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INSTITUTIONAL FUNCTION AND EVOLUTION IN THE CRIMINAL PROCESS

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resources in the climb much earlier, when they have reached an altitude which appears acceptable to them for the purpose at hand.

Moreover, if it is a truism to say that life is change, then it is equally clear that genuine understanding of social systems as they exist in the real world requires explicit and detailed analysis of their behavior in disequilibrium, the state in which we observe them every day. This point is especially plain to lawyers and judges, much of whose daily work is concerned with continually seeking, within (or in spite of) the bounds of codified law and *stare decisis*, necessarily small changes in established legal rules and procedures. Over time, the slow accretion of these marginal changes effects the evolutionary transformation of a central part of the neoclassical economist's exogenous "givens," the institutional and organizational forms which constrain and direct important aspects of social life.

But the past decade has seen the development of an alternative approach to economic analysis which, by placing the dynamic character of economic and social systems and the informational obstacles to optimizing behavior within them at center stage, has made issues of institutional structure and evolution endogenous to economic inquiry. This emerging "institutional" paradigm borrows from John R. Commons its initial focus upon the smallest observable economic phenomenon, the individual transaction between parties each hoping to realize personal gain from the exchange.² Rejecting the neoclassical assumption of strict optimizing behavior, institutional analysis instead extends Adam Smith's less confining postulate of a human propensity toward exchange³ to address the evolution of nonmarket institutional arrangements to facilitate and organize exchange when markets fail to do so. The institutional paradigm recognizes that combinations of well specified human and environmental factors may inhibit the free flow of information essential to the identification of efficient exchanges, frustrating market transactions which might otherwise result in mutual benefits to the participants. Thus, alternative institutional structures

² An excellent discussion of this approach to the organization of economic activity and its debts to earlier work in this area is found in O. WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* 1-56 (1975). In addition to works cited below, central insights into the relationship between information impactedness, external effects, and allocational mechanisms are developed in K. ARROW, *THE LIMITS OF ORGANIZATION* (1974) and ARROW, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation*, in *PUBLIC EXPENDITURES AND POLICY ANALYSIS* 59 (R. Haveman & J. Margolis eds. 1970). Relevant works of Commons himself are J. COMMONS, *INSTITUTIONAL ECONOMICS* (1934), and J. COMMONS, *LEGAL FOUNDATIONS OF CAPITALISM* (1924) [hereinafter cited as J. COMMONS, *LEGAL FOUNDATIONS*].

³ A. SMITH, *THE WEALTH OF NATIONS* 13 (E. Cannan ed. 1937) (originally published in 1776) ("[The division of labor] is the necessary, though very slow and gradual consequence of a certain propensity in human nature . . . the propensity to truck, barter, and exchange one thing for another").

are developed within which economic activity can feasibly be organized despite the inherent limitations of human decisionmakers and the further obstacles to completing efficient exchanges arising within environments which are constantly changing and in which essential information is difficult or impossible to obtain.

The Smithian postulate of a propensity toward exchange initially suggests voluntary and unregulated private contractual arrangements as the most effective way of organizing efficient exchanges and ensuring that information sufficient to identify them *a priori* is made available to prospective traders. "In the beginning," writes Oliver Williamson "there were markets."⁴ This, of course, cannot be taken literally or to express a necessary historical sequence of events. The observation that a given set of nonmarket institutions enables the completion of efficient exchange in environments hostile to market organization does not imply that once, long ago, an unsuccessful attempt to establish markets in these environments was actually made or that this failure is a condition precedent to the evolution of alternative organizational forms. Rather, the postulate of exchange reflects an aspect of human behavior which manifests itself well beyond the narrow spectrum of environments in which market organization is possible. In environments which can independently be identified as well suited to them, there is good reason to believe that markets will in fact emerge and persist as a mode of organizing individually efficient transactions. When they are feasible, markets enjoy a clear comparative advantage relative to alternative modes of organization in their ability to extract and communicate the deeply impacted information necessary for the completion of efficient transactions. They do so, moreover, largely without the need for cumbersome administrative or supervisory mechanisms. But if the propensity to exchange is to express itself in trading environments which plainly cannot support explicit economic markets, it is clear that the completion of individual transactions must be organized in some other way from the outset. In other instances, we may indeed observe a particular exchange environment shift over time from one suitable to market organization to one hostile to it, and with this shift an evolutionary change from market to nonmarket organization. But this need not always be the case, and the evolution of various modes of exchange, including but not limited to the market, is better seen as a process of parallel development in different environments than as a sequential replacement of markets by other forms.

The analysis of market failure is nonetheless a central element of institutional inquiry, for the relative efficacy with which markets gather and employ essential information creates a rebuttable evolutionary presumption in their favor. As a result, any characterization of a particu-

⁴ O. WILLIAMSON, *supra* note 2, at 20.

difficulties they face in acquiring necessary information in various exchange environments.

The criminal process is a rich source of qualitative observation for economic analysis pursued from an evolutionary perspective. For example, one evolutionary problem posed and confronted in the criminal process concerns the sentencing disparities resulting from increasingly refined attempts to match individual punishments to the detailed particulars of the offense and personal attributes of the offender. Such "individually specific" punishment prices present severe informational obstacles to the organization of efficient transactions within the criminal process; if the costs imposed by a given offense depend upon the identities of the parties involved and the specific circumstances of the act, efficient prices generally cannot be determined until the act itself is completed and all relevant information becomes available to the sentencing authority. Where this is the case, however, the ability of these prices to serve simultaneously as "signals" to potential offenders, informing them about the efficiency or inefficiency of contemplated but not yet undertaken offenses, is greatly diminished and the deterrent function of efficient pricing severely undermined. The intertwined goals of precise assessment of costs already imposed and the creation of incentives for efficient decisions in the future—which are met simultaneously by market pricing in cases of homogeneous goods or entitlements—thus stand in direct conflict with one another where individually specific cost imposition is involved. This tension can be reduced only by sacrificing some of the precision afforded by individualized sentencing in favor of the more effective deterrent signalling associated with mandatory or standardized sentencing procedures. But in a series of recent decisions with important ramifications for all criminal sentencing, the United States Supreme Court has invalidated mandatory penalty schemes and imposed upon the criminal process the less constraining alternative of legislatively defined standards as a means to implement the constitutional guarantee against cruel and unusual punishments in capital cases.¹⁰ Though framed in terms of normative considerations of due process and the proper interpretation of the eighth amendment, the language and rationales of these opinions speak with remarkable clarity to precisely the "economic" issues of information transfer outlined here.¹¹

¹⁰ See, e.g., *Woodson v. North Carolina*, 428 U.S. 280 (1976); *Gregg v. Georgia*, 428 U.S. 153 (1976); *Furman v. Georgia*, 408 U.S. 238, 256-57 (1972) (Douglas, J., concurring); *id.* at 307-10 (Stewart, J., concurring); *id.* at 311-13 (White, J., concurring); *id.* at 400-01 (Burger, C.J., dissenting); *McGautha v. California*, 402 U.S. 183 (1971). These cases and their relationship to the organizational failure which results from this informational problem are discussed in detail in Adelstein, *Informational Paradox*, *supra* note 9, at 291-96.

¹¹ That judicially imposed rules or procedures ostensibly grounded in fairness or due process may have clear economic significance of this kind renders the sharp neoclassical distinction be-

In this light, qualitative observations of litigation outcomes and procedural rules can be seen as "positive evidence" in support of the evolutionary model of the criminal process in much the same way as the historical development of patent and copyright structures in response to the widespread external effects of knowledge creation is taken as positive support for the theory of public goods.¹² But even when viewed as complementary to the neoclassical approach, institutional inquiry raises serious questions of scientific method and epistemology. Differences in the phenomena treated as endogenous by the two paradigms make clear that their methodologies must be very different as well. The neoclassical reliance upon mathematical specificity and prediction in the style of the physical sciences naturally directs analysis toward quantifiable variables and econometric methodology. For the institutionalist, on the other hand, the richest sources of empirical observation include contemporary organizational arrangements in various spheres of activity and existing configurations of property and liability rules and legal procedures, along with their historical development over time. The essentially qualitative nature of such observations precludes the mathematical precision to which more traditional economic models aspire. Moreover, the evolutionary component of the institutional paradigm suggests inquiry into underlying and largely implicit processes of development rather than the deterministic prediction of specific outcomes within a given institutional structure or the precise definition of new organizational forms which might evolve in the future.

These considerations offer a parallel between the institutional approach to economic organization and the technique of "functional analysis" employed with varying degrees of discernment and success by anthropologists, sociologists, and evolutionary biologists, a methodology which has occasioned a lively debate among philosophers of science and social science. Carl Hempel, himself skeptical of the scientific value of functionalism, has characterized its objective in the social sciences as "understand[ing] a behavior pattern or sociocultural institution by determining the role it plays in keeping the given system in working order or maintaining it as a going concern."¹³ Two aspects of the technique have been at the focus of the controversy. The first con-

tween "equity" and "efficiency" considerations quite problematic. This important point is treated in greater depth in notes 184-203 and accompanying text *infra*.

¹² This epistemological position is by no means limited to the analysis of legal structures. Consider, for example, Mancur Olson's widely cited discussions of labor unions, political parties, pressure groups, and similar phenomena as institutional responses to the inability of market organization to induce the supply of public goods. M. OLSON, *THE LOGIC OF COLLECTIVE ACTION* (1965). See also the inquiries of O. WILLIAMSON, note 2 *supra*, Alchian & Demsetz, note 5 *supra*, and Coase, note 5 *supra*, into the organization of business firms.

¹³ Hempel, *The Logic of Functional Analysis*, in *ASPECTS OF SCIENTIFIC EXPLANATION AND OTHER ESSAYS IN THE PHILOSOPHY OF SCIENCE* 297-305 (1965). Hempel's characterization of

which raise or lower mean temperatures by a decisive degree or two? To import normative significance to survival or persistence seems absurd. The "fit," merely winners in a gigantic game of chance, cannot be more worthy than the "unfit."

The criminal process, as an evolving, nonmarket exchange structure, bears resemblance to the biological example. In the institutional view, the substantive criminal law and the procedures through which it is enforced, taken together, comprise an organizational arrangement which (unlike the market) mediates the many-sided externality relationship between individual offenders and the large, widely dispersed group which bears the costs of their activity.²¹ Individual criminal litigation results from the desire of the cost bearers, represented by the public prosecutor, to be compensated for their costs by the imposition of a punishment which exacts from the offender a psychic cost roughly equal to the costs associated with the criminal act. In this sense, the offender "purchases" the criminal entitlement from the state, and the highly visible and universally recognized hardship imposed by imprisonment or other deprivations of personal liberty represents a form of restitution "in kind" to the cost bearers for the largely nonmaterial or moral costs they have borne. Where reliable information flows freely in this system, that is, where both the offender at the moment he decides to commit the offense and the sentencing authority at the moment the punishment is fixed are able to assess with reasonable accuracy the costs imposed by the offense, this arrangement in general permits efficient criminal transactions to be completed and inefficient ones to be effectively deterred. But where such information is unreliable or unavailable, the price exaction mechanism fails, and some structural adaptation is required if its ability to organize efficient exchange in this sphere of human activity is to be preserved.

The substantive criminal law, therefore, as developed through the continuing interplay of legislative and judicial processes,²² speaks generally to the costs associated with various forms of criminal activity and defines prices for the underlying criminal transaction. Rules of procedure, largely the product of appellate courts, take account of the economic and moral costs of the price exaction mechanism itself, directing the mechanism toward relatively less costly modes of gathering the information necessary for these determinations and actually imposing the punishment price.²³ In both cases, the relevant costs involve substantial moral elements, and information regarding their magnitude is in-

herently difficult to extract. Further, insofar as judicial decisionmaking plays a major role in this structure, marginal changes in both law and procedure will result from individual litigation when the courts deem the particular litigation to be prototypical and indicative of a more general problem, thus an appropriate vehicle for modifying the exchange mechanism in generally applicable ways. Individual litigants, usually convicted appellants whose claims are often framed in terms of fundamental fairness or due process, are seen within the institutional perspective as arguing either that environmental conditions have rendered the criminal process incapable of organizing efficient exchange in specific ways²⁴ or that individual behavior within the price exaction mechanism has led to systematic error in the evaluation of particular costs.²⁵

In this way, uncoordinated and self-interested behavior on the part of aggrieved individuals (or public officials acting in their name) lies at the very core of the procedures through which institutional variants are generated in the criminal process. But the potential for serious error pervades this generating structure. The original judgment of prototypicality may be in error; the specific structural alternatives urged by particular litigants, which may sharply delimit the court's range of choice, may be posed in terms less appropriate to the general instance of the problem they represent than to the peculiar circumstances of the case at bar. As Justice Holmes recognized long ago, hard cases often make bad law. Even where this original decision to decide is well taken, however, both the litigants themselves and the judges who hear their claims must act within an environment of deeply impacted information. These informational constraints are especially severe given the central role of moral costs in the definition of both accurate punishment prices and efficient procedural devices; the nonmaterial nature of such costs and the inability of market values to reveal their magnitude makes their estimation an extremely formidable endeavor under any circumstances. Moreover, the normative and political significance attached to the estimation of these costs makes the criminal process especially sensitive to errors in this respect and counsels extreme caution and circumspection in the evaluation of systemic outcomes. The strictly bounded rationality characterizing the complex of defendants, prosecutors, trial judges, juries, and appellate courts responsible for structural change in the criminal process thus creates an inevitable element of random error within it. As a result, decisionmaking processes which might be seen as "optimizing" under hypothetical conditions of

²¹ The institutional model of the American criminal process is developed in greater detail in Adelstein, *Informational Paradox*, *supra* note 9, at 283-89; and Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 783-807. Various aspects of it will be treated more thoroughly here as they become relevant to the present discussion.

²² See Adelstein, *Informational Paradox*, *supra* note 9, at 287-89.

²³ See Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 799-809.

²⁴ Our earlier discussion of sentencing standards as a response to failure created by highly individualized sentencing patterns is an example of this phenomenon. See generally Adelstein, *Informational Paradox*, *supra* note 9, at 289-96.

²⁵ See, e.g., the analysis of *Santobello v. New York*, 404 U.S. 257 (1971), in Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 814-16. Both these sources of organizational failure are discussed further in notes 162, 254 and accompanying text *infra*.

mechanism through which developing structural inadequacies are identified and compensatory responses to them formulated and implemented. This diachronic aspect of the evolutionary analysis raises difficult questions of teleology and the relationship between purposive actions of individuals within the criminal process and the adaptive and self-regulatory properties of the system as a whole, and I will consider both these and associated problems of prediction. I conclude in Section IV with a very brief discussion of the principal lesson of method to be drawn from the study of evolutionary biology, the necessity of comparative analysis in the study of evolving systems, and the potentially great value of the institutional framework as a theoretical basis for comparative work in criminal law and procedure.

II. ECONOMIC PERSPECTIVES ON THE CRIMINAL PROCESS

A. *Positive and Normative Aspects of Externality Analysis*

For the institutional and neoclassical economist alike, questions of crime and its control are but a special case of a more pervasive social problem, that of mediating the conflict of personal interest created by relationships of external cost. A useful working definition of this concept emphasizes the element of conflict inherent in it; an externality relationship exists when one individual or group seeks to employ resources for private advantage in such a way as to inflict injury or cost upon others who do not share in the benefits derived. Like all issues of human conflict, the resolution of externality relationships has both a positive (what is?) and a normative (what ought to be?) dimension. How much of this cost-imposing activity is in fact tolerated by a society at a particular moment? How much ought to be endured? To whom does the society award the right to inflict such injury, or the contrary right to be free of it, and why? How and in what circumstances ought these alternative entitlements to be distributed? And by what standards, if any, are these matters actually decided? Are these the rules upon which such determinations ought to be based?

