definable) except the shared assumption of profit maximization in the choice of technique by capitalist firms. He goes on to urge that even utility maximization as a theory of the composition of output can be made compatible with any one of the three theoretical approaches.

For Marglin the important issues in this debate go deeper than the specification of the technology of production or the simple rationality of household or firm behavior. They have to do with the boundary conditions within which the capitalist economy operates, and in particular with the vision of the functioning of the labor market and of social saving (or as the classical economists put it, the accumulation process) at the heart of the three approaches. Without the assumption of full employment of an exogenously given labor force through variability of the real wage, the neoclassical proposition of equality of profit rate and marginal product of capital loses its significance as a determinant of the profit rate and thus of accumulation. Marglin finds strong reasons to think that the neo-Marxian and neo-Keynesian views, in which the labor force itself is an endogenous variable that responds to capital accumulation, come closer to the mark. He ends the book with a tour through the notoriously treacherous terrain of theories of saving and their empirical relevance. Here he runs into the same problems of measurement and interpretation of time series regressions that have dogged earlier investigators.

There are some important limitations to Marglin's discussion of these issues. The strategy of putting neo-Marxian and neo-Keynesian theories on an exactly symmetrical footing with neoclassical theory is brilliant pedagogy but inevitably does violence to the internal structure of the non-neoclassical approaches. For example, Marx' procedure of beginning with a value of labor power that reflects the historical development of production in a society and the current state of class struggle is not parallel to the neoclassical assumption of an exogenously given labor supply. The neo-Keynesian investment function has deeper roots in the theory of money, interest, and expectations than Marglin indicates, and this discussion suffers to some degree in comparison with his elegant derivation of the neoclassical savings function. His treatment of the labor theory of value follows Ricardian rather than Marxian lines, and thus his neo-Marxian theory is in fact a Ricardian surplus theory of profit. In his long and inconclusive investigation of alternative savings hypotheses, he seems to lose sight of his own main claim that the differences between the theories lie not so much in hypotheses about individual rationality as in the structure envisioned for the capitalist economy.

With judicious neglect of the Shandean digressions that mark this tome, it is an ideal text for graduate students of economic theory. In addition to introducing the most important deep questions of modern theory, it is a treasure trove of mathematical modeling techniques. Marglin explains his procedures with great care and clarity, and his orchestration of the basic mathematics of economic models reaches great heights of virtuosity and even beauty. The first four chapters taken alone constitute a self-contained exposition of basic theoretical issues, and these, together with the ninth through the eleventh chapters, a substantial course in capital, production and growth theory.

If economists on the various sides of the great divides that currently afflict economic theory will read this book, it can perhaps begin to provide the common ground for discussion that has eluded us.

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Game theory in the social sciences. Vol. 2. *A game-theoretic approach to political economy.* By MARTIN SHUBIK. Cambridge, MA and London: MIT Press, 1984. Pp. viii, 744. $47.50, ISBN 0-262-19219-5.

JEL 85-0361

This is an important book for two reasons: First of all, Martin Shubik has been at the center of game theoretic research in economics since its beginning. Hence, any volume which collects and organizes his classic work with Lloyd Shapley and more recently with Pradeep Dubey provides us with an important reference. In fact, (as reviewer) I feel more like an art critic reviewing a Picasso retrospective than an economist. The breadth and depth of this artist's work is impressive and it is informative to see it displayed in one place. Each piece puts the other in a context that makes the whole more coherent.

More importantly, however, this book clearly puts game theory in its proper context as a modeling tool for political economy broadly defined. From page one we are impressed with the fact that social phenomena are multifaceted, i.e., involve political, economic, sociological and psychological components, and that game theory provides the basis for tying all of these parts together. The way this is to be done is by a formal and rigorous modeling of the various institutions that we use to coordinate our lives. Throughout his career, Shubik has made it a point to make his models institutionally rich. His recent work on the role of financial institutions and his earlier work on oligopoly and the role of ownership in production clearly demonstrate this point. If one reads Von Neumann and Morgenstern and looks between the lines, it is clear that this is the role that game theory was meant to play. This book demonstrates how far game theory has come in fulfilling this mission and in doing so provides an overview of this approach. Furthermore, it allows us to better appreciate the current work being done in game theory and experimental economics, since much of that work is being done to evaluate existing and to design optimal social institutions. If we stand on the shoulders of giants then this giant volume (744 pages) will certainly allow us to see the future more clearly.

The book is divided into five sections. Section I presents some preliminaries about the role of money in economies and reviews some familiar material on preferences, Neumann-Morgenstern utilities, and the definition of commodities. Section II presents a detailed discussion of the problems involved in properly modeling the oligopoly problem, both in its open form (where demand is exogenously given and nonstrategic) and its closed form (where consumers are strategically alive). A consistent simple linear example is used to present the analysis throughout, but this is not a drawback if one is concerned primarily with modeling considerations. It is also interesting to note that Shubik consistently presents the cooperative analysis of the oligopoly problem by defining its characteristic function and then applying the various solution concepts. This is typically not done but it makes sense to do so if one treats the problem as one of cartel negotiation.

