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“Utility and Welfare II: Modern Economic Alternatives” by Frank Ackerman

The inequality between the rich and the poor is not primarily a matter of utility, or who *feels* what, but one of who *owns* what. There is no obvious reason why abstaining from interpersonal comparisons of utility must have the effect of making it impossible to consider economic inequality in social welfare judgments.

—Amartya Sen¹

At the beginning of the 20th century, economic theory as expounded by Alfred Marshall offered definite, if at times arbitrary or merely pragmatic, judgments on numerous immediate issues affecting social welfare. At the end of the century, the mainstream of economic theory has become rigorous and elegant in its logic, but indecisive as to the welfare implications of most actual policies. Several interesting alternative interpretations have been proposed, but remain controversial; as Sen suggests, there are many possible bases for welfare judgments, beyond the narrow focus on individual utility that is enshrined in neoclassical economics.

This overview offers a necessarily selective treatment of 20th-century developments in the economics of welfare and well-being. It begins with an exploration of the “ordinalist revolution” of the 1930s, followed by a look at Keynes’ philosophy. Subsequent sections address the early development of welfare economics and its contradictions and the theory of social choice that emerged in the wake of Arrow’s “impossibility theorem.” The final section examines two contemporary alternatives that are somewhat independent of the discussion of social choice. Further applications of welfare economics to problems of externalities, valuation, and cost-benefit analysis are the subject of Part IV of this volume.

ACCENTUATING THE POSITIVISTS

Two crucial episodes in the history of neoclassical theory are often referred to as “revolutions” within economics. First, the marginalist revolution (see Part II) introduced the assumption that consumers seek to maximize utility, just as firms seek to maximize profits. Values and prices were based on marginal utility, allowing an increasingly mathematical method of analysis. The marginal utility approach was developed in the 1870s and had become widely accepted by the 1890s. The second upheaval, the ordinalist revolution of the 1930s, declared that it was neither necessary nor possible to make interpersonal comparisons of utility, nor even to assign cardinal numbers to utility. All that was needed for economic theory was an ordinal ranking expressing each consumer’s preferences.

The first article summarized here, by Robert Cooter and Peter Rappoport, focuses on the change in welfare economics wrought by the second revolution. In the decades of the interregnum--after marginalism but before ordinalism--economics, at least in England, was dominated by what Cooter and Rappoport call the “material welfare” school of Marshall, Arthur Pigou, and others. This school maintained that there were both material and nonmaterial aspects of welfare; economics dealt with the former, though fortunately the two were usually positively correlated. People were assumed to be similar enough in their basic needs that the average utility experienced by large groups, such as the rich and the poor, could be meaningfully compared. This assumption, combined with the declining marginal utility of money, led to an argument for redistribution toward the poor so long as it did not interfere with economic growth.

Although the material welfare school was a British phenomenon, there were other early neoclassical economists who held related views. In France, Leon Walras, who founded the axiomatic mathematical analysis of competitive equilibrium, drew a sharp distinction between the “applied economics” of the market and the “social economics” that should govern questions of equity and public policy. His ideal was a market socialist society in which the state would own and sell natural resources, using the revenues to finance public goods.² In Sweden, Knut Wicksell developed a widely discussed critique of the theory that free trade and competition necessarily lead to social harmony. Competition maximizes the value of output, but this does not maximize social welfare unless every individual has the same marginal utility of money, which Wicksell thought unlikely in a world of unequal incomes. Such comparisons of utilities, for Wicksell, provided the “material basis for the idea of *justice*, whether in government or in social distribution.”³

An opposing, “ordinalist” view of utility could be seen as early as W. Stanley Jevons’s writings in the 1870s and was further developed in the work of Irving Fisher and Pareto in the 1890s and early 1900s. Similar perspectives appeared in the Austrian School of economics (including Austrian, German, and central European authors, largely writing in German) in the early decades of the 20th century.⁴ The ordinalists doubted that utility could be measured or compared and emphasized the unpredictable diversity of individual desires rather than the commonality of basic needs. Most important of all, they demonstrated that the technical theory of consumer behavior could be developed without cardinal measurement or interpersonal comparison of utility. When Lionel Robbins reiterated these views in the 1930s, he was soon joined by John Hicks and other leading economists, and ordinalism quickly triumphed.

