CONVENTION AND LIMITATION IN BENEFIT-COST ANALYSIS

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I

BENEFIT-COST ANALYSIS AS AN ADMINISTRATIVE DEVICE

The formal computation of benefit-cost ratios is an established part of the American governmental process; its origins go back at least as far as the River and Harbor Act of 1902,[1] and it was explicitly provided for in an act of 1920.[2] It is peculiarly, perhaps uniquely, American, stemming as it does from a Constitution in which the antinomies inherent in a federation of sovereign states are compounded by a refusal to allow the federal Executive Branch discretion over details of expenditure already approved in principle by the Legislative Branch. (Providing by statute for the computation of benefit-cost ratios is unknown in the United Kingdom, where such discretion is a matter of course, subject only to subsequent parliamentary discussion and the scrutiny of the Public Accounts Committee of the House of Commons.) The computation of benefit-cost ratios was intended to serve two purposes which in essence are separate. It establishes which public projects are prima facie likely to yield economic benefits and are hence worthy to be submitted for congressional approval; and it furnishes a basis for the apportionment of the cost of such projects between the federal government and others. In the first case, it embodies an economic shibboleth, in the form of a benefit-cost ratio in excess of 1 :1 ; in the second, it lays down a rubric that the apportionment of costs should be in the same ratio as the incidence of benefits. Neither shibboleth nor rubric is in fact binding on Congress, and each is essentially no more than a rule of thumb for the guidance of government agencies in submitting projects.

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I should like to acknowledge a special debt to the work of Professor T. W. Hutchison, of Birmingham University, England, cited hereafter, for elucidating numerous methodological points and for a number of citations from other authors.

1. 32 Stat. 372-73 (1903).
2. River and Harbor Act, 41 Stat. 1009-10 (1920).

It is no derogation of such devices to say that they are, of convention, inevitably imbued with a strong element of artifice. When one considers, for instance, the difficulty of assessing and apportioning economic benefits already received, the equity of charging costs pro rata with an apportionment of hypothetical benefits appears itself hypothetical. Likewise, it is apparent that two projects with identical benefit-cost ratios, however carefully compiled, may—one might almost say, are bound to—turn out very differently in practice. Not only is the usefulness of calculation limited by the extent of human ability to foretell the future; its scope is circumscribed by decisions taken in the past. The Bureau of Reclamation, for instance, operates only in the seventeen western states; plausible, though doubtless not conclusive, arguments could readily be adduced to show that these states are the sole beneficiaries of its activities and that on balance the nation is the loser. Yet the contrary presumption is made imperative by the very establishment of the Bureau of Reclamation. Sometimes such a presumption may be tacit or customary: the Corps of Engineers, in making benefit-cost analyses of navigation projects, appears simply to have assumed that these projects would constitute a national, and not merely a local, benefit to the extent that they were used.

The inherently speculative character of the analysis, and the evident fact that public works programs will always have to take into account past history and a variety of considerations lumped under the general head of "public policy," suggest that the scope for improvements in, or extensions of, the analytical process itself is decidedly limited. Two questions in particular arise that can only be answered by persons familiar with the day-to-day process of administration: (1) How, and how far, is it possible to secure uniformity of practice between different agencies using benefit-cost analysis? (2) To what degree of elaboration is it worthwhile taking the process, *i.e.*, at what point does a further increment of speculation promise less than a commensurate increase in the accuracy of the forecast? In recent years a great deal of effort, attended by a modicum of success, has been spent on the first question. But a voluminous literature can be searched in vain for more than a suggestion that the second question is even proper to ask, let alone for any attempt to answer it. So far from benefit-cost analysis being assigned a place as a useful administrative device in limited applications, it has been exalted into a "secular sacrament"—to quote a theologically-minded administrator of my acquaintance—as well as a comprehensive solvent for economic problems of resource use.

The history of this development is an instructive commentary on the role of the economist in public administration.

The point in time at which the benefit-cost ratio began to get out of hand, so to speak, can be dated with sufficient accuracy as the early years of the New Deal, when massive public works became the vogue as a way of diminishing unemployment, and when a narrowly financial estimate of benefits and costs appeared to underestimate the advantages of creatively employing "labor which otherwise might have to be provided subsistence when idle."[3] The Water Resources Committee of Secretary Ickes' National Resources Board called for a study of the "intangible factors" governing benefits and costs, and for a revision of "conventional costing technique" in favor of one "peculiarly suitable to collective undertakings. . . . [I]t appears reasonable to explore the possibility of constructing a general formula which would serve in any project by substitution of ascertainable values for such of the terms of the formula as are pertinent."[4] Such a general formula was, however, not forthcoming. Instead, widespread encouragement appears to have been given to individual agencies to seek out ways and means by which projects that seemed desirable could be endowed with the favorable benefit-cost ratios requisite for congressional approval. A sign of the times was the proviso in the Flood Control Act of 1936 allowing the federal government to participate in schemes of flood control "if the benefits *to whomsoever they may accrue* are in excess of the estimated costs, and if the lives and social security of people are otherwise adversely affected."[5]

It is arguable that a straightforward rejection of the benefit-cost formula in favor of administrative discretion would have been preferable to a large-scale resort to economic casuistry. The course that was pursued certainly brought benefit-cost analysis into disrepute in many quarters, particularly when agencies continued, in times of wartime boom and post-war "full employment," practices generated by the depression. The Bureau of Reclamation in particular began to make play with "secondary" or "indirect" benefits, evaluating such things as the increased attendance to be expected at motion-picture theaters in an area affected by a reclamation project (at a figure amounting to thirty-nine per cent of the expected admission

3. U.S. National Resources Board, A Report on National Planning and Public Works in Relation to Natural Resources and Including Land Use and Water Resources With Findings and Recommendations 267 (1934).

4. *Ibid.*

5. 49 Stat. 1570 (1936), 33 U.S.C. § 701a (1964). (Emphasis added.)

fees);[6] a process which, carried to its logical conclusion throughout the life of, say, a dam designed to last half a century or more, has implications at which the mind boggles. Several agencies evoked so-called intangible benefits, such as those afforded by the provision of facilities for recreation, and a variety of attempts were—and continue to be—made to put some kind of dollar value on them. Opinions are divided on the intrinsic merits of including these intangibles in analysis; moreover, the practical effect of doing so is to increase the federal contribution to the cost of joint projects, inasmuch as intangibles are inevitably classed as "non-reimbursable," *i.e.*, not chargeable to the locality in which the project is situated.

