PETER J. HAMMER

DEBORAH HAAS-WILSON

WILLIAM M. SAGE

■ *Kenneth Arrow and the Changing Economics of Health Care: "Why Arrow? Why Now?"*

Brand New '64 Dodge
Money comes out of Dad's billfold. Hankies come out of Mom's purse.
The engine hardly makes a sound, even when you put it in reverse.
Its got a push-button transmission, hardtop convertible, 4-door.
Its November of '63 and the brand new Dodge is a '64.
—*The Poet Game*, Greg Brown (1994)

Why Arrow? Why now? Kenneth Arrow is a Nobel laureate and one of the most important economists of our time. "Uncertainty and the Welfare Economics of Medical Care" (Arrow 1963) is a landmark contribution to health economics that is required reading in health economics, health policy, and health law courses. While most of Arrow's economic insights transcend time and can fit comfortably within modern economic theory, his institutional analysis of medical markets is layered in amber. This turns out to be a blessing. By offering a point of reference that only time and distance can provide, Arrow's interpretation of medical markets circa 1960 affords an extraordinarily useful framework for understanding the health care economy and health care policy of today.

The year 1963 evokes an era as well as being a specific date. It was a time of perceived innocence and Camelot. People had faith in their government, in the functioning of private markets, and in the family doctor. The Dodgers beat the Yankees in the World Series, *Cleopatra* played in the movie theaters, and television audiences tuned in to *My Favorite Martian* and *The Fugitive*. At the same time, rumblings of unrest could be heard, the start of revolutionary social change. Martin Luther King, Jr. led his historic civil rights march on Washington in 1963.

President Diem was assassinated in South Vietnam, marking deepening U.S. involvement in a quagmire war. America's own President Kennedy had just brought the world back from the brink of nuclear war but would not himself survive the year.

For medicine, 1963 was a time of hope and optimism, though most of the profession's accomplishments still lay in the future. Most physicians were in solo practice, and many still made house calls. Medical science had made tremendous strides with antiseptic surgery, antibiotics for the treatment of infections, and vaccines for the prevention of diseases such as polio, but few specific therapies for important diseases yet existed. The delivery of professional services was undoubtedly a market transaction, but medical charity was also common, by necessity if not by design. Private health coverage was not yet widespread, and although national health insurance came periodically into political debate, the government still played little direct role in the purchase of medical services. Aggregate national spending on health care amounted to roughly 6 percent of the gross domestic product—a substantial but hardly a daunting sum.

Some forty years later, health care occupies a far more central role in the national economy. Today, it is common to speak of a "medical-care industry" comprising large physician organizations and hospital networks and of using "competitive forces" to discipline health care spending. But even as economics and competition have gained ascendance, we are wrestling with many of the same questions that Arrow attempted to address: What is the proper role of markets in delivering health care services? Can we base our health care system exclusively on private competition? What place should be reserved for government or for social mechanisms such as professionalism, nonprofit status, or trust? Do these "nonmarket institutions" help markets overcome uncertainty, or do they replace markets that have failed because of informational asymmetry? How does one define the proper boundary between market and nonmarket institutions?

It is also fitting that both Arrow's original contribution in 1963 and this retrospective collection today are the products of public policy initiatives by major philanthropic foundations. The Robert Wood Johnson Foundation's Investigator Awards in Health Policy Research program exists to encourage broad, interdisciplinary thinking about the design and operation of the American health care system. Because of the foundation's interest in promoting the exchange of ideas among Investigator Award recipients, a "cluster group" was formed to consider the proper role of competition in health care. Discussion at an introductory meeting in 1999 identified Arrow's 1963 article as a useful lens through which to view current health care markets and attendant public policy concerns. Drawing on this discussion, we developed an intellectual agenda for the cluster group's work, redefining our project as a published volume that would transform general interest in Arrow's article into a specific scholarly contribution. We then

recruited leading members of the health economics and health policy community, from both inside and outside the ranks of the Investigator Awards in Health Policy Research program, to address a series of questions that emerged from Arrow's analysis. A first working meeting of the group was held in June 2000; subsequent meetings for discussion of draft essays took place in October 2000 and March 2001.

