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Discovery and the Deepself

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Mainstream economists—Neoclassicals, in the narrow sense—have from time to time remarked on Israel Kirzner's theory of entrepreneurship. They have maintained that Kirzner says things that do not fit into normal economic theory, that conflict with normal theory, that are too speculative to entertain, and that contradict other things he says. Their criticisms tell us why Kirzner is rebuffed by the narrow mainstream. The Austrian-Neoclassical dialogue as a whole tells us why there is no place for Kirznerian entrepreneurship in Neoclassical economics[1]: anything that cannot be compressed into and sealed entirely within a pure logic of choice, that is, within an optimization framework of ends and means, is deemed to be nonscience and hence nonsense. In this paper I attempt to reconcile the Neoclassical and Austrian views by borrowing ideas about the mind from Marvin Minsky. Minsky's ideas lead to a mind theory richer than those of the Neoclassicals and Austrians. The richer theory accommodates valuable features of both the Neoclassical and the Austrian views.

Kirzner and Neoclassicism

Kirzner's theory of entrepreneurship

The simplest theory of the mind is a single-agent optimization problem, which posits a goal, or preference ordering, or objective function, and a set of alternative means. The literature of Neoclassical economics is devoted to crafting models of optimizing agents, models that usefully illuminate some real-world problem. Kirzner applauds such investigations and appreciates the fruits that they bear, but he insists that there is more to economics. He maintains that there are important facets of the subject that cannot be captured within the logic of optimization. Kirzner wants to probe the question, How was the individual's optimization problem arrived at? or How does the individual arrive at a new optimization problem? Kirzner not only asks these questions; he maintains that there are important things to say about them.

Kirzner contrasts the optimization approach with a broader decision-making approach. In the broader approach, a decision "reflects not merely the manipulation of given means to correspond faithfully with the hierarchy of given ends, but also *the very perception of the*

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[1] By "Neoclassical economics" I mean something narrower than "neoclassical economics." The latter includes the former and good Austrianism, among other things (such as Coasianism).

ends-means framework within which allocation and efficiency is to take place" (1973, p. 33). Entrepreneurship is that element of decision making that perceives and helps to formulate the ends and means that are to define the optimization problem. It is also the element that enables the individual to transcend one optimization problem and arrive at another. When the individual is pursuing one optimization problem while a better one is readily available, if only the individual would notice it, there exists for that individual, according to Kirzner, a pure profit opportunity. Entrepreneurial discovery is the noticing (and, therefore, seizing) of such pure profit opportunities.

To illustrate Kirzner's ideas, allow me to relate a story from Somerset Maugham's "The Verger." (A verger is the usher or custodian in a church.) A new vicar came to St. Peter's, Neville Square and learned that the church verger could neither read nor write. When directed to learn, the verger replied, "I'm too old a dog" and bid the vicar farewell. He went into the street, and it occurred to him that a cigarette would comfort him. He looked up and down the long street without finding a shop that sold cigarettes.

> "I can't be the only man as walks along this street and wants a fag," he said. "I shouldn't wonder but what a fellow might do very well with a little shop here. Tobacco and sweets, you know."
>
> He gave a sudden start.
>
> "That's an idea," he said. "Strange 'ow things come to you when you least expect it."
>
> He turned, walked home, and had his tea.
>
> "You're very silent this afternoon, Albert," his wife remarked.
>
> "I'm thinking," he said.

The former verger set up as a tobacconist and news agent, and accumulated a small fortune. He went to the bank to put his growing wealth into securities, and startled the bank manager by announcing that he could not read or write. "Good God, man, what would you be now if you had been able to?"—"I can tell you that, sir," he replied. "I'd be verger of St. Peter's, Neville Square."

Maugham's story tells of a man who not only discovered something he wasn't looking for, but discovered something he quite possibly might not have discovered at all. The optimization problem that occupied the verger was the finding of a cigarette, and he engaged in search. Working within such a framework, he came to apprehend the street as a bad-place-to-find-a-cigarette. Apprehending it as a good-place-to- set-up-a-tobacco-shop was an insight lying outside the working interpretative framework. Kirzner would maintain that this discovery cannot be explained as the result of optimizing search, because the verger was not searching out career opportunities at the time. In that respect, he had formulated neither what it was he would search for nor what set of searchable-boxes he would search *over*. The experience of insight was a happening that scarcely conforms to what happens in Neoclassical search models in the tradition of George Stigler (1961). The opportunity could have been missed entirely, or noticed only fleetingly.

Kirzner maintains that such entrepreneurial discovery is not, however, purely random and inexplicable. He maintains that "human beings tend to notice that which it is in their interest to notice"—they tend to notice opportunities for profit or betterment (1985, p. 28). He insists

that discovery is not a result of optimizing choice. The faculty of noticing opportunities for gain he calls *alertness*. Alertness is not an economic resource like labor. Rather, alertness is a sort of propensity, a propensity that is exercised in the presence of available profit opportunities. Individuals do not decide to use their alertness: "Entrepreneurial alertness is not an ingredient *to be deployed* in decision making; it is rather something in which *the decision itself is embedded* and without which it would be unthinkable" (1985, p. 22). Were a bright and capable individual to deploy or rent out some of his attention to help solve a particular problem or to manage a firm, we would not describe such doings as the transacting of entrepreneurial alertness, but rather as the transacting of a designated sort or human labor, such as managerial effort or attention. Such activity would be undertaken deliberately. In contrast, entrepreneurial discovery is "undeliberate but motivated" (1985, p. 14).

Kirzner says that "a decision maker never considers whether to apply some given potential alertness to the discovery of opportunity A or opportunity B." If opportunities are already known to be out there, then they have already been discovered, and alertness has done its part. If options A and B instead represent alternative projects calling for cultivation or development, then it is not alertness that one allocates to them, but research or managerial effort. Unlike the consumption of a human resource, the exercising of alertness does not reduce its availability: "To recognize that opportunity A exists need not preclude simultaneously recognizing that opportunity B exists." Entrepreneurial alertness is, "in principle, inexhaustible." Kirzner says that "entrepreneurship is costless" (1985, pp. 24, 25).

With the notion of entrepreneurship comes a notion of error. Error occurs when opportunities are quite apparent to the individual but go unnoticed. Error is the missing of available opportunities that would be noticed with a modest or normal amount of alertness. Kirzner says, "where ignorance consists not in lack of available information but in inexplicably failing to see facts staring one in the face, it represents genuine error and genuine inefficiency." Individuals who come to realize that they have made errors, that they have, *ex ante*, missed available opportunities, may, says Kirzner, *reproach* themselves for the actions they have taken (1979, pp. 128–130). As Ricketts notes (1994, p. 61), Kirzner maintains that in the narrow Neoclassical worldview there cannot be any role for self-reproach for decisions made at the *ex ante* position.

The chief practical use to which Kirzner puts his theory of entrepreneurship is to address the basic policy issue of freedom versus government regulation (1979, chap. 13; 1985, chaps. 2, 6; 1992a, pp. 51–54). Kirzner claims that Neoclassical theories tend to neglect the role of discovery in economic processes, instead focusing on issues of allocative efficiency (epitomized in the Fundamental Welfare Theorems of general equilibrium). Once we admit that entrepreneurial discovery does play a big part in prosperity, Kirzner's ideas become especially pertinent to the basic policy issue. If, as Kirzner maintains, interest does stimulate discovery, then an important feature of any policy regime is the extent to which it gives people an interest in making such discoveries. The regime of laissez-faire gives people the widest and strongest interest in making socially beneficial discoveries. Kirzner argues that the discovery variable points up a very significant comparative virtue of laissez-faire, a virtue neglected by Neoclassical equilibrium studies that posit a neatly characterized framework of given ends and means.

Neoclassicals contra Kirzner

Numerous Neoclassical economists, including Theodore Schultz, Benjamin Klein, Harold Demsetz, and Stephen Shmanske, have commented critically on Kirzner. Before visiting their comments, however, let us begin with George Stigler, who never commented explicitly on Kirzner but is the godfather of narrow Neoclassicism.

Stigler describes "the very logic of economic theory: we deal with people who maximize their utility, and it would be both inconsistent and idle for us to urge people not to do so" (1982, p. 6). He draws a hard line for the use of the terms "rationality," "efficiency," and "optimality," a line that eradicates any place for the terms "*ir*rationality," "*in*efficiency," and "*sub*optimality." In his critique of Harvey Leibenstein's theory of X-inefficiency (Leibenstein (1966)), Stigler maintains: "In Neoclassical economics, the producer is always at a production frontier . . . " (1976, p. 215). Stigler seeks to eradicate any notion of X-inefficiency (which has certain parallels to Kirzner's theory of error). Any and every kind of limitation an individual faces must be regarded as part of the set of constraints, constraints that partly define the optimization problem but are separate from the act of decision making. In one of his most whimsical (and consciously self-contradictory) essays, Stigler insists that bad policies like rent-control and import quotas should be described as "efficient," because they emerge from, and persist within, a setting in which everyone optimizes. In this manner of speaking, whatever is is efficient.

Stigler was a great pioneer of the study of limitations in knowledge, but always he acknowledged only one sort of limitation: lack of information. He raises the question of the determination of technologies used by firms: "The choice is fundamentally a matter of investment in knowledge: the costs and returns of acquiring various kinds and amounts of technological information vary systematically . . . " (1976, p. 215). Stigler confined the idea of ignorance to lack of information. Ignorance, in Stigler's view, is nothing but an optimal response to information costs: "information costs are the costs of transportation from ignorance to omniscience, and seldom can a trader afford to take the entire trip" (1967, p. 291).