As early as 1943 the need for some central check on agency practices gave rise to an Executive Order requiring that reports "relating to or affecting Federal public works and improvement projects"[7] be submitted to the Bureau of the Budget. Early in 1946, perhaps under pressure from the Bureau of the Budget, which may well have been embarrassed by the variety of agency practices that were thus revealed, the Federal Inter-Agency River Basin Committee[8] appointed a Sub-Committee on Benefits and Costs "for the purpose of formulating mutually acceptable principles and procedures." This sub-committee is still in existence under a somewhat different name, though of late it appears to have accomplished little that is noteworthy. Its early years, however, were marked by a sustained and laborious attempt to come to grips with the problem, which its first progress report in 1947[9] rightly characterized as "complex and difficult." The report went on to say that "search of the available literature has yielded relatively little of value to the Sub-Committee. Even a standard terminology is lacking." Not until May, 1950, was the sub-committee in a position to produce a comprehensive interim report[10] which even so was hurried forward ("on an expedited schedule") at the request of the President's

6. Staff of House Comm. on Public Works, 82d Cong., 2d Sess., Economic Evaluation of Federal Water Resource Development Projects (Comm. Print No. 24, 1952), quoted in R. J. Hammond, Benefit-Cost Analysis and Water Pollution Control 34-35 (Misc. Pub. No. 13, Food Research Institute, Stanford Univ. 1960).

7. Exec. Order No. 9384, 8 Fed. Reg. 13782-83 (1943).

8. Comprising the Army Corps of Engineers, the Departments of the Interior, Agriculture, and Commerce, and the Federal Power Commission. The Department of Health, Education, and Welfare was added in 1948, after the passage of the Water Pollution Control Act of that year.

9. Sub-Comm. on Benefits and Costs, Report to the Federal Inter-Agency River Basin Comm., Proposed Practices for Economic Analysis of River Basin Projects 58 para. 5 (1950) [hereinafter cited as Green Book].

10. Letter of Transmittal, dated May 15, 1950, Green Book vii.

Water Policy Resources Commission. This document, the so-called *Green Book*, has shaped official thinking ever since; any amendments have touched detail rather than principle.

II

CONTRADICTORY DOCTRINES OF BENEFIT MAXIMIZATION

No one who has essayed even a partial study of the problem can fail to sympathize with the predicament of those charged with drafting the interim report. They were confronted, as so often is the case, with a doctrinal vacuum that had been filled by *ad hoc* improvisations, some of long standing and all cherished by their departmental inventors. As many of these as possible required reconciliation and intellectual defense, which—though benefit-cost analysis had, it seems, originally been invented by non-economists—could only be couched in terms of generally accepted economic theory. (An independent theory elaborated from first principles, supposing anyone had attempted such a thing, might have turned out to be dangerously heterodox.) In default of a detailed study of the sub-committee's papers and of the intellectual antecedents of its members and staff, one can only guess at the process by which the report came into existence. Despite the avowed aim—"to develop a systematic, consistent, and theoretically sound framework for the economic analysis of river basin projects and programs, irrespective of current practices or legislative and administrative limitations" —one suspects that the authors of the *Green Book* did not seek to penetrate very far beneath the surface of any theoretical proposition. At the same time they deliberately eschewed what would have been most useful (one might think) to the administrator in search of advice, namely an inquiry into the "legislative and administrative limitations" within which any set of principles would have to be applied. (It is only fair to add that this neglect of practical considerations, coupled with a want of rigor in theoretical formulation, is to be discerned in some authors who may be presumed free of bureaucratic constraints.) There is much in the report with which no one would wish to quarrel, or at which only minor cavils need be raised. As a whole, however, the report falls between two schools: its theory is not beyond question, and as a handbook it is not very practical.

The most influential and persistent error in the *Green Book* stems from what may be called *The Fallacy of Maximizing Net*

Returns. The *Green Book* sets this out as an incontrovertible proposition:

> The most effective use of economic resources is made if they are utilized in such a way that the amount by which benefits exceed costs is at a maximum rather than in such a way as to produce a maximum benefit-cost ratio or on some other basis. This means that a project should be so designed as to include each separable segment or increment of scale of development which will provide benefits at least equal to the cost of that segment or increment. . . . *This criterion of maximising net benefits is a fundamental requirement for economic justification of a project.*[11]

This proposition has been spelled out with numerical examples and diagrams on several occasions, most recently in a study by Hirshleifer, DeHaven, and Milliman[12] which prides itself on its economic sophistication and loses no opportunity to point out the errors of engineers, bureaucrats and other non-economists in matters concerning water supplies. The examples they give will, as it happens, serve to put the matter beyond all doubt:

> Suppose that we must choose between two mutually exclusive projects (with all risk and uncertainty being assumed away), one with a cost of $1.00 and a benefit of $5.00, the other with a cost of $1,000 and a benefit of $1,200. The former has a B/C ratio of 5, and the latter of only 1.2, but we would clearly be mistaken to forego a $200 gain for a mere $4 on the other project. The ratio does not, therefore, lead to the right answer. . . .

A little later, they continue as follows:

> Those who argue against the use of the B-C criterion cite comparisons like the following. Suppose there is one project with benefit of $2.00 and cost of $1.00, and another with benefit of $1,000,002 and cost of $1,000,001—is not the former preferable? The answer is, 'No,' *risk and uncertainty aside. . . .*[13]

There is one unlikely circumstance in which the contention in the second example above would be valid, namely if it were certain that no benefit might be derived from using the resources repre-

11. Green Book 5. (Emphasis added.)

12. J. Hirshleifer, J. C. DeHaven & J. W. Milliman, Water Supply: Economics, Technology and Policy (1960).

13. *Id.* at 137-38. (Emphasis by the authors.)

sented by the million-dollar difference in some other way (or, as an economist would put it, if the difference in *opportunity costs* between the two projects were nil). If this were not so—if the criterion of maximising net benefits might properly be applied in the sense postulated in the *Green Book* and by the authors quoted —it would be impossible to choose on economic grounds between projects having identical net benefits and differing costs, an evident absurdity. So, in the other instance, a preference for the project having the lower benefit-cost ratio could be justified only if it represented the most advantageous use of the remaining 999 dollars' worth of resources. The choice would then be tantamount to one between incurring costs of $1000 for benefits of $1004 and $1200 respectively, and the use of benefit-cost ratios *would* give the correct answer.

The foregoing may seem painfully obvious once it is set out. Indeed, the patent fact that the fallacy has not been detected by experienced practitioners would seem to require explanation. It is hardly enough to remark, as did Thorstein Veblen in a not dissimilar instance: "This supposition . . . may be objected to as a bit of puerile absurdity; but it is a long time since puerility or absurdity has been a bar to any supposition in arguments on marginal utility."[14] What seems to have happened is that a familiar abstract proposition of economic theory, that rational conduct consists in balancing marginal cost against marginal gain, has been mistaken for a prescriptive rule of behavior applicable in any and all circumstances without qualification. Such economic fundamentalism, which like its religious counterpart is innocent of philosophy, naturally gets itself into trouble in a complex universe.

What makes this persistent aberration (which recurs in the latest official ruling[15] on the subject, dated May, 1962[16]) the more odd is that a standing fact of bureaucratic life, the budgetary limitation within which construction schemes generally operate, would seem

14. Veblen, *Professor Clark's Economics*, reprinted in The Place of Science in Modern Civilization 180, 225 n. 38 (1919).

