1976 all require careful consideration of resource values, in part utilizing economic analysis, in the selection of management alternatives. And in damage assessment, the CERCLA regulations and the Oil Pollution Act of 1990 emphasize the need to base damage awards on the values the public assigns to the damaged resources.

about individual personal preferences or from the balancing of the preferences of opposing interest groups. This concern arises because of the hunch that a different value would result if the valuers were asked to adopt a social perspective from the start—to put aside their individual personal preferences and focus on their judgment of the value that best reflects the interests of society at large.

The *values jury* is an alternative source of public value judgments that can potentially avoid some of the problems with the existing sources of public value judgments. The jury approach avoids the problem of poor information by taking the time to inform the jurors adequately, and avoids the problem of undue influence exerted by interest groups by being composed of randomly selected citizens. Further, the jury process instructs participants to act as direct representatives of the larger society, including future citizens if the decision would affect them. In appropriate situations, a values jury might further avoid the problems of explicit valuation altogether by directly recommending resource management alternatives.

Use of juries to decide guilt or innocence, responsibility, compensation, and penalty, including questions of life and death, is a well-established legal institution in the United States. Tens of thousands of jury trials each year, and 80 percent of all jury trials in the world, occur in the United States (Hans and Vidmar 1986). Grand juries are the other type of jury in common use in the United States.<sup>2</sup> Application of this institution to matters of value in natural resource allocation is, in theory, a natural and logical extension.<sup>3</sup> Delegation of binding decision authority to juries in such matters would require legal enablement; however, administrative use of juries in a staff advisory role is already feasible under existing empowerment, although it may require public understanding, acceptance, and support to be effective. It would not usurp the authority of elected officials or agency decision makers. The findings of an advisory jury might carry considerable weight in the ultimate decision, however, in keeping with

the rich tradition of jury use in the United States.

## II. THE ROLE OF THE VALUES JURY

There are two potential roles of a values jury: (1) to assist in the selection of a course of action, such as a land management alternative, and (2) to recommend a value magnitude, such as the magnitude of a damage payment. A values jury should only be convened to recommend a course of action if the decision hinges on an articulation of difficult-to-measure values, such as the value of a public good. For example, where the effects of the alternatives under consideration have been estimated and the economic values of those effects are relatively well understood except for the value of a public good, a values jury could be employed. The jury could be given either of two tasks in this situation. First, it could be asked to recommend the maximum payment from citizens that would be reasonable to provide the public good at issue. This monetary amount could then be used along with the other value information to help managers reach a decision. Second, the jury could be asked to recommend an alternative from among the management alternatives under consideration, in light of the physical and

<sup>2</sup> Most trial juries contain 12 members, who listen to evidence but cannot ask questions or take notes. Unanimity is generally required to render a guilty verdict. Grand juries usually contain 12 to 23 members, who listen to evidence and can ask questions and even issue subpoenas. A simple majority is needed to return an indictment. Jury members are viewed as being impartial, and have no long-term obligations or interests in the outcome of the case. The Jury Selection and Service Act of 1968 (George, Golash, and Wheeler 1989) directs that jury members are to be selected at random and represent a fair cross section of the population. For a review of issues regarding the use of juries, with emphasis on their use in natural resource issues, see Tonn, Peterson, and Brown (1994).

<sup>3</sup> Another use of citizen juries is in rendering judgments of fact, especially where the needed technical facts are unknown and unknowable within the constraints of time and money dictated by a given decision context. An "expert jury" is an institutional implementation of the "expert systems" approach to resolution of technical conflict, risk, and uncertainty.

economic information presented about the alternatives and in light of the jury's unquantified judgment of the social value of the public good. Their recommendation would, of course, imply a judgment about the value of the public good.

If the decision under consideration were not a choice from among land management alternatives, but rather the specification of a value magnitude such as a damage payment, a values jury could recommend the payment in light of the evidence about the damage and in light of applicable laws. The jury might be asked to recommend only part of the payment if other parts of the payment had already been determined. For example, if the damage affected commercial fishing and subsistence fishing, the commercial fishing damage might be determined using existing valuation techniques, and a values jury would be convened to estimate the subsistence portion of the damage payment.

