

INFORMATION, KNOWLEDGE AND THE CLOSE OF FRIEDRICH HAYEK'S SYSTEM

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INTRODUCTION

Can Friedrich Hayek ground his theoretical defense of the open society on his positive propositions concerning information and knowledge? That is, can he deduce the superiority of the market mechanism over planning, and the liberal political order over the communal one, from his views on information and knowledge?

It will be easier to answer the question if one distinguishes fundamentally between information and knowledge. The term *information* is used here in the same sense employed by George Stigler, where information is about *given* quantities, costs, effort, and so on, that can be perfectly known or imperfectly known with the help of some probability distribution. In contrast, the term *knowledge* is used here in a sense related to Herbert Simon's theory of procedural rationality, where knowledge is understood as about the developing organism as it experiences and discovers the world.¹

The proposed dichotomy is a rational reconstruction of Hayek's ideas. Given the dichotomy, one can dissect the question posed above into two rather separate questions. First, is the free-exchange aspect of open society, which allows agents to search for best prices, *necessarily* more efficient at handling dispersed information than the planned aspect of a socialist society, where prices and quantities are bureaucratically administered? Second, is the liberal-polity aspect of open society *necessarily* more functional (that is, successful) at allowing personal knowledge to develop than the communal aspect of a socialist society, where the development of knowledge is, at least to some extent, authority-guided?

The central thesis of the paper is that neither Hayek's notion of information nor Hayek's notion of knowledge can support his argument about the superiority of open society understood in either sense of order—as free-market exchange or liberal polity. Hayek's positive theories about the nature of information and knowledge imply the proposition that open society can be less efficient, in terms of handling the information problem, and less functional, in terms of handling knowledge development, than the socialist one. While one may build a case for the desirability of open society, it has to be empirically based in reference to a particular country under particular institutions and circumstances. On the basis of Hayek's positive theories, we can equally advocate socialist society if we have a different set of circumstances. The central the-

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sis of the paper is that the case for open society cannot be grounded theoretically nor can it be derived from Hayek's notions of information and knowledge.

The paper approaches its thesis with a terminology that would be familiar to Hayek and his contemporaries and avoids the currently popular nomenclature associated with post-modern social theory and the new philosophy of science. Specifically, the paper avoids epistemological questions and refrains from discussing Hayek's later epistemological views, which have a strong post-modernist flavor, as is evident in his critique of axiomatic theorizing and, in particular, his critique of *a priorism* as advocated by his intellectual mate, Ludwig von Mises.

It is true that Hayek advanced his advocacy of open society on the basis of a deep scholarship in history, psychology, jurisprudence, philosophy, moral theory, and political and legal developments. But his distaste of axiomatic theorizing does not mean he is not a foundationalist. Hayek tried to ground his theory of human welfare in fundamental terms, mainly, in terms of human motives, the character of information, and the character of knowledge. Otherwise, his contribution would not have had the impact it has, even on his critics [Roemer, 1995].

The policies that Hayek has recommended are consistent, suggesting that they might have been based on fundamental concepts concerning human interaction, cognition, and social order. In the socialist calculation debate, Hayek defended the superiority of free exchange on the basis of a positive theory of information. Likewise, he defended the liberal order on the basis of a psychological theory of the senses and how personal knowledge develops best in a liberal polity that does not punish people for expressing their thought. If we take his defense of the open order seriously, (that is, not merely as a good policy given contemporary circumstances), it is legitimate to ask whether his positive theories of information and knowledge can support his unqualified advocacy of open society. The question does not suppose that Hayek is an axiomatic theorist. The question does not preempt Hayek's preference of historical investigation over axiomatic theorizing—a methodological temperament that can still be foundationalist. Rather, the question here is based on the simple requirement that the rejection of axiomatic or *a priorist* methodology does not give one a license to advocate propositions that do not follow from one's fundamental concepts.

The discussion proceeds with minimal textual exegesis and eschews a historical reconstruction of Hayek's ideas. It does not claim that the early Hayek was concerned with the efficiency afforded by the market, while the later Hayek was concerned with liberty afforded by the market. The paper is a rational reconstruction of Hayek's argument—specifically the information/knowledge dichotomy. The reconstruction calls for the introduction of a few concepts. The most important of which are organization order (the order of families, firms, and states) and structure order (the order of markets, traffic flow, and other non-purposeful entities) [Khalil, 1990; 1996b]. This paper begins with an exposition of the information/knowledge distinction and its ramifications and continues with a discussion of the market-versus-plan debate and the liberal-versus-communal debate.

THE INFORMATION/KNOWLEDGE DICHOTOMY

There is a divide, which is sometimes blurred, between two Austrian conceptions of human action that is expressed in the form of debates about the characterization of the market. As Ludwig Lachmann [1976] lucidly expounds, one tradition represented by Israel Kirzner [1985; 1994; Ricketts, 1992], views the economy as a dynamic structure that cannot reach equilibrium because as soon as agents adjust their allocations, their tastes, technology, and new discoveries intervene and upset the previous equilibrium price structure. So, at best, the economy is seen as ever groping towards, but never reaching, the elusive equilibrium. The other conception, which Lachmann [1986] and Brian Loasby [1992] express, views the market as a creative engine of knowledge; it is not something that is groping towards an elusive equilibrium. According to such a view, agents do not act according to given risky information, but rather according to uncertain visions and paradigms. Unlike risk, one cannot express uncertainty even as a subjective risk subject to correction through trial and error because knowledge defies all attempts to treat it as “datum” or an object identifiable in time and space [Lachmann, 1976, 127].