15. It also appears in an unofficial commentary:

> If the benefit-cost ratio is used to qualify projects and if it is assumed that all projects having a benefit-cost ratio greater than one will be built, it is obvious that projects should be planned so that net benefits on individual projects will be maximized. This will result in a maximization of net benefits for the entire project system.

E. Castle, M. Kelso & D. Gardner, *Water Resources Development: A Review of the New Federal Evaluation Procedures*, 45 J. Farm Econ. 698 (1963).

16. S. Doc. No. 97, 87th Cong., 2d Sess. 7-8 (1962).

to impose an opposite presumption, might indeed be construed as a reminder to consider the opportunity-cost of adding each "segment or increment" to a project. (True, some economists quaintly give this fact of life the name "capital rationing," as if there were something abnormal about it.) The authors of the *Green Book*, though ignoring the point when discussing the size of an individual project, become abruptly aware of it when they pass to comparison between projects. They rightly remark that two projects having equal net benefits would, if that were the sole criterion, appear equally desirable even though their costs differed: "This method of comparison would be useful only if relative costs were no object." They go on to recommend that the benefit-cost ratio be used to compare one project with another. One commentator[17] has pointed out that this procedure would be akin, in the commercial world, to using a ratio of gross receipts to gross expenses in an investment decision. Moreover, it is completely in contradiction with the earlier dictum about the "most effective use of economic resources." The authors of the *Green Book* have failed to recognize that there is absolutely no difference in principle between comparing two separate projects and comparing a larger and smaller version of the same project. Hence their recommendations are not merely mistaken but each nullifies the other.

The contradiction is easily removed if one assumes, as the general case, that capital resources are limited. If the object of investment be then to maximize net returns to the funds that have been voted for the program in question, and if the benefit-cost ratio be calculated, not as a gross figure representing all costs and all benefits, but in such a way as to separate capital costs from running costs and exclude the latter from the denominator of the ratio,[18] the projects having the highest ratio will also show the maximum net benefit. Certain accounting difficulties will remain, particularly when more than one agency's funds are concerned, but the principle of calculation will be both correct and intelligible. The *Green Book* authors actually hit on this solution, only to reject it on the ground

17. J. Margolis, The Discount Rate and the Benefits-Costs Justification of Federal Irrigation Investment 12-13 (Tech. Report No. 23, Dep't of Economics, Stanford Univ. 1955).

18. Let B represent benefit, X the annual equivalent of capital invested, and Y the annual working costs. Then the customary manner of computing the ratio is given by $\frac{B}{X+Y}$, whereas the correct formula would be $\frac{B-Y}{X}$. See R. N. McKean, Efficiency in Government Through Systems Analysis 108-17 (1958); Hammond, *op. cit. supra* note 6, at 19-20.

that it would mean an incomplete comparison of the operating and maintenance costs of different projects:

> The method has a limited usefulness, as for example for determining relative desirability of projects when construction funds are limited and when the relative cost of operation and maintenance is considered of secondary importance.[19]

The general rule is thus treated as if it were the exception.

III

THE DEBILITATING ASSUMPTION OF PERFECT FORESIGHT

The outcome of the foregoing laborious discussion is to establish as a criterion for government precisely the common-sense one employed by the ordinary investor, namely to seek the maximum return on his capital. One is therefore entitled to question the utility of invoking the sub-committee's "fundamental requirement," the more so since the sub-committee was thereby led into an intellectual impasse that was nonetheless complete for being unsuspected. Even had it succeeded, however, in formulating a consistent criterion by which to judge projects, this would only constitute the first stage in the journey and in itself would say nothing about the means by which the criterion was to be applied. It is these that require consideration in the light of the *Green Book* assertions that benefit-cost analysis can array projects in order of economic efficiency, and can "*ascertain* the extent to which the use of economic resources . . . necessary for a project is more or less effective than would be the case if the project were not undertaken."[20]

These are sweeping claims, unknown to the unsophisticated pioneers who merely sought to establish that a given project was promising enough to warrant favorable recommendation to Congress. One might almost suppose that a solution to the problem of efficiency in resource use by Government had been achieved and that all Congress needed to do was to endorse the results of calculation. Some writers have indeed gone so far as to suggest that this was morally incumbent on politicians and administrators and that the rolling log and the barrel of pork were the only obstacles to economic righteousness. The underlying implication is that some-

19. Green Book 14.
20. *Id.* at 5. (Emphasis added.)

how or other the progress of science has disposed of uncertainty and enabled us to choose not only rationally but infallibly.

This assumption of prescience can never, in the nature of things, be overt, for it needs but be stated to be repudiated. But it is discernible in the very language of the *Green Book*, which often uses words like *measure, ascertain,* and *evaluate* in contexts where *estimate, expect*, and *guess* would be more appropriate. It shows likewise in a willingness to resort to what are best described as imaginary data as bases for calculation, rather than admit ignorance of the future and restrict the extent of calculation accordingly. Thus, in discussing the "evaluation" of the future running costs of a project, the *Green Book* declares:

> Future operation, maintenance, and replacement costs and benefits should be evaluated on the basis of the prices estimated to prevail at the time of occurrence of such costs and benefits. The *most practicable procedure* is to estimate the average price level expected over the life of the project. . . . This requires consideration of population growth, technological developments, changes in consumption patterns, levels of employment, amount of foreign trade, possibilities of substitutes and alternative sources of supply, and monetary and fiscal policy. . . . Use of future price levels estimated after careful consideration of all the factors likely to influence them is more likely to result in adequate appraisals than use of current or historical prices without regard for future trends.
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> The soundness of project formulation and justification analyses depends in part on the accuracy of benefit and cost estimates. In general it is preferable that estimates be on the conservative side and have a reasonably high degree of certainty of realization. Future price levels as estimates for evaluating benefits and costs should, therefore, be the expected average price levels which may reasonably be expected to prevail. . . . They should reflect a degree of certainty which may differ from that associated with estimates made for other purposes, such as estimates of desirable price levels and other factors intended as a guide to fiscal and monetary policies, or such as estimates of economic goals which are to be sought but which may have less than average chance of realization.[21]

As a statement of quasi-moral principle, this may serve very well, but it begs the fundamental question of feasibility: whether *any* estimate of the listed variables, over a project life of fifty

21. *Id.* at 18. (Emphasis added.)

or a hundred years, can be said to have a "reasonably high degree of certainty of realization." A generation ago, demographers were forecasting a catastrophic fall in the population of the most "advanced" countries by the year 2000; nowadays they seem equally sure that the "population explosion" after World War II will continue. What justification can there be for supposing that current projections may not be falsified as completely and as rapidly as the previous ones have been? Again, Colin Clark published in 1942 a prophetic book entitled *The Economics of 1960,* which dealt with many of the matters the *Green Book* rightly says are pertinent to long-term project evaluation. Critical analysis undertaken when 1960 had arrived showed the forecasts to be widely out in the majority of particulars. The critic,[22] with the advantage of hindsight, attributed this to defects in the "models" that had been used, but he offered no evidence that, at the time, they were not as plausible as any others that might have been found. Mr. Clark's indiscretion, it would seem, lay not in choosing a particular technique of prediction but in essaying the role of prophet at all. In the long run we are all wrong.

