

REFLECTIONS ON *HUMAN ACTION* AFTER 50 YEARS

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The core of Ludwig von Mises' thought is the theory of human action, or praxeology, the general science he seeks to articulate. Within this general science is included—embedded in it—catallactics, or the science of exchange (Mises [1949] 1996: 1–3; hereafter M). Consequently, to Mises everything we seek to study in economics stems ultimately from individual choice, the key to which is subjectivist economics (stemming from the 1870s revolution by Menger, Jevons, and Walras). Thus, “Choosing determines all human decisions. In making his choice man chooses not only various material things and services. All human values are offered for option. All ends and all means . . . are ranged in a single row and subjected to a decision which picks out one thing and sets aside another” (M, p. 3). Moreover, “Human action is necessarily always rational” (M, p. 19). For Mises this is a truth, not a hypothesis to be tested that can be right or wrong. This is because praxeology is neutral with regard to any value judgments concerning its data—that is, the ultimate ends chosen in human action. Hence, there is no objective basis for asserting that anyone's choices can be irrational.

Externalities (whether costs or benefits) are not a problem in principle for Mises because he saw clearly, as did Coase, that these involve the delineation of property rights—the problem of no man's property, or public free access resources. The problem is one of holding individuals accountable though liability for those costs of human action that are borne by others. Mises sees the principle of liability as being widely accepted; any alleged deficiencies he attributes to loopholes “left in the system” (M, p. 658). Finally, in this thumbnail sketch there are the well-known strong views of Mises against intervention: “There are hardly any acts of government interference with the market

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process that, seen from the point of view of the citizens concerned, would not have to be qualified either as confiscations or as gifts. . . . There is no such thing as a just and fair method of exercising the tremendous power that interventionism puts in the hands of the legislature and the executive" (M, p. 734). We also see even the foreshadow of rent seeking and public choice when he summarizes his discussion of corruption, as inevitably "a regular effect of interventionism" (M, p. 736). So the theory of choice is much more than the "economic" side of human endeavor—it is central to all human action.

I first read Mises when I was a senior at CalTech, graduating in electrical engineering. It was one of several reasons why I subsequently shifted to economics. Reading Mises after 50 years, I am impressed with how stimulating, relevant, and crisp *Human Action* is for the state of economics at the end of the second millennium. It has endured well because many of its major themes—property rights, liability rules, the efficacy of markets, the futility of interventionism, the primacy of the individual—have become important elements in microeconomic theory and policy. Moreover, these themes have become important because of Mises, Hayek, and others on the fringe (e.g., Coase, Alchian, North, Buchanan, Tullock, Stigler, and Vickrey, to name a few) and not because of mainstream economic theory. There is plenty in Mises to update because of things we think we now know that we did not know 50 years ago. But Mises' basic message as to how economies function is as good today as it was then. What has changed with great leaps is the methodologies for studying the nature of human decisionmaking. In this brief encounter I am going to pick up several themes in Mises that I will use to illustrate this change. I will also complement that discussion with some commentary on Hayek, for this year is the 100th anniversary of his birth. So there is much to celebrate with the Austrians.

On Human Action and Laboratory Experiments

Mises' views on experimental methods reflect the methodological outlook that was universal in the profession 50 years ago—namely that economics is necessarily a nonexperimental science:

There are . . . some naturalists and physicists who censure economics for not being a natural science and not applying the methods and procedures of the laboratory. . . . But the experience to which the natural sciences owe all their success is the experience of the experiment in which the individual elements of change can be observed in isolation . . . the experience with which the sciences of human action have to deal is always an experience of complex phenomena. No laboratory experiments can be performed with regard to human

action. We are never in a position to observe the change in one element only, all other conditions of the event remaining unchanged [M, pp. 7–8, 31].

My view is that the reason economics was believed to be a nonexperimental science was simply that almost no one tried or cared. Mises' view was universal then, and is still frequently encountered. Thus, Charles Holt, a distinguished and leading experimentalist, was warned by his advisor that experimental economics "was a dead end in the 60s and it would be a dead end in the 80s" (Kagel and Roth 1995: 428, n. 8). What is not clear is why what had been a dead end in the 1960s survived to be a new dead end in the 1980s. In the few remaining months of 1999, I look forward to it being another dead end in the 1990s. I am reminded of Paul Samuelson's quip that science advances funeral by funeral.