Cooter and Rappoport emphasize that the ordinalist revolution was not simply scientific progress, but a difference in values on such questions as the importance of equity and the nature of human needs. In some cases, differences in values implied political differences: while Marshall and Pigou were optimistic liberal reformers, Pareto was an affluent aristocrat who believed that substantial inequality was inevitable and cynically dismissed democratic politics as a fraud--and was made an honorary member of the Italian Senate under Mussolini.⁵ However, ordinalism was not primarily a political movement, and its adherents certainly did not all share Pareto’s extreme opinions.

The abruptness of the shift within the economics profession remains somewhat of a mystery. Why did ordinalism attract only a minority when it was first articulated, but rapidly convert the majority of economists when it was restated in the 1930s? Understanding this paradigm shift is of continuing relevance to contemporary economics, since most economists still work within the ordinalist framework described by Cooter and Rappoport.

Ordinalism succeeded in the 1930s in part because it resonated with other intellectual rhythms of the era. Logical positivism was becoming fashionable in philosophy; this perspective treats all value judgments as subjective expressions of attitude that have no place in science, and calls for a positive, or nonnormative, scientific discourse consisting of empirically falsifiable theories and collections of data. Similarly, psychology was turning toward behaviorism, attempting to eliminate discussion of motivations and mental states in order to create a “hard science” of observable behavior. Behaviorist psychology provided a critique of both the hedonism implicit in simple versions of utilitarianism, and the somewhat ad hoc, introspective discussion of human nature employed by the material welfare school. Both positivism and behaviorism have lived on in economics, long after they have fallen from favor in the disciplines which gave rise to them.⁶

This explanation, however, only pushes the question back to a deeper level. Where did the intellectual fashions of the 1930s come from? More broadly and tentatively speaking, the rise of ordinalism, behaviorism, and logical positivism could be associated with the social context of the decade. It was a time of economic crisis, and political and cultural conflict. The wounds of the last great war were hardly healed, and the warnings of the next one were increasingly evident. Traditional liberalism did not flourish in such an era; instead, there was a search for fundamental alternatives. The leading philosophies of the day were logical positivism, which rejected most past philosophical discussion in the name of science; Marxism, which called for sweeping social change; and existentialism, which, at least in some versions, began from the premise of the apparent absurdity of human existence.⁷

In this dark and despairing context, one of the few bright intellectual stars was the recent advance of physics. Using a difficult, technical discourse that defied common sense, intuitive comprehension, both relativity and quantum mechanics had made huge strides in understanding physical reality in the early 20th century. Thus it was not surprising that attempts to imitate the formal, objective methods of science were attractive to scholars in many fields. Logical positivism presumed that natural sciences and mathematics had a privileged, closer relationship to reality than other modes of discourse. Behaviorism sought to bring the same rigorous objectivity to psychology--as did ordinalism in economics.

Turning from the historical context to the content of ordinalism, the new theory's success in driving overt value judgments out of economics can also be traced in part to a weakness of the material welfare school. As Marshall acknowledged, his “higher,” nonmaterial values were not amenable to systematic analysis, and thus could not be rigorously addressed within his economic theory. The eclectic versions of utilitarianism and reformist politics developed by Marshall, like the views of Mill before him, or the socialist visions of Walras, were all too easily detached from the technical aspects of the same authors' economics. Later writers seeking to introduce ethical

concerns into economics have generally attempted to create a tighter connection between moral and technical analyses.

