

Understanding Economic Man

*Psychology, Rationality, and Values**

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ABSTRACT. The deficiencies of economic science are examined against its historical development: the utilitarian concentration upon individual choice conflates preferences and values and the hedonistic calculus is inoperable in the presence of incommensurability. In restricting explanations of behavioral patterns to changes in prices, incomes, and other “economic” variables, neoclassical analysis was destined to draw implausible conclusions. While the uniqueness of man rests in a highly developed self-consciousness, his rationality need not imply conscious reason. Decisions and actions that are made in response to inputs from all of the sensory modalities are led by conventions and traditions that give structure to every response. Biological, psychological, social, and ethical constraints so limit purposeful action, that a complete economist (*pace* G. L. S. Shackle) is one who has mastered mathematics, philosophy, psychology, anthropology, history, geography, and political science.

I

Introduction

THE BIG QUESTION FOR ALBERT EINSTEIN WAS: “Did God have any choice?” Einstein was asking whether there were unknown alternatives to the established laws of physics. Big questions challenge established methodological perspectives, and they are integral to an attempt to define the characteristics of rational economic man. Wearing the blinkers of their adopted paradigm, few practitioners of

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science ask big questions. At a less demanding level, it would be reassuring if they were alert to criticisms of their motives and methods. This is especially relevant when the modern criteria for academic advancement (research grants and publications) may not coincide with those of “good” science. Especially in the social sciences, there is much mindless data crunching. The widely accepted view of scientific method—“start from observations, observe, go on observing”—is poor science, because it is necessary “to know first *what to observe*.” That is, purposeful inquiry requires some prior interest in the topic under scrutiny. Data create interest only when they relate to a problem. Historians do not “start from documents, read documents, and go on reading documents” (Popper 1994, p. 145). Instead, the purposeful route is to start with a problem and to proceed to a tentative solution that is then subjected to criticism. The focus of the criticism is “directed towards the elimination of error” (Popper 1994, p. 140) from whence will derive new problems. So, as for scientists and historians in general, it is well said that “[a] good economist . . . is someone who has a difficulty for every solution” (Loasby 1991, p. 103).

II

Science: An Important Distinction

GOOD SCIENCE LOOKS FOR AN OBSERVATIONAL POSITION that is detached from the researcher’s own phenomenal experience. The ideal perspective is that of objectivity. Given the inherent impossibility of achieving that God’s-eye view, it is “more accurate to think of objectivity as a direction in which understanding can travel” (Nagel 1979, p. 173). In embarking upon that journey, physical science enjoys an advantage over other disciplines. By its precise calculations—of differences and relationships across repeatable experimental procedures—physical science substitutes measurements for sensory classifications. It recategorizes events according to the characteristics of an objective (noumenal) order rather than a sensory (phenomenal) order. So, for example, color and sound have been recategorized according to the relative frequency and wavelength of oscillations in order to permit such distinctions as visible and invisible light and

audible and inaudible sound. By such measurements, supported by their configuration to mathematical formulations, physical science focuses upon events in the natural world so as to infer their component elements.

The social and biological world is fundamentally different from the physical world, which implies that the approach to a scientific understanding must also be different. Social order is built upon an empathy that allows individuals to fathom the minds of others and the meaning of the actions that others undertake. That imprecise understanding of others' knowledge and behavior is accessed through introspection, which is dependent upon a high degree of commonality, between the observer and the observed, of social institutions, customs, traditions, and genomes. The more disparate (alien) are cultural mores, the more difficult it becomes to understand our fellow men. While there may be some circumstances that allow the features of biological and social events (that is, the events of human existence and interaction) to be represented by the categorizations and mathematical formulations that are relevant to physical science, for the general case it must appear

unlikely that we will get closer to the real nature of human experience by leaving behind the particularity of our human point of view and striving for a description in terms accessible to beings that could not imagine what it would be like to be us. (Nagel 1979, p. 174)

The implications are that, while mathematical formulations (as scientific models) would be potentially comprehensible to alien life forms, the communication of social aspects of life on Earth would be more problematic. A vast array of issues relating to the human condition that are relevant to the development of the social and biological sciences lie beyond the scope of mathematical formulations and statistical correlations. More precisely, the divide between physical science and the social and biological sciences rests in the transition "to the living from the non-living," when information itself becomes transformed. With the emergence of life forms, new rules of Darwinian adaptation "supervened over the laws of chemistry and physics" (Edelman and Tononi 2000, p. 209). The new Darwinian element was "that selection for fitness in the phenotype could

stabilize some DNA or RNA sequences over others” (Edelman and Tononi 2000, p. 210). This constituted a formidable change. Sequences of DNA and RNA have relevance that transcends their chemistry: they are the residues of the impact of events upon a succession of biological phenotypes. Code sequences of DNA and RNA are the stored information that derives from that ancestral succession.

In sharp contrast to the scientific patterns that define our knowledge of physics and that reflect no historical antecedents, the “memory” of a vital ancestral heritage is uniquely characteristic of the social and biological sciences: “[m]emory itself is a system property that allows the binding in time of selected characteristics having adaptive value” (Edelman and Tononi 2000, p. 210). Biological and socio-historical processes, as far ranging as from the function of the immune system to the development of the common law, are evolved systems; and memory is critical to all systems that follow a path of evolutionary adaptation. There are as many memory systems in existence as there are systems capable of autocorrelation with past states. A series of path-dependent adaptations—modifications of physiological, behavioral, and organizational characteristics—is preserved by reason of their usefulness. These constitute spontaneous processes of “end-directed adaptive action” (Plotkin 1994, p. 104) that constitute “understanding” in the broadest sense:

all adaptations are knowledge. The fleshy water-conserving cactus stem constitutes a form of knowledge of the scarcity of water in the world of the cactus . . . Lacking a brain of any kind, the cactus has its knowledge built upon a less complex structure of genes and development. (Plotkin 1994, p. 229)

Although nonliving material might be said to contain knowledge—the path-dependent formation of a snowflake has been cited (Herrmann-Pillath 1992, p. 177, fn. 1)—a higher order definition requires memory to involve some symbolic exchange. Upon this basis, signals and configurations constitute information when (1) pattern recognition goes beyond the laws of physics and chemistry (Edelman and Tononi cite the pattern of a bee dance as contrasted with that of a molecular crystal); and (2) organisms capable of exercising choice and communication are at the origin or terminus of signals and stimuli.

III

Science: The Data of Complex Phenomena

SOCIAL SCIENCE DEALS WITH COMPLEX PHENOMENA in that its data (which may not be directly observable) are dependent upon time and place. In addition, concern is not usually with events *per se* but with the opinions and interests of individuals that derive from events as individuals have presumed them to be. The assumption that knowledge is the same for all people (that is, the idea of “objective” knowledge) is grossly misleading. Friedrich Hayek (1899–1992) provides two illustrations. Our “certainty” (objective knowledge) of the impotency of a magic charm is irrelevant to our comprehension of the actions of individuals who believe in it. Similarly, if individuals were made to wear a chain around their necks whenever they commit a certain act, that objective knowledge would explain nothing of the social context. The relevant knowledge is whether the chain is recognized as a reward or a punishment: “[n]ot only man’s action towards external objects but also all the relations between men and all the social institutions can be understood only by what men think about them” (Hayek 1952a, p. 57).