Understood either as a positive social phenomenon to be observed and explained or as a normative prescription for the resolution of conflict created by the scarcity of resources, the notion of allocative efficiency, of making cost-imposing activity "pay its own way," offers a perspective on these questions at once distinctive and controversial. A careful discussion of the issues raised by the economist's paradigmatic culprit, the manufacturing firm which pollutes the air as it produces its principal output, will illustrate. Consider a steel plant located in a densely populated area. The production of steel requires the use of a wide range of human and material resources, including land, labor, capital, organizational skill, and raw materials, which the plant generally acquires by purchasing them in markets from others who own

them. If these input markets are competitive and working well, the owners of the primary resources are completely compensated for their contribution to the production of steel by the plant's payment to each of a price equal to the full cost of producing the primary resource itself and making it available for steel production. In this way, the steel plant is forced to take account of the costliness of the resources it employs in deciding how much steel to produce; the plant will purchase only those primary resources which are more valuable to it for the purpose of making steel than they would be to other purchasers who would use them differently. Given these conditions, the market mechanism allocates an efficient amount of each primary resource to the production of steel, and the plant, facing a market for its own output which determines the value of the primary resources to it, produces and sells an efficient amount of steel.

But there may be primary resources for which no markets exist. Suppose the production of steel entails filling the air around the plant with thick smoke. The plant's neighbors must breathe this smoke which imposes a real cost upon them in the form of damage to their lungs and respiratory systems and which to this extent makes their good health a primary resource essential to the production of steel. Where the law initially awards ownership of this primary resource ("the good health of the plant's neighbors") to those whose lungs are damaged, and where free bargaining between the plant and its neighbors can be relied upon to reveal accurately the relative values of the resource to the parties involved, the market mechanism will efficiently allocate "good health" just as it did the other primary inputs to steel production. Thus, the plant might compensate those of its employees who live near the plant by adjusting the wage rate to a mutually acceptable value which accounts for the costs imposed by the smoke. But for the plant's other neighbors, such "internalization" of costs through the market mechanism may not be possible. If the number of cost bearers is very great, and each bears a different, individualized cost as a result of breathing the smoke, the practical difficulties involved in organizing the vast number of separate market transactions required to allocate resources efficiently are likely to be insuperable. Without an alternative institutional structure designed to force the plant to consider the full resource costs of steel production given the market's failure to do so, the damages suffered by the plant's neighbors, their contribution to the production of steel, will remain "external costs." In a real sense the plant, while paying in full for its other primary resources, will have "stolen" the good health of its neighbors, and it will produce an inefficiently large output of steel (which it sells at an inefficiently low price as a result of its free use of a costly resource).

It is especially important to note that this posing of the externality problem does not in general contemplate the unconditional deterrence

like those to the franchise or the ownership of one's own body, universal and inalienable?²⁹

The positive problems associated with implementing the principle of systemically efficient allocation in cases of market failure are no less difficult. Even where all of the external costs imposed involve only physical damage to commodities which are themselves ordinarily traded in markets, and thus where existing market values provide a reasonable basis for the estimation of external effects, the practical obstacles to implementing an efficient scheme of taxation are most formidable. The characterization of efficient allocations requires an immense amount of information regarding the precise values placed upon various resources by many individuals dispersed throughout the community, information which these individuals may or may not be motivated to reveal accurately. As Friedrich Hayek³⁰ has eloquently argued, the "marvel" of the market mode of organization is that by protecting the freedom to own and trade property and by decentralizing economic decisionmaking to the greatest extent possible, the market provides every individual with a personal incentive to reveal this information truthfully and the society as a whole with a reliable means by which resources can be continually reallocated toward their most valuable use. But when markets fail to organize individual exchange and the goal of systemic efficiency remains, alternative organizational modes which necessarily centralize allocational decisions must be relied upon instead. These alternative forms, however, are inferior to markets in their ability to allocate efficiently because they are less able to extract the requisite information in useful and timely forms. This is especially so in dynamic, fluid situations where the severity of the externalities may change from day to day with local conditions; compared to market organization, which places primary decisionmaking responsibility in those "at the margin" who are best able to observe and adjust to changing conditions, centralized allocational schemes are inevitably sluggish and prone to error. Detailed cost information must be collected and transmitted over time and space from the place where it is generated initially to the decisionmaking authority, often in statistical form, and decisions taken centrally then communicated back to the point of origin for implementation, where conditions may have changed in the interim. The manifest potential for error in such a process is magnified when effects are included for which corresponding market values are not readily available (such as those in our pollution example), and remagnified where enforcement is uncertain and the corrective probabilities must be estimated in addition to the external effects themselves.

In this light, it seems fair to ask whether the goal of systemic efficiency can possibly be attained in the circumstances which characterize externality relationships in the real world. Certainly tax prices to be levied against individual cost imposers which would just internalize the injuries inflicted upon others by their activities and which, taken together, would effect an efficient level of cost imposition in the aggregate, can be specified with mathematical precision in abstract environments of perfect information. But are there actual or realizable institutional structures which can extract information sufficient to define the relevant prices and organize the vast number of individual transactions necessary to implement these marginal conditions in practice? Moreover, the realities of complex organizational forms of the kind required to achieve efficient central planning compel serious reconsideration of the teleological aspect of the model's basic analytical postulate. The achievement of an efficient allocation of external effects in the aggregate across a large system presupposes a "visible hand" of extraordinary reach and dexterity. Individual decisions regarding cost and price must be closely coordinated with one another and substantial internal discipline maintained if a centrally administered objective of systemically efficient resource allocation is to be met, no small task for organizational forms in which hierarchical relationships are fragile, decisionmaking diffused, and discretion necessarily widespread. Existing nonmarket structures concerned with the resolution of externality relationships generally do not in fact seek efficient allocation in the aggregate. Such systemic efficiency is neither a feasible nor necessarily a desirable goal of social policy, particularly where probability scaling in the presence of uncertain enforcement would be involved. Those who would argue otherwise bear a heavy burden in showing how, in the absence of markets, the collective decision for systemic efficiency might be made and the degree of coordination necessary to carry it out achieved.

The normative and positive issues raised by this approach to externality relationships are brought into still sharper focus when the external effects are generated by activities designated as criminal rather than by processes of economic production. I have argued elsewhere that the characteristic feature of criminal acts is the element of "moral cost" associated with them, the widely felt sense of outrage created by particular kinds of behavior and accompanying states of mind which distinguish them from other acts which might also entail damage to property or physical or psychic injury to the person.³¹ These moral costs are

²⁹ Cf. Calabresi & Melamed, *supra* note 6, at 1111-15 (discussing "inalienability").

³⁰ Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519-525 (1945).

³¹ See, e.g., Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 786-92. The incorporation of nonmaterial and moral effects into discussions of economic efficiency has been suggested elsewhere in the legal literature, e.g., Michelman, *Property, Utility and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1173, 1214-18 (1967); Calabresi & Melamed, *supra* note 6, at 1111-12; Comment, *Just Compensation and the Agency*.

creased. But to prescribe such an outcome as "optimal" or socially preferred is to accept as appropriate or desirable the set of social, political, and economic factors which underlies the array of moral cost created by the specific acts of particular individuals at a given moment.³⁴ As I shall argue further below, neoclassical analysis in this sphere of human activity has been characterized by normative policy prescriptions inconsistent with old and cherished values in the criminal process or by an insensitivity to positive considerations of moral cost which leads to unpersuasive explanations of observed phenomena within it. The institutional approach, in contrast, explicitly accepts the economic and moral costs associated with particular offenses and procedures without normative qualification and attempts to use them solely as a means toward positive understanding of the way in which the criminal process is organized, what functions its various institutions appear to serve, and how this social system has evolved over time. Institutional analysis must therefore be clearly understood as intentionally devoid of prescriptive content or normative evaluation of the phenomena with which it is concerned.

The obvious practical difficulties associated with the measurement of moral cost point to a second area of divergence between the neoclassical and institutional approaches to the criminal process. Moral costs as we have defined them are plainly very hard to quantify and unlikely to manifest themselves as disturbances in market values.³⁵ That they are hard to measure, of course, is not to deny their existence—but one can go further and argue that without consideration of moral costs, the economic interpretation of the criminal process as a means of externality control through price exaction cannot be sustained. Were the costs associated with criminal activity assumed to be

solely economic or material in character, severe punishments observed in cases of crimes which impose little or no material cost or injury could not be satisfactorily explained. But the clearly substantial moral costs imposed upon the direct victim and the society at large by crimes such as rape or kidnapping can be seen within an externality framework as rationalizing the substantial penalties provided for by statute and frequently imposed in practice for these offenses even where the victim has suffered no serious physical injury.

The central role played by individually specific moral costs in the definition of criminal offenses in general and the specification of punishments in particular cases, however, casts grave doubt upon any analysis which characterizes the criminal process as a mechanism designed to achieve systemic efficiency through central planning. The difficulties such a system would face *ex ante* in gathering sufficient information regarding the costs associated with various offenses and in determining the likelihood of conviction in particular cases—both necessary to specify appropriate punishment prices—are staggering. It is the very difficulty of these problems which is the motivating theme of the institutional analysis. In place of the neoclassical postulation of a centrally administered objective of efficient resource allocation, the institutional approach fixes attention upon the individual act of efficient exchange itself and interprets the criminal process as an inherently imperfect means to facilitate such exchanges on a case-by-case basis through the *ex post facto* imposition of a punishment equal to the costs of the offense involved *without regard* to the systemic variable of conviction probability. In a world in which cost information were freely available to planning authorities and the apprehension and conviction of offenders were certain, the marginal conditions for systemic efficiency would be satisfied by imposition of punishments set precisely equal to the full social cost imposed by their perpetrators alone, and the two approaches would converge to the same result. But in real environments where *ex ante* information is difficult to obtain and conviction far less than certain, only the institutional depiction is consistent with the observed legal norm of proportional punishment, of fixing the punishment "to fit the crime" in all its particulars without reference to the offenses of others and the burdens they may place upon the administration of justice. As our pollution example suggests, proportional punishment is incompatible with the probability scaling necessary to achieve efficiency in the aggregate where conviction is uncertain. A criminal process which continues the effort to effect individually efficient criminal transactions despite its inability to bring all offenders to account will not provide sufficient incentives to induce systemically efficient levels of criminal activity within its jurisdiction, a failure whose dimension increases as the probability of perfect enforcement falls. When Professor Posner suggests that "[t]he basic function of law, in an

³⁴ This argument is a variant of the considerations of wealth distribution discussed in note 18 *supra*.

³⁵ Even the economic "*gedanken* experiment" occasionally proposed to estimate the demand for public goods and services would be of no avail in estimating moral costs. Under this procedure, citizens are asked how much they would pay to see a particular good or service, say a new highway or bus route, provided by the government. Individual responses are then summed to produce a social "willingness to pay" for the item which is taken as an expression of demand. In the case of crime, the analogous question would be "How much would you pay to see prevented a crime of type *W* committed by offender *X* upon victim *Y* in circumstances *Z*?" Assuming that citizens would be able to offer reliable *ex ante* responses to questions of this form, the answers would then be summed and the total seen as a measure of the total cost, including both economic and moral elements, of the particular offense involved. But even this hypothetical result would be unsatisfactory because the individual responses would be dependent upon personal income in a way inconsistent with moral costs as we have defined them; a poor man, for example, could not pay as much as a wealthy man to see a particular crime prevented, even if his feelings in this instance were significantly stronger. Income effects of this kind (though clearly not all effects of income and social class) are excluded from the notion of moral cost envisioned here. For a general discussion of the institutional arrangements for the estimation of costs in the American criminal process, see Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 793-99.

criminal behavior or with respect to entire classes of cost-imposing activity.

A second relationship concerns the behavior of individual offenders and the deterrent effect of legal sanctions. Here Becker extends the economist's model of rational choice to illegal activity and depicts potential offenders as Benthamite calculators whose decisions to participate in crime are responsive to the suffering they expect to be inflicted upon them in the form of criminal punishment as a result of their choice. He proposes for each offender a "supply function" for offenses relating decreases in the individual's willingness to break the law to increases in either of the components of expected punishment, the probability of apprehension and conviction and the severity of sentence imposed.⁴¹ Summing these individual functions, Becker constructs a composite supply relation in which the instrumental variables of probability and severity of punishment can be employed as tools of policy to vary the overall level of activity within specific categories of offenses.

The concern with systemic efficiency which distinguishes the neo-classical approach is introduced by Becker's two remaining behavioral relationships, which explicitly recognize the costliness of maintaining a mechanism to apprehend, convict, and punish offenders. The first of these cost functions deals with the police and the courts, and argues first that, given a constant level of criminal activity in the aggregate, increments in the *a priori* probability of apprehension and conviction which face each offender can be achieved only through increased expenditure on police, prosecutorial, and judicial resources; each successive increment of probability, moreover, is assumed to be costlier than the last. Secondly, in order to maintain a given *a priori* probability, more resources must be devoted to the police and the courts, again at an increasing rate, as the total number of offenders rises.⁴² But this

⁴¹ Here, as with each of the other three behavioral relations, Becker must assign algebraic signs to the derivatives of his functions (*i.e.*, assume the direction in which one variable changes as the other related variables are changed in turn) and defend them on positive grounds. *Id.* at 42-55. This is required by the mathematics of systemic efficiency; particular signs are a necessary condition for the solution to the optimization problem to locate a point of *minimum* social loss. While some econometric evidence regarding these occasionally problematic propositions has been offered, *see, e.g.*, Ehrlich, *Participation in Illegitimate Activities: A Theoretical and Empirical Investigation*, 81 J. POL. ECON. 521 (1973) (suggesting that increased probability and severity do have a deterrent effect upon offenders), it is worth noting that, because institutional analysis suggests that the concern of the criminal process is the completion of efficient transactions on an individual basis rather than the achievement of systemically efficient resource allocation, strong assumptions of this kind need not be made.

⁴² While Becker means this cost function to measure the expenditure of financial resources in law enforcement, it is clear that police activity and judicial procedures of various kinds may also impose substantial nonmaterial or moral cost upon the society at large. *See, e.g.*, Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 806-09, 816-27. But Becker's framework is sufficiently general to account for these effects as well, and an extension of the analysis by John R. Harris considers in

poses a fundamental economic dilemma for the criminal process. While the social loss which results directly from illegal activity can be reduced by the increased deterrence associated with higher probabilities of apprehension and conviction, these increments are themselves a source of real cost. The unconditional deterrence of crime, while clearly a desirable goal, does not come cheaply, and efficient allocation implies that as the value of this deterrence is balanced against the cost of achieving it, some offenders will properly go unpunished because the expense of imposing the criminal sanction in these cases is simply not worth incurring.