A MACROECONOMIC INTERLUDE

The most influential book written about economics in the 1930s (and one of the top contenders of all times) had nothing to do with the ordinalist controversy, pro or con. It had a direct relationship, however, to the economic crisis and depression of the day. In *The General Theory of Interest, Employment, and Money*, John Maynard Keynes returned to the broad macroeconomic scope of classical economics, though not to its analytical framework, to produce a novel understanding of aggregate demand, employment, and growth. In the article summarized here, Rod O'Donnell describes the moral and political philosophy within which Keynes developed his economic theories.⁸

Keynes can be viewed as the last in a series of great economists who posed the goal of an ideal future society, in which affluence will allow the development of more ethical behavior and less selfish character traits, replacing the competitive, acquisitive individualism fostered by the market and the regime of scarcity. Mill, Marshall, and Marx, among others, described similarly sharp dichotomies between present and future conditions. Yet none, aside from Marx, were able to integrate the pursuit of the future goals into the analysis of the economy of their times. Keynes' ironic comment (quoted by O'Donnell) on the need to pretend "that fair is foul and foul is fair" to continue capital accumulation only underscores the separation between ultimate ethics and immediate economics.

If Keynes's philosophy were better known, he might also be remembered as one of the first economists to reject all forms of utilitarianism and to begin the exploration of other bases for welfare judgments. As O'Donnell makes clear, Keynes had a detailed conception of the good life and viewed economic and political rights and institutions as means for achieving the good rather than as ends in themselves. That is, his philosophy was consequentialist, since he judged actions and policies solely in terms of their outcomes; but it was also nonutilitarian, since he rejected subjective utility as a measure of the goodness of outcomes. Although Keynes's conception of the good bears traces of the cultural elitism of his class and his times, it also has many aspects of more enduring value. Beneath the differences in style and presentation, there are striking similarities to the contemporary non-utilitarian, consequentialist philosophy of Amartya Sen.

WELFARE ECONOMICS: BORNE IN CRISIS

Despite his central role in macroeconomics, Keynes's philosophy had no noticeable impact on neoclassical theory and its approach to welfare. Rather, in the 1930s the ordinalist revolution caused a protracted crisis in the newly emerging field of welfare economics. In the heyday of Marshall and Pigou, there had been no great difficulty in making welfare judgments.⁹ Intervention in the market could be justified when material and nonmaterial aspects of welfare clashed, when extreme poverty prevented the satisfaction of basic needs, or when externalities or other market failures interfered with the efficiency of competition. There was, as Wicksell put it, a material basis for the idea of justice.

Once the ordinalist objection to welfare comparisons was adopted, however, it was difficult to draw meaningful conclusions about social welfare. The review article by Peter Jackson, summarized here, describes the resulting dilemmas. The sole criterion that ordinalism seemed to allow, advocacy of Pareto-optimal improvements, was ludicrously weak, saying essentially that any policy favored by an unopposed consensus should be adopted or that no valuable resource should be wasted. Two parallel lines of development ensued: the search for more substantial welfare criteria that were compatible with ordinalism, and the formalization of the analysis of general equilibrium and its welfare implications.

The search for new welfare criteria led first to several compensation principles, and the idea of potential Pareto improvements: was a policy desirable if the winners could *potentially* compensate the losers? This foundered both on technical objections, described by Jackson, and on the ethical objection that, if, for example, the winners are rich and the losers are poor, a potential Pareto improvement may not be desirable unless the potential compensation is actually paid--and if compensation is paid, the change is an actual Pareto improvement, so no new principle is needed. Stepping back from the debate over compensation principles, some economists proposed the creation of a social welfare function that would aggregate individual preferences into society's preferences. Hopes for this approach were destroyed by Arrow's impossibility theorem, discussed in the next section.

Meanwhile, the theory of the ideal competitive market became increasingly formal and axiomatic, building on Walras' technical work (while ignoring his social vision). The same behaviorist and positivist impulses that contributed to the rise of ordinalism soon led on to the elimination of all utility functions, ordinal or otherwise. Samuelson's theory of revealed preference asserted that consumers' preferences were revealed by their behavior and that no additional knowledge about utility was needed; economic theory required only that consumers obey a few mild assumptions of rationality. Two problems with revealed preference were noted by Joan Robinson, in the essay summarized in Part II. First, despite its apparent behaviorism, a theory based on revealed preference cannot escape the value-laden and controversial assumption that all revealed preferences should be satisfied. Second, removing all reference to utility furthers the tendency to slip from maximizing individual well-being to maximizing money incomes--making it impossible to assess whether these two concepts coincide.