In fact, last year was the 50th anniversary (passed without recognition) of the first paper about market experiments in economics (Chamberlin 1948). What Chamberlin thought he showed was that competitive market theory does not work. (Although the experiments run in his classes were designed to set the stage for the need for his theory of monopolistic competition, his experiments did not show that markets fail to yield substantial gains from exchange). My critique and modifications of the Chamberlin experiment, including the introduction of monetary rewards, and a change in focus to the role of institutions ("market organization") are reported in Smith (1991: 1–55). Once the important role of institutions (the rules of a particular market) is recognized, there is nothing strange or unusual about Chamberlin's results. Experimental economics is strongly supportive of Mises' theory of market prices, but also for equilibrium theory under stationary and even dynamically shifting conditions. All equilibrium theory was seen by Mises as an "imaginary construction" (M, pp. 250–51). As indeed it was, as were many of Mises' important contributions. Such is the nature of theory, all of which was developed without an expectation that anyone would actually try to test it in the laboratory. What market experiments did for me was to bring to life this "imaginary construction." Before my very eyes people with private information, who therefore had no prevision of the ends they were achieving, maximized the gains from exchange and approximated equilibrium outcomes.

There have now been many hundreds, probably thousands, of experimental demonstrations of the power of markets—especially when organized under the "double auction" institution common in all financial and commodity markets—to yield efficient competitive outcomes, but also in posted offer and one-price sealed bid-offer clearing markets

(see Kagel and Roth 1995, Davis and Holt 1993, Smith 1991). These results, which have been replicated by a host of investigators, are robust with respect to the subject pools used: undergraduates, graduates, high school students and teachers, businessmen and women; then in the mid-1980s we ran an experiment using administrative employees of the Department of Energy making it plain that regulators could just as naturally make a market.

What we learn from such experiments is that any group of people can walk into a room, be incentivized with a well-defined private economic environment, have the rules of the oral double auction explained to them for the first time, and they can make a market that usually converges to a competitive equilibrium, and is 100 percent efficient—they maximize the gains from exchange—within two or three repetitions of a trading period. Yet knowledge is dispersed, with no participant informed of market supply and demand, or even understanding what that means. This strikingly demonstrates what Adam Smith called “a certain propensity in human nature . . . to truck, barter, and exchange one thing for another” (Smith [1776] 1909: 19). Also, it demonstrates Mises’ assertion that “Everybody acts on his own behalf; but everybody’s actions aim at the satisfaction of other people’s needs as well as at the satisfaction of his own. Everybody in acting serves his fellow citizens” (M, p. 257).

On Evolution and the Primitive Mind

Mises’ understanding of evolution accords well with contemporary interpretations, such as that of evolutionary psychology (Tooby and Cosmides 1992).

The human mind is not a tabula rasa on which the external events write their own history. It is equipped with a set of tools for grasping reality. Man acquired these tools, i.e. the logical structure of his mind, in the course of his evolution from an amoeba to his present state. But these tools are logically prior to any experience. . . . No facts provided by ethnology or history contradict the assertion that the logical structure of mind is uniform with all men of all races, ages and countries [M, pp. 35, 38].

This is essentially the current evolutionary psychology perspective on evolution, mind, and, specifically, natural language. The claim that we acquire mental tools prior to experience is particularly well illustrated in the study of how we acquire language: “When researchers focus on one grammatical rule (examples in English are the algorithms that add ‘-s’ to a regular noun to form its plural; and to add ‘-ed’ to form the past tense of a regular verb) and count how often a child obeys it and how often he or she flouts it, the results are astonishing:

for any rule you choose, three-year-olds obey it most of the time” (Pinker 1994: 271). The interpretation is that the brain comes pre-equipped with circuitry ready to absorb the syntax of any language; initialization of the circuitry requires only exposure to talking others to set the switches. The exceptions (errors) of three-year-olds actually help to prove the principle: “two mans are at the door,” or “he builded the house.” Irregular verbs and nouns have to be memorized, and dubbed in by a mental process that first blocks the inflection algorithm, then dredges up the irregular case from memory. Many irregular cases are rarely used by adults, so it takes longer to develop the blocking/substitution process, and the three-year-old always substitutes the regular-case algorithm. This is how language modules in the brain naturally work. Adults do the same. How often do you hear the past tense of *strive* (*strove*) or *tread* (*trod*)? For many, so rarely that they regularize with *strived* or *treaded* (Pinker 1994: 273–76). In fact, *strove* and *trod* tend to sound pretentious to many ears, suggesting that the user knows something important that you do not. Note that the use of inflection algorithms is the brain’s way of conserving scarce memory and access resources. You only need to store in memory the basic roots and stems, then invoke autonomic algorithms to leverage the basic words into a far larger vocabulary. Thus, “an average American high school graduate knows 45,000 words—three times as many as Shakespeare managed to use . . . in his collected plays and sonnets” (Pinker 1994: 150).