Where the assumption of infallibility becomes most conspicuous is in the handling of benefits forgone, or what are more often called opportunity costs:

> For the usual case, it is assumed that the goods and services used for project purposes are diverted from uses in which the value of the goods and services produced would be approximately equal to the cost of the goods and services used. In such cases the cost, in terms of market value, of the goods and services used is used as an adequate measure of benefits forgone.[23]

This simply will not do. If it were true that the market embodied perfect foresight—as well as perfect competition—then the market price would indeed be a correct measure of the benefits to be expected from using the resources in any way whatsoever, including the project under evaluation, and benefit-cost analysis would truly be otiose. In the "usual case," however, markets are not perfectly competitive; perfect foresight does not reside in them or anywhere else; prices reflect, *inter alia*, expectations liable to be falsified. In

22. K. C. Kogiku, *The Economics of 1960 Revisited,* 41 Rev. Econ. & Statistics 373 (1960).

23. Green Book 9.

other words, a real market is simply a market; there is nothing special about its mechanism that enables it to transcend the fallibility of human opinions regarding the future.

This is so obvious that one almost apologizes for stating it. Yet a tacit presumption to the contrary underlies not only the *Green Book* discussion of benefit-cost analysis but many others as well. As in the instance of maximizing of net benefits, the explanation appears to lie in a misapplication of economic theory. A purely logical formulation involving no appeal to the world of fact is treated as an empirical law; the assumptions under which it holds good, which may not have been fully set out, are lost sight of; and the "law" becomes a prescription for economic behaviour. A comparable situation has been pointed out by Professor Peter Wiles in discussing the theory of imperfect competition:

> [T]he facts were not seriously studied at all, and the generalizations were based on singularly little empirical research and subjected to surprisingly little qualification. Surely social scientists could not be presenting in these terms an important *factual discovery*. Nor were they: the authors were really presenting a *logical* discovery. But they were guilty of not making this point clear, even to themselves. The indicative mood has a fatal attraction: it is so much easier to say 'the entrepreneur does' than 'if my premises hold the entrepreneur would.'
>
> How could so great a fault have been committed? Nearly all economists commit it nearly all the time . . . . The persistent source of this error is of course the confusion of normative and analytical with descriptive economics.[24]

This epistemological pitfall is the more insidious because it seemingly enables economists to have the best of both worlds. On the one hand, their theoretical propositions, reached *a priori*, are proof against any empirical confutation. As Ricardo put it,

> It would be no answer to me to say that when men were ignorant of the best and cheapest mode of conducting their business and paying their debts, because that is a question of fact not of science, and might be urged against almost every proposition in Political Economy.[25]

On the other hand, few have recognized that this argument cuts

24. P. J. D. Wiles, Price, Cost, and Output 1-2 (2d ed. 1961).

25. Letters of Ricardo to Malthus 18 (Bonar ed. 1887), quoted in T. W. Hutchison, The Significance and Basic Postulates of Economic Theory 121 n.6 (1938).

both ways and hence estops any recommendations for action insofar as they logically descend from "questions of science." The distinction between *a priori* propositions of this sort—which perhaps would be better described as *presuppositions*[26]—and empirical generalizations like Giffen's and Gresham's Laws has not always been made clear, even by writers on economic methodology.[27] To insist on it is not to deny epistemological value to the former; on the contrary, presuppositions are indispensable to reasoning, that is, formulating meaningful questions, about economic phenomena. Their function, however, is explanatory, not imperative.

One can scarcely blame the authors of the *Green Book* for falling into error in such distinguished professional company. Moreover, their recommendation about benefits forgone and market prices was at any rate feasible, which is more than can be said for many proposals of the kind. For instance, a panel of consultants advising the Commissioner of Reclamation in 1952 objected to the *Green Book* treatment as insufficiently general:

> In a 'with and without' comparison, alternative uses are not necessarily limited to uses of the identical resources, but rather any alternative uses made of any of the Nation's available resources, human, physical, or financial.[28]

It would be difficult to impugn the logic of this statement; nevertheless, it is odd coming from people who had declared, a few pages earlier[29] that secondary benefits are "so ramifying, involved, and conjectural that the attempt to compute them as a national total, in dollar terms . . . cannot be regarded as 'measurement.' " Surely the pursuit of secondary benefits is no more a *reductio ad absurdum*

26. R. G. Collingwood, An Essay on Metaphysics 21-33 (1940).

27. *Cf.* the statement by L. M. Fraser, Economic Thought and Language 51-54 (1937), and the conclusive confutation in Hutchison, *op. cit. supra* note 25, at 63.

The persistence of the confusion referred to is well illustrated in a recent controversy between two leaders of the economic profession, Professors Samuelson and Machlup, in which Machlup criticizes Samuelson for condemning theories that employ unrealistic assumptions—"What Samuelson does here is to reject *all theory*"—and Samuelson retorts that it is "a monstrous perversion of science to claim that a theory is *all the better for its shortcomings*." (Emphasis by the authors.) 54 Am. Econ. Rev. 733, 739 (1964). The two sides are simply not using the term *theory* in the same sense. For the one it means no more than an empirical generalization from observed facts, and for the other it is an *a priori* construct with which to examine those facts. It is surely time that economists made up their minds whether they were using maps or spy-glasses.

28. U.S. Bureau of Reclamation, Report to the Commissioner: Secondary or Indirect Benefits of Water-Use Projects 17 (1952) (mimeo.).

29. *Id.* at 3.

of benefit-cost logic than the pursuit of opportunity costs? Either may form an interesting academic speculation—as when Krutilla and Eckstein[30] demonstrate the possible effects on the state of Maine of a hypothetical development on the Willamette River in Oregon—but neither is seriously to be contemplated as a regular bureaucratic routine.

Thus, in the matter of benefits forgone, what is logically warranted turns out to be manifestly impracticable; one can explore only a handful out of an infinity of conceivable alternatives to any given project. Conversely, what is practicable—recourse to market valuations—has no logical warrant but is merely a rule of thumb. Much indeed can be said in favor of rules of thumb, but they ought not to be disguised as science. It may, for instance, be convenient and not grossly misleading for agencies, assessing the benefits of low-flow regulation on a stream to riparian cities using its waters for sewage dilution, to count them as equivalent to the *alternate cost* of treatment plant that would otherwise have to be provided. But this convention involves an arbitrary assumption, namely that the benefit-cost ratio of any and every such treatment plant may be taken as 1:1, which is simply the "benefits forgone" formula turned inside out. Moreover, the convention can be abused, as in the case where the benefits of water supply from the Feather River project in California were equated to the costs of supplying desalted sea water—"a method [that] permits justification of any project, so long as a worse one can be found and declared to be the least costly alternative source."[31] One might go on indefinitely uncovering assumptions of this sort in the literature, no less than in agency practice. It is not their presence, but the fact that they may be tacit, inconsistent, or ill-chosen, that largely accounts for the confusion and disrepute into which benefit-cost analysis has fallen, and which the *Green Book* and subsequent glosses (including the latest Executive Order)[32] have conspicuously failed to clear up.