It is not the role of the values jury to determine factual issues, although facts may be relevant to a value determination. The purpose of a values jury is to resolve issues of value when the decision hinges on valuation. Determination of facts should occur by other procedures, such as expert testimony, literature review, basic research, or judgments by expert juries. For example, in a decision about the harvest of a stand of old-growth timber, a values jury has a role to play if the relevant facts are well described and the decision hinges on the relative values of harvest versus preservation. A values jury is, however, of little use if the decision hinges on a biological determination about the effect of harvest on the survival of a species.

Values juries may be particularly helpful where measures of assigned value (such as CV estimates of monetary value) fail to adequately reflect the held or symbolic values at issue, for it is in those circumstances that a procedure to take a more comprehensive view of value is needed. Most difficult resource management decisions involve conflicting held and symbolic values, such as environmental preservation versus lifestyle, fairness to current citizens versus fairness to future generations, or conflict over an en-

dangered species, where the endangered species is a symbol of broader held values. Trade-offs among fundamental held values are particularly difficult. Nevertheless, difficult resource management decisions often require such compromises, and the values jury offers a potentially useful procedure because, depending on the task, it does not necessarily force participants to reduce very complex issues into a single, cardinal estimate of value. Rather, it allows for the values of the participants to come to the fore in the course of recommending a preferred alternative. The values jury allows participants to question and discuss, and thereby to gradually learn about the issue and reach a richer understanding of their assigned values. It is one procedure that allows for, in the words of Vatn and Bromley (1994, 143), "collective discussion [which] is necessary to form a collective understanding and to construct a coherent basis for choice."

### III. CHARACTERISTICS OF THE VALUES JURY

The nature of a values jury is defined by the constituency that jurors are instructed to represent, the decision rule they use to reach a judgment, the number of jurors and the process used to select them, the information that is presented to the jurors and the way that information is presented, and the authority the jury's judgment is given.

#### *Constituency*

Jury membership would not require individual jurors to act as representatives of specific interests. Rather, in keeping with trial and grand juries, jurors would be instructed to act as agents of society, including all its disparate individuals and groups. Thus, the role of juror is distinctly different from the role of survey respondent or public involvement participant.

Two practical reasons can be offered for asking each juror to adopt the same constituency (society at large), rather than leaving them to represent just themselves or some interest group of their choice. First,

assuming jurors are randomly selected and few in number, the jury is unlikely to contain members of each interest group or point of view relevant to the issue the jury is asked to deliberate, and even if it did, the jurors may not be equally proficient at representing the different interest groups or viewpoints. The small size of the jury makes it impossible to include actual representatives of all interest groups or to include sufficient individuals to obtain a precise measure of the central tendency of the larger society. Asking each juror to represent the larger whole may help avoid narrowly focused advocacy of individual interests. Second, a single constituency increases the chance of cooperation among jurors towards some common agreement about a recommendation or valuation.

In addition to these pragmatic considerations, there is a more fundamental reason for asking jurors to adopt a social constituency—it focuses the attention of the jurors directly on the task at hand, which is a decision or valuation in the best interest of society. The substance of such a direction to jurors rests on the assumption that our preference orderings are a function of the constituency we intend to represent. In support of such an assumption, Sen (1977) suggests that a single preference ordering does not adequately characterize human choice. Rather, Sen hypothesizes at least a dual preference ordering that “permits us to distinguish between what a person thinks is good from the social point of view and what he regards as good from his own personal point of view” (p. 336). Or, as Harsanyi (1955, 315) notes, we must distinguish between “ethical” and “subjective” preferences, where “the former must express what this individual prefers . . . on the basis of impersonal social considerations alone, and the latter must express what he actually prefers, whether on the basis of his personal interests or on any other basis.”<sup>4</sup> A person’s subjective preferences would essentially define his utility function and would “express his preferences in the full sense of the word as they actually are, showing an egoistic attitude in the case of an egoist and an altruistic attitude in the case of an altruist”

(p. 315). Ethical preferences express what the individual “prefers only in those possibly rare moments when he forces a special impartial and impersonal attitude upon himself” (p. 315). Sen (1977) develops the concept of “commitment” as the source of a socially based preference ordering that does not necessarily make the committed person better off.