The pinnacle of formalization was reached by Kenneth Arrow and Gerard Debreu in the 1950s, in their proofs of what have become known as the first and second fundamental theorems of welfare economics. First, under a lengthy set of restrictive assumptions, every general equilibrium in a perfectly competitive economy is a Pareto optimum; second, under another set of assumptions, every Pareto optimum is the equilibrium that would be reached by the market, starting from some appropriately chosen initial distribution of resources. These are the mathematical statements of Adam Smith's optimistic vision of the invisible hand, allowing economists to treat the concepts of efficiency, competition, and Pareto optimality as virtually synonymous with each other.

The two theorems provide an interesting illumination of the abstract mathematical structure of neoclassical theory. However, the required assumptions never come close to being satisfied, so neither theorem is necessarily applicable to the real world. (Positivist philosophy,

still accepted by many economists, accords little merit to untestable statements such as, “Under the following unattainable conditions, an ideal result would be observed.”) Trying to overcome this problem, some economists have suggested that potential competition, or contestable markets, are as good as actual competition for the purposes of theory. This suggestion is rejected by Jackson and by Joseph Stiglitz in another article summarized here.

Stiglitz starts from the “Keynesian” position of acknowledging the existence of persistent unemployment. If significant unemployment exists in reality, then a theory that deduces the existence of full-employment equilibrium must be mistaken in at least one of its assumptions. Stiglitz identifies a broad category of problems of imperfect information and incomplete markets, which are sufficient to undermine the existence and/or optimality of market equilibrium. If market outcomes are not reliably optimal, the Keynesian presumption in favor of government intervention becomes justifiable; practicing what he preaches, Stiglitz himself was appointed to the Clinton administration’s Council of Economic Advisors.

SOCIAL CHOICE: WELFARE AFTER ARROW’S THEOREM

The most promising direction for the reconstruction of welfare economics after the ordinalist revolution seemed to be the creation of a social welfare function expressing society’s welfare judgments. Before ordinalism, the “social welfare function” was, in principle, the sum of every individual’s utility; although no such function was in fact ever calculated, many versions of utilitarianism imply that it should be possible. After ordinalism, both Abram Bergson and Paul Samuelson separately proposed that some unspecified method of aggregation of individuals’ (ordinal, noncomparable) preferences could still lead to a function expressing society’s judgments. In 1951, Arrow proved that they were wrong. Using just a few innocuous-sounding assumptions, he demonstrated that any logically consistent social welfare function is dictatorial--that is, there is a single individual whose preferences prevail in every situation, even when all other individuals have opposing preferences. The article by Peter Hammond, summarized here, explores the assumptions used in Arrow’s theorem and the subsequent debate over potential modifications of these assumptions. Arrow’s conclusion has proved remarkably robust; as Hammond shows, changes in the assumptions that eliminate the paradox often do violence to the concept of the social welfare function as well.

In the wake of Arrow’s theorem, a new approach to the problems of welfare economics has emerged. Social choice theory examines the manner in which individual choices, preferences, and well-being should enter into social judgments and decisions about economic matters. It has coincided with the appearance of new philosophical discussion of ethics, equity, and economics (see Part VII), and has led to syntheses of the approaches of economists and philosophers. Many authors have tried to expand the subject matter of welfare economics to include other criteria besides efficiency and Pareto optimality. To illustrate the importance of going beyond efficiency criteria, Coles and Hammond argue that there is no reason in theory to assume that all economic agents have the ability to survive from one period to the next; a market equilibrium can still be Pareto-optimal even if some individuals die of starvation, while others have more than enough resources to save them.¹⁰

No author has been as important to the development of social choice theory as Amartya Sen.¹¹ He was a leading participant in the initial discussions of modifications of Arrow’s

theorem and has produced a new, simplified proof of the theorem that makes its logic more transparent. He has also offered what is perhaps the most insightful interpretation of the Arrow paradox.

Sen attributes the impossibility of a nondictatorial social welfare function to the impoverished informational base allowed by Arrow's assumptions: neither interpersonal comparison nor nonutility information of any sort is allowed. Real decisions are rarely made on such a narrow basis; using only the tools allowed in Arrow's proof, one cannot solve a mundane problem such as the right way to divide a cake among three people. The solutions offered by common sense, either that equal slices are fair or that the hungriest person should get the most, are excluded, one for using nonutility standards of fairness, and the other for making interpersonal comparisons of hunger. (Note that majority rule is ethically unattractive here: two people could agree to vote that they should each get half, and the third person none.)