The final relation concerns the choice between alternative modes of punishment, and although the systemic considerations in this area are similar to those associated with the police and judicial cost functions, Becker's discussion of the nature of criminal sanctions, particularly imprisonment, raises serious questions for the institutionalist. Becker argues that the act of imposing punishment upon the convicted offender is invariably a source of social cost. This loss is minimized where the punishment takes the form of a pecuniary fine, since the financial cost borne by the offender is always balanced by an equivalent gain registered by the recipient of the fine; in this case, only the costs involved in collecting the fine represent a net social loss. But where offenders are punished by imprisonment or by restrictions of personal liberty imposed by probation or parole, these social costs are greatly increased. Not only is the offender forced to endure suffering which is assumed to benefit no one,⁴³ but the remainder of the society must invest valuable human and material resources in maintaining the prisons and associated paraphernalia which comprise the means of administering the criminal sanction in this form. For Becker, this is the heart of "the case for fines":⁴⁴ where it is feasible to exact the appropriate punishment price by fine rather than imprisonment or probation, the criminal process *errs*, according to this normative efficiency perspective, when it chooses not to do so. Becker would reserve the most costly alternative of imprisonment only for cases in which it is absolutely necessary, where an impecunious defendant is financially unable to pay the monetary equivalent of the costs which his offense has imposed upon others. In this view, moreover, only fines can effect the socially desirable element of restitution in the criminal setting. Thus, if punishment were by fine, minimizing the social loss from offenses would be equivalent to compensating "victims" fully, and deterrence or vengeance could only be partially pursued. Therefore, if the case for fines

principle the systemic effects of procedures which might widely be perceived as unfair or improper. Harris, *On the Economics of Law and Order*, 78 J. POL. ECON. 165 (1970).

⁴³ Note that this ignores the effect of incapacitation upon the aggregate supply of offenses. *See, e.g.*, J. WILSON, THINKING ABOUT CRIME 193-94, 225 (1977).

⁴⁴ G. BECKER, *supra* note 39, at 63-68.

jectification of social cost, the sentencing authority must perform a second transformation at the time of sentencing, calibrating a pecuniary sanction in each case which induces an equivalent measure of suffering in the particular offender involved. Apart from any sense of unfairness which this scheme of unequal objective punishments might engender, the informational problems posed by this form of organization are quite severe. Where the requisite exchange of cost for cost, which itself involves difficult interpersonal comparisons in any case, must twice be mediated in this way, the reliable *ex ante* specification of efficient and intelligible punishment prices becomes almost impossible. But the need for the second of these transformations would be eliminated, and the difficulty of price signalling to potential offenders substantially reduced, if a mode of sanction were employed in which a unit of punishment could reasonably be expected to inflict an equal measure of suffering upon all offenders, without regard to income or social circumstance.

Certainly physical violence and the infliction of severe pain can be said to possess this element of universality, and can be accomplished with relatively small expenditure as well. And sadly, one need not look far for evidence that the barbarity and degradation of such methods have not yet relegated them entirely to the past. But in societies where individual freedom and personal dignity are held to be fundamental values, punishment by imprisonment or the substantial deprivation of liberty reflect a similar universality, for the quality of suffering and humiliation felt by free men and women in these circumstances seems at best only peripherally related to considerations of wealth or personal condition. Despite its relative economic costliness, then, the institution of punishment by imprisonment can be seen as achieving the "in kind" exchange of costs implied by price exaction in a way which reduces some of the uncertainty in completing individually efficient criminal transactions.

The task of the criminal process, therefore, is not, as Becker (and Posner) would have it, the effectuation of a systemically efficient allocation of resources or the inducement through relatively costless modes of "deterrence" of a predetermined level of criminal activity in the aggregate. Rather, it is the development and implementation of nonmarket mechanisms which can reliably extract the severely impacted information regarding the costs associated with specific behavior, transmit it to potential offenders so as to enable the *ex ante* identification of efficient cost imposition, and use it to exact *individually* efficient punishment prices in as many cases as possible given the economic and moral costs of the price exaction process itself. Only in this way can the essential *compensatory* function of the price exaction be achieved in environments hostile to the organization of exchange in markets. To argue

that imprisonment is "mere suffering"⁵⁰ and thus that expenditures upon it produce no social benefit at all is to neglect the fundamental (and normatively controversial) retributive purpose of criminal punishment, and to preserve, as Becker apparently does, the artificial distinction between retribution and deterrence⁵¹ is to ignore the crucial compensatory and allocative consequences of painful sanctions proportioned to the "gravity" of the offense.

Similar issues are raised as Becker, having set forth these behavioral relations, turns to the specification of "optimal" policy in the criminal process. He begins by collecting the social costs variously generated by the offenses themselves, the activities of the police and the courts, and the operation of the penal system into an analytically general measure of the social loss associated with crime and its control. The behavioral relations posited earlier imply that the magnitude of this social loss depends directly upon three variables which are assumed to be freely manipulable as instruments of public policy: the probability of apprehension and conviction, the severity of punishment imposed, and the mode of applying the criminal sanction.⁵² Decisions regarding these variables, Becker argues, should be made on the basis of "a criterion that goes beyond catchy phrases and gives due weight to the damages from offenses, the costs of apprehending and convicting offenders, and the social cost of punishment. The social-welfare function of modern welfare economics is such a criterion,"⁵³ and Becker finds it to be the appropriate goal of public policy in this area. Thus, he prescribes that the criminal process select values for the instrumental variables in order to minimize the social loss function and thereby achieve a systemically efficient allocation of resources to crime and its control.⁵⁴

⁵⁰ R. POSNER, *supra* note 28, at 173. See also *id.* at 169.

⁵¹ See Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 792 n.29.

⁵² Algebraically, the four behavioral relations are, respectively, $D=D(0)$, $0=0(p,f)$, $C=C(p,0)$, and $f' = bf$, where D is the net social harm due to the total number of offenses; p is the probability of apprehension and conviction and C their associated costs; f is the severity of punishment imposed directly upon offenders; and f' the social costs of punishment. The coefficient b varies with the mode of punishment and transforms f into f' ; for fines Becker assumes $b = 0$, but for all other modes, $b > 1$. Then the social loss function is $L = L(D, C, bf)$ or, since $0 = 0(p, f)$, $L = L(p, f, b)$. In light of the discussion in Part A of this Section concerning the great difficulties of extracting information essential to these calculations, it is significant that Becker bases all of his hypothetically precise mathematical results on the simplifying assumption that all costs are measured in real income and that L is the simple sum of these dollar amounts, $L = \$D + \$C + \$bf$. These further assumptions substantially reduce the model's generality and its sensitivity to issues of moral cost.

⁵³ G. BECKER, *supra* note 39, at 51.

⁵⁴ Becker's brief discussion of two potential policy alternatives to systemic efficiency, *id.* at 50-51, is of some interest. Through simple deterrence, which he interprets as setting p very close to 1 and f sufficiently high to exceed the welfare gains to offenders from illegal acts, the level of offenses could be reduced almost at will, but the resource costs associated with these policies might

But the trial procedure is not the only source of cost which the defendant might impose upon the state. Whenever the defendant invokes a statutory right to appellate review of a conviction, the state is forced not only to bear the costs of contesting the appeal⁶³ but, should the attack be successful, to retry the defendant (or negotiate a guilty plea) or abandon its prosecution of the case. Just as in the plea bargaining situation, the exercise of this right of appeal can effectively be deterred by the threat of a more severe sentence for those whom the state must reconvict after a successful appeal. In *North Carolina v. Pearce*,⁶⁴ however, the Court reinforced the *Jackson* rationale by holding this practice unconstitutional. "It . . . would be a flagrant violation of the [due process clause] for a state trial court to follow an announced practice of imposing a heavier sentence upon every reconvicted defendant for the explicit purpose of punishing the defendant for his having succeeded in getting his original conviction set aside,"⁶⁵ whether the appeal succeeded on constitutional or other grounds. The Court further noted that while it "has never held that the States are required to establish avenues of appellate review,"⁶⁶ once the state chooses to grant such a right it is "without right to . . . put a price on an appeal. A defendant's exercise of a right of appeal must be free and unfettered. . . . [I]t is unfair to use the great power given to the court to determine sentence to place a defendant in the dilemma of making an unfree choice."⁶⁷

Yet when the Court did confront the question of negotiated pleas squarely in *Brady v. United States*,⁶⁸ it ignored the implications of *Jackson* and *Pearce*⁶⁹ and upheld the general practice of plea bargaining in its most common forms. Citing the "mutuality of advantage"⁷⁰ which the bargaining process offers to prosecutor and defendant as the source of its widespread incidence, the Court distinguished *Jackson* and found no constitutional bar to plea negotiations where defendants are competently advised by counsel and there has been no extraordinary pressure "overbearing the will of the defendant."⁷¹

⁶³ Where appellants are without the means to pursue review, of course, the state must also bear many of the costs which would ordinarily fall upon them. See, e.g., *Douglas v. California*, 372 U.S. 353 (1963) (state may not condition the appointment of counsel for indigent appellants upon a preliminary determination of the merits of the appeal); *Griffin v. Illinois*, 351 U.S. 12 (1955) (state must pay the costs of providing necessary trial transcripts for indigent appellants).

⁶⁴ 395 U.S. 711 (1969).

⁶⁵ *Id.* at 723-24.

⁶⁶ *Id.* at 724.

⁶⁷ *Id.* (quoting *Worcester v. Commissioner*, 370 F.2d 713, 718 (1st Cir. 1966)).

⁶⁸ 397 U.S. 742 (1970). This case is discussed in greater detail in Adelman, *Negotiated Guilty Plea*, *supra* note 8, at 823-26.

⁶⁹ The inconsistency of negotiated pleas and the language of *Pearce* was suggested in Note, *The Unconstitutionality of Plea Bargaining*, 83 HARV. L. REV. 1387, 1402-03 (1970).

⁷⁰ 397 U.S. at 752.

⁷¹ *Id.* at 750.

While the *Brady* Court would not go so far as to acknowledge explicitly the reason for this apparent retreat,⁷² Chief Justice Burger did so—almost casually—for the Court the following term in *Santobello v. New York*:⁷³

"[P]lea bargaining" is an essential component of the administration of justice. Properly administered, it is to be encouraged. If every criminal charge were subject to a full-scale trial, the States and the Federal Government would need to multiply by many times the number of judges and court facilities.⁷⁴

Thus, despite the subsequent misgivings expressed by members of the Court as they considered various prosecutorial bargaining tactics in light of the still viable principles expressed in *Jackson* and *Pearce*,⁷⁵

⁷² "Of course, that the prevalence of guilty pleas is explainable does not necessarily validate those pleas or the system which produces them." *Id.* at 752-53.

⁷³ 404 U.S. 257 (1971).

⁷⁴ *Id.* at 260.

⁷⁵ In *Bordenkircher v. Hayes*, 434 U.S. 357 (1978), for example, the Court considered the propriety of a prosecutor's threat to reindict a defendant under the state's habitual offender statute should he refuse the offer of a negotiated plea. Although the prosecutor's right to invoke this statute under state law was not challenged, and there was sufficient evidence to support the indictment, the issue was posed in terms of prosecutorial "vindictiveness," suggested by language in *Pearce*: "Due process of law, then, requires that vindictiveness against a defendant for having successfully attacked his first conviction must play no part in the sentence he receives after a new trial." 395 U.S. at 725. In upholding the defendant's sentence of life imprisonment under the recidivist statute after his insistence upon a trial, the Court said:

[We have] emphasized that the due process violation in cases like *Pearce* . . . lay not in the possibility that a defendant might be deterred from the exercise of a legal right, but rather in the danger that the State might be retaliating against the [accused] for lawfully attacking his conviction.

To punish a person because he has done what the law plainly allows him to do is a due process violation of the most basic sort, and for an agent of the State to pursue a course of action whose objective is to penalize a person's reliance on his legal rights is "patently unconstitutional." But in the "give-and-take" of plea bargaining, there is no such element of punishment or retaliation so long as the accused is free to accept or reject the prosecution's offer.

434 U.S. at 363 (citations omitted). The distinction the Court is attempting to draw here is clearly a very dubious one, for it has chosen the wrong hypothetical defendant upon which to base its analysis. It is, of course, not the defendant who accepts the offer who is retaliated against in the plea bargaining situation; it is those, like Hayes, who *refuse* the offer and are sentenced accordingly after trial who must pay the penalty for exercising their rights. There is no inducement to plead guilty without the example of the Hayeses to place before recalcitrant bargainers. The Court itself seemed to recognize the futility of distinguishing *Pearce*, for it soon conceded that "by tolerating and encouraging the negotiation of pleas, this Court has necessarily accepted as constitutionally legitimate the simple reality that the prosecutor's interest at the bargaining table is to persuade the defendant to forego his right to plead not guilty." *Id.* at 364. In dissent, Justices Blackmun and Powell argued that this tactic was precisely the sort of "vindictiveness" forbidden by *Pearce*. But the time for these arguments was in *Brady*, not *Bordenkircher*; once the plea bargaining system has been constitutionally upheld, as the majority implies, it cannot be denied the single procedure which makes it work. Here again, one sees that the real issue is submerged and implicit, for what makes Hayes' case so poignant and motivates the dissenters' passion is that his life sentence was triggered by the passing of a bad check for less than \$90. This may indeed be a miscarriage of justice, but if it is, the real source is in the harshness of the recidivist statute itself, an issue which was not raised in the case, rather than in the bargaining tactics of the prosecutor.

certain P* because the risky prospect includes the possibility of a punishment greater than P* upon conviction. In these situations, the imposition of extremely severe penalties in a vanishingly small number of cases, a penalty scheme which might truly be called "wanton and freakish,"⁸³ induces an efficient level of aggregate offenses with negligible expenditure on police, prosecutorial, and judicial services. If risk preference among offenders is assumed, this policy is ameliorated to some degree. When offenders are less deterred by the uncertain punishment prospect than by the corresponding certain penalty, the prescribed likelihood must rise and its associated severity fall, although in general the individual punishments actually imposed still greatly exceed the costs of the offenses involved.⁸⁴

It is, of course, difficult to speculate as to either the general attitudes toward risk which characterize offenders as a class or the "optimal" values which would follow were the proposed policies actually pursued in the United States. Nonetheless, present practices in American jurisdictions may offer some insight into the kinds of results which would accompany the attempt to induce systemically efficient levels of illegal activity through probability scaling. Consider the crimes of burglary and larceny, which together account for the vast majority both of offenses actually committed in the United States and of successful prosecutions in the nation's courts.⁸⁵ For purposes of illustration, assume that offenders in general are risk neutral,⁸⁶ that existing probabilities of conviction in the American system lie reasonably close to those values which a systemic efficiency analysis would prescribe,⁸⁷ and that the statutory penalties currently provided for these offenses can be taken as useful estimates of the actual social cost ordinarily associated with the crimes.⁸⁸

⁸³ *Furman v. Georgia*, 408 U.S. 238, 310 (1972) (Stewart, J., concurring).

⁸⁴ G. BECKER, *supra* note 39, at 53-54. The efficient level of offenses in the aggregate is likely to be somewhat greater in this case as well.

⁸⁵ Of the F.B.I.'s six index crimes (excluding auto theft, for which complete figures are not reported because of the unusually high incidence of juvenile offenders), burglaries accounted in 1977 for some 31% of all reported offenses and 21% of all convictions, while larcenies comprised 59% of reported crimes and 62% of successful prosecutions. See generally FEDERAL BUREAU OF INVESTIGATION, UNIFORM CRIME REPORTS FOR THE UNITED STATES (1977) [hereinafter cited as UCR].