One way to instruct the jury towards a social constituency might be to ask each member to consider the values of all relevant interest groups. For example, a juror deliberating an issue of timber harvest would be asked to consider the needs of all parties, including both the loggers and the preservationists. Another approach would be to ask jurors to adopt an impartial stance. As Harsanyi (1955) puts it, “an individual’s preferences satisfy this requirement of impersonality if they indicate what social situation he would choose if he did not know what his general position would be in the new situation chosen . . . but rather had an equal chance of obtaining any of the social positions existing in this situation, from the highest down to the lowest” (p. 316). This is similar to Rawls’ (1971) “veil of ignorance,” behind which one is unaware of his or her personal identity. Regarding decisions affecting future generations, for example, a values jury might want to consider alternatives from the viewpoint of time travelers.

An important element of adopting a social constituency is that it forces jurors to consider the equity of a decision or associated valuation. Unlike the benefit-cost approach to valuation, which maintains a strict distinction between equity and efficiency (see, for example, Bromley 1982), the values jury may simultaneously address equity and efficiency concerns. On the one hand, this

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<sup>4</sup> Others have emphasized such a distinction. For example, Brown (1984) proposed that constituency is an important aspect of the valuation context and that different constituencies bring to the fore different assigned values, and Sagoff (1988) argued that our role as consumer differs fundamentally from our role as citizen.

asks a lot of jurors, for they are expected to balance a large number of considerations; on the other hand, it may help them in their valuation efforts to be "looking at the whole picture" rather than what may seem to them to be an arbitrary abstraction.

Different decision or valuation contexts may tend to emphasize different constituencies. For example, choices among consumer goods may emphasize a personal constituency and voting in public referenda may emphasize a more social constituency. And people naturally differ in the degree to which they focus on different constituencies in different valuation contexts; some people may base their votes or responses on their understanding of what is best for society at large, while others may operate from a more self-centered perspective, perhaps thinking that a self-centered stance is only rational where others are likely to do likewise. Adoption of different constituencies may be one reason for the variance in individual valuations in CV surveys. Jury members, however, are explicitly instructed to act as agents of the larger public, possibly removing or at least reducing one source of variance in valuations. The role of juror as agent for society is something like the role of statesman, as opposed to that of a politician burdened by political debts or reelection strategies.

Adopting a social constituency is perhaps of more consequence with a values jury than with trial or grand juries because values, not facts, are the focus of the values jury's deliberation. People may more easily agree about matters of fact than about matters of value, even if they are trying to represent the same constituency. The question thus arises, to what extent will jurors be willing and able to put aside their individual interests to focus on the public interest? Also, will the decision rule that the jury uses help or hinder a focus on the larger public interest? Finally, will the instruction to adopt a social constituency affect the result, compared with the jury conclusion that would result in the absence of such instruction, and if so under what circumstances? Hopefully, these questions will be subjected to careful study.

#### *Decision Rule*

Alternative decision rules include majority, consensus, unanimity, and central tendency. Majority, consensus, and unanimity are based on voting or agreement. Central tendency is a rule based on statistical analysis of the responses of individual jurists. Voting or agreement are most appropriate for questions of choice among alternatives, and central tendency is more appropriate with estimation of a numerical magnitude.

Majority rule requires that a specified proportion of jury members vote in favor of a given outcome. It may be a simple majority, two-thirds majority, etc. The unanimity rule requires that all jury members vote in favor of a given outcome. It allows no dissenting votes and no abstentions. Consensus is reached when any members of the jury who do not favor the outcome advocated by other members choose nonetheless not to oppose it. They are sufficiently indifferent or uncertain that they are willing to "live with" the consensus position. Partial consensus, such as a three-quarters consensus, requires that at least the specified proportion of the jury members are willing to go along with the consensus position. Consensus decision making requires a facilitator who understands the process of reaching consensus and is able to remain impartial throughout the deliberation.

Measures of central tendency include the mean and median. The mean is appropriate for larger juries with normally distributed results. The median may be more appropriate for smaller juries, when outliers are present, or where the jurists divide into groups with differing opinions. Consensus may also be a reasonable decision rule where the jury is asked to recommend a specific magnitude, such as a damage payment. Consensus, as opposed to some measure of central tendency, is probably preferred if the number of jurors is less than, say, twenty.

