Kenneth Arrow's "Uncertainty and the Welfare Economics of Medical Care" (1963) was published at a time when health economists were still a small sect of adventurous scholars. Regular economists wondered why any ambitious young academic would venture into such strange, uncharted territory from which one might never be able to return—to the comfort of academic tenure. The natives of the uncharted territory, on the other hand, greeted the sect as arrogant missionaries bent upon imposing neoclassical economic doctrine on a people who viewed their land as a semi-religious place that would forever remain impenetrable to commercial forces. What greater comfort for the adventurous sect than to receive from the hand of one of the world's most renowned regular economists a treatise that not only lent professional respect to the sect's exploits, but also served as an authoritative road map for much bolder incursions into health care.

Arrow's script is dated by the graceful prose then still customary among social scientists. It is, however, so richly laden and so compact that it demands from readers nothing less than the academic analogue of talmudic scholarship. As James Robinson remarks at length in his essay in this volume, casually read, or selectively cited, the article can be made to serve all manner of entrenched economic interests or preferred ideology.

Arrow's objective in his article was to identify the special characteris-
tics of medical care that set it apart from the standard norms of welfare economics. To that end he described in passing the main pillars of these norms: the fundamental concept of Pareto optimality (also known among economists as Pareto efficiency) and the First and Second Theorems of Pareto Optimality. He concluded from this exercise that health care differs from the conditions posited for standard welfare economics mainly because two types of markets were insufficently developed in health care. The first type was markets for the risk inherent in the uncertainty in the incidence of disease and in the efficacy of treatment. The second type was markets for the information assumed to be accessible for all participants in perfectly competitive markets.

Naturally, Arrow's conclusion kindled the hope among legions of younger economic disciples that, with the aid of better information technology, the missing markets could be developed in the foreseeable future. If that could be accomplished, then the efficient allocation of health care resources could be entrusted to the "invisible hand" of a price-competitive marketplace, which economists are uniquely qualified to understand, and public health policy could be confined to sundry externalities (e.g., halting the spread of contagious diseases) and to the redistribution of purchasing power for the sake of social equity. It is now a deeply held credo that has fueled health economics and U.S. health policy ever since. In fact, a good part of the theoretical and empirical work in health economics since the appearance of Arrow's article reminds one of the medieval scholastics who, under Saint Anselm's motto fides quaerens intelligentiem [faith seeking understanding], conducted their research to give rational content to their faith (Columbia Encyclopedia, 5th ed., 1993: 2447).

Remarkably, nowhere in his article did Arrow himself ever dream that boldly. If he had thought that the missing markets could be developed one day soon, presumably he would have counseled policy makers to see to the careful development of these markets first before turning the health sector to the mercies of a commercial free-for-all. Sadly, U.S. health policy since Arrow's writing has proceeded in precisely the reverse order, as the so-called procompetitive strategy during the 1980s and of managed competition with managed care during the 1990s so amply demonstrate. If the experience of these past two decades in U.S. health policy is to persuade the general public that a market approach will move health care closer to what the public wants to read into the words efficient and optimal, then the disciples advocating that approach have work to do.
The present essay will use Arrow’s seminal article as a springboard to explain to noneconomists what properly trained economists mean by terms such as \textit{efficient} and \textit{optimal} and how much that usage deviates from what the public associates with these terms. The essay begins with an exposition of the First and Second Theorems of Optimality cited by Arrow at the beginning of his article. That exploration requires a careful look at the meaning of Pareto optimality (alias Pareto efficiency) as these terms are used by economists. Next, this essay elaborates upon a passing remark by Arrow suggesting that economists may err when they deem redistribution of purchasing power by government generally superior to the distribution by government of benefits in kind. The third section recounts very briefly what happened when, during the 1990s, the Second Theorem of Optimality encountered the real world. By way of summary, the essay concludes with Arrow’s gentle warning that economists refrain from using their technical jargon wittingly or unwittingly to play politics in the guise of science.

\textbf{The Norms of Welfare Economics}

At the time Arrow’s article was penned, graduate students in economics were well familiar with the First and Second Theorems of Optimality, which furnished the benchmark against which Arrow examined medical care. Most probably, at the time, students would have been assigned Francis Bator’s classic essays on the subject in “The Simple Economics of Welfare Maximization” (1957) and “The Anatomy of Market Failure” (1958). The first article, in particular, offers a lucid, graphic exposition of modern welfare economics and warns students about its limits. As already noted, fundamental to the two theorems is the concept of Pareto optimality.

\textbf{The Concept of Pareto Optimality}

Citing Vilfredo Pareto (1897), Arrow writes that in a competitive equilibrium characterized by a Pareto optimal allocation of resources, “There is no other allocation of resources to services which will make \textit{all} participants in the market better off” (942, emphasis added). The words \textit{all participants} in this phrasing make it a rather stringent condition of optimality. More commonly, economists define a Pareto optimal or Pareto efficient allocation of resources as one at which “the only way to make one individual [or more] better off is to make another individual [or
more] worse off” (Katz and Rosen 1991: 424–425). It is hard to disagree with that definition of optimality; it borders on a tautology. In Arrow’s words: “It is reasonable enough to assert that a change in allocation which makes all participants better off is one that certainly should be made; this is a value judgment, not a descriptive proposition, but it is a very weak one. From this it follows that it is not desirable to put up with a non-optimal allocation” (942). Figure 1 serves to illustrate the power and limits of the concept of Pareto optimality. It must be emphasized that the axes in this graph represent not real resources but, presumably, quantifiable degrees of human happiness measured in units economists call *utils*. The solid, downward sloping curve in the graph depicts the maximum happiness that a two-person society, with its available real resources, can bestow upon citizen A at a given level of citizen B’s happiness. The curve represents this two-person society’s happiness-trade-off-possibility frontier. A moment’s thought makes it clear that any point on the frontier must be Pareto optimal (Pareto efficient). Any point in the interior of the set bounded by the frontier evidently is Pareto inefficient.