But some reject these interpretations of language, arguing that our language ability is not an adaptation but an exaptation—a device that evolved for other purposes but is seized or recycled for a new purpose (Gould and Vrba 1981). Such views, however, seem to me to be diversionary. Adaptation can be complex, and seizing a module that to a biologist “looks like” it has been developed for another purpose is just one of the many paths that evolutionary adaptation can take. It is a wise person indeed who can say what a particular biological mechanism originally evolved for. You do not have to believe that language developed because a protohuman spoke a word that increased the person’s fitness, and that this word gene then flourished in the population. Mises does not pretend to know how evolution has created human mental capacity, but for him it is just as natural to think of the mind as an evolved phenomenon as it is to believe that the evolutionary process created arms and legs.

Gould and Lewontin (1979) have accused many evolutionary biologists of assigning too much credence to natural selection. Mises’ intellectual descendants will find amusement in Pinker’s (1994: 359) assessment of the influential paper by Gould and Lewontin: “One of their

goals was to undermine theories of human behavior that they envision as having right-wing political implications.” Harvard’s Gould is of course a prominent example of the claim by some wag that the only Marxists left in the world are teaching in British and American universities. It seems that left-wingers who promote the perfectibility of humans through social (i.e., government) control fear the implications of ascribing too much influence to nature, while right-wingers (at least the subset who are strong on limited government) fear the statist implications of human malleability. This is the nature versus nurture debate, which is fraught with underground political biases. Mises comes down on the side of nature in arguing that the mind has tools that are not part of experience. But the mind has those tools because they were adaptive, because they flourished in environments that did not block their expression. Thus an important contemporary view is that of the coevolution of nature and culture—culture influences that which survives and flourishes, and nature influences what is more or less malleable.

On Conscious versus Unconscious Action

Here Mises has been overtaken by recent trends in neuroscience, for he states, “Conscious or purposeful behavior is in sharp contrast to unconscious behavior, *i.e.* the reflexes and the involuntary responses of the body’s cells and nerves to stimuli” (M, p. 10). He wants to claim that human action is consciously purposeful. But this is not a necessary condition for his system. Markets are out there doing their thing whether or not the mainspring of human action involves self-aware deliberative choice.

He vastly understates the operation of unconscious mental processes. Most of what we know we do not remember learning, nor is the learning process accessible to our conscious experience—the mind. A normally developing child has learned a syntactically correct natural language by the age of four, without having been taught. As noted by Pinker, “Children deserve most of the credit for the language they acquire. In fact we can show that they know things they could not have been taught” (Pinker 1994: 40). Even important decision problems we face are processed by the brain below conscious accessibility. This is apparent when you are struggling with a decision, or trying to solve a problem, then go to bed, and wake up having made significant progress or found the solution. As the neuroscientist, Michael Gazzaniga, has noted with characteristically plain prose:

By the time we think we know something—(namely that) it is part of our conscious experience—the brain has already done its work.

It is old news to the brain, but fresh to “us” (the aware mind). Systems built into the brain do their work automatically and largely outside of our conscious awareness. The brain finishes the work half a second before the information it processes reaches our consciousness. . . . We (that is, our minds) are clueless about how all this works and gets effected. We don’t plan or articulate these actions. We simply observe the output. . . . The brain begins to cover for this “done deal” aspect of its functioning by creating in us the illusion that the events we are experiencing are happening in real time—not *before* our conscious experience of deciding to do something. [Gazzaniga 1998: 63–64].

Indeed, one of the puzzles of neuroscience is why the brain fools the mind into believing it is in command of mental activity. But none of this changes the import of Mises’ argument. Markets are one of the social brain’s means of extending its capacity for information processing to other brains, and to leverage the creation of wealth beyond anything that can be comprehended by the mind. Just as most of what the brain does is inaccessible to the mind, so also is there a widespread failure of people to understand markets as self-organizing systems, coordinated by prices for cooperative achievement of gains from exchange, without anyone being in charge. The workings of the economy are as inaccessible to the awareness of its agents, business persons included, as is an agent’s awareness of his own brain functioning. The workings of the economy are not the product, nor can they be the product, of conscious reason, which must recognize its own limitations and face, in the words of Hayek, “the implications of the astonishing fact, revealed by economics and biology, that order generated without design can far outstrip plans men consciously contrive” (Hayek 1988: 8).

On Brain Circuit Specialization to Discern Opportunity Cost, and the Reason-Emotions Nexus

A persistent theme throughout Mises is that choice is based on a thinking, reasoning person’s preference comparisons and judgments of what is more, or what is less: “Action is an attempt to substitute a more satisfactory state of affairs for a less satisfactory one. . . . Cost is equal to the value attached to the satisfaction which one must forego in order to attain the end” (M, p. 97). “Man alone has the faculty of transforming sensuous stimuli into observation and experience, [and can arrange them] into a coherent system. Action is preceded by thinking” (M, p. 177).