We have all been inspired and assisted in these efforts by Kenneth Arrow himself, whose involvement in the process and contribution to this volume have made the project complete. In July 2000, Professor Arrow hosted a memorable lunch and afternoon meeting at Stanford University with us as editors of this volume, where we discussed the 1963 article and post-1963 changes in health care markets. He was also an active discussant at the October 2000 meeting where many of the essays were presented. This introduction draws liberally from notes of those meetings.

In preparing these essays, we employed an innovative form of peer review. In addition to being reviewed by the volume's editors, each essay was assigned to at least two other project participants to act as commentators. Most essays were discussed as well at formal meetings of the group. Further feedback was facilitated by a project Web site where drafts, comments, and revisions were posted and easily shared. In making this collective journey we gained a deep respect for the text of Arrow's article, for the article's role in the evolution of the still-young disciplines of health economics and health policy research, and for the degree to which Professor Arrow's encounter with the medical industry influenced his own intellectual development and subsequent thinking about economics. Before outlining more fully the themes which these essays address, however, it is useful to put the discussion in perspective by telling the story of how and why the original article was written and briefly exploring the article's impact.

HISTORY OF THE 1963 ARTICLE

Arrow's Commission from the Ford Foundation

Kenneth Arrow's intellectual engagement with health care was largely serendipitous. Arrow had not written about medical markets before 1963 and seldom returned to health economics in later years (1972a, 1972b, 1974). Why the initial foray? Arrow was invited by the Ford Foundation to examine medical markets as part of a larger initiative addressing policy arenas with substantial public-private overlap, such as: health, education, and welfare. Marshall A. Robinson (1965), director of the Ford Foundation Program in Economic Development and Administration, explained: "The Ford Foundation was influenced by the fact that expenditures in these three fields are in excess of $100 billian annually, that they are among themost important and sensitive areas of the entire economy, and that

communication between economists and those making policy and operating decisions in these areas has been infrequent and irregular." Robinson went on to note that "of the three areas, health economics is perhaps the most neglected by economists."

The Ford Foundation's plan was to combine the work of a practitioner in the field with that of a theoretician not necessarily working in the area. Victor Fuchs reports that Arrow's invitation to participate as the theoretical economist resulted from Fuch's own involvement at the time with the Ford Foundation. Arrow was paired with Herbert Klarman at Johns Hopkins University.

Given that Arrow was selected, in part, because he had not previously written about health care, he had to expend significant energy simply learning the industry. Arrow views his article as being part "survey," describing the existing literature, and part "insight," particularly regarding the role of information. He read the existing literature and talked to various people. In the article, he acknowledges comments from Francis Bator, Robert Dorfman, Victor Fuchs, Saul Gilson, Ruben Kessel, Selma Mushkin, and C. Rufus Rorem. Arrow recalls finding the existing health care and insurance literatures incomplete. There was standard risk theory along with loose concepts which posited that people will take advantage of insurance, although he does not remember seeing the catchphrases "moral hazard" and "adverse selection" in use at that time. According to Arrow, existing work did not adequately explain the complicated array of nonmarket relationships in health care, such as between physicians and patients, or the role that professionalism played more broadly. Arrow sought some unifying theory to encompass the existence of specialized professional knowledge and the underlying issues of insurance.

Arrow's Own Experience with Insurance and Medical Markets

In addition to the literature, Professor Arrow drew upon his own life experience. He recalls purchasing a private health insurance policy in the mid-1950s. A high school friend who had become a physician told him about the policy. Arrow asked his general insurance agent, but the agent was unaware that health insurance policies existed. He ended up purchasing a plan with coverage up to $15,000. He laughs at the policy today, saying, "That should have been the deductible, not the coverage. Insurance should cover only rare events." Arrow was also familiar with the role of certain private employers in providing health insurance for their workers, although they did so largely as a result of successful union efforts. Arrow was intrigued by the contrast in General Motors' two-pronged approach to health insurance, which he describes as a capped plan for blue-collar workers that was negotiated by the union and an uncapped plan for salaried workers.