Stigler's position was to have the discussion of human action sealed within a logic of optimization. He recognized that notions of "waste" and "error" could not be so sealed: "Waste is error within the framework of modern economic analysis, and it will not become a useful concept until we have a theory of error"—that is, a description of error as the deliberate outcome of optimizing behavior (1976, p. 216). Because notions of "error" or "interpretation" or "motivation" (one of Leibenstein's variables) do not fit neatly into his scientific idiom, Stigler would treat them not merely as something different, but as utter nonsense:

> Potential motivation could indeed rewrite all history: if only the Romans had tried hard enough, surely they could have discovered America. (1976, p. 214) It is the most vacuous of "explanatory" principles to dismiss inexplicable phenomena as mistakes [read: errors]—everything under the sun, or above the sun, can be disposed of with this label, without yielding an atom of understanding. (1982, p. 10)

According to Stigler, once we entertain ideas that do not fit into the tight Neoclassical way of speaking, all of our scientific knowledge is subverted. Perhaps this is what McCloskey identifies as the positivist belief "that the only alternative to narrowly defined logic and fact

is whim" (1994, pp. 350, 354). My reading of Stigler suggests that he sees no place in economic theory for anything to be distinguished as "entrepreneurship."

Stigler's way of thinking is expressed by several economists who have commented on Kirzner. Benjamin Klein reviewed Kirzner's *Competition and Entrepreneurship* for *Journal of Political Economy* (Klein (1975)). Although Kirzner's book does not make a clear distinction between knowledge and information, it explores entrepreneurial insight, like that of the verger, that would seem to lie outside the bounds of Stiglerian information economics. Nevertheless, Klein reduces Kirzner's discussion to issues of information and the costs of acquiring information. Klein finds Kirzner's claim for a distinct entrepreneurial ingredient to be unpersuasive:

> Although the problem of decentralized coordination of economic activity in an environment of transaction and information costs is complicated, there is certainly no reason why maximization techniques cannot and should not be used. . . . We just must assume a richer informational background under which individual maximizing decisions take place (Klein (1975, p. 1308)).

Klein finds the book scientifically unsatisfying: "[O]n the level of positive scientific contributions the book is weak . . . Kirzner presents . . . no clearly stated propositions that could, in principle, be refuted" (p. 1308).

Theodore Schultz does ascribe to entrepreneurship a role in economic processes. This roles "the ability to deal with disequilibria" (1975, 1990). Schultz regards this ability to be a specialized form of human resource. In his perfunctory remarks on Kirzner, he says Kirzner loses sight of "the economic value of the costs of opportunity time that entrepreneurs devote to being entrepreneurs . . . Kirzner is patently wrong in his view that there are no expected entrepreneurial rewards that accrue to entrepreneurs as economic agents" (1990, p. 36). Schultz says entrepreneurship is a type of human capital, amenable to supply and demand analysis and marginal productivity analysis.

Harold Demsetz (1983) and Stephan Shmanske (1994) have provided more discerning and more penetrating critiques of Kirzner. Their critiques run along very similar lines and may be treated as one. In assessing Kirzner's theory, Demsetz says that entrepreneurial discovery is the "only . . . truly distinguishing characteristic that separates entrepreneurship from maximizing behavior." He recognizes that discovery is a transcending from one optimization problem to a new one. It is "the stumbling onto a profit possibility without any intent (that is, without any deliberate, focused investment of time, energy, or other resources), . . . striking crude oil and recognizing its value while drilling for water." Both Demsetz and Shmanske are willing to accept the notion that the cost of making such a discovery would be zero or close to it, and they are open to the idea that such discoveries are an "important source of economic progress" (Demsetz (p. 278)).

Demsetz and Shmanske see decision making as "punctuated with discrete moments of planned and unplanned discovery" (Shmanske (p. 219)). But, as Demsetz puts it, "there is a more familiar name for it—luck." Such unexpected, serendipitous events may be important, but what are we to say about them? "[I]t is, in a sense, beyond the scope of scientific analysis. For luck by any name is the unexplainable occurrence" (Demsetz (p. 277)). Demsetz and

Shmanske read Kirzner as saying, essentially, what Armen Alchian (1950) says in his famous paper on evolution: sometimes behavior is matched appropriately to the circumstances not because the agent intelligently adapts his behavior to the circumstances, but because the circumstances adopt the behavior that, serendipitously, is appropriate.

Although Demsetz and Shmanske agree that alertness can be a crucial ingredient to the perceiving and seizing of an opportunity that comes with a punctuating event, they emphasize that there is a cost to being alert (Demsetz (p. 279), Shmanske (p. 218)). Making a discovery in the instant may be virtually costless, but maintaining a state of mind that is loose and responsive to incoming opportunity does have costs, such as playing chess or taking a nap. Thus, both critics maintain that the part of Kirznerianism that is amenable at all to scientific comment can be expressed within the Neoclassical idiom: alertness is reduced to a form of investment under uncertainty, a form of search. Punctuating events may bring a true transcendence of optimization frameworks, but "[p]roblems of change associated with unforeseen and unforeseeable events are beyond the scope of analysis" (Demsetz (p. 278)).

Were Demsetz and Shmanske to offer their own rendering of Somerset Maugham's story of the verger, it would run something like the following: The verger had a combination of short-term and long-term goals, including finding a cigarette and finding a new career. He invested some of his time and attention in searching for a cigarette. In the course of doing so, he gained, purely by chance, new knowledge pertinent to his goal of finding a career. Subsequent to this punctuating event, he reoptimized. As Shmanske puts it, "the person is in disequilibrium but only for an instant" (p. 208). The reoptimization takes place within a somewhat revised ends-means problem.

To sum up: Neoclassical economists have rejected Kirzner's proposition that economics needs to think of human action as more than concatenated reoptimization within a punctuated series of ends-means problems. Stigler, Klein, Schultz, Demsetz, and Shmanske all would either eradicate entrepreneurship from economic theory, or recognize it merely as a particular form of human resource to be called "search," "alertness," or "the ability to deal with disequilibria." Along with the eradication of Kirznerian entrepreneurship would come the eradication of error and any economic significance of self-reproach. They recognize the existence or possibility of transcendence of one optimization framework to another, such as occurs with the serendipitous discovery of oil or of the idea to open a tobacco shop. They say that such events might indeed be important in understanding the performance and evolution of markets, as explored by Alchian (1950), but can be part of an understanding of human action only in so far as they are guessed at, however vaguely, in advance, and thereby belong to a subjective stochastic backdrop within which optimization takes place. Other than that, the moments of transcendence are beyond the pale of economic theory.

Kirzner's rejoinder to neoclassicism

What would Kirzner say to the Neoclassical rendering of the Maugham story? The verger acquired information showing that on that street there were no stores selling cigarettes. The working interpretation within which this information was gained concerned the satisfaction of the verger's desire for a smoke. An alternative interpretation of the information—that the street represented an opportunity to open a successful tobacco shop—was not inherent in the information. The "event" that occurred was not only the arrival of information,

but also a shift in the verger's thinking, a shift that permitted a different interpretation *of* the information. Kirzner is saying that, to be consistent, the Neoclassical view would have to include, as Shmanskian punctuating events or Demsetzian moments of chance, not only that external stimuli (facts, raw data), which translate, within the working interpretation, into a set of information, but also *internal changes*, cognitive changes that provide new interpretations (and, correspondingly, new sets of information).

Kirzner (1979, p. 161) offers a different example that makes the point more clearly. Robinson Crusoe catches fish day after day with his bare hands. One day he realizes that he could catch fish better by making a net. In this example, there is not even any external stimulus to be indentified as part of the punctuating event (nor change in accumulated physical capital); the only change is a change in interpretation of information that Crusoe already had. In Shmanske's way of speaking, one would say that Crusoe was optimizing by catching fish by hand. Then one day his self-equilibrium was altered by a punctuating event: an insight came to him. This insight posed a new, revised optimization problem, and Crusoe immediately reoptimized and was in a new self-equilibrium. The insight can only be said to arrive by chance. Kirzner rejoins: "[it] may not be arrived at deliberately, rationally, but neither is it arrived at purely by chance" (1979, p. 170). Shmanske's worldview would eradicate all of the following notions: that Crusoe might have had an entrepreneurial moment, that he might have been acting in error prior to that moment, that upon realizing his error he might reproach himself for having erred so long, and that there is economic significance in self-reproach. According to Kirzner, Shmanske's view impoverishes our understanding of how people act and how markets function.

Yet Shmanske and Demsetz do take one step away from Stigler and toward Kirzner. The examples of the verger and Robinson Crusoe prove the claim that knowledge is more than just information. It is also interpretation (and perhaps more as well). The point seems to be accepted by Shmanske and Demsetz in their acknowledgment of moments of "disequilibrium" and surprise. They move beyond the view apparently advanced by Stigler that knowledge is merely information.

Shmanske's piece provoked a response from Kirzner (1994). Kirzner emphasizes that he and Shmanske present different worldviews but that each of them is logically coherent and consistent. Shmanske would probably agree to this claim, were some pieces of Kirzner's theory expressed in Neoclassical idiom.

Towards a synthesis: The deepself

Remarks on the "costlessness" of entrepreneurship

As noted, there has been much contention over Kirzner's claim that "entrepreneurship is costless." One way to interpret this statement is that entrepreneurship has a cost equalling zero. Indeed, Kirzner sometimes says things that suggest such an interpretation. But Kirzner really does not mean that entrepreneurship has a cost equalling zero. He qualifies his use of the word "costless":

> To describe the knowledge so acquired as having been costless or a free good is somewhat misleading. To be sure, the spontaneous learner has incurred no cost or sacrifice through

> his learning. But this is not so much because the knowledge was costlessly available as because the knowledge was simply not sought deliberately (Kirzner (1979, p. 143)).