I want to call attention to the fact that a line of animal and human research going back to the same year *Human Action* was published

demonstrates the basis for forgone value comparisons in how the animal brain naturally works. Zeaman (1949) reported experiments in which rats were trained to run to a large reward–motivated goal. Then they were shifted to a small reward, and the rats responded by running more slowly than they would have to the small reward only. A second group of rats began with a small reward and shifted to a large one, and these rats immediately ran faster than if the large reward alone had been applied. This early experiment was consistent with the hypothesis that motivation was based on relative reward—opportunity cost—and not on an absolute scale of values generated by the brain. But this interpretation was not appreciated at the time. Since then, direct measurement of brain neuronal activity has revealed the importance of relative value comparison in how mammalian brains actually work. Thus both monkey and rat brains respond to differential comparisons of rewards. “Neurophysiological studies of both monkeys and rats show that neurons in the six-layered parts of the orbitofrontal cortex (above the eyes) process motivating events, discriminate between appetitive and aversive conditional stimuli and are active during the expectation of outcomes” (Tremblay and Schultz 1999: 704).

It is now established that orbitofrontal neuron activity in monkeys enables them to discriminate between relative rewards that are directly related to the animals’ relative preference among rewards such as raisins, apple, and cereal (in order of decreasing preference). Thus, neuronal activity is greater for raisins than for apple when the subject is viewing raisins and apple, and similarly when apple and cereal are compared. But the activity associated with apple is much greater when compared with cereal than when it is compared with raisins. This is contrary to what one would expect to observe if the three rewards were coded on a fixed scale of physical properties rather than a relative scale (see Tremblay and Schultz 1999: 706, fig. 4).

Since the technologies used in animal studies are too invasive to be applied to humans, what is the significance for humans of these accounts of how the animal brain works? The answer is that other research has shown that the orbitofrontal cortex in humans and monkeys performs many of the same generic functions. This is indicated by studies of humans and monkeys with damage to this tissue: both species exhibit altered expression of reward and preferences, and impairment of their decisionmaking, motivational, and emotional behavior, which leads to significant abnormalities in social behavior. As noted by Damasio in summarizing this literature: “In spite of the marked neurobiological differences between monkey and chimpanzee, and between chimpanzee and human, there is a shared essence to

the defect caused by prefrontal damage: Personal and social behavior is severely compromised” (Damasio 1994: 75).

People like to believe that good decisionmaking is a consequence of the use of reason, and that any influence that the emotions might have is antithetical to good decisions. What is not appreciated by Mises and others who similarly rely on the primacy of reason in the theory of choice is the constructive role that the emotions play in human action. For example, Bechara et al. (1997) have studied the behavior of patients with front lobe damage in decisionmaking experiments under uncertainty, and compared their behavior with normal subjects.¹ They show that normal subjects, as they learn about the experimental environment, enter a critical transition in which they change their decision pattern. But *prior* to the switch in decision, skin conductivity tests record an emotional response, whereas only *after* the decision change are they able to articulate verbally why they made the change. Hence, the emotional brain acts prior to the change in decision, while reason, in the form of verbal rationalization, occurs after the decision. The brain-damaged patients, however, fail to show the emotional response, fail to change their decisionmaking, and offer verbal excuses for their poor performance. Interestingly, a generic problem with the patients in their life history is a tendency to lose their jobs, go bankrupt, and have difficulty making satisfactory long-term decisions. Bechara et al. (1997) believe that there are unconscious cues from the emotional brain (sometimes called the limbic system) that guide or influence the formation of cognitive strategies, and that this circuitry is effected by front lobe lesions. Consequently, the emotions, far from being inimical to rational decision, may be essential to it, while the conscious reasoning brain is the last to know.

¹The subjects' task is to build up their stock of cash by turning over cards from any or all of four decks. The cards in decks A and B yield \$100, and in C and D \$50. In the former, however, there appears an occasional card with a large, unpredictable loss. The penalties continue with no pattern, nor do the subjects know when the task will end. All subjects are connected to skin electrodes to measure their galvanomic skin response (GSR). Emotional response to events causes humans to perspire more, and this is registered in the form of higher skin conductivity, as measured by a higher galvanometer reading. The first interesting result of the experiment is that there was an emotional response detected in the GRS readings of normal subjects prior to their decision to switch from decks A and B to decks C and D. Only then, following the change in their decisionmaking, were the subjects able to articulate verbally why they were switching. The second important observation is that the patients with front lobe lesions did not switch to decks C and D, there was no associated change in GSR readings, and they tended to offer verbal excuses as to their poor performance, some indicating that decks A and B might get better.

On Human Society and Cooperation

According to Mises, all social relationships arise from the division of labor, which is made possible by the market economy:

Within the frame of social cooperation there can emerge between members of society feelings of sympathy and friendship and a sense of belonging together. These feelings are the source of man's most delightful and sublime experiences. They are the most precious adornment of life. . . . However, they are not . . . the agents that have brought about social relationships. They are the fruits of social cooperation, they thrive only within its frame. . . . The fundamental facts that brought about cooperation, society, and civilization and transformed the animal man into a human being are the facts that work performed under the division of labor is more productive than isolated work and that man's reason is capable of recognizing this truth [M, p. 144].