Arrow's acquaintance with insurance markets was more than casual. He had

acquired practical knowledge of the industry while working one summer between college and graduate school calculating life insurance premiums. By his own account, he narrowly escaped life as an actuary, a prospect that horrified his graduate school professors. Arrow is still conversant in the "loads" that insurance companies place upon actuarial risk, and he remains sensitive to the role that transaction costs can play in the development and marketing of policies. One lesson he derived from this knowledge is that the evolution of insurance markets is likely to be path dependent in subtle ways. For example, Professor Arrow observed in our conversations how insurance companies do not like to cover areas where they do not have much experience-based data, but that they only collect statistics in the first place if they write policies in an area. This chicken-and-egg problem helps to explain both the limited nature of private medical coverage and the dearth of reliable actuarial information in the early 1960s. Indeed, the empirical understanding of health insurance that emerged in the late 1960s and 1970s was largely the result of government reporting requirements accompanying receipt of payments under Medicare and Medicaid.

Professor Arrow's personal contacts with the health care delivery system were more limited. In addition to conversations with his doctor friend, he recalls talking with his personal physician while preparing the article. Despite his affiliation with a major university, Arrow had little opportunity to examine large hospitals or academic medicine because the Stanford Medical School was then located in San Francisco. At one point, he reports, he was a member of the Palo Alto Clinic and had a bad personal experience at the facility. Overall, Arrow claims to be skeptical about medicine, as about most things, and states that he never had any impression that doctors were infallible.

Arrow's Knowledge of the Health Policy Questions of the Time

We also inquired into Professor Arrow's awareness of health policy concerns at the time of the 1963 article. Arrow recalls being struck by organized medicine's long-standing antagonism to prepaid medical practice, the precursor of today's HMOs. The AMA's fight against closed panels and forms of contract medicine were well known at the time, and the issue figures prominently in Ruben Kessel's 1958 work, which Arrow cited and discussed. Arrow recalls as well that discussions of physician shortages were part of the policy agenda in the early 1960s, as was the use of limited-license practitioners to supplement physician practice. Arrow also remembers that the Flexner Report on medical education was still controversial in the late 1940s when he was completing his own academic studies, and that it had been criticized by Chicago School economists such as Kessel as pure scarcity control. Arrow, however, was and remains unenthusiastic about strict Chicago School "physician conspiracy" theories of professional practice restrictions, find-

ing those stories incomplete because they do not explain how restrictions arise in the first place or why they perpetuate themselves politically.

The potential role of government as a direct purchaser of health care is absent from Arrow's 1963 article. Obviously, Medicare and Medicaid did not yet exist, but similar proposals had been around for decades. Arrow says that he was aware of the political debates that preceded the enactment of Medicare. He was also aware of the earlier Truman Commission work. However, he did not view his article as a policy piece, and therefore chose not to comment on or evaluate specific legislation. Instead, he confined himself "to scholarship, not public advocacy." This was made easier, he recollects, by the fact that 1963 was a "trough" in the Medicare debate. Discussions of government insurance figure more prominently in Arrow's replies (1965, 1968) to comments on the original article by Dennis Lees and Robert Rice (1965) and Mark Pauly (1968).

The Role of Economic Theory and Information

While the survey elements of the 1963 article are important, Arrow's lasting contribution was his theoretical insights regarding the economics of uncertainty. His use of the term "uncertainty" is itself a complicated matter, embracing not only insurance and underlying issues of risk but also differential or asymmetric information. The challenge undertaken in his article was to make economic sense of behavior in medical markets that had to confront and work its way through multiple layers of uncertainty. The common thread for unraveling this puzzle was information—Arrow describes his approach as "a study of rational behavior in the presence of differential information."

Significantly, theorizing about medical markets led Arrow to appreciate the full importance of asymmetric information in economic relationships as a general matter. Arrow recalls a flash of insight that came to him while working on the economics of medical care as he traveled cross-country by train (his wife did not like for him to fly). Previously, Arrow had thought about information mainly as the "cost of sampling" in statistical analysis. There was little in the economics of information to draw upon in 1963. Arrow remembers that there had been some work on the economics of innovation, including work by Arrow himself, Richard Nelson (a contributor to this volume), and RAND (in a study of military information). Bell Labs had examined the economics of efficient sampling, specifically the trade-off between accuracy and cost in testing telephone circuit relays. Jacob Marschak had worked in the 1950s on a general theory of information that viewed information as an economic good and proposed a "team theory" of cooperative decision making. However, there was little understanding of market failure resulting from informational problems, and not until Arrow's study of health care had anyone connected the precursors of such a theory in a coherent fashion.