All economists and, indeed, all laypersons ought to agree that any pol-
icy that would move the economy from the interior point C to the Pareto-efficient frontier between (and including) points A and B is to be desired. It would represent not only an increase in efficiency, as economists define that term, but reasonable people generally would view the change as unambiguously an improvement over the previous allocation. To paraphrase Arrow, it would be inexcusable to put up with allocation C if any point on the line segment AB were technically and politically attainable.

As Arrow also is quick to point out, however, there is no reason why society should put up with any one Pareto-efficient allocation. In terms of Figure 1, for example, society might prefer Pareto-efficient allocation E to Pareto-efficient allocation A. In a move from one efficient allocation to another, however, someone necessarily will be made worse off to make someone else better off, which implies that the merit of such a change rests on a pure social value judgment. Unfortunately, the Pareto criterion itself does not offer any way to assess the social desirability of such a change or, for that matter, of any move along the Pareto-efficient frontier, although public policy typically involves precisely just such moves. That is why Pareto's concept of efficiency or optimality by itself typically is useless in the world of practical affairs. As economist William Baumol (1969: 503) has observed on the Paretian construct:

Pareto optimality analysis sidesteps the issue of income distribution. . . . [Optimality rules resting on a Paretian foundation] remain either silent or prejudiced in favor of the status quo on the issue of income distribution and are, therefore, necessarily incomplete or unsatisfactory even on matters for which distribution is not the primary issue. Ultimately, the Paretian criterion can be considered the welfare economists' instrument par excellence for the circumvention of this issue.

In his essay, Arrow argues that under certain highly restrictive conditions, this analytic conundrum can be circumvented with appeal to the First and Second Theorems of Optimality, which imply that the problem can be resolved through reliance on competitive markets. That proposition is so fundamental to modern welfare economics and so momentous in its implications for public policy that it warrants extended review.

The First Theorem of Optimality

Among the more triumphant moments in the life of economics professors is the demonstration, in Arrow's words, that "if a competitive equilibrium exists at all, and if all commodities relevant to costs or utilities are in fact
priced in the market, then the equilibrium is necessarily [Pareto] *optimal* (942, emphasis in original). It is the famous First Theorem of Optimality. Once the professors' students have graduated from college and matured to decision makers in the world of practical affairs, they recite the theorem as the credo that markets always are more efficient than alternative algorithms for resource allocation, with only a distant memory of the stringent conditions underlying the theorem, if any memory at all.

Two observations can be made in connection with this theorem. First, the minimal conditions for the functioning of the competitive markets assumed for the theorem are (1) that both sellers and buyers fully understand and can assess the relevant dimensions of the particular goods and services traded in the market, (2) that both of them are price takers in the sense that as individual participants in the market they are too insignificant to have any influence at all over prices, and (3) that *all* relevant prices are known to *all* participants before transactions are consummated. It is left to the reader to assess how well even now, four decades after Arrow's article was published and almost two decades into the information revolution, the typical transaction in health care meets even these minimal requirements of a competitive market. Further illumination on this issue can be had from Thomas Rice's *The Economics of Health Care Reconsidered* (1998) in which the author examines in great detail how well the health care markets of the late twentieth century own up to the requirements of the First Optimality Theorem. Rice's answer is "Not."

Second, as noted above, Arrow hints in passing (942) at the possibility that a Pareto-efficient allocation of resources might be one in which some members of society are starving while others suffocate in gluttony (e.g., allocation D in Figure 1). Even if an allocation would leave many members of society starving, it would be defined as Pareto efficient by economists as long as even one of the gluttons objected to sharing his or her claim to resources with the starving members of society. Translated into health care, a Pareto-efficient allocation of resources might be one in which many patients suffer unwittingly from the excessive application of medical procedures while others suffer wittingly for want of critically needed care. Although such an allocation of health care resources may be judged abhorrent by many, economists nevertheless would be obliged to certify it as Pareto efficient if any one member of society objected to a redistribution of health-care resources—for example, if any one unwittingly overtreated member of society would object to a tax-and-transfer policy that would bestow critically needed health care to individuals hitherto without access to it.
Unfortunately, textbooks in economics inform students that “when economists use the word efficient, they generally have the notion of Pareto efficiency in mind” (Katz and Rosen 1991: 425). In a debate on public health policy, that usage can easily seduce noneconomists into believing that any particular, efficient allocation of resources is ipso facto superior to any particular, inefficient allocation. In fact, no such statement can legitimately be made by economists. In terms of Figure 1, for example, there is no reason why one should necessarily regard the highly skewed Pareto-efficient distribution of economic privilege represented by allocation D superior to the more egalitarian but Pareto-inefficient allocation C although, as Arrow reminds us (942), it certainly would not be sensible to put up with allocation C if any allocation on line segment AB could be technically and politically attained.

