Introduction: Sociological and Economic Approaches to the Analysis of Social Structure[1]

Christopher Winship
Northwestern University

Sherwin Rosen
University of Chicago

In 1984, we were asked by Edward Laumann, then editor of the *American Journal of Sociology*, to edit a supplement issue of the *Journal* on sociology and economics. The increasing points of contact between the two disciplines made the idea attractive enough for us to propose some specific ideas for the issue. The proposal and the supplement that has resulted from it reflect our opinion that sociologists and economists can learn the most from each other by thinking about substantive issues of common concern, by keeping an open mind, and by seeing what points of view and evidence each discipline brings to bear on real problems. We wanted to avoid the tiresome and predictable methodological debates in which sociologists would stress the narrowness of economic models and question the validity of rationality assumptions, while economists would criticize sociological research for "measurement without theory."

Requiring papers to deal with substantive research topics rather than philosophical and methodological issues meant that papers could not be commissioned for this enterprise. Rather, we had to investigate whether there was enough research in progress of common interest to warrant a supplement. Thus, a call for papers was published in the *American Journal of Sociology* and the *Journal of Political Economy* indicating a number of general areas where we thought there might be potential for fruitful interaction. These included the analysis of labor markets, the family, education, mobility and occupational choices, fertility and demography, and the structure of organizations. We also welcomed work in any other complementary areas.

We did not prejudge the focus, if any, that the supplement should take. Still, we anticipated many submissions concerning economic and sociological approaches to the family. The modern research tradition in this

[1] Requests for reprints should be sent to Christopher Winship, Department of Sociology, Northwestern University, Evanston, Illinois 60201.

0002-9602/89/9407-0015$1.50

class of problems is much older in sociology and demography than in economics, and many of the statistical methods of cohort analysis have found increasing use in microeconometrics. The best-known single work on the family by an economist is Gary Becker's *Treatise on the Family* (1981), which has influenced a growing group of economists working on economic demography and allied problems. Economists also have devoted much attention to the economic connections between generations, including the analysis of cohort effects and imperfect substitution (Welch 1979) and the long-term prospects of social security systems (e.g., Lazear and Ricardo-Campbell 1988), as well as more emotional debates on the consequences of large budget deficits and the intergenerational burdens of our rising national debt. Sociologists and economists share many obvious concerns in understanding the intergenerational transmission mechanisms of inequality, occupation and educational attainment, discrimination and status (Blau and Duncan 1967; Jencks 1972; Sewell and Hauser 1975; Featherman and Hauser 1978; Hauser, Tsai, and Sewell 1983; Becker and Tomes 1979; Behreman, Pollak, and Taubman 1982; Freeman 1981). Although critiques of research in the economics of the family by sociologists have been published (Hannan 1982; MacRae 1983; Berk and Berk 1983), the relative scarcity of submissions suggests that currently there may be less work in this area than seems warranted by the importance of these problems to both fields.

We did receive, however, a large number of initial submissions concerning both economic and noneconomic organizations and institutions—so many in fact that we made a conscious decision to focus the supplement on these topics. This is not surprising in retrospect. Organizational behavior has always been an important subfield within sociology, and the analysis of economic institutions has been an area of particular interest recently (e.g., White 1981; Burt 1983; Stinchcombe 1983). In an earlier era, the institutional approach to labor relations had strong interactions with industrial sociology. The "new institutional economics" has revived interest in nonmarket organizations.

A considerable number of submissions came from business school faculty: four of the eight papers included have at least one author who is on a business school faculty, and five of the 12 authors are associated with business schools. Evidently, business schools provide a friendly environment for research on organizations from various points of view. As the papers selected for the issue exemplify, the content of submitted work included work not only on economic institutions but on other types of social structures as well, namely, Iannaccone's paper on church and sect, Camerer's paper on gift giving, Mortensen's analysis of marriage markets, and Coleman's paper on social capital. Thus, our supplement took

on the loosely organized theme of its subtitle: sociological and economic approaches to the analysis of social structure.

Economic analysis of institutions has gained increasing attention in several quarters. The work most familiar to sociologists is probably that of Oliver Williamson (1975, 1981, 1985), who has been instrumental in extending Ronald Coase's (1937) transactions-cost approach in several directions. This approach analyzes organizational structures as institutional responses for economizing on transactions costs in the presence of organization-specific capital. Other important contributors to this line of thought include Alchian and Demsetz (1972), Fama and Jensen (1983), Grossman and Hart (1987), and several others who organize their work around "property rights" ideas (Barney and Ouchi 1986). Parallel developments have occurred in economic history (see esp. North 1981), law and economics (Landes 1971; Posner 1981; Shavell 1984; Easterbrook and Fischel, in press), the economics of regulation (Stigler 1971), and the interactions between the economy and the state—the "new political economy" (Buchanan and Tullock 1962; Peltzman 1980; Olson 1982). Particularly these last areas have forged on-going links between economics and political science. Concepts and methods of both fields have been joined to analyze resource allocation through the political process (e.g., Ferejohn 1974; Fiorina 1974; Weingast and Moran 1983). The intense interest in all this work is in part propelled by its promise (far from fulfilled at present) of providing a theory of institutional change, a class of problems that has generally been ignored in economics since Marx. For the past decade, the comparative-historical approach in sociology has worked hard to resolve related issues of societal change from another perspective (see Tilly 1984, for an overview).