Kenneth Arrow has made many valuable contributions to economics, including his mathematical proofs of the existence of a general competitive equilibrium and his "impossibility theorem" governing problems of social choice. His work on information and uncertainty, while different in nature, is of equally lasting importance. In his autobiographical essay for *Lives of the Laureates*, Arrow contrasts his work on information with his other accomplishments. The significance of his insights on information, he observes, was not the production of a single well-defined theorem, but rather the introduction of "a point of view that has served to reorient economic theory" (Arrow 1995: 55).

IMPACT, CRITICS, AND CONTEMPORARY RELEVANCE OF THE ARTICLE

Impact of Arrow's Article

Although (because?) written by an outsider, it would be hard to identify a more seminal contribution to the health policy field—both inside and outside health economics—than Arrow's 1963 article. We have not done the comparative statistics, but with at least 675 citations to it from 1963 to 2000 by authors in a multitude of disciplines, our guess is that no other single article has entered the scholarly domain of health policy as deeply, pervasively, and persistently. Young entrants into the fields of health services research and health policy probably recognize Arrow's article more than any other published four decades, three decades, two decades, or perhaps even one decade ago—even if they have not seen it with their own eyes.

The citations to Arrow's 1963 article show both the reach it has achieved in scholarship and the significance of revisiting his analysis with a multidisciplinary perspective. Table 1 presents a disciplinary-based analysis of these citations. It compares the types of journals in which the referencing articles appeared for two different time periods: the first ten years following publication of Arrow's essay and the most recent ten years. Although inferences must be made cautiously given the substantial changes over forty years in the number and type of journals themselves, several features of these data are worth noting. First, to say that Arrow's contribution has endured in the literature is to be guilty of almost criminal understatement. Based on this compendium of articles, Arrow's essay was cited in 51 articles between 1963 and 1972, but in a whopping 282 articles between 1991 and 2000, a ratio of 5.53. Second, Arrow's work originally had greater significance for economics in the first decade (51 percent of the citations were in economics journals of various types) but became a focal point for the noneconomics world in the most recent decade (only 34 percent of the citing articles were in economics journals). As the number of citations grew in both economics and noneconomics settings, the major sources of change in the distribution of journals were the phenomenal escalation of citations reported in health policy

Table 1 Article Citations to Kenneth Arrow's "Uncertainty and the Welfare Economics of Medical Care" by Type of Journal

	PERIOD OF PUBLICATION				
	FIRST TEN YEARS (1963–1972)		MOST RECENT TEN YEARS (1991–2000)		Ratio—Last Ten Years to First Ten
Type of Journal	Number	Column (%)	Number	Column (%)	
Economics[a]	26	51	95	34	3.65
Noneconomics	25	49	187	66	7.48
Total	51	100	282	100	5.53
BREAKDOWN OF NONECONOMICS JOURNALS					
Insurance	3	6	11	4	3.67
Human resources/ industrial relations	3	6	3	1	1.00
Law[b]	6	12	26	9	4.33
Medical	3	6	48	17	16.00
Health policy[c]	2	4	52	18	26.00
Political science	1	2	0	0	—
Sociology	0	0	6	2	All
Other	7	14	41	14	5.85

Source: Tabulations based on information provided in Memo, Reference Department, University of Michigan Law Library, 7 July 2000.

[a]Includes health economics and law and economics journals.

[b]Does not include law and economics journals.

[c]Does not include health economics journals.

publications (twenty-six-fold) and medical publications (sixteen-fold). One may fairly suggest that in the 1960s and early 1970s, Arrow's analysis resonated most in one way or another in the combined domain of economics, insurance, and human resources and industrial relations (a total of 63 percent of the citations). In the 1990s, the shift was to the combination of economics, health policy, and medicine (69 percent of the citations).

We cannot assess from this simple numerical overview, however, how well understood, evaluated, or critiqued has been Arrow's investigation of health care, health care markets, and the health care system as a whole. Indeed, when we shared the results of the bibliographic search with Arrow, it was clear from his reaction that he himself had no idea just how much his article permeated not only the literature, but so many literatures. All we know from this numerical sum-

mary of the past nearly forty years is that there have been many individual uses made of Arrow's article, or at least passing references.