It is, of course, impossible to say whether an approach that did not eschew consideration of "present practices or current legal or administrative limitations," and that did admit the limitations of economic theory, would have been feasible in 1946 (when the work of the Sub-Committee on Benefits and Costs began), or whether it would, having regard to political and administrative pressures, have

30. J. V. Krutilla & O. Eckstein, Multiple Purpose River Development 234-64 (1958).

31. Hirshleifer et al., *op. cit. supra* note 12, at 350.

32. S. Doc. 97, *op. cit. supra* note 16.

made much difference to decision-making in practice. As recent commentators on the subject ruefully remark,

> Until a greater public concern is manifested about natural resource programs, it is unlikely that any basic changes will be made in the institutional process by which projects are conceived, planned, authorized and built. . . .[33]

The implication, as almost always in such comments from the profession, is that economics (not necessarily or solely in the form of benefit-cost analysis) ought to play a larger, and politics a smaller, part in that process. Often the claim is overt:

> Perhaps we have not stressed strongly enough the implication of economically efficient decisions for . . . long-term welfare . . . . Critics of economic analysis may have partially succeeded in creating the impression that economic criteria for decision-making are abstruse theoretical postulates invented and circulated by academic professional economists, or at best, that economic analysis is suitable only for application to idealized situations that have little relation to the real world.[34]

On the contrary, the same writers continue,

> The use of economic criteria of efficiency in resource investments will contribute to the wealth, living standards, and possibly even survival of the nation.

Suppressing the impulse to cheer, one must instead observe that the claim is based on false pretenses, even though put forward elsewhere more modestly by the same authors:

> Economics alone cannot give us answers to policy problems; it can show us how to attain efficiency and what the distributional consequences are of attaining efficiency in alternative possible ways, but it does not tell us how to distribute the gain from increased efficiency.[35]

If this statement were true, complaints that the criteria for decision-making were abstruse might indeed be thought beside the point; but, of course, the statement over-simplifies to the point of falsity.

33. Castle et al., *supra* note 15, at 704.
34. Hirshleifer et al., *op. cit. supra* note 12, at 358.
35. *Id.* at 37.

Economics cannot show us how to *do* anything in the sense in which these words are commonly used; it is not a kind of intellectual cake-mix, complete with instructions for use. What economic theory does is to provide a *definition* of efficiency that at best can only help decision-makers to lessen avoidable errors about the future; whereas is is certain that unavoidable errors, especially in the longer run, constitute the majority. Moreover, as Wicksteed put it many years ago: "We are bound to act upon estimates of the future, and since wise as well as foolish estimates may be falsified, the mere failure of correspondence between the forecast and the event does not in itself show that the forecast was an unwise one."[36]

IV

THE INDISPENSABILITY OF POLICY PRESUPPOSITIONS

Neither Wicksteed's dictum nor the foregoing discussion of which it embodies the essence must be taken as deprecating due diligence in the making of benefit-cost analyses; but they may affect our conception of what constitutes due diligence. In the first place, it will be evident that the notion of an *accurate* benefit-cost ratio—no matter how compiled—in the sense that it can be plausibly compared to the actual performance of a project once adopted, is a chimera. The ratio is a measure of putative performance and no more. We may adopt it as a basis of comparison with other projects in the belief that the prospect of error in all instances is broadly identical, and that the project having the best ratio is therefore the best bet. But since the prospect of error is nonetheless high we shall be ill-advised to draw fine distinctions between projects solely on the basis of the ratio. The more high-flown talk about efficiency, coming from "sophisters, economists, and calculators," to use Edmund Burke's terms, we shall discount as mere attempted intimidation, while treating their specific criticisms, once purged of any *a priori* taint, on their merits. (Not all is false that's taught in the Chicago School.) We shall reject, as unduly speculative, any examination of alternative projects not having the same general purpose. We shall consider likewise whether anything but what a congressional committee[37] termed "expedient self-deception" is served by setting out hypothetical benefits and costs for a project fifty years hence, and then reducing them to negligible proportions in terms of "present worth" by the

36. P. H. Wicksteed, The Common Sense of Political Economy 121 (1910), cited by Hutchison, *op. cit. supra* note 25, at 89.

37. Hammond, *op. cit. supra* note 6, at 22.

application of a necessarily arbitrary rate of discount.[38] And we shall consider whether it might not be better and simpler to exclude the remoter future altogether from consideration.

Furthermore, it must be recognized that many of the most controversial questions surrounding benefit-cost analysis do not admit of a single, "scientific" answer, and that the different answers returned to them—errors in logic aside—depend on postulates which, insofar as they are neither axiomatic nor empirical, we can accept or reject as seems convenient. One such question is that of the appropriate rate of interest to be used in calculating the costs of government projects over time. The official view has consistently been in favor of using the average rate at which government can borrow, a purely financial criterion.[39] A number of writers[40] have objected that this procedure underestimates the true costs of public as compared with private enterprise, because it allows neither for risk, nor for the corporation profit tax and other taxes, elements that affect adversely the rate at which private corporations can finance their operations. Hence public works are deemed efficient and are undertaken by government, though in the private sector the same projects would be considered clearly inefficient. This, it is argued, represents a misallocation of resources that would be prevented if a genuinely "opportunity-cost" interest rate were used in evaluations; estimates of what this rate should be vary from 5 to 10 per cent (compared with customary rates of from 2½ to 4 per cent).

Clearly it would be specious to argue that a dam built in a particular place to a particular set of specifications would prima facie represent a more efficient use of resources because the builder was exempt from taxation. The case for public versus private power, for instance, must rest on wider considerations, such as the greater ease with which public power can serve multiple purposes. In benefit-cost analysis one must always compare like with like. But a proposal to apply an arbitrary, "derived" interest-rate across the board raises not only technical but policy questions. How much certainty can there be about the "correct" rate? Do we really want to be "neutral," as some authors suggest we should, between public projects and all private projects whatsoever, or are we prepared to

38. See, *e.g.*, Hirshleifer et al., *op. cit. supra* note 12, ch. 7 *passim*.

39. Green Book 24; S. Doc. 97, *op. cit. supra* note 16, at 12.

40. *E.g.*, Krutilla & Eckstein, *op. cit. supra* note 30, chs. 4 & 5; Hirshleifer et al., *op. cit. supra* note 12, at 144-51. Contrast the view of W. S. Gramm, *Water Resource Analysis: Private Investment Criteria and Social Priorities*, 45 J. Farm Econ. 705 (1963).

concede to public projects an element of public interest that would give them preference? Does it make sense to talk of efficiency regardless of what is being produced? Are all desired objects to be regarded as free and equal in the sight of market valuation, which is indifferent between vice and virtue?[41] These are proper questions to be raised by economists, but not for them to settle. Economists may expound the "efficiency criterion," but not enforce it. (Once again, it must be borne in mind that we are talking only of presumptive efficiency.)