The two conceptions of the Austrian idea of the market can be understood along the proposed distinction between information and knowledge. To be sure, Hayek does not distinguish between information and knowledge. He would probably reject such a distinction outright. For him, information revealed by market prices allows agents to discover hidden market opportunities and, hence, permits agents to undergo development and knowledge formation. But still, one can distinguish information from knowledge, enrich our understanding of Hayek, and remain true to Hayek's texts. In this section, I argue first that to avoid an organistic-holistic conception of the market, the market has to be distinguished from knowledge formation and its premises. Second, I show that Hayek held a notion of the market as an efficient allocator of resources—which implies that information is objective.

Knowledge and the Market

The proposed information/knowledge dichotomy is a rational reconstruction of Hayek that does not dispute Hayek's intricate notion of knowledge. For Hayek, knowledge is not discovered, but rather created by agents. The idea of discovery entails that objective facts lie waiting to be discovered—very much like a continent waiting for its Columbus. However, for Hayek, knowledge is not an objective fact, but is rather created as agents use their imagination while acting purposefully. However, the market is not a necessary medium for agents to act purposefully. Agents act purposefully even without entering any type of exchange—for example, when they try to swim a channel, climb a mountain, compose poetry, write an academic paper, or make their own furniture. It is too restrictive to identify knowledge formation with the market.

Any student of history knows that knowledge and creativity have flourished in ancient civilizations such as the Chinese, Egyptian, and Arabic/Islamic, where markets were neither as uniform nor as extensive as in modern times. Alternatively, we can have markets without any knowledge development or creativity such as auction

markets, where commodities are allocated to different uses. The market simply presents a particular form of incentives, basically monetary rewards for successful acts. But this form of incentives is not necessary for success or heroism. The pecuniary incentive is not a necessary condition (and, some argue, maybe not a sufficient condition) for creativity. In academia, for example, recognition and status are more powerful incentives than monetary ones. The same could be said about professions ranging from the military to politics and the arts.

So, the market—at least in the narrow sense of free and impersonal exchange—is not the exclusive vehicle for the growth of knowledge. The development of personality, sense of identity, and purposeful action may hinge on incentives such as those the market provides, but not exclusively so. Many historical structures, which were illiberal by today's standards, have fostered the growth of the arts, culture, and philosophy without relying on the market to articulate the set of incentives. A king or prince provided incentives ranging from the monetary to the accordance of status in his domain. The experience of the Twentieth Century with illiberal regimes in the form of totalitarianism should not color our view of all autocratic regimes. The Stalinist and the Nazi regimes are an aberration. In the norm, the growth of knowledge did not rely on the market.

The conflation of knowledge with the market appears explicitly in Buchanan and Vanberg's [1991] essay, "The Market as a Creative Process." They present the market in a way that makes it hard to distinguish it from the individual or the organization of individuals. However, the market is merely an institution that allows people to trade according to rules. I distinguished in some detail between institutions, on one hand, and individuals or organizations of individuals, on the other [Khalil, 1995]. The reification of the market institution into a creative agency at the hands of many Austrian economists is paradoxical given the organistic-holistic connotation of the reification. The nature of knowledge, which neoclassical theory confuses with information, can be illustrated without identifying it with the market. The task is to emphasize the nature of knowledge. The alternative Austrian emphasis on the nature of the market, called the market process, makes the market mechanism the necessary condition for the flourishing of knowledge and creativity.

Austrians can treat the market as an institution that facilitates the efficient allocation of resources without necessarily falling into the neoclassical trap of conflating knowledge with information. Treating the market as an institution would not only save us from the reification of the market as an individual, would also let us separate analytically the problem of knowledge from the analysis of the market.

In short, the *differentia specifica* of the market (competition) is not relevant to the problem of knowledge. What is relevant to the flourishing of knowledge is the presence of a set of incentives, which need not be in the particular form provided by the market. This, however, is not true of information: Competition, which is the exclusive characteristic of the market, is relevant to the processing of information. Therefore, when I discuss Hayek's intricate notion of knowledge, I treat it with regards to what makes it grow and prosper according to Hayek, meaning, the liberal order. I do not evaluate the market with regard to knowledge, even though knowledge is compatible with a market setting. The fact that the market is compatible with knowledge development is not unique to the market as argued above. What is relevant to the

evaluation of the market is the distinguishing characteristic of the market, the processing of information—not the formation of knowledge.

Information and the Market

Hayek understood the market as an allocative institution in his famous 1945 article, “The Use of Knowledge in Society.” Needless to say, the term knowledge in the title cannot be an argument that Hayek used the term in one sense or another. In fact, the 1945 article commences by addressing why economists conceive the economic problem as about optimization, where the market assures that the marginal rates of substitution between any two commodities or factors must be the same in all their different uses [Hayek, 1948, 77]. Such an optimization problem is about logic and calculation as *if* we possess all the relevant information, as *if* we can start out from a given system of preferences, and as *if* we command complete knowledge of available means [ibid.]. But, for Hayek, this is not the economic problem because the assumptions are unwarranted. They are unwarranted not because there is no such thing as objective information. (This argument about knowledge appears throughout Hayek’s writings, including the 1945 essay as well.) Rather, they are unwarranted assumptions because the information is too dispersed, never given to a single mind (that is, planner) to calculate:

And the economic calculus which we have developed to solve this logical problem, *though an important step toward the solution of the economic problem of society*, does not yet provide an answer to it. The reason for this is that the data from which the economic calculus starts are never for the whole society given to a single mind which could work out the implications and can never be so given. [ibid., emphasis mine]

It is clear that Hayek recognizes optimization at least as an important step to solving the economic problem of society.

For data to be too dispersed for a single mind to comprehend, it must, first, exist outside the knowing subject and, second, it has an objective quality that, because of its dispersion and the limited mental capacity of humans, a single mind cannot comprehend. So, Hayek’s objection to optimization is not that the data cannot be objectified (which is another problem), but rather that no planner could have all the data under his command.

