

Echols, Mabel E.

From: Federling, Daphne
Sent: Monday, March 30, 2009 4:18 PM
To: FN-OMB-OIRA-Submission
Cc: Lewis, David L.; Reif, Joanne; Behr, Christopher; Pogorelsky, Neil; Bekka, Khalid
Subject: Docket No. OMB-2009-0008 David Lewis HDR Response to Federal Regulatory Review Request for Comments
Attachments: David Lewis HDR Public submission Letter to OMB on Regulatory Recommendations .pdf; David Lewis paper on New Cost Benefit Analysis to MacArthur Foundation.pdf

Dear Ms. Echols:

Attached please find a letter and a paper presented to the MacArthur Foundation on Cost Benefits Analysis submitted on behalf of Dr. David Lewis in response to the request for comments by the office of Management and Budget, Docket No. OMB-2009-0008.

Thank you.

Daphne C. Federling
Senior Economist
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3/31/2009

March 25, 2009

Hon. Peter Orzag
Director
Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Re: Federal Regulatory Review Request for Comments
Docket No. OMB-2009-0008

Dear Director Orzag:

Thank you for providing the public with this opportunity to comment on and provide suggestions for updating the regulatory review process.

Attached please find a paper I presented in 2005 to the MacArthur Foundation titled, "The New Cost-Benefit Analysis," which proposes a method for adapting the existing Cost-Benefit framework currently used in regulatory analysis into a discursive approach incorporating discourse theory, welfare economics and probability. This "New" Cost-Benefit Analysis is a procedural framework for deliberation and discussion by decision-makers and stakeholders, including the impacted parties among the general public. Drawing on the work of Sunstein and others, this approach directly addresses three of the issues listed in your request for comments, including:

- Encouraging public participation in agency regulatory processes;
- The role of cost-benefit analysis;
- The best tools for achieving public goals through the regulatory process.

This proposal grew from the insights of over thirty-five years of experience using economics to facilitate good policy decision-making. I believe that before us is an excellent opportunity to move our decision-making processes forward in a rigorous and democratic manner.

Sincerely,



David Lewis
National Director, Economics and Finance
And Chief Economist

Enc.

THE NEW COST-BENEFIT ANALYSIS

Paper Presented to the MacArthur Foundation
Chicago, Illinois

David Lewis, Ph.D.
Chief Economist
HDR|HLB Decision Economics Inc.

June, 2005

I. INTRODUCTION

Although the technical apparatus of Cost-Benefit Analysis has been worked out to the general satisfaction of those who teach and practice it, citizens and decision makers are less than sanguine about its usefulness. This paper looks at the foundations and procedures of Cost-Benefit Analysis with a view to finding ways and means of making one of the most powerful technical tools in economics more effective in supporting the public policy making process.

Section II reviews and critiques the ethical, analytical and democratic assumptions that guide the practice of Cost-Benefit Analysis today. Section III examines the institutional roles and procedures of Cost-Benefit Analysis, followed in Section IV with the closely related question of how Cost-Benefit Analysis is communicated to decision makers, stakeholders and the general public.

The synthesis of Section II-IV gives rise, in Section V, to a framework for the reform of Cost-Benefit Analysis. To align Cost-Benefit Analysis with the functioning of contemporary American democracy, the framework eliminates the idea of Cost-Benefit Analysis as objective-observer studies and reports. Instead, Cost-Benefit Analysis is recast as a discursive procedure for facilitating consensus and decision-by-discussion. Elements of subjective probability and risk analysis are seen to be key to the facilitation process.

II. ETHICAL, ANALYTICAL AND DEMOCRATIC FOUNDATIONS

The practice of Cost-Benefit Analysis is grounded in principles crafted by philosophers and economists during the course of the 18th, 19th and early 20th centuries. Small wonder then that the practice is running into problems in the third millennium. The following paragraphs identify where the practices of Cost-Benefit Analysis must be dug out of old foundations and what it means to establish new ones.

Ethical Foundations

John Maynard Keynes once remarked that, "The government which sets the happiness of the governed before it serves a good purpose whatever the ideological theory from which it draws its inspiration." Keynes commends Edmund Burke (1729-1797) as the first utilitarian political philosopher – the first to espouse consistently the "greatest happiness" principle.¹ But it was Jeremy Bentham (1748-1832) who gave the term "utility" economic meaning. Bentham defined utility as "that property in any object whereby it tends to produce pleasure, good or happiness, or to prevent the happening

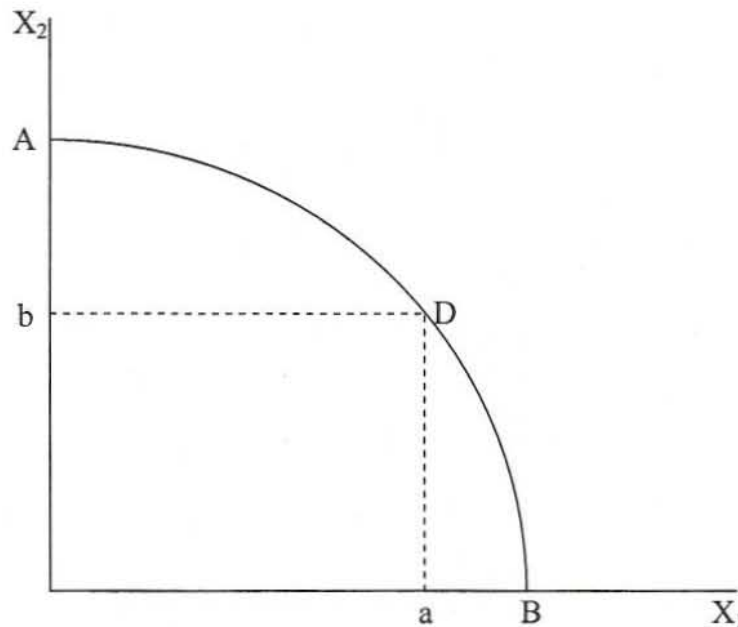
¹ Robert Skidelsky, *John Maynard Keynes: The Economist as Savior, 1920-1937*, Penguin Books, 1992

of mischief, pain, evil or unhappiness to the party whose interest is considered.”² For Bentham, the object of all government action must be the greatest utility for the greatest number. The greatest happiness principle of utilitarianism remains the core ethic of welfare economic theory as well as the theory’s principal workhorse, Cost-Benefit Analysis.

The French economist Vilfredo Pareto (1848-1923) was first to inject scientific objectivity into the utilitarian ethical framework by defining what constitutes an “optimal improvement” in utility (economic welfare). The definition reduces to a “rule” which states that any social change is desirable which results in everyone being better off, or someone being better off and no one being worse off, than before the change. A “Pareto improvement” is actually a movement toward the more general case of a “Pareto Optimum”, a resource allocation in which any further shift in resources would make someone worse off and no-one better off. Under the Pareto scheme, there are many resource allocations that might represent optimal improvements.