Two substantive strands of the article's impact deserve special mention because of their continued relevance to health policy and their more general importance to the economics of information and insurance. As discussed above, Arrow's article identified problems of asymmetric information in markets for both medical services and health insurance. With respect to the first set of informational problems, George Akerlof (1970) and Hayne Leland (1979) extended Arrow's analysis to explore the implications for product and service markets when sellers have information concerning product quality that buyers are incapable of verifying. For example, "lemons" can cause markets for used cars to collapse. With respect to the second set of informational problems, Arrow (1963: 964) had observed that if insurance markets are genuinely competitive, "insurance plans could arise which charged lower premiums to preferred risks and draw them off, leaving the plan which does not discriminate among risks with only an adverse selection of them." Michael Rothschild and Joseph Stiglitz (1976) used Arrow's work to explore the possible unraveling of competitive insurance markets when, as is often the case, buyers of insurance have better information concerning their own risk than insurers do.

Critics of the Article

Arrow has had his share of prominent critics. Perhaps the most controversial aspect of the 1963 article is the economic role that Arrow postulates for social institutions, including professional norms and ethics: "I propose here the view that, when the market fails to achieve an optimal state, society will, to some extent at least, recognize the gap, and nonmarket social institutions will arise attempting to bridge it" (947). Arrow reasons further that "the special structural characteristics of the medical-care market are largely attempts to overcome the lack of optimality due to the nonmarketability of the bearing of suitable risks and the imperfect marketability of information" (ibid.).

Arrow's contention is somewhat surprising, considering that a Nobel Prize–winning economist ultimately embraces nonmarket mechanisms as the antidote for market failure. Mark Pauly (1978: 29) was the first to question the "optimality-gap-filling" role of social institutions, because "we have no assurance that these characteristics really are attempts by politicians and medical trade associations to do what the welfare economists would suggest." Paul Starr (1982: 227) was also critical of Arrow's analysis: "The result is not so much to explain as to explain away the particular institutional structure medical care has assumed in the United States."

Professor Arrow was refreshingly open-minded when discussing these criticisms. He acknowledges that his discussion of professional norms as an opti-

mality-gap-filling mechanism was probably too functional and too formalistic. He also appreciates the need to incorporate interest group theory into the analysis of nonmarket institutions. Nevertheless, he still believes that the existence of market failures helps predict where nonmarket institutions are likely to take root and that such failures give these institutions political legitimacy in the first instance. He defends this proposition as an important conjecture, not as a proof in itself. Obviously, he admits, there should be fuller explanations for why particular norms emerge, what they do, and why they persist. This echoes the reasons he provided in 1963 for rejecting the special interest, rent-seeking explanations for professional licensing in favor of his own more nuanced story about information and uncertainty. "I think this explanation, which is perhaps the naive one, is much more tenable than any idea of monopoly seeking to increase incomes. No doubt restriction on entry is desirable from the point of view of the existing physicians, but the public pressure needed to achieve the restriction must come from deeper causes" (966).

Contemporary Relevance of the 1963 Article

Much has changed since the early 1960s. Despite the popular belief that the U.S. health care system is predominantly private and market based, health care markets operate in the shadow of substantial government regulation and sizable public investment. Some of the legislative and quasi-legislative developments that reshaped the health care system were in the wind when Arrow penned his article. In 1962 Congress passed substantial amendments to the Food, Drug and Cosmetic Act, requiring proof of drug efficacy and enacting stricter standards for drug approval. The World Health Organization issued the Helsinki Declaration in 1964, establishing international standards for medical experiments involving human subjects and furthering the causes of informed consent and patient autonomy. Perhaps most significantly, Medicare and Medicaid were passed in 1965, setting the stage not only for rapid increases in public financing of medical care, but also for extensive government regulation and the intense politicization of health care markets. Finally, on the journey from the preindustrial medicine of 1963 to today's managed care marketplace, one should not forget initiatives such as the National Health Resource Planning and Development Act of 1974, which relied on government planning instead of market competition as the preferred means of allocating health care resources.