Some Austrians are deeply doubtful of the claim that Hayek recognized the role of the market as an efficient allocator [Lavoie, 1985;1988]. So, let us proceed to the third paragraph of the essay. Hayek clearly uses the term knowledge in the sense of information used here, characterizing the term as about something that cannot be in a concentrated form necessary for a single mind to calculate or optimize:

The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or

integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate given resources—if given is taken to mean given to a single mind which deliberately solves the problem set by these data. It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. *Or, to put it briefly, it is a problem of the utilization of knowledge that is not given to anyone in its totality.* [1948, 77-8, emphasis mine]

In these words, which carry great weight given their location, Hayek unambiguously considers knowledge to be a problem because it is dispersed, not given to anyone in its totality.

The fact that Hayek recognizes the allocative role of the market does not exclude Hayek's recognition of knowledge as a subjective cognitive process. To draw a distinction between the two notions, I chose the term information to denote the data that is objective, but can be too dispersed for a single mind to command. I reserve the word knowledge to denote Hayek's meaning of the subjective, creative aspect of human comprehension of the world. Hayek obviously used the term knowledge to denote both senses, which has created confusion. The mere fact that Hayek has failed to use two different terms is no proof that he had only one sense of the term.

The proposed dichotomy between information and knowledge is a rational reconstruction that is true to Hayek's texts. It helps us avoid either charging Hayek of inconsistency or dismissing his reference to the market as an allocative institution. To clarify the dichotomy further, it is not the case that information is relevant to the market, while knowledge is pertinent to another sphere of human action. Rather, information and knowledge are intimately intertwined in human action. Nonetheless, information and knowledge can be separated analytically, and should be separated if one wants to understand why Hayek's view of human action and motives is richer than the view of Milton Friedman.

In any case, reading Hayek through the proposed distinction between information and knowledge is valid insofar as it clarifies his system. And even if one insists that the information/knowledge dichotomy is invalid in general or in relation to Hayek's texts in particular, it helps to keep the information/knowledge dichotomy for expository purposes. The dichotomy, for example, is not essential to the main conclusion of this essay. One would reach the same answer to the question posed at the outset even if one insists on treating information and knowledge as the same.

Information and knowledge, and the consequent divide separating the two Austrian conceptions of the market, are incompatible. However, to be incompatible does not mean to be exclusive (that is, both ideas cannot be true simultaneously). If the ideas are exclusively disjunctive, Hayek would be inconsistent. It is possible that the two conceptions are inclusively disjunctive (that is, while different, they are not alternatives). Both conceptions would be inclusively disjunctive if one finds that each kind of conception actually deals with a different aspect of human action or human cognition.²

THE TWO FACES OF COGNITION

The two conceptions of the market, predicated on the proposed information/knowledge dichotomy, are ultimately predicated on two senses of fragmented cognition. The term fragmented cognition is employed merely as an umbrella of the fragmentation of knowledge called personal knowledge, on the one hand, and the fragmentation of information dubbed local information or dispersed information, on the other. According to Hayek's notion of personal knowledge, freedom is required for the agent to develop his knowledge and to allow it to flourish to its full potential. This sense of fragmented cognition leads to the advocacy of liberal organization order. I use the term organization not in Hayek's sense as a designed order (artificial), which is contrary to spontaneous order in the sense of order rising without political leadership [Khalil, 1997e]. In this misconceived dichotomy, Hayek considers organizations such as tribes, firms, government agencies, public agencies, and socialist and quasi-socialist states as artificial entities because they are organized around end-dependent principles such as distributive social justice. Rather, I use the term organization to denote the political, extra-economic moment that binds the members of any group—including firms, tribal, socialist, and even Hayek's ideal open society. So, I do not adhere to Hayek's opposition between organization and order [Hayek, 1973, 2; Langlois, 1992] because organization is not an artifact—organization, such as the socialist state, can be seen as a spontaneous order as well.

Concerning Hayek's notion of dispersed information, the other sense of fragmented cognition, agents need to be able to interact freely to search for the best prices, allowing them to react most efficiently to ever changing relative scarcities. This sense leads to the advocacy of a market structure order. I do not identify structure order with Hayek's spontaneous order because, as just stated, spontaneous order may also denote organizations. As used here, structure does not denote organizations, only markets and other non-purposeful entities. Of course, structure order (market) is composed of organizations such as families, firms, public agencies of government, and (at the international level) states. However, structure order *in toto* is not an organization because, as illustrated by traffic flow or market, it is not purposeful. These issues, especially the organization/structure contrast, will become clearer as the discussion develops below.³

Hayek's two senses of fragmented cognition, or the information/knowledge dichotomy, entail two aspects of open society, the market order and the liberal order. These two terms, are not meant to denote two independent orders, but rather two aspects of the same order—the open society or the Great Society. To adhere to Hayek's terminology, I use the term market order instead of economic order. Hayek himself used the term economic order in some early writings (for example, the title of the 1948 collection of essays). But Hayek later explicitly rejected the term because the word economy connotes planning:

An economy in the strict sense of the word in which we can call a household, a farm, an enterprise or even the financial administration of government an economy, is indeed an organization or a deliberate

arrangement of a given stock of resources in the service of a unitary order or purposes. [1984, 367]

Hayek preferred instead the term spontaneous order of the market, or in short, market order, which results from the interaction of households, firms, and other economies. Hayek would not object to the term liberal order or, more generally, political order as long as political order does not connote principles from which one can plan or manage the economy.