The Pareto rule is itself an ethical proposition, a value statement. In one respect the rule commands wide assent for it equates the term “*better off*” with “*in that position voluntarily chosen*.” In other words, individual preferences are taken to indicate changes in wellbeing. A person is said to be better off when he or she voluntarily changes his or her position from one to another. On the other hand, many different distributions of economic resources may constitute a Pareto improvement, an ethical proposition of rather less practical appeal in policy making. Consider Figure 1 in which a fixed stock of commodities is to be distributed between two people, X_1 and X_2 . The point 0, the origin, represents the position before any resources are distributed. The line AB represents the points such that given X_1 ’s gain at the corresponding level, there is no way to distribute the commodities so as to make X_2 better off than the point indicated by the curve. Consider the point $D = (a,b)$. Holding X_1 at the level a , the best that can be done for X_2 is the level b . The points on the line AB are the Pareto efficient points. Each point on AB can be seen to satisfy Pareto’s criterion for efficiency: there is no redistribution that makes either person better off without making the other worse off. Clearly, there are many Pareto efficient points, namely all the points on line AB. Neither the Pareto principle, nor the maximum happiness principle that is foundational to it, indicate one particular distribution of resources as the single-most efficient one.

² Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation*, University College, London, 1781

Figure 1: The Pareto Principle

Twenty-first century society has shifted ground in relation to pure utilitarianism: Witness the emergence of belief systems such as environmental justice and acquired liberties that run counter to Pareto's ethical proposition of economic indifference to the distribution of resources, rights and obligations. Cost-Benefit Analysis remains rooted in the utilitarian ideal, however. Notwithstanding a few clumsy attempts in the economics literature to permit such things as the introduction of numerical weights for different income distributional outcomes, CBA makes no distinction, other than obvious common sense ones, between sources of economic satisfaction and sources of satisfaction grounded in concepts of justice, liberty, duty, obligation and due process. Under the Pareto principle it does not matter how the sum of satisfactions is distributed among individuals. The correct distribution is that which yields maximum fulfillment to the greatest number. Under this rule, and under the rules of Cost-Benefit Analysis, society must allocate its means of satisfaction whatever these are – resources, rights, duties – so as to achieve this maximum. In Cost-Benefit Analysis there is no reason in principle why the violation of the liberties of a few might not be made right by the greater good shared by many.

Of course the greatest sum of advantages is not actually attained in the way described above. As noted by Rawls, "the strictness of common sense precepts of justice is brought to bear in limiting major injustice and insidiously injurious actions."³ But the utilitarian believes that to affirm this "strictness of common sense precepts" as a first

³ John Rawls, *A Theory of Justice*, Belknap Press of the Harvard University Press, 1971 (Revised Edition, 1991)

principle of welfare economics would be a mistake. Excepting constitutionally enshrined liberties, all is fair game in the process of securing the maximum satisfaction for the greatest number. Some economists believe that this is as it should be – that matters of “social justice” are inherently political and as such are properly left to elected representatives to deal with. Elected representatives, on the other hand, feel underserved when Cost-Benefit Analysis studies leave them without systematic guidance on what might be the more pressing decision variables at-hand.

Analytical Foundations

Bentham’s ambition was a means of quantifying utility so as to obtain, through the measurement of peoples’ satisfaction with things, the steps by which governments might secure the greatest happiness of the greatest number. He never achieved his “felicific calculus” but others, notably Cambridge University economist Alfred Marshall (1842-1924), took to the task. Based on Marshall, and the principles laid down by Pareto, the early 20th century Cambridge professor A.C. Pigou (1877-1959) recognized that market prices, in combination with Marshall’s concept of “consumers’ surplus,” provide a practical framework within which to measure and aggregate individual preferences so as to evaluate the merits of social change – a numerical means by which to ascertain the nature of Pareto improvements. Consumers’ surplus refers to the value (“benefit”) obtained by consumers from prices that lie beneath the maximum they would be willing to pay for different goods, services, liberties, rules and so on. Although the notion peoples’ *willingness to pay* as an index of benefit of has since been extended to non-marketed goods and services (through the contingent valuation framework), the consumers’ surplus framework remains the conceptual and operational center of Cost-Benefit Analysis.

Theoretical refinement of the Pareto conditions for optimality was the stuff of much intellectual endeavor among 20th century economists. An enormously influential refinement arose in the form of the “compensation principle” which makes a distinction between actual and potential increases in welfare. Because satisfying the Pareto rule requires that no one is made worse off by a change in policy, changes satisfying it are rarely observed in the real world. Developed in the early part of the century by Nicolas Kaldor (1908-1986), John Hicks (1904-1989) and Tibor Scitovsky (1910-2002), the compensation principle states that a social change can be deemed a Pareto improvement if those who stand to gain could, through lump sum transfer payments, compensate those who stand to lose and still remain better off. This principle requires only that prospective gains in consumers’ surplus are sufficient to create the potential for such compensation, not that it actually occur. This is not a denial of the importance of distributional effects. Rather, it argues that, in a democratic society, only elected representatives should decide whether compensation is appropriate in cases where overall welfare improvements would nevertheless leave some people worse off.

The Social Welfare Function. Doubting the ethical purity of the compensation principle, in the 1940s Professors Paul Samuelson and Abram Bergson reintroduced certain Benthamite ethical norms through the device of the "social welfare function."

"What's wrong with the compensation principle, Sir?" the young graduate student asked with a tug of the forelock.

"Compensation isn't paid," the great Samuelson replied.

"Is that all?"

"That's enough."

Conceptually, the social welfare function incorporates fully the required information concerning the relative importance of conflicting aims, including the relative importance of separate individuals within the social group. The function orders all possible states of society and reveals the single best allocation accordingly. This replaces Pareto's concept of many equally valid optimal changes.

The Impossibility Theorem. Unfortunate ethical implications of the social welfare function were revealed in the early 1950s when Harvard's Kenneth Arrow⁴ published his famous "impossibility theorem." The impossibility theorem demonstrates that in trying to obtain an integrated social preference from diverse individual preferences, it is not possible to find even some mild-looking conditions that would satisfy elementary demands of reasonableness for public choice in a democratic society. Arrow had originally set out to prove that a social welfare function could satisfy, simultaneously, the following four conditions:

1. Provide the social ordering (i.e., the way society uses its resources) for every possible combination of individual preferences);
2. Allow the ranking of any two social states to depend on peoples' preference only over that pair of alternatives, with no dependence on how other, unrelated alternatives, are ranked. (Economists call this condition the "independence of irrelevant alternatives", or just "independence");
3. Permit no individual or group of individuals to prevail over the social ordering regardless of what others prefer (Arrow called this condition "non-dictatorship"); and,
4. Allow the group of all individuals, taken together, to prevail over the social ordering (namely the "Pareto principle" requiring that any change in the social ordering leave some individuals better off without leaving others worse off).⁵

⁴ Kenneth Arrow, *Social Choice and Individual Values*, Wiley, 1951, 2nd Ed., 1963

⁵ This condition can be weakened to require only that any change in the social ordering generate net gains that are large enough to compensate the "losers" while still leaving some individuals better off.

What Arrow ended up proving is that it is not feasible to have a social welfare function that satisfies, simultaneously, independence, the Pareto principle and non-dictatorship.⁶ Arrow reaches this conclusion by revealing the problems that arise in seeking to translate the logic of individual utility maximization to that of collective welfare maximization while still preserving the basic axioms of individual rationality. For example, the formulation of a social welfare function assumes the existence of "transitive preferences," which states that an individual who prefers x to y and y to w will, logically and rationally, prefer x to w . Consider three alternative road projects, one that offers increased speed, one increased safety, and one better air quality. If, at the margin, a person prefers the faster road to the safer one, and prefers the extra safety to the additional air quality, welfare theory hinges on the premise that he or she will prefer the extra speed to the improvement in air quality. Arrow shows that whereas transitivity holds for individuals, it can break down in the context of groups, such as a group of voters. Within such a group a majority might well vote for speed over safety, safety over environment and, yet, environment over speed. Since maximizing a social welfare function assumes the existence of collective transitivity, the key result of Arrow's work is the recognition that maximizing a social welfare function cannot be relied upon as a basis for rational choice without accepting that government might need to impose undue (non-democratic) authority in order to implement it.