The inclusion of secondary or indirect benefits—those not attributable to project costs—in analysis is likewise a question of policy. The latest Executive Order[42] allows that "national secondary benefits," net of their associated (non-project) costs, may be included in the benefit-cost ratio. This is an anomalous practice, inasmuch as it excludes secondary costs from the denominator of the ratio and hence gratuitously improves it: secondary benefits thus become more desirable than primary benefits with comparable associated costs. It indeed constitutes a standing invitation to agencies to search for secondary benefits. One may interpret the ruling as primarily an acknowledgment of the needs of the Bureau of Reclamation. It has been sharply criticized for "its failure to deal in more detail with this complex theoretical and empirical problem [secondary benefits]";[43] but it is doubtful whether extra detail would not have been of the Gilbertian kind, "intended to give verisimilitude to an otherwise bald and unconvincing narrative." There is nothing inherently difficult about the *idea* of secondary benefits; it is their vagueness, limitlessness, and insusceptibility to plausible estimation that makes them objectionable. The *possibility* of national secondary benefits can scarcely be denied; the argument used by some writers,[44]

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41. In Peacock's novel, *Crotchet Castle*, published in 1831, the point at issue is put with characteristic force:

> *The Rev. Dr. Folliott:* . . . "The moment you admit one class of things, without any reference to what they respectively cost, is better worth having than another; that a smaller commercial value, with one mode of distribution, is better than a greater commercial value, with another mode of distribution; the whole of that curious fabric of postulates and dogmas, which you call the science of political economy, and which I call *politicoe oeconomiae inscientia*, tumbles to pieces.'

Cf. F. H. Ayres, The Theory of Economic Progress 226 (2d ed. 1962).

42. S. Doc. 97, *op. cit. supra* note 16, at 8.

43. Castle et al., *supra* note 15, at 697.

44. *E.g.*, S. V. Ciriacy-Wantrup, *Benefit-Cost Analysis and Public Resource Development*, 37 J. Farm Econ. 676, 685-86 (1955).

that under conditions of full employment secondary benefits associated with a project would be cancelled by adverse effects elsewhere in the economy, seems purely *a priori* and applicable as well to primary benefits. (Full employment is seldom *that* full, anyway.) Nevertheless, the pursuit of national secondary benefits—as distinct from local benefits more readily identified, if not assessed—lies outside the realm of realistic economic analysis and can be justified only by political necessity. (It is not argued here that the Bureau of Reclamation should be abolished in the name of welfare economics.)

Yet another policy question requiring resolution before benefit-cost analysis is undertaken, is that of the appropriate viewpoint. The *Green Book* recognizes that the choice of viewpoint might have marked influence on the results of analysis, but not that it must be in large measure arbitrary:

> The adequacy of results obtainable in project formulation . . . depends on how completely a comprehensive public viewpoint can be realized; that is how completely all effects on individuals and society as a whole can be traced . . . . [I]t is essential that consideration be given to all effects of a project and that such effects be evaluated as completely as possible and on the same basis.[45]

If one is recommending recourse to benefit-cost analysis, this seems an odd way to go about it; even in retrospect only a small part of the consequences of any human decision can be traced. The practical problem which the *Green Book* is not alone in declining to face directly is to what lengths it is desirable and feasible to carry the process of estimation and forecast. Clearly, analysis from a national standpoint, besides being more speculative than that which attends solely to local benefits, is more laborious and expensive to conduct; and the question therefore arises whether evaluation of the former sort should not be confined to large-scale public enterprises, the national impact of which may be judged self-evident. The case of Belhaven Harbor, North Carolina, where (as the House Sub-Committee to Study Civil Works tartly noted[46]) an improvement scheme to cost $13,500 for engineering absorbed nearly half that sum in surveys and the calculation of various benefit-cost ratios, is patently something to be avoided. It can only be avoided if a minimum figure of proposed expenditure be set, below which elab-

45. Green Book 6.
46. Hammond, *op. cit. supra* note 6, at 10.

orate benefit-cost surveys from a national point of view are ruled out. The latest Executive Order[47] is clearly correct in principle when it prescribes the compilation of a separate benefit-cost ratio for *local* secondary benefits. It was always a fallacy to suppose that only one "correct" benefit-cost ratio was possible; everything depends on the point of view. What is needed is not endless academic speculation on what constitutes a national benefit, as distinct from a regional or local benefit, but an unequivocal set of assumptions that will enable decisions to proceed and which, after all, can be amended if they prove inconvenient. Thus, to revert to an example already given, it is not merely permissible but obligatory to presume that the work of the Bureau of Reclamation constitutes per se a national benefit, because Congress has in effect so decided. (As Collingwood[48] says, the logical efficacy of a supposition does not depend on its truth but only on its being supposed.) The prescription of such assumptions is clearly a matter for political decision, albeit with economic advice.

Perhaps the extreme instance of resort to convention in benefit-cost analysis is the treatment of "intangible" benefits, such as those the *Green Book* includes under the heading "Recreation, Fish, and Wildlife." The attempt to put a market value on these has evoked much ingenuity, but also much opposition, some of it from commentators neither hostile to government enterprise nor averse to the use of imaginary ("derived") data. One of the recognized pitfalls to be avoided is what may be called the "gross-for-net" fallacy; for instance, measuring the benefit conferred by a project in terms of the expenditure of sport fishermen on equipment, board and lodging, and travel.[49] The difficulties of definition and classification, which any attempt to quantify this type of benefit presupposes to have been resolved, appear to have been passed over by most writers. Looked at from one point of view, expenditure by persons bent on recreation might be regarded as a gross secondary benefit to those catering to their needs (*cf.* the Bureau of Reclamation's cinema attendances); from another, that of those incurring the expenditure, it is a secondary cost productive of an uncertain, subjective net benefit (What are we to say of a fisherman who "has a bad day?"). The issue of choice between these—and possibly other—legitimate ways of regarding such expenditures seems bound to be arbitrarily decided; doubtless opinions will differ whether the provision of op-

47. S. Doc. 97, *op. cit. supra* note 16, at 6.

48. Collingwood, *op. cit. supra* note 26, at 28.

49. See, *e.g.*, O. Eckstein, Water Resource Development: The Economics of Project Evaluation 41 (1959).

portunity for spending can be properly defined as a "benefit." The problem arises in principle with all secondary benefits, presupposing as they do no direct investment and hence no return thereon.

In instances where direct expenditure on providing facilities for recreation is contemplated as part of a "multipurpose" project, one can, of course, postulate a benefit equal to the net yield of an admission charge to the facilities in question. If, as a matter of policy, it were decided not to levy an admission charge, one might say that a benefit of that magnitude had been forgone by the public as investor in favor of that section of the public enjoying the facility, thus putting recreation on the same footing as public schools or libraries. But here again an arbitrary element enters in: whether the appropriate hypothetical admission charge would be that which, multiplied by the number of users, would yield the largest gross income, or a lesser figure designed to promote the maximum attendances compatible with covering administrative costs. In other words, it seems that the result of any analysis would be inseparable from logically precedent questions of policy.