Given the aspects of market order and political order, the opposition between socialist and open societies amounts to a four-way typology. Figure 1 clarifies how the four concepts—market, plan, liberal, and communal—are related in light of the axes of order and type of society. To determine the superiority of the open society over the socialist one, it is necessary to differentiate between the two kinds of fragmented cognition (information versus knowledge) or its associated two kinds of order (structure versus organization). One may quibble with the choice of lexicon. I chose the term open society, which Hayek [1973, 2] borrows from Karl Popper, instead of Great Society, which Hayek [1973; 1976; 1979] borrows from Adam Smith, for a simple reason. The term Great Society does not indicate its character as being competitive or liberal (that is, open). Furthermore, I chose open society instead of Hayek's spontaneous order because the latter term connotes the ordering dynamics of the market, whereas the open society is not exclusively about the market.

FROM THE PLANNING DEBATE TO *THE SENSORY ORDER*

We still must show that, for Hayek, the two senses of the market and ultimately cognition are inclusive rather than exclusive disjunction. The two representative works that express the two senses of cognition are Hayek's [1945] defense of the market mechanism against socialist planning and Hayek's [1952] defense of deep psychology and knowledge formation against the behaviorism of Watson and Skinner. To repeat, the issue here is not the intellectual evolution of Hayek. In fact, other early papers by Hayek [1948, Chs. 7-9], published in 1935 and 1940, emphasize the knowledge aspect of cognition.

It is not inconsistent to hold the information/knowledge dichotomy. For one thing, if Hayek was only a precursor to Kirzner, his spontaneous order would exclusively be the near equilibrium state. If he was only a precursor to Lachmann, his spontaneous order would have no relation to relative scarcities as conveyed by prices. So, it would be fruitful to presume that, for Hayek, while information and knowledge are disjunctive, they are not exclusively disjunctive.

For Hayek [1945], information, by its nature, is highly fragmented and, hence, involves the dynamics of discovery as agents search for given, but dispersed opportunities [Bianchi in Birner and van Zijp, 1994, Ch. 12]. As is shown below, Hayek's notion of dispersed information is a precursor to what later came to be called the economics of information [Stigler, 1961].⁴ While economists have traditionally viewed prices as incentives, Hayek highlighted the informational role of prices without agents being aware of that role. Agents react to changes in prices without the agents changing their outlook or character.

FIGURE 1
The Lexicon

		TYPE OF SOCIETY	
		Open Society	Socialist Society
ORDER	Structure Order (information)	market	planned
	Organization Order (knowledge)	liberal	communal

Hayek's 1945 essay has been elongated and stretched by a host of authors [Strydom, 1990; Thomsen, 1992; Lavoie, 1995] to extract insights about the creative nature of knowledge, liberty, and entrepreneurship. One may see the 1945 essay, as Kirzner [1984] claims, to be about how information presents risky rewards that unleash discovery of unnoticed opportunities by alert entrepreneurs. Thus, information does not just communicate incentives. However, the information that is communicated by price disparities need not lead either to innovations or novel discoveries. The information may only entail arbitrage activity, turning the entrepreneur into a coordination mechanism which, given the transaction costs, equalizes the prices of the same goods across space and time. As Kirzner concedes, "[M]y own treatment of the entrepreneur emphasizes the equilibrating aspects of his role" [1973, 73]. The fact that equilibrium price structure cannot be reached lends greater force to the robustness of the equilibrium core of Hayek's 1945 essay.

So, rather than wasting more intellectual sweat on "massaging" and "interpreting" Hayek's 1945 classic essay, one has to recognize a separate source of creativity, non-Kirznerian entrepreneurship, and development. In *The Sensory Order*, Hayek [1952] provide it: the functioning of the conceiving mind. For Hayek, knowledge expresses the individual's mind as it develops its internal coherence when attempting to organize the field of experience into a meaningful whole. That is, the mind does not confront sense data *tabula rasa*. Rather it selects some sensations, and usually excludes others, by its own impetus or tendency to create order or cohesion. Such an impetus affords a principle or paradigm, according to which the mind organizes the sense data. Peirce [1955] called this tendency abduction—in opposition to induction and deduction. In this light, unlike information, knowledge is not correct or incorrect, because knowledge is not about inductive generalization or deductive logic. Rather, knowledge is more or less coherent depending on how it organizes observations with respect to principles and beliefs.

At the outset of *The Sensory Order*, Hayek highlighted how his theory of the mind would solve the mind-body problem—a problem that was a hot topic in academic circles in the 1950s as philosophers and psychologists responded to the rise of behaviorism. Behaviorism basically robbed the agent of purposefulness, an idea dear to Austrian economists, and simply solved the mind-body problem by eradicating the mind from the equation. Hayek—before Stephen Toulmin, Kenneth Boulding, Thomas Kuhn, and Michael Polanyi—advanced a view of the mind that develops through

the construction of images of sensory data. Such a developmental theory connects the biological with the mental. Hayek did not tout his theory to be about the personality, but describes the mind as a learning organ that evolves through the creation of knowledge. This conception regards the human agent as a cohesive whole, which I call personality. More on this is undertaken below.

Given Hayek's two senses of cognition, one is better equipped to investigate in what sense socialist society is necessarily inferior to an open society. According to Hayek's information dimension, socialist society is inferior because planning is less efficient than the market in noticing and reacting to changing relative scarcities. According to Hayek's knowledge dimension, the socialist society is inferior because authority stifles the personal development of knowledge.