Democratic Foundations

Arrow viewed his results not only as a flaw in the social welfare function, but in democracy itself. He viewed the breakdown of transitivity at the collective level as nothing less than an obstacle to rational choice in the context of democratic majority rule.

Taking issue with Arrow, in 1953 James Buchanan argued that the breakdown of transitivity at the collective level is not a fundamental problem but merely an artifact of the assumption of the social welfare function that the logic of individual choice is a "good thing" for social groups as well.

"Rationality or irrationality as an attribute of the social group implies the imputation to that group of an organic existence apart from that of its individual components. If the social group is so considered, questions may be raised relative to the wisdom or unwisdom of this organic being. But does not the very attempt to examine such rationality in terms of individual values introduce logical inconsistency at the outset? Can the rationality of the social organism be evaluated in accordance with any value ordering other than its own?"⁷

⁶ The proof draws on various tenets ("lemmas") of mathematical logic and is not reproduced here. For a good review, see Sen (op. Cit, p.4).

⁷ James M. Buchanan, *The Collected Works of James M. Buchanan, Volume I, The Logical Foundations of Constitutional Liberty*, Liberty Fund, Indianapolis, 1999, Page 116

Buchanan's argument is that different concepts of "rationality" apply to a whole society as distinct from a single individual. Whereas the impossibility theorem points to voting as a source of potentially inconsistent and thus "irrational" decisions, Buchanan argues that such "irrationality" is actually a desirable attribute of social choice. He explains that, in the historical and philosophical context, majority decision evolved as a means through which a social group makes collective choices among alternatives when consensus among the individuals comprising the group cannot be attained. Correctly speaking, majority decision must be viewed primarily as a device for breaking a stalemate, allowing for collective action. A decision reached through the approval of a majority with minority dissent has never been, and should never be, correctly interpreted as anything other than a provisional or experimental choice of the whole social group. As a tentative choice, the majority-determined policy is held to be preferred to inaction, but is not to be considered as irrevocable.

"The fact that such decisions may be formally inconsistent provides one of the most important safeguards against abuse through this form of voting process. If logical consistency were a required property of decision, majority rule would not prove acceptable, even as a means of reaching provisional choices at the margins of the social decision surface".⁸

Buchanan's critique of Arrow, and of the Bergson-Samuelson social welfare function in general, gives rise to an alternative view of the institutional role of welfare economics and Cost-Benefit Analysis. Whereas the Bergson-Samuelson welfare function derives the optimal allocation of resources from an assessment of collective or "social" values, Buchanan's approach begins with the proposition that no social values exist apart from individual values. Instead of revealing a social optimum, the role of economic analysis is to search for "social compromises" on particular issues. In this sense, a Cost-Benefit Analysis is to be viewed as merely hypotheses about individual values, hypotheses to be tested through the choice process itself. Actual values are revealed only through the political action of individuals, and consensus among individual members of the choosing group becomes the only possible affirmation of a "social" value and a welfare-improving change.

Thus, whereas the social welfare function approach represents a decision criterion independent of the choice process, the Buchanan alternative evaluates results only in terms of the choice process itself. A Cost-Benefit Analysis finding of a net gain in consumers' surplus is to be viewed as but an hypothesis, one that can be validated only through discussion, through a direct referendum or through the decision of an elected legislative body. If a majority rejects the change, the Cost-Benefit finding (of a welfare gain) is refuted. The finding of a welfare gain is equally refuted if a *minority dissents*; minority dissent is interpreted as the need for further options,

⁸ Buchanan, *ibid.* p.118

including compensation provisions for damaged minorities. Only options that yield consensus without minority dissent can be regarded as welfare improvements.

Buchanan thus views the practice of welfare economics as the use of Cost-Benefit Analysis to facilitate, not “inform,” the decision process. The analysis must seek to evaluate relevant options with analytically derived assumptions about the values and preferences of individuals while all the time remaining open as to how values should be modified based on discussion and consensus. The compensation principle is gone. In its place is the search for options or sufficient actual compensation to garner not merely majority rule, but consensus without minority dissent.

Gone as well is the Bergson-Samuelson social welfare function as a device for revealing the single best allocation of resources. It is replaced with the search for consensus through discussion. The discussion and consensus process is to be structured and informed with the apparatus of Cost-Benefit Analysis; but it is the decision process itself, not the conclusions drawn from third-party Cost-Benefit Analysis studies, that reveals welfare-improving policies.

Under a Buchanan-inspired framework, Cost-Benefit Analysis would thus be applied as a means of facilitating the search for consensus within a political process. The reality of course is that Cost-Benefit Analysis has not evolved as a facilitation tool. On the contrary, Cost-Benefit Analyses are almost always performed as third-party (“impartial observer”) studies whose conclusions are framed as findings about the economic welfare effects of this or that policy option. While this approach is consistent with Pareto, Bergson and Samuelson, for Buchanan such “findings” exist outside the process of public discourse and thus say nothing definitive about welfare.

The discussion above leads us to ask whether Buchanan’s formulation of welfare implies fundamental change in the way we estimate welfare costs and benefits. The answer is most definitely “Yes.” Whereas Cost-Benefit Analysis remains the analytical workhorse of welfare economics, the Hicks-Kaldor compensating variation criterion for declaring a policy change welfare-positive or welfare-negative is gone. In other words, with Buchanan, the belief that hypothetical transfers from gainers to losers would leave losers no worse off (while still generating overall net benefits) is not sufficient for declaring a change welfare-positive. The various ratios that one calculates to test the Hicks-Kaldor criterion thus become irrelevant.

The significance of empirically derived economic values is also different under Buchanan. With conventional Cost Benefit Analysis, values (values of time, life, environment, amenity and the like) are measured from historical data using either revealed or stated preference (contingent valuation) empirical methodologies. With Buchanan, the assumption is that values take shape during the process of discussing prospective change. In this context, empirically derived estimates from historical data are points of departure in a discursive process – important points of departure, but points of departure nonetheless.

More fundamentally still, Buchanan's concept of welfare economics can be viewed as a realignment of economic analysis with the realities of modern democratic governance. Traditional Cost-Benefit Analysis is seen as an analytic exercise within a larger frame in which elected officials allocate resources with technical advice from third-party experts (such as economists). As such, traditional Cost-Benefit Analysis is part of the early 20th century model of governance (called "republicanism" by political scientists) whereby government institutions exist to program the government in the interest of society. Politics is seen as a framework for serving the interests of society with technical advice from third-party experts acting through bureaucratic institutions.