The Second Theorem of Optimality

Figure 1 illustrates that any initial endowment of society with real resources could be allocated among goods and services and subsequently among members of society in many alternative ways to produce many distinct, alternative distributions of economic privilege among members of society, each of them Pareto efficient. The question is how a society is to pick from among the infinite set of alternative, efficient distributions the one that is considered to be truly the best—what laypersons would call the optimal allocation. It is here that economists call on the Second Theorem of Optimality. Arrow phrases the theorem as follows (943): “If there are no increasing returns in production, and if certain other minor conditions are satisfied, then every [Pareto] optimal state [distribution of economic privilege among members of society] is a competitive equilibrium corresponding to some initial distribution of purchasing power” among members of society. From this powerful analytic insight follows an equally powerful policy recommendation so far-reaching that it warrants a lengthy quotation from Arrow’s essay:

Operationally, the significance of this proposition is that if the conditions of the two optimality theorems are satisfied, and if the allocation mechanism in the real world satisfies the conditions for a competitive model, then social policy can confine itself to steps taken to alter the

1. By “increasing returns in production” is meant processes under which a doubling of all inputs would yield more than double the output. That circumstance can create certain analytic problems in general equilibrium analysis.
distribution of purchasing power. For any given distribution of purchasing power, the market will, under the assumptions made, achieve a competitive equilibrium which is necessarily optimal; and any optimal state is a competitive equilibrium corresponding to some distribution of purchasing power, so that any desired optimal state [distribution of satisfactions among members of society] can be achieved.

The redistribution of purchasing power among individuals most simply takes the form of money: taxes and subsidies. The implications of such a transfer for individual satisfactions are, in general, not known in advance. But we can assume that society can \textit{ex post} judge the distribution of satisfactions and, if deemed unsatisfactory, take steps to correct it by subsequent transfers. Thus, by successive approximations, a most preferred social state can be achieved, with resource allocation being handled by the market and public policy confined to the redistribution of money income. (943)

It is understandable why, on casual reading, this passage may appear as the seal of approval by a world-renowned economist for separating equity from efficiency in the formulation of health policy. If one believes—or acts as if one believes—that health care more or less meets the stringent conditions posited for the norms of welfare economics, then one can feel comfortable in advocating reliance on the market as the best means to attain economic efficiency in the allocation of health care resources, leaving it to the political process to recalibrate the distribution of income so as to render the market’s impersonal verdicts ethically acceptable.

In fact, however, Arrow did not offer nearly so soothing an ointment for the problem of distributive justice in health-policy analysis. Even in the main text of his essay he observed that “If, on the contrary, the actual market differs significantly from the competitive model, or if the assumptions of the two optimality theorems are not fulfilled, the separation of allocative and distributional procedures becomes, in most cases, impossible” (943). At the very least, this passage challenges the proponents of a market approach to health care to demonstrate that the modus operandi of the market for health sector more or less satisfies the rather stringent conditions posited for the norms of welfare economics. That obligation remains a major challenge. In fact, it would be stretching things to read that conclusion into Arrow’s article. He concluded otherwise.

Quite aside from the behavior of the health care market, however, supply-side economists vehemently question the tacit assumption implicit in the
Second Theorem of Optimality, namely, that purchasing power can easily be transferred among members of society without causing serious economic distortions—distortions causing the so-called "deadweight losses" lamented so much in the welfare economics of public finance. Arrow remarks on this problem in the following footnote:

The separation between allocation and distribution even under the above assumptions [i.e., even if the conditions of the two optimality theorems are met] has glossed over problems in the execution of any desired redistributive policy; in practice, it is virtually impossible to find a set of taxes and subsidies that will not have an adverse effect on the achievement of an optimal state. (943 n. 2)

The problem identified in this footnote and the damage it does to the Second Theorem of Optimality ought not to be underestimated. In the classroom, economists find it convenient to develop the Second Theorem of Optimality with appeal to head taxes and head income transfers. By their very nature, these taxes and transfers cannot distort economic behavior because they are not linked to any behavioral variable (such as income earned or property owned). Alas, in practice, head taxes, in particular, are very rare because they lack political appeal. The proposal to introduce head taxes, probably with an eye toward economic efficiency, is said to have lost Britain's former prime minister Margaret Thatcher her office.

The adverse effects of redistributing purchasing power to which Arrow alluded in his footnote became a major issue during the U.S. health-reform debate in 1993–1994. Throughout the 1980s, supply-side theorists among U.S. economists had warned policy makers about the adverse economic incentives inherent in health policies that necessarily tax families in the upper half or so of the nation's income distribution to subsidize the health insurance for the families in the lower third. In fact, avoidance of such adverse effects—even at substantial cost of the welfare of the poor—has been a major theme among supply-side economists.2 Drawing on simulations at the National Bureau of Economic Research made during the health reform debate of the mid-1990s, for example, economist

2. At a congressional retreat during the health reform debate of 1993–1994, James Mongan, M.D., currently president of the Massachusetts General Hospital, asked a prominent economist—who shall remain nameless—why one of the richest nations on earth finds it so difficult to give all of its citizens access to the kind of health care taken for granted by the middle class. To which the economist replied: "Has it occurred to you that that is why we are among the richest nations on earth?" Oral communication from James Mongan.
Martin Feldstein (1994) warned policy makers and the public in an editorial entitled "Income-Based Subsidies Won't Work" that, in the end, it would cost $18,000 to insure a currently uninsured family of three (whose policy itself might cost less than a quarter as much).

In short, when the rubber hits the road in the arena of truly applied policy analysis and politics, the fabled Second Theorem of Optimality quickly loses its relevance. If one group of economists specializes in normative rules that advocate a free market for health care, assuming that the political process will put in place an ethically defendable distribution of purchasing power, while another group of economists specializes in alarming the policy makers over the loss of efficiency inherent in such redistributions, thus making sure that the political process does not put in place an ethically defendable distribution of purchasing power, then jointly the economics profession merely demonstrates that, in its own eyes, the conceptual separation of equity and efficiency implied by the Second Theorem of Optimality is just that, an elegant theorem.