Perhaps the most complete theoretical analysis so far is principal and agent theory (Holmstrom 1979, 1982; Pratt and Zeckhauser 1985; Jensen and Mechling 1976; see Moe 1984, for a review). This theory generally deals with the "alignment" of incentives within a decentralized organization. Every organization must be partially decentralized to take advantage of the division of labor within it. How can contracts and institutions be structured so that individuals working in their own self-interests will also work in the collective interests of the organization as a whole? In the simplest cases, there are two actors: an "agent" who is hired by a "principal" to carry out a task on the principal's behalf because the agent has skills and information that are unavailable to the principal. Agency relationships are ubiquitous in economic life. Examples include employers and employees, teachers and students, doctors and patients, lawyers and clients, politicians and voters, managers and stockholders, to name only a few.

The theory analyzes contractual features and parameters that induce agents to work in the best interests of their principals. Optimal incentives for agents are created by finding schemes that impose full penalties for shirking and other forms of misbehavior, but this typically exposes agents to excessive risk of fluctuations in their incomes. The agent would be fully insured if earnings were independent of performance, but this has undesirable incentive properties because it does not penalize misbehavior and may encourage it. The solution represents a compromise between the two conflicting forces of insurance and incentive. Various types of payment mechanisms, monitoring of work, and internal property-rights assignments arise to deal with these problems. These include payment by piece rates, such as salespersons' commissions and sharecropping arrangements in agriculture (Stiglitz 1975), promotion contests for workers (see McLaughlin's 1988 survey), choices between piece rates and time rates (Lazear 1986*a*), bonuses and stock options for executives (Murphy 1986), and a variety of other devices (Jensen and Zimmerman 1986). (For work by sociologists on principal-agent theory, see White [1985] and Shapiro [1987].)

It is interesting to note that game-theoretic concepts have been used extensively in the recent literature on institutional economics. For example, the canonical principal-agent problem is formulated as a Stackelberg game in which contractual parameters are optimally chosen by the principal, given the strategies of agents. It is natural enough that strategic considerations gain analytical importance for nonmarket transactions. Schotter (1981) proposes thinking about institutions as equilibria in *n*-person cooperative games (see Winship 1983, for a review). However, the application of cooperative game theory to institutional analysis has been limited (see Schotter and Schwoadiauer 1980, for a review). Noncooperative games provide a more useful framework because agents are presumed to exploit the organization to the fullest extent of their self-interest. A decentralized and noncooperative market mechanism achieves an efficient outcome because competition constrains strategies in the right way: self-seeking noncooperative behaviors in markets turn out to exhibit a certain kind of cooperative outcome through the invisible hand. When market institutions are too costly, other mechanisms, including contract design, the constraints of repetition, and the value of reputations must be found to do the job.

Since we had not started out with the intention of putting together a volume of work by sociologists and economists on institutions and organizations, it is perhaps not surprising that the end result is not broadly representative of work on those topics in either discipline. The papers by sociologists in this volume are predominantly empirical and focus on *economic* institutions. They all point to empirical phenomena that are not

easily dealt with in current economic theory. Missing are papers that fall within the various traditions of organization theory. The most obvious is the lack of any work in the behavioral tradition of Simon and his followers (e.g., March and Olson 1975; Padgett 1980*a*, 1980*b*) and the organizational environment tradition of either social ecology (e.g., Hannan and Freeman 1977) or resource dependence (e.g., Pfeffer and Salancik 1978). Nor are the methods of social network theory represented. On the other hand, the papers by economists are essentially theoretical and predominantly deal with *noneconomic* institutions. All attempt to construct behavioral models of phenomena that are not easily dealt with in current sociology. Missing are papers explicitly treating transactions costs, property rights, and compensation schedules per se. A volume such as this also might have included work on evolutionary models of economic behavior (e.g., Nelson and Winter 1982).

What can economists and sociologists learn from each other in general and from the papers in this volume in particular? There can be little debate that sociologists and economists generally take different approaches in studying a problem. Sociologists are often more empirical, and the theories they develop are usually empirically motivated. As a result, much theory in sociology is quite broad and lacks rigor. In contrast, most economic theory is built on a central organizing idea of voluntary action motivated by self-interest. This naturally leads to the construction of narrower and more tightly constrained mathematical models and to a more deductive type of hypothesis testing than the more inductive mode of investigation common in sociology. Of course, all good science is a combination of inductive and deductive methods, a constant interchange between data and theory. It simply cannot be asserted that either one or the other comes "first" as a matter of principle. Nonetheless, the relative emphasis described above probably will be shared by many readers of this volume. If this characterization of the differences in sociologists' and economists' work and thinking is at least crudely correct, then it is perhaps not surprising that economists often view sociology as being too broad and diffuse and see the behavior that sociologists examine as being too complex (at least initially) for modeling. Similarly, it is not startling that sociologists view economics as being too narrow and based on unrealistic assumptions.