What then takes the place of the republican paradigm? Some insist that Buchanan's critique demands a Libertarian solution. Others disagree, arguing instead that "discursive democracy" (or "discourse theory") is the appropriate framework within which to exercise Buchanan principles. Libertarians, Sugden for example,⁹ argue that the primary role of government is to maintain a framework of rules and procedures within which individuals are left free to pursue their own ends within a framework of constitutionally protected liberties, rights and freedoms. Decision-support analysis of any sort is wholly irrelevant in this formulation.¹⁰ Yet researchers, most notably Kannaman and Tiversky, have demonstrated that individuals are "hard-wired" with certain mental heuristics that lead to biased forms of reasoning, especially in matters of complexity. Such biases have the effect of prompting people to make choices that are inconsistent with their own beliefs, values and preferences. The procedures of Cost-Benefit Analysis provide a means by which people can be guided around these internal imperfections.¹¹ Discourse theory, and the discursive democratic governance model it has spawned, is a middle ground between the third-party remoteness of republican governance and the laissez faire paradigm of libertarianism; it is in this institutional middle-ground in which Cost-Benefit Analysis can be practiced according to Buchananesque ideals.

III. INSTITUTIONAL ROLES AND PROCEDURES OF COST-BENEFIT ANALYSIS

The ethical, analytical and democratic foundations in which the procedures of Cost-Benefit Analysis are rooted have changed over the last 50 years. Thus, whereas the technical practices of Cost-Benefit Analysis generate little controversy among

⁹ Robert Sugden. *The Political Economy of Public Choice*, Oxford: Martin Robertson, 1981 (and) *Welfare, Resources, and Capabilities: 'A Review of Inequality Reexamined'* by Amartya Sen, *Journal of Economic Literature*, December 1993.

¹¹ Nobel Prize winner Amartya Sen opposes the "consequence-independent" character of the libertarian view, arguing that the possibility of having unacceptable consequences has to be addressed by any principally procedural system.

¹¹ Cass Sunstein, "Cognition and Cost-Benefit Analysis," *The Journal of Legal Studies* Vol 29 (2), 2000.

academics and practitioners, citizens and decision makers often regard the product as unhelpful or wrong or irrelevant. Whereas Cost-Benefit Analysis recognizes the existence of obvious liberties and duties (due process of law and natural rights, for example), it draws no fundamental distinction between “the good,” “the right,” “the fair” in seeking out welfare maximizing solutions and opportunities. Such things as acquired rights and environmental justice are viewed as “non-economic” or “political” factors to be introduced into decision making outside the context of Cost-Benefit Analysis.¹² Welfare maximizing solutions are discovered in studies, outside the choice process itself. The analysis is conducted as a research exercise within a larger context in which decisions about the allocation of resources and the character of fairness, rights and duties are taken by elected or appointed officials who receive advice on the resource dimension from third-party experts (economists). Experts treat resource values (time, life, property, environment, time-preference) as data to be drawn from the empirical analysis of consumer behavior; the decision making process itself is not regarded as a source of information about resource values.

When decisions veer from the steps recommended in Cost-Benefit Studies, economists tend to look for the “political logic” that might explain the divergence from the economically correct course of action.¹³ Does the maximization of welfare (happiness) really exist only within the province of economics, not that of politics? Or, has modern society’s view of what constitutes the basis for happiness gone beyond the assumptions of classical utilitarianism. Can the technical apparatus of Cost-Benefit Analysis be made to serve a productive purpose if the procedures of Cost-Benefit Analysis were aligned with modern ethical and democratic realities? Three possible frameworks for repositioning the procedures of Cost-Benefit Analysis, none of them mutually exclusive, are examined next.

The Veil of Ignorance as a Procedural Framework for Making Cost-Benefit Analysis Useful

One approach to reconciling the public “good” with public “rights” is offered by philosopher John Rawls (1921-2003) in his hugely influential book, *A Theory of Justice*.¹⁴ Using a framework he calls “justice as fairness,” Rawls begins by establishing a basic rule within which members of society can establish a social contract. The rule is that discussants have to find consensus outcomes from behind a

¹² The concept of environmental justice is not to be confused with that of environmental resources. Environmental resources do indeed occasion willingness-to-pay values in Cost-Benefit Analysis. Viewed through a neo-classical microeconomic lens, economic justice might equate to the notion of option or existence value as distinct from use value.

¹³ See for example, Arnold M. Howitt and Alan Altshuler, *The Politics of Controlling Auto Air Pollution* (in) *Essays Transportation Economics and Policy: A Handbook in Honor of John R. Meyer*, Jose Gomes-Ibanez, William Tye and Clifford Winston, Editors

¹⁴ op. cit. Rawls.

“veil of ignorance” – a state in which no-one knows which social role or economic position they might end up occupying (the idea being that if you don’t know whether you will end up rich or poor, male or female, boss or worker, you will bend your mind to adopting principles of justice between each group). Rawls then gives two principles to guide the discussion:

- Principle I: Each person is to have an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties for others.
- Principle II: Social and economic inequalities are to be arranged so that they are both (a) reasonably expected to be to everyone’s advantage, and (b) attached to positions and offices open to all.

Rather than treating all resources as tradable, Principle I would separate factors that are deemed (through some legitimate process) to take on the characteristics of rights duties. One does not need Rawls to see that this already applies to basic liberties such as speech and assembly, the costs and benefits of which are not part of the Cost-Benefit Analysis calculus. But it might equally apply to things such as a minimum standard of air quality or the extent to which facilities are to be accessible to people with disabilities. Principle II applies to the allocation of resources and to the design of organizations that make use of differences in authority and responsibility. Importantly, the ordering of the two principles implies priority. Diminution of liberties protected by the first principle cannot be compensated for by greater social and economic advantages generated under the second principle.

Rawls points out that the two principles are actually a special case of a more general conception of justice that can be expressed as follows: All social values – liberty, opportunity, income and wealth, and the social bases of self-respect – are to be distributed equally unless an unequal distribution of any, or all, of these values is to everyone’s advantage.¹⁵ Rawl’s concept of a just and fair society¹⁶ cannot be taken too literally as basis for organizing American society, but it does provide some insight into the operational means by which Cost-Benefit Analysis might help policy making reconcile the twin objectives of economic efficiency and social justice: Consider a 1979 Cost-Benefit Analysis in which Congressional Budget Office¹⁷ found that separate “paratransit” systems that, like a subsidized taxi, take people with disabilities

¹⁵ *A Theory of Justice*, Revised Edition, p54

¹⁶ The philosopher Simon Blackburn observes that Rawl’s framework most closely resembles the democratic socialist countries of Scandinavia with their substantial welfare floors. Blackburn notes that Rawls is actually more left than them, since even after a welfare floor has been established, those least well off can make claims to further redistribution of resources if such redistribution would not, by dampening incentives to work, shrink the overall endowment of economic resources available to everyone. See Simon Blackburn, *Being Good: A Short Introduction to Ethics*, 2001, p.127.

¹⁷ Congressional Budget Office, *Transportation for Handicapped Persons: Issues and Options*, 1979

from door to door, would generate greater net benefits than a Carter Administration proposal to make all fixed route transportation facilities physically accessible to people with disabilities. Congress rejected the finding, enacting instead the Americans with Disabilities Act, which requires both paratransit (as a mobility measure) and fixed route accessibility (as a rights measure). Had the CBO study been conducted within a contractarian framework, one might imagine (with the benefit of hindsight) that equality of access would have occasioned consensus as an acquired right under "Principle I." The extent of "inequality of mobility" (the amount of paratransit service) would have been subjected to analysis under Principle II. While Rawls does not offer a numerical framework for operationalizing Principle II (a felicific calculus), he suggests that Cost-Benefit Analysis is probably as good as any, namely the maximization of net satisfaction based on the values and preferences of individuals. What matters more to Rawls than the operational calculus of Principle II is that decisions emerge from the procedures necessary to find a common point of view.