Where physical science deals with relations between things, social science deals with relations between men and things, and between men and men: the complex phenomena “of life, of mind, and of society.” Complexity is defined by “the minimum number of distinct variables a formula or model must possess in order to reproduce the characteristic patterns of structures of different fields” (Hayek 1967, p. 26). Now, the concept of a scientific law that is valid for simple phenomena—that is, a definite rule that links two events—rarely applies to complex phenomena. If physical science is seen to have advanced further than the social and biological sciences, that is precisely because it deals predominantly with phenomena that are simple. Indeed, the primary achievement of theories of social structures is to have shown that events that arise in the course of human interaction depend upon so many detailed circumstances that it is impossible to ascertain them all:

[t]he very insight that theory provides . . . that almost any event in the course of a man’s life may have some effect on almost any of his future

actions, makes it impossible that we translate our theoretical knowledge into predictions of specific events. (Hayek 1967, p. 34)

The unwelcome conclusion is that the scientific aspiration to achieve accurate predictions (and even control) generally lies beyond the reach of the social and biological sciences. While, in the complexity of his rationality, economic man is essentially unpredictable, that does not imply that social patterns are indiscernible. If that were the case, there could be no social science. By his intellectual creativity, man strives to overlay social events with “artificial” patterns, such that general presumptions in regard to social forces can be made and tested scientifically. Social science studies the implications of purposeful action. By its practical success, that scientific understanding generally endures until it is displaced by new patterns that bestow some greater adaptive advantage.

IV

The Science of Economics

THE CREATION OF PATTERNS that relate most directly to socioeconomic forces became a preoccupation for specialists from the 18th century onward. Upon his retirement as physician to Louis XV, François Quesnay (1694–1774) redirected his attention to social relationships. The result was a new category of science whose original nomenclature, “physiocracy” (the rule of nature), was discarded for that of “economics” but then restored as other schools emerged, each with its distinctive emphasis. The physiocrats placed particular stress upon patterns that emerge from *laissez-faire*:

the movements of society are spontaneous and not artificial, and the desire for joy which manifests itself in all its activities unwittingly drives it towards the realization of the ideal type of State. (de la Riviere; cited in Gide and Rist [1915] 1948, p. 30)

Although owing much to the physiocrats, as well as to the teaching of Frances Hutchinson (1694–1746) and David Hume (1711–1776), Adam Smith (1723–1790) is credited for having secured the foundations of classical economics, not least for his denial of Quesnay’s representation of agriculture as the source of wealth. For Smith, human

activity in general, rather than agricultural activity in particular, is the original source of economic value. The influence of Bernard de Mandeville (1670–1733) shows in *The Theory of Moral Sentiments* (1759), where Smith explains how general welfare is served by the pursuit of private interests. However, it is with *The Wealth of Nations* (1776) that Smith ultimately “eclipsed the tentative efforts of his predecessors” (Gide and Rist [1915] 1948, p. 69). Its general thesis is that economic prosperity is a manifestation of spontaneous social interaction. Prosperity is enhanced by the free exchange of a vast array of differentiated commodities that is secured through the division and specialization of labor. However, that achievement is possible only where there is a supportive institutional framework: the “Smithian” mode of argument for free market policies,

starting out from a realistic view of man and his psychology, and recognising the all-persuasiveness of ignorance in human affairs, gives as important a place in its objectives to freedom and the Rule of Law as it does to some kind of ideal, optimal economic efficiency. (Hutchinson 1984, p. 162)

In the absence of an institutional framework, *laissez-faire* is a vacuous concept. The related issue of the legitimacy of a polity draws from its interface with cultural traditions and the accommodation of individuals’ needs. In this regard, liberalism *is* special, not in the sense of having objectively determined procedures for deciding the parameters of an individual’s equal right to freedom, but for bringing mutual compatibility to the goals of free men. In recognizing that social cohesion emerges from the characteristics of human nature (that is, from man as a social animal with a propensity to act in certain ways), Smith indicated the importance of two motivations: “self love” and “an innate desire for the approbation of other human beings” (Murray 2000, p. 195). Although both motivations are commensurate with diverse political systems, there are two aspects to the particular appeal of a free society (liberalism): the prospect of individual fulfillment through meeting challenges with responsibility, and the potential for material advancement through trade and peaceful coexistence.

Smith’s *Wealth of Nations* is recognized for the order it gave to a set of existing economic considerations. By its encompassing

scientific formulation, Smith initiated a social theory with a philosophical dimension (liberalism), an organizational dimension (the pursuit of self-interest), and a technical dimension (the division of labor). More generally, the methodological principles by which economics was guided in the 18th century consisted

on the one hand, of a firm belief in the stages theory of history, resting on the interaction between definite “modes” or types of economic production and certain eternal principles of human nature, and on the other hand, of a profound commitment to simplicity and elegance as overriding criteria of an adequate explanation. (Blaug 1980, pp. 56–57)

In other words, theoretical perspectives upon world events were directed by particular views of economic development and human nature and by the methodological precept established by William of Ockham (1285–1349): *entia non sunt multiplicanda praeter necessitatem* (“entities are not to be multiplied beyond necessary”). Simplicity per se is desirable. With the further influence of David Ricardo (1772–1823), a greater emphasis was placed upon abstract analysis, with less upon the historical and the institutional. A three-staged procedure was implicit: induction to give “the premises that determine the principal forces in operation”; deduction to give “the consequences . . . from the operation of these forces under given conditions”; and verification “to test the correctness of economic explanation” (Zouboulakis 1999, p. 80).

As social philosophers, practitioners of political economy in the 18th century understood that men of virtue are necessary to sustain the ethos of liberalism:

[m]en are qualified for civil liberty in exact proportion to their disposition to put moral chains upon their own appetites . . . Society cannot exist unless a controlling power upon will and appetite be placed somewhere; and the less of it there is within, the more there must be without. (Burke; cited in Murray 2000, p. 195)

So, while a society of free men in peaceful coexistence relies upon a high degree of self-discipline—with individuals acting according to their beliefs and taking responsibility for the consequences of their actions—liberalism needs to be secured; that is, individuals’ activities require the constraint (and protection) of clearly defined, nonarbitrary rules. Actions that are guided by psychological and social constraints

drive a time-dependent path across an uncertain terrain wherein rules are necessary to delimit and protect every individual's private sphere against arbitrary incursion.

Such was the framework of a social theory of political economy that held center stage until the mathematical "revolution" that began in the last quarter of the 19th century. As a prelude to that era, John Stuart Mill (1803–1873) had tightened the boundary of political economy by focusing concern upon man "solely as a being who desires to possess wealth, and who is capable of judging the comparative efficiency of means for obtaining that end"; upon an "abstraction of every other human passion or motive, except . . . aversion to labor, and desire of present enjoyment of costly indulgences" (Mill 1844, p. 137). By these and further contemporaneous developments, there was a detachment from the ethics of liberalism and an engagement with rational economic man as an optimizer *in extremis*. By that detachment, the relationship between virtue and a liberal society became lost as the focus shifted exclusively to the power of self-interest; and so,

whether it was Ricardo or Malthus or Carlyle or Mill or Spencer, they could take that construct of self-interest and make it explain a lot. They did the right thing in the sense that it is truly a powerful construct. But they neglected the other half of the equation. (Murray 2000, p. 196)

This neglect became entrenched and established a sharp and lasting dichotomy: normative precepts were no longer to be countenanced as falling within the orbit of economic science.