Our goal for the present volume is not to contend that either approach is superior or to suggest that there is some compromise, intermediate method that should be developed. Rather, our aim is to argue, by way of examples, that sociologists and economists can learn from each other, even if they do not accept each other's methodology and research agenda. There is no certain road or machinery that leads to truth. A prudent person will be tolerant and see virtue in a portfolio of approaches pro-

ceeding in parallel, even though each investigator is and perhaps must be committed to one particular approach in the group. We believe that sociologists and economists can learn from each other if they are at least initially methodologically agnostic and examine the possible facts and insights that can be garnered from the other's work.

Consider what sociological research might contribute to economics. At a minimum, research by sociologists can point to empirical facts and phenomena that can inform economic theory. Put differently, sociologists, precisely because of the methods they use, their skills in generating survey and other micro data, and their attempts to develop broad-brush theory, are sometimes in a good position to provide further and often discomfiting evidence on economic phenomena.

A good example of work of this kind is Eccles and White's paper in this volume, "Price and Authority in Inter–Profit Center Transactions." Using survey data of a kind that is scarcely used in economic research today, they provide direct evidence on the difficulties of managing a market-like mechanism for internal transactions across units of multiunit firms. From a series of 156 interviews of managers in firms, they demonstrate that internal transfer prices are difficult to determine and often lead to conflicts and disfunctional organizational behavior among the decentralized units. Furthermore, their survey methods indicate several specific types of difficulties arising in these systems that will have to be confronted in subsequent work in this area. Transfer-pricing policies are seen to be much more complicated and involved mechanisms than the existing literature on the subject implies.

Work by sociologists can also provide broader challenges to economic theory. Hamilton and Biggart's paper, "Market, Culture, and Authority: A Comparative Analysis of Management and Organization in the Far East," compares the industrial structures in Japan, Korea, and Taiwan. These countries share many common features of culture, resources, and other endowments. They argue that neither cultural nor economic factors can explain the observed differences in industrial structure. Rather, important differences in the political structure, particularly in the role of the state in economic matters, are critical in determining industrial structure outcomes. While different readers may interpret their evidence in different ways, they make a convincing case that economic variables alone cannot explain the differences in government intervention in the economies of these three countries.

Economics has had considerable success in applying economic theory to traditionally noneconomic problems, with Gary Becker (1976, 1981) being the dominant figure (considerably less attention has been devoted by economists to the importance of noneconomic factors for explaining economic phenomena, though Akerlof [1984] is an exception). Hamilton

and Biggart's paper indicates one level at which noneconomic factors can be important. James Coleman's paper in this volume, "Social Capital in the Creation of Human Capital," indicates another. Taking up a theme of Granovetter (1985), Coleman argues that informal social relations can be critical in creating the potential for and conditioning the nature of social and economic activity. Coleman proposes to think of these relations as "social" capital. He argues that social relations may have important effects on trust that may be critical to efficient exchange, important to the flow of information, and basic to the development of norms and effective social sanctioning (see Shapiro [1987] for a discussion of the importance of these issues for principal-agent theory). As such, Coleman is arguing that social context can be of fundamental importance to all kinds of exchanges.

Like Hamilton and Biggart's, the paper by Kalleberg and Lincoln, "The Structure of Earnings Inequality in the United States and Japan," poses the problem of explaining the variety of institutions serving similar functions across different cultures and societies. Using unique data sources they generated themselves, Kalleberg and Lincoln document substantial differences in the determinants of pay between Japan and the United States. They find that pay in Japan is much more closely tied to such life-cycle factors as age, family size, and seniority, whereas pay in the United States is to a greater degree determined by market factors. While some of these findings have been treated by economists (e.g., Mincer and Higuchi 1987; Hashimoto and Raisian 1985) in the context of firm-specific human capital and interfirm mobility, they provide new and independent evidence and some additional findings that have not been previously considered.

Work by economists has a different relevance for sociologists. Whereas sociology can provide economists with additional empirical understanding, economics holds out the promise of additional conceptual insights for sociologists, particularly regarding the consequences of the behavior of a set of individuals. For many sociologists, this is a controversial claim. At least since Durkheim's *Division of Labor* (1933), sociologists have explicitly rejected the economist's model of utility-maximizing behavior. Many sociologists view individual rationality assumptions as wholly untenable, and this has lead to their outright rejection of any work in the neoclassical economic tradition. In recent years, however, some sociologists have become interested in exploring the implications of rational behavior and how it relates to the formation of institutional structure and norms (e.g., Coleman 1986*b*; Hechter 1983, 1987; Shapiro 1987). This work shares the economist's goal of trying to understand the relationship between social structure and rational individual behavior. The work by sociologists differs from that by economists in tending to focus much more on the de-

tailed empirical analysis of institutions and their histories (e.g., Heimer 1985).