⁸⁶ Becker himself suggests that at the moment the decision to commit an offense is made, offenders in general show a preference toward risk, G. BECKER, *supra* note 39, at 53, and there is some econometric evidence, indicating that the aggregate level of offenses is more responsive to increments in probability than to severity, which supports this hypothesis. See note 80 *supra*; Ehrlich, note 41 *supra*. But the overwhelming majority of these same offenders, when subsequently confronted with the choice between a negotiated sentence imposed without risk and an uncertain trial prospect, select the option of the certain bargain, suggesting that they are risk averse in this situation. Given these observations, the assumption made in the text for expositional purposes seems a reasonable one.

⁸⁷ This inference is explicitly made by Becker as well. See G. BECKER, *supra* note 39, at 53.

⁸⁸ Detailed arguments in support of this proposition are presented in Adelstein, *Negotiated*

The Uniform Crime Reports of the Federal Bureau of Investigation [UCR] report that 3,052,200 burglaries were committed in the United States during 1977, of which 16% resulted in the arrest of a suspect. Of those arrested, 73% were prosecuted, with 75% of these cases ending in a conviction on the charge of burglary or some lesser offense.⁸⁹ On the basis of these figures alone, the *a priori* probability of apprehension and conviction which confronts a potential burglar would appear to be approximately .088, just under one in eleven. But careful studies of victimization have consistently demonstrated that the true incidence of criminal activity in the United States is several times that reported in the UCR;⁹⁰ the National Opinion Research Center estimates that the incidence of burglary across the nation is three times the UCR rate,⁹¹ and that in Chicago, for example, only one burglary in five is reported to the police.⁹² If underreporting at the national rate is incorporated into the calculations, the relevant probability is decreased by two-thirds to roughly .029, almost one in thirty-four. For larcenies, by far the most common UCR offense, the results are similar; the F.B.I. reports 5,905,700 offenses, with an *a priori* conviction probability of .136, just under one in seven.⁹³ But the victimization surveys suggest a real incidence twice the UCR figure,⁹⁴ reducing the likelihood of conviction to .068, about one in fifteen.

In Illinois, where Professor Becker lives, burglary is a Class 2 felony, punishable by imprisonment for a term of one to twenty years,⁹⁵ while larceny, a Class 3 felony, carries with it a term of one to ten years.⁹⁶ Given risk neutrality among offenders, these punishments would be divided by the appropriate probabilities to create an expected value just equal to the costs imposed by the offense, inducing illegal behavior at a systemically efficient rate. In the case of burglary, this scaling would impose sentences of from 34 to 690 years on the one offender in thirty-four actually convicted; and the present statutory limit of 20 years would be imposed upon an offender whose crime would, in an environment of perfect certainty, result in a sentence of seven months. For larcenies, the sentencing range would be 15 to 147

Guilty Plea, *supra* note 8, at 796-99, and Adelstein, *Informational Paradox*, *supra* note 9, at 283-89. I am aware of no evidence of any kind which suggests that the ultimate probability of apprehension and conviction is a factor influencing the legislative establishment of criminal penalties.

⁸⁹ UCR, *supra* note 85, at 23-24. One-third of the arrests for burglary involved juveniles, and for purposes of discussion I have assumed that they are prosecuted and convicted at roughly the same rate as adults.

⁹⁰ See J. KAPLAN, CRIMINAL JUSTICE 610-12 (2d ed. 1978).

⁹¹ *Id.* at 610.

⁹² *Id.* at 612.

⁹³ UCR, *supra* note 85, at 27-29.

⁹⁴ J. KAPLAN, *supra* note 90, at 610.

⁹⁵ ILL. ANN. STAT. ch. 38, §§ 19-1(b), 1005-8-1 (Smith-Hurd 1973).

⁹⁶ *Id.* §§ 16-1(e3), 1005-8-1.

ing throughout the American criminal process. It is thus worth noting that

[e]xcept possibly for political prisoners in totalitarian states, prisoners in American penitentiaries serve the harshest sentences in the world. In 1974, only 2 percent were serving less than one year; 24 percent were serving sentences of one year to 4.99 years; 74 percent were serving sentences of five years to life. Under sentence of death were 700 persons. No other country in the world imprisons as great a proportion of the population as we do, and the length of sentence for an offender in the American criminal justice system is several times longer than that of his counterpart anywhere else in the world.¹¹³

Where probability scaling would multiply even these sentences many times over and so plainly distort the principle of proportionality, it seems clear that the normative case for systemic efficiency as the primary organizing principle of American criminal justice would need to be made very persuasively indeed.

Whatever controversy might be occasioned by these policy arguments, much of the clarity and power of Becker's essay derives from its firm and unapologetic normative stance. Still, prescriptive analysis without a view towards its eventual adoption as public policy is a singularly empty exercise, and thus some brief consideration of the practical problems involved in effecting systemically efficient resource allocation in the criminal process seems in order. One such problem lies in the otherwise elegant mathematical specificity of the sentencing and expenditure policies Becker proposes, precision which is largely due to the characterization of social welfare solely in terms of real income and the general exclusion of moral costs from the analysis.¹¹⁴ But the informational obstacles to the implementation of even this simplified and less general notion of efficiency remain most daunting. When the costs imposed by individual offenses and the probability and costliness of apprehension are assumed to depend upon the unique circumstances surrounding them, the requisite specification of particular efficient punishments *ex ante* is plainly impossible. The alternative is the grouping of offenses, and perhaps classification of offenders as well, into categories for which these costs and probabilities are held to be roughly equal and for which uniform, mandatory penalties would be prescribed. As I have argued elsewhere,¹¹⁵ such a scheme would require the acquisition of a great deal of information regarding rates of deterrence within the various classifications and the *ex ante* estimation of the costs to be expected from the offences involved and would, even in the best of circumstances, result in errors of potentially substantial

magnitude in specific cases.¹¹⁶

But even if these groupings could be made and reasonably accurate cost information obtained, there would remain the problems of coordinating the necessary appropriations for police, courts, and penal facilities and, most importantly, of ensuring that the required sentences would in fact be imposed as they had been specified. The difficulties of administering centrally determined policy in large organizations even when hierarchical structures and command relationships are clearly defined are substantial enough, but they would be vastly complicated in the American criminal process, with its constitutional separation of decisionmaking powers and the pervasive discretion to resist central direction vested in officials ranging from police dispatchers to Supreme Court Justices. The values of the two principal instrumental variables in the Becker analysis, the probability of apprehension and conviction and the severity of sentences imposed, are both the products of an extremely complex set of interrelated decisions, coordinated only in the very loosest ways, and made by individuals and groups in all three branches of government whose motives and purposes are often at odds. A criminal process which could even begin to establish and implement these values through central planning and direction would appear very different from that which we know, and more than a little threatening. That the conflicts of purpose and dispersal of power which characterize the American criminal process exist by constitutional design suggests not only that the degree of discipline necessary to administer systemic efficiency would be all but impossible to achieve in practice, but that the concentration of power it would entail would perhaps be seen as an evil far greater than that which it was meant to overcome.

Even this brief critique suggests that Becker's analysis suffers from a kind of tunnel vision, that fundamental elements and problems at the core of the criminal process are attenuated or excluded from view by the narrow focus upon static optimization within a framework of systemic efficiency. Yet it would be a serious error to fault Becker for this; in his work we see the neoclassical paradigm at its very best, imaginatively applied by a scholar of consummate skill and intellectual integrity. It is the very quality of Becker's craft which exposes the essential limitations of neoclassical analysis and epistemology as ways of illuminating the nature of the criminal process and its place in the larger mosaic of social life.

As I have shown, Becker is concerned neither with the structure or development of legal institutions as such nor with organizational form within the criminal process and the constraints that such organization

¹¹⁶ At least in capital cases, moreover, the errors in individual cases which necessarily result from mandatory sentencing procedures have rendered them unconstitutional. See the discussion of *Woodson v. North Carolina*, 428 U.S. 280 (1976) in Adelstein, *Informational Paradox*, *supra* note 9, at 295-96.

¹¹³ J. KAPLAN, *supra* note 90, at 503.

¹¹⁴ See note 52 *supra*.

¹¹⁵ Adelstein, *Informational Paradox*, *supra* note 9, at 290-91.

tyless and ahistorical."¹²² The neoclassical view sees quantities, prices, incomes, and levels of output¹²³ as central and mathematically related to one another in systems in which all change is necessarily quantitative and, in principle, fully reversible simply by a reversal of the forces which determine them. Consider, for example, a ball tossed into the air which, after a time, returns to rest at just the point from which it was thrown. In Newtonian terms, the "before" and "after" snapshots of this physical system are identical. A description of the system consisting of the position, velocity, and energy of the ball will be precisely the same in the instant after the ball comes to rest as in the instant before it began its journey; it is wholly unresponsive to events which might have occurred in the interim. The ball may simply have gone straight up and come back down again, or it may have bounced once or twice on a floor or ceiling, or it may have been caught in midair and thrown back by another person. But because events of this kind have wrought no quantitative change in the physical parameters of the system, they have been "forgotten" by it. There is no place in this descriptive scheme for qualitative information about the ball's "history" because in general there is no need for it, and so it is lost.

In the neoclassical perspective, economic processes are seen in just this way. The unyielding quantification of economic information and the conflation of economic relationships into mechanistic systems of simultaneous equations leaves no room for the observation or analysis of qualitative development in economic systems. The scientific vision of Frank Knight, although nearly fifty years old, still dominates the discipline:

For if it is in the intrinsic nature of a thing to grow and change, it cannot serve as a scientific datum. A science must have a "static" subject-matter; it must talk about things which will "stay put"; otherwise its statements will not remain true after they are made and there will be no point to making them.¹²⁴

But as our present economic difficulties make painfully clear, economic systems simply will not "stay put," nor do they "forget" the events in their past. The remedy prescribed by Keynes to reduce unemployment during the Great Depression, the stimulation of aggregate demand through governmental expenditure financed by public debt, proved universally effective through the Depression and the Second World War because his theoretical analysis had so perceptively captured the underlying economic relationships in the Western industrial nations (including Germany) at the time. His theory, moreover, was

perfectly reversible in the sense we have just described; policies which were appropriate in depressed and deflationary times could equally well be applied in reverse to the problems of "overheated," inflationary economies. From the Keynesian model of macroeconomic equilibrium came the hope of "fine tuning"—taming the business cycle through precise and timely fiscal measures designed to ameliorate the periodic fluctuations in national income and the human misery which accompanies them. But the sad experience of the last decade has been that Keynesian policy which has worked well in one direction apparently cannot be successfully applied in the other, especially in democracies characterized by dispersed concentrations of authority. Political constraints make the unpopular remedies of increased taxation and reduced public expenditure extremely hard to implement, and even where they are available, remedial policies can often be frustrated by anticipatory or adaptive behavior on the part of individuals and firms who, like the policymakers, have also read their Keynes.

The problem, of course, is not that Keynes was "wrong" but that the economic systems which he so brilliantly described fifty years ago no longer exist. The "mixed" Western economies of 1981 are vastly different from those of 1930, due in no small part to the application of Keynesian policies themselves; it would plainly be idle to suppose that this great political and economic transformation could be significantly undone and the pre-Keynesian world of 1930 restored.¹²⁵ Popular perceptions of the relative roles and responsibilities of individuals and government in economic affairs have shifted dramatically. The economic and social character of production has been radically altered as individual firms have grown in size and power and markets become truly international in scope and domestically less competitive. Inherently unpredictable technological advance and a fluid political environment have restructured basic industries and created entirely new ones. The distinguishing feature of all macroscopic social changes of this kind, as well as those which occur on a smaller scale specifically within the legal system, is that they are fundamentally qualitative and historical in nature. They are the results of irreversible dynamic processes which are neither optimizing nor equilibrating, and it is precisely these features which place the changes beyond the grasp of mechanistic analysis.

But how is change of this kind to be systematically apprehended and understood? Georgescu-Roegen's critical insight is that all social

¹²² N. GEORGESCU-ROEGEN, *supra* note 118, at 4.

¹²³ In Becker's analysis of the criminal process, the analogues of these three variables are, respectively, the probability and severity of punishment, the dollar value of the social loss due to crime, and the aggregate level of criminal activity. G. BECKER, *supra* note 39, at 42.

¹²⁴ F. KNIGHT, *THE ETHICS OF COMPETITION* 21 (1935).

¹²⁵ This point seems to be one of the few areas of agreement among scholars of differing ideological persuasions who are concerned with the contemporary "crisis" in Keynesian thought and policy. Compare, e.g., J. GALBRAITH, *THE AGE OF UNCERTAINTY* 225-26 (1977) with J. BUCHANAN & R. WAGNER, *DEMOCRACY IN DEFICIT: THE POLITICAL LEGACY OF LORD KEYNES* 3-76 (1977). See also Skidelsky, *Keynes and the Reconstruction of Liberalism*, *ENCOUNTER*, Apr. 1979, at 26, 36-39.

science is the study of "life phenomena,"¹²⁶ patterns and structures of human activity whose most important attributes are form and evolutionary development. Not surprisingly, then, he finds an epistemological model for economic science not in mechanics but in the life sciences, particularly evolutionary biology and ecology, where "[q]ualitative change has never ceased to be a central theme."¹²⁷ Research in these areas has long recognized that form and shape are continuous qualities of infinite variety which cannot meaningfully be classified or reduced to a vector of cardinal numbers.¹²⁸

Furthermore, qualitative change in living systems is a process of hysteresis, one in which the entirety of the system's past is cumulated in and acts upon its present.¹²⁹ The range of possible adaptations open to an evolving entity in the face of a given change in environment is sharply limited by the unique experience of its evolutionary past. Were the climate in the temperate zones to begin to cool significantly, the available set of mutant candidates for selection in this newly hostile

¹²⁶ N. GEORGESCU-ROEGEN, *supra* note 118, at 4. Georgescu-Roegen is by no means the only economic thinker to suggest the appositeness of the analogy between economic change (or social change in general) and evolutionary processes in the domain of the life sciences. See, e.g., F. HAYEK, *Degrees of Explanation*, in *STUDIES IN PHILOSOPHY, POLITICS, AND ECONOMICS* 3:11-14 (1967); F. HAYEK, *The Theory of Complex Phenomena*, in *id.* at 22, 31-36; Veblen, *Why is Economics Not an Evolutionary Science?* 12 Q.J. ECON. 373 (1898). In the present essay, however, a more direct debt is owed to the pioneering but difficult and long neglected work of John R. Commons, who perceived the individual transaction as the essential integrating unit of economics, ethics, and law, and who explicitly saw both courts and moral codes as evolutionary mechanisms in which "working rules" to facilitate and organize transactions in changing environments are continuously developed and refined. See note 2 *supra*. It might fairly be said of Commons that it was his misfortune to write at the same time as Keynes, at a moment when the world was understandably more concerned with the economics of depressions than with the economics of legal systems. A contemporary review which imparts the flavor of Commons' thought and method is Mitchell, *Commons on the Legal Foundations of Capitalism*, 14 AM. ECON. REV. 240 (1924). Commons was strongly influenced by his own teacher, Richard T. Ely, who had studied with Karl Knies and Wilhelm Roscher in Heidelberg during the latter part of the nineteenth century. Knies and Roscher were among the leaders of what has come to be called the "German Historical School" of social science, which stressed the fundamental inseparability of economics, politics, and history as social disciplines and the evolutionary and organic character of social institutions. See generally J. HERBST, *THE GERMAN HISTORICAL SCHOOL IN AMERICAN SCHOLARSHIP* (1965). The continuing vitality of this rich tradition is seen not only in the institutional writing of Commons' intellectual descendants but in the scientific insight of Friedrich Hayek as well.