Now it may be argued that, in a properly functioning representative democracy, the prevailing distribution of after-tax and after-transfer income at any moment is the most ethically defendable distribution of purchasing power; otherwise the democracy would not tolerate that distribution. On that assumption, it may be argued, one need not worry about social equity in advocating a market approach to health care because the willingness and ability to pay by different members of society interacting in a free market can legitimately be taken as the relevant measure of social value in normative economic analysis. In other words, if one accepts the prevailing after-tax and after-transfer distribution of income as the ethically acceptable platform for the market, then it is also ethical to accept as a working proposition that health care given, say, to the child of a corporate executive has a higher social value than similar health care given to the child of a gas station attendant, because the corporate executive probably would be willing to pay more money for that care than would the gas station attendant.

This argument cannot be dismissed out of hand, but one may point to its weakness. For one, a hard debate can be had over the question whether this nation’s democracy does, indeed, function so as to beget the distribution of income that in turn would beget a distribution of health care that a majority of citizens would accept as ethically defensible. One may explore that question by asking the following question: Would the American public, or citizens elsewhere in the world, be content to accept the currently prevailing distribution of general purchasing power among
members of society as an ethically adequate platform for the auctioning off of, say, transplantable organs to the highest bidders or of other life-saving and medical interventions that may be in limited supply? The answer is likely to be a resounding "No!" As Arrow observed on this point: "The taste for improving the health of others appears to be stronger than for improving other aspects of their welfare" (954). In other words, Arrow appears to suggest here that there probably is not just one initial distribution of general purchasing power that can satisfy the distributional ethic that society wishes to impose on particular commodities within the entire set of all goods and services. There probably are many different desired initial distributions of purchasing power, each tied to a particular commodity on which society has special attitudes. The desired distributions of purchasing power for health care and for education, for example, might be much more egalitarian than those for food and housing.

This circumstance bears directly on a corollary often extracted by economists from the Second Theorem of Optimality, namely, that the distribution of benefits in kind by government—as, for example, through the Medicare and Medicaid programs—is inherently inferior on economic grounds to a simple distribution of cash in an amount equal to the cost (to taxpayers) of the benefits in kind distributed by government. Because the proclamation of that proposition, too, remains one of the more triumphant moments in first-year courses in economics and, thence, is carried into mature adulthood, it may be well to subject that proposition to closer scrutiny.

The Welfare Economics of Benefits in Kind

Arrow's oblique reference to the distribution of benefits in kind would be obvious to a general public, worldwide, that routinely countenances huge public expenditures on health care for the poor but would be likely to reject quite vehemently a proposal to distribute a like amount of cash instead. It can be asked fairly whether so many people could possibly be so wrong on this issue for so many years, while economists have had it right all along, or whether it may possibly be the other way around.

Economists pretend to be deeply puzzled by the public's tolerance of the patently inefficient distribution of benefits in kind. As noted, every year thousands of economics professors persuade hundreds of thousands of American undergraduates that granting the poor distribution of benefits in kind is less efficient than simply transferring to them cash in an
amount equal to the cost of the benefits in kind. In the words of Victor Fuchs (1983: 148–149): “While elementary justice seems to require greater equality in the distribution of medical care, the question is complicated by the fact that the poor suffer deprivation in many directions. Economic theory suggests it might be better to redistribute income and allow the poor to decide which additional goods and services they wish to buy.” Similarly, in his exploration of the willingness-to-pay approach for tax-financed benefit-in-kind programs, Mark Pauly (1995: 117) observes:

If we want to provide benefit to low-income people, a more efficient approach would be to use the money that would have been spent on the program, as opposed to making a direct money transfer to them, since the money will benefit low-income people more than the program would. If the community decides not to make the money income transfer, it must not have attached high value either to low-income persons’ health or to their overall welfare.

Ever on to the real world, however, Victor Fuchs (1983: 149) is quick to add to his commentary on benefits in kind: “As a practical matter, however, it may be easier to achieve greater equality through a redistribution of services (such as medical care) than through a redistribution of money income.”

By practicality Fuchs may have in mind merely the venal political process that governs the redistribution of benefits in kind by government in a democracy. That distribution inevitably feeds horses to feed the birds, so to speak. Out of pure self-interest, and under almost any form of government, the horses (the producers of benefits in kind) can be counted on to become strong political allies of society’s targets of compassion, which is reason enough to make the ideologically committed champions of the poor favor benefits in kind, for purely pragmatic, political reasons. Therein may lie part of the practicality of which Fuchs writes.3

But there may be more to the practicality of benefits in kind than merely feeding of the hungry horses that, in turn, provide politicians with campaign financing. Taxpayers themselves may not be impressed by the

3. To be sure, in a democracy in which “representative government” contents itself more and more with representing mainly special, monied interests, the hungry horses producing benefits in kind may help stretch their provision beyond the level that could be justified, if one knew the true valuation that donors and recipients jointly attach to some of the benefits taxpayers will be forced to finance.
economist's dictum that cash transfers are inherently superior to the transfer of benefits in kind. In other words, it is possible that, after a century of study, economists still do not understand the utility function of taxpayers in this regard. The economist's dictum is driven by the tacit assumption that taxpayers maximize their own utility when the recipients of tax-financed transfers, the poor, are allowed to maximize any which way they choose their own happiness per dollar of taxes borne by the taxpayers. If the recipients of public transfers are happier spending their transfers on alcohol and visits to Disneyland than on health care for their children, then so be it, as long as the poors' utility is maximized per dollar of taxpayers' money. Is there persuasive empirical evidence that the typical taxpayer's utility function actually does conform to the economist's imagination?