This is not all. The artificiality of regarding any expenditure not yielding tangible returns as investment for the purposes of benefit-cost analysis is so patent that one inevitably asks whether there is not some different way of treating it. It would seem more natural to regard recreation facilities as a form of collective durable consumption goods, like statues of public men, which are valued primarily for their own sake and not as a means toward some economic end. Consumption is neither less nor more virtuous per se than investment; and it seems mere casuistry to go through elaborate and inevitably inconclusive calculations to show that something not designed as an investment in fact is one. (That there is a sense in which education, say, can be regarded as an investment is not denied, but merely the fruitfulness of doing so in this particular context.) This is a matter on which opinions may differ; however, the very fact that the line between consumption and investment is indefinite is sufficient for the present purpose to underline the arbitrary, dogmatic character of current analytical practices.

V

THE INHERENT LIMITATIONS OF BENEFIT-COST PROCEDURES

It is matter for reflection that the huge speculative structure of benefit-cost analysis should have grown unchecked in the years since World War II, despite the manifest discontent of many with its

results. There seems to have been a dialectical process at work, in which the growth of the federal government's economic power and influence has been matched by that of the already endemic suspicion of politicians and bureaucrats, and both have operated to exalt a supposedly scientific approach to decision-making. Some economists have promoted benefit-cost analysis as a device to defeat the machinations of what Adam Smith called "that insidious and crafty animal vulgarly called the statesman or politician." Some administrators have seen in it a way not only of assisting decision, but to buttress decision against critical assault. (It has more value in this regard in the United States than it would in a country like the United Kingdom, where the doctrine of ministerial responsibility protects civil servants from individual criticism.) There has been singular reluctance to inquire whether the analysis can, even in theory, do all that has been claimed for it. Thus the Second Hoover Commission Task Force on Water Resources and Power, after writing that the benefit-cost ratio

> has attempted to serve as a means by which projects, which involve in their selection a high degree of humanitarian considerations, both social and political, can be assessed on an economic or monetary level, and this objective has not been realized,[50]

went on to say:

> This does not mean that there is anything wrong with economic evaluation . . . . It would be as reasonable to say that the principles of arithmetic are incorrect because some people fail to get right answers. . . . The trouble is not with economics, but with those who make economic evaluations . . . .[51]

The analogy breaks down at first blush. If the principles of economics were comparable with those of arithmetic, errors in applying the first would be as readily detected as those in the second. In fact, there are no "right answers" in economics in the sense that there are in arithmetic.

For this very reason, some have sought to deny to economics the title of science. "A scientific law," says the biologist Lancelot Hogben,[52] "embodies a recipe for doing something, and its final validifi-

50. Comm'n on Organization of the Executive Branch of the Government, Report of the Task Force on Water and Power, vol. 2, p. 630 (1955).

51. *Id.* at 790-91.

52. L. Hogben, The Retreat From Reason 7 (1937).

cation rests in the domain of action." By contrast, "economics, as it is studied in our universities, is the astrology of the machine age." Elsewhere Hogben has written:

> Readers who lack intellectual self-confidence may be trapped into believing that . . . [the] exercises in draughtsmanship displayed in books on economics record the results of real measurements, as do curves in books on physics or biology.[53]

He might have cited Veblen in support:[54]

> The current marginal-utility diagrams are not much use . . . because the angle of the tangent with the axis of ordinates, at any point, is largely a matter of the draftsman's taste. The abscissa and the ordinate do not measure commensurable units.

Hogben concludes:

> [A] subject which admits to the dignity of law statements solely based on logical manipulations of verbal assertions forfeits any right to be called a science.[55]

Hutchison would presumably agree, for he wished to reserve the term *economic law* for empirical generalizations, such as Gresham's law:

> It is such laws as these that it is the central object of science to discover. This is something more than the mere suggestion of a terminological change. It implies a fundamental alteration in the *quaesita* and methods of Economics.[56]

This, however, is going too far in the direction of positivism. As Peter Winch has remarked in another context,

> Empiricists . . . systematically underemphasize the extent of what may be said *a priori*: for them all statements about reality must be empirical or they are unfounded. . . . But if the integrity of science is endangered by the *over*estimation of the *a priori* . . . it is no less true that philosophy is crippled by its *under*estimation: by mistaking conceptual enquiries into what it makes sense to say for empirical enquiries which must wait upon experience for their solution.[57]

53. L. Hogben, Dangerous Thoughts 86 (1940).
54. Veblen, *op. cit. supra* note 14, at 212 n.29.
55. Hogben, *op. cit. supra* note 52.
56. Hutchison, *op. cit. supra* note 25, at 64.
57. P. Winch, The Idea of a Social Science and Its Relation to Philosophy 15-16 (1958).

What is objectionable, then, is not economists' recourse to the *a priori*, but their persistent confusion between it and the empirical; their habit of dwelling in an epistemological limbo of their own contriving. To say this is to call upon them to recognize that their discipline has more in common with philosophy than it has with natural science. Hence there is only superficial likeness between the findings of benefit-cost analysis and, say, an engineer's calculation of the safe load a bridge will carry. As Keynes puts it,

> [H]uman decisions affecting the future, whether personal, political, or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist. . . . [I]t is our innate urge to activity which makes the wheels go round, our rational selves choosing between the alternatives as best we are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance.[58]

To sum up: the *Green Book* embodied, and its latest recension perpetuates, grandiose notions of the reliability and useful scope of benefit-cost analysis that are warranted neither by logic nor experience. Criticism of federal policy in the field of resource use has likewise concentrated on supposed abuses of the technique rather than its inherent limitations. Such an approach can engender nothing but the continuance of disillusion. Not merely is benefit-cost analysis, conducted with ever so much refinement and sophistication, unable to replace judgement in the making of decisions, but it depends at every point on judgement in the choice of assumptions. It is the creature of policy, and to treat it as a determinant of policy is to argue in a circle. Many critics of current benefit-cost procedures—for example, those who advocate the use of imaginary "opportunity cost" interest rates—are really putting forward policy proposals in the guise of changes in analytical technique. It cannot be too strongly emphasized that these are not justifiable in terms of economic theory,[59] however much may be said for them on other grounds; they rest ultimately on a view of government that government can hardly

58. J. M. Keynes, The General Theory of Employment, Interest, and Money 163 (1936), cited by Hutchison, *op. cit. supra* note 25, at 186.

59. Hutchison demonstrates this truth neatly and conclusively. *Id.*, especially app. "Some Postulates of Economic Liberalism."

Mrs. Robinson puts it more sharply:

> The argument that public investment, however beneficial, must be less eligible from a national point of view than any private investment, merely because it is public, has no logical basis; it is just a hang-over from *laissez-faire* ideology.

Robinson, Economic Philosophy 134 (1962).

be expected to share. It is not the business of this essay to take sides in such controversies, but merely to indicate the advantage of conducting them on the appropriate—the political—plane.