I want to put an altogether different spin on these issues, without, I think, denying, or detracting from, the main import of Mises' message. My version, based upon archeological, ethnographic, and experimental studies, offers a different perspective on the social psychological origins of exchange, property rights, and money. Since I have already developed this theme elsewhere, I will use this opportunity to update and restate it in the context of honoring Mises' lasting contributions (Smith 1998).

Perhaps second only to language as a human universal, people continually, and to a large extent unconsciously, engage in reciprocity with friends, associates, and even strangers if the context is not perceived to be hostile. You invite acquaintances to dinner, and subsequently they invite you. You give your theater tickets to a friend when you are out of town, and subsequently she gives you concert tickets that she is unable to use. Friends trade favors, lend property, and provide services to each other autonomically, without a close keeping of accounts. Hence, the common phrase, "I owe you one." Hunter-gather societies studied in the last 100 years are replete with social exchange systems that have far-reaching economic implications. Although some have forms of commodity money, many have none and rely entirely on social exchange through reciprocity to capture gains from exchange in a world without money or refrigeration. The forms of institutions vary widely, but their functionality is the same. There is a pronounced division of labor across generations and between the sexes: generally women, children, and older men gather and process plant food; men and boys beyond the age of 18 hunt; older men advise in hunts and make tools; and grandmothers assist in the birthing and rearing of children as part of a characteristically human

biological adaptation—menopause, leading to an extended postreproductive life of family and community service.

This “instinct” for reciprocity has surfaced strongly and unexpectedly in various extensive form laboratory experiments (Fehr, Gächter, and Kirchsteiger 1996; McCabe, Rassenti, and Smith 1996). As indicated above, experimental market research strongly corroborates the Smith-Hayek-Mises theme of cooperation through market institutions in which property rights harness self-interest to create wealth. But up to one-half or more of the same subjects who unknowingly maximize the gains from exchange in anonymous interaction through a set of market rules also choose to forgo action in the self-interest to achieve cooperative outcomes through trust and trustworthiness in anonymous interactions in simple complete information games.

For example, in one of the trust games 12 subjects arrive at the laboratory to “earn money in an economics experiment.” As individuals arrive they are paid \$5 for appearing on time and are assigned a computer terminal in a room containing 40 machines separated by partitions. After all subjects arrive they log in, and each is randomly and anonymously paired with another subject in the room, and is randomly assigned the position of first, or second, mover.

The game is played once. The first mover can elect to split \$20 evenly, \$10 for himself, \$10 for player 2. Alternatively he can pass to player 2, which doubles the original pie to \$40. Player 2 has two options: take the \$40, leaving nothing for player 1, or take \$25, leaving \$15 for player 1. Whatever the choice, at the end each subject is paid privately, and leaves the experiment. The entire experiment takes about 15 minutes. No subject knows with whom he or she is paired. This single play, anonymous matching, protocol is widely acknowledged to define the conditions most favorable to noncooperative moves by each player. Game theory assumes that in the absence of repeat play, or any history or future interaction between the players, each will choose dominant strategies, and each will assume the other will so choose. Consequently, the equilibrium (subgame perfect) of the game is for the first mover to take \$10, leaving \$10 for player 2. Otherwise, if the first mover passes the second mover will choose to take the entire \$40.

Alternatively, suppose player 1 is a person whose policy in interacting socially with others is often to initiate a friendly exchange. In this context passing the move to player 2 is intended as an offer that they cooperate. Player 1 risks an opportunity loss of \$10 for an opportunity gain of \$5. This can be interpreted as a signal to player 2 implying that “I am not giving up the sure thing of \$10 because I expect you to leave me with 0; I am offering you a 250 percent return, so that

I can get a 150 percent return from the exchange. I am trusting you to be trustworthy.” If player 2 is similarly disposed, we have a trade, yielding gains from exchange in which player 1 receives \$15 and player 2 receives \$25.

Table 1 lists the outcomes for a sample of 24 pairs of undergraduates and a sample of 28 pairs of advanced graduate students. (Data from McCabe and Smith 1999; also see Gunnthorsdottir, McCabe, and Smith 1999). The lesson is that half of the sample of university students, including advanced graduate students from across the United States and Europe, with training in economics and game theory, are trusting, while some 64 to 75 percent of their matched counterparts are trustworthy. Why does such a large proportion of these anonymously interacting subjects forgo noncooperative self-interested action as predicted by game and economic theory? We think the reason is simple: most people in relatively stable societies find it pays, in the long term, to show a cooperative, accommodating face to their fellow humans. This accustomed stance is so strong that it survives even in an unfamiliar anonymous-interaction experimental game played once; most of their paired counterparts get the message, and reciprocate to their mutual advantage. Our data show that players 1 who cooperate, risking defection, on average make more money than those who do not cooperate.