¹²⁷ N. GEORGESCU-ROEGEN, *supra* note 118, at 62.

¹²⁸ Georgescu-Roegen's own work reflects this view:

Many have argued that [the classification of living things is impossible] because in the domain of living organisms only form (shape) counts and shape is a fluid concept that resists any attempt at classification. Some have simply asserted that form cannot be identified by number. . . . Yet a simple proposition of the theory of cardinal numbers vindicates the gist of all these intuitive claims. It is the proposition that the next higher cardinal number mathematics has been able to construct after that of the arithmetical continuum is represented by the set of all functions of a real variable, i.e., by a set of forms. Clearly, then, forms cannot be numbered.

Id. at 77 (emphasis in original) (citations omitted).

¹²⁹ *Id.* at 114-27.

environment would be very different for those creatures which have evolved to become horses and those which have become frogs. The uniqueness of these unfinished histories of novel evolutionary response to unforeseeable environmental change suggests that the condition of *ceteris paribus*, the indispensable ingredient of controlled experiment and predictive hypotheses, is of little value in the study of evolutionary processes. We can observe a continuing process of evolution only once, from its midst rather than its end, and we are unable to abstract it from its history. In this important sense, "other things" can never be made "equal." The evolutionist must learn from the qualitative comparison of evolutionary responses, not the quantitative prediction of them.

The process of change within legal systems reflects these essential characteristics; it is manifested in qualitative forms of organization, rules, and procedures, and the particular shape it takes is largely determined by the historical experiences contained in precedent and by the peculiar development of basic institutions. To cite one example to which I shall return, where criminal caseloads increase and the resources required to handle them are limited, the responses evolved by various legal systems can be expected to differ in important ways which reflect the histories and institutions of the systems themselves. Thus, the American devices of plea bargaining and substantial prosecutorial discretion and the German analogues of *Strafbefehl* and *Opportunitätssprinzip* are indeed qualitatively different forms,¹³⁰ and close attention must be paid to the reasons for, and effects of, these differences. But evolutionary analysis based upon notions of economic exchange also makes clear that different forms may serve many of the same purposes and arise for many of the same reasons, and much can be learned from this as well.

The casual metaphor of an "evolving law" has, understandably, long been a comfortable one for lawyers and legal scholars. Yet, as I shall argue throughout the remainder of this essay, careful evolutionary analysis of legal institutions based upon an explicitly economic view of their nature and purpose can be much more than mere metaphoric discussion. It is important that the limitations of such an inquiry, particularly with respect to the problem of deterministic prediction, be clearly articulated and appreciated. But these considerations by no means vitiate the explanatory power of models of legal systems as mechanisms of economic exchange in which new procedures and organizational forms are continuously evolved in response to a constantly changing exchange environment. That such an approach has the potential to open rich and significant new areas of legal scholarship will, I believe, become manifest.

¹³⁰ See generally J. LANGBEIN, *COMPARATIVE CRIMINAL PROCEDURE: GERMANY* 87-111 (1977). Cf. notes 230-34 and accompanying text *infra*.

legal doctrines which do not conform to the hypothesized efficiency objective as "puzzling" or "anomalous"¹³⁵ because neither his account nor the evolutionary models derived from it allow for the persistence of "mistakes" of this kind.¹³⁶

In common both with Becker and the institutional approach, Posner begins with the efficient offense and the problems involved in identifying and encouraging it. But his rejection of moral externalities as an explanatory tool leads him immediately into artificiality in discussing the magnitude of criminal penalties and creates some initial confusion as to whether his analytical intent is positive or normative. Even where apprehension and conviction are certain, he argues, fixing the punishment price just equal to the direct economic damage caused by an offense would merely make the potential offender indifferent between engaging in the criminal activity and refraining from it. In the case of some crimes, however, "the law's purpose in prohibiting the act in question [is] to channel the activity into the market, i.e., the arena of voluntary transacting,"¹³⁷ and so the punishment facing the offender must be somewhat greater than the economic cost associated with the act in order to provide the requisite increment of deterrence. Still, the existence of efficient offenses and the desire not to discourage them requires that the sanction not be so severe as to deter *all* potential offenders. For Posner, these two objectives can, in principle, be reconciled by setting the punishment price for a given offense equal to the sum of the act's economic cost *per se* and the costs incurred in bringing the culprit to justice.¹³⁸ In one stroke and without resort to moral effects, Posner thus provides a justification for Becker's "natural" policy of forcing offenders to bear the costs of their prosecution¹³⁹ and develops a tentative rationale for the existence of criminal punishments clearly greater than the economic costs associated with the offenses involved.

But some doubt creeps even into this world of perfect enforcement. If the purpose of the law were indeed to tip the balance of indifference toward restraint in cases of intentional cost imposition, and the vehicle for achieving this goal were the addition of marginal enforcement costs to the economic damage caused by the offense in assessing penalties,

¹³⁵ Posner's description of these "anomalies" is by now well known:

Why, then, are some apparently efficient transactions forbidden in the name of morality? . . . No court would enforce [a wife's] contract [to leap on her husband's funeral pyre]. No court would enforce Shylock's contract with Antonio. No court would enforce a voluntary contract to become another's slave. A convicted criminal is not permitted to substitute a lashing [for a prison sentence] even if he showed that the cost savings to the state [are substantial]. These examples are puzzling from an economic standpoint.

R. POSNER, *supra* note 28, at 187.

¹³⁶ For a similar criticism, see Macneil, *Economic Analysis of Contractual Relations: Its Shortfalls and the Need for a "Rich Classificatory Apparatus,"* 75 Nw. U.L. Rev. 1018 (1981).

¹³⁷ R. POSNER, *supra* note 28, at 165.

¹³⁸ *Id.* at 166.

¹³⁹ See notes 57-77 and accompanying text *supra*.

there would seem to be no reason for the law to distinguish among various forms of cost imposition in this respect. Thus, for example, we might expect intentional breaches of contract to be punished not only by the award of damages equal to the economic harm done but also by a further payment covering plaintiff's full costs of litigation. But American law generally requires such cost imposers to pay only the economic costs of the breach itself, a result Posner applauds without qualification as encouraging efficient breaches of contract.¹⁴⁰ Alternatively, if Posner means to argue positively that the evolution of the criminal law has been qualitatively different in this fundamental way from that of the civil law, some historical analysis of this divergence of purpose would be useful, especially to still the doubts of those who see merit in *North Carolina v. Pearce*¹⁴¹ and remain uneasy with the institution of plea bargaining.

More to the point, however, it is simply unreasonable to suspect that the statutory penalties provided for a theft of \$500 and a rape imposing a similar quantum of purely economic damage differ so greatly solely because the legislature assumes *a priori* that it will cost an order of magnitude more to catch a rapist than a thief. In the institutional perspective, this phenomenon is seen to result from the varying degrees of moral cost associated with the two offenses, a straightforward and intuitive explanation unavailable to Posner. Instead, here as throughout the remainder of his discussion, he grounds a *positive* argument in the equivalent effect (risk preference aside) of certain penalties and risky ones of equal expected value and the systemically efficient outcomes which result from probability scaling. Posner sees observed rules of criminal law and procedure as being *causally* related to the existence of an uncertain conviction, resulting directly from an implicit, operationally undefined but apparently real and continuing attempt within the criminal process to calibrate the severity of sanctions with perceived likelihoods of conviction in a variety of circumstances so as to effect systemically efficient levels of aggregate criminal activity. To defend this remarkable hypothesis in the absence of direct empirical support for it, he is forced into a series of positive positions of increasing implausibility. Unsupported and often dubious assumptions about the relevant costs and probabilities must be made. The various centers of decisionmaking authority within the criminal process must be presumed disposed and competent to coordinate their behavior toward the

¹⁴⁰ R. POSNER, *supra* note 28, at 89-90. Elsewhere, however, Posner has termed this same result an "anomaly" and criticized it as "highly inefficient." Posner, *The Economic Approach to Law*, 53 Tex. L. Rev. 757, 765 (1975). But the fault Posner identifies in the American rule is not that it provides less than effective deterrence of the cost-imposing activity itself, as his argument here would suggest, but instead that it encourages inefficiently frequent litigation *after* the breach of contract rather than less costly settlement procedures. See Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 J. LEGAL STUD. 399, 428 (1973).

¹⁴¹ 395 U.S. 711 (1969), discussed in notes 64-77 and accompanying text *supra*.

result which demands that the fine itself be set no higher than it was.¹⁵¹ The next case on the docket concerns Jefferson, Hamilton's (apparently incompetent) guide, who has committed precisely the same offense but is too poor to pay the \$25 fine. So Jefferson is sent to jail for ten days, after which he admits that he too would do it again if the necessity arose because the jail term, though unpleasant, was much preferable to the alternative of starving. But in Posner's view, this result is *not* "cost-justified" because Jefferson, unlike Hamilton, does not have the means to pay the dollar value of the goods involved and the price exaction required to distinguish efficient from inefficient offenses must therefore be achieved through some different means, such as imprisonment. Now this may or may not be sound economics (I would argue strongly that it is not), but as ethical theory, it would appear to distinguish right from wrong solely on the basis of personal wealth and thus certainly leave much to be desired.¹⁵² It would, moreover, be surprising indeed if positive analysis were to reveal that the character of fundamental institutions of criminal justice had been wholly determined by pecuniary considerations of this kind.

Yet this is precisely the position Posner takes. Once the "case for fines" has been accepted as a descriptive proposition, "the heavy reliance in all criminal-justice systems on nonpecuniary sanctions, predominantly imprisonment"¹⁵³ is clearly suboptimal and must therefore be explained. Posner does this by asserting that "the costs of collecting fines rise with the size of the fine"¹⁵⁴ and that the insolvency of most offenders requires that other modes of imposing the criminal sanction be devised.¹⁵⁵ Returning to the normative, however, Posner argues that because imprisonment is a large consumer of social resources, "[i]f we must continue to rely heavily on the sanction of imprisonment, there is an argument for combining heavy prison terms for the convicted criminal with low probabilities of apprehension and con-

viction."¹⁵⁶ Posner is apparently untroubled by the disproportionality of the penalties he would thus prescribe but, like "[m]edieval thinkers [who] were worried about this problem,"¹⁵⁷ he is concerned about the existence of an upper bound to the practical severity of punishment: "But if there is an upper bound . . . , then crimes of different gravity may carry an equivalent penalty, and this could lead to inefficient results."¹⁵⁸

Had Posner's discussion of the criminal process ended here, his readers might be excused for thinking that he had conceded the positive weakness of his position and thus intended his analysis to be taken as normative. But his subsequent discussion of organizational form in the civil and criminal processes demonstrates otherwise,¹⁵⁹ because his attempt to explain the observed reliance upon private enforcement in the civil case and public prosecution in the criminal one is explicitly based upon the assumption that criminal punishments are in fact probability scaled for purposes of systemic efficiency.

Once again, a distinction between crimes and civil wrongs that is grounded in the existence of moral cost would provide a simple but satisfying rationale for this structural variation.¹⁶⁰ In the case of torts and breaches of contract, for example, the external effects involved are all but exclusively economic in nature and concentrated upon a single direct cost bearer. This generally allows the full extent of cost imposed to be ascertained despite the expense of litigation through individual suits brought by private, self-interested plaintiffs. But the dispersion of moral costs over a multiplicity of cost bearers forces the criminal process toward a different mode of organization. While the aggregate moral cost of a given offense may be substantial, the cost borne by single indirect victims is generally too small to induce the large number of individually costly private suits which would be necessary for reasonably complete cost internalization. Public enforcement in this situation is thus very much in the nature of a class action and, as we have seen, the punishment imposed upon convicted offenders is characteristically a public good which serves as a kind of restitution to the large class of moral cost bearers.¹⁶¹

But here too, analysis of this sort is not open to Posner. Instead, he examines an alternative to public organization in the criminal process in which the police and public prosecutor are replaced by private "enforcement firms," bounty hunters who would undertake to capture of-

¹⁵¹ See *id.* at 166.

¹⁵² Posner has argued at length that an ethical system in which "[t]he only kind of preference that counts . . . is one that is backed up by money" is an appropriate and desirable normative theory of law. Posner, *Utilitarianism, Economics, and Legal Theory*, 8 J. LEGAL STUD. 103, 119 (1979).

¹⁵³ R. POSNER, *supra* note 28, at 167.

¹⁵⁴ *Id.* It should be noted in passing that this unsupported assertion is not the same as the milder one upon which Posner actually relies, that many offenders are unable to pay pecuniary fines equal to the economic damage caused by their acts.

¹⁵⁵ "Since water cannot be squeezed out of a stone, imprisonment must continue to be used for indigent offenders, who predominate in theft and in crimes of violence." *Id.* at 169. But Posner's argument that nonpecuniary sanctions have *in fact* been evolved as a response to this problem of indigency requires the further demonstration that crimes punishable by imprisonment (or torture) have *always* been generally the province of the impecunious, a proposition which he neither states nor proves. Moreover, there appears to be no room in this analysis for the observation that many persons who could indeed afford the requisite fines are sent to prison nevertheless.

¹⁵⁶ *Id.* at 170.

¹⁵⁷ *Id.* at 171.

¹⁵⁸ *Id.*

¹⁵⁹ The arguments discussed to this point appear in a chapter entitled *The Criminal Sanction and Criminal Law*, *id.* at 163-78. The procedural issues, however, are treated later, *id.* at 461-74.

¹⁶⁰ Adelman, *The Moral Costs of Crime*, *supra* note 7, at 241-42.

¹⁶¹ See text accompanying notes 49-52 *supra*.

making it available to the purchaser. Subject to individual income constraints, potential buyers bear the final responsibility for deciding whether or not the good is to be transferred to them, and determine for themselves whether their taking of the good would provide personal profit or satisfaction greater than the full cost of production as reflected in the purchase price. The essential element of this decentralized-allocational mechanism is the purchase price, which serves simultaneously as an instrument of "deterrence" and "retribution." Those to whom transfer of the good is inefficient in this sense are discouraged by the requirement of payment from taking ownership of it; indeed, where all potential buyers are deterred in this way, production of the good must be reorganized so as to consume fewer resources or be abandoned altogether. But those professing willingness to make good the resource costs imposed by their enjoyment of ownership are in fact required to satisfy the claims to restitution of those who bear the costs. Exaction of the purchase price from these buyers is both a guarantee of the efficiency of the transfer and a means by which each participant in the production process is eventually compensated in full for the costs suffered in contributing to it.

It is precisely this principle of simultaneous deterrence and retribution which characterizes the resolution of externality relationships in the criminal process, which seeks to reconcile the satisfactions of criminal behavior with the widely dispersed material and psychic injury that such activity inflicts. This reconciliation is effected through the exaction of a punishment price in each case meant to reflect the full extent of cost associated with the act involved. The application of a cost-proportioned sanction thus completes a multilateral transaction initiated by the offender's imposition of economic and moral cost upon a large group of cost bearers, including the members of society at large as well as the immediate victim of the act.¹⁶⁷ Like its market analogue, this mechanism places the ultimate responsibility for distinguishing efficient from inefficient cost imposition on the offender, the potential "purchaser" of the criminal entitlement, who is the only reliable judge of the satisfaction to be derived from the act and whose decision can be based upon the cost information encoded in the punishment price attached to the contemplated behavior. Where the costs imposed exceed the satisfaction of the act, the price serves to deter the inefficient transfer of the entitlement to the offender. But when the offender believes otherwise, that judgment of efficiency is tested by the public exaction of a price which, as I have argued, produces retributive value generally sufficient to compensate moral cost bearers "in kind" for the injuries they have suffered.¹⁶⁸

¹⁶⁷ See text accompanying notes 42-52 *supra*.