Where the jury is asked to recommend a specific alternative, we would suggest that unanimity and simple majority be rejected as decision rules; unanimity because it is difficult to achieve and simple majority because it is too easy to achieve. A unanimous

decision can be thwarted if only one juror disagrees however slightly with the others. A simple majority requires only that slightly over half of the jurors agree; where a jury contains only a few (say 12) individuals, the jury's recommendation is unduly subject to the vagaries of the sample. Simple majorities are more appropriate where all who desire may have their say, as with a plebiscite. Further, majority rule, whether simple or some larger proportion, deemphasizes interaction among jurors. A consensus decision rule, however, encourages jurors to consider each others' points of view and to work towards some position that all (or some large portion) of the jurors can abide.

#### *Size*

Jury size depends on the role assigned to the jury. Juries cannot generally aim at externally valid statistical representation of all public and private values by way of individual advocacy. If the role were to represent the diverse values of the affected publics and respond in behalf of represented constituencies as those constituencies would themselves respond as, for example, in a referendum, the group would need to be considerably larger than if the role were to render an objective judgment from the perspective of the society at large. In the former case, it ceases to be a jury and becomes a panel or representative sample, and the jury idea transforms itself back to an election, opinion survey, or contingent valuation.

Choosing the number of jurors requires a compromise between pluralism and practicality. The larger the number of jurors, the more likely it is that the jury will understand and be sensitive to all the publics likely to be affected by the outcome. Larger juries may thus be better equipped to act in the role of agency for society. However, larger juries are less likely to reach a consensus in a reasonable length of time. Juries asked to reach consensus might number 12 to 20 in membership, with the proportion of jurors who must agree perhaps varied inversely with the size of the jury. For juries asked to suggest a specific magnitude and where

measures of central tendency and variance are admissible findings, diversity is more critical. Such juries might consist of 20 or more members.

#### *Jury Member Selection*

The role of a values jury as advocated here is objective advocacy of reasonableness, common sense, and truth, not adversarial advocacy of special interests. Thus, the goal in jury selection is broad representation by capable persons able to act as agents once presented with adequate information. The jury should consist of reasonable people free of significant personal conflict of interest, people who are willing and able to understand the issues and consider them objectively.

The only way to avoid the appearance, if not the actuality, of selecting jurists on the basis of which interest group they may represent, is to select potential jurists randomly. Random selection cannot hope to achieve statistical representativeness, however, if jury size is to be kept manageable. Further, strict random selection may not avoid jurists with significant conflicts of interest. Thus a strictly random selection might be conditioned with a process to remove potential jurors who may not be able to adopt the role of agent for society at large.

An established procedure for considering the objectivity of a juror is *Voir Dire*, a negotiation process by which potential jurors are rejected if they are suspected of bias. As with trial juries, the *Voir Dire* process would operate on a sample randomly drawn from an appropriate pool of candidates. With values juries, the *Voir Dire* process might work by recruiting the assistance of a panel of stakeholder representatives who would question or review the qualifications of prospective jurors. To avoid oversensitive selection criteria, the pool of potential jurists might be fixed before the *Voir Dire* process began at some reasonable number so that the stakeholder representatives had to select from within the pool. This is just one possibility; research and experimentation would help to select the most workable procedure.

The overriding objective of the jury selection procedure is to avoid selecting jurors who have significant personal conflict of interest. It may be impossible, however, for a citizen jurist to be completely free of conflict of interest when recommending a public resource decision or adjudicating values where public interest is a significant factor. Social choices about allocation of public resources affect everyone's life to some extent. It is possible, however, to distinguish between compelling personal interest in the outcome, and general concern for one's role in the public interest. Again, *Voir Dire* may be the best approach for eliminating unacceptable conflict of interest. If a potential jurist's personal interest in the outcome is such that he or she is not likely to be willing or able to see and fairly consider the collective good, that person should be excluded.

Public resource decisions affecting small groups with long-standing and vital interests in the resource are always difficult. This is particularly true where lifestyles and livelihoods are threatened, or where cultural or religious traditions are at risk. For example, proposals to curtail resource harvest, such as timber harvest or livestock grazing, may threaten communities dependent on those activities. Similarly, a proposal to build a ski area on a mountain that has religious significance to American Indians raises sensitive and emotional issues. Where the issue to be addressed by a values jury involves such difficult value conflicts, members of the public are likely to quarrel with jury membership, complaining that their particular interest is poorly represented. One may argue that jury membership needs to be representative in the sense of political acceptability to significant stakeholders or of sufficient political and cultural diversity as to be sensitive to and capable of understanding the values at stake, or that questions that involve diverse cultural or political issues require more politically and culturally diverse juries. However, once jury members are selected on the basis of the group they represent, the jury runs the risk of becoming a negotiation session among opposing view points rather than a jury. We

would suggest that a jury can only hope to be successful if jurors are randomly selected, and willing and apparently able to represent society at large. The question nevertheless remains, can a randomly selected jury, even one which satisfies some *Voir Dire* qualifications, be a politically acceptable body whose recommendations carry weight in the ultimate decision? If not, then perhaps the values jury is inappropriate for addressing questions involving particularly sensitive cultural or ethnic issues.