Similarly, Sen has argued that utility, or preference satisfaction, alone is an inadequate basis for social choice. His "Paretian liberal" paradox illustrates this point, showing that Pareto optimality is incompatible with even an extremely minimal interpretation of individual rights. Paradoxes seem to be easier to create than to resolve in social choice theory. The article by Pattanaik, summarized here, reviews the Paretian liberal paradox, and a related formulation by Gibbard that also finds a conflict between efficiency and individual rights. Pattanaik is skeptical of Sen's own preferred resolution, as well as many others that have been proposed; Sen's paradox, like Arrow's, has proved to be quite robust.

Thus it appears that there is a deep conflict between efficiency (defined as Pareto-optimal satisfaction of individual preferences) and liberty (i.e., respect for a sphere of individual rights), in which economists have traditionally favored the former alternative. Equally problematical, however, is the opposite extreme, as seen in the writings of libertarians such as Nozick. While libertarians claim to evaluate actions purely in terms of processes and rights, Sen points out that Nozick makes an exception for actions with "catastrophic" outcomes –and, therefore, is not able to ignore the consequences of actions altogether. Indeed, a (nonlibertarian) decision rule is needed to determine when outcomes are so catastrophic that consequentialist standards must be invoked.¹²

Sen's own philosophy is at least partly consequentialist, judging actions in terms of their outcomes; it is also decidedly nonutilitarian, relying extensively on information other than utility or expressed preferences for the evaluation of outcomes. His concept of human capabilities and functionings (see David A. Crocker's summary in Part VIII) is an ingenious attempt to combine the best of several worlds, including certain types of objective outcomes, subjective experiences, and process standards. Sen's ethical standards for judging economic actions and policies have frequently been elaborated in the course of discussions of poverty and development and will be addressed in Part VIII.

Social choice theory has generated debates that are lively and accessible, but has failed to reach a consensus on most points. An ever-expanding amount is known about social decision rules and procedures that do not make sense, and should not be adopted; little has been settled about what should be done instead. A decision rule that is applicable to all possible sets of individual preferences (Hammond notes Arrow's suggestion that such a rule could be called a

constitution rather than a social welfare function) seems all but guaranteed to produce paradoxical results when applied to some particular set of preferences. As a result of these discussions, communication between certain subsets of economists and philosophers has been vastly improved; social choice theory may have had more impact on philosophy than on economics to date. As we will see in Part IV, the application of welfare economics to policy problems in the form of cost-benefit analysis proceeds by ignoring most of the dilemmas that have been raised by theoreticians since the ordinalist revolution. Yet the issues raised by Sen and other social choice theorists should be central to a reconstruction of the economics of social welfare and individual well-being.

TWO ALTERNATIVE THEORIES

Social choice theory encompasses many, but not all, of the alternative approaches to the problems of welfare economics. Two very different alternatives are examined in the last two summaries included here.

Like a duckling that “imprints” on its mother when it comes out of the shell, neoclassical economics may be inseparable from utilitarianism--the philosophy that was present at the birth of marginal utility theory. John Harsanyi has been working for years to produce a revised, modernized utilitarianism that overcomes the objections to earlier variants. The publication summarized here is one of his most recent and comprehensive; similar themes are expressed in many of his other writings.

Harsanyi derives the existence of cardinal utility functions from the work of von Neumann and Morgenstern, the founders of game theory. Anyone who responds rationally to lotteries has, in effect, a cardinal utility function.¹³ Then Harsanyi (like Sen) appeals to the common-sense belief that people’s experiences and satisfactions are comparable. The combination of these two principles appears to be enough to overturn ordinalism and allow a restoration of the earlier, unproblematical approach to welfare economics. The social choice paradoxes due to Arrow, Sen, and others would be immediately resolved if it were possible to determine social welfare by adding individual utility levels. Sen’s cake would be divided among the three people in the manner that maximizes their joint satisfaction.

