The Rise of Cost-Benefit Rationality as Solution to a Political Problem of Distrust

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I’m a historian of science, not an economist, and whether I’m a social scientist is a question for advanced taxonomy. I wrote one of the few historical studies of cost-benefit analysis in my 1995 book *Trust in Numbers*, a discussion that may strike economists—for example my mother-in-law—as hostile to this form of analysis. Be that as it may, I do call into question many of the usual reasons for denouncing cost-benefit. Those reasons include (1) that it involves a power grab by economists; (2) that it heartlessly rejects all moral and political considerations in favor of a capitalistic logic of cold cash, profit and loss; (3) [somewhat the opposite of 2] that it is a fraud, a smokescreen of numbers appearing to be rigorous which merely disguise the effects of political favoritism and even corruption. Not that I think these complaints wholly lacking in merit, but my ambition has been rather to switch the terms of analysis into a different kind of language from that of quantitative social science. Yet I might defend my approach as a proper social science move: just as economists and political scientists studying politics want to cut through the grand self-justifying rhetoric and examine how government programs work in our fallen world, so I have tried to look at cost-benefit an analysis from the ground up—not as applied welfare economics or as an instance of the logic of measurement, but as a quantitative decision technology, practiced mainly in public bureaucracies, often in a highly politically-charged context. I do not see it first of all as descending from the high mountains of economic analysis, but as ascending out of bureaucratic tangles, which seemed to require a dose of objectivity to make their way to some kind of decision that would be acceptable to elected
officials, to interested parties, and to those professedly public-spirited ones who now go by the
noble title of “stakeholders.” That is, it is not theory put into practice but a messy, politicized
activity that was driven to have recourse to theory. It was worked out, in the first instance, not
by economists or sociologists or academic practitioners of the decision sciences, but by engineers
in public agencies.

Note also that I associate cost-benefit analysis with public investments rather than
private, profit-making ones. The notion of weighing costs against benefits as one contemplates a
decision is not new, but very old and rather commonplace. It probably is compatible with any
utilitarian ethical system, and it seems also to have a natural relationship to capitalism. Cost-
benefit analysis goes well beyond any loose comparison. Reducing a decision to calculation
presumes the possibility of commensuration, that is, expressing various and sometimes radically
different sorts of advantages and disadvantages in terms of a single metric, usually money. The
logic is very similar if instead, as in medical economics, we are content to practice cost-
effectiveness analysis and analyze on the basis of cost per quality-adjusted life year (or QALY).

The commensuration problem is trivial in the case of a private firm evaluating
investments, because there the costs and benefits take the form of real expenditures and receipts.
In contrast, the whole reason for working out the technology of costs and benefits as a basis for
evaluating state-financed projects such as bridges or dams (to say nothing of educational
programs, health regulation, or medical systems) is the desire include in the computation benefits
that will never in fact be instantiated in monetary form. So, for example, French engineers in the
early nineteenth century argued that bridges and canals yield benefits that cannot be charged as
tolls, on account of what we call consumer surplus: most people who cross the bridge would
have been willing to pay more, sometimes much more, than the toll. To raise the toll to capture
that willingness-to-pay would mean, however, that many users who could benefit from the bridge will not cross it. In fact, as these engineers argued, the greatest benefit to the public will be realized if no toll is charged at all, for then everyone who can achieve some advantage by crossing the bridge will do so. They found that many public works should be regarded as advantageous even though they could not be made to bring in revenue sufficient to offset expenditures. (For present purposes I ignore the possibility, worked out as a theory by one of these engineers, Jules Dupuit, to achieve this by charging differential tolls, and, in the ideal case, to make all public projects self-financing.)

The other important way in which modern cost-benefit analysis differs from a rudimentary weighing of advantages is the pursuit of objectivity. By “objectivity” I refer here to impersonal results, to knowledge that does not depend on and so cannot be corrupted by the subjective biases or selfish interests of those who carry out the evaluation. In decisions involving public works, which in general are free of the discipline of the market, loose or poorly-standardized analyses have almost always been suspect, since these involve expenditures of public funds in a way that will benefit private interests. French engineers of the nineteenth-century were generally able to shield themselves from such skepticism, since they had the prestige of an elite state corps and the capacity to make many decisions in closed sessions, screened from public inquiry. An institutionalized aspiration to rigorous objectivity in the measurement of costs and benefits appeared for the first time in the United States in the 1930s. Some landmark legislation in 1937 required many water projects to show benefits in excess of costs as a condition of their authorization. Soon afterwards, this project of advanced measurement began to be formally codified as a decision technology, supported by elaborate
rules. After the Second World War, it became necessary to recruit economists and other social scientists to make the rules more systematic and provide for them a more coherent rationale.