Perhaps a more realistic assumption would be that taxpaying voters typically exhibit a more parental form of altruism toward their poor fellow citizens. Taxpayers would like poor families to use a select few basic commodities (for example, health care and education) in adequate amounts, but specifically not use tax-financed subsidies to purchase whatever goods and services the poor fancy (especially gin and Cadillacs). The preference among voters for bestowing on the poor benefits in kind rather than cash transfers—apparently so puzzling to economists who write textbooks—may well rest in good part on that characteristic of the donors' utility function. If that hypothesis is valid, then it would seem hopeless that we would ever find a single, politically acceptable distribution of generalized purchasing power that would distribute through the free market all commodities among members of society in a fashion that the general public will accept as just. Furthermore, if that is so, then economists would actually be misusing the word efficiency in this context. They would be misusing it because they would be recommending the maximization of the wrong maximand.

**Judging the Social Merits of Alternative Social Policies**

Alternative public policies in health care, as in other sectors, can be of several distinct types. Occasionally one thinks of policies that represent an actual Pareto improvement in the sense that the policy makes some members of society feel better off without making anyone else feel worse off. Unfortunately, such occasions are rare. More commonly, public policies do make some people feel better off at the expense of others who do
feel worse off. It could occur when a resource allocation is changed from one Pareto-inefficient distribution to another or when policy makers seek to move from one Pareto-efficient allocation to another. Finally, it could occur when policy makers, perhaps at the behest of economists, seek to move the allocation of resources from a Pareto-inefficient state to a Pareto-efficient one.

In either case, when a proposed policy makes some members of society better off at the expense of others, policy makers cannot escape the chore of having to make explicit value judgments on the social desirability of the proposed policy. Economists have long debated how such evaluations should be done.

Only a faulty reading of Arrow's article could suggest to the reader that, in health care, this problem could be left to the invisible hand of competitive markets. A careless reader of his article might possibly draw that inference, because in connection with the First Theorem of Optimality, he observed that an explicit "value judgment on the desirability of each possible new [Pareto-efficient] distribution of benefits and costs corresponding to each possible allocation of resources is not, in general, necessary" (942). Evidently he meant that if the conditions of competitive markets are satisfied, these value judgments could be left to the market after social policy has set the ethically preferred distribution of purchasing power.

Even that proposition, however, seems somewhat at variance with Arrow's subsequent observation, offered in connection with the Second Theorem, that the implications of particular distributions of purchasing power among members of society on the ultimate distribution of satisfaction among members of society are, in general, not known in advance, so that the distributions of satisfactions resulting from particular distributions of purchasing power need to be judged by society ex post (943). In other words, according to Arrow, in the end, even perfectly competitive markets do not spare policy makers the chore of making explicit value judgments about the "distributions of satisfactions" that a competitive market will beget with alternative initial distributions of purchasing power among members of society (with alternative social policies). Policy makers certainly are not spared that chore in contexts that do not even meet the conditions for the First and Second Theorems of Optimality, of which health care to this day surely remains one. Thus, the question remains how one is to evaluate the relative social merit of outcomes from alternative social policies that redistribute economic privilege among members of society. Is there really an objective analytic method of accomplishing that seemingly subjective social valuation?
Because this question lies at the core of welfare economics as it is practiced today, and because its pragmatic resolution by many economists has tended to create an intellectual gap between the profession and noneconomists, it merits a wider excursion into the relevant literature, beyond Arrow’s article proper. Concretely, then, in terms of the two-member society modeled in Figure 1, the question at issue is how one is to evaluate any reallocation of human happiness that leaves person A feeling better off and person B feeling worse off, or vice versa.

Kaldorian Welfare Analysis

Ever eager to play in the world of practical affairs, economists by now appear to have settled this century-old question pragmatically by relying on a dubious norm originally proposed by the British economist Nicholas Kaldor (1939: 549) and sold to policy makers ever since, to wit:

A reallocation of resources wrought by a particular policy represents a “social net gain” if the individuals who gain from the reallocation value that gain sufficiently so that they could, in principle, bribe the individuals who are worse off as a result of that policy into accepting that change, even if that bribe actually is not paid.

Translated into the realm of standard benefit-cost analysis, for which the Kaldorian criterion has become the gold standard, the postulate can be expressed in a manner that might astound and possibly appall noneconomists:

If those who stand to gain from a proposed change in the economy would maximally be willing to pay $B to see that change made, whoever these people may be, and given their tastes and their particular position in society’s income distribution, and if those who stand to lose from the change would maximally pay $C to prevent that change, whoever they may be, and given their tastes and particular position in the nation’s income distribution, then the proposed change represents a “social gain” or “increase in social economic welfare” if the gain $B exceeds the loss $C.

For a profession that prides itself on basing its normative dicta on the preferences of individuals, this postulate strikes on a remarkably collectivist approach to social valuations. In essence, it implies that if $1,000

4. In this connection, see also Rice 1998.
is taken from person A by a head tax and given to person B by means of a head-transfer, collective social welfare has not changed at all. One can esteem the postulate for its potential practicality but not for its ethical foundation.