Psychologists also have begun to explore ways in which individual choice under uncertainty is inconsistent with expected-utility theory (Kahneman and Tversky 1979). This work shows that certain choices made under controlled experimental conditions violate the predictions of expected-utility theory and suggests that the theory may lead to more serious false predictions about actual behavior. Psychologists have examined some of the implications of these findings for managerial behavior (Bazerman 1986). Earlier work by economists themselves has pointed out conceptual difficulties in understanding such things as the simultaneous purchase of insurance and of lottery tickets, which still remain to be fully resolved. The new critiques by psychologists add more evidence that is widely debated and assessed (see Hogarth and Reder [1986], the special issue of *Journal of Business* titled "The Behavioral Foundations of Economic Theory"). It is interesting to note that many of these anomalies have provoked economists into extending the theory in various ways to accommodate them, for example, pointing out some surprising consequences of state-dependent preferences for gambling (Bergstrom 1986) to more far-reaching specifications of preferences that are nonlinear in probabilities and cannot be expressed as simple mathematical expectations (Machina 1987). (For two very different analyses by economists of the importance of irrational behavior see Frank [1987] and Akeroff and Yellen [1985].)

The response by sociologists to the hypothesis of the new institutional economics that institutions can be explained by efficiency considerations has been mixed. Zald (1987) is perhaps the most sympathetic to this line of reasoning. To quote: "I find it extraordinary how sociologists manage to ignore issues of profit and efficiency in their thinking about capitalism. To deny profit maximization and hyperrationality is one thing; to deny, as some of my colleagues seem to, that a search for profits and efficient modes of production drive much of organization choice is quite another" (Zald 1987, p. 706). Oberschall and Leifer (1986) are moderately sympathetic to efficiency arguments but fear their misuse. Granovetter (1985) contends that economic discussions of efficiency are quite similar to the structural functional arguments of Parsonian sociology and share many of the same problems. Related reservations are privately expressed by some skeptical economists in remarks to the effect that "if you can't understand it, it must be transactions costs."

Economists might learn something from sociologists here. Parsonian functionalism was the dominant theoretical paradigm in sociology from World War II through the mid-1960s. A thorough statement and review of functionalism is far beyond the bounds of this introductory essay, but,

to simplify somewhat, its major thrust was to explain the existence of particular institutional forms in society by reference to the functions they served for the social system as a whole. For instance, the classic functionalist explanation of religion is that it provides social solidarity. The main problem with functionalist explanation is that it is almost always possible to tell an ex-post story about why a particular institution is functional for society but far more difficult to do so ex ante. Similarly, it is difficult to connect institutional change with changes in functions. As a result, functional arguments can be quite difficult to test and can easily become tautological (Tilly 1984). Interest in this theory has lessened in recent years as a result.

One of the major criticisms of economic work on institutions by both Oberschall and Leifer (1986) and Granovetter (1985) is that much of this work has failed to show that a particular institution does in fact result in efficiency gains. For instance, Eccles and White's article in this volume argues that the integration of separate production units into a firm does not necessarily reduce conflicts and disputes because transfer-pricing schemes within the firm may be considerably more complex and disputed than market exchange (also see Eccles's [1985] and Granovetter's [1985] discussions of this point). Eccles and White do not explore other possible reasons for integration, such as scale economies and capital specificities, where market transactions are also very difficult to manage, so the question remains open.

How can we ensure that an efficiency argument is credible? Oberschall and Leifer (1986) suggest that it must be possible for inefficiency to exist. It is difficult to disagree with this point, given the existence of prohibitive tariffs, sugar subsidies, licensing in many occupations, and price controls, though these and many other instances of state intervention in the economy seem to call for a somewhat different conception of efficiency and inefficiency than usual (Becker 1983). We also agree with the point for the private economy but would argue that it must be true that inefficiency is a problem as well. For instance, an inefficient firm is a perpetual money sink for its owners in the face of even moderate competition from other firms. "Frictions" will always sustain some inefficiencies, but competition puts narrow limits on residual inefficiency in many cases. Surely, the relative efficiency of an institution ultimately must be empirically established. A complete theory should also show how an institution arose to reduce inefficiency and why some other institution did not arise. Otherwise, efficiency theories can fall into the Panglossian trap of "Whatever is, must be optimal." So far, most economic analyses are not this complete. Many of the conceptual advances of the past decade have yet to be supported by extensive empirical analysis. We suspect that many sociologists will doubt that any efficiency argument can satisfy all the above

criteria, but we challenge them to define equally stiff criteria for the alternative hypotheses.

In fact, there are some examples in which economists have come close to satisfying these criteria. Robert Fogel's (1964) remarkable counterfactual reconstruction of the American economy with canals rather than rails allowed him to assess the social benefits of railroads. Joskow (1987) recently examined the long-term contractual solutions for the splitting of rents in relation to specific exchanges between public utilities and their suppliers. Roth's (1984) work on the market for medical interns is of greater interest to sociologists and worthy of more discussion here.