Discursive Democracy as a Procedural Framework for Making Cost-Benefit Analysis Useful

Discourse theory, and the principles of discursive democracy to which it gives rise, refers to the institutionalization of the procedures and conditions of communication as a basis for collective will-formation through consensus. Discourse theory suggests similar procedures to Rawls' theory of justice, but is less normative and more practical in application. Discourse theory posits that collective will-formation does not draw its force from a previous convergence of communally shared ethical convictions (a social welfare function). Rather, it is the procedures of deliberation, and the release peoples' *communicative* instinct to allow better arguments to come into play, that precipitate the formulation of values as a basis for collective, welfare-maximizing policy making.

Discourse theory replaces traditional concepts of rationality (i.e., the maximization of a social welfare function) with the concept of "communicative rationality." Rooted in the interaction of social life, communicative rationality is seen as a property of *subjective* discourse, not individual or social maximization. This idea of communicative rationality, as its proponents are quick to point out, has a respectable heritage. Indeed, Aristotle is seen as a key player in the lineage. Kant (who advanced the idea of "Reason" as the basis for collective agreement) and Rousseau (the social contract) also figure prominently. Each sought justification of values and principles in "the formal conditions of consensus formation."¹⁸ Contemporary heirs to this Aristotelian theme include Arendt, Gadamer, MacIntyre, Habermas and Dryzek. The common aim of these philosophers is to resurrect authentic and reasonable public

¹⁸ Jurgen Habermas, *Communication and the Evolution of Society*, Beacon, Boston 1979 (as cited in Dryzek, *ibid*, p.14).

discourse. To paraphrase Dryzek, such discourse has been eroded over the centuries by theories of rationality manifested in hierarchy, administration, and technocracy, by attempts to locate objectivist solid ground, and more recently, by postmodern relativism.

It is through the mechanisms of discursive democracy that Cost-Benefit Analysis has much to offer. Applied as a mode of facilitation, Cost-Benefit Analysis offers a means of liberating "the communicative instinct" while helping individuals avoid the mental heuristics that give rise to unintended reasoning biases. As a mode of facilitation, Cost-Benefit Analysis can be stripped of the presumption that it reveals *the* welfare maximizing solution: Instead, it becomes a means of enabling the citizenry or its elected representatives to determine for themselves what does and does not constitute welfare-improving change.

A facilitation, or "communitarian" role for Cost-Benefit Analysis aligns it with important advances in our understanding of the way peoples' values and beliefs actually form. Contrary to the assumption in classical utilitarian theory of stable values and preferences, it appears that people often do not have well-established values, and that preferences are actually constructed – not merely revealed – during discussion.¹⁹ In Cost-Benefit Analysis as conventionally practiced, prices and values are obtained through empirical investigation and treated as "data," namely information that is not capable of being altered through the decision making process itself. As shown earlier, Buchanan would dispute this approach, arguing that individual values can and do change in the process of discussion and decision-making. Nobel Prize winning economist and philosopher Amartya Sen writes that the practical reach of Cost-Benefit Analysis is considerably reduced by its tendency to ignore value formation through social interactions. According to Sen, many of the more exacting problems of the contemporary world – varying from famine prevention to global warming, actually *call for* value formation through public discussion.²⁰ As commonly practiced today, value measurement emphasizes the quest for empirical accuracy. The utilization of structured discussion through which such valuations can be altered, validated and legitimized is alien to Cost-Benefit Analysis as traditionally practiced.

Procedurally, the above means that the third-party estimation of benefits and costs is, or should be, only a starting point for policy formulation and discussion. With Buchanan, a policy change can only be declared a welfare gain when a consensus of the citizenry (or some legitimately conceived representative group) agrees that such is the case. In short, Cost-Benefit Analysis should be viewed as a means of organizing

¹⁹ Daniel Kahneman and Amos Tversky, *Choices, Values and Frames*, Cambridge University Press, 2000, p.618

²⁰ Amartya Sen, *The Possibility of Social Choice*, Lecture Delivered in Stockholm, Sweden on December 8, 1998 on the Occasion of Receipt of the Nobel Prize in Economic Sciences

and facilitating a public discourse on resources, values, liberties and justice, and the likelihood of welfare gains in relation to prospective alternatives for change.

IV. THE COMMUNICATION OF COST-BENEFIT ANALYSIS

By convention, Cost-Benefit Analysis studies communicate through vehicle of *forecasts*. Quantity forecasts and forecasts of economic values are used to populate the essential equation for benefits (B) or costs (C) which, for exposition, we can state generally as B_{it} or $C_{it} = (q_{it})(v_{it})$, where q_{it} denotes the quantity of the i^{th} resource to be produced or consumed by a prospective project in future year t , and v_{it} the unit economic value of the i^{th} resource that time. If the project in question were a prospective new road and the i^{th} resource were travel time, q_{it} would be the quantity of travel time saving forecast for travelers in year t ; and v_{it} would be the economic value of unit of travel time in year t (expressed in dollars per minute). B_{it} would thus represent a forecast of the economic benefit of the road attached to time saving in year t . If the i^{th} resource were asphalt, q_{it} would be the forecast quantity of asphalt to be consumed in constructing the road during year t , v_{it} the forecast unit price of asphalt in that year, and C_{it} the forecast economic cost associated with the consumption of asphalt in year t .

The communication problem is a problem of trust – no one believes forecasts. As to values, it is counterintuitive for people to imagine their values being quantified in the absence of discourse and reflection. Against these realities Cost-Benefit Analysis studies presumes the suspension of disbelief. Forecasts of costs, benefits and time preference that extend 100 years out or more are portrayed as the basis for decision. Economic values, measured from past behavior and contingent valuation surveys, and treated as ‘data.’ Studies fuel mistrust by either presenting as certain that which is not, and by employing faux experiments to reflect uncertainty. Consider the common “*What if?*” experiment in which studies pose hypothetical questions and use models to evaluate associated outcomes. The “what-ifs” themselves are almost always arbitrary, leaving no reason to assign the associated forecasts particular weight. Variants of the “what-if” experiment include the familiar “best-case/worst-case” and “high case/low case” scenarios. To construct a worst case, analysts suppose that all projections will deviate from the central expectation *in the same direction*. In reality the likelihood that all forecast assumptions will err simultaneously in one direction is as remote as everything turning out exactly as expected. Another conventional but flawed procedure is “sensitivity analysis” wherein forecast assumptions are varied one or two variables at a time. Needless to say, life does not veer from expectations one or two variables at a time.

Communication through Probability

While people do not believe forecasts, they are anxious to know how scientific evidence and expert beliefs might bear on possible outcomes. Meteorologists learned this long ago. The now ubiquitous “probability of precipitation” (PoP) combines reasoned information about uncertainty in order to present a statement of risk. “*The chance of rain tomorrow is 20 percent*” is not perceived as a professional cop-out: On the contrary, people have always known the forecast to be uncertain. Information as to *how* uncertain enables reasoned decision-making, and for that decision makers are grateful.

PoP combines two kinds of probability, objective and subjective. Objective probability reflects the kind of statistical analysis most people are at least vaguely familiar, the “frequentist” procedures for gauging random error and dispersion in observed data, surveys, instrument readings and models. Subjective probability (the “Bayesian” method) accounts for the opinions and beliefs of experts. Before any models are run, different meteorologists will have different opinions about the implications for tomorrow of weather patterns being observed today. Regardless of how well specified a model might be, no single weather analysis can provide absolute, definitive conclusions: Even after a given model is calibrated and run, some diversity of expert opinion will persist. Before issuing a hurricane evacuation advisory, analysts apply the subjective method (“Bayesian updating”) to incorporate the range of expert beliefs into the final statement of risk. Consumers do the same, comparing the wording of advisories from different sources before making up their own minds.