Some textbook writers refer to a Kaldorian social gain as a “potential Pareto improvement” and define the latter as ipso facto an “increase in economic efficiency” (Stockman 1996: 305–306). That appears to have become by now the common usage in economics. For example, Steven Landsburg (1995: 258) instructs students in his textbook *Price Theory and Applications*:

According to the efficiency criterion, any change in policy that makes George $2 richer and Martha only $1 poorer *is a good thing*. Any change in policy that makes George $1 richer and Martha $2 poorer *is a bad thing*. More generally, the efficiency criterion pronounces that between two policies, we should always prefer the one that yields the higher *social gain*. The preferred policy is said to be more efficient than its rival.

One must wonder how many first-year students, struggling with their first brush against the complexity of welfare economics, will stop to ponder just who George and Martha might be. Would the proposition appeal to them if George were Donald Trump and Martha a near-poor waitress?

**Critique of the Kaldorian Welfare Criterion**

In their professional writings, economists tend to apply the Kaldorian criterion with abandon and with nary a thought or apology for its shaky ethical foundation. How unwise that practice is depends, of course, on the particular context to which the criterion is applied. Within the context of health care, one might judge it reckless. It has not always been so. Earlier economists, writing at about the time at which Arrow’s article was penned, were, as Arrow was, far more circumspect on this facet of welfare economics, and they agonized over its validity. In one of the more trenchant reviews of welfare economics in general, for example, William J. Baumol (1977: 530) concluded:

In my view, the Kaldor test operates on the basis of an implicit and unacceptable value judgement. By using a criterion involving potential money compensation, [it] sets up a concealed interpersonal comparison of utility on a money basis. If [individual] Y’s gain is worth $200
to him whereas [individual] X evaluates his loss at $70, we are not entitled to jump to the conclusion that there is a net [social] gain in [the associated change in the economy]. If X is a poor man or a miser, $70 may mean a great deal to him, whereas if Y is a rich man or profligate, $200 may represent a trifle hardly worth his notice. . . . It is no answer to this criterion that these criteria are just designed to measure whether production, and hence potential welfare, are increased by the policy change—that these criteria disentangle the evaluation of a production change from that of the distribution change by which it is accompanied.

Defense of the Kaldorian Welfare Criterion

A defense of the Kaldorian welfare criterion might be that, while its application in particular instances may redistribute economic privilege in undesired ways, its consistent and repeated application to public policy across the entire economy is bound to have a portfolio effect under which individual instances of injustice cancel out one another, so that, in the end, all boats can be made to rise, so to speak, through efficiency-enhancing policies driven by welfare-economic analysis. The most elegant version of this defense is the expected-utility or constitutional standard originally proposed by James Buchanan and Gordon Tullock (1962).\(^5\) As Pauly (1995: 100–102) has described the constitutional standard it asks:

> given a wide variety of decisions to be made and a wide variety of individual circumstances for any member of a give group, what method would maximize the average or expected well being of a person in that group? In effect, this standard assumes/argues that each person has the group-average probability of being in each of the circumstances that might occur. . . . The constitutional perspective . . . makes the [Kaldorian] potential compensation test more attractive. If society follows the benefit-cost rule [that test implies], on average every person can expect to be better off; the chance that the person will win will more than offset, in expectational terms, the chance that the person will lose.

There clearly is something to that argument, although, as Pauly mentions, the same analytic construct has been employed by John Rawls (1971) to justify policies for a more egalitarian distribution of income.

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The construct has not carried conviction in that realm any more than it can in health policy. The standard raises two questions.

First, is it in fact the case that each member of society has the group-average probability of being in each circumstance that might occur, or does consistent application of the Kaldorian benefit-cost rule consistently favor one socioeconomic class over the other, or healthy people over chronically sick people?

Second, even if the group-average probability of being in each circumstance were the same for all members of society, over what span of economic activity should policy makers and the affected individuals average (in their minds) the wins and losses from the variety of decisions that are to be adjudicated by the Kaldorian benefit-cost rule? Is it good enough when the disadvantages that the rule may visit on an individual in one economic sector (e.g., health care) are offset, in “expectational terms,” through advantages the rule bestows on the same individuals in another sector (e.g., transportation or entertainment)? Or should the assumed portfolio effect take place within sectors (e.g., within health care proper)? For example, if an application of the Kaldorian benefit-cost rule shifts more of the financial burden of ill health onto the shoulders of the chronically ill, is it good enough to tell the chronically ill that, on average, in expectational terms, a consistent application of a normative rule that hurts them in health care will bestow offsetting special benefits on them in other sectors (e.g., in transportation)? Would a consistent application of the Kaldorian benefit-cost rule in health policy not be likely to drive the entire health system inexorably toward systematic income-based rationing and visit the economic cost of ill health more heavily on the sick than is the case even now? If that be the goal, or if it be judged an acceptable outcome, then economists using that line of defense had better articulate their acceptance of that outcome in health care very explicitly, at the outset, in any normative analysis they base on the Kaldorian criterion, so that users of the analysis can make their own moral judgment on the matter. As William Baumol (1977) has put it, Kaldor’s expedient normative dictum is never an excuse for setting aside moral thought.

The Second Optimality Theorem
Meets the Real World

Although it is unlikely that Paul Ellwood (1971), Anne and Herman Somers (1972), and later Alain Enthoven (1978) ever consciously fol-
lowed the road map to the social optimum for health care that many economists perceived in Arrow's article, the shared vision for U.S. health care proposed by these authors at various times—and most fully developed by Enthoven (1978), Enthoven and Kronick (1989), and Ellwood, Enthoven, and Etheredge (1992)—comes closest so far in the attempt to move the health care sector closer to the conditions required by what Arrow calls "the norms of welfare economics." That vision is an attempt to fuse a price-competitive framework for health care with production processes designed to produce medical treatments efficiently and with income transfers designed to achieve a desired degree of social equity. Although the proper description of this construct is "managed care within managed competition," it will be convenient henceforth to refer to it by the conventional shorthand managed care.