The details of this story, though fascinating, are unnecessary here, but a brief sketch of the circumstances out of which cost-benefit analysis grew may be enlightening. It was initially associated with public works, and particularly with the engineering of inland waters for purposes of flood control, navigation, irrigation, and power generation. In the American context, water projects were the very model of corrupt “pork barrel” spending, a way for elected representatives to channel benefits to their districts. As the scale of such projects grew in the twentieth century, the expenditures attracted more interest, and also, what is crucial, more determined opposition. A dam to protect farms or towns from floods was rather less desirable for those just upstream, whose land and houses might be submerged under thirty feet of water. Private utility companies regarded the generation of electric power by state projects appeared as a socialist threat, and rail companies took a dim view of expensive canals, locks, and dredged river channels that would allow inland transport to bypass their lines at public expense. Beyond that, water control in the United States was divided among at least three powerful agencies, and in the case of multi-purpose projects there were no clear standards to determine which should take charge. These were the Army Corps of Engineers, the Bureau of Reclamation, and the Department of Agriculture, each or which developed its own forms of measurement in accordance with the rules of accounting and reimbursement under which it operated. Local interests and Congressional representatives played the agencies off against one another in order to secure the most favorable terms possible for these projects. They wanted the federal government to pay as much as possible of the costs, and they wanted to avoid any requirement for great landowners to break up their holdings in order to benefit from abundant low-cost irrigation water.
Struggles between public and private interests, and especially among rival agencies, provided the main stimulus to the working out of uniform, systematic methods of cost-benefit analysis. The agencies were embarrassed by the political struggles in which they found themselves enmeshed, and looked to quantitative rules as an objective solution. But this could only work if the rules were explicit, uniform, and binding (and that, I repeat, is what objectivity means in this context). It was hard work to make them so, but in the late 1940s, standardized rules of quantification emerged as an important desideratum. Soon, the rough methods of engineers began to be replaced by more fully rationalized ones of economists and sociologists, who were hired in great numbers to help with the planning and justification of public works. A bit later, they and their methods migrated to other agencies and extended the cost-benefit rationale to other kinds of decisions.

The scale of these quantitative studies was daunting. Even a transportation or water control project, whose benefits were mainly of an economic kind, presented huge problems demanding many kinds of expertise. One might need, for example, to forecast rainfall, to calculate the extent and duration of floods, to anticipate changed land-use patterns as a result of flood protection, and to predict uses of irrigation water and hydroelectric power. In effect, the analysts had to map out the future development of the local economy, to figure out prices and costs of production, and then to put money values on all kinds of intangibles. In the 1940s, the Bureau of Reclamation included as a benefit of irrigation works the increased revenue to movie theaters in towns where new farm employees came to shop, and where new grain elevators stored wheat for the millers and bakers called into being by the heightened economic activity that they boldly forecast. As cost-benefit analysis passed into the domain of economics, economists began asking how much of this was new production and how much was merely displaced from other
activities. To subject all these factors to uniform standards of quantification was scarcely imaginable, even if, counterfactually, there had been no political interference. And yet it was imagined, and vigorously pursued. The new ideal of cost-benefit calculation as it was formulated about 1950 called for a “purely objective analysis,” meaning one based on rational considerations that stood above all particular institutional circumstances. The methods of cost-benefit analysis should be uniform and rigorous, to the point that they could stand up when challenged in committee hearings or in courtrooms, as they inevitably were. The committees and courts were unlikely to judge its fundamental rationality, but they could certainly challenge inconsistencies in its application. Objectivity, then, meant above all the standardization of quantitative methods and the training up of people capable of performing them. Every failure of clarity, every gap in the reasoning, every loophole that left space for the quantifier to alter the results in a preferred direction, was a potential weakness, which opponents of the agency were certain to exploit, often in hearings before judges and administrators who would probably be ignorant of all the fine points of economic quantification. The watchwords here were impersonal rigor and uniformity, without which it was very difficult to defend the methods against critical public scrutiny by oppositional experts.

It is easy enough for the historian of social critic to be ironical, and indeed it is easy enough to find grounds for cynicism about these early cost-benefit efforts. We must concede, however, that the problem these engineers and social scientists faced admitted no easy answers. The unscrupulous diversion of public funds to favored projects was common, and quantitative rigor, even if incomplete, offered hope of making these decisions more systematic and of heading off at least the worst abuses. Social scientists and even philosophers have held up cost-benefit analysis as the very model of rational decision making. Yet of course it could never be
above politics. The Lyndon Johnson administration favored it as a way to demonstrate the sound economic basis of public investments. Two decades later, Reagan Republicans advocated it as a strategy to hold up and often to overturn meddlesome regulations.