Under the new label of "neoclassical economics," the marginal analysis of constrained optimization became dominant as mainstream 20th-century microeconomics. Not all were captivated by the application of differential calculus to human activity (inclusive even of marriage and procreation). Alfred Marshall (1842–1924) was the most influential economist of his day, but

[t]hough a skilled mathematician, he used mathematics sparingly. He saw that excessive reliance on this instrument might lead us astray in pursuit of intellectual toys, imaginary problems not conforming to the conditions of real life: and further, might distort our sense of proportion by causing us to neglect factors that could not easily be worked up in the mathematical machine. (Pigou 1925, p. 84)

It was for these reasons that Marshall recommended to economists the following rules:

- (1) Use mathematics as a shorthand language, rather than as an engine of inquiry.
 - (2) Keep to them till you have done.
 - (3) Translate into English.
 - (4) Then illustrate by examples that are important in real life.
 - (5) Burn the mathematics.
 - (6) If you can't succeed in (4), burn (3). This last I did often.
- (Marshall; cited in Pigou 1925b, pp. 427–428)

Mathematical formulations per se are never scientific. They are propositions, formal derivatives from assumptions (axioms), that are neither true nor false. They remain tautological derivatives, even when dressed as economics. So, for example, by the usual assumptions of the neoclassical theory of the firm, an optimal outcome (“equilibrium”) is achieved when the marginal cost of production is equal to the marginal revenue from sales. This statement is a tautological derivative: a logical deduction from the stated goal (maximum profit) and its constituent elements. Science is irrelevant. Only if the assumptions (that profit maximization is the objective) were claimed to be true—in which case the assumptions (or the deduced propositions) would have to be falsifiable—would the statement be scientific. If neither assumptions nor propositions were falsifiable, the statement would be unscientific.

Even so, mathematical formulations can prove useful in clarifying ambiguities and in revealing inconsistencies that may be hidden by linguistic imprecision. Moreover, the presumption of an opportunity cost that is reflected in price, of a well-defined preference function that is precisely constrained by a fixed budget, of known technologies, of a given set of mutually consistent factor prices, and an acute awareness of all the feasible alternatives provide constructs that are useful in examining the notion of economic efficiency within a static equilibrium. It is not a valid criticism to argue that neoclassical microeconomics presents an unrealistic scenario. Its very usefulness lies in its contrast to reality: it is a benchmark. Yet, in a different context, it can be seriously misleading:

[t]he fundamental Austrian complaint against neoclassical economics is that its concept of equilibrium already assumes the solution of the economic problem, which is the problem of discovering—or inventing—possibilities and making good use of them. (Loasby 1989, p. 156)

To assume that relevant data exist is to beg all the questions relating to the entrepreneurial process of discovering new avenues of advancement. Indeed, since the purpose of every human action is to improve upon a given situation, all human action is entrepreneurial; but, with the formulations of neoclassical analysis, the vital social element is absent. The relevant information is not something to be discovered; it is given.

While neoclassical formality clarifies the logical features of an economic problem, it delivers no solutions to problems arising from social interrelationships that are dependent upon an informed but incomplete knowledge of production and consumption possibilities. Knowledge is generated by interactive processes that incite the continuous revision of the subjective perceptions of individual participants. With the abrogation of those interactive uncertainties, modern microeconomics became dominated by an analytical approach in which the optimal conditions for economic efficiency are identified in the context of full and certain knowledge of both resources and objectives. Once optimality is deduced, there is nothing further to ponder. The context is static; the world is an uneventful place. Entrepreneurs are *assumed* to have exhausted every conceivable beneficial opportunity. The contours of a *hypothetical* landscape are described as they might appear after action has long ceased. Yet neoclassical economics has no inhibitions in regard to recommendations for intervention. With the *observed* landscape displaying noticeably different features, neoclassical economics calls for intervention to remedy so-called market failures.

Such market “imperfections” are symptomatic of the transaction costs that are incurred with every action of social exchange. Every institution whose function facilitates exchange would be superfluous if exchange were costless. Institutions that owe their existence to transaction costs include money, banks, the law, accountancy, firms, stores, distributors, and sales. If transaction costs were zero, optimal factor combinations would emerge spontaneously to achieve all the economies of efficient production. Of course, this is nonsense, and the firm (together with many other institutions) owes its existence to its efficiency in minimizing transaction costs. The ubiquity of economic “externalities” indicates that transaction costs intrude upon any

balance between the allocation of costs and the disbursement of benefits. Far from indicating “market failure,” these are the natural frictions of economic life that are excluded from the institutionally barren world of neoclassical theory.

While for many the general equilibrium analysis of Léon Walras (1880–1910) represents the apotheosis of neoclassical economics, formal proofs came only in the 1950s, when Kenneth Arrow (1921–) and Gerard Debreu (1921–) structured a mathematical model of a market economy, wherein the hire of factors of production and the production of goods and services are planned so as to maximize welfare. The model specifies agents with perfect foresight; agents whose choices are independent (no one’s welfare is affected by what happens to someone else); and an outcome such that, if any of these conditions is not met, equilibrium vanishes. Furthermore, the method of comparative statistics allows any detail of an equilibrium state A to be altered so that, *ceteris paribus*, a new equilibrium state B emerges. In comparing A with B, the change in one detail is deduced to have “caused” the new situation to emerge; and this is supposed to give insight into social processes.

The dominance that has been achieved by neoclassical economics might be attributed to a desire to match the analytical achievements of physical science. In the event, it delivers little more than mathematics. In the pursuit of pseudo-scientific tractability, neoclassical economics neglects the dynamic aspects of the social realm and delivers a static utilitarian calculus. In the context of its earlier classical usage, utility—“usefulness”—implies that *potential* benefits are conditional upon social circumstances. In its neoclassical connotation—“satisfaction”—the pseudo-social objective becomes the greatest satisfaction (by intensity and duration) of the greatest number. The driving concept is that of a “Pareto” optimum” (Vilfredo Pareto (1843–1923)), which is such that no individual can be further advantaged without some other individual suffering disadvantage. In reaching that optimum, the utilitarian drive is directed by a “hedonistic calculus of pleasure and pain” (that is, by the logic of pure choice) that underpins every aspect of the neoclassical theory of human behavior. So, for example, the undesirability of work *per se* is offset by earnings

that enable desired purchases to be made; but time must also be allocated to recuperation. Hence, the precise calculation of hours of work, rest, and play: a hedonistic calculus with rational economic man intent upon maximum satisfaction. Yet the limitations of this “psychology” are suggested by its own redundancy of expression: pleasure (pain) is negative pain (pleasure). The human condition is poorly represented by such monochromatic shades.

V

Human Behavior: Values and Preferences

WITHOUT OMNISCIENCE, OPTIMIZATION FAILS. Even with omniscience, the hedonistic calculus is inoperable in the presence of incommensurability; and, in pursuit of the greatest satisfaction of the greatest number, interpersonal transfers must be addressed. Here, the possibility has been mooted of replacing subjective preferences with some objective standard, “a kind of majority rule,” that is determined by “a majority of interests suitably weighted for intensity” (Nagel 1979, p. 112). Of course, this risks the subordination of personal freedom to some nebulous concept of public good. Who is to decide? Furthermore, the utilitarian concentration upon individual choice ignores the important issue of which preferences are worth having.