I want to suggest that this sort of behavior has been characteristic of our ancestors in developing form, probably for the last 2 million years. In fact I would agree with Mises that it was through exchange that we got to where we are today, except that for most of our history, exchange occurred through reciprocity in the family, the extended family, and the tribe. This is what laid the basis for the earliest specialization, long before markets arose. Consequently, when someone invented barter, and later what would be called “money” (no

TABLE 1
NUMBER (PERCENTAGE) OF PAIRS ACHIEVING INDICATED
CONDITIONAL OUTCOME BY SUBJECT POOL TREATMENT

Outcome	Undergraduates	Advanced Graduate Students
(10, 10)	12 (50%)	14 (50%)
(15, 25) ^a	9 (75%)	9 (64.3%)
(0, 40) ^a	3 (25%)	5 (35.7%)

^aNumber of pairs achieving this outcome conditional on reaching the second stage of the game (player 1 passes). Thus, with the undergraduates, 12 of 24 players 1 moved down, of which 9 players 2 moved right and 3 moved down.

doubt like language it was “invented” many times over), humans already had a vast experience with *social* exchange. What money enabled was a freeing of the mind from goodwill accounting—the need to periodically check to see that your goodwill account with a friend was not too much out of balance. This new element would have made long-distance trade possible, which has culminated today in world markets, and the initiation of the age of electronic commerce (North 1991).

The above model of the individual—to behave noncooperatively in impersonal markets and maximize the gains from trade, but cooperatively in personal exchange also to maximize the gains from exchange—enables one to understand why people keep wanting to intervene in markets to “improve” matters. *Their experience in personal social exchange is that doing good* (by being trusting and trustworthy) *accomplishes good* (visible gains from social exchange). In impersonal exchange through markets, the gains from exchange are not part of their experience. As noted by Adam Smith ([1776] 1909: 19), “This division of labour . . . is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion.” Impersonal exchange through markets tends to be perceived as a zero sum game, which perception in no way diminishes the capacity for markets to do the work articulated by Adam Smith and Mises. Interventionist programs, I suggest, result from people inappropriately applying their intuition and experience from personal social exchange to markets, and concluding that it should be possible to intervene and make things better. People use their intuition, not their reason (as hoped by Mises), in thinking about markets, and they get it wrong.

Conclusion

Two characteristics, unique to the hominid line, are most likely central to the emergence of specialization (the extended order of cooperation), as a human universal allowing our protohuman ancestors to “have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing” (Genesis 1:26). These two are: (1) the use of a sophisticated natural language; and (2) reciprocity, or “the propensity to truck, barter and exchange one thing for another” (Smith [1776] 1909: 19). It is hard to imagine that these two characteristics evolved independently. They are almost certainly part of a coevolutionary cultural and biological nexus going back over 2 million years. The instinct for exchange

explains the survival of trading systems in China, the former Soviet Union, and elsewhere under state, and attempted social, repression.

Mises and Hayek articulated and vastly enriched the principles of Adam Smith at a crucial time in this century, when their thinking was widely rejected as anachronistic, unworkable, and ideological. They spoke for freedom when it was without popular support; they spoke with insight and wisdom. But they spoke from independent, sometimes contradictory, perspectives. For Mises, “reason . . . is the mark that . . . brought about everything that is specifically human” (M, p. 91). But for Hayek the fatal conceit is “the idea that the ability to acquire skills stems from reason. For it is the other way around: our reason is as much the result of an evolutionary selection process as is our morality,” but it stems from a separate development—“one should never suppose that our reason is in the higher critical position and that only those moral rules are valid that reason endorses” (Hayek 1988: 21). “To understand our civilization one must appreciate that the extended order (of cooperation) resulted not from human design or intention but spontaneously: it arose from unintentionally conforming to certain traditional and largely *moral* practices many of which men tend to dislike, whose significance they usually fail to understand, whose validity they cannot prove, and which have none the less fairly rapidly spread by evolutionary selection—the comparative increase in population and wealth—of those groups that happened to follow them” (Hayek 1988: 6).

Even though Hayek, in my view, is the leading economic thinker of the 20th century who saw what must be the mainsprings of the extended order, Mises was the choice technician, and no one was better at articulating the primacy of the individual and the need to define and nurture individual rights. Experimental economics, created in the 50 years since *Human Action*, is kind to the Austrians in enabling us to demonstrate that the spontaneous order, operating through property right institutions, exhibits the desirable characteristics that the Austrians claimed for it. This power of demonstration is for me far more compelling than the appeal to reason, especially by Mises. Reason, after all, is also claimed to be on the side of state intervention, and that form of reason has a way of commanding people’s minds because of its superficial correspondence with their experience, even as the systems created by it crumble about them, and they despair that all would be well if humans were not so greedy.