Fundamental changes have also taken place in medical markets themselves. The evolution of health care markets provides clear evidence of the Coasian contestability of boundaries between markets, firms, and contracts. The study of health care is the study of a system undergoing continual change. Even the "managed care revolution" of the 1990s failed to produce a dominant Coasian unit for assessing interrelated health care markets, contracting processes, or the extent of

integration within health care firms. In Arrow's parlance, no stable equilibrium has yet been achieved.

This changing context again demonstrates the analytical value of Arrow's 1963 reference point. When one reads Arrow's article, one is struck by the "physician-centricity" of his analysis. Arrow may have overstated this point even in 1963, but it is clearly not an accurate description of contemporary health care markets. One of the most important developments in the past forty years has been the transition from a physician-based unit of production for medical services to an institution- or system-based unit of production. This is often, although not necessarily, associated with the rise of prepaid managed care. The ability to contrast contemporary markets with markets and institutions from a substantially different era helps to place many current problems into economic as well as historical perspective.

CONTENTS AND ORGANIZATION OF THE PRESENT VOLUME

Background, Theory, and Terminology

The essays in this volume actively engage Arrow's article from a modern perspective. In the process of discussing and commenting upon as well as writing the various contributions, the text of Arrow's article attained an almost talmudic significance for the contributors herein. Accordingly, the presentation begins with a reproduction of Arrow's masterpiece in its original form, with marginal annotations to pertinent essays in this book. For those who have never read Arrow's article, this provides a wonderful opportunity to become acquainted with a classic of health economics. To those who have encountered the article at various points in their professional careers, it offers a chance to reexplore both the text itself and one's original reactions to it. During our deliberations, we discovered that each contributor entered the process with distinctly different memories of the article's principal claims. Discussion revealed that mistaken recollections were often held as strongly as accurate ones. Moreover, participants were uniformly struck by how much more was in the article than they had remembered and how well the text stands up not only to time, but also to repeated examination.

Methodologically, Arrow approaches health care markets through the lens of welfare economics and general equilibrium theory, employing a set of economic tools that seeks to understand the simultaneous interaction of markets and the role that prices play in allocating resources among them. The enduring contributions of the article flow primarily out of Arrow's attempt to reconcile the institutional idiosyncrasies of health care markets with the theoretical predictions of welfare economics. Approaching the problem in any other manner would have failed to produce the same insights. For noneconomists, Arrow's condensed

summary of these topics may make for difficult reading, but the payoff is well worth the effort. Some assistance is available from Uwe Reinhardt's and Michael Chernew's essays in this volume, the latter of which also looks at health care markets from a general equilibrium perspective and provides a useful introduction to these theories.

Terminology also presents a challenge. As suggested earlier, Arrow uses the term "uncertainty" in holistic fashion, grouping under a common label notions of risk, insurance, and imperfect information. Other economists, both before and after 1963, segment Arrow's notion of uncertainty into component parts (Knight 1921: 233). Some theorists try to distinguish a notion of "risk," where the probability distributions associated with particular outcomes are known, from a notion of "uncertainty," where such probability distributions are unknown. This can lead, for example, to an analysis of why particular events are or are not insurable. Other theorists focus on the informational dimensions of uncertainty. Analyses of asymmetric information can lead either to discussions of quality deterioration or to discussions of agency, delegation, trust, and monitoring. Alternatively, one can view information as a commodity in itself. This can lead to discussions of the conditions that determine whether information will be privately produced or should be treated as a public good and of interventions such as credentialing and accreditation as means of supplying information to the market. Finally, medical uncertainty can have a technological or scientific component. If uncertainty is understood as the absence of knowledge, the prevailing level of uncertainty depends in part on the potential for innovation. In our discussions, Professor Arrow resisted efforts to overcompartmentalize the notion of uncertainty, often seeing more interconnections than differences in these distinctions. In the end, contributors to this volume were simply asked to use the terms *uncertainty*, *risk*, *insurance*, and *asymmetric information* in as self-conscious and consistent a manner as possible.

THEMES AND ISSUES EXAMINED IN THE ESSAYS

Contributors to this book struggle with a wide range of contemporary health care concerns. Professor Arrow's article provides a common backdrop to each essay, but each author uses the article differently in his or her attempt to explain the changes that have taken place in medical markets since 1963. Contributors come from diverse backgrounds—economists, health care providers, political scientists, journalists, and lawyers. In fact, the diffuse nature of current health policy studies is reflected in the departmental affiliations of the authors: medical schools, schools of public health, schools of public policy, law schools, business schools, and special programs designed for the study of health policy as well as traditional economics departments.