What Kirzner means by the costlessness of entrepreneurship is not that the cost of entrepreneurial insight is zero, but that *the notion of cost does not apply to it*. Cost is a facet of choice, and Kirzner insists that entrepreneurship is not an object of choice. Kirzner often states that people do not choose to be entrepreneurial. If it made sense to say that the degree of entrepreneurship that the individual actually possesses has a cost of zero, it also would make sense to say that any entrepreneurship beyond that degree has a cost of infinity. Indeed, Kirzner (1979, p. 131) says, "we cannot conceive of one who lacks alertness making a decision to acquire it." The wiser idiom is simply not to speak of a cost of making entrepreneurial discoveries. Entrepreneurial discovery is not the result of choice, just as an earthquake is not the result of choice. Earthquakes do not have costs. They bring losses to people, but they do not have costs. Kirznerian entrepreneurship is costless in the sense that sound is weightless—not that sound weighs zero pounds, but that the concept of weight does not apply to sound (how do you put sound on a bathroom scale?).

Is Kirzner, therefore, surrendering to the Shmanske worldview? If the insights had by the verger or by Crusoe were not the result of choice, are we not forced to say that they are serendipitous events, governed merely by chance and punctuating the person's existence? But Kirzner objects to this as well. He refuses to play by the rules. When Neoclassicals claim that entrepreneurship is a normal human resource, Kirzner objects, saying it is not an object of choice. But when they claim that it is a stochastic event, a matter of chance, again he objects. He says that, unlike chance, it is "motivated."

Then the question becomes: *Motivated by what*?

The Society of Mind

The motivation comes from a deeper level of self. There is a shallower agent, that often calls itself "I," and then deeper agents. In the case of the verger or Robinson Crusoe, it is a deeper agent that deliberately searches for or luckily finds the alternative interpretation. The deeper agent conveys the results to the shallower agent, who receives it like money falling into its lap. This understanding of the matter relies on two basic premises: first, that there is a multiplicity of agents within the human being; second, there is asymmetric knowledge between them—that is, they are not fully aware of each other's activities, nor in mutual possession of each other's knowledge. These ideas are at variance with much economic discourse. But the framework conforms to the most fundamental premise of neoclassical economics: agents are mere optimizers. I propose that the mind be thought of as a layered society of interconnected Shmanskian optimizers.

The approach is unorthodox to economics,[2] but not unorthodox to the larger world of science. Research in psychology, sociology, cognitive science, neuroscience, and

[2]Within economics, Thomas Schelling (1984, chaps. 3, 4) is a notable exception, as well as a small but steady stream of technical papers (an important early one being Thaler and Shefrin (1981)). In social sciences more broadly, Jon Elster (1979) brought much prominence to the idea of the multiple self. For the idea of tacit knowledge, the major figure is Michael Polanyi (1958, 1966); see also Hayek (1952, chap. 8).

computer science make routine use of the notions of the multiple self, layers of thinking, imperfect self-knowledge, and so on. Such ideas are staples of psychiatry, philosophy, and, indeed, everyday ordinary conversation. Our moments of wit, irony, and humor are messages designed to make ourselves aware of specific cases of these realities. (Consider the Abbott and Costello act "Who's On First," which provides an example of systematic misinterpretation; the act leads the audience to identify with the difficulty of juggling multiple ways of interpreting information and arouses the delight in seeing others (and, by extension, ourselves) struggle because they lack knowledge we have.)

Marvin Minsky has written a book entitled *The Society of Mind* (1986) that offers a great wealth of ideas highly pertinent to the Kirzner-Neoclassical debate. Minsky's degrees are in mathematics from Harvard and Princeton. He is currently professor of electrical engineering and of computer science at the Massachusetts Institute of Technology. At MIT he co-founded the Artificial Intelligence Laboratory, and he is former president of the American Association for Artificial Intelligence. He is a member of the National Academy of Science. Here I use ideas treated by Minsky to fashion a synthesis of Kirzner and Neoclassicism. I will quote him often and at length; unless another source is specified, all page references are to *The Society of Mind.*

The multiple self

Minsky's approach is to explain intelligence as a combination of simpler things called "agents." "This means that we must be sure to check, at every step, that none of our agents is, itself, intelligent. . . . Accordingly, whenever we find that an agent has to do anything complicated, we'll replace it with a subsociety of agents that do simpler things" (p. 23). Agents are the most fundamental unit; they are like simple machines.

But agents come in hierarchies and bureaucracies. Minsky speaks, for example, of a child building towers out of wooden blocks. There is a *Builder* agent that turns on a hierarchy of subagents involved in building towers, such as "Find," "Get," and "Put," and each of these has subagents. Minsky says that we can think of *Builder* in two ways: as a panel of on/off switches for its immediate subordinates, in which case it is merely the top or chief agent in the hierarchy; or a collection of all the subagents, and their subagents, and so on, in which case *Builder* is the entire hierarchy, or an "agency." To use a mechanical analogy, a steering wheel is an agent, whereas the entire steering apparatus, from steering wheel to tires, is the steering agency. It is the agency that may be said to contain knowledge. Each component senses activity of the other components and responds accordingly. "As agency, it seems to know its job. As agent, it cannot know anything at all" (p. 23).

Minsky views the mind as a community of agencies. They are not strictly hierarchical: they may cut across one another, sharing some of the same agents. He applies his ideas quite consistently: "Even the ideas we 'get' for ourselves come from communities—this time the ones inside our heads. . . . [T]o get a good idea, one must engage huge organizations of submachines that do a vast variety of jobs. Each human cranium contains hundreds of kinds of computers, developed over hundreds of millions of years of evolution" (p. 66). To understand the mind, "we have to guard ourselves against that single-agent fallacy of thinking that the 'I' in 'I believe' is actually a single, stable thing. The truth is that a person's

mind holds different views in different realms. . . . We each use many different views, and which we choose to use depends, from one moment to the next, upon the changing balance of power among our agencies" (p. 302).

Asymmetric knowledge

Minsky asks: "[W]hy do we so often embrace the strange idea that what we do is done by Someone Else—that is, our Self? Because so much of what our minds do is hidden from the parts of us that are involved with verbal consciousness" (p. 50). Fundamental to Minsky's system is that the mind is not only a multitude of agencies, but that knowledge among these agencies is compartmentalized, divided, or, as economists might say, "asymmetric":

> [Y]our agencies for locomotion, vision, and language may contain within their boundaries some processes that are quite as intricate as those "you" use for your own conscious thought. Possibly, some of those processes are actually more "conscious" than you are yourself, in the sense that they maintain and use even more complete records of their own internal activities. Yet what happens in those agencies is so sealed off that you have no direct experience of how "you" distinguish a cat from a dog, retrace "your" last few steps, or listen and talk without knowing how "you" do it. . . . Several such agencies could have many agents in common, yet still have no more sense of each other's interior activities than do people whose apartments share opposite sides of the same walls. Like tenants in a rooming house, the processes that share your brain need not share one another's mental lives (p. 290).

Even within an agency, knowledge is divided: "The high-level agents. . . scarcely know which lower-level processes exist. Nor can lower-level agents know which of their actions helped us to reach our high-level goals; they scarcely know that higher level goals exist" (p. 75; for similar comments see Hayek (1967, p. 61)).

A Spontaneous order of the self?

Economists have diverging attitudes about asymmetric knowledge in the economy. Models of asymmetric information show "adverse selection" and incomplete markets. Sometimes asymmetric knowledge is regarded as a kind of market imperfection, and consumer ignorance is cited as a reason for various kinds of regulations on product quality and safety.

On the other hand, economists also regard the division of knowledge as a great achievement, whether achieved within the firm or throughout the economy. For a firm to have an extensive division of knowledge and still function effectively is testimony to good leadership, management, and teamwork. Within a vast and complex market economy, an extensive division of knowledge is testimony to a well-functioning system of exchange.

The same sort of ambivalence over asymmetric knowledge exists in Minsky's work on the mind. On the one hand, one can see, in Hayekian/Coasian fashion, a division of knowledge within the mind as a mark of success:

> Achieving a goal by exploiting the abilities of other agencies might seem a shabby substitute for knowing how to do the work oneself. Yet this is the very source of the power of societies. No higher-level agency would ever achieve a complex goal if it had to be concerned with every small detail of what each nerve and muscle does. Unless most of its work were done by other agencies, no part of a society could do anything significant (p. 169).
>
> How could any specialist cooperate when it doesn't understand how the others work? We manage to do our worldly work despite that same predicament; we deal with people and machines without knowing how *their* insides work. It's just the same inside the head; each part of the mind exploits the rest. . . . It is enough for our words and signals to evoke some useful happenings within the mind. Who cares how they work, as long as they work! (pp. 169, 57).

Yet, on the other hand, a multiplicity of agencies means a degree of *conflict*, and conflict sometimes obstructs the flow of knowledge. Competitors might obstruct communication between two teammate agents **P** and **Q**. **P** may send "a query straight to **Q** and hope that **Q** can get a truthful message back before other [competing] agents change **Q**'s state—or change its message along the way" (p. 61). What Minsky says about competing agents will sound plausible to public choice economists: "agents. . . suppress their competitors" (p. 208).

Another reason for asymmetric knowledge, aside from conflict, is simply the lack of a common language:

> If a mind whose parts use different languages and modes of thought attempted to look inside itself, few of those agencies would be able to comprehend one another. It is hard enough for people who speak different languages to communicate, and the signals used by different portions of the mind are surely even less similar. If agent **P** asked any question of an unrelated agent **Q**, how could **Q** sense what was asked, or **P** understand its reply? Most pairs of agents can't communicate at all (p. 66).

For either the mind or the economy, the more successful it is, the greater the division of knowledge; but the greater the division of knowledge, the more scope there is for mistakes, errors, and deceit.