Harsanyi is not, however, merely reviving the utilitarianism of the past. He argues for “rule utilitarianism,” in which utilitarian calculations determine the choice of society’s moral rules, rather than “act utilitarianism” with its impossible burden of evaluation of the social utility of every action. Nor are all preferences created equal in Harsanyi’s theory. Only well-informed preferences are counted; more surprisingly, only self-directed preferences are counted in the calculation of the social welfare function. While these modifications are motivated by philosophical debates and objections raised by critics, their effect is to make Harsanyi’s utilitarianism less transparent. No simple summation of individual preferences is involved; rather, Harsanyi derives a complex social decision rule, growing out of the utilitarian tradition. A cake should be divided in accordance with moral principles that maximize utility in general, not necessarily on the basis of the actual utility of eating a particular cake today.

Harsanyi is not completely alone in proposing a return to an updated utilitarianism. Bernard van Praag, a Dutch economist working in the same framework, has attempted empirical

measurement of the utility of income and finds considerable interpersonal consistency in the responses to his surveys.¹⁴ Game theorists are frequently drawn to the von Neumann-Morgenstern approach to utility functions; some work in game theory could even be seen as suggesting a trial and error model for rule-utilitarian creation of social norms.¹⁵ Support for utilitarianism, however, is restricted to a small minority of contemporary economists.

A different minority of economists has objected to conventional welfare economics on the grounds that preferences are in part endogenous results of economic activity, and thus it is logically circular to use satisfaction of preferences as a standard for welfare judgments. E.J. Mishan's exhaustive survey of welfare economics in 1960 mentioned the complications caused by interdependent utility functions, as proposed by Duesenberry, as one of the unresolved problems in the field.¹⁶ A similar point was raised, from a somewhat different perspective, by neo-Marxist "radical economists" in the 1970s. Herbert Gintis argued that welfare economics was incomplete since it failed to recognize the influence of economic institutions on individual development, and hence on the formation of preferences.¹⁷ (See also the summary of Robert Frank's essay in Part V.)

The final summary is a later analysis that draws on and extends Gintis's approach. Robin Hahnel and Michael Albert offer a detailed critique and proposed reconstruction of welfare economics, including a remarkable mixture of social and philosophical discussion with intricate mathematical derivations. In the portion of their work summarized here, they develop a formal mathematical model, entirely within the spirit of neoclassical analysis, but assuming endogenous formation of preferences. They use the model to prove three types of results: first, endogenous preference formation leads to misestimation of the welfare effects of economic choices; second, under the usual assumptions of perfect competition plus endogenous preferences, the "fundamental theorems" of welfare economics still hold; and third, in the presence of market imperfections, endogenous preferences lead to increasing deviations from optimal outcomes over time.

The contrast between the second and third categories of results serves as a caution for interpretation of optimality theorems in general. Hahnel and Albert argue that endogenous preference formation alone does not destroy the optimality of competitive equilibria but renders that optimality unstable. Any deviation from ideal competitive conditions--and such deviations are sure to exist--leads to cumulatively greater departures from optimality.

Other work emerging from a similar perspective (increasingly shedding its former Marxist assumptions) stresses the significance of institutional inequalities of power, and conflict over market exchange relationships, as well as endogeneity of preferences.¹⁸ There are some points of overlap with the work of Stiglitz, as described above, and perhaps the potential for the development of a new paradigm in the future.

The discussion of social choice, and of other recent alternatives, embodies one clear improvement over the Marshallian welfare economics of a century ago: contemporary analyses bring ethical concerns, standards, and critiques into the heart of the theory, rather than leaving the pursuit of higher values to an unspecified point in the future. Yet there is nothing approaching unanimity among the alternatives explored here. Nor, unfortunately, has there been

much impact on the practices of mainstream economics. On the one hand, the theory of welfare economics has played a steadily decreasing role in textbooks and curricula in recent years. On the other hand, applied welfare economics, in the form of cost-benefit analyses, often make drastic simplifying assumptions that ignores the sophisticated debates, largely eliminating the ethical content and insights of the theory--as will be seen in Part IV.