The following investigation is carried out on Hayek's ground, meaning that his notions of information and knowledge provide non-normative, scientific grounds for the establishment of the superiority of an open society. So, I do not consider his advocacy of the trans-historical superiority of an open society as *a priori* or normative, based on the rejection of socialism merely because it cannot afford cherished ideals, or that the freedom to compete in the market and the freedom from authority and to exit from the political organization are valuable in themselves. Rather, I discuss his advocacy of an open society as based on his positive theses, namely that planned economic structure and communal, paternalistic organization hinder, respectively, the communication of dispersed information and the development of personal knowledge. Thus, I take Hayek's endorsements of competition with regard to the structure order (the market) and competition with respect to the organization order (liberalism) as arising from non-normative criteria—efficiency of the communication of information and of advancement of knowledge.

RISK VS. UNCERTAINTY

Hayek views the market as fragmented loops of informational islands. So it is impossible for any agent (including the state) to know all relative scarcities that are in a constant flux. For Hayek, persons and firms who react to changing prices can adjust faster to changing relative scarcities than can a state planner. But is this a theoretical or a practical proposition? In other words, does the impossibility of an omniscient agent stem from a theoretical or a practical impossibility?

Theoretical impossibility arises when the subject cannot be known, even when information is perfect or search cost is zero. This impossibility is the case when one cannot predict if a particular agent will open a restaurant because, even if the preferences and costs are known, he can always change his mind at the last minute. This situation is illustrated in the story of Adam and Eve, where God knows all that is objectively known about the nature or potential of Adam, but God still cannot predict how Adam will behave.

In contrast, practical impossibility arises not because of nature of the subject, but because it is too difficult to know all the information. The information is too fragmented across space and time for any agent to collect under a certain cost. But, in principle, an agent can collect the dispersed information. A genie who has infinite resources or zero transaction costs, can perfectly predict the numbers of the winning

lottery ticket, what is the most profitable investment portfolio, and which stores have the cheapest prices on hundreds of thousands of products. The fragmented information will not hinder such a Hayekian genie from undertaking optimum planning or optimum market allocation of resources.

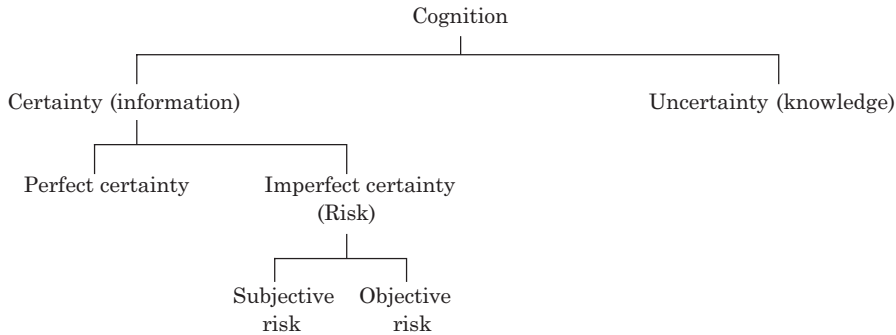
Knight [(1921) 1971, 219-20] distinguishes between the ignorance doctrine of probability, on the one hand, and real theory of probability, on the other. Concerning ignorance, the agent, at least in some occasions, simply does not know that he does not know (the case of sheer ignorance).⁵ The case of sheer ignorance gives rise, I propose, to practical impossibility of prediction because the agent—with a minimal dose of doubt—can find out *ex post* about sheer ignorance. That is, contrary to Thomsen [1992] and others, the case of sheer ignorance is not a sufficient departure from neo-classical theory of uncertainty. Given that agents learn from experience, they can build contingencies for cases of sheer ignorance and, hence, can construct risk distributions.

In contrast, Knight's real doctrine of probability is more important. It defines uncertainty as the inability of the subject of knowledge to have a risk distribution because future states are not given facts. The purposeful actor can always intervene and change them. This situation can be expressed as the process by which the actor comes to know his ability to develop his personal paradigm of knowledge. Herbert Simon [1976] called such a situation, where the decision maker cannot stand externally to the process of development, procedural rationality. However, Knight's notion of uncertainty degenerates into risk when it is treated, as Knight [1971, 225] himself does, as a subjective/non-measurable estimate of a unique situation where there is no classifying instance. Subjective probability theory in the tradition of Savage [1954] has successfully shown that Knight's subjective risk estimate can be transformed, through Bayesian learning, into objective risk. To maintain the uncertainty/risk distinction, the subjective/objective lexicon must be avoided. Instead, as shown in Figure 2, the distinction should use the uncertainty/certainty terminology, where certainty includes either risk probability or perfect information.

Agents use risk probability of hidden opportunities if they are the result of fragmented information. Opportunities are not known because, first, agents are ignorant and, second, data collection is not free. Such imperfect information does not arise because the future is still open for the paradigmatic development of division of labor and technology or, in short, knowledge. From previous discoveries, the agent can make a subjective estimate of the chance of finding a particular product cheaper by a certain amount if he continues searching for a certain period of time. Given his opportunity cost, he can decide the optimal period of search [Stigler, 1961].

In contrast, agents are engulfed with uncertainty when they try to assess the capacity of personal knowledge to undertake a particular challenge. Such uncertainty cannot be expressed as risk because the agent wants to explore his own developmental potential relative to new challenges and he has no certain frame of reference to work with [Khalil, 1997b; 1997d]. Even when the agent employs the experiences of others as a frame of reference, he is making an act of faith: Why should one group over many other groups be the relevant peer group or frame of reference? Why should one, for example, choose the artists of one's own town as opposed to the artists who have public exhibits in New York and Paris? The agent cannot tell for certain if his

FIGURE 2
Uncertainty vs. Certainty



plan to manage a new restaurant will succeed because the potential of his paradigm is uncertain even when the all external risk factors are well estimated. Even when the agent acts, the agent would be transformed and he would still be uncertain about the future if the task ahead is again challenging. Given that the knowledge paradigm is subject to development, old challenges and actions cannot fully determine the potential of his paradigm.