In conflating preferences and values, neoclassical economics denies the relevance of ethics. Automata may optimize, but—uniquely among sentient/sapient beings—man is able to decide what needs to be optimized. This issue, the question of which preferences are worth having, raises an important distinction: unreflective tastes (“wanton preferences” or “appetites”) and meta-preferences (“values”) that are supported by reflective consideration. In regard to values, a reexamination of rational behavior can be explored. It is one that demands a reversion to the wider remit of political economy and to the values that constrain an individual’s actions.

The modern notion of happiness and the Greek notion of *eudaimonia* (from which “happiness” derives) are etymologically rooted in chance good fortune (as respectively reflected in “happenstance” and

the literal translation of *eudaimonia* as the “good *daemon*” that accompanies a successful person). However, with a switch of emphasis to the success that derives from rational choices and virtuous behavior, the Greek notion of irrational behavior (*akrasia*: variously translated as “weakness of the will,” “lack of self-control,” “intemperance,” “incontinence,” “self-deception,” and the “deliberate choice of an inferior course of action”) is the destroyer of happiness. According to Aristotle, an individual acts irrationally (that is, in opposition to what reflective consideration would show to be in his best interest) when a general kind of knowledge (values driven by reason or virtue) is overridden by particular kinds of knowledge (wanton preferences driven by appetite).

In ignoring the relevance of values, neoclassical analysis overstates the relevance of preferences. Thus, for illustration, Gary Becker’s *The Economics of Discrimination* (1957) and Harry Johnson’s “A Theoretical Model of Economic Nationalism in New and Developing States” (1965) might be indicted for having “fostered the illusion that ‘raising the cost’ of discrimination (or nationalism) is the simple and sovereign policy instrument for getting people to indulge less in those odd ‘tastes’” (Hirschman 1984, p. 90). More generally, in restricting explanations of behavioral patterns to changes in prices, incomes, and other “economic” variables to the neglect of any appraisal of values, neoclassical analysis was destined to draw implausible conclusions. Thus, in their analysis of beneficial and harmful addictions, Gary Becker (1930–) and George Stigler (1911–) “take the elasticity of the individual’s demand curve for music or heroin as given and, it would seem, immutable” (Hirschman 1984, p. 90). Thereby, the normative aspects of education are excluded from the “positive” remit of neoclassical economics. The implicit *assumption*—that, though responding rationally to price incentives, both the Philistine and the drug addict are beyond redemption or, rather, have no call upon our abilities to educate—denies any consideration of the uniqueness of man within the animal kingdom. The uniqueness is that man is able to reflect upon his values (or opinions):

Man is the only animal that laughs and weeps; for he is the only animal that is struck with the difference between what things are and what they ought to be. (Hazlett 1819)

[a]nimals may have *beliefs* about this and that, but they don't have *opinions*. They don't have opinions because they don't *assent*. Making up your mind is coming to have an opinion . . . and changing one's mind is changing one's opinion. (Dennett 1997, p. 304)

That higher values (rather than preferences) might be gained through deliberation upon choices—that is, through changing one's mind—is a hugely important issue that lies abandoned in the wake of the neo-classical assumption that behavior is consistent: “it is the essence of personhood that a person can change his mind” (Dennett 1997, p. 309). The distinction between satisfaction (wanton preferences) and values (meta-preferences) demands explicit consideration of ethics and motivation.

VI

Social Ethics and Just Acts

A MORAL CODE UPHOLDS SOCIAL COHESION through its condemnation of unjust acts. In elucidating *A Theory of Justice*, John Rawls (1921–) rejects utilitarianism by his assertion that “it hardly seems likely that persons who view themselves as equals . . . would agree to a principle” of allowing “the hardships of some” to be “offset by a greater good in the aggregate”; nor would it be rational for an individual (unless driven by “benevolent impulses”) to seek to maximize “the algebraic sum of advantages” (Rawls 1972, pp. 14–15). In looking to alternative guidelines, Rawls set himself a threefold objective: “to reveal the principles of justice which underlie the dominant moral and political views of the period”; “to show that these principles can be viewed as the result of a selection procedure that all people can agree is fair”; and “to show that these principles describe a workable social arrangement, given everything we know from the social sciences” (Daniels 1975, p. xiv). The result, Rawls argues, is a thesis that is consistent with the dominant Western ideology (that is, liberalism) and that supports the “commonsense” conviction that an individual's legitimate expectations have priority over some elusive common good. Rawls's sense of justice is driven by the *mutual* gains that can be expected to be generally available when just rules are applied.

Rawls works with the concept of primary social goods (those that

all men prefer more of to less). These include: rights and liberties; opportunities and powers; income and wealth; and (most important) self-esteem. The latter relies upon two characteristic features: a rational plan of life that satisfies Rawls's criterion of the "Aristotelian principle"; and an appreciation by others who are likewise esteemed. The Aristotelian principle is conceived as a principle of motivation:

Aristotle certainly affirms two points that this principle conveys: (1) that enjoyment and pleasure are not always by any means the result of returning to a healthy or normal state, or of making up deficiencies; rather many kinds of pleasure and enjoyment arise when we exercise our faculties; and (2) that the exercise of our natural powers is a leading human good. Furthermore, (3) the idea that the more enjoyable activities and the more desirable pleasures arise in connection with the exercise of greater abilities involving more complex discriminations is not only compatible with Aristotle's conception of the natural order, but something like it usually fits the judgements of value he makes, even when it does not express his reasons. (Rawls 1972, p. 426, fn.)

The inference that might be drawn in regard to rational economic man is that his objective is not to maximize an income-constrained utility function of "given" items but to exercise his abilities against demanding problems.

Satisfaction is gained from the self-esteem (arising from reaching out for difficult but achievable goals) that secures respectability within a society of like-minded individuals. There is no (utilitarian) promise that the exercise of individual initiative (following the Aristotelian principle of motivation) under the constraint of liberal principles can deliver an enhanced material living standard. Rather, the human condition is improved, not by the extension of material comfort, but by the quest for achievement. Thus, social progress is a "process of formation and modification of the human intellect . . . in which . . . our values and desires continually change" (Hayek 1960, p. 40). (Again, the capacity to hold an opinion and to change one's mind is a uniquely human characteristic.) The extensive corroboration of the Aristotelian principle of motivation as it is elucidated by Rawls suggests that the need for fulfilment (self-esteem) is deeply embedded in the human psyche:

[f]rom their earliest origins, men and women appear to have allocated a considerable portion of their time to the pursuit of truth, beauty, justice,

liberty, community, friendship, love, salvation, and so on. . . . [A]ctivities . . . best described not as labor or work, but as *striving*—a term that precisely intimates the lack of a reliable relation between effort and result. A means-end or cost-benefit calculus is impossible under the circumstances. (Hirschman 1984, p. 91)