The Verger's story, once again

Let us consider a Minskian rendering of Maugham's story. Upon resigning his position, the verger faced the existential choice of how to occupy himself for the remainder of the afternoon. Figure 1 shows agents within the verger's mind. The verger could run errands, take comfort after his resignation, or try to find a new livelihood. Each of these agents would involve cascading sets of subagents, only some of which are drawn in the figure. The verger chose to take comfort and to have a cigarette. This activated subagents beginning with *Search for Cigarette*. In searching for a cigarette the active agencies acquired the information that there were no stores selling cigarettes on that street. This information

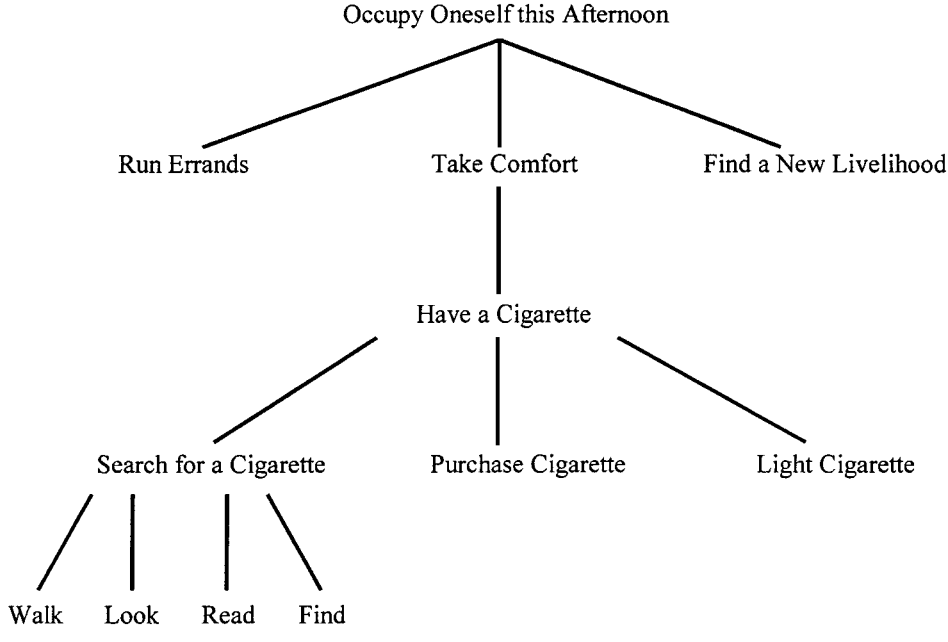

Figure 1. Structure of agents within the verger.

was pertinent in an obvious way to each of the active agencies moving up through the hierarchy: it meant a direct frustration of effort of *Have a Cigarette, Take Comfort,* and *Occupy Oneself.* The information, however, also had a nonobvious pertinance to *Occupy Oneself,* in that the information was relevant to the *inactive* agent *Find a New Livelihood.* It is by virtue of the perceiving of this nonobvious new knowledge that the moment qualifies as an entrepreneurial moment.

Whence comes a second interpretation? It does not make sense to say that the agent *Have a Cigarette* saw the alternative interpretation and sent a special message to its superiors. Not only would *Have a Cigarette* not have any particular interest in doing so (even if it had the capability), it would have a definite interest in not doing so. The content of such a message could imperil its own life! The message might lead the superior agents to deactivate *Have a Cigarette* altogether. Each agent works to suppress any interpretation which competes with the interpretation that brings it life and success.

The second interpretation must spring from agents that do not appear in figure 1. Minsky explains that the mind can allocate some of its capacity to watching itself:

> Divide the brain into two parts, A and B. Connect the A-brain's inputs and outputs to the real world—so it can sense what happens there. But don't connect the B-brain to the outer world at all; instead, connect it so that the A-brain is the B-brain's world! . . . Now A can see and act upon what happens in the outside world—while B can "see" and influence what happens inside A (p. 59).

The agency shown in figure 1 exists in the A-brain. But in the mind there is also a B-brain made up of agencies that are watching, reviewing, and evaluating the A-brain, and sometimes sending messages to influence the A-brain. Minsky's book goes into detail about how agents can also be knowledge functions, agents called such things as "recognizers," "memorizers," and "knowledge-lines," as well as other, unfamiliar names ("difference-engines," "polynemes," "pronomes," "isonomes," "perceptrons"). The point is that knowing, thinking, remembering, and communicating are, in Minsky's system, also the work of machine-like knowing agents. Connected to agents of pure action are knowing agents, which in turn may have additional agents connected to them. In the story of the verger, the B-brain recognizes and evaluates certain features of what it sees in the A-brain. The A-brain has little or no awareness of what the B-brain is up to—indeed, for the two "brains" to have mutual full awareness would create an infinite loop that would immediately exhaust all mind capacity and bring everything to a stop.

It is agencies in B that recognize the second interpretation of the crucial information. B is engaged in an optimizing search for ways to improve what A is doing. Within B's search, the goal of finding a new livelihood looms large. The arrival of information about cigarettes being unavailable on that street may be considered a lucky accident for B, a sort of serendipity. Since B was engaging in an entire review of A, including its inactive agencies, the interpretation of this information as a career opportunity was, let us say, *obvious* to B. To B the information was like money falling into its lap. But once B had gained this new knowledge, it now had to communicate with A.

The conveyance of knowledge from B to A is not a trivial matter. A's capacities are chiefly occupied, at the time, by *Have a Cigarette*, which not only does not see pertinence in anything B has to say, but indeed may regard messages from B as imperiling its existence. It suppresses messages from B. To help A, B must *get past some of A's subagencies*. In the story, B's line to the superior agents in A were strong enough to succeed. The message got through. For A, this new knowledge did not arrive from the outside world. It came from within. And the idea did not strike the verger as immediately obvious—quite the reverse. It was, to A, what I propose to call an *epiphany*. As far as A was concerned, the new knowledge was not inherent in the information.

Epiphany

Epiphany is a gaining of new knowledge (that is, a discovery) that alters one's interpretive framework and that comes, in a proximate sense, from within the mind. It brings an interpretive shift that, to the active agencies of the mind, is not obvious from the raw facts.

Although Minsky does not use the word "epiphany" (nor speak of entrepreneurship), the idea suits his system. Just as Kirzner emphasizes that entrepreneurship goes beyond mere optimizing, Minsky explains that thought goes beyond strict logic:

> I doubt that we often use logic actually to solve problems or to "get" new ideas. Instead, we formulate our arguments and conclusions in logical terms *after* we have constructed or discovered them in other ways. . . . [Logic] can serve as a test to keep us from coming to invalid conclusions, but it cannot tell us which ideas to generate, or which processes

> and memories to use. Logic no more explains how we think than grammar explains how we speak; both can tell us whether our sentences are properly formed, but they cannot tell us which sentences to make (p. 186).

In contrast to the Kirzner/Minsky view, George Stigler champions the unsophisticated view of knowledge: "Every failure of a person to make decisions which serve his self-interest may be interpreted as an error in logic" (Stigler (1971, p. 144)). Minsky suggests that we give up such hopelessly tidy notions: "[w]e're always using images and fantasies in ordinary thought" (p. 163). Creativity cannot be modeled as a *single-agent* optimization process, because it does not work according to any single-agent logic. As Minsky puts it: "Our best ideas are often those that bridge between two different worlds!" (p. 131).

Three kinds of discovery

Kirzner writes of "entrepreneurial discovery," but he recognizes that not all discoveries should be described as entrepreneurial. There are different kinds of discovery. I propose a discovery trichotomy (used also in Klein (1997)).

The kind of discovery that is most tractable within Neoclassicism is the realization of variables within a stochastic framework. The agent recognizes the framework and responds to realizations with contingent plans. This framework is very much like a search model in which laborers, for example, search over employment possibilities or car buyers search over offers. Economic actors, however, are often susceptible to stochastic variables without being engaged in any form of search (cf. Kirzner (1979, pp. 142–143)). I prefer to focus on the situation in which the realizations come to the agent rather than being the result of active search. This situational difference is perhaps not of great significance. I do, however, propose a name other than "search" for responsive behavior within a stochastic framework: *respondence*.

Search/respondence does not entail large interpretive shifts. Rather, it entails realizations that tell the agent *where he is* within a single interpretive framework. Each realization does represent a sort of discovery or new knowledge. But the new knowledge is *merely new information*. (Respondence coincides with Shmanske's "contingent planning;" see Shmanske (p. 207.)) Martin Ricketts' characterization of neoclassical search puts the point nicely: "It is rather as if we are searching for something of which we once had full knowledge but have inadvertently mislaid" (1994, p. 60).

More significant discoveries are those that do entail an interpretive shift. One kind is *serendipity*. Serendipity has the following in common with respondence: moments of both come by chance from the outside world. But serendipity differs from respondence in that the discovery entails a major interpretive shift. Serendipity is utterly unexpected and leads one to rethink significantly what one is up to. Demsetz (p. 278) gives the example of striking oil while drilling for water. Kirzner (1979, p. 159) gives the example of Robinson Crusoe "climbing a tree to look far out to sea—without realizing at all that his action will yield him fruit." Serendipity is not entrepreneurial. Serendipity entails a major interpretive shift that is *obvious* to the A-brain agencies active at the time.