Jurors must be selected from within some geographical area. Should they be selected from the primary geographic area affected by the decision in question, or should they be "imported" from other areas in order to avoid conflict of interest? Consider, for example, an issue that involves conflict between local economic development and collective national welfare. A jury limited to members from the local area may find it difficult to give fair consideration to national issues. On the other hand, a jury that excludes people from the local area may not be sufficiently sensitive to local concerns. The best approach may be to ensure that jury membership includes appropriate geographic representation while excluding serious personal conflict of interest. The exact composition may, again, be a matter of political negotiation by *Voir Dire*. Or, it may be possible to derive rational composition formulas. Where the question at hand does not invoke conflict between geographic scales (such as the local versus national conflict cited above), the best approach is probably to select jurists from the primary affected areas.

Additional qualifications for jurors include freedom from mental or emotional disability that could prevent them from acting rationally and with good common sense. Also, jurors must have an adequate level of maturity, intelligence, and education, as evidenced, for example, by high school graduation and legal status as an adult. The *Voir Dire* process could also be used to exclude potential jurors who did not meet such minimum qualifications.

### *Information Presented*

One of the principal advantages of the values jury as an alternative to an opinion poll or CV is the ability to adequately inform jury members about the relevant facts. The NOAA panel on use of CV for damage assessment (Arrow et al. 1992, 14) states, "If CV surveys are to elicit useful information about willingness to pay, respondents must understand exactly what it is they are being asked to value . . ." It remains to be seen whether CV can allow for sufficient flexibility in time and content to adequately inform respondents about complex goods.

Cloistering a values jury for several hours or several days, depending on the scope of the question, allows a more rigorous educational experience than is possible with CV or an opinion poll or perhaps even with a referendum. The goal of the information is to inform jurors of facts and issues about the goods and services and/or actions in question and their consequences, and about the concerns, values, and preferences of stakeholders. To reach this goal, the jury can be given reading materials as well as presentations from experts and stakeholder representatives. Further, like a grand jury, members of a values jury would be allowed to ask questions and, within reason, request additional information. And jury members could discuss the issues among themselves.

A major challenge of the information stage of jury deliberation is to avoid half-truths and value-laden propaganda that might introduce significant bias. Ideally, information and points of view would be presented in a balanced and objective manner. However, it is probably optimistic to expect that balanced objectivity can always be maintained. Perhaps a more successful procedure would be to invite representatives of pertinent interest groups to make presentations to the jury, and to rely on the good judgment of jurors to sort through such testimony for the essential information. When presented with opposing view points or disparate facts, they must question, sift, and weigh as one naturally does in coming to any significant decision.

Clearly, as in a court trial, there must be rules and procedures that control the presentation of information and stakeholder pitches. To facilitate this information stage, an impartial but knowledgeable facilitator might oversee the preparation and presentation of information. This facilitator would gather and organize written information and contact experts as well as important stakeholder groups and arrange for presentations to the jury. A key role of the facilitator would be to keep the jury on track, working towards an articulation of the value judgment or decision that is the focus of the jury's charge. The facilitator might also manage discussion sessions in which jurists would compare notes, exchange perceptions, and test consensus. Unlike attorneys for opposing sides of a legal dispute, the facilitator's job would be to remain impartial and assist the jury in reaching its own judgment.

### *Authorization*

Trial juries and grand juries carry weight in part because they are officially sanctioned vehicles for decision making. The values jury, although only advisory, could still exert substantial influence if the process were designated by some central authority. For public lands administered by a land management agency, for example, the agency or overall department head might be the appropriate source of authorization for the values jury process. Statutory or judicial sanction of the values jury process as a valid source of information would also strengthen the approach. Without some such high-level authorization, it is unlikely that values juries would carry significant weight with decision makers.