[p]rogress in the sense of the cumulative growth of knowledge and power over nature is a term that says little about whether the new state will give us more satisfaction than the old. . . . What matters is the successful striving for what at each moment seems attainable. It is not the fruits of past success but the living in and for the future in which human intelligence proves itself. Progress is movement for movement's sake, for it is in the process of learning, and in the effects of having learned something new, that man enjoys the gift of his intelligence. (Hayek 1960, p. 41)

Among many other corroborations are those in Alfred Marshall's *Principles*:

[t]he main concern of economics is thus with human beings who are impelled, for good and evil, to change and progress . . . the central idea of economics, even when its foundations alone are under discussion, must be that of living force and movement (Marshall 1890 [1961], p. xiii);

in the philosophical perspective of Karl Popper (1902–1994):

[l]ife is a struggle for something; not just for self-assertion, but for the realisation of certain values in our life. I think it is essential for life that there should be obstacles to overcome (Popper and Eccles 1977, p. 558);

and in John Maynard Keynes's (1883–1946) rejection of the utilitarian conception of human nature (see Mini 1991, p. 104 *ff*). Behind all ends and motivation “is ‘the restless spirit of man,’ who is an aspiring rather than a desiring being” (Knight 1922, p. 473).

In periodically reviewing his aspirations and through a continuous process of *striving*, an individual puts his opinions to the test; and the confidence with which those opinions are held will vary as an individual deliberates and from time to time makes the conscious decision to change his mind. Set against such considerations, the neo-classical representation of the human condition, in terms of the relative costs and merits of alternative activities, is modest indeed. Only the shallowest of human aspirations are met by decisions that are guided by marginal cost-benefit evaluations. The limitations of the neoclassical paradigm should not be allowed to constrain analytical

thought. Ludwig von Mises (1881–1973), for example, affirms the precedence of moral standards over materialist considerations: “[a]nyone with a genuine sense of moral values experiences no hardship in deciding between honour and livelihood” (Mises 1920, p. 100). From a cultural/moral perspective, honor rather than livelihood is served by such conventions as the lifeboat drill of “women and children first.” In that extreme situation, the preference (for life against death) gives way to values and the moral action that is so defined.

VII

Psychology and Socioeconomic Behavior

ALTHOUGH EVERY SOCIAL INTERACTION is instigated, monitored, and recorded through the mediation of human minds, economics has significantly failed to engage with the philosophy of the mind, with psychology, and with neuroscience. Purported theories of economic behavior that neglect fundamentals of the human condition afford only limited insights into social interaction. Harry Johnson (1923–1979) provides an apt illustration in his neoclassical *Lectures on Income Distribution* when he inquires:

who likes to be reminded of the risks of human existence by the daily sight of a one-armed, one-eyed, dwarfed, or otherwise disfigured elevator operator when for a somewhat higher wage one can obtain the services of a fully-able-bodied man or woman whose presence in the elevator daily reminds one that one’s superior income is due to one’s superior ability and not merely to one’s physical health. (Johnson 1973, p. 227)

Even within its own context, Johnson’s conclusion is poorly argued. Reminders of the fragile nature of the human condition are ever-recurring; and they invoke many different emotions (or none at all, as with Bob Geldof’s observation of the “passion fatigue” induced by the “Band-Aid” famine-relief appeals). In a fundamentally uncertain world (that is, a world of the historical rather than the neoclassical kind), physical health, mental health, innate ability, education, psychological disposition, and luck are key considerations to the achievement of a “superior income.”

By such details, the course of socioeconomic events is directed by

forces far removed from the abstractions of neoclassical production functions, whose algebraic coefficients deliver factor productivities that purport to determine the distribution of income. History shows that prosperity and progress have best been served when rewards have been allowed to accrue to those positioned to meet new and rapidly changing circumstances; that “[w]e allow the individual share to be determined partly by luck in order to make the total to be shared as large as possible” (Hayek 1978, p. 91); that continuous adjustments are necessary to secure coherent economic interaction; and that many who lose out are too quick to claim special protection. The marginal products of labor and capital afford meagre representation to such considerations.

Harry Johnson’s categorization of a “disfigured elevator operator” as a “negative personal consumption externality” invokes the linear hedonistic scale of pleasure and pain. More arresting distinctions lie within a range of incommensurable human emotions that are generally familiar. A “negative externality” encompasses feelings as qualitatively different as boredom and disgust. Whereas boredom might be alleviated by the purchase of a newspaper, nothing counters the fear and revulsion engendered in George Orwell’s Room 101. Similarly, what kind of hearty breakfast fully compensates a condemned man, or the father who is forced to decide which of his sons must die? Consider Primo Levi’s inquiry as to why his friend bothers to wash himself “in the turbid water of the filthy washbasins” of Auschwitz. It would be obscene (a telling emotion) to represent that choice as a hedonistic calculation. Rather, it is

precisely because the Lager was a great machine to reduce us to beasts, [that] we must not become beasts; that even in this place one can survive, and therefore one must want to survive, to tell the story, to bear witness; and that to survive we must force ourselves to save at least the skeleton, the scaffolding, the form of civilisation. We are slaves, deprived of every right, exposed to every insult, condemned to certain death, but we still possess one power, and we must defend it with all our strength for it is the last—the power to refuse our consent. So we must certainly wash our faces without soap in dirty water and dry ourselves on our jackets. We must polish our shoes, not because the regulation states it, but for dignity and propriety, not in homage to Prussian discipline but to remain alive, not to begin to die. (Levi 1987, p. 47)

Only by a deliberate degradation of the complexity of the human mind and its civilization could such sensitivities be registered along the linear scale of neoclassical utility theory:

[t]here are elements which, if added to one's experience, make life better; there are other elements which, if added to one's experience, make life worse. But what remains when these are set aside is not merely *neutral*: it is emphatically positive. Therefore life is worth living even when the bad elements of experience are plentiful, and the good ones too meagre to outweigh the bad ones on their own. The additional positive weight is supplied by experience itself, rather than by any of its contents. (Nagel 1979, p. 2)

In restricting itself to the utilitarian preoccupation with activities that make life better or worse, neoclassical economics presents an analysis of an amoral and self-contained agency that reveals virtually nothing of the essence of being.

VIII

Individuality: Driven by Emotion

INDIVIDUALITY DERIVES FROM SELF-CONSCIOUSNESS, for which reason individuality is difficult to explain. The mind is embodied in the natural world and, while it is relatively easy for neuroscience to explain the biology—the electrochemistry—of the neural order, the mechanisms by which each of us knows that it is “I” who is hungry or sad are more problematic. However, the importance of the distinction that is afforded to sentient beings invokes morality and the hugely important issues of human rights and responsibilities. The uniqueness of the human condition lies in the degree of self-awareness (a corollary of the “opinions” discussed earlier); for example, in the recognition of one's own mortality.

In seeking some level of understanding of how “I” know that it is “I” who knows, “the investigation of consciousness (and all other cognitive phenomena) is condemned to some indirectness” (Damasio 1999, p. 81). So, it is from general observations that “[e]motions and core consciousness tend to go together in the literal sense, by being present or absent together” and that “the absence of emotion is a reliable correlate of defective core consciousness” (Damasio 1999, p. 100)

that Antonio Damasio (1944–) argues the thesis that emotions *per se* are the bedrock of self:

[T]he plotting of a relationship between any object and the organism becomes the feeling of a feeling. The mysterious first-person perspective of consciousness consists of newly-minted knowledge, information if you will, expressed as a feeling. (Damasio 1999, p. 313)

Upon that basis, the widest range of human emotions upon which self-consciousness (individuality) is based must be relevant to any meaningful theory of human function, and that includes theories of economic behavior. While (uniquely in the animal world) *human* intellect can be brought to bear upon such issues, an entirely rational assessment of emotionally charged social interactions would be *literally* devoid of sense.