The Elegant Theory of Managed Care

The fundamental idea underlying the theory of managed care was to achieve social equity through the distribution of vouchers—currently known as defined contributions—that could be used only for the purchase of health insurance offered by a variety of private, competing health insurance plans. Within a formal framework that regulated their conduct, the health plans could be made to compete for enrollees on two distinct bases.

First, they could be forced by government to accept the voucher as payment in full for a defined, basic benefit package. In that case, they would compete strictly on their reputation for quality and, possibly, on the basis of additional services not in the basic benefit package and sold for additional premiums. It would be the closest approach to perfect social equity. Alternatively, the health plans could be allowed to compete on both price and quality. Thus, they would be free to quote for the basic benefit package a premium above or below the amount of the voucher, leaving the insured to pay from their own resources any amount of premium above the voucher amount or to pocket the amount of the premium below the amount of the voucher. The second approach would not be perfectly egalitarian, but it could be calibrated by policy makers to achieve any desired degree of social equity. To make either approach workable, of course, the total money payment ultimately made to the health plans would have to be adjusted somehow for the actuarial risks they attracted in the competitive free-for-all.

For their part, the health plans would have every incentive to produce
or procure health care for their enrollees as efficiently as possible. They would do so by bargaining fiercely over the prices of inputs and of monitoring their use with appeal to preestablished practice guidelines—that is, through external micromanagement of medical treatments—hence the name managed care.

Crucial to the entire arrangement would be an elaborate information infrastructure that would give all participants in the arrangement—the insured as they select health plans and providers within plans, the managers of the health plans and the providers supplying them—with all relevant information on prices and quality that is fundamental to an efficiently operating economic sector. The existence of this information infrastructure was fundamental to the success of the strategy as, of course, it would be to the validity of the Second Optimality Theorem in any economic context. 6

The Checkered History of Managed Care

It would strain one’s credulity to be told that today’s health system in the United States comes anywhere near the ideal set forth in the elegant theory of managed care. As noted in the introduction, economists who would persuade the participants in health care—patients, providers, insurers, and government officials—that the U.S. health system has moved closer to an efficient social optimum during the past decade or so might be a source of sardonic humor.

A lively debate could be held on the question whether, relative to what needs to be known about today’s much more complex health system, patients now are any better informed about their health system and about their health care than they were when Arrow penned his famous essay. To appreciate what is being asserted here, one need only imagine a patient beset by chest or stomach pain in Anytown, USA, as he or she attempts to “shop around” for a cost-effective resolution to those problems. Only rarely, in a few locations, do American patients have access to even a rudimentary version of the information infrastructure on which the theory of competitive market and the theory of managed care rest. The prices of health services are jealously guarded proprietary informa-

6. If this rendition of the theory of managed care reminds readers of the Clinton health reform plan, they would not err. The core of that plan was very close to the design parameters spelled out above. Unfortunately, that design was hidden behind the additional, often needless, regulatory baggage the Clinton team chose to load on top of that design.
tion. In fact, even the nomenclature of the fee schedules used by the federal Medicare program was made, under contract with the Reagan administration, the private property of the American Medical Association and can be used by others in the private sector only with that trade association’s permission. Information on the quality of care is generally unavailable or not trustworthy. Not even the infection or complication rates experienced in hospitals are publicly known. Such information on quality as is made available in the media or on Web sites typically consists of mysteriously weighted aggregate indexes that obscure the detailed information patients would need in a competitive market. Much is made now of the ability of Web-enabled health care consumers to view physicians as full partners or mere ordering clerks. Perhaps the typical American patient will fit that image one day. In the meantime, the image will remain the stuff of futurist tracts and of conference circuit fantasy.

Space does not permit a more careful and detailed analysis of the fate of managed care during the 1990s beyond the brash assertions offered above, nor does space permit an exploration why managed care did not achieve what ought to have been technically feasible. It would be hard to argue, for example, that either the technical know-how or the physical capacity or the availability of funds were effective barriers to a more effective use of modern information technology. Can these factors explain why third-party payers in this country, more so than in most other countries, still rely so heavily on cumbersome paper transactions? More persuasive than appeal to technical factors is J. D. Kleinke’s (2000) behavioral theory. In his “Vaporware.com: The Failed Promise of the Health Care Internet” he argues that better transparency and speedier communication in U.S. health care actually has more powerful enemies than friends, that these enemies of transparency have a vested interest in holding genuine competition in health care at bay, and that they tend to triumph in our latitudes, in part, no doubt, because American consumers have never really warmed up to the idea of a price-competitive, commercial health care system.

Although a fuller understanding of this remarkable market failure probably will require the work of many diverse scholars over many years, it would be a worthy enterprise. Economists, in particular, will benefit from pursuing the task, begun by Kenneth Arrow, to understand just why, even forty years later, the health system still deviates so sub-

7. With some effort one might be able to obtain a hospital’s “charges” for its services, but one would quickly be told that these are meaningless because no one actually pays them.
stantially from the norms of welfare economics and whether a convergence on that ideal can ever realistically be expected.