Delegation of binding decision power to values juries in natural resource allocation cases would be a revolution of sorts in the institutional structure of American government. Because of the complex and controversial issues involved, we do not advocate the institution of binding decision authority for values juries, but simply raise the question as possibly worthy of further discussion. An advisory role for values juries might be



possible, however, within the existing authority of governmental agencies. An agency that has legal and financial authority to conduct a CV survey or a focus group as part of the CV survey design or other information-gathering procedures probably has authority to create an advisory values jury.<sup>5</sup>

Although a values jury's conclusion were advisory, the conclusion would nevertheless need to be publicly announced so that it could not simply be ignored by the public agency. Ideally, the jury's conclusion would be published in pertinent newspapers, along with a summary of the reasoning behind the conclusion.

#### *Compensation*

Jury service may require travel and added cost of living. The agency being served by the jury must, of course, compensate jurists for such out-of-pocket expenditures. Serving on a jury takes time away from family, work, and personal interests. The time required may range from only a few hours in simple cases to several days in complex cases. Compensation for time is not as simple as for actual expenditures. Numerous questions arise. For example, should all jurists receive equal pay, such as an average national wage rate, for time spent, or should they receive compensation equal to lost income? And should the public agency in question compensate individual jurists, or should compensation go to employers while jurists continue to receive their regular wages? Obviously, no one compensation formula would appear fair to all parties. However, selection of a formula could refer to procedures already in common use with trial and grand juries.

#### **IV. ADVANTAGES AND DISADVANTAGES OF THE VALUES JURY**

The important advantages of a values jury are that it is representative, objective, well informed, formal, cost effective in appropriate applications, and likely to use good common sense. First, members of a values jury, unlike a task force, advisory panel, or

public meeting, would be chosen randomly, perhaps with further refinement by *Voir Dire*. Second, the frame of reference of the jurors is agency for the larger society, including both public and private interests, not advocacy of specific interest groups. For example, the welfare of future generations could be explicitly considered by the jury. Third, unlike respondents to public surveys, jury members become well informed about the issue they are deliberating in the course of listening, asking questions, and exchanging ideas during the information stage of the jury process. Fourth, the values jury process is formal and systematic, following rules that would need to be established. National level sanction, formalized procedures, and the history of jury use in the United States would lend authority and weight to values jury deliberations.

Fifth, a values jury will often be more cost effective than large-scale public surveys. A well-designed national CV study intended for use as evidence in damage assessment litigation may cost several million dollars to design, implement, analyze, and report. Because of the controversy surrounding CV, however, the results may not be more credible in court than the findings of a values jury. Sixth, somewhat in contrast to criminal and civil trial proceedings, the values jury is likely to base its decisions on good common sense rather than technical artifacts of legal precedent. Hopefully, each values jury would examine a question on its own merits and use common sense to come to a conclusion, rather than horrendous legalistic arguments.

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<sup>5</sup> It is not clear whether values juries would fall under the purview of the Federal Advisory Committee Act of 1972 (P.L. 92-463, 86 Stat. 770). However, if a values jury were to be covered by the act, a problem would arise from the act's requirement that meetings of advisory committees established by federal agencies be open to the public (with notice of meetings published in the Federal Register). Although public attendance during the presentation should not be a problem, we expect that if jury deliberations were also open to the public, the jury might be unable to frankly discuss the issues and work towards consensus. Thus, if the act were determined to cover the values jury, including its deliberation stage, a change in the act might be needed.

The primary disadvantage of a values jury is that it consists of a small number of persons and therefore runs the risk of being unrepresentative of the rich pluralism of the public at large. This problem is ameliorated, however, by the agency role that jury members are asked to assume. Each juror is expected to act as society's representative and decide what he or she considers to be in society's best interest in recommending a course of action or suggesting a representative assigned value.

A related disadvantage is that small groups of individuals who are together for considerable time may be susceptible to undue influence by unusually articulate or passionate members of the group. This disadvantage is, however, alleviated by two aspects of the values jury process. First, choosing consensus as the decision rule lessens the influence of individual members because consensus requires the acceptance of all jurors (or a specified majority of jurors for partial consensus). Second, when deliberations are facilitated by someone trained to help all individuals in the jury obtain a rich understanding of the issues and express their individual opinions, each juror is helped to feel that he or she has something valuable to contribute.