¹⁶⁸ As I have noted elsewhere, the *compensatory* aspects of the criminal process seem primarily directed toward the elements of moral cost, and thus largely toward the class of indirect victims.

The wide incidence of costs over a multiplicity of cost bearers is a characteristic of criminal activity which is shared by ordinary economic consumption. The contributions of vast numbers of people separated by great distances are required to produce each orange or automobile and direct it to the consumer. Nevertheless, if property rights are sufficient to ensure that all transactions are made voluntarily and the goods involved have essential qualities that are independent of the identities of particular buyers or sellers, efficient allocation of these resources can generally be achieved in free markets with competitive prices; this is the "marvel" of market coordination to which I have already alluded.¹⁶⁹

But these favorable conditions for market organization do not exist in the case of criminal cost imposition. The nature of criminal entitlements is highly individualized and sensitive to the conditions under which they are transferred; the identities of offender and direct victim and the circumstances of the offense are variables which largely determine the actual costs imposed by specific kinds of behavior. Moreover, although each of us is aware of the general existence of crime and conduct our daily lives so as to expose ourselves continually to the small risk of victimization, participation of the direct victim in the criminal transaction at the moment it occurs can hardly be deemed voluntary. While neither of these conditions alone is sufficient to frustrate market organization,¹⁷⁰ their concurrent existence, together with the dispersion of moral costs, presents an all but insuperable barrier to the development of markets in criminal activity.

This failure of markets to organize the efficient transfer of criminal entitlements requires that task to be achieved, if at all, by alternative and endemically less efficacious allocational devices. Although in the

although the actual punishment imposed upon a given offender may also reflect the economic cost borne by the direct victim and thus full internalization of the external effects involved might occur. Where a criminal act imposes substantial physical or economic injury, a private cause of action in tort is generally created at the same time. But these claims must be pursued separately from the criminal proceedings, and the costs involved in such actions make them a practical rarity. As a result, while the offender may be forced through the punishment price to bear the full costs of the illegal act, the element of economic cost borne by direct victims may remain uncompensated without still further institutional arrangements to effect recovery. In the United States, this problem has been approached in recent years by the enactment of "victim compensation" insurance schemes administered by the state. See generally Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 792 n.29.

¹⁶⁹ See text accompanying note 30 *supra*.

¹⁷⁰ In the limiting case in which costs are perfectly individualized but only two parties are involved in the externality relationship, a situation of bilateral monopoly exists and an efficient solution is generally possible through free bargaining. With respect to involuntary transactions, while it is clear that few workers would accept employment at any price which would lead immediately to certain death or serious injury, policemen, firemen, construction workers, miners, and many others voluntarily consent to a small but significant probability of death or injury on the job every day, a risk for which adjustments in the wage rate provide compensation.

perspective. As I have shown, the neoclassical approach often can only postulate the costs attendant to a certain course of conduct; indeed, from that perspective some costs—especially moral ones—are functionally excluded.

If such a framework is to have any empirical content at all, the scope and generality of the fundamental proposition must be limited by some further set of particulars. More precisely, these "primary hypotheses" must specify the nature of the costs involved in the exchange process in greater detail and thereby exclude some logically possible characterizations of them from consideration. Only when the fundamental proposition has been supplemented in this way can empirically meaningful "secondary hypotheses" be formulated on the basis of it and confronted directly with evidence which might refute them. Moreover, like the fundamental proposition itself, the set of primary hypotheses generally cannot be evaluated by direct observation; the empirical value of a given primary hypothesis is tested solely by its "subjective" appeal to the intuition and the "objective" correspondence between the secondary hypotheses which flow from it and observed phenomena in the system under investigation. The process of hypothesis generation in the institutional framework is thus necessarily comprised of three steps: the postulation of the fundamental proposition, the amplification of this proposition by primary hypotheses motivated by intuition or introspection but not subject to immediate empirical evaluation, and only then the development of secondary hypotheses which are tested directly against observation.

Two now familiar examples will serve to illustrate this procedure. In the first case, we begin with the fundamental proposition of price exaction and add the primary hypothesis that the costs imposed by criminal behavior, as opposed to that which is merely tortious, contain both a widely dispersed moral element and an economic component largely concentrated upon the direct victim of the act. While this distinction between crimes and torts may well be an appealing one, it seems clear that it is ultimately an intuitive definition which cannot be "proved" independently of argument within the price exaction framework itself. But as I have shown, this primary hypothesis allows us to explain,¹⁷³ on the basis of the fundamental proposition, both the observed differences in the structure of the civil and criminal processes¹⁷⁴ and the persistence of traditional modes of inflicting visible suffering

¹⁷³ With Hayek and Karl Popper, I assume here the epistemological equivalence of the concepts of prediction and explanation (or "retrodiction"), which "are merely two aspects of the same process where, in the first instance, known rules are used to derive from the known facts what will follow upon them, while in the second instance these rules are used to derive from the known facts what preceded them." F. HAYEK, *Degrees of Explanation*, *supra* note 126, at 9 n.4.

¹⁷⁴ See text accompanying notes 160 & 161 *supra*.

which continue to characterize criminal punishment.¹⁷⁵ If we adopt the further (and again untestable) primary hypothesis that the costs associated with illegal behavior are highly individualized and sensitive to the specific circumstances of the offense, we can foresee the inability of *ex ante* pricing of criminal entitlements to reflect their true value with acceptable accuracy and the development of pricing procedures which do not fix the precise punishment until the offense has been committed can be expected. Where this individualization becomes highly refined, the resultant informational paradox will necessitate some amelioration of purely *ex post facto* pricing so that potential offenders are given an opportunity to evaluate the efficiency of their contemplated cost imposition before they act.¹⁷⁶

In both these cases, the qualification of the fundamental proposition by the primary hypotheses enables identification of specific ways in which environmental conditions might frustrate the operation of the criminal process as an exchange mechanism, and we can therefore anticipate some structural response to the organizational failure. But the essentially qualitative nature of the phenomena encompassed by the secondary hypotheses clearly robs the "predictions" involved of mathematical precision. For any given source of organizational failure, there will generally exist a range of qualitatively different responses, all of which might adequately speak to the problem in practice. Informational paradox, for instance, might alternatively be addressed by legislatively defined sentencing standards applied at the judicial stage, by mandatory sentencing statutes, by procedures of appellate sentencing review, or by some combination of these devices.¹⁷⁷ The secondary hypothesis that individuals seeking efficient exchange within the criminal process will direct the process toward some structural response to the paradox does not single out any feasible adaptation as "optimal" or require a particular one to dominate or persist indefinitely.

But even though the range of phenomena consistent with a given secondary hypothesis may be wide, it is never infinite, and the framework retains significant empirical value because there are clearly conceivable phenomena which lie outside the range of admissibility and whose existence, therefore, could be used to refute the secondary hypothesis.¹⁷⁸ For example, since the free flow of cost and price informa-

¹⁷⁵ See text accompanying notes 49-52 *supra*.

¹⁷⁶ See text accompanying notes 10 & 11 *supra*.

¹⁷⁷ An example of the way in which qualitatively different procedures might all provide a satisfactory response to the informational paradox is offered by the Supreme Court's approval of the similar but not identical capital sentencing procedures of Florida, Georgia, and Texas in *Proffitt v. Florida*, 428 U.S. 242 (1976), *Gregg v. Georgia*, 428 U.S. 153 (1976), and *Jurek v. Texas*, 428 U.S. 262 (1976). Moreover, different structural responses may be more or less efficacious depending upon the nature of the offenses (and offenders) involved. Both these issues are discussed in Adelman, *Informational Paradox*, *supra* note 9, at 291-96.

¹⁷⁸ Cf. F. HAYEK, *Degrees of Explanation*, *supra* note 126, at 8-16.

more than one such explanatory framework, only the subjective plausibility of the undemonstrable fundamental propositions and primary hypotheses involved, their correspondence with one's own personal experience and interpretive intuition, can support an intellectual commitment to one or the other.

Indeed, much of my earlier criticism of the Becker and Posner perspectives on the criminal process can be understood in just this way. To take but one example, recall Posner's discussion of the relative severities of observed penalties for premeditated murder and impassioned homicide.¹⁸² To his fundamental postulate that the criminal process is organized so as to achieve systemically efficient resource allocation through the device of probability scaled punishments, Posner adds the primary hypothesis that the probability that cold-blooded murderers will be apprehended and convicted is systematically smaller than that for impassioned killers. From these two untestable assertions follows the third, that the penalty for premeditated murder must be greater so that the expected punishments in the two cases will be the same. Here, as elsewhere, my criticism was not that Posner was logically "wrong" but rather that, relative to the alternative institutional explanation of this same observation, the fundamental proposition and primary hypothesis required to support his argument simply did not seem plausible.¹⁸³ This is particularly true for Posner's fundamental proposition, where the absence of any mechanism through which such systemic efficiency doctrines could historically have evolved or presently be implemented in so complex a system, the existence of explicitly contrary but unexplained norms of criminal justice, and the total suppression of moral elements demand suspensions of disbelief too great for the explanatory power it returns. But the nature of the epistemology required by the institutional and neoclassical explanatory frameworks forces the issue to this inherently subjective debating ground, where neither paradigm is likely to prevail quickly or completely.

These issues are complicated still further when the phenomena under scrutiny are the inherently qualitative outcomes of an evolutionary process. As I have argued in the case of the criminal process, the continuous variability of rules and procedures which do not yield to

quantification and the nonoptimizing character of the process which generates them severely constrain our ability to "predict" or explain their evolution with mathematical precision. At best, we can outline a general set of properties which characterize adequate structural responses to a given environmental condition, qualities which might be shared by a broad range of specific evolved forms.

But beyond this, such qualitative argument inescapably involves a series of subjective interpretations and verbal descriptions on the part of the analyst, an element of particular sensitivity in comparative studies of evolutionary development. At the outset, of course, the evolving exchange mechanism itself must be isolated and identified clearly. This delineation of theoretical boundaries need not correspond to other, more common or generally perceived definitions of the institutions under consideration; what must be captured is the complex of social arrangements which serve to structure individual incentives regarding cost-imposing behavior through the device of effective sanctions. In some societies, for example, or in a given society observed over a long period of time, the mechanism that I have termed the "criminal process" may well be manifested beyond the explicit borders of formal criminal law and procedure. It may include elements not only of the civil law (should such a clear distinction exist) but also of religious institutions and other informal but respected codes of conduct and sanctioning mechanisms. Moreover, once the system itself has been demarcated, the nature of its evolutionary development must be articulated in sufficient detail to permit the formulation of unambiguous hypotheses and the organization of empirical observation to evaluate them. The way in which problems are posed by changes in the exchange environment, the precise nature of the dysfunctions that result, and the means by which structural variation is generated within the exchange mechanism must be made explicit so as to indicate clearly just what kinds of phenomena the observer ought to be looking for and how he or she will be able to recognize them once they are encountered.

2. *The Santobello Observation.*—Certainly, the interpretive role required of both theorist and observer in such an endeavor and the close relationship between description and analysis it creates counsel circumspection and sensitivity throughout the analytic process. But these concerns become most problematic at the very end of the process, when for reasons of theory the observer is called upon to recognize particular structural phenomena which result from individual behavior within a social system "for what they are" (or, more precisely, "by what they do") even though the participants themselves may view the causes and consequences of their own actions very differently. This question of "latency" in individual behavior takes on special significance in the

¹⁸² See text accompanying notes 144 & 145 *supra*.

¹⁸³ The effective displacement within the neoclassical framework of cardinal (*i.e.*, numerically measurable) utility functions by preference orderings which did not require the quantification of utility was achieved on just these grounds. Economists had long been uncomfortable with the artificiality of the assumption of cardinal utility which lay at the base of demand theory, and when it was shown that the principal result of that theory, the downward sloping demand curve, could be derived from an ordinal notion of utility which appeared intuitively more plausible as a depiction of the actual process of choice, the cardinality assumption was largely abandoned. For an interesting discussion of this episode in the history of economic thought, see M. BLAUG, *ECONOMIC THEORY IN RETROSPECT* 343-74 (3d ed. 1978).

damentally unfair to him as an individual, and despite its allusions to arguments of policy, this is precisely what the Court held. Now it can well be argued that where, as in *Santobello*, a particular rule or procedure can be rationalized independently of any constitutional claims which might be raised in its support, the adoption of policy on these grounds is to be preferred in that it avoids the adjudication of constitutional questions.¹⁹³ Yet it is clear nonetheless that many such rules also remedy widely perceived inequities; the Court does little violence to well established moral sensibilities in asserting that the state's treatment of *Santobello* was unfair.

The observation that rules which serve to maintain or enhance the ability of a given allocational mechanism to organize efficient exchange in particular environments may also reflect broadly shared values of fairness (which we shall call the "*Santobello* observation") becomes especially significant in the evolutionary perspective of institutional inquiry. In the first instance, it suggests that the persistence and generality of specific normative principles of fairness or due process may be related to the role they play in facilitating the individual search for mutually beneficial exchange which lies at the center of the institutional framework. *Santobello* is by no means the only example in the American criminal process of this compatibility of pervasive social norms with a propensity of individuals toward efficient exchange. Environments characterized by moral effects which may vary widely from case to case and which include a clear element of coercion in the initial imposition of costs demand a great deal of organizational arrangements directed toward the completion of efficient transactions. Price exaction in such an environment requires the simultaneous pursuit of proportionality and individualization in the fixing of punishment, goals traditionally seen as distinct and often conflicting.¹⁹⁴ Prices must be sensitive both to the extent of cost associated with particular acts and to the potentially substantial variance among ostensibly similar cases. Moreover, given the absence of competitive forces from this environment, the problem of "fair notice" assumes great importance; some means must be established by which price information essential to the identification of efficient transactions can effectively be communicated *ex ante* to offenders.

But the Supreme Court has in fact evolved constitutionally based rules and procedures which address each of these organizational requirements, and in each case has done so by identifying the normative grounds for its decisions with what it perceives to be deeply rooted values of criminal justice. The virtually universal norm of proportionality, though fully elevated to constitutional dimension through the eighth

amendment only recently in *Coker v. Georgia*,¹⁹⁵ has been recognized by the Court for decades as a basic principle of equity in criminal sentencing.¹⁹⁶ The interrelated ideal of individualization is articulated in equally fundamental terms. Thus, in *Pennsylvania v. Ashe*,¹⁹⁷ holding the equal protection clause to be consistent with the imposition of different sentences for statutorily identical offenses, the Court stated:

For the determination of sentences, justice generally requires consideration of more than the particular acts by which the crime was committed and that there be taken into account the circumstances of the offense together with the character and propensities of the offender.¹⁹⁸

The transmission of price information to potential offenders has been treated similarly. The threshold problem of entitlement placement—the distinction between legal and illegal cost imposition—has long been at the core of the vagueness doctrine:

That the terms of a penal statute creating a new offense must be sufficiently explicit to inform those who are subject to it what conduct on their part will render them liable to its penalties is a well-recognized requirement, consonant alike with ordinary notions of fair play and the settled rules of law; and a statute which either forbids or requires the doing of an act in terms as vague that men of common intelligence must necessarily guess at its meaning and differ as to its application violates the first essential of due process of law.¹⁹⁹

But as the perception of the costs imposed by specific offenders in particular circumstances has become increasingly refined,²⁰⁰ the resultant individualization of sentences has created the further problem of fair notice expressed in the informational paradox. As I elsewhere have argued at length, the Court's requirement of capital sentencing standards in the normative context of the eighth amendment speaks directly and with striking explicitness to this environmental obstacle to

¹⁹⁵ 433 U.S. 584 (1977) (by implication). See text accompanying notes 98-113 *supra*.