The current interns and residents matching program got started because the market for interns was highly disorganized early in this century. Competition among hospitals for interns resulted in hospitals' attempting to commit students to accept their offers as early as the second year of medical school. This was inefficient because both students and hospitals would have more information about prospects and career goals if recruitment were deferred to a point later in medical school. In 1946, medical schools and hospitals agreed that student transcripts would not be released until the end of the third year of medical school, so offers could not be made earlier than the beginning of the fourth year. However, this led to other problems. Students would receive an offer of a position at one hospital and be put on the waiting list at another. Decision deadlines would force them to accept the offer in hand, without however necessarily committing to it since many later accepted an offer of a hospital whose earlier waiting list had cleared after the decision deadline. In the early 1950s, a matching algorithm was established to assign interns to hospitals based on their common preferences. With only slight modifications, the algorithm has remained basically unchanged since that time.

The basic idea of the algorithm is as follows. Interns rank-order the hospitals in which they are interested, and hospitals rank-order the interns in whom they are interested. The algorithm begins by matching all (1, 1) pairs, in which both intern and hospital rank each other first. From this point on, the order of matching is determined first by the hospitals and then by the students. At the second stage, the algorithm matches all (2, 1) pairs, in which the intern ranks a hospital second and a hospital ranks the intern first, then (3, 1) matches, and so on until all individuals who are ranked first by some hospital have been assigned. The algorithm then looks at (2, 2) matches, (2, 3) matches, and so on until all individuals are assigned.

Roth analyzes the algorithm as a cooperative game and establishes properties that help explain why this particular institution has remained intact since the 1950s. First, the outcome is in the core of the game, which means that no coalition of interns and hospitals could get together and

produce a set of matches that they preferred to the assigned match. This means that match outcomes are economically efficient. Second, there exist other efficient assignment algorithms, the most obvious being, for example, where the overall order of assignment is determined first by students and then by hospitals instead of the other way around. Here, Roth shows that within the set of efficient outcomes the algorithm that has been adopted produces the assignment that is best from the hospitals' perspective and worst from the interns' perspective. Finally, Roth examines the strategic incentive to lie in ranking one's preferences. He shows that it is disadvantageous to lie about one's first choice, but there may be an advantage in lying about lower-ranking choices. Nonetheless, it would be difficult for a player to identify a strategy that was superior to reporting his true preferences.

This is a small but interesting example because it shows how the current system evolved and how the mechanism achieves efficiency (even though its inventors were completely ignorant of that concept). The analysis does not determine why this particular efficient algorithm came to be used, but it does give important insight for an explanation: the fact that there are far fewer hospitals than interns and that hospitals are repeat participants in this market suggests why the hospitals might have been able to enforce the best efficient algorithm from their point of view. In terms of the criteria stated above, this analysis gives a credible efficiency argument. It is not, however, an argument without problems. Sociologists desire a more detailed account of how it is that the algorithm that is best for hospitals was the one chosen. Economists complain that Roth has failed to consider the role of salary competition in the model and its effects on the results.

Do the efficiency arguments of economics take us any further than the functional arguments of Parsons and his followers? We believe they do. A major problem with Parsonian functionalism is that it lacks a theory of individual action (Coleman 1986*a*). Functionalism failed, in part, because it did not solve the problem of methodological individualism. It offered societal level explanations for phenomena that implicitly involve individual behavior without providing a basis for constructing a theory of individual behavior (Stinchcombe 1986). If economics does anything, it provides a theory of individual behavior. The articles by economists in this volume illustrate this important point.

Milgrom and Robert's paper, "An Economic Approach to Influence Activities in Organizations," extends the literature on principal-agent problems and methods of pay. How do firms manage unproductive competition among co-workers for promotion? This competition is assumed to make no direct contribution to productivity but does provide information about who would do the better job if they were promoted. The problem is

that if individuals spend too much time competing and attempting to exert influence, less work will get done. The authors analyze the effects of a number of schemes on productive work versus unproductive competition. Among other things, bureaucratic procedures and rules may be useful in restricting the counterproductive effects of "influence" (see also Tirole 1986; Lazear 1986*b*).

Camerer's article, "Gifts as Economic Signals and Social Symbols," analyzes a different problem of commitment, that of gift giving, in a game-theoretic framework. The primary example is courtship. The woman's concern is whether the man is interested in a long-term relationship or in just a one-night stand. One possible solution to this problem would be for the man to post a bond to be returned after it had been found that his intentions were good. As Camerer notes, however, a gift (say an engagement ring) works better. If only those males who have appropriate long-term interests are willing to give substantial presents, the costs of courting are large enough to screen out men with only short-term interests. As such, gift giving signals intent. The ambiguity of whether the gift should be returned if the relationship is terminated ensures that only well-intentioned males will court and that there are incentives to remain well intentioned.