Some essays examine matters of perennial concern, such as the role of the consumer, the composition of the health care workforce, the nature of insurance markets, the importance of nonprofit institutions, and the impact of medical technology. In addition, there are thoughtful discussions of shifting attitudes toward government regulation and a succinct explanation of how antitrust enforcement helped facilitate the rise of modem health care markets. While systems of prepayment constituted an interesting subnarrative for Arrow's article, the rise of managed care and the backlash against it are the dominant stories of today. Essays discuss the evolution of provider compensation arrangements, assess the extent and character of informational asymmetry, and examine the awkward role that financial intermediaries play as multiple agents in markets with divided loyalties. There are also essays addressing issues often overlooked in literature, such as the role that capital markets have played in restructuring the health care system and the "lawyerization" of medicine since 1963. Importantly, critical voices are also heard, openly questioning claims in the 1963 article, pointing out omissions, and challenging the ways in which the article has been used and interpreted since its publication. Finally, there are a number of essays discussing Arrow's treatment of professional norms and social institutions, evaluating their efficiency attributes, examining the continued role of trust in the provision of medical services, and exploring the loss of faith in professional institutions as a source of political authority and legitimacy.

Kenneth Arrow is given the first and last word. He is given the first word by including here the full text of his 1963 article. He is given the last word, and an opportunity to explore the health care markets of a new millennium, in his own concluding essay. As readers will attest, time has not dimmed Professor Arrow's intellect. Nor has it diminished his good nature and generosity. We are deeply grateful for his interest in this project and for his contribution to this collection.

Arrow's article and this collection of essays should be of interest to anyone concerned about health care and health policy. We have designed this collection to be useful and provocative for the most seasoned health policy professional as well as for those just beginning to understand the puzzles presented by health care markets. In doing so, we have adopted an interdisciplinary approach that seeks to transcend unhelpful distinctions between economists and noneconomists or between those who generally trust and those who generally mistrust markets. Because it pays attention to both the functioning of medical markets and the role of social institutions, norms, and ethics, Arrow's article is a potential source of information and inspiration for partisans of all stripes and for noncombatants as well.

Our privileged opportunity to produce this volume did not happen by accident. A confluence of resources, intellectual infrastructure, spirited determina-

tion, and goodwill among many people has made this book possible, as well as the special issue of the *Journal of Health Politics, Policy and Law* on which it is based. First came, as noted earlier, the fertilization of the ground by the Robert Wood Johnson Foundation's Investigator Awards in Health Policy Research program. The Investigator Awards program office, represented initially by Alvin Tarlov and Barbara Krimgold (who nurtured us all with special care) and now by David Mechanic and Lynn Rogut as the program's director and deputy director, afforded the opportunity, with no limit of encouragement, for the emerging group.

The Robert Wood Johnson Foundation provided additional direct assistance for the project. A grant from the foundation to the *Journal of Health Politics, Policy and Law* made it possible for a significant number of the authors to meet repeatedly to discuss outlines of proposed articles and early drafts. It also facilitated the luncheon meeting and afternoon session that we held with Kenneth Arrow at Stanford University to discuss the origins of the project, learn the history of his 1963 article, and make arrangements for his participation. We are all enormously grateful that Professor Arrow not only shared the historical background on the article, but so generously gave of his time, actively participated in the project, and contributed the closing essay.