¹⁹⁶ Writing for the majority in *Weems v. United States*, 217 U.S. 349, 366-67 (1910), Justice McKenna stated:

Such [disproportionate] penalties for such offenses amaze those who have formed their conception of the relation of a state to even its offending citizens from the practice of the American commonwealths, and believe that it is a precept of justice that punishment for crime should be graduated and proportioned to offense.

¹⁹⁷ 302 U.S. 51 (1937).

¹⁹⁸ *Id.* at 55. See also *Lockett v. Ohio*, 438 U.S. 586, 602 (1978) ("[T]he concept of individualized sentencing in criminal cases generally, although not constitutionally required, has long been accepted in this country."); *Burns v. United States*, 287 U.S. 216, 220 (1932); *Moore v. Missouri*, 159 U.S. 673 (1895).

¹⁹⁹ *Connally v. General Constr. Co.*, 269 U.S. 385, 391 (1926). See also *Lanzetta v. New Jersey*, 306 U.S. 451, 453 (1939).

²⁰⁰ *Cf. Williams v. New York*, 337 U.S. 241, 247-48 (1949) ("The belief no longer prevails that every offense in a like legal category calls for an identical punishment without regard to the past life and habits of a particular offender . . . Today's philosophy of individualizing sentences makes sharp distinctions for example between first and repeated offenders.") (footnote omitted).

¹⁹³ A similar point is made with respect to the imposition of sentencing standards in *Adelstein, Informational Paradox*, *supra* note 9, at 281, 296 n.78.

¹⁹⁴ See, e.g., H. HART, *supra* note 98, at 24-25, 164-66.

who comprise them. What is needed to break this circle is some analogue to the biological process of natural selection, a mechanism attributable solely to the behavior and intentions of *individuals* which is sensitive to the environment within which the system exists and which propels the generation of adaptive structural change in response to shifts in environmental conditions.

In the criminal process, as I have suggested,²⁰⁶ this evolutionary mechanism is a complex of legislative and judicial institutions directed toward the resolution of individual externality relationships through price exaction, severely constrained by the impactedness of necessary information and the strictly bounded rationality of its actors. Structural change at the margin is most often precipitated by individual litigants whose claims of unfair treatment can, in their essentials, be interpreted as identifying sources of organizational failure in the price exaction process that are due either to specific conditions in the exchange environment or to systematic error in the evaluation of particular costs. In cases they deem appropriate, appellate courts fashion remedies of general application to the problem at hand from among the limited set of alternatives presented to them, thereby adapting the allocational mechanism as a whole to whatever informational or environmental condition motivated the litigation. And the dynamic which energizes this entire process of structural adaptation is the postulated search for mutually beneficial exchange, a fundamental constituent of *individual* behavior which extends well beyond those particular environments well-suited to market organization and which, in the institutional perspective, is the *raison d'être* for the criminal process itself.

None of this represents a revolutionary innovation in economic thought. One need only look to Adam Smith for an expression not just of this underlying behavioral postulate but, much more strikingly, of the adaptive and evolutionary view of social organization based upon this behavioral assumption.²⁰⁷ A universal and distinctively human "propensity to truck, barter, and exchange"²⁰⁸ was, for Smith, the individual purpose which lay at the source of market organization itself and the social division of labor which derives from it. The vast and

immensely complex network of interrelationships which comprise the market evolves not as a product of conscious design but as a "spontaneous order"²⁰⁹ neither foreseen nor intended by any of its individual participants. The specific qualitative form of market institutions, moreover, is sensitive to the environmental conditions within which exchange must be carried out. Thus, "the division of labor is limited by the extent of the market"; factors of population density and topography are principal determinants of the degree and kind of specialization which characterizes particular markets.²¹⁰

Most interesting, however, is the dynamic component of Smith's analysis. His discussion of the origin and development of money, for example, is a detailed evolutionary argument solidly grounded in the functional aspects of currency as a market-based medium of exchange.²¹¹ The replacement of barter, first by commodity money, then by raw metals, and finally by public coinage is explained in terms of the successive improvements in physical convenience and transferability, measurability and standardization, and the reduction of uncertainty offered by each of these qualitative changes. It is the individual propensity toward exchange which Smith explicitly saw as calling forth these institutional adaptations in increasingly complex trading environments, and had he written 200 years later, it seems clear that Smith would have understood the subsequent development of commercial paper, negotiable instruments, and "electronic balances" in precisely the same way.

Against this background, the framework developed here adds but two elements. The first—a broad functional analysis of the criminal process as an imperfect institutional response to the failure of markets to organize individually efficient transactions in criminal entitlements—results from the simple extension of the postulated propensity toward exchange to environments hostile to market organization. Beyond this, the possibility of a limited but fruitful analogy to the process of natural selection enables us to specify a plausible mechanism which can account for adaptive structural change in this system without resort to final causes or systemic purposes. In the final parts of this essay, I examine some of the problems associated with these two elements, and conclude with a brief discussion of the framework's promise as a theoretical basis for comparative studies in criminal law and procedure.

²⁰⁶ See text accompanying notes 21-26 & 166-72 *supra*.

²⁰⁷ Indeed, the evolutionary ideas of Smith and others of the Scottish school appear to have been reflected in the thought of Charles Darwin. See, e.g., F. HAYEK, *The Legal and Political Philosophy of David Hume*, in *STUDIES IN PHILOSOPHY, POLITICS, AND ECONOMICS* 106, 119 (1967). On the precursors of Darwin generally, see the excellent collection *FORERUNNERS OF DARWIN: 1745-1859* (B. Glass, O. Temkin & W. Straus, Jr. eds. 1959).

²⁰⁸ Smith explained:

Whether this propensity be one of those original principles in human nature, of which no further account can be given; or whether, as seems more probable, it be the necessary consequence of the faculties of reason and speech, it belongs not to our present subject to inquire. It is common to all men, and to be found in no other race of animals, which seem to know neither this nor any other species of contracts.

A. SMITH, *supra* note 3, at 13.

²⁰⁹ This phrase is Hayek's. See F. HAYEK, *Notes on the Evolution of Systems of Rules of Conduct*, in *STUDIES IN PHILOSOPHY, POLITICS, AND ECONOMICS* 66, 74 (1967).

²¹⁰ A. SMITH, *supra* note 3, at 17-21 (Book I, ch. III: "That the Division of Labor is Limited by the Extent of the Market").

²¹¹ *Id.* at 22-29 (Book I, ch. IV: "Of the Origin and Use of Money"). For two more modern expositions of these same ideas, one historical and one mathematical, see J. HICKS, *A THEORY OF ECONOMIC HISTORY* 63-68 (1969); Jones, *The Origin and Development of Media of Exchange*, 84 *J. POL. ECON.* 757 (1976).

coordinated *can* be formulated solely in terms of the behavior of individuals. Only when such explanations require the ascription of purposive behavior to social entities or systems themselves, rather than to individual actors alone, is their scientific validity called into question. But it is precisely this deficiency which some thoughtful critics claim is inherent in all of functional analysis. In their view, the defining feature of functional argument is its invocation of a systemic teleology; explanations of social phenomena or the dynamics of social systems which can successfully be grounded in the actions of individuals necessarily lose their functional character as a result.²¹⁹

This easy identification of functionalism with a teleological point of view is resisted by Carl Hempel.²²⁰ Impressed by the extensive use of functionalism in evolutionary biology as well as the social and historical disciplines, Hempel offers a critical and closely circumscribed defense of its methodology. His purpose is to examine the logical structure and empirical significance of functional analysis "by means of a confrontation with . . . the explanatory procedures used in the physical sciences."²²¹ He does this by carefully decomposing what he perceives to be the common core of the functional method in a variety of disciplines into a series of separable propositions, discussing the meaning and explanatory power of each in turn. Relative to the methods employed in the physical sciences, Hempel ultimately finds functional analysis wanting, largely because of its inability to provide deterministic or statistical predictions about the qualitative phenomena with which it is generally concerned. But he also shows that, contrary to claims of inherent tautology, proper functional argument does invoke general causal relationships²²² and, most importantly, that its element

of self-regulation or homeostasis can (indeed must) be based upon individual behavior and thus need not imply systemic purposes or the existence of final causes.²²³ Pursued with care and discernment, he concludes, functional analysis can be a powerful mode of scientific inquiry, "illuminating, suggestive, and fruitful in many contexts."²²⁴ What makes Hempel's study of particular interest is that the logical structure of the functional method he discusses is all but identical to that of the institutional analysis of the criminal process. His detailed consideration of this structure, as well as the shortcomings he identifies in it, can thus shed much light on the epistemological properties of the institutional framework and ensure that argument within it is conducted in a useful and scientifically acceptable way.

1. *Functional Statics: Structure and Clarity in Functional Argument.*—Proper functional argument must incorporate both a static depiction of the system under consideration and an explicit dynamic which accounts for its ability (or failure) to adapt over time to changes in the circumstances of its existence.²²⁵ As Hempel makes clear, functional analysis in the social sciences has often floundered on the specification of this dynamic and the conditions under which it operates, and I shall presently examine this problem and the response of the institutional framework to it in some detail. But the static component has been a major source of difficulty as well, for Hempel shows that much of the explanatory power of a given functional argument turns on the clarity and precision of this aspect of the inquiry. At base, this static element amounts to a descriptive "snapshot" of the system at a moment in time during which it is adequately performing the social task ascribed to it by the analyst. Along with a clear definition of the system itself and its internal state at the moment in question, this requires a specification of the environmental conditions which surround it and a demonstration of the precise way in which a given institutional structure or organizational form enables the system to continue its satisfactory performance of the social task.

In general, this element of the argument fixes attention upon some persistent structural form or behavioral pattern *i* which occurs in the system *s*. The aim of the static analysis is then

to show that *s* is a state, or internal condition, *C_i*, and in an environment representing certain external conditions *C_e*, such that under conditions *C_i* and *C_e* (jointly to be referred to as *c*) the trait *i* has effects which satisfy some "need" or "functional requirement" of *s*, i.e., a condition *n* which is

grounded in the actions of individuals avoids this problem and is well framed in terms of general laws. Given this mechanism, the argument becomes "E motivates the creation of R by individuals within the system, and R produces E."

²²³ C. HEMPEL, *supra* note 205, at 319-29.

²²⁴ *Id.* at 330.

²²⁵ See text accompanying notes 244 & 245 *infra*.

²¹⁹ Thus, Anthony Giddens explains,

Merton's differentiation of manifest and latent functions makes explicit an integral feature of functionalist theory in the social sciences: that social institutions demonstrate a teleology which cannot be necessarily inferred from the purposes of the actors involved in them. In sociological functionalism, this *always* depends ultimately upon the thesis, or the assumption, that there are "social needs" which have to be met for society to have a continuing existence [But] social systems, unlike organisms, do not have any need or interest in their own survival, and the notion of "need" is falsely applied if it is not acknowledged that system needs presuppose actors' wants But if there are no independent system needs . . . the notion of function is superfluous, for the only teleology that has to be involved is that of human actors themselves, together with the recognition that their acts have consequences other than those they intend, and that these consequences can involve homeostatic processes.

A. GIDDENS, *supra* note 15, at 105, 110-11 (emphasis in original). See also A. RYAN, THE PHILOSOPHY OF THE SOCIAL SCIENCES 172-96 (1970).

²²⁰ C. HEMPEL, note 205 *supra*.

²²¹ *Id.* at 297.

²²² *Id.* at 298-303, 309. See also R. BROWN, EXPLANATION IN SOCIAL SCIENCE 129-30 (1963). The thrust of this controversy is readily illustrated. Let R be a procedure or organizational form within a particular system, E its functional effect in the system (that is, the problem which R solves), and \bar{E} the absence of E. The argument "E causes R" is properly questioned because it locates an effect at an *earlier* moment in time than its cause. But Hempel shows that functional argument which includes the essential element of a self-regulating mechanism in the system

nizational forms upon an unwilling legislature through the adjudication of individual cases. The British judiciary, in contrast, is entirely subordinate to the legislature in matters of law and procedure, and English courts have no authority to overturn an act of Parliament.²²⁹ Though they exercise substantial discretion over the conduct and outcomes of individual cases, the common law prerogatives that the British courts retain with respect to procedural issues in general are sharply circumscribed by statute and fully subject to revision by the legislature. As a result, the principal source of procedural innovation in the British criminal process is not individual litigation directly, but legislative enactment informed (and often inspired) by governmental commissions of inquiry.²³⁰ While it is clear that the process of structural evolution in both these cases is rooted in the behavior of individuals acting under conditions of severely bounded rationality, the precise mechanisms involved differ in significant ways. Information regarding shifts in the exchange environment is gathered, and alternative organizational responses to them proposed and implemented, by individuals occupying different places in the system of exchange; the ability of these parties to perceive relevant costs or organizational effects may thus vary considerably. It is essential that institutional inquiry, particularly comparative studies, be sensitive to variations of this kind, and that care be taken in each case to specify the mechanism which accounts for structural change as precisely as possible.

The limiting role of deep structures in the generation of variability is well illustrated by the problem of prosecutorial accountability. In principle, the degree of independent authority vested in the public prosecutor to decide which cases to pursue and how best to proceed with them is a primary structural distinction between the adversarial American criminal process and the "inquisitorial" or "mixed" systems of Western Europe. Substantial and largely unchecked prosecutorial discretion in these areas is a pervasive element of the American system, but continental law tends to favor a rule of compulsory prosecution (the "principle of legality") in cases of serious crime, monitored by a process of judicial review of decisions not to prosecute.²³¹ Both of these systems, however, must somehow deal with the twin problems of selecting which offenses to prosecute and how to prosecute them when the

available human and material resources are insufficient to provide every defendant with a full criminal trial. The American response has been the controversial institution of plea bargaining, made possible by the freedom of prosecutors to adjust the charges against a particular defendant to correspond with the terms of a plea agreement. Indeed, attempts to incorporate rules of mandatory prosecution or sentencing²³² have most often failed precisely because they deny the judicial process its discretion to individualize the application of the criminal sanction. But on the European side, the legality principle forecloses this approach and requires that other avenues be explored. Still, continental systems have developed organizational forms consistent with mandatory prosecution which address the problem of case selection in the face of limited resources.²³³ The observation that evolved responses plainly directed toward similar ends must assume ostensibly very different forms in the American and European systems suggests the severity of the evolutionary constraint imposed by the deep institutional structure of the criminal process.²³⁴

Atop these deep structures lies a sensitive and pliant "overlay," a fluid complex of specific outcomes and much less firmly rooted procedures and organizational arrangements within which the initial stages of the evolutionary dialogue between the criminal process and its environment are conducted. The characteristic flexibility of this overlay—its ability to respond relatively quickly even to small shifts in the exchange environment—makes it the crucible in which alternative ap-

²²² See D. NEWMAN, *supra* note 62, at 53-56, 112-14 (suggesting that mandatory sentencing statutes tend to increase the incidence of plea bargaining as prosecutors adjust charges to avoid the mandate); Heumann & Loftin, *Mandatory Sentencing and Abolition of Plea Bargaining: The Michigan Felony Firearm Statute*, 13 LAW & SOC'Y REV. 393 (1979). In capital cases, mandatory sentencing statutes have been found unconstitutional and "totally alien to our notions of criminal justice" insofar as they eliminate the possibility of individualized sentencing. *Gregg v. Georgia*, 428 U.S. 153, 200 n.50 (1976) (discussing proposal that prosecutors charge capital offenses for all capital murders and refuse to plea bargain); *Woodson v. North Carolina*, 428 U.S. 280 (1976), both discussed in Adelstein, *Informational Paradox*, *supra* note 9, at 294-96.