Mortensen's article, "Matching: Finding a Partner for Life or Otherwise," provides a concise overview of the extensive literature in economics on matching. In recent years, sociologists have shown considerable interest in segmented-market theories. The literature discussed by Mortensen provides a framework for understanding why individuals are matched to particular jobs and not to others. Matching theory has a number of parts. At one level, it attempts to model individual matches when there is complete information, as in Roth's paper discussed above. Another line of analysis assumes that individuals are incompletely informed about how good the match will be, a priori. After a trial period, this information is revealed and the match may be continued or terminated. These models directly confront an important set of interesting problems for both economists and sociologists on how individuals find their niches in the labor and marriage markets and in the transitions from adolescence to maturity. It is interesting to point out that the extensive empirical work within this framework shows important interactions between economists and sociologists in the use of panel data and statistical methods of semi-Markov processes and duration analysis.

The final article by an economist, Laurence Iannaccone's "A Formal Model of Church and Sect," is an extraordinary economic analysis of one of our most important social institutions. It illustrates the potential for economic analysis to inform sociologists' concepts of typology as well as to unify a wide variety of empirical observations and hypotheses in one

conceptual framework. And economists will appreciate the subtle and difficult points of technical analysis that lie behind the superior exposition of this paper. Iannaccone suggests that it is economies of scale that fundamentally account for why church and sect describe distinct types of religious behavior and why these behaviors cluster.

We expect that for a considerable time sociologists and economists will continue to have major problems with each other's work. Sociology and economics are quite far apart in both theory and methodology. We do hope that the time has come when practitioners in both groups will at least attempt to suspend strong prior beliefs, glean what they can from each other's work, and take the best from both. We hope that the current volume to some modest extent encourages a better-informed dialog.

REFERENCES

Akerlof, George A. 1984. *An Economic Theorist's Book of Tales*. Cambridge: Cambridge University Press.

Akerlof, George A., and J. L. Yellen. 1985. "Can Small Deviations from Rationality Make Significant Differences in Market Equilibria?" *American Economic Review* 75:708–20.

Alchian, A. A., and H. Demsetz. 1972. "Production, Information Costs, and Economic Organization." *American Economic Review* 62:777–95.

Barney, Jay B., and William G. Ouchi, eds. 1986. *Organizational Economics*. San Francisco: Jossey-Bass.

Bazerman, Max H. 1986. *Judgment in Managerial Decision Making*. New York: Wiley.

Becker, Gary S. 1976. *The Economic Approach to Human Behavior*. Chicago: University of Chicago Press.

———. 1981. *A Treatise on the Family*. Cambridge, Mass.: Harvard University Press.

———. 1983. "A Theory of Competition among Pressure Groups for Political Influence." *Quarterly Journal of Economics* 98:371–400.

Becker, Gary S., and Nigel Tomes. 1979. "An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility." *Journal of Political Economy* 87:1153–89.

Behreman, Jere R., Robert A. Pollak, and Paul Taubman. 1982. "Parental Preferences and Provision for Progeny." *Journal of Political Economy* 90:52–73.

Bergstrom, Theodore C. 1986. "Soldiers of Fortune." Pp. 57–80 in *Social Choice and Public Decision-Making*, vol. 1. Edited by W. P. Heller, R. M. Starr, and D. A. Starret. Cambridge: Cambridge University Press.

Berk, R. A., and S. F. Berk. "Supply-side Sociology of the Family: The Challenge of the New Home Economics." *Annual Review of Sociology* 9:375–95.

Blau, Peter M., and Otis D. Duncan. 1967. *The American Occupational Structure*. New York: Wiley.

Buchanan, James, and Gordon Tullock. 1962. *The Calculus of Consent*. Ann Arbor: University of Michigan Press.

Burt, R. 1983. *Corporate Profits and Cooptation*. New York: Academic.

Coase, Ronald. 1937. "The Nature of the Firm." *Economica* 4:386–405.

Coleman, James S. 1986*a*. "Social Theory, Social Research, and a Theory of Action." *American Journal of Sociology* 91:1309–35.