Such uncertainty does not arise from self-deception, (that is, when failures are blamed on extraneous circumstances rather than indicative of one's ability). The uncertainty rather arises as long as one's ability is subject to development and innovation. Of course, the aging process limits development. However, such a limit can be ignored at first approximation because it is an extraneous limitation to one's decision. Thus, Hayek's idea of knowledge as expressive of one's process of development is about uncertainty as opposed to risk. Thus, the discussion of knowledge as personal should be separated from the analysis of Hayek's notion of information as dispersed.

LOCAL INFORMATION AND STRUCTURE ORDER

For Hayek, the impossibility of economic planning is the result of the nonexistence of price structure—a structure that underpins the creativity engendered by market competition. Another reason behind the impossibility of planning, evident in his 1945 article, is that information is dispersed, (that is, local). While Hayek recognized in his later writing that planning is a theoretical possibility, he still insisted that it is impossible from the practical standpoint [Lavoie, 1985]. To put his argument succinctly, planned coordination is practically impossible because it involves enormous transaction costs, in the form of search cost to collect given, but localized information.

If information is local, however, even market-clearing prices are not cost-free.⁶ Agents acting without a central planner must incur substantial costs to find out about the present and future prices, qualities, and location of the goods they want to purchase. Such search costs includes the cost of trying to synchronize the parts that make up machines and products through the market, and the cost of time synchroni-

zation essential to the effectiveness of team effort or complementary actions [Milgrom and Roberts, 1990a; 1990b].

Ironically, local information is the main reason, as argued by Coase [1937; cf. Khalil, 1997a], why agents prefer administered exchange within the firm to market exchange. Agents prefer planning within the firm over the market when the cost of collecting information through the plan is cheaper than the cost of collecting the same information through the market. In pure markets, where the state does not interfere to solve the coordination problem, each agent's transaction cost is replicated as many times as there are clusters of agents. Although planned economies and firms have their own information problems arising from coordination, they do minimize the search cost expended by market-mediated coordination.

In fact, the inefficiency of market-mediated allocation is the basis of Karl Marx's advocacy of socialist planning: Rationality in the sense of efficient allocation of resources (what Marx names the allocation of social labor) calls for the avoidance of market anarchy. For Marx, prices of production (equilibrium prices) assert themselves in the market in a haphazard way that is at the origin of commodity fetishism, (that is, the subjugation of human action to the forces of the market, what Marx calls the law of value). Although he draws a conclusion that differs from Hayek's, Marx shares the same analytical core with Hayek. That core is the limits that local information imposes.

In the attempt to minimize search costs, agents invest in positional goods such as advertising that try to transform local information into what is called here general information. The term positional inputs denotes investments undertaken by households and firms to reduce search costs necessitated by the unplanned character of production and exchange in market economies [Khalil, 1997a]. There is inefficiency in positional goods because each seller tries to advertise his locality, partially canceling the effort of his competitors. That is, the effectiveness of any advertisement depends on the quantity of similar communication in the medium. This analysis invokes the concept of equilibrium, which Hayek explicitly rejects. I do not wish to enter into the issue of whether equilibrium plays a role in Hayek's view of the market. One need not, in fact, invoke equilibrium. It is sufficient to compare a state with local information with an ideal state where information is generalized.

Hirsch distinguishes positional goods from pure utility-awarding products (which he calls truly private goods):

Strictly speaking, our existing concept of economic output is appropriate only for truly private goods, having no element of interdependence between consumption by different individuals. The bedrock is valuation by individuals of goods and opportunities in the situation in which they find themselves. At any moment of time and for any one person, standing on tiptoe gives a better view, or at least prevents a worse one. Equally, getting ahead of the crowd is an effective and feasible means of improving one's welfare, a means available to any one individual. It yields a benefit, in this sense, and the measure of the benefit is what individuals pay to secure it. The individual benefit

from the isolated action is clear-cut. The sum of benefits of all the actions taken together is nonetheless zero. [1976, 7]

The class of positional inputs invokes the adding-up problem or the fallacy of composition: What is possible for the single individual is not possible for all individuals [ibid., 6; Frank, 1985]. This problem is most evident in the positional aspect of any arms race: The relative position of the protagonists is not a function of the absolute stock of weapons. Using the Red Queen Paradox in *Alice's Adventures in Wonderland*, Van Valen [1973] proposes a new evolutionary law. Every entity tries to arm itself with better capabilities to assure survival—similar to the Red Queen who has to keep running to maintain her position relative to other runners. To wit, without informal and formal regulations, sometimes enforced by the threat of stigma or legal system, a great number of resources are wasted on runaway positional, unproductive expenses.

Other kinds of costs include the cost of protecting property rights. Such protection is needed to internalize costs and benefits, (that is, minimize the effects of externalities and the possibility of missing markets). Another cost is convincing other agents that the asking price is firm. Such a cost minimizes the cost of haggling and posturing occasioned by private information that appears in bargaining situations where action depends on how one perceives the other's subjective valuation of the product. A further cost is promoting the company label and reputation which minimize the cost of inspection due to asymmetric information, which is especially pronounced in single-spot games.

It is important to distinguish asymmetric information from the focus here, (that is, local information). Local information requires the investment in communication that generalizes the information about one's goods to minimize search cost. In contrast, asymmetric information necessitates investment in the stock of trustworthiness to minimize the transaction cost of inspection and monitoring of every contracted service or good. For instance, the signaling of ability through certificates and educational degrees [Spence, 1974], tries to solve the issue of asymmetric information concerning experience goods. As is well known, agents cannot know the quality of the service or experience good until it is fully inspected or consumed. Signaling and other self-selection mechanisms—such as expenditure on labels, warranties, and what can be generally called reference goods—try to convince the skeptical buyer by offering credible guarantees that the service or good is of the quality which one promises [Williamson, 1983; Khalil, 1997a].