Even, or especially, those who hoped to avoid this politicization faced real obstacles, and their search for rigor as an answer to politics evoked some special problems. One is that cost-benefit was often a blunt instrument. The political constraints within which it operated tended to favor precision over accuracy: that is, the rigorous measurement of (possibly) the wrong quantity over a looser estimate of the right one. This became more and more an issue as the field of quantified objects expanded to include subtle and, on the surface, non-economic qualities such as natural beauty or threats to health and to life. For a long time, cost-benefit analysis used insurance methods to measure the value of a life in terms of discounted present value of anticipated income, rather than pursuing the more fitting but also more elusive object: what a life (or the avoidance of a risk) is worth to the individuals affected. Economists generally agreed that this last measure is the proper one, but empirical estimates were all over the map, and could easily go to infinity if defined in terms of what we would have to pay someone to sacrifice his or her life. This system of calculation has often been seen as a kind of technocracy (or “econocracy), expertise run amok, but really it involves a denial of expertise. Economists might be obliged,, as in this case of the value of life, to base a number on a method they saw as theoretically incorrect. And more generally, the ideal “objective” decision would be so well standardized that it could be automated, and in which subtle expertise would be otiose. Let a computer could do the calculation rather than introducing expert humans whose fatal flaw is a sense of nuance or faith in their own enlightened judgment.
Another important reservation is that, in practice, cost-benefit analysis tends to be pointillist. That is, it often means investigating projects one at a time rather than seeing the big picture, making comparisons, and planning systematically. The projects analyzed are perhaps picked out in the first place for reasons having nothing to do with their economic merits. There is always a temptation to rely on quick and dirty numbers and to ignore the larger picture as not susceptible to ready quantification. If quick and dirty means avoiding the hard questions, it may lead simply to automatic support of the interest that put the project on the agenda.

Finally, there is the question of the limits to quantification. As a political matter, calculations of the value of a life, an endangered species, a beautiful mountain scene, or an education in literature or mathematics, often appear highly inappropriate to the man or woman “in the street” or “on the Clapham omnibus.” In practice, public suspicions of decisions by experts and bureaucrats tend often to favor the standardizing impulse of rigorous cost-benefit calculation. Otherwise, it is feared, these experts might act arbitrarily, might be biased, might even favor—corruptly—their own interests or those of the institutions for which they work. But now that the net of calculation has been spread to embrace decisions about schools, regulations, safety standards, and medical procedures, the appropriateness of calculation as a basis for moral decisions comes increasingly into doubt. It’s all very well to measure (however imperfectly) the economic impact of a flood, but can we decide to take action to save the life of a little child only on condition that an intervention costs less than some set amount, or brings some minimal increase of quality adjusted life years? Such trade-offs may be inevitable, yet family members, friends, and other non-economists often find it immoral to assign a monetary value to some particular persons (even if the identity of those persons may only become known later) and to use that figure as reason not to try to save them. Ford Motor Company paid immense punitive
damages when a jury learned that company executives had relied on such a calculation to avoid relocating a gas tank, and the tendency in America is generally to disguise such standards when they are used at all. In Britain it seems to be possible to use them more openly, but there, too, we must recognize that the idealization of strict objective quantification has its limits.

It is a situation of damned if you do, damned if you don’t. Consistency and standardization evoke one set of objections, the heartless economist, but a departure from the rules invites suspicion of bias or self-dealing. We worry about rule by experts, and perhaps sometimes we are justified in doing so, but this can mean more than one thing. In a genuine technocracy, the experts must have authority to depart from the rules—to rely on informed judgment where it seems advisable. Cost-benefit analysis, in its strict form, draws from deeply engrained suspicion of the unarticulated, perhaps ineffable, wisdom of experts. And who can say we are wrong to be suspicious? But in ruling this form of expertise out of court, we are denying the possibility of what the ancients most valued, wisdom, and it requires a profound faith in the utter transparency and linearity of things, in a world uncomplicated by legitimate moral or political considerations, to believe that plain, rigorous rules of quantification will reliably give the best answers to disputed questions of public policy. When put in positions of responsibility, even the most uncompromising quantifiers—even economists and accountants—tend to rebel against mechanical decision rules that deny them the opportunity to exercise discretion. They ask us to trust them to make use of the good sense, the well-honed judgment, furnished by education and experience. Quantification can of course be justified as providing crucial information which good sense must take into account. But cost-benefit analysis arose as a logic of distrust of unregulated “good sense.” And not without cause, but calculation too has its disadvantages, which need to be considered as we contemplate the modalities of public reason.