Subjective Probability and Elicitation

Bayesian updating involves the elicitation of probability beliefs using a range of protocols designed to help experts avoid the mental heuristics discussed earlier while revealing a coherent set of personal probabilities. “Coherent” in this context means that the results conform the axioms of probability (one cannot hold the belief that an outcome is 30 percent likely without also holding the belief that its converse is 70 percent unlikely). The premise is not that experts carry well-formed probability-based judgments around in their heads: They do not. Rather, elicitation has evolved into a synthesis of social psychology, statistical discipline and group facilitation designed to enable experts to give context-sensitive quantitative expression to their well-informed but qualitatively held beliefs.

In addition to meteorology, applications of subjective probability are common in the military, finance and medicine. A revealing 1995 application of Bayesian updating was reported in 1995 by the Journal of the American Medical Association (JAMA).²¹

²¹ James M. Brophy and Lawrence Joseph, *Placing Clinical Trials in Context Using Bayesian Analysis: GUSTO Revisited by Reverend Bayes*, Journal of the American Medical Association, March 15, 1995, Vol 273, No. 11

Ten years of clinical random trials with two thrombolytic drug strategies for myocardial infarction (two “clot-buster” drugs designed to arrest heart attacks) were updated on the basis of expert beliefs among practicing cardiologists, paramedics and other practitioners. Frequentist evidence from the trials, which indicated one drug to be more effective than the other, was sharply revised in forging a basis for guiding medical practice. As stated in JAMA, “*The subjectivity of prior beliefs in the Bayesian approach is not a liability, but rather explicitly allows different opinions to be formally expressed and evaluated.*”²²

Perhaps it goes without saying that shifting Cost-Benefit Analysis to the probabilistic mode would enhance its usefulness. What is less than self-evident is that the elicitation protocols of subjective probability (Bayesian updating) present a means by which decision makers and stakeholders can participate, inform or even take a central role in the analysis process. Those whose values we seek to quantify are the very “experts” we need to engage in the process of updating evidence from revealed preference studies, contingent valuations and other frequentist examinations of economic and social behavior. In short, probability – both objective and subjective – is a powerful operational means by which Cost-Benefit Analysis can be recast from a “study” to a procedural framework for reasoned deliberation and decision by discussion.

V. THE REFORM OF COST-BENEFIT ANALYSIS

The “New” Cost-Benefit Analysis must be an integration of discourse theory, welfare economics and probability. As in a child’s braid, each of the three component strands is itself an organized collection of many strands. As we have seen, discourse theory represents a synthesis of moral philosophy, ethics, political science, institutional analysis, and the facilitation of various levels of consensus. Welfare economics encompasses numerous elements of microeconomics, including the tools of rational analysis and the quantitative expression of value. Probability (or, as Bernoulli first called it in the 17th century, “political arithmetic”) combines the mathematics of uncertainty and risk with social psychology and the elicitation of subjective values. Despite the discrete and overlapping attributes of its many strands, a braid, properly constructed, holds tight as single entity: The entity is Cost-Benefit Analysis as a discursive social institution.

The New Cost-Benefit Analysis: A Discursive Social Institution

I begin with Dryzek’s expression of a formal discursive process:

“A discursive design is a social institution around which the expectations of a number of actors converge. It therefore has a place in their conscious

²² *ibid.*, page 871

awareness as a site for communicative interaction among them. Individuals should participate as citizens, not as representatives of the state or any other corporate and hierarchical body. No concerned individuals should be excluded and an educative mechanism should promote the competent participation of persons with a material interest in the issues at hand who might otherwise be left out. The focus of deliberations should include, but not be limited to, the individual or collective needs and interests of the individuals involved. Thus the institution is oriented to the generation and coordination of actions situated within a particular problem context. Within the discursive design, there should be no hierarchy or formal rules, though debate may be governed by informal canons of free discourse. A decision rule of consensus should obtain... A neutral third party should initiate, lubricate and oversee discussions among interested parties."²³

Under the discursive design I propose here, the educative mechanism is an integration of, (i) the rational frame and evidence-based apparatus of Cost-Benefit Analysis, and (ii) the Bayesian protocols of subjective probability. The educative mechanism replaces the "Terms of Reference" that frame traditional modes of public participation ("Presidential Commissions," "Public Enquiries," "Environmental Reviews," and so on). The neutral third-party is the economist. The economist departs from the traditional application of Cost-Benefit Analysis in three ways. First, he or she acts, as stated, as third party facilitator of a discursive process. Second, the decision rule, the rule for welfare maximization, is not Hicks-Kaldor but rather consensus (as given by Dryzek above and by Buchanan and Sen earlier in the paper). In place of the Hicks-Kaldor test for hypothetical compensation, participants examine options and sub-options, including alternative compensation and mitigation schemes, until consensus emerges. Third, forecasts are replaced by probability, namely probabilistic expressions of the bearing of evidence, judgments and beliefs on the costs, value, benefits, justice and net benefits of alternatives. Participants inform such probability statements through the third party application of Bayesian elicitation protocols.

Would people participate in a discursive institution like that outlined above? Two lines of evidence indicate they would. First, case studies of incipient discursive procedures reported by Dryzek and others indicate that people do participate, though for various reasons and motivations. One reason might be a stalemate in other areas of decision, such as the courts. Another might be a genuine desire for improved communications with protagonists. A third reason is naked self-interest wherein people see more to gain from participation than from abstention. This third calculus [self-interest] reportedly tends to dominate, "As one might expect in a world of ubiquitous strategic pursuit of self-interest."²⁴ Such pursuit is of course anathema to

²³ John S. Dryzek, *Discursive Democracy: Politics, Policy, and Political Science*, Cambridge University Press, 1990, Page 43

²⁴ Ibid. p. 44

communicative rationality. Hence, as Dryzek observes, rationalized interaction immediately confronts the need to transcend the motivations that attract the participants. This requirement explains why the rational procedures of Cost-Benefit Analysis and a neutral third party are necessary – to ease participants over hurdles leading to an unfamiliar kind of interaction.

The second line of evidence regarding participation stems from my own experience with a discursive Cost-Benefit Analysis procedure I practice in the field (see below). I find that the procedures of Benefit Analysis procedures to facilitate in a discursive process, combined with probabilistic elicitation, can lead people both to participate and to transcend self-interest as an original motivation. Transcendence arises in a number of ways. One dynamic is the appeal to what Habermas calls the communitarian instinct – an instinct liberated by the propensity of free but rationally framed discourse to allow better arguments to come into play. This seems to be reinforced by the pedagogical and yet non-authoritarian (non-hierarchical) nature of the process. Another dynamic is the appeal to self-interest itself. It appears that the transparency of multi-stakeholder discussion in a free but rationally framed, evidence-based and probabilistically reasoned discourse helps defuse the efficacy of single-issue strategic behavior and deontological debate. Compromise itself becomes a mode of strategic self-interest: Participants are moved to find consensus on *what* to do even though they might well disagree on *why* to do it.