**Concluding Observations**

In the late 1980s several economists offered, in this journal, a retrospective on the more market-oriented approach that U.S. health policy had taken since 1977, the year of a major national health-policy conference on the potential role of competition in health care. In his introduction to the series of articles, Warren Greenberg, the editor of the volume, remarked:

> It appears that competition has increased substantially among providers and among insurers and health plans since 1977, perhaps more than anyone predicted or thought possible. Economic theory would suggest that this increase in competition should have resulted in a more efficient allocation of health services. . . . But competition may have succeeded only in improving the allocation of health resources. In the next ten years, I believe, we will have to combine a better allocation of resources with a more equitable distribution of these resources. (Greenberg 1988: 223, 224–225, emphasis added)

Leaving aside the debatable assertion that, in 1988, U.S. health care truly was more efficient than it had been in 1977, the passage suggests that a resource allocation that is more efficient than the one it replaces is ipso facto an improvement and therefore better. This inference reminds me of one of my favorite comments in Arrow’s article, by which he gently reminds his peers and his future disciples in passing that: “A definition is just a definition, but when the *definiendum* is a word already in common use with highly favorable connotations, it is clear that we [economists] are really trying to be persuasive; we are implicitly recommending the achievement of optimal states” (942).

The main objective of this essay has been to use Arrow’s seminal article as a vehicle for explaining to noneconomists the huge gap between the economist’s and the layperson’s use of the words *optimal* and *efficient*. In the vernacular, the word *efficiency* has a highly positive connotation. *More efficient* is understood to mean better, and *optimal* is thought to be best. In standard welfare economics, on the other hand, the terms merely imply a state of affairs that satisfies certain conditions but that may or may not be socially desirable and may even be abhorrent in the eyes of modern societies.
Arrow's admonition in this passage puts a burden on economists to be ever mindful of their use of professional jargon in the arena of public policy debates, lest they fall into the trap of proffering particular ideologies under the mantle of science (unless, of course, they actually seek to do so). Among noneconomists, efficiency or optimality always are tied implicitly to a particular goal. In terms of Figure 1, for example, laypersons might not care to enhance efficiency by moving from an interior point, such as C, of the feasible set of allocations to an efficient point, such as D, on the trade-off frontier if they patently do not wish to be at the latter allocation. Indeed, if push came to shove, they might even prefer to remain at the relatively more inefficient point C.

One can explain this point easily to first-year students in economics with a hypothetical road trip (Reinhardt 1998). Suppose a family decided to travel by car from New York City to the West Coast and each of four fairly mature children is charged with the task of finding the most efficient routes to two potential destinations: San Diego and Seattle. The family agrees that the most efficient route is one that leads them to the chosen destination in the least travel time. Youngsters A and B, each and separately, are asked to discover the most efficient route to Seattle. Youngsters C and D similarly are asked to discover the most efficient route to San Diego. Now suppose that A's chosen route will require less travel time than B's and that C's chosen route will require less travel time than D's. Clearly the family would judge C's chosen route to San Diego to be both more "efficient" than D's and also "better" if the family ultimately decided to travel to San Diego. On the other hand, D's inefficient route to San Diego would clearly be preferred by the family to A's efficient route to Seattle if everyone really wished to go to San Diego.

Few people fail to grasp the central point of this homely illustration unless, of course, they are working in health policy rather than on vacation plans. In the context of health policy, one commonly finds alternative policies (or national health systems) ranked in terms of their alleged relative efficiency, even though these policies (or national health systems) may have vastly different distributional consequences. A health policy (or health system) that provides superb health care to, say, 85 to 90 percent of the population but leaves 10 to 15 percent of mainly low-income individuals without critically needed care cannot legitimately be compared in terms of economic efficiency with an alternative policy (or health system) that trims somewhat the benefits enjoyed by the top 85 to

8. In this connection, see also Reinhardt 1996.
90 percent of the population in order to bestow more health benefits on the lower 10 to 15 percent. The two systems attain different goals. They can be compared on normative grounds only by how well they approximate the goal society actually posits for its health system.

The choices laid out in the example are roughly the choices this country has faced for close to a century and probably will continue to debate deep into the new century. The general public and their political representatives may have distinct preferences concerning these two visions for health care, and their normative judgments must be respected. Economists as professionals, on the other hand, have literally nothing normative to say about these alternative visions besides the purely positive observation that they have different distributional consequences.

Economics will run into the same limitation in the forthcoming debate on the reform of the Medicare program. One set of proposals calls for reforms within the current, defined-benefit structure of Medicare. Those proposals would broaden Medicare’s benefit package to include prescription drugs and other items that are now excluded. Furthermore, they would allow Medicare to contract selectively with centers of excellence for certain complex medical procedures and to rely on competitive bidding for many other health services. The rival set of proposals would substantially privatize Medicare along the lines advanced in Senate Bill 357 by Senators John Breaux (D-LA) and Bill Frist (R-TN). That approach would be based on the concept of defined contributions, delegate the task of cost and quality control to private health plans, and force the traditional Medicare program to compete on premium and quality with the private plans. It is unlikely that these conceptually different approaches would have the same distributional consequences. Relative to the Breaux-Frist approach, the enhanced, defined-benefit approach probably would produce less tiering of the health care experience of the elderly by income class, but would shift relatively more of the cost of health care for the elderly onto the working population. It is possible and appropriate to lay out the sundry consequences of these proposals side by side for easy comparison. It would be quite illegitimate, however, to rank them in terms of their alleged, relative “efficiency.” It will be fascinating to observe whether or not economists will be able to keep their professional hands clean in the forthcoming debate on Medicare reform.
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