References

- Bechara, A.; Damasio H.; Tranel D.; and Damasio, A.R. (1997) “Deciding Advantageously before Knowing the Advantageous Strategy.” *Science* 275 (28 February): 1293–94.

- Chamberlin, E. (1948) "An Experimental Imperfect Market." *Journal of Political Economy* 61 (April) 95–108.
- Damasio, A. (1994) *Descartes' Error*. New York: Avon Books.
- Davis, D.D., and Holt, C.A. (1993) *Experimental Economics*. Princeton N.J.: Princeton University Press.
- Fehr, E.; Gächter, S.; and Kirchsteiger, G. (1996) "Reciprocity as a Contract Enforcement Device: Experimental Evidence." *Econometrica* 65: 833–60.
- Gazzaniga, M. (1998) *The Mind's Past*. Berkeley: University of California Press.
- Gould, S.J., and Lewontin, R. (1979) "The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptionist Programme." *Proceedings of the Royal Society* B205: 581–98.
- Gould, S.J., and Vrba, E. (1981) "Exaptation: A Missing Term in the Science of Form." *Paleobiology* 2: 4–15.
- Gunnthorsdottir, A.; McCabe, K.A.; and Smith, V.L. (1999) "Using the Machiavellian Instrument to Predict Trustworthiness in a Bargaining Game." Economic Science Laboratory, University of Arizona.
- Hayek, F.A. (1988) *The Fatal Conceit*. Chicago: University of Chicago Press.
- Kagel, J.H., and Roth, A.E. (1995) *The Handbook of Experimental Economics*. Princeton, N.J.: Princeton University Press.
- McCabe, K.A.; Rassenti, S.J.; and Smith, V.L. (1996) "Game Theory and Reciprocity in Some Extensive Form Experimental Games." *Proceedings National Academy of Science* 93: 1996, 13421–28.
- McCabe, K.A., and Smith, V.L. (1999) "A Comparison of Naive and Sophisticated Subject Behavior with Game Theoretic Predictions." Economic Science Laboratory, University of Arizona. (To appear in *Proceedings National Academy of Science*.)
- Mises, L. von ([1949] 1996) *Human Action: A Treatise on Economics*. 4th revised ed. San Francisco: Fox and Wilkes.
- North, D. (1991) *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.
- Pinker, S. (1994) *The Language Instinct*. New York: William Morrow.
- Smith, A. ([1776] 1909) *The Wealth of Nations*. New York: P.F. Collier.
- Smith, V.L. (1991) *Papers in Experimental Economics*. New York: Cambridge University Press.
- Smith, V.L. (1998) "The Two Faces of Adam Smith." *Southern Economic Journal* 65 (July): 1–19.
- Tooby, J., and Cosmides, L. (1992) "The Psychological Foundations of Culture." In J. Barkow, L. Cosmides, and J. Tooby (eds.) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, 19–136. Oxford: Oxford University Press.
- Tremblay, L., and Schultz, W. (1999) "Relative Reward Preference in Primate Orbitofrontal Cortex." *Nature* 398 (22 April): 704–8.
- Zeaman, D.J. (1949) "Response Latency as a Function of the Amount of Reinforcement." *Experimental Psychology* 39: 466–83.

THE METHODOLOGY OF *HUMAN ACTION*

Lawrence H. White

Vernon Smith has given us a very interesting set of reflections on Mises' *Human Action*. In the area of methodology, *Human Action* might be regarded as a statement of dedicated apriorism, while Smith might be regarded as a dedicated empiricist (of the experimentalist variety). Considering that, Smith displays surprising and commendable open-mindedness toward the book.

Ethical Neutrality and Rationality in Economics

Mises (1966: 19), quoted by Smith, declares that "Human action is necessarily always rational." Smith tells us that Mises considers this true "because praxeology is neutral with regard to any value judgments concerning its data—that is, the ultimate ends chosen in human action. Hence, there is no objective basis for asserting that anyone's choices can be irrational." I believe that Smith's "because" is misplaced. Although the paragraph Smith quotes does discuss both the necessary rationality of human action and the ethical neutrality of praxeology, the latter is not the reason for the former. We should not blur two distinct issues: (1) the meaning of the term "rational" in economics, and (2) the ethical neutrality of economic analysis (*wertfreiheit*).