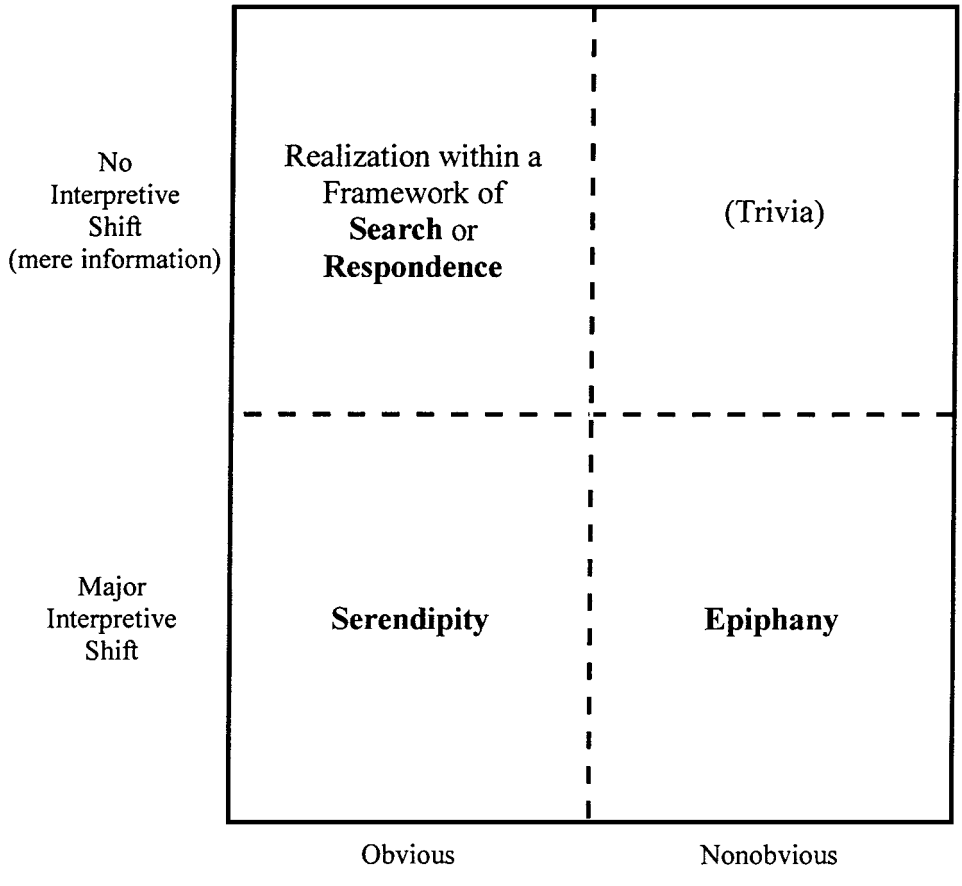

Figure 2. A classification of pieces of new knowledge (or discoveries).

Epiphany is the final form of discovery. It is a discovery entailing a major interpretive shift, a discovery that comes from inside the mind, originating in some other agencies of the brain. Epiphany is nonobvious to the active A-brain agencies. As Kirzner (1992b, p. 86) says, the entrepreneurial "flash of light. . . lifts one out of the routine sequence of everyday experience." Kirzner (1979, p. 178; 1992b, p. 87) reserves entrepreneurship for this kind of discovery; he explicitly excludes what I call serendipity.

There are then two dimensions by which we can classify discoveries. One dimension is whether the new knowledge is merely new information or also entails a significant interpretive shift. The other dimension is whether the new knowledge is obvious or nonobvious to the active agencies. Figure 2 presents the typology. (In the upper right cell of the figure would come mere information of a trivial nature.)

The two dimensions are a matter of degree. In a sense, there is always a bit of surprise in what the world brings, and the interpretation is never perfectly obvious. In that sense, there is always an entrepreneurial element in decision making, as Kirzner often reminds us.

But of course we recognize that sometimes the distinguishing features are especially strong and noteworthy. Then we are especially inclined to identify entrepreneurship. Minsky discusses reformulation (or reinterpretation) and notes that distinctions come down to a matter of degree:

> Reformulation is clearly very powerful—but how does one do it?... Does this depend upon some mysterious kind of insight or upon some magically creative gift—or do we simply come upon them by accident?... [T]hese seem to me mere matters of degree, since people are always making reformulations of various sorts. (p. 133)

Although there is no sharp demarcation between respondence and serendipity, nor between serendipity and epiphany, the distinctions are meaningful nonetheless.

The deepself

Figure 3 presents the basic structure of what I propose to call the "deepself" view of mind. Level A (or the "A-brain") is active at the surface of human existence, meeting the world and referring to itself as "I." Level A can get new knowledge in three ways. First, it can receive realizations from the outer world within a framework of respondence. Second, it can experience serendipity directly from the outer world. The meaning of these forms of new knowledge are so obvious that they need only a very basic level of "predigestion" by the mind. The third kind of discovery is epiphany, which comes significantly predigested by the deeper Level B. B, in turn, can get its new knowledge in the same three ways, relying for *its* epiphanies on a yet higher level of mind. "[T]here is no reason to stop with only two levels; we could connect a C-brain to watch the B-brain, and so on" (Minsky, p. 59).[3]

Minsky's formulation of mind as a society of agents without full knowledge of each other may seem kooky to Austrian economists of the rationalist bent. Yet we find in Kirzner's writing some comments that neatly parallel the Minskian formulation:

> A man decides to display behavior *a*. We may call the mental activity of making that decision activity *b*. Now the man *may* have decided (in the course of decision-making activity *c*) to engage in decision-making activity *b* (or he may have simply and impulsively engaged in decision making activity *b*). But even if engaging in decision- making activity *b* (as a result of which behavior *a* was chosen) was itself the outcome of "higher" decisions, at some level our decision maker's highest decision was made quite unselfconsciously. (Kirzner (1985, pp. 48–49))

"We can have a tacit foreknowledge of yet undiscovered things" (Polanyi (1966, p. 23)). What is epiphany to Level A might have been respondence or serendipity to Level B.

[3] A note about the morphology of the self: I describe the more basic levels of mind as both "higher" and "deeper," yet as we stand on earth we think of deeper as *lower*. If we think of the human being (or deepself) as a sphere, we should think of the conscious, articulate selves as standing not on the surface, but at the center, and, as depicted in figure 3, looking upward for understanding. From that position, the deeper levels are higher. (Sometimes I suspect that our position on the surface of earth, and hence not at the center, has made for a cluster of metaphors that, when applied to questions of knowledge and the self, are misleading.)

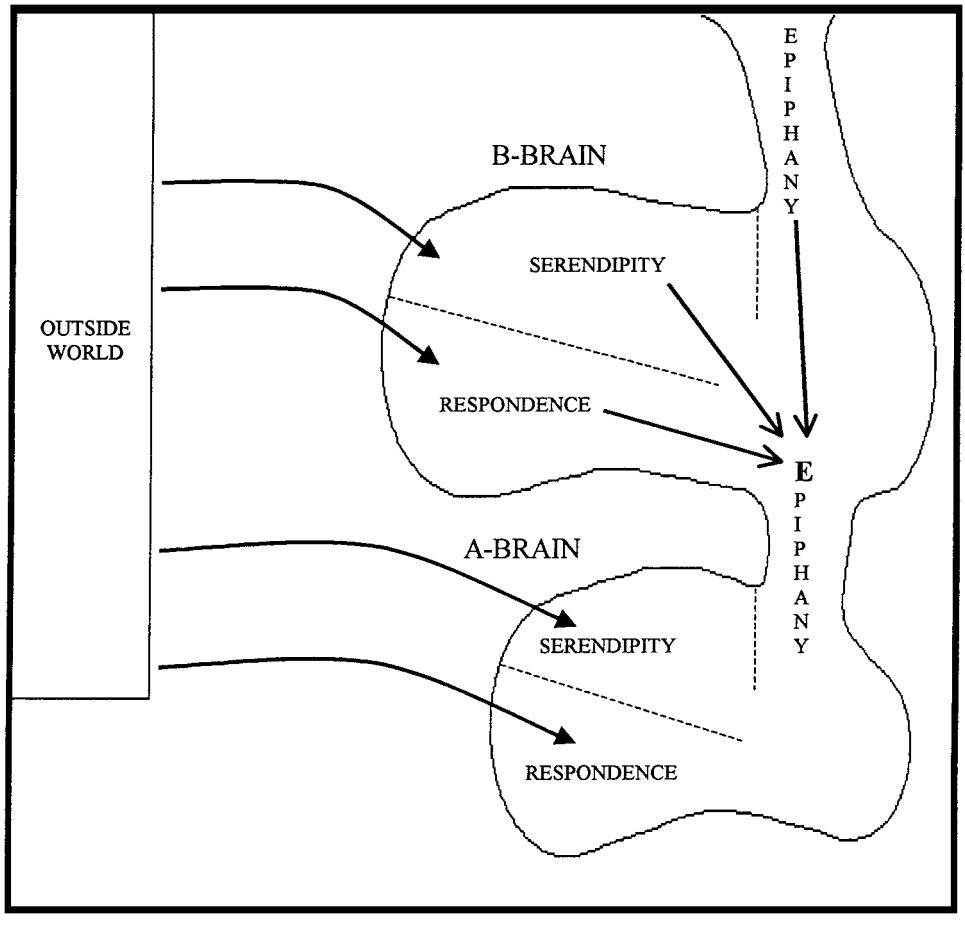

Figure 3. The Deepself: Epiphanies occurring at one level come from a deeper level of mind.

Similarly, the failure to make a discovery may be due to lack of respondence or serendipity at a deeper level. Thus, the deepself approach suggests that a lack of *knowledge* at Level A might be the direct result of weak *motivation* at Level B. Perhaps B lacks incentive to work hard at effective search/respondence, at listening carefully to epiphanies emerging from Level C, or at conveying new knowledge to Level A. Ignorance is, at least in part, the flip-side of incentive or motivation problems at deeper levels of the mind.

Sometimes our A-brains overcome ignorance by way of epiphany. How exactly that happens is bound to remain somewhat mysterious. But Minsky raises a related question about such breakthroughs: "we usually see by hindsight that these were variants of things that people knew before that time. Then we have to ask, instead, for reasons why those reformulations were so long postponed" (p. 133).

Error

Just as epiphany is the internal communication of new interpretive knowledge that is nonobvious, *error* is the failure to communicate new interpretive knowledge that is obvious. Error is like serendipity that fails to happen. (Note that even in the case of serendipity the "outer world" must be digested by very basic realms of thought before reaching the A-brain; as Hayek (1952, p. 166) says, "Every sensation, even the 'purest' must be regarded as an interpretation of an event in the light of past experience of the individual or the species.") As in Kirzner's system, entrepreneurship and error are theoretical inverses.

The deepself approach rejects the single-agent view of mind. But to build a satisfactory description of entrepreneurship and error, it is not adequate to move to a two-agent description. Entrepreneurial insight is essentially a conveyance of knowledge between two internal agents that are like teammates. We might expect communication between them to be very easy. But their communication is often difficult and faulty. To understand the difficulty we need to recognize the presense of a *third* agent.