Elements of an Operational Framework

While every matter of public policy has a unique profile of issues, Cost-Benefit Analysis as a discursive *institution* (as a, “Site for communicative interaction”) needs sufficient subject matter and procedural structure to establish a sense of place in the social consciousness.

Subject Matter

Five subjects delineate the discursive design represented in Figure 2. While the study process of traditional Cost-Benefit Analysis needs to be stripped away, the underling work breakdown structure helps define the appropriate subjects for a discursive process, namely (i) the problem; (ii) alternative courses of action; (iii) pertinent scientific theory and evidence; (iv) the bearing of theory and evidence on the quantification and valuation of costs, benefits and net benefits of alternatives; and (v) consequences, justice and reasons. “Consequences” pertains to the net benefits of alternative policy actions. Whereas the subject matter of traditional Cost-Benefit Analysis ends here, discourse theory recognizes that people do not invoke the formal calculus of consequences – costs and benefits – as the language of actual decision-making. For most people, it is the informal, non-quantitative language of *reasons* for and against this or that course of action that guides decisions. Among such reasons might be “in-consequentialist” considerations of fairness, justice, right and wrong, alongside which consequence-oriented evidence (costs and benefits) adds critical

perspective in the search for consensus. But to succeed in that search, the discourse must relax the formal language of Cost-Benefit Analysis.

Procedures

Figure 2 depicts the procedures that animate deliberation in relation to each subject. These are (i) distribution of the Reference Agenda; (ii) the elicitation of scientific and evidentiary consensus; and (iii) the deliberation of consequences, reasons and choices.

Figure 2: Cost-Benefit Analysis as a Discursive Institution

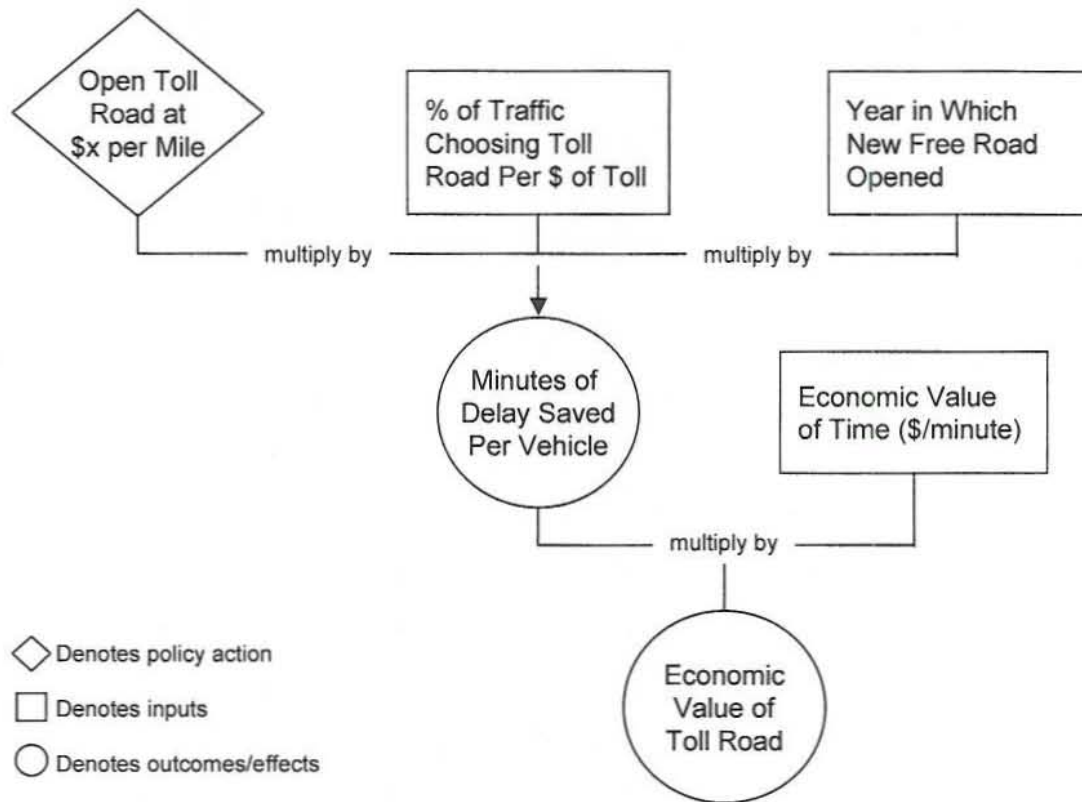
Procedures		
Subject Matter	Disseminate Reference Agenda	Elicit Opinion and Judgment
	Problem	Deliberative Assembly 1.x
	Options	
	Theory	Deliberative Assembly 2.x
	Evidence	
	Consequences, Justice & Reasons	
		Deliberative Assembly 3.x

The Reference Agenda. Prepared and disseminated in advance of deliberation, the Reference Agenda provides detailed but accessible information in relation to each of the four subjects. The Reference Book lays down a foundation for deliberation. The material in it is characterized as entirely preliminary. It is not a report. It is an agenda.

The Reference Agenda contains four Sections of material. Section 1 identifies the assumptions and beliefs that give rise to the perception of a problem, or lack thereof. Alternative ways of expressing the problem, or lack thereof, are articulated in relation to the foundational assumptions and beliefs of each. If the “problem” at-hand were traffic congestion, for example, the corresponding assumption of free roads would be explained (for were roads to be tolled there might be less congestion). Section 2 of the Reference Agenda follows with a preliminary scoping of alternative courses of action and combinations thereof, including that of no action and the widest possible range of options (build more roads, build toll roads, attach tolls to existing roads, invest in more public transit, discourage urban sprawl, and so on).

Section 3 of the Reference Agenda gives participants access to state-of-the-art scientific information. Cost-Benefit Analysis is employed as the organizing framework. The section is presented in two parts, A and B. Part A identifies the effects, both positive and negative, of each alternative. All effects are listed – market and non-market, internal and external. While effects are listed in recognizable units of measurement (air quality in units of CO₂, time savings in minutes) Part A also explains the economic logic whereby (i) positive effects translate into economic benefits and negative effects into economic costs; and (ii) willingness to pay can signal the economic value of any given effect (a foundation for deliberating values later on). The *time-value* of economic benefits and costs is also explained (a foundation for deliberating discount rates later on). Explained as well is the issue of “double counting” whereby a single economic benefit or cost manifests in more than one measurable form (such as time savings from a new rail line arising as both greater worker productivity and increased land value).