In the most general terms, “[o]ur knowledge of the real world comes as a result of the physical, psychological, and social interactions of our minds and bodies with that world” (Edelman and Tononi 2000, pp. 215–216). With that accumulation of knowledge, an individual’s capacity to know develops from the relationships between three structures (see Hayek 1952b, p. 39): the physical order, the neural order, and the sensory order. The physical order is that of the material world. The neural order is that of the human neurological system, which is a subset of the physical order. The sensory, or mental, order (that is, the “mind”) is the uniquely individual interpretation that is created within an individual brain by the neurological configurations of the neural order.

The mind uses the instrument of the brain to classify the regularities of the experience of living in a material world. Knowledge is created by mind, by its categorization of perceptions as memory:

*memory is more like the melting and refreezing of a glacier than it is like the inscription on a rock. . . . memory is not a representation; it is a reflection of how the brain has changed its dynamics in a way that allows the repetition of a performance. . . . [M]emory results from the selective matching that occurs between ongoing, distributed neural activity and various signals coming from the world, the body, and the brain itself. . . . [Memory is] a form of constructive *recategorization* during ongoing experience, rather than a precise replication of a precise sequence of events. (Edelman and Tononi 2000, pp. 93–95)*

This glacial analogy is redolent of Henri Bergson's emphasis upon the continuous nature of experience. For example, the repeated reading of a poem is a succession of unique events in that the "experience on each occasion is modified by the previous readings" (Russell 1929; cited in Feigl and Brodbeck 1953, p. 403). By this general function of bringing the past into the present, memory creates a series of uniquely evolved mind-categories (that is, phenomena) that constitute the coordination of sensory inputs invoked by external stimuli. It is by such influences that the mind is shaped, but the knowledge of which the mind can have only limited comprehension.

To investigate an instrument using that same instrument—to know the mind using the mind—is an inherent impossibility: "to 'explain' our own knowledge would require that we should know more than we actually do, which is, of course, a contradictory statement" (Hayek 1952a, p. 86). A complete understanding of the influences by which the mind is shaped would require knowledge of how the sensory order represents relationships in the physical world; and this would require the sensory picture of that physical world to include the model of the relationship between that model and the physical world; and so on, *ad infinitum*. The inherent inability to fathom the mind carries the corollary of the limited degree to which an individual is able to know himself and (*a fortiori*) to know others. (So much for the insistence upon full knowledge, consistency, transitivity, etc. in the preference functions of neoclassical economics.) The implication is that explanations of one's decisions—even those honestly given—must be treated with circumspection. Even so, explanations must invoke those factors that drive individuals toward certain actions, rather than what is given as their (or some other individual's) rationalization of what happened.

This is an introspective approach that contrasts starkly with that of philosophical behaviorism, which attempts to naturalize epistemology *via* behavioral psychology alone. That approach is limited to proceeding no further than the stimulation of sensory receptor sheets (retina, skin, taste buds, tympanum, olfactory). Behaviorism neglects the inner working of the body and the brain; the grounding of epistemology in neuroscience; and the possibilities for a theory of consciousness, including psychology. In addressing this neglect, a more

comprehensive approach to explanations of human action “would open our inquiry to include feelings and emotions in terms of bodily mechanisms that go far beyond computation” (Edelman and Tononi 2000, p. 217). Gerald Edelman (1927–) and Giulio Tononi (1960–) offer a tentative thesis of mental patterns that are created in response to inputs from *all* the sensory modalities: the visual, auditory, olfactory, gustatory, and somatosensory (including touch, muscular, temperature, pain, visceral, and vestibular). The corollary is that, while social science offers tentative explanations of a spontaneous order that is the (unintended) outcome of human activity, the best explanation by any one of the agents whose actions contribute to the shaping of that order might be, “I *feel* I took the right decision, but it would be misleading to say more.”

IX

Rationality: Genetic

WHILE EMOTION MARKS THE DIFFERENCE between sentient beings and automata, the uniqueness of man rests in a highly developed self-consciousness (commensurate with the capacity to change “opinions,” cited earlier). Simple automata follow a set of preprogrammed reactions. At a more sophisticated level, automata can be constructed to learn: with a *given* set of values (“opinions”) even of the simplest kind, such as light is preferable to dark, they may be programmed to construct a memory store from their interaction with an environment. Sentient beings also initiate action upon the basis of values held; but these are formulated and recorded upon an extensive basis.

In facilitating the choice of action by a sentient being, the “efficacious role of consciousness is to construct an information scene (‘the remembered present’) that connects present reality to the past value-ridden history of each individual, conscious animal.” At a remove far distant from the most sophisticated automata, this higher-order consciousness confers such evolutionary advantages as “the rapid integration of information and planning” and “[t]he translation of such planning into unconscious learned routines” (Edelman and Tononi 2000, pp. 217–218). These are rapid processes of learning that allow intelligence to deal with problems of an unfamiliar future by

tracking events that are too rapid to be accommodated by instinctive behavior:

[l]earning and memory are its most common manifestations in different animals; reasoning and thinking are much more restricted forms of intelligence; and so too is culture, the ability to share knowledge, which adds another dimension to intelligence. (Plotkin 1994, p. 154)

Intelligent learning would be impossibly slow if it were necessary to investigate the consequences of every new sensation; but intelligence receives guidance from a deep-seated cerebral structure (the “value system”) that projects over the entire cortex:

[v]alues reflect events involving the nervous system that have been selected during evolution because they contribute to adaptive behavior and to phenotype fitness. Examples of low-level values are: “eating is better than not-eating” or “seeing is better than not seeing.” (Edelman and Tononi 1995, p. 85)

Although the number of potential thoughts (neuronal connections) is enormous, Edelman’s model of brain function shows how learning derives from Darwinian selection operating upon random neuronal connections. For example, the spontaneous movements of infants are initiated by random neurological firing patterns; but, for movements that constitute useful behavior, relevant connections are strengthened:

[c]ertain specialised structures in the brain . . . possess certain properties of value systems, such as the ability to give a transient but strong response to the occurrence of events having adaptive value, to signal such an occurrence to wide areas of the brain through diverse projections, and to release substances that modulate changes in synaptic strength. The modulation of local synaptic changes by global signals that are associated, directly or indirectly, with evolutionary selected values, constitutes a major means to effect value-dependent learning . . . [which is] . . . essential in the selection of adaptive behavior in somatic time. (Edelman and Tononi 1995, p. 85)

Synapses are naturally selected when they enhance the survival potential of a species; and they are further strengthened through repeated use. In this manner, intelligence is guided by knowing what it needs to know (for example, in respect of eating, drinking, sense coordination, etc.): “Rationality and intelligence are extensions of instinct and can never be separated from it” (Plotkin 1994, p. 165).