Figure 4 provides a diagram of intramind communication. A's Friend might be a B-brain or other deep agencies of the mind. A's Friend wishes to convey some new knowledge to A. The success of the message depends on the following three variables: (1) how clearly

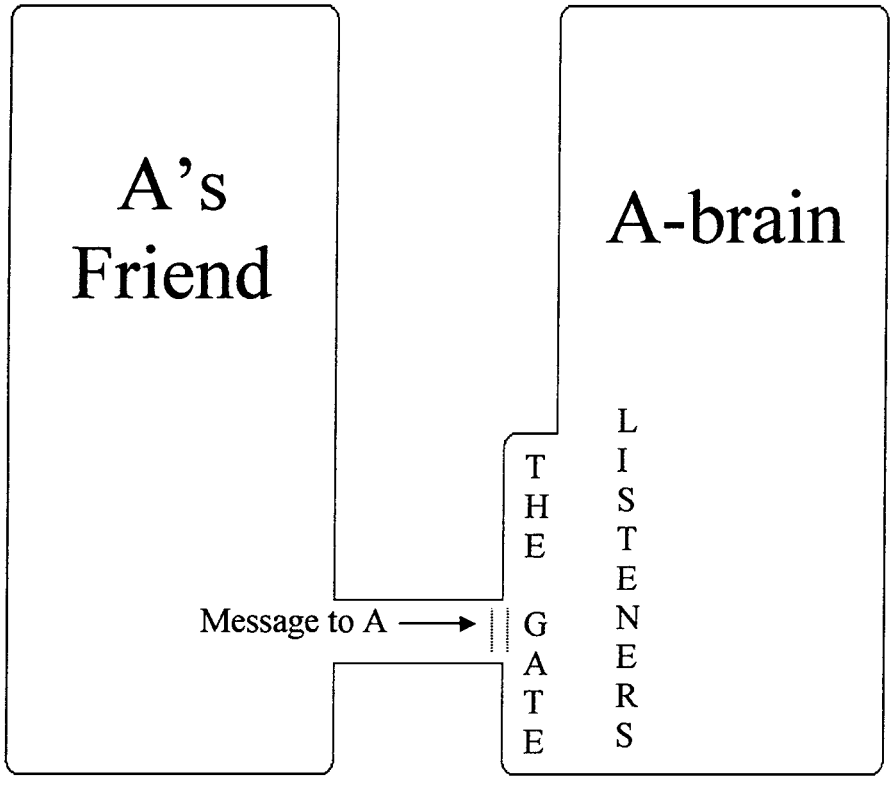

Figure 4. The structure of intramind communication: A's friend must get the message past "The Gate".

and loudly Friend sends the message; (2) how obvious and significant to A the value of the message is; and (3) how attentively A listens for such messages.

The third variable might come down to the same thing as how yielding the active subagents of A are. An active subagent of A—for example, "Park the Car"—will be inclined to deflect, block, suppress, or even distort Friend's message to secure its own success. The active (and possibly hostile) subagents together form a sort of third agent positioned between Friend and (the core of) A. Different sets of subagents occupy this position as one set of subagents is deactivated and another activated. At one moment "Park the Car" is active, at another "Buy Groceries." Let us refer to this position, occupied in the instant by whichever subagents are most active, as *the gate* of knowledge conveyance. A gate can be either open or closed.

Just inside the gate are A's agents that listen for messages. Call these agents "listeners." (Minsky (p. 77), writes of "agencies whose job it is to learn.") The success of Friend's message will depend in part on whether the listeners become active when the message is sent. If the currently active subagencies of A, such as "Park the Car," yield when a message arrives, they effectively step out of the gateway for a moment and let the listeners in. Then the message is likely to get through.

Given that Friend has a significant piece of new knowledge for A, we can classify such messages along two dimensions: whether they are successful or unsuccessful, and whether they are obvious or nonobvious. Figure 5 shows that entrepreneurship (epiphany) occurs when Friend, having a piece of new knowledge that is significant to A, gets it past the gate despite the fact that the new knowledge is nonobvious to A. The symmetrical position in the figure is occupied by error. Error occurs when a piece of new knowledge had by Friend is significant and obvious to A, yet does not get past the gate. The reason could be poor conveyance on Friend's part, poor attentiveness on A's part, or especially unyielding subagents occupying the gateway.

We might wonder whether we can dwell simply in the good cells and avoid error. Why can't we just keep our gates open? Why can't we get our active subagents to keep an open mind and be patient when messages arrive? That sounds nice, but it isn't that simple. The A-brain cannot constantly keep its gates open because the subagencies currently occupying the gateway also have their regular specialized tasks to perform. Remember, agents occupying the gateway are *a part of A itself*, and if A is going to get anything done it cannot have its most active agents constantly yielding to competing agents (that is, to the listeners).

Scarcity and mistakes

When a message from Friend comes to the gate, the message gets through only if the active agents yield sufficiently. That might seem like a small sacrifice, but actually it is not. The active agents follow certain programs. Once they are interrupted, there is the need to keep track of where they were. After the interruption, the yielding agents have to rely on short-term memory, or else they will go all the way back to the beginning of their program (Minsky (p. 159)). If the short-term memory is imperfect they might skip a step of what they were doing—that is, they might make a *mistake*. Mistakes are different from errors. In keeping with Kirzner (1979, p. 122), we say that mistakes are simply slip-ups in carrying out a task; errors are the poor exercise of judgment resulting from one's overlooking something

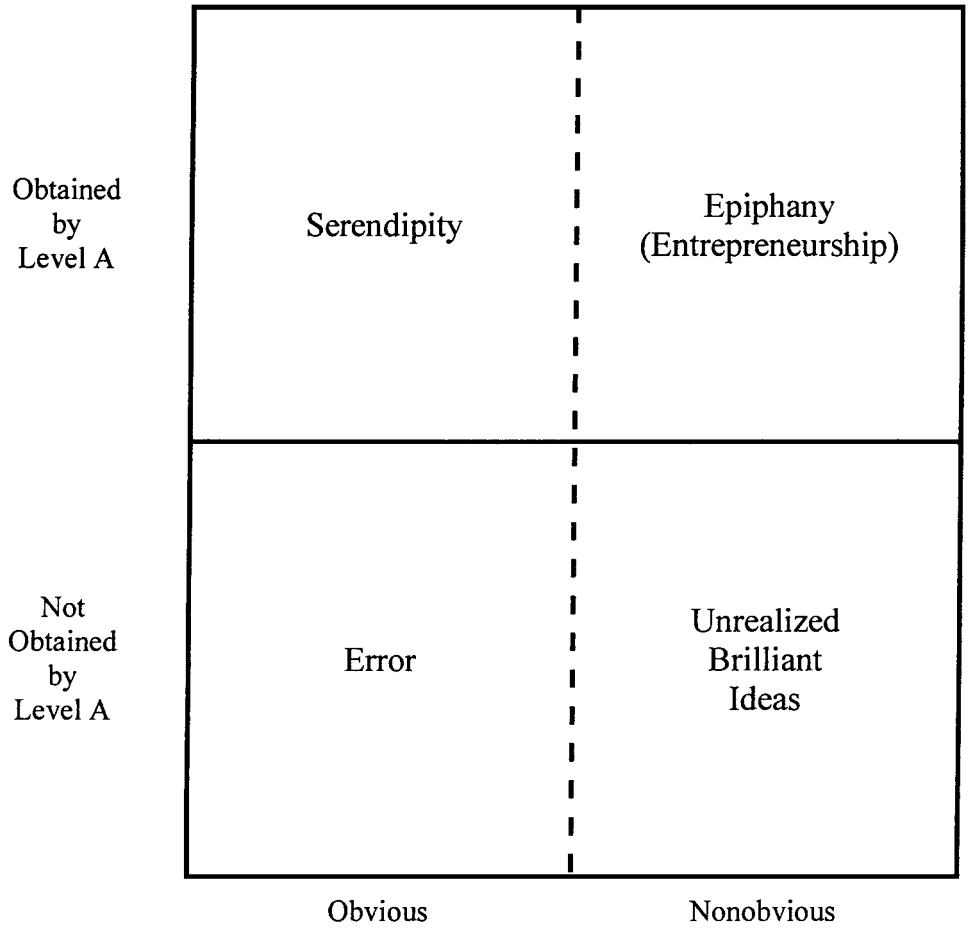

Figure 5. Error and entrepreneurship are theoretical inverses.

significant and obvious. Mistakes are made by active subagents of A; errors are made by the A-brain as a whole. When we make a mistake, such as hitting an adjacent car while parking, we say angrily, "God damn it!" as though reprimanding a subordinant. When we realize that we have made an error, we feel remorse and sigh, "Oh Lord, what have I done?"

Minsky explains that when we are constantly interrupted, we incur high costs to avoid making mistakes:

> [W]e must have some way to store, and later re-create, the states of interrupted agencies. Behind the scenes, we need machinery to keep track of all the incomplete accomplishments, to remember what was learned along the way, to compare different results, and to measure progress in order to decide what to do next (p. 161).

There is a scarcity of mind capacity to allocate to such tasks. Hence, "the more things we think about, the harder it is to pay attention to them all" (p. 224). In consequence, we cannot always keep the gate open: "No longer-term project can be carried out without some defense against competing interests" (p. 163).

If active subagents yield constantly to the listeners, they will dissipate all their power on memory and make slow progress and many mistakes. On the other hand, if they keep the listeners suppressed, then A will receive fewer messages and suffer more errors. Thus we see that one of the inherent trade-offs of the mind is how much it should train active subagents to yield to the listeners. Much yielding leads to mistakes and slow progress, but little yielding leads to errors.

The trade-off between epiphany and error

Thus there is a trade-off between making mistakes and suffering errors. But Minsky explains that the A-brain also faces a trade-off between *different ways to listen to messages*. He explains why we cannot excel in epiphany while avoiding error. There is an inherent trade-off between those two goals.