A further potential problem with the values jury is that it may fail to reach a recommendation. A consensus, for example, is never assured. Although a jury understands that it is asked to reach consensus if possible, it may still fail to do so. Occasional failures to achieve a recommendation would be acceptable, but if failure to reach consensus were common with values juries, the process would prove frustrating and expensive.

It should be clear that a values jury is not a substitute for CV. Although a values jury can be used to provide a monetary value, it is unlike CV in several respects. First, a values jury may employ a group decision rule such as consensus. Second, a values jury, if it uses a consensus decision rule, would produce one monetary estimate rather than a distribution of dollar values. Third, the constituency of a values jury is explicitly designated to be society at large, whereas a

CV leaves constituency unstated. Similarly, fairness may play an explicit role in the jury's deliberations, whereas CV does not focus on fairness. Finally, in a CV the information presented to respondents is carefully controlled and limited in time and space, whereas a values jury receives a broad range of information, possibly including presentations by stakeholders, can ask questions, and can discuss issues.

## V. CONCLUSIONS

A democracy tries to solve resource allocation problems by means of social contracts instituted both as laws that regulate behavior and as services that private interests are not willing to provide. Where existing law adequately defends the public interest in natural resource allocation decisions, the public interest jury role is not necessary. In some natural resource decisions, however, existing law does not adequately represent the public interest. A well-informed values jury acting as agent of the members of society may be the most effective short-run approach, pending emergence of more effective law.

Important questions about the values jury process need to be addressed before the process could be used on an operational basis. These questions include the following: (1) What is the effect of asking jurors to adopt a social constituency? (2) What is the effect of presentations by stakeholder representatives? (3) What decision rules work best with different jury tasks and different numbers of jurors? (4) What constitutes an unacceptable conflict of interest and what rules should guide the Voir Dire process? (5) What is the stability of jury judgments (how much do they vary from one jury to another)? Clearly, the values jury process raises some interesting avenues for research. We hope this paper will stimulate discussion and study of the values jury concept.

## References

- Arrow, Kenneth, Robert Solow, Paul R. Portney, Edward E. Leamer, Roy Radner, and Howard

- Schuman. 1992. "Report of the NOAA Panel on Contingent Valuation." Washington DC: Resources for the Future.
- Bromley, Daniel W. 1982. "Land and Water Problems: An Institutional Perspective." *American Journal of Agricultural Economics* 64 (Dec.):834-44.
- Brown, Thomas C. 1984. "The Concept of Value in Resource Allocation." *Land Economics* 60 (Aug.):231-46.
- Brown, Thomas C., and Paul Slovic. 1988. "Effects of Context on Economic Measures of Value." In *Amenity Resource Valuation: Integrating Economics with Other Disciplines*, ed. G.L. Peterson, B.L. Driver, and R. Gregory, 23-30. State College, PA: Venture Publishing.
- George, J., K. Golash, and R. Wheeler. 1989. *Handbook on Jury Use in the Federal District Courts*. Washington, DC: Federal Judicial Center.
- Fischhoff, B., and L. Furby. 1988. "Measuring Values: A Conceptual Framework for Interpreting Transactions with Special Reference to Contingent Valuation of Visibility." *Journal of Risk and Uncertainty* 1:147-84.
- Hans, V., and N. Vidmar. 1986. *Judging the Jury*. New York: Plenum Press.
- Harsanyi, John C. 1955. "Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility." *Journal of Political Economy* 63:309-21.
- Rawls, John. 1971. *A Theory of Justice*. Cambridge: Harvard University Press.
- Sagoff, Mark. 1988. *The Economy of the Earth: Philosophy, Law and Environment*. Cambridge: Cambridge University Press.
- Sen, Amartya K. 1977. "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory." *Philosophy and Public Affairs* 6:317-44.
- Tonn, Bruce E., George L. Peterson, and Thomas C. Brown. 1994. "Using Citizen Juries for Natural Resource Management." Draft, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.
- U.S. Court of Appeals. 1989. State of Ohio versus United States Department of the Interior, Case No. 86-1529. Decided July 14, 1989.
- Vatn, Arild, and Daniel W. Bromley. 1994. "Choices without Prices without Apologies." *Journal of Environmental Economics and Management* 26 (Mar.):129-48.