Neurological adaptations are not solely determined by the “value

system.” The spontaneous development of an infant’s physical coordination is implausible as an explanation of (say) Dick Fosbury’s high-jump technique; and what is true of choreographed movement is true of conscious thought: “[o]nce intelligence has evolved in a species, then thereafter brains have a causal force equal to that of genes” (Plotkin 1994, p. 177). While survival advantages are afforded to intelligence, there is no evidence to show that higher-order intellectual capacity correlates with reproductive success. If it did, intelligence, like linguistic precocity, would be more uniformly distributed across the species. So, what gives us the genius? Extrapolating on an allusion made by Darwin (comparing the disadvantages from an excessively elongated bird’s beak with the neutral impact of ever-widening mental faculties), John Watkins (1924–1999) suggests an explanation: even when mental capacities reach an optimum in terms of a current survival advantage, no penalty falls upon a mutation that adds to that capacity. When genes that favor exceptionally high mental capacities enter the gene pool, they “would neither be driven out nor sweep through it”; and the implication is that “genius is possible but rare” (Watkins 1999, p. 158). Of course, the artistic and scientific constructions of genius minds are of potential benefit to all others in the context of their uniquely personal striving. So, as language has released biological evolution from the confines of purely genetic development, the ability to share in a collective knowledge has allowed more rapid adaptation. The cultural transmission of knowledge (both explicit and tacit) has proven an effective means of securing survival traits: it removes the need for successive generations to rediscover the precepts of sound hygiene, dietary balance, the features of political fascism, liberalism, parliamentary democracy, and the speed of light.

X

Rationality: Logic and Neurologic

A COMPUTER IS PROGRAMMED TO APPLY unambiguous rules to coded input and to follow logical procedures repeatedly and without error. The human brain, having no high-precision code-storage facility, cannot perform in like manner. Evolutionary adaptation did not directly

endow humans with a faculty for mathematics and logic: “[n]eurons do not do precise floating-point arithmetic” (Edelman and Tononi 2000, p. 94). Although semantic operations are undertaken, the inputs that the brain receives are generally not logically coded: “[m]athematical capabilities . . . have arisen in human culture as a consequence of linguistic interactions and the application of logic” (Edelman and Tononi 2000, p. 94). The application of formal logic is an intellectual self-discipline. However, the rationality that is implied by formal logic is more aptly viewed *not* as a characteristic of an individual but as a property of the problem-situation in which an individual reaches a decision. It is the throw of the dice that can be represented rationally, not the psyche of those placing their bets. The convenience in setting rationality into a psychological context is that it allows discussion centered upon the individual as against the situation; and it gives rise to a presumed connection (the “rationality postulate”) between the logic of an individual’s situation and his behavior toward reaching an objective. However, this is to underestimate the capacity of the human mind.

Although the mind is unable to replicate the speed and logical precision of the computer, the computer is unable even to “formulate” the kinds of problems that humans must solve on a regular basis. The interplay of intuition, experience, and cold calculation are brought to bear upon all manner of unique situations. Insofar as these can be accessed by scientific inquiry, they are the remit of psychology and neuroscience, which are focused upon the construction of mind models in an attempt to explain: (1) how an “event” within the external physical order triggers a mental construction within the internal neural order of an individual organism; and (2) how a response is formulated and becomes manifest as the behavioral reaction of the organism to that external event. Psychology encompasses both conscious and subconscious response mechanisms, and it is in regard to the former that rationality must be considered in its strict sense; that is, as a matter of consistency, or correct deduction from given premises. Rational behavior follows upon consideration of circumstance, ends and means: if it is raining (circumstance), and I wish to stay dry (end), I take an umbrella (means). Yet situations are rarely so simple. More usually the framework for a decision is open ended; that is, the

full circumstances (premises) are not known and, in principle, may be unknowable.

The rationality postulate assumes that an individual has the ability to obtain knowledge about a situation, the ability to deduce the action that is necessary to deal with that situation, and the ability to undertake that action. Since these conditions rarely apply to a social context, action is more often founded upon the subjective interpretation of (incomplete and inexact) evidence. "Reasonable" decisions then reflect an individual's motivations and subjective assessment of a situation. This kind of perception and knowledge formation bring psychological and social behavioral elements into consideration; but unless one individual achieves some understanding of the psychology of another individual (that is, of a unique perception of a situation), he is in no position to judge any decision that the other has reached.

XI

Rationality: Social

IF ONLY CONSCIOUS AND SUBCONSCIOUS RESPONSE MECHANISMS were relevant to social interaction, it would be for psychologists to explain the behavioral patterns of interactive organisms. However, beyond the realm of psychology, there exists a dimension of *spontaneous* social order: the widespread *unintended* consequences of human activity. Here, the structures of language, law, money, and markets are intricately intertwined within complex arrangements. While the independent decisions of individuals are shaped by narrow intentions, their consequences are unlimited; and, although individuals' decisions might be adequately modelled by deductive models (representing the logic of pure choice), those deductions must be augmented by an understanding of a socioeconomic structure that brings order to the endless adaptive sequences of human interaction.

The pervasive uncertainty that shrouds social interaction and the manifold consequences thereof points to the inadequacy of an economic approach that assumes perfect knowledge. The full circumstances of decisions are not known and, in principle, may be unknowable. More usually, human action is decided upon the basis

of a subjective appraisal of incomplete and inexact information that may amount to little more than a hunch. In circumstances far removed from those of neoclassical economics, the relevant determinants of decision making are the cultural and physical environment, genetically based predispositions, intelligence, and sense perceptions. All of these contribute to the formation of knowledge that is relevant to decisions in the widest social context. In that context, economists insist upon rationality and, *prima facie*, they are correct to do so. A world of irrationality would be a world without explanations; but rationality is much more than a premise to sustain the logic of pure choice:

[r]ational behavior is not a premise of economic theory, though it is often presented as such. The basic contention of theory is . . . not . . . that most or all of the participants in the market process are rational, but, on the contrary, . . . that it will in general be through competition that a few relatively more rational individuals will make it necessary for the rest to emulate them in order to prevail. (Hayek 1979, p. 7)

The idea is not new:

[g]ood management . . . can never be universally established but in consequence of that free and universal competition which forces everybody to have recourse to it for the sake of self-defence. (Smith 1776; cited in Popper 1994, p. 182)

By these conclusions, the Smith-Hayek exegesis of rationality combines the neoclassical connotation of optimality with the social dimension of entrepreneurial competition that delivers (for example) tendencies for mutual gains from trade, lowest cost production, and the law of one price.

In the broadest social context, human action is rational if the actor has a reason for the choice that is made over the options that are rejected. Without rationality, that choice is either instinctive or arbitrary. Yet rationality need not imply conscious reason in the manner of a set of logical considerations. Decisions and actions are not only made in response to inputs from *all* of the sensory modalities (see Edelman and Tononi). They are also led by conventions and traditions that give structure to every response, whether considered or conditioned. The observance of conventions, traditions, and institutional norms permits purposeful choice and action within a frame-

work that sets limits to possible outcomes. Such observance creates social cohesion and a “regularity in the world which makes it possible to predict events correctly” (Hayek 1949, p. 49). In short, conventions permit the certainty of the present to be projected into the future, modified to the extent of good cause (or even by the vaguest hunch). Upon that basis, rational conduct (actions, decisions, and argument) may be undertaken with varying degrees of confidence.