Listeners can listen for different types of knowledge. One strategy is to listen for a far-reaching chain of ideas that uncovers a distant and substantial idea. Alternatively, one can listen for all the possibly relevant bits of knowledge nearest to the initial position. Suppose you were inside a square room and in each wall there were two closed doors. The eight doors had misty hints as to what they lead to. Behind each door one finds another distinct room, perhaps containing some useful new knowledge and containing yet more doors. Suppose you have enough power or thinking capacity to open just eight doors. We can then imagine two extreme strategies. One is to pass into every newly opened room, going room to room, concluding in a room that is eight rooms removed from the initial one. The other strategy is to stay in the initial room, open all of its eight doors, and gain the knowledge of the eight adjoining rooms. The first strategy, proceeding room to room with some hunch about the best door to pass through next, leads to remarkable insights but suffers acutely from error. Sometimes one will overlook a major insight that is just one door away from the initial room. The second strategy is unlikely to achieve remarkable insights but is more likely to avoid major error. (The first strategy is sort of a "maximax" strategy, whereas the second is "maximin.") Minsky describes two types of thinkers that conform to our two types of listeners:

> [Those of the first type] disregard discrepancies in favor of imagined regularities. They tend to be perfectionists but also tend to think in terms of stereotypes. This sometimes leads to recklessness because they have to reject some evidence in order to make their [theories complete].
> [Those of the second type] are less extreme. They keep collecting evidence and hence are much less prone to make mistakes [read: errors]. But then they're also slower to make discoveries. (pp. 125, 161)

Hence people face several trade-offs in how they manage their internal communication. First, they must decide the extent to which active agents should yield to the listeners. Second,

they must decide the extent to which listeners should be epiphany maximizers rather than error minimizers. These trade-offs suggest that for any level of discovery, if we can go deep enough we can make the occurrence depend on choice.

Correction, self-reproach, and learning

Minsky notes that "any problem will be easier to solve the more one learns about the context world in which that problem occurs" (p. 177). And the longer one dwells within a context, the less disruptive yielding to listeners becomes, and, over time, the more "doors" get opened. This simple insight concords with Kirzner's important premise that there is "a tendency to become aware of opportunities that do stare one in the face" (1979, p. 146). The natural tendencies for the overcoming of error and for unperceived opportunities to become perceived are central to Kirzner's view that there are tendencies within the economy toward the solving of problems and the improvement of economic arrangements.

Consider an example provided by Kirzner (1979, p. 129): "A person [say, a maker of apple pies] walks along a street and sees a store with signs offering to sell apples for one dollar; but, perhaps thinking of other things, he enters a second store where he pays two dollars for [a great quantity of identical] apples." The first part of the overcoming of error is noticing the missed opportunity. Inasmuch as the situation is repeated or is continued, this noticing is the *correction* of error; it is the correction of an action that, to a deeper agency inside the pie maker, is a mistake.

Beyond correction in the instant may come *self-reproach*. Kirzner (1979, p. 129) says the pie maker "will, when he realizes his mistake, reproach himself for having been so absentminded as to pass by the bargain." Kirzner uses the term reproach in this way seven times in three pages (1979, pp. 128–130). Kirzner (1979, pp. 146, 147) says, "one looks back at one's ignorance as upon a deplorable and embarrassing error," sometimes even as "a pity, possibly a tragedy." Although the scarcity of mind creates certain unavoidable trade-offs, we are nonetheless able to put mind resources into refining and developing our ability to listen to ourselves. We can reduce the trade-off between having epiphanies and avoiding errors, although doing so will come at a cost in some other dimension (such as taking up chess). But to set ourselves the task of learning to listen better, learning to avoid error, that goal must prevail over others. It must scream and holler to call for the attention of superior agents and demand a reallocation of resources. As Minsky explains, "conflicts between agents tend to migrate upwards to higher levels" (p. 32). Superior agents will redirect their efforts to resolve the conflict.

Self-reproach is a crucial part of the learning process. Self-reproach may be a matter of agents who watch agents who in turn watch yet other agents (Minsky, p. 238), but it is, at the relevant level, simply another tendency toward the overcoming of error (or, at a higher level, a strategy to correct mistakes). If we have an economic theory that admits of entrepreneurship and error, and we believe in a tendence toward overcoming error, then we have an economic theory that admits of self-reproach. Self-reproach is one important mechanism in the machinery of economic development.

Note that matters of self-reproach and learning lie at the heart of the question of whether we should consider an opportunity to have been obvious. The pie maker reproaches himself

and feels that apple-bargain signs should be noticed by him. The misfortune is an error only insofar as its correction elicits self-reproach. Were the individual in the story not a pie maker, but rather a poet lackadaisically buying a snack, he will, upon recognizing the missed bargain, feel no need to pay greater attention in the future to apple prices, no sense of error, and no self-reproach. To one such as him, the apple-bargain sign was not obvious, because he would not feel that it should have been obvious. The pie maker, however, feels that it should have been obvious; hence it was obvious, and not noticing it was an error.

Digression: A reproach to shirking reproachers

The deepself approach to mind leads us to think of the human being as a sort of society. But notice that such an approach, by the same token, makes society more like an individual human being. The reader may therefore allow a passing remark about society as an error-prone individual. America may be said to err in sustaining policies like trade barriers, price controls, and restrictions in the name of consumer protection. Friends tell policymakers to overcome these errors but the "gateway" is occupied by subagents who suppress the message. Such obviously pernicious policies may be deemed society's errors, because those subagents make a small portion of society. The persistence of the errors indicates that those positioned to reproach and persuade are neglecting the task. How tragic that the task often lies with those whose worldview does not even admit of error and self-reproach. (See Kirzner (1983), Berlin (1954, pp. 96ff, 115ff), Klein (1998)).

Does the deepself eradicate Kirzner?

The deepself approach enables us to see that what is epiphany to one level of mind results from serendipity or optimizing choice at a deeper level of mind. Have we then eradicated entrepreneurship by bringing it within the Neoclassical fold of optimization? Does Kirzner's claim—that there is something called entrepreneurship, something that lies beyond mere optimizing—therefore dissolve? I believe the answer is no. The deepself approach accommodates and, indeed, highlights Kirzner's contributions.

First of all, to look at the mind as a *society* of optimizers is itself beyond narrow Neoclassicism. Granted, we see each agent within the mind as a Shmanskian optimizer, but they are *multiple*. Multiplicity within the self is a major departure from standard Neoclassicism. Along with multiplicity comes the relations that take place between them. It is within the newly found relations between internal optimizers that we find a secure home for Kirznerian elements.

A Neoclassical critic like Shmanske or Demsetz would perhaps respond as follows:

> Okay, we can view the self as consisting of a multitude of optimizers. But the same might be said of the firm. Just because a firm has 100 employees does not mean that we can't talk about the singular optimization problem of *the owner*. In describing the owner's problem, the multitude of optimization problems of the subordinates come to characterize various

constraints on the owner's choice set. Similarly, for the individual human being, there are multiple subagents, but their behaviors are not *the* optimization problem we focus on. Their behaviors belong, rather, to the set of constraints on the final optimization problem of *the upper-most agent*. That final optimization problem encompasses all the others. It is singular, and brings the whole deepself approach neatly into Neoclassicism.

The problem with likening the deepself to a firm is that in the self *we never get to a definitive final "owner."* The deepself approach does not come to a conclusion at the *N*th level of the mind. In knowing the self, we first meet certain lower agents, working, if you will, at the counter. We can try to infer what their superiors are like, and then theirs, and so on, but we never come to a final boss. The deepself tells us that we cannot fully know even ourselves. As Minsky says, "[w]e never really know ourselves because there are so many other processes and policies that never show themselves directly in our behavior but work behind the scenes" (p. 53). He says, "[t]he further back you trace your thoughts, the vaguer seem those causal chains" (p. 196). It is, in fact, a contradiction in terms to say we can fully know ourselves, because, by the term "to know," here we mean to have a good description (or model), and we cannot have a description that *includes the describer*, including, that is, a description of the criteria for formulating the description (and if such a metadescription is offered, then we may ask for the criteria for formulating the metadescription, *ad infinitum*) (cf. Minsky (p. 88), Hayek (1952, pp. 185, 189, 194), Hayek (1967, p. 62)).

Minsky notes that his line of thinking gives rise to infinite regress.[4] "But when thinking keeps returning to its source, it doesn't always mean something's wrong. For circular thinking can lead to growth when it results, at each return, in deeper and more powerful ideas" (p. 50). Infinite regress should not alarm us. Minsky points out what happens "whenever we try to probe into our own motivations by continually repeating, 'What was my motive for wanting *that*?' Eventually, we simply stop and say, '*Because I simply wanted to*'" (p. 305). That final response is not answering the question; it is refusing to answer the question. It is confessing ignorance, but in a way that is acceptable within our culture. Human cultures evolve around the need to cope with this perennial problem:

Economics teacher:	The price of Pat Boone records fell in the short-run because the demand curve shifted back.
Student:	But why did the demand curve shift back?
Economics teacher:	Because consumers' tastes changed.
Student:	But why did consumers' tastes change?
Economics teacher:	Ask your cultural history teacher.

Minsky notes the parallel issue of infinite regress in the problem of "common knowledge": "*Did John know that I knew that he knew that I knew that he knew that*?" (p. 305). David K. Lewis, who provided the seminal statement of common knowledge, explained that for

[4]See Minsky (1986, pp. 49, 50, 59, 73, 88, 92, 150, 151, 174, 196, 219, 229, 238, 288, 305).

the problem of whether John knew that. . . we simply cut it off at some point, figuring and hoping that the depth to which our knowledge does reach is *adequate for the human purposes at hand* (see Lewis (1969, p. 32)). It is the particular human purposes in the discourse situation—including notably those purposes within scientific discourse—that determine the appropriate place to cut it off.