The inevitability of local information means that the market is inescapably riddled with inefficiencies—similar to those facing a planned economy. To be clear, positional goods, as well as local information, are not characteristic exclusively of the market. In the planned economy, positional goods usually take the form of investments undertaken by consumers, rather than by suppliers, to advance their place in the queue [Kornai, 1979]. Hayek seems to have misdiagnosed the problem that plagues socialist planning: The problem is not unique to socialist planning, but rather the result of the generic problem of local information. The point is not that Hayek did not recognize that the market suffers from imperfections resulting from the dispersion of information. But rather he did not trace such imperfections to the same source that is responsible for planning problems.

In fact, there is nothing about local information that lets us state categorically that competition is necessarily more efficient than planning. One can model the modern industrial state—in its function as quasi-planner and regulator of the market—as a multidivisional firm. The multidivisional state uses market-sensitive transfer prices to coordinate the activities among its divisions, (that is, privately owned firms). Such a state also selectively intervenes in the internal market of its divisions when it finds that plan-controlled allocation attains greater efficiency than market-coordinated allocation with regard to the problem of local information problem at hand. So, one cannot assert, in unqualified and fundamental terms as Hayek does, that planning is always inferior relative to the market with regard to the efficiency of processing dispersed information. The dispersed nature of information entails that the transaction cost of search or data collection is endemic to any structure or method of coordination. One cannot *a priori* specify the best method. Only empirical research—taking technology, institutions, and stage of development as given—can determine which mechanism or mixture of coordination mechanisms minimizes search cost at that historical juncture. In short, Hayek's observation that information is dispersed does not prove that market coordination is always necessarily more efficient than planned coordination.

However, the market seems to have an apparent advantage in one respect. Hayek notes that the market is more adaptable, with regard to unforeseen shocks, than planning:

If in the real world we had to deal with approximately constant data, that is, if the problem were to find a price system which then could be left more or less unchanged for long periods, then the proposal under consideration [that is, planning] would not be so entirely unreasonable. With given and constant data such a state of equilibrium could indeed be approached by the method of trial and error. But this is far from being the situation in the real world, where constant change is the rule. Whether and how far anything approaching the desirable equilibrium is ever reached depends entirely on the speed with which the adjustments can be made. [1948, 188]

I concur with Hayek. With regard to adjustment, the market has a clear advantage over planning. Market flexibility is cheaper because it would be much more expensive for the planning board to adjust its decrees. The planning board faces huge up-front or fixed costs needed to adjust its plan—where private agents face much lower costs. *By the same logic*, the planning board should enjoy much better economies of scale with regard to search cost than private agents. What makes the planning board inflexible in light of unforeseen shocks also makes it much more efficient to plan. The planning board simply spreads more-or-less the same search cost over a multitude of agents. For instance, it is cheaper for a planning authority to find out returning soldiers' need for housing, and decree the equilibrium price of lumber needed for construction than for each private entrepreneur to find out such a need, and to form his expected equilibrium price, to price his product. The downside of planning is that the

planning authority would be slower to respond in case of an unforeseen change in demand for housing. But one cannot take the downside as a clear indication of the superiority of the market. One has to take *simultaneously* into consideration the upside of planning that engenders the downside under certain circumstance. Thus, the advantage of the market in case of changing data is not clear. One cannot assert, at least at the level of theory, that the market *in toto* is a more efficient method than planning even in the case of changing circumstances.

PERSONAL KNOWLEDGE AND ORGANIZATION ORDER

Does Hayek's observation of the personal character of knowledge—the origin of entrepreneurial innovativeness—lead to the theoretical superiority of an open society? Hayek [1973; 1976; 1979] advocated the open society on the basis of its liberalism—the promise that the person's potential would not be stifled by communitarian strictures common to the face-to-face societies of our ancestors.

In *The Sensory Order*, Hayek [1952] argues that previous experiences form a paradigmatic order that fashions sensory input after itself [Weimer, 1982; Herrmann-Pillath, 1992; De Vries in Birner and van Zijp, 1994]. That is, cognition partially depends on one's mental matrix or one's world view. So, the mind is not a mirror of the world as portrayed by the behaviorist stimulus-response research program of Watson and Skinner. Rather, the mind appropriates the world according to already made classes of objects and relations. So, perception does not accurately represent relations:

This [the reconstruction of objects into classes] may often comprise relations which objectively do not at all belong to the particular object but which we merely ascribe to it as a member of the class in which we place it as a result of some accidental collection of circumstances from the past. [Hayek, 1952, 143]

Hayek's stress on past experience resonates with Polanyi's [1958] concept of personal knowledge: the mind can decipher new facts only by relying on its personal development. For Hayek, the development of the person is a unique process based primarily on the individual's ordering of sense experience according to tacit cognitive paradigms, which he calls master moulds (templates, schemata, or Schoblonen) [Hayek, 1967, 51]. A healthy functional order is one that allows individuals to fully develop their cognitive paradigms. A healthy order permits them to create new resources, develop new tastes, and undertake innovations. As Rosenberg and Birdzell [1986] argue, such a healthy order emerged in Western Europe in the past five hundred years, which allowed individuals to pursue new goals, innovate, and accumulate wealth at a fast pace.