———. 1986*b*. *Individual Interests and Collective Action: Selected Essays*. Cambridge: Cambridge University Press.
Durkheim, Émile. 1933. *The Division of Labor in Society*. New York: Free Press.
Easterbrook, Frank, and Daniel Fischell. In press. *The Economic Structure of Corporate Law*. Cambridge, Mass.: Harvard University Press.
Eccles, Robert. 1985. *The Transfer Pricing Problem: A Theory for Practice*. Lexington, Mass.: Lexington.
Fama, Eugene F., and Michael C. Jensen. 1983. "Agency Problems and Residual Claims." *Journal of Law and Economics* 26:327–49.
Featherman, David L., and Robert M. Hauser. 1978. *Opportunity and Change*. New York: Academic.
Ferejohn, John A. 1974. *Pork-Barrel Politics*. Stanford, Calif.: Stanford University Press.
Fiorina, Morris P. 1974. *Representatives, Roll Calls, and Constituencies*. Lexington, Mass.: Lexington.
Fogel, Robert. 1964. *Railroads and American Economic Growth*. Baltimore: Johns Hopkins University Press.
Frank, Robert H. 1987. "If *Homo Economicus* Could Choose His Own Utility Function, Would He Want One with a Conscience?" *American Economic Review* 77:593–604.
Freeman, Richard B. 1981. "Black Economic Progress after 1964: Who Has Gained and Why?" Pp. 247–94 in *Studies in Labor Markets*, edited by S. Rosen. Chicago: University of Chicago Press.
Granovetter, M. 1985. "Economic Action and Social Structure: The Problem of Embeddedness." *American Journal of Sociology* 91:481–510.
Grossman, Sanford J., and Oliver D. Hart. 1987. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy* 94:691–719.
Hannan, M. T. 1982. "Families, Markets, and Social Structures: An Essay on Becker's *A Treatise on the Family*." *Journal of Economic Literature* 20:65–72.
Hannan, M. T., and J. Freeman. 1977. "The Population Ecology of Organizations." *American Journal of Sociology* 82:929–66.
Hashimoto, Masanori, and John Raisian. 1985. "Employment Tenure and Earnings Profiles in Japan and the United States." *American Economic Review* 75:721–35.
Hauser, R. M., S. L. Tsai, and W. H. Sewell. 1983. "A Model of Stratification with Response Error in Social and Psychological Variables." *Sociology of Education* 56:20–46.
Hechter, Michael. 1983. *Microfoundations of Macrosociology*. Philadelphia: Temple University Press.
———. 1987. *Principals of Group Solidarity*. Berkeley and Los Angeles: University of California Press.
Heimer, Carol. 1985. *Reactive Risk and Rational Action*. Berkeley and Los Angeles: University of California Press.
Hogarth, Robin M., and Melvin W. Reder, eds. 1986. *The Behavioral Foundations of Economic Theory. Journal of Business*, vol. 59, no. 4, pt. 2 (supplement).
Holmstrom, Bengt. 1979. "Moral Hazard and Observability." *Bell Journal of Economics* 10:74–91.
———. 1982."Moral Hazard in Teams." *Bell Journal of Economics* 13:324–40.
Jencks, Christopher. 1972. *Inequality: A Reassessment of the Effects of Family and Schooling in America*. New York: Basic.
Jensen, Michael C., and William Mechling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3:305–60.

Jensen, Michael C., and Jerold Zimmerman, eds. 1986. *Symposium on Management Compensation and the Managerial Labor Market. Journal of Accounting and Economics* 7:1–251.
Joskow, Paul J. 1987. "Contract Duration and Relationship-specific Investments: Empirical Evidence from Coal Markets." *American Economic Review* 77:168–85.
Kahneman, Daniel, and A. Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47:263–91.
Landes, William M. 1971. "An Economic Analysis of the Courts." *Journal of Law and Economics* 14:61–107.
Lazear, Edward P. 1986*a*. "Salaries and Piece Rates." *Journal of Business* 59:405–31.
———. 1986*b*. "Pay Equality and Industrial Politics." Hoover Institution Working Paper E-86-12.
Lazear, Edward P., and Rita Ricardo-Campbell. 1988. *Issues in Contemporary Retirement*. Palo Alto, Calif.: Hoover Institution.
Machina, Mark J. 1987. "Choice under Uncertainty: Problems Solved and Unresolved." *Journal of Economic Perspectives* 1:121–54.
McLaughlin, Kenneth J. 1988. "Aspects of Tournament Models: A Survey." In *Research in Labor Economics*, vol. 12. Edited by R. Ehrenberg. Greenwich, Conn: JAI. (In press.)
MacRae, D. 1978. "Review Essay: The Sociological Economics of Gary S. Becker." *American Journal of Sociology* 83:1244–58.
March, James G., and Johan P. Olsen. 1975. *Ambiguity and Choice in Organizations*. Bergen, Norway: Universitetsforlaget.
Mincer, Jacob, and Yoshio Higuchi. 1987. "Wage Structures and Labor Turnover in the U.S. and Japan." Unpublished working paper. National Bureau of Economic Research, Cambridge, Mass.
Moe, T. M. 1984. "The New Economics of Organization." *American Journal of Political Science* 38:739–77.
Murphy, Kevin J. 1986. "Incentives, Learning and Compensation: A Theoretical and Empirical Investigation of Managerial Labor Contracts." *Rand Journal of Economics* 17:59–76.
Nelson, Robert R., and Sidney A. Winter. 1982. *An Evolutionary Theory of Economic Change*. Cambridge, Mass.: Harvard University Press.
North, Douglas C. 1981. *Structure and Change in Economic History*. New York: Norton.
Oberschall, A., and E. M. Leifer. 1986. "Efficiency and Social Institutions: Uses and Misuses of the Economic Reasoning in Sociology." *Annual Review of Sociology* 12:233–53.
Olson, Mancur, Jr. 1982. *The Rise and Decline of Nations*. New Haven, Conn.: Yale University Press.
Padgett, J. F. 1980*a*. "Bounded Rationality in Budgetary Research." *American Political Science Review* 74:354–72.
———. 1980*b*. "Managing Garbage Can Hierarchies." *Administrative Science Quarterly* 25:583–604.
Peltzman, Sam. 1980. "The Growth of Government." *Journal of Law and Economics* 23:309–88.
Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row.
Posner, Richard A. 1981. *The Economics of Justice*. Cambridge, Mass.: Harvard University Press.
Pratt, John W., and Richard J. Zeckhauser, eds. 1985. *Principals and Agents: The Structure of Business*. Boston: Harvard Business School Press.
Roth, Alvin E. 1984. "The Evolution of the Labor Market for Medical Interns and