Notes

1. Amartya Sen, "Social Choice and Justice: A Review Article," *Journal of Economic Literature* 23 (December 1985), 1764-1776; quote from 1768.
2. Much of Walras's writing on these issues has never been translated into English. See "The Perfect Socialist Society of Leon Walras," Chapter 6 of Ugo Pagano, *Work and Welfare in Economic Theory* (New York: Basil Blackwell, 1985).
3. Lars Pålsson Syll, "Wicksell on Harmony Economics: The Lausanne School vs. Wicksell," *Scandinavian Economic History Review* 41 (1993), 172-188; quote from Wicksell, 180.
4. The rise of ordinalism in the Austrian School is traced in Jack High and Howard Bloch, "On the History of Ordinal Utility Theory: 1900-1932," *History of Political Economy* 21 (1989), 351-365.
5. Everett J. Burt, Jr., *Social Perspectives in the History of Economic Theory* (New York: St. Martin's Press, 1972), 267-268.
6. On the influence of positivism, see John B. Davis, "Cooter and Rappoport on the Normative," *Economics and Philosophy* 6 (1990), 139-146. On behaviorism, see Shira B. Lewin, "Economics and Psychology: Lessons For Our Own Day From the Early Twentieth Century," *Journal of Economic Literature* 34 (September 1996), 1293-1323.
7. George Lichtheim, *Europe in the Twentieth Century* (New York: Praeger, 1972), especially Chapters 9 and 11.
8. See also S.A. Drakopoulos, "Keynes's Economic Thought and the Theory of Consumer Behavior," *Scottish Journal of Political Economy* 39 (August 1992), 318-336, summarized in the predecessor to this volume, *The Consumer Society*, eds. Goodwin, Ackerman, and Kiron (Washington, D.C.: Island Press, 1997).
9. On the greater flexibility of Marshall's welfare analyses, compared to the ordinalists, see P.L. Williams, "Marshallian Applied Welfare Economics: The Decline and Fall," *Economie Appliquée* 43 (1990), 231-245.
10. Jeffrey L. Coles and Peter Hammond, "Walrasian Equilibrium without Survival: Existence, Efficiency, and Remedial Policy", in *Choice, Welfare, and Development: A Festschrift in Honor of Amartya K. Sen*, eds. K. Basu, P. Pattanaik, and K. Suzumura (New York: Oxford University Press, 1995), 32-64.
11. Bibliographic review of Sen's contributions to social choice theory would be a substantial undertaking in itself. Many of his most important papers through about 1980 are collected in Amartya Sen, *Choice, Welfare and Measurement* (Cambridge, MA: MIT Press, 1982). His 1995 presidential address to the American Economics Association, "Rationality and Social Choice," *American Economic Review* 85 (March 1995), 1-24, is a valuable review article and contains citations of many of his other works.
12. Sen (1995), 12.
13. However, empirical work in psychology has often found that people do not respond rationally to lotteries; low-probability, high-payoff bets are frequently overvalued, for example. See Amos Tversky, Paul Slovic, and Daniel Kahneman, "The Causes of Preference Reversal," *American Economic Review* 80 (March 1990), 204-217.
14. Bernard M.S. van Praag, "Ordinal and Cardinal Utility," *Journal of Econometrics* 50 (1991), 69-89.
15. Ken Binmore and Larry Samuelson, "An Economist's Perspective on the Evolution of Norms", *Journal of Institutional and Theoretical Economics* 150 (1) (1994), 45-63.
16. E. J. Mishan, "A Survey of Welfare Economics, 1939-1959", *Economic Journal* 70 (1960), 197-256. On Duesenberry's model, see the discussion and summary in *The Consumer Society*, eds. Goodwin, Ackerman, and Kiron, Part V.
17. Herbert Gintis, "A Radical Analysis of Welfare Economics," *Quarterly Journal of Economics* 86 (November 1972), 572-599.
18. For example, see Samuel Bowles and Herbert Gintis, "The Revenge of Homo Economicus: Contested Exchange and the Revival of Political Economy," *Journal of Economic Perspectives* 7 (Winter 1993), 83-102.