Section III deals with cooperative models of closed economic systems, i.e., the analysis of exchange models in characteristic function form. This section contains most of Shapley and Shubik's famous articles on the "assignment game" and their analysis of market games in general. In addition, a set of convergence results both for the core and the value are interspersed throughout the analysis.

Section IV deals with strategic models of closed economic systems. The roots of this work can be seen at the end of Section II where Shubik asks, "Can one embed the Cournot oligopoly model in a closed economic model either nonsymmetrically or symmetrically and obtain limit behavior (or continuum) results, linking the noncooperative with the competitive equilibria?" To do this properly, we must introduce money because it serves as a strategic decoupling devise, and Section IV reviews the work of Shapley and Shubik and Dubey, Mas-Colell, and Shubik on this problem.

Section VI deals with the problem of externalities and public goods. It also presents an extremely good view of what mathematical political economy (or mathematical institutional economics) should look like. It begins with an interesting and perhaps overlooked analysis of the effect of property institutions (i.e. feudalism, capitalism, cooperatives, etc.) on production and distribution. The analysis here is interesting since it demonstrates how specifying different social institutions can affect the characteristic function of society and hence its core and value. The problem of externalities and public goods is next discussed along with Shapley and Shubik's often used garbage game. Finally an analysis of voting, taxation and public goods prices is presented. Throughout the text, cross-references are given to the companion volume entitled *Game Theory and the Social Sciences* published in 1984. Together these two volumes constitute an encyclopedic (1258 pages) presentation of game theory and its applications. This is a truly impressive accomplishment.

In summation, I find this book to be extremely valuable—a useful guide to game theoretical approaches to a wide variety of economic problems, as well as a how-to-book on the art of game theoretic modeling. If one wanted to offer criticism one could say that some weeding of the material might be in order since 744 pages is a lot to handle, but if one believes in the free disposability axiom, this should not be a problem.

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030 HISTORY OF ECONOMIC THOUGHT; METHODOLOGY

The noble science of politics: A study in nineteenth-century intellectual history. By STEFAN COLLINI, DONALD WINCH AND JOHN BURROW. Cambridge, New York and Sydney: Cambridge University Press, 1983. Pp. x, 385. $49.50, cloth; $14.95, paper. ISBN 0–521–25762–X. *JEL 84–0983*

This book considers the history of the "aspiration to develop" a "science of politics" in the nineteenth century in Britain. It consists of a series of essays on particular topics, and does not attempt a comprehensive overview. As such it is largely concerned with the thought of political economists (Dugald Stewart, T. R. Malthus and David Ricardo, J. S. Mill, Walter Bagehot and Alfred Marshall each merit a chapter) insofar as they invested literary effort in attempts to devise a science of politics distinct from political economy. The authors describe this development as "annulling the long–established marriage between political economy and politics" (p. 69), and they trace the course of this annulment through Marshall into the early twentieth century, following the development of a distinct and professionalized political science.

Of particular interest is the essay on "Dugald Stewart and his Pupils" (Ch. I), which details the influence of Stewart on his students, many of whom became significant influences in Parliamentary and journalistic circles. While these students were decidedly lesser lights, collectively they played a significant role in the popularization of political economy in the first half of the nineteenth century, principally via the vehicle of the *Edinburgh Review.* Also of interest is the essay "A Separate Science: Polity and Society in Marshall's Economics" (Ch. X), which neatly encapsulates Marshall's views promoting economic imperialism, a comprehensive vision which "would have made economics the most general of the social sciences, perhaps even the only social science, thoroughly preempting in the process the conceptual space occupied by both sociology and political science" (p. 313). Rather than being a thematically consistent history of the emergence of a "science of politics" the various essays deal with diverse topics, including political philosophy, the methodology and philosophy of economics, and various more specialized topics (like the dynamics of the Malthus-Ricardo debate, detailed in Ch. II). Notwithstanding, most of this material is interesting and informative, although there is little that is new with respect to the life and writings of major figures; much of what *is* new concerns a variety of minor figures (e.g., Stewart, Bagehot, and Henry Sidgewick), and little of this holds much surprise. But all of these essays are examples of competent and meticulous scholarship, and the book does a good job of tracing the widening gulf between the study of politics and the study of the economy over the course of the nineteenth century.

Unfortunately, the authors have missed an important opportunity at a very early stage of their enterprise. The widening gulf itself constitutes an important problem in intellectual history. Why did a "science of politics" develop distinct from political economy during the nineteenth century? Most of the major contributions to this independent development were in fact political economists, as the text explains. Yet these writers persistently failed to extend the principles of economic analysis to the political process itself. This failure led Bagehot, as an exponent of the conventional view, to claim that political economy was "the science of business"; and caused writers like Cunningham to reject political economy altogether as irrelevant to understanding political affairs, which in fact it had become. The possibility of extending the principles of political economy to explain not only the consequences of political decisions that the political process itself was largely ignored throughout the nineteenth century.

The irrelevance of most of nineteenth century political economy to problems of non-