However deeply we excavate the mind, carrying our analysis to the Nth level, there the Kirznerian elements exist in a state of purity. There they exist without any express relation to a deeper-level optimizer. At the farthest Nth level, we must admit of Kirznerian elements, notably discovery that is "undeliberate but motivated." As theorists, therefore, we find these elements to be perennial.

Roger Garrison commented on Shmanske and came to the same conclusion: "[A] cost-benefit analysis. . . pushes the positing of alertness one step back in the overall argument. . . . An infinite regress can be avoided only by recourse to Kirznerian alertness or some effectively similar notion" (Garrison (1993, p. 78), O'Driscoll and Rizzo (1996, p. 70) say the same). The Kirznerian elements, then, exist, at the farthest reaches and are only dimly understood. But that does not mean that they are marginal. They are the farthest from "us" but therefore most fundamental *to us*, because they give origination to whole frameworks for action. Rather than call these elements marginal, we should call them *primordial* (as does Kirzner (1979, p. 131)). How we think about these primordial elements is important. Consider the following words from Minsky:

> Our minds contain processes that enable us to solve problems we consider difficult. "Intelligence" is our name for whichever of those processes we don't yet understand (Minsky (p. 71)).

Nonetheless we rely on the idea of intelligence. Although we do not understand its causes, we recognize some of its propensities and incorporate them into our explanations *of other things*.

At many points in Minsky's book, he flirts with the idea that the mind is a machine (see pp. 160, 163, 171, 185, 186, 303, and especially 288 and, in the appendix, p. 323). He often leads the reader into suspecting that everything is either Cause or Chance—as the Neoclassicals maintain (with Cause corresponding to optimization). But in the final pages of the book, Minsky makes good on this issue. The penultimate section is entitled, "The Myth of the Third Alternative." Minsky writes: "We imagine that somewhere in each person's mind, there lies a Spirit, Will, or Soul, so well concealed that it can elude the reach of any law—or lawless accident" (p. 307). Minsky refers to this Third Alternative as a "myth," but in doing so he does not mean to derogate it. The label is apt. In the end, the MIT scientist affirms the worthiness of the myth, and related myths of "responsibility," because no matter how much progress science makes, we will always have to admit of a perennial, mysterious human element between Cause and Chance (see Hayek (1952, p. 193)). Indeed, we can count on that element to transcend—willfully, if necessary—theories that purport to capture human existence.

Concluding comments on Kirzner's contribution

Kirzner has devoted much of his professional career to studying a component of economic theory that narrow Neoclassicism has worked to eradicate. By developing the idea of entrepreneurship and working out its role in fundamental questions of economic theory, Kirzner has kept entrepreneurship a living, albeit marginalized, part of the economics conversation. In this paper I have suggested a deepself approach to the subject, an approach that supports Kirzner's line of thinking. I wish now to suggest some ways in which the deepself approach might offer specific clarifications to Kirzner's terminology and a restatement of his central conjecture.

Clarifying terminology

"*Costlessness*." Again, when Kirzner speaks of entrepreneurship as costless, one should read that to mean that the concept of cost does not apply to entrepreneurship (or, at least, not to the level of mind experiencing the epiphanies), not to mean that the cost of entrepreneurship equals zero.

"*Alertness*." Kirzner calls the propensity to notice opportunities *alertness*. Yet one must take care. In common language we use the term "alertness" in a way that often, even typically, does make it a matter of choice—choosing to sharpen our powers of respondence. The idea of making ourselves alert—during a lecture, for example, by drinking coffee—is natural enough, but it is not what Kirzner means. I wish to suggest that "alertness" might be profitably replaced by "transcendence." We might talk of people's propensity to transcend their current way of thinking, but we would not say that they invest in being more transcendent. They do invest in being more alert (in the common-language sense of the term).

"*Discovery*." Kirzner often uses the term "entrepreneurial discovery," and sometimes it gets abbreviated to just "discovery" (e.g., Kirzner (1985, p. 78)). But not all discovery is entrepreneurial. Even when we exclude pieces of new knowledge that are merely additions to a set of information (as occurs within a process of search or respondence), still not all discovery is entrepreneurial. Serendipity is interpretive new knowledge but is not entrepreneurial, as Kirzner points out (1979, pp. 161, 165, 178; 1992b, pp. 86–87). Rather, Kirzner confines entrepreneurship to one type of discovery, the type I have called "epiphany."

Discovery vs. Creativity. Several authors (Loasby (1983, p. 223), Ricketts (1992), Gilder (1984, p. 260)) have criticized Kirzner for purportedly arguing that entrepreneurship is merely the noticing of opportunities out there waiting to be discovered. These authors prefer to emphasize, with Joseph Schumpeter (1934), the *creative* aspect of entrepreneurship. The deepself approach again helps to resolve the issue. In addition to "out there," there is also "in there." Creativity may be seen as the discovery of opportunity that lies *within oneself*. It is perhaps a cascading of related discoveries. Thus, Kirznerian discovery definitely includes inspired and visionary feats of creativity (cf. Kirzner (1985, pp. 56, 58)).

"*Profit Opportunity*." Ordinary people think of profit as a pecuniary residual, but Kirzner means something broader. Kirzner (1992b, p. 88f) gives the example of a restless insomniac who comes to realize in the middle of the night that having some ice cream would better

his situation. Entrepreneurial discovery often takes such idiosyncratic forms. The ordinary person is surprised to hear that the insomniac found profit in thinking to eat ice cream. In the interest of using terminology that ordinary people can appreciate, I suggest that in the place of "profit opportunity" we consider "betterment opportunity," a term which better accommodates the broad and often idiosyncratic character of entrepreneurial discovery.

Kirzner's point on freedom

With the deepself approach in mind, I offer a brief statement of Kirzner's most important contribution: the role of entrepreneurship in the intellectual case for liberty.

The justification for virtually any kind of coercive government regulation, such as medical licensure or FDA drug control, is necessarily based on descriptions ("theories," "models") of how the world works, in one case with the regulation and in the other case without it. The comparative virtue of the case with regulation is the justification for that regulation. Kirzner's point is as follows: In descriptions, each individual is understood by the theorist to be engaged in pursuing some goals subject to constraints. The description might have a general plausibility, but no matter how richly the theorist has described the problem, perhaps even to incorporate a deepself approach and stochastically incoming opportunities for serendipitous discovery, every individual in real life always holds the *further* capacity for epiphany. What the range or nature of these potential epiphanies might be cannot be written fully into the model, because the possibility of further epiphany *applies also to the theorist*. The individual subject's transcendence may come in any of innumerable forms—new ideas in pricing, production, organization, contracting, product line, marketing, customer service, and so on. The new ideas were previously imagined neither by the individual himself nor by the theorist. There will always remain, above and beyond the most complete description of a situation, a residual, uncaptured propensity for transcendence.

That the transcendence element works, especially over longer periods of time, to raise the comparative standing of freedom is Kirzner's key conjecture. The freer people are, the more scope and motivation there is for transcendent ideas. In the face of externalities, high transaction costs, monopoly power, ignorance—or *whatever* it is that the theorist perceives to be the *pitfall* of liberty—people never lie prostrate. Entrepreneurship is what brings them to their feet—it is "irrepressible and perennial" (Kirzner (1985, p. 92))—and it propels them towards discovery of a way to change the apparent rules of the game. The pitfall itself generates betterment opportunities that spark entrepreneurial transcendence. The new level of entrepreneurial transcendence is *motivated by the pitfall*. By virtue of transcendence, *the pitfall fuels the overcoming of itself*. Compared to coercive regimes of government regulation, Kirzner claims, liberty better exercises the transcendence element and channels it into activities that tend to be more socially beneficial.

Kirzner's point is not that the transcendence element seals the case for freedom. His point is that there will always be this transcendence element, and that usually, if not always, it works as a "kicker" for freedom. The fact that scientists cannot compress it into a model of optimizers, estimate it with accuracy, or even measure it *ex post*, does not mean that it does

not exist.[5] It always exists, and it is a part of economic science, which like any science, is self-limiting. Science and theory will necessarily be incapable of incorporating fully some important aspects of their subject. The failure of intellectuals and leaders to see this is a great and sometimes fatal conceit.

With the help of God?

Some of Kirzner's words have a religious connotation. He writes of the "entrepreneurial leap of faith," of individuals being "blessed with an alert temperament." He writes of entrepreneurship as "some vital ingredient," as "primary," "primordial," or "perennial" (1979, pp. 131, 163, 164, 170; 1985, p. 92). I do not claim that there is a cryptic religious message in Kirzner's work, or an ulterior religious motive, or that religion has served as an inspiration or template for his theory of entrepreneurship. Indeed, Kirzner makes abundantly clear that he is refining and developing Mises's notion of human action, and Mises was a self-proclaimed athiest. What I find noteworthy is how elements of human action that lie beyond Neoclassical optimizing often carry a religious connotation.

In this essay, although I have relied heavily on the mathematical scientist Marvin Minsky, I have heightened the ring of religion by speaking of epiphany, transcendence, and the infinite self. Religious readers might welcome such a move, viewing it as the injection of divine elements into economics. Secularists rejecting any notion of God or divinity, might be very uneasy with such words. But secularists can read the words without religion. The words are not bringing God into economics; they are bringing more of man into economics. If the words suggest the idea of God—a being of transcendent powers, infinite depth, and, finally, wonder and mystery—that may be seen to reflect that man and woman created God in their own image.

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[5]In response to Ben Klein's challenge that "Kirzner presents. . . no clearly stated proposition that could, in principle, be refuted" (Klein (1975, p. 1308)), I submit the following hypothesis: Economists insensitive to the role of epiphany in economic processes, and to the distinction between information and knowledge, tend to underpredict the harms of regulation and the benefits of deregulation. Until the utterers of positivist doctrine clarify the principle that they refer to by their expression "in principle," we will not know whether the hypothesis I submit satisfies their criterion for real science. (The problem of giving evidence for the discovery factors of economic freedom is explicitly addressed by Hayek (1978, pp. 180–181.))

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