XII

Social Evolution

AN INSTINCTIVE DISPOSITION TO SOCIAL BEHAVIOR is reinforced by the cross-generational evolution of cultural mores. The social orders that have emerged are the result of a multitude of serial adaptations, of which only a fraction survive. In general, these and other social institutions prevail when (by their continuous adaptation) they enhance the reproductive fitness of the communities that adopt them. Ethnographers and anthropologists have identified two broad structures: the hierarchical and the egalitarian. A general evolutionary pattern is characterized, in which hierarchical rivalry between hominids gives way to egalitarianism within hunter-gatherer groups (see Knauff 1991). In support of the thesis that “human hunter-gatherer egalitarianism” was “the only viable strategy” for early man, the mores of present-day foragers are cited. Across diverse cultures and ecology, the most impressive common features are “egalitarianism, cooperation, and sharing” (Whiten 1996, p. 140). While the hunter-gatherer culture of booty-sharing may have shaped “the human mind for more than two million years” (Leaky and Lewin 1992, p. 142), the most “impressive evidence of hunting” (as opposed to scavenging) is found “with the emergence of *Homo sapiens* as recently as 100,000 years ago” (Whiten 1996, p. 140). Thereafter, and least controversially, the hierarchical structures of farming communities emerged over a very short period (of 10,000 years or so).

The long-established hunter-gatherer egalitarian ethos contrasts both with the more evidently hierarchical characteristics of agricultural societies and (still more so) with the large-scale organizational structures of modern industrial society. In contrast to biological

adaptations that are measured against a protracted evolutionary timescale, these recent and rapid societal changes invoke a new set of considerations. The tribal morality, which binds individuals by *personal* relationships, could never have supported the extended modern socioeconomic order. Beyond the tribe, it is virtually impossible for anyone to aspire *directly* to construct outcomes for a wider community because of the vast network of interactive consequences and obligations that arise from every single action. Under the ethos of liberalism and in the context of the extended economic order of 21st-century capitalism, the interactions of individuals are predominantly those between strangers, whose rationality confines them to seek only immediate and local objectives. It follows that social mores are necessarily defined in terms of actions *per se*, and not in terms of their (unknowable) outcomes; and that unambiguous entitlements to property are a prerequisite for achieving mutual gains from harmonious exchange.

Respect for property is a trait that has been identified in “all vertebrates, and very clearly in primates” (Radnitzky 1990, p. 161). Without respect for property, the idea of “harming others” has no meaning. To that extent, property rights must have existed contemporaneously with the emergence of early cultural forms. The voluntary exchange of material goods is primarily a human characteristic, for which mutual recognition of ownership is a prerequisite: “[i]n humans, sharing and gift-giving are the most important bonding devices, and they themselves presuppose ownership” (Radnitzky 1990, p. 161).

In the modern epoch, the legal protection that is extended to property and to the enforcement of contracts gave rise “to an extensive division of labor, specialisation and the establishment of markets” (Hayek 1978, p. 11). Where livelihoods are heavily reliant upon the impersonal interplay of market forces, it is prudent that individuals should seek to protect their gains. The legal protection afforded to claims that are based upon known rules and procedures define the “ranges of objects over which only particular individuals are allowed to dispose and from the control of which all others are excluded” (Hayek 1973, p. 107). All mutually advantageous trades consists of an exchange of property rights, which defines an individual’s protected domain, within which others may not legally encroach: “[l]aw, liberty

and property are an inseparable trinity” (Hayek 1973, p. 107). By securing property rights and in providing for the impartial administration of just rules in cases of dispute, the law safeguards the liberty of unique individuals within an evolving socioeconomic order.

XIII

Conclusion

SCIENCE ITSELF IS A MANIFESTATION OF SOCIAL EVOLUTION. As an artifact of intelligence, science provides mappings, that is, stylized patterns, of the phenomena of the senses. As part of that mapping procedure, boundaries emerge that define scientific specialties. Social science imposes patterns upon human interaction; and economics specializes in patterns of activity that feature production, consumption, distribution, and exchange. Within each of the boundaries that defines a specialty of science, a degree of methodological uniformity shapes the processes of inquiry. In economics, the *leitmotif* is rationality: it is axiomatic that individuals are self-motivated to improve upon existing circumstances.

By their innate disposition to entrepreneurship (literally, “taking between” markets, buying cheap and selling dear), social engagements allow participants the potential to achieve mutual gains. Success is not guaranteed. On the contrary, progress follows upon repeated trials and the elimination of errors. By those adaptive sequences, which allow individuals to discover most effectively how they might best serve their own particular ends, rests a belief that the freedom to undertake transactions within a market economy secures the greatest volume of mutual gains. The legal framework of a liberal order permits each individual to apply his limited (but unique) knowledge in any manner that he sees fit. Hence, Adam Smith’s “invisible hand”: “[i]t is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their self-interest.”

In accepting Smith’s dictum that “[i]t is the essence of a free society that we should be materially rewarded not for doing what others want us to do, but for giving some others what they want” (Hayek 1967, p. 234), Friedrich Hayek provides an additional but complementary

appreciation. Where Smith indicates the mutual benefits to be had from the division of labor, Hayek indicates the mutual benefits that may be obtained from making best use of divided and widely dispersed knowledge. According to Hayek, “the coordination problem is *the* central problem” (Caldwell 1988, p. 514). The “knowledge and intentions of different members of society are supposed to come more and more into agreement” (Hayek 1937 [1949], p. 45); but this can happen only if “the subjective data of different people . . . were due to the experience of the same objective facts” (Hayek 1937 [1949], p. 44). Yet objective knowledge “only exists in the dispersed, incomplete, and inconsistent form in which it appears in many individual minds, and the dispersion and imperfection of all knowledge are two of the basic facts from which the social sciences have to start” (Hayek 1952a, p. 50). The scientific problem is “how the ‘data’ of different individuals on which they base their plans are adjusted to the objective facts of their environment (which includes the action of other people)” (Hayek 1946 [1949], p. 93). Economic science maps this tendency to social harmonization by its theorizing in regard to processes of learning, reasoning, and expectation formation.

The Smith-Hayek exegesis places the onus upon the individual: to act entrepreneurially (in respect of a unique endowment of skills and knowledge) and to accept personal responsibility for those actions. Every human activity that is motivated by a desire to improve upon a given situation is entrepreneurial. Only some succeed. In facilitating readjustments to successes and failures, a liberal institutional structure guides social cohesion. In the analysis of these and related social issues, a direction is indicated for economic *science*. In taking that direction, economists must recognize that tractable mathematical analysis is neither an objective per se nor the only means to deliver insights into socioeconomic behavior. Rather,

[t]o be a complete economist, a man need only be a mathematician, a philosopher, a psychologist, an anthropologist, a historian, a geographer, and a student of politics; a master of prose exposition; a man of the world with the experience of practical business and finance, an understanding of the problems of administration, and a good knowledge of four or five languages. All this in addition, of course, to familiarity with the economics literature itself. (Shackle 1953)

It is a sad reflection upon the most recent direction of economic science that very few of the dozen or more categories of expertise identified by George Shackle (1906–1990) are evident in the research publications of the current mainstream economics journals.

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