²³³ See, e.g., J. LANGBEIN, *supra* note 130, at 92-100.

²³⁴ Cf. the lively and interesting recent debate on these issues in Goldstein & Marcus, *The Myth of Judicial Supervision in Three "Inquisitorial" Systems: France, Italy, and Germany*, 87 YALE L.J. 240 (1977); Langbein & Weinreb, *Continental Criminal Procedure: "Myth" and Reality*, 87 YALE L.J. 1549 (1978); Goldstein & Marcus, *Comment on Continental Criminal Procedure*, 87 YALE L.J. 1570 (1978). Goldstein and Marcus argue generally that the erosion of the principle of compulsory prosecution in recent years has been such that explicit parallels between American and continental "bargaining" procedures are highly apposite. "[The assumption] that because there is no explicit bargaining, face-to-face or otherwise, there are also no trade-offs and compromises . . . simply mistakes the surface, and the formal law, for the underlying reality." *Id.* at 1575. But Langbein and Weinreb maintain that the principle remains intact, and that formal procedures to allow for the alternative disposition of petty offenses cannot usefully be seen as "bargaining" in the American sense. It is precisely this kind of comparative study for which the institutional analysis can be of greatest value, providing a theoretical framework for organizing the relevant observations and itself offering valuable insights into the issues involved.

²²⁹ On the relationship between Parliament and the British judiciary in general, see W. JENNINGS, *THE LAW AND THE CONSTITUTION* 137-92, 239-54 (5th ed. 1959).

²³⁰ Though this is not the place for a detailed discussion of the mechanics of English criminal justice, two excellent overviews are found in R. JACKSON, *ENFORCING THE LAW* (rev. ed. 1972), and P. DEVLIN, *THE CRIMINAL PROSECUTION IN ENGLAND* (1960).

²³¹ See, e.g., the discussion of the German *Legalitätsprinzip* in J. LANGBEIN, *supra* note 130, at 87-89; Jescheck, *The Discretionary Powers of the Prosecuting Attorney in West Germany*, 18 AM. J. COMP. L. 508, 509 (1970). The mechanisms for enforcing compulsory prosecution in Germany are considered in J. LANGBEIN, *supra* note 130, at 100-05, and the joining of civil and criminal claims are discussed in *id.* at 111-15.

ety of ways whose efficaciousness depends directly upon the nature of the entitlement involved and the environmental conditions under which it is to be exchanged. Social mechanisms which cannot satisfactorily organize exchange in particular environments will ultimately be rejected, and those which can do so will continually be modified as conditions change to preserve their ability to organize exchange, not by the operation of some final cause but by the purposive actions of individuals seeking to complete efficient transactions. Thus, for example, in any such system it is essential that the impacted information regarding the costs associated with various activities be extracted so that efficient prices can be determined, and that these prices be effectively communicated *ex ante* to potential offenders. This, in Hempel's sense, is clearly a functional requirement of the exchange mechanism, but it manifestly is not a "purpose" of the system as such. It is instead a requirement which must be met by whatever mechanism individuals devise to organize the efficient transfer of entitlements, and established systems which fail to meet it must be altered by the actors to do so or be replaced by others which will ensure the transmission of this information if the individual purpose of exchange is to be achieved.

But proper functional argument does *not* require that individual behavior be consciously intended to achieve the functional requirement in question. It is necessary only to show that where the functional requirement is in fact being met, its satisfaction results entirely from individual behavior *prompted by its absence*, whatever the expressed intent or motivation of the actors involved. As my earlier discussions of both the *Santobello* observation and the theory of general equilibrium make clear, the purposive actions of individuals may well have functional consequences unrecognized by them and not part of their conscious intent.²⁴¹ In *Santobello*, as in the capital sentencing cases, the Court's explicit purpose was to rectify the injustices exposed by the cases before it and to prevent their recurrence, not to establish procedures which would fulfill the particular functional requirements of the criminal process identified by the institutional analysis. But the ruling had precisely this "unintended consequence," and a major contribution of institutional inquiry is its illumination of just these kinds of functional effects and the social relationships which give rise to them.

2. *Functional Dynamics: Of Self-Regulation and the Possibility of Prediction.*—Of perhaps greatest importance, however, is the intimate relationship between the notion of functional requirement and the essential dynamic element of proper functional argument. Hempel argues persuasively that vagueness in the definition of functional requirements often leads to tautology or the misplaced incorporation

into positive analysis of a particular investigator's own normative judgments as to what constitutes a "proper" adjustment in a given social system. The concept of functional requirement can thus be given the requisite precision and empirical content only if it is explicitly defined in terms of some objectively discernable standard of adaptation. In a system *s*,

the standard would be indicated by specifying a certain class or range *R* of possible states of *s*, [in which] *s* is to be considered as . . . "adjusting properly under changing conditions" just in case *s* remains in, or upon disturbance returns to, some state within the range of *R*. A need, or functional requirement, of system *s* relative to *R* is then a necessary condition for the system's remaining in, or returning to, a state in *R*; and the function relative to *R* of an item *i* in *s* consists in *i*'s effecting the satisfaction of some such functional requirement.²⁴²

But much more is implicit in this formulation than simply the clear statement of functional requirements. For while Necessity may indeed be the Mother of Invention, she herself cannot be seen as its *cause*; the satisfaction of functional requirements does not follow merely from the fact of their existence. Functional argument cannot be sustained without the further specification of an explicit dynamic, a mechanism grounded in the behavior of individuals which is able to sense that a particular functional requirement is not being met and then to initiate some structural adaptation within the system which can respond adequately to its absence. Hempel calls this essential specification a *hypothesis of self-regulation*, "a general principle to the effect that, within certain limits of tolerance or adaptability, the system will—either invariably or with high probability—satisfy, by developing appropriate traits, the various functional requirements that may arise from changes in its internal state or its environment."²⁴³

[Only] if a precise hypothesis of self-regulation for systems of a specified kind is set forth does it become possible to explain, and to predict categorically, the satisfaction of certain functional requirements simply on the basis of information concerning antecedent needs; and the hypothesis can then be objectively tested by an empirical check of its predictions. [Thus, if] functional analysis is to serve as a basis for . . . prediction . . . it is of crucial importance to establish appropriate hypotheses of self-regulation

²⁴² C. HEMPEL, *supra* note 205, at 323.

²⁴³ *Id.* at 317. Hempel explained further that

[such a hypothesis would be to the effect that within a specified range *C* of circumstances, a given system *s* . . . is self-regulating relative to a specified range *R* of states; i.e., that after a disturbance which moves *s* into a state outside *R*, but which does not shift the internal and external circumstances of *s* out of the specified range *C*, the system *s* will return to a state in *R*. A system satisfying a hypothesis of this kind might be called *self-regulating with respect to R*.

Id. at 324 (emphasis in original).

²⁴¹ It is this consideration which underlies Robert Merton's controversial distinction between "manifest" and "latent functions," *critically analyzed in* A. GIDDENS, *supra* note 15, at 106-09.

cumstances of the case which initiates the process will be, an inability which stems from the fundamentally subjective nature of the informational paradox itself. Defined in terms of the perceptions of individual offenders, the paradox becomes an "objective" problem for the criminal process only when offenders are unable to elicit *ex ante* price information and a court agrees that the difficulty they face is general and serious, a sensing mechanism itself subject to the "error" introduced by conditions of bounded rationality. The equally subjective judgment of the external observer as to whether this particular functional requirement is being met is thus not only rendered extremely difficult but, in an important sense, quite irrelevant. Certainly the epistemological rules which Hempel imposes upon the terms and structure of proper functional analysis are as fully valid and binding in this context as in all others. But one element of the objective definitional precision that he demands must be replaced by an irreducible kernel of uncertainty, for the ultimate specification of the range of "acceptable" states *R* remains an inherently subjective matter, inextricably bound up in the mechanism which senses and responds to departures from the acceptable range.²⁴⁶

Yet even if it were possible to specify functional requirements with mathematical precision, a more fundamental source of indeterminacy in the institutional framework would persist. This is the problem of "functional alternatives" or "multiple solutions," which Hempel identifies as common to functional argument in both the social sciences and evolutionary biology.²⁴⁷ For any given source of organizational failure in the criminal process, there generally exists a potentially broad and not fully specifiable class of qualitatively different forms, each of which in principle represents a sufficient adaptive response to the problem at hand.²⁴⁸ The particular subset of organizational alternatives actually placed before a court by the process of litigation, and the remedy ultimately selected, depend in large measure both upon a precedential history which varies considerably from system to system and upon the peculiar qualitative circumstances of the case at bar. These variables,

²⁴⁶ An analogous argument can be made with respect to the institution of plea bargaining, initiated by the decisions of prosecutors concerned with the necessity that some acceptable proportion of the triable cases which reach them result in the imposition of some punishment price. Cf. text accompanying notes 69-77 *supra*. Here, the precise determination of this critical proportion is left essentially to the court-monitored subjective judgment of the prosecutor by the deep structural arrangement of the American criminal process, and the external observer is again faced with a basic inability to establish the value of this variable independently of the system's self regulatory mechanism. The organizational arrangements and incentive structures which create this situation are discussed in detail in Adelstein, *Negotiated Guilty Plea*, *supra* note 8, at 786-807, and Adelstein, *The Plea Bargain in Theory: A Behavioral Model of the Negotiated Guilty Plea*, 44 S. ECON. J. 488 (1978).

²⁴⁷ C. HEMPEL, *supra* note 205, at 308-14.

²⁴⁸ We have encountered various aspects of this problem before. See text accompanying notes 118-30 & 176-79 *supra*.

by their very nature, simply cannot be anticipated.²⁴⁹ The essentially nonoptimizing character of this process, the impossibility of completely specifying *a priori* all the relevant conditions under which it operates, and the continuing power of the human imagination to create qualitatively novel solutions even to familiar problems all combine to frustrate the prediction, whether deterministic or statistical, of the specific outcomes of the evolutionary process. For Hempel, this limitation is an especially serious one, rendering the explanatory value of even the most carefully wrought functional analysis "precarious."²⁵⁰

But as Friedrich Hayek has vigorously argued,²⁵¹ such a position seriously misperceives the nature of the evolutionary process and the human capacity to apprehend and model it. Hayek points to an important epistemological distinction between the recognition of patterns—regular recurrences of certain kinds or sequences of events in nature or social life—and the individual manifestations of these patterns in particular environments of time, place, and circumstance. The construction of theory consists entirely in the recognition and description of the patterns themselves, the clear articulation of those common properties in each set of recurrent events which give rise to the regularity observed. But theory becomes a predictive tool only when it is possible to apply it to a sufficient set of corresponding data, to ascribe values to each of the distinct elements within the theory which are required to specify the pattern itself. Our ability to determine precisely how the pattern will manifest itself within a given circumstantial environment thus depends directly upon how many of these individual particulars we are able to ascertain.

Hayek uses this distinction between the recognition of patterns and the prediction of their manifestations to express a fundamental demarcation between the physical sciences on the one hand and the life and social sciences on the other. The impressive predictive power of the physical sciences results from their concern with "simple phenomena," those in which "the minimum number of elements of which an instance of the pattern must consist in order to exhibit all the character-

²⁴⁹ As Holmes stated:

The growth of the law is very apt to take place in this way. Two widely different cases suggest a general distinction, which is a clear one when stated broadly. But as new cases cluster around the opposite poles, and begin to approach each other, the distinction becomes more difficult to trace; the determinations are made one way or the other on a very slight preponderance of feeling, rather than of articulate reason; and at last a mathematical line is arrived at by the contact of contrary decisions, which is so far arbitrary that it might equally well have been drawn a little farther to one side or to the other, but which must have been drawn somewhere in the neighborhood of where it falls.

O. HOLMES, *THE COMMON LAW* 101 (M. Howe ed. 1963):

²⁵⁰ C. HEMPEL, *supra* note 205, at 314.

²⁵¹ F. HAYEK, *The Theory of Complex Phenomena*, in *STUDIES IN PHILOSOPHY, POLITICS, AND ECONOMICS* 22 (1967).

structural evolution in the criminal process does share with its biological counterpart four basic characteristics which combine in each case to impose strict constraints upon the theory's powers of generalization and prediction. First, the phenomena of interest are essentially qualitative, organizational forms which vary continuously and cannot adequately be specified by a vector of cardinal numbers. Moreover, the development of these forms is a process of hysteresis, in which the entirety of the system's past is encoded in its present and acts as an important determinant of its future. From these two elements springs the fundamental uniqueness of evolving entities which makes simple generalizations across them impossible. But even when our inquiry is confined to a single one of these "species," the inherent indeterminacy which suffuses both sides of the evolutionary dialogue frustrates the attempt to foresee the course of its development. Conditions of bounded rationality create for us an element of randomness in the generation of institutional variation much like that which dominates the process of genetic mutation. Finally, of course, we cannot predict evolutionary response without a specification of the stimulus, and the absence of a theory of environmental change in both the institutional and the biological cases makes the central determinant of evolutionary direction exogenous to the analysis.

But because the institutional framework, like its biological analogue, incorporates a theory of structural change which avoids the ascription of final causes, it allows us to seek in careful comparative analysis both a means of empirical testing and a source of theoretical insight. I have begun in this essay to suggest how this comparative inquiry into systems of criminal price exaction might be conducted, what questions must be asked of each such criminal process, and what must be included in satisfactory answers to the inquiry. The vast potential of institutional analysis as a tool of legal scholarship is, I think, apparent. What may be less so is its power to redress a destructive imbalance between the two disciplines which has come to pervade the economic analysis of law. The increasingly sterile misapplication of neoclassical technique to what economists perceive the problems of law to be has begun to engender a well founded skepticism amongst lawyers as to the value and appropriateness of this analysis to their own discipline. I have tried to show here that legal scholarship has a vital contribution to make, not simply to the field of economics and law, but to the development of economic thought itself. But economists must first free themselves from "the naive superstition that the world must be so organized that it is possible by direct observation to discover simple regularities between all phenomena and that this is a necessary presupposition for the application of the scientific method."²⁵⁷ Perhaps,

through the richness and discernment that they can bring to the institutional framework, it will be the lawyers who demonstrate to economists that their inspiration must be drawn not from Newton, but from Darwin.

²⁵⁷ F. HAYEK, *supra* note 251, at 40.