Ethical neutrality means that economics is concerned with tracing the consequences of market activity and economic policy, not with judging them for goodness and badness. To be *rational*, for Mises (1966: 20), is to engage in purposeful behavior, that is, to deliberately attempt to attain some goal. Further, "action" means "purposeful behavior" (Mises 1966: 11). The only nonpurposeful (non-goal-oriented) behavior is reflexive behavior. Thus *by definition* all human "action" is "rational," whether or not one accepts *wertfreiheit*. (In

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the sentence following the declaration quoted by Smith, Mises thus continues: “The term ‘rational action’ is therefore pleonastic and must be rejected as such.”) One could accept Mises’ terminology, and still reject *wertfreiheit*, believing that economics has an ethical mission to judge decisions for goodness or badness. The two issues only *seem* to overlap when the terms are used differently, in particular when an observer describes a person’s decision as “irrational” when he means “bad” or “contrary to my (the observer’s) goals.” Mises discusses ethical neutrality in order to warn against this usage, not in order to explain why human action is necessarily rational.

Economics Is Not a Natural Science

Smith soon begins to offer constructive criticism: “There is plenty in Mises to update because of things we think we know now that we did not know 50 years ago,” specifically about “the nature of human decisionmaking.” Our new knowledge about decisionmaking comes from (1) Smith’s own incentive and “market” choice experiments with human subjects; (2) anthropology, ethnography, and evolutionary psychology; and (3) neuroscience research—for example, on monkey brains and damaged human brains.

It is easy to agree that any statement made 50 years ago about the state of the natural sciences is likely to require updating. I agree with Smith that Mises was wrong, or at least far too sweeping, when he wrote (Mises 1966: 31): “No laboratory experiments can be performed with regard to human action.” In fairness to Mises, though, this statement came in the middle of a paragraph about the problem of explaining historical experience. Mises was simply pointing out that economic history does not take place in a laboratory setting, so that methods other than controlled experiments must be used to establish causal explanations of historical human actions. Historical data are not laboratory data.

Smith’s criticism suggests an important larger issue for anyone who takes seriously the Misesian project of “praxeology” (the aprioristic derivation of economic theory, beginning with the pure logic of choice). Do Mises’ views on the proper methods of economics require updating? I would argue that they do not. I think Mises is still correct in insisting that the core propositions of economic theory are rooted in methods distinct from those of natural science. Praxeology is independent of natural science, and experimental economics in this respect counts as a natural science. This does not mean that experimental economics does not belong in an economics department, or is uninteresting or irrelevant to how we nonexperimentalists do economics.

There is plenty of room for both praxeological and natural-scientific approaches to human behavior in markets.

My position boils down to this: experimental economics and other natural sciences are not in a position to falsify the deductive propositions of economic theory. These propositions rely on our “internal” perspective on human beings as agents, whereas natural science gives us an “external” perspective on human beings. Experiments *can* illustrate or “demonstrate” the working of economic theory. In Smith’s words, they can “bring to life” its “imaginary constructions.” Most importantly, they can help to settle important questions that cannot be settled aprioristically. The set of such empirical questions is not empty (nor did Mises believe it was). On the other hand, neither is the set of useful deductive economic propositions empty. It includes not only consumer theory but also some of monetary theory (for example, Gresham’s Law).

Entrepreneurial Discovery

Smith says that current neuroscience refutes Mises’ view that there is a “sharp contrast” between purposeful behavior and unconscious or reflexive or involuntary behavior. I have no doubt that, from the viewpoint of neuroscience, there is a continuum rather than a sharp contrast. But I must disagree when Smith says that purposiveness “is not a necessary condition for his [Mises’] system. Markets are out there doing their thing whether or not the mainspring of human action involves self-aware deliberative choice.” Smith’s statement might apply to Walras’s theoretical system, of which I believe it was Pareto who said, “the individual may disappear, provided he leaves us with a photograph of his tastes.” But it does not apply to Mises’ theoretical system. Mises’ understanding of the way the market process really works is that of an entrepreneurial discovery process, not of mere homeostatic responses to stimuli. That the resulting social order is unintended does not imply that the individual decisions comprising it need not be deliberative.¹

References

- Becker, G.S. (1962) “Irrational Behavior and Economic Theory.” *Journal of Political Economy* 70 (February): 1–13.
- Becker, G.S. (1963) “Rational Action and Economic Theory: A Reply to I. Kirzner.” *Journal of Political Economy* 71 (February): 82–83.

¹On this issue, see the classic exchange between Becker (1962, 1963) and Kirzner (1962, 1963).

- Kirzner, I.M. (1962) "Rational Action and Economic Theory." *Journal of Political Economy* 70 (August): 380–85.
- Kirzner, I.M. (1963) "Rational Action and Economic Theory: Rejoinder." *Journal of Political Economy* 71 (February): 84–85.
- Mises, L. von (1966) *Human Action: A Treatise on Economics*. 3rd revised ed. Chicago: Henry Regnery.
- Smith, V. (1999) "Reflections on Human Action after 50 Years." *Cato Journal* 19(2): 195–209.