CONCLUSION

Benefit-cost analysis as at present practiced is a veritable jungle of assumptions, postulates and formulae, of entities multiplying incessantly and without limit in the name of economic efficiency, while administrative efficiency is left out of account. Occam's razor, wielded by the robust common sense of a Samuel Johnson, is needed to clear a way through it. This situation may be attributed partly to the endemic confusion in economics between questions of fact and questions of logic, partly to the failure of those affected, politicians and administrators, to discern this confusion behind the impressive facade that benefit-cost practitioners have been building during the last twenty years. It was indeed perceived that the facade was incomplete without policy pronouncements and administrative recommendations which might from time to time need renovation, but it was not perceived that these constituted an integral part of the whole building, without which the facade was no more than a complex optical illusion. Only thus can one account for the leisurely process by which the comprehensive policy statement of May, 1962 (Senate Document 97), came into being, for the character of the statement itself, and for the encomiums that have been passed on it in some of the highest quarters.[60]

The changes in policy represented by the statement—which do not appear, incidentally, to amount to a great deal—have been ably analyzed elsewhere.[61] They concern the present discussion only insofar as they seem likely to bring about changes in the *modus operandi* of resource evaluation, and on this score there is little that requires notice. The enunciation of objectives may well command universal assent inasmuch as it studiously avoids definition, commends reasoned choice, and seeks the well-being of all. Water is to be "adequate" in supply and "suitable" in quality, navigation and hydroelectric power are to be provided where "needed," flood control measures taken where "justified," etc. Planning policies and

60. A chronology of the changes leading up to the publication of Senate Document 97 will be found in Castle et al., *supra* note 15, at 704. It should be supplemented by reference to Senator Clinton P. Anderson's statement of May 17, 1962, S. Doc. 97, *op. cit. supra* note 16, at iii.

61. Castle et al., *supra* note 15, at 693-704.

procedures are to be "comprehensive" and to consider "all viewpoints—national, regional, state, and local"; planning is to be "coordinated" within the federal government and "carried out in close co-operation" with non-federal agencies; existing law and executive orders are to be complied with. All this is like the language of diplomatic communiqués to the press—ritual affirmation deprived of substance by the inevitability of its content, in which it would be idle to seek a guide to conduct. (Anyone who doubts this is invited to substitute their opposites for any of the words in quotation marks.)

The remainder of Senate Document 97, "Standards for Formulation and Evaluation of Plans," likewise affords little suggestion of fundamental change compared with the *Green Book*, of which it is essentially an up-to-date summary. There are some differences in emphasis, but only time can show whether these are significant or even deliberate. Thus the role of benefit-cost analysis in ranking projects in order of merit has disappeared from mention, and the treatment of secondary benefits, as noted earlier, is a shade more realistic. On the other hand, the maximum period of analysis may still be as high as one hundred years; the fallacious procedure of attempting to maximize net benefits in individual isolated cases is retained; recourse to simulated prices is endorsed without question, and the practical, but arbitrary and inconsistent, "alternate cost" method of estimating benefits continues to win favor. If on balance there may seem to have been a de-emphasis of economic efficiency as an objective, this does not appear to reflect a new and healthy skepticism about the ability of economic analysis to attain efficiency, but merely a wish to take other considerations than efficiency into account; it indicates a value judgement rather than a technical one.

It is difficult to say whether Senate Document 97 displays a greater awareness of administrative possibilities and limitations than did its predecessor. The use of such phrases as "appropriate detail," "all pertinent benefits and costs," and the recommendation that analyses should be "as extensive and intensive as is appropriate to the scope of the project being planned" may represent something more than an obeisance in the direction of the practicable. But, here as elsewhere in the document, no definitions are vouchsafed, much less any systematic consideration of the most expeditious and economical way of handling the business of decision. What economists would be the first to deny in any other context, that the maximum recourse to benefit-cost analysis represents the optimum, is appar-

ently taken as axiomatic. This seems indefensible even were one to accept the claims made for the analysis in certain professional quarters.

Benefit-cost analysis made its first appearance as an administrative tool, and as such it ought to be judged. A good tool is one adapted to its function. It was the great Dean Swift who noted, for instance, that a knife for cutting paper must not be too sharp. The function of benefit-cost analysis may be defined as "guesswork with a view to decision," and one might add that it has a ritual aspect as well. The kind of question that at once arises, as was indicated earlier in this paper, is one of scale and proportion. How much speculative detail is relevant to a decision on any given project? At what point do diminishing returns set in? Ought not the expenditure on analysis to bear some ratio to the expected cost of the project? Would it not be desirable to fix a lower limit of project cost, below which analysis would be curtailed or even eliminated? How many alternatives to any given project is it desirable or practicable to explore? How far forward in point of time is it *profitable* to look? Closely connected with these are another set of questions about the process itself. Is it sufficiently expeditious? Does it require a professional staff of high caliber in large numbers, and are these people available? Is a refined guessing game the best use of their talents in the national interest? Can the processes be limited and simplified into routine operations without a substantial loss of forecasting decision? How much avoidable duplication of work is there between federal, state, and local entities? *In sum*, is the country getting the right kind of analysis, in the right amounts, at the right time and place?

Questions like these can be answered only by those well-versed in administration; which may explain, though it hardly excuses, their conspicuous absence from the benefit-cost literature. But, of course, they are not purely administrative questions; they have implications for economic theory, inasmuch as one can only apply a theory that is applicable. One indispensable condition of such a theory is that it be purged of what Professor Hutchison has called "the ubiquitous implication of the assumption of perfect expectation," which, as he says, "assumes most or all economic problems out of existence."[62] The attempt to establish rules of economic conduct, as distinguished from asking questions of experience, by the light of *a priori* reasoning should cease. Benefit-cost analysis should be recognized for what

62. Hutchison, *op. cit. supra* note 25, at 162, 179.

it is—a useful way of roughly assessing the promise of a particular project, or comparing various ways of carrying out a project—and not taken for what it is not, nor can never be—a precision tool for attaining general economic efficiency. Speculative calculations of wide scope, concerning such concepts as "social costs" and "general economic welfare," are inherently inconclusive and in any case have no place in day-to-day decisions. "Intangibles," as Senate Document 97 commendably lays down, should be left to "informed judgement."

That phrase goes to the root of the matter. In the last analysis, the responsibility for decision must not, because it properly cannot, be shifted from the administrator dealing with the individual case to a departmental economist operating a prescribed formula. In a country where mistrust of government is rife, the temptation to substitute supposedly impersonal calculation for personal, responsible decision and to rely on the expert rather than size up the situation by oneself, cannot but be exceedingly strong; in a country where experts abound, there will always be plenty who will advocate that course. This essay will have served its purpose if it does something to redress the balance, if it encourages contumacious and skeptical tendencies in decision-makers confronted with economico-analytical findings. One must never forget that though pure economics is a matter of logic, applied economics is a matter of informed common sense.