Others warrant special mention as well. We are delighted that Mark Pauly, who more than thirty years ago as an assistant professor of economics at Northwestern University was one of the first scholars to engage formally the arguments made by Arrow, wrote the foreword. We are especially pleased, too, that Victor Fuchs—long-time friend and Stanford colleague of Kenneth Arrow, former president of the American Economic Association, and a leading health economist—contributed the preface to this book. At Peter Hammer's request, Nancy Vettorello, reference librarian at the University of Michigan Law Library, compiled the bibliography of citations to Arrow's article that gave concrete indication of its wide impact, permitted us to convey that evidence to Arrow, and made possible our calculations in table 1. As always, the production staff at Duke University Press recognized a good opportunity for the health policy field and energetically did everything possible to move what became a monster-sized project through the pipeline, without complaint. The same needs to be said of Byerly Woodward, then managing editor of *JHPPL*, who with enthusiasm for the project put in decidedly extra-long hours to take us from the disparate final drafts of the twenty-five essays—some on schedule, some not—to a whole, copyedited issue, and now to this edited book. The special issue became this edited volume thanks to the tremendous enthusiasm and support, as well as felicitous action, of Raphael Allen, editor in the books division of Duke University Press. We are also grateful that the *American Economic Review* so swiftly and graciously granted permission for us to reprint Arrow's original article. Thanks are owed, too, to Jennifer Colamonico, who with her usual professional skill made all the air travel

arrangements for our March 2001 meeting in North Carolina, and to Tami Cole, who so efficiently handled the other arrangements for the session. We are also grateful to Miryam Frieder for the hard work of compiling a comprehensive national mailing list of instructors in health economics and health policy courses, which helped to disseminate the original special journal issue.

Some forty years ago the Ford Foundation commissioned a creative and thoughtful theoretical economist to examine the economics of health. Today, with the assistance of myriad institutions and colleagues, the journey continues.

REFERENCES

Akerlof, G. A. 1970. The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics* 84(3): 488–500.

Arrow, K. J. 1963. Uncertainty and the Welfare Economics of Medical Care. *American Economic Review* 53(3): 941–73.

———. 1964. The Role of Securities in the Optimal Allocation of Risk-Bearing. *Review of Economic Studies* 31(2): 91–96.

———. 1965. Uncertainty and the Welfare Economics of Medical Care: Reply (The Implications of Transaction Costs and Adjustment Lags). *American Economic Review* 55(1–2): 154–58.

———. 1968. The Economics of Moral Hazard: Further Comment. *American Economic Review* 58(3): 537–38.

———. 1972a. Gifts and Exchanges. *Philosophy & Public Affairs* 1(4): 343–62.

———. 1972b. Social Responsibility and Economic Efficiency. *Public Policy* 21: 303–17.

———. 1974. Government Decision Making and the Preciousness of Life. In *Ethics of Health Care: Papers of the Conference on Health Care and Changing Values*, ed. L. R. Tancredi. Washington: Institute of Medicine.

———. 1995. Kenneth J. Arrow. In *Lives of the Laureates: Thirteen Nobel Economists*, ed. W. B. Breit and R. W. Spencer. Cambridge: MIT Press.

Brown, G. 1994. "Brand New '64 Dodge." *The Poet Game*. St. Paul: Red House Records.

Kessel, R. A. 1958. Price Discrimination in Medicine. *Journal of Law & Economics* 2(1): 20–53.

Klarman, H. E. 1965. *The Economics of Health*. New York: Columbia University Press.

Knight, F. H. 1921. *Risk, Uncertainty and Profit*. Chicago: University of Chicago Press.

Lees, D. S., and R. G. Rice. 1965. Uncertainty and the Welfare Economics of Medical Care: Comment. *American Economic Review* 55(1–2): 140–54.

Leland, H. E. 1979. Quacks, Lemons, and Licensing: A Theory of Minimum Quality Standards. *Journal of Political Economy* 87(6): 1328–46.

National Health Care Expenditures Projections Tables. 1998. Office of the Actuary, Health Care Financing Administration, Washington, September.

Pauly, M. V. 1968. The Economics of Moral Hazard: Comment. *American Economic Review* 58(3): 531–37.

———. 1978. Is Medical Care Different? In *Competition in the Health Care Sector: Past,*

Present, and Future: Proceedings of a Conference Sponsored by the Bureau of Economics, Federal Trade Commission, March 1978, ed. W. Greenberg. Germantown, Md.: Aspen Systems.

Peterson, Mark A., ed. 1998. *Healthy Markets? The New Competition in Medical Care*. Durham: Duke University Press.

Robinson, M. A. 1965. Foreword to *The Economics of Health*, by H. E. Klarman. New York: Columbia University Press.

Rothschild, M., and J. Stiglitz. 1976. Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information. *Quarterly Journal of Economics* 90(4): 629–49.

Starr, P. 1982. *The Social Transformation of American Medicine*. New York: Basic Books.