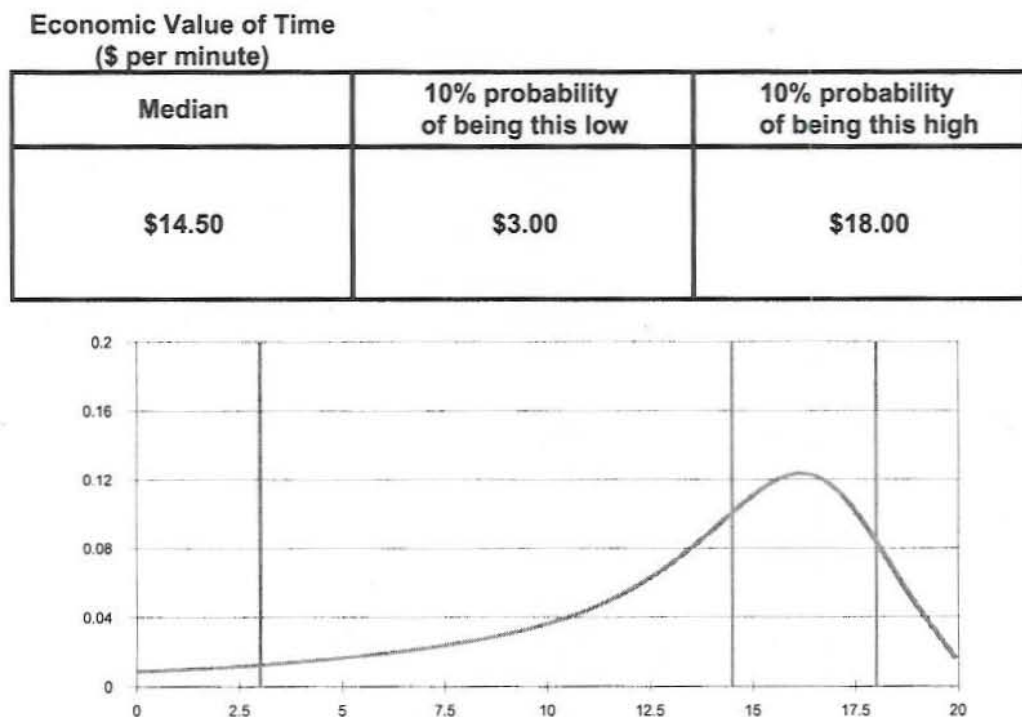
Part B of Section 3 explains the state-of-the-art understanding of cause-and-effect relationships that connect policy actions to each of the effects identified in Section A. This aim is to make models accessible to lay persons. The format given in Figure 3 has been found effective in facilitating understanding and deliberation, and in eliciting opinion. Figure 3 is a highly simplified illustration of the format that would typically depict many variables, parent and infant models and coefficients (“connective tissue”). Regardless of how elaborate the presentation, however, the format permits the facilitator to educate and, through elicitation, enrich the cause-and-effect logic in response to insights generated during deliberation.

Figure 3: Depicting Economic Relationships

Section 4 of the Reference Agenda enables the participant access to state-of-the-art empirical evidence – the data that, when used to populate the models depicted in Section 3, generate estimates of costs and benefits. The presentation of evidence in Section 4 is governed by two rules. First, only data regarding model inputs are presented (causal variables and coefficients, collectively called “assumptive evidence”), *not* the costs and benefits that follow from solving the models accordingly. Deliberation over assumptive evidence must precede meaningful deliberation of outcomes (see Figure 3). If the models are “solved” too early in the discursive process, participants are prone to examine estimated costs and benefits first, rather than the assumptions underpinning the estimates. This promotes strategic behavior, behavior that is sharply diluted if “bottom lines” are allowed to emerge later in the deliberative process, after fulsome deliberation of the theory and evidence has occurred. While participants could, in theory, try solving the models and “reverse engineering” their comments accordingly, the complexity of such an exercise makes it most unlikely. The second rule is that quantitative evidence be portrayed probabilistically. As shown in Figure 4, three numerical attributes of a probability distribution are given for each variable, the median (50th percentile) estimate, and the 10 percent probable estimates both above and below the median. These quantities are drawn from the statistical properties of relevant and available market analysis,

contingent valuation studies, formal meta-analysis of the evidentiary record and other legitimate sources of empirical information. The corresponding “shape” of the probability range is also portrayed. As shown in the Figure 4, the distribution could be skewed rather than “normal” (bell-shaped). While few participants will grasp statistical subtleties prior to facilitated deliberation, most comprehend the idea of a range and of the risk of error being even or uneven in relation to some central estimate: Indeed, these mirror ways of thinking in the everyday decisions of daily life. As well, people appreciate from the start that the evidentiary segment of the discursive process is not to be governed by single best-guess values or convenient but arbitrary concepts of risk.

Figure 4: Depicting Evidence Probabilistically



Scientific and Evidentiary Elicitation. With the Reference Agenda complete and disseminated to all parties, the deliberative element of the process can begin. The process involves three facilitated deliberative sessions organized, as shown in Figure 2, in relation to subject matter. The first session is dedicated to seeking preliminary consensus on the way, or different ways, in which the problem at-hand is to be articulated, and on the range of associated policy alternatives. The second session is devoted to science and assumptive evidence, the goal being preliminary technical consensus on the categories of negative and positive policy effects (costs and benefits); the nature of cause-and-effect relationships through which policies create costs and benefits; and the assumptive evidence with which quantitative

expression is to be assigned to the models so as to estimate, probabilistically, the order of costs and benefits. Under the rubric of "preliminary" consensus, the definition of alternatives, the logic of cause-and-effect relationships and the assignment of probabilities to assumptive evidence remain open to further deliberation during the third session.

Facilitation and Consensus. Session 3 begins by populating the cost and benefit models with the probabilistic evidence developed in Session 2 to reveal a preliminary rank ordering of alternatives in relation to net benefits (benefits minus costs). The ordering could well be different at different levels of probability. Alternative "B" might outrank all others when evaluated at the 80 percent probability level whereas Alternative "D" might rise to first place at the five percent level. Such situations can arise when known technologies or policies are pitted against new or developmental ones: Whereas a new or developmental approach might be associated with significant failure risk (as assessed during evidentiary review in Session 2), its consequences for society (its net benefits) might be materially greater than that of conventional methods were it too succeed.

The facilitator now poses up to four questions in the search for some degree of consensus:

1. *Are the risks and consequences revealed a basis for collective choice? If not:*
2. *Should the net benefits of one or more alternatives be reexamined in the light of further deliberation of scientific evidence?*
3. *Is there a new or differently structured alternative (in further recognition of disaffected minorities, for example) that might bring about consensus?*
4. *"Are there matters of justice or other reasons that ought to override "consequences" per se (net benefits) in order to find consensus on a course of action?"*

This or a similar sequence of questions opens the Session to a free but structured discourse. The onus on the facilitator is to maintain neutrality while reminding participants of matters of fact; keeping track of agreements on singular matters and employing them as building blocks of consensus; and facilitating debate under Question 4 by reference to both (i) principles of ethics and justice (including, perhaps, Rawlsian justice), and, (ii) probabilistic evidence regarding relevant costs, benefits and net benefits. It is well to bear in mind that that it is not the facilitator's duty to bring about consensus; it is his or her duty to enable the kind of discourse that gives rise to the conditions within which consensus can be realized.

VI. A FINAL WORD: EDUCATING NEW ECONOMISTS FOR THE NEW COST-BENEFIT ANALYSIS

To produce economists capable of serving as masterful facilitators of public discourse, the economics syllabus must be significantly broadened. Cost-Benefit Analysis today is taught as an analytic technique, usually as part of a course in public finance. Cost-Benefit Analysis as a discursive institution cannot be taught as part of a course, nor can it be taught as a course in its own right. As it once did, the graduate economics syllabus must demand the mastery of moral philosophy, political thought and ethics. The economics student's fluency of Kant, Burke, Bentham, Habermas and Rawls must equal her expertise in the apparatus of Marshall, Pigou, Samuelson, Musgrave and Mishan. Amartya Sen the *philosopher* and *ethicist* must be mastered, not just Amartya Sen the *economist*. The syllabus must embrace social and experimental psychology as well as econometrics, and Bayesian statistics as well as the frequentist method. And, coursework must be supplemented with law school's counterpart of moot court if our universities are to produce economists ready for the role of facilitator.