Residents: A Case Study in Game Theory." *Journal of Political Economy* 92:991–1017.
Schotter, Andrew. 1981. *The Economic Theory of Social Institutions*. Cambridge: Cambridge University Press.
Schotter, Andrew, and Gerhard Schwoediauer. 1980. "Economics and Game Theory: A Survey." *Journal of Economic Literature* 18:470–527.
Sewell, William H., and Robert M. Hauser. 1975. *Education, Occupation and Earnings*. New York: Academic.
Shapiro, S. P. 1987. "The Social Control of Impersonal Trust." *American Journal of Sociology* 93:623–58.
Shavell, Steven. 1984. "Liability for Harm versus Regulation of Safety." *Journal of Legal Studies* 13:357–74.
Stigler, George J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics* 2:3–21.
Stiglitz, Joseph E. 1975. "Incentives, Risk and Information: Notes toward a Theory of Hierarchies." *Bell Journal of Economics* 6:552–79.
Stinchcombe, Arthur. 1983. *Economic Sociology*. New York: Academic.
———. 1986. *Organizations as Information Processing Systems*. Unpublished manuscript, Northwestern University, Department of Sociology.
Tilly, Charles. 1984. *Big Structures, Large Processes, Huge Comparisons*. New York: Russell Sage.
Tirole, Jean. 1986. "Hierarchies and Bureaucracies: On the Role of Collusion in Organizations." *Journal of Law, Economics and Organization* 2:181–214.
Weingast, Barry R., and Mark J. Moran. 1983. "Bureaucratic Discretion or Congressional Control: Regulatory Policy-Making by the Federal Trade Commission." *Journal of Political Economy* 91:765–800.
Welch, Finis. 1979. "Effects on Cohort Size on Earnings: The Baby Boom Babies and Financial Bust." *Journal of Political Economy* 87:S65–S98.
White, H. C. 1981. "Where Do Markets Come From?" *American Journal of Sociology* 87:517–47.
———. 1985. "Agency as Control." Pp. 187–212 in *Principals and Agents: The Structure of Business*, edited by J. W. Pratt and R. J. Zeckhauser. Boston: Harvard Business School Press.
Williamson, Oliver E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: Free Press.
———. 1981. "The Economics of Organization: The Transaction Action Cost Approach." *American Journal of Sociology* 87:548–77.
———. 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press.
Winship, Christopher. 1983. Review of *The Economic Theory of Social Institutions*. *American Journal of Sociology* 88:786–89.
Zald, M. N. 1987. "Review Essay: The New Institutional Economics." *American Journal of Sociology* 93:701–8.

Price and Authority in Inter–Profit Center Transactions[1]

Robert G. Eccles
Harvard University

Harrison C. White
Columbia University

Price and authority have traditionally been regarded as alternative social mechanisms for allocating resources. However, actual transactions—whether inter- or intrafirm—can be evaluated in terms of the extent to which they combine both of these mechanisms. An especially revealing example of this is the exchange of goods between two profit centers in the multi–profit center firm. Three of the most common arrangements, or transfer pricing policies, for effecting these transactions are examined here. Exchange autonomy transfers depend primarily on price, with no or minimal use of authority. Mandated full cost transfers involve a substantial exercise of authority relative to the use of price. Mandated market-based transfers use both authority and price in important ways. For all three policies, the transaction costs of these internal transactions may exceed these costs on external transactions.

Price and authority are often presented as alternative social mechanisms for allocating and controlling resources (Arrow 1974; Coase 1937; Ouchi 1979, 1980; and Williamson 1975, 1985). Traditionally, "price" characterizes the vocabulary of economists, who study markets. "Authority" belongs to that of sociologists, who study hierarchies. In markets, resources are allocated through prices. In hierarchies, they are allocated through authority. However, empirical studies have shown that markets may contain authority properties found within a firm (Corey 1976, 1978; Eccles 1981; Jackson 1985; Macaulay 1963; Stinchcombe and Heimer 1985) and that multidivisional firms may contain pricing mechanisms found in markets (Chandler 1962; Eccles 1985; Lorsch and Allen 1973; and Vancil 1978). Overall, it now seems clear that the traditional con-

[1] The authors would like to thank Sherwin Rosen, Chris Winship, and two anonymous referees for helpful comments on an earlier draft of this paper. Requests for reprints should be sent to Robert G. Eccles, Graduate School of Business Administration, Harvard University, Boston, Massachusetts 02163.

0002-9602/89/9407-0011$1.50