This observation about the nature of individuality and its paradigmatic development is not disputed here. But does it necessarily imply that the liberal practice of the open society allows, generically, better development of individual paradigms than the communal socialist order? At first examination, the deduction of the thesis from the observation assumes that the communal socialist order necessarily amounts to com-

mands that stifle individual development. The deduction is questionable in light of two reminders. First, to deduce the thesis from the observation, we must stipulate that individuality is restricted to the level of the person, not to higher levels such as the firm or state. But there is no reason why we cannot consider any agent with a purpose, such as the firm and the state, as an individual. Individual paradigmatic development is not undertaken only by persons.

Second, the issue under investigation is not the socialist order in its capacity as a structure of coordination, which is relevant if the topic is local information. The issue is the socialist order in its capacity as organization. As an organization, any order is characterized by a leadership that expresses the common goals of the members, sometimes more extensively than what some members prefer. The leadership must express the commitment to a common set of ideals—if the organization order is to be cohesive. This leadership has to be political in Adam Smith's sense of rank and authority [Khalil, 2000]. It is not simply a leadership equal in status to the ones arising in civil society such as leaders of arts, letters, science, religion, commerce, finance, industry, and so on. Civil society on its own, with its plurality of leaders without any supervising political leadership, may invite the formation of warlords, competing through violence and other means to dominate the populace. Leaders of the arts, religion, industry, and so on, very much like other individuals, have to consent to a constitution to prevent the civil society from degenerating into anarchy. Even classical liberal theorists recognized the necessity of the state to supervise, or at least protect, civil society from being dominated by one power bloc or another.

Thus, political leadership must supervise organization order. Here, I use the term political leadership in the sense of commitment to the constitution, flag, tribe, or king that surpasses one's partiality or party affiliation. In this sense, organization order, insofar as it is cohesive under a political leadership, acts as an individual. The claim of individuality for organizations, from firms to states, deserves a defense—given the neoclassical, Marxian, and Austrian positions on the issue. In other places [Khalil, 1997c; 1997f] I make such a defense. Here it is sufficient to state that individuality or self is not restricted to the literal person. Organization order must possess, insofar as it is cohesive, a sense of individuality.

Such a view of organization order does not necessarily imply functionalist reasoning. Such reasoning has a long history in Germanic romantic economics of the past two centuries [Pribram, 1983]. Functionalist reasoning starts with the persistence of the organization in its setting at the given level of generality [Levy, 1968, 23] and, in turn, asks what are the conditions or actions that members must fulfill to ensure such persistence. Hobson's [1914, Ch. 20] work exemplifies such a procedure. As he puts it, society is an organization whose social will is subscribed to by every member [ibid., 1914, 309]. This should not mean that advocates of functionalist modes of conception do not recognize individual rights. However, as Hobson argues, the satisfaction of these rights is desirable insofar as they further the health of the organization [ibid., 304].

The view expounded here need not invite functionalist reasoning. In fact, as argued elsewhere [Khalil, 1997c; Kavka, 1991], the neoclassical argument that the person has consistent and complete preferences implies surprisingly functionalist reasoning if examined from a different level. Neoclassical theory sees the agent as a

harmonious unit who can easily command diverse goals or sub-selves into the obedient and unconditional service of a given utility function of the agent. The ordering of a person's conflicting tastes is, following the well-known Arrow Impossibility Theorem, as problematic as the consistent ordering of social tastes. There is no reason, at least if one grounds one's theory on psychological findings, to assume that the person is harmoniously self-dedicated towards a consistent set of goals, which ultimately leads to the maximization of a single utility function or the attainment of a subjective end.

While avoiding functionalist reasoning, we should not throw the baby out with the bath water. We should not deny *a priori* that the multi-person organization has a common purpose to which the members have implicitly or explicitly expressed loyalty. Loyalty involves responsibility toward the organization. The responsibility can be defined broadly or strictly depending on the constitution of the organization as well as the particular historical circumstances. Given the extent of responsibility, there can be no organization without a common goal. Otherwise, if the entry point to the theory of organization is the repudiation of the common goal idea [Vanberg, 1994, Ch. 8], we must, to be consistent, also deny that lower-level organizations (such as the firm and household) have common purposes.

To avoid functionalist reasoning, we should instead reconceptualize the idea of purpose—starting with the single-person organization. In place of the traditional view of purpose as coherent and straightforward, it should rather be seen as the product of conflicting demands among different sub-selves that make up the organizer self of the person. Such demands can become manageable only if the diverse selves submit themselves to a common goal as expressed by the self of the person. So the individual self of the person is the expression of sovereignty to which other compartments of the person must submit. The consented goals of the person, such as the multi-person agent, are never final and consistent because they are based on the uncertain organization of the potential of subsumed diverse sub-selves.

It is outside the scope of this article to provide an account of personality and its internal conflicts [Ainslie, 1992]. Insofar as we find such a non-functionalist account feasible in its broad outline, its extension to the conception of the social order as an individual should not be problematic. If states have accepted goals, it does not necessarily mean that their individuality is achieved by inhibiting the development of the members' paradigms.

A liberal organization order *à la* Hayek lacks the notion of common goals necessary for the development of personal paradigms. Insofar as there is no common self that can articulate political conflicts, the individual person would constantly be trying to devise voting rules to secure that others do not encroach on his rights. The issue here is not about the definition of property rights, rule of law, and rules of propriety in civil society. It is rather about guaranteeing that, with the lack of common purpose and leadership, protectors of property do not shirk. The agent in a society that lacks a common self is involved in a series of exercises of infinite regression in the attempt to find a guardian of his property without submitting to a common sovereign self.

Hayek [1979] gave ample attention to how constituted legal leadership, with the help of common law evolving from the accretion of respected rules, guarantees the

tranquility of an open society and prevents the encroachment of the state over civil society. He even recognized government organization in his spontaneous order. However, he viewed the government as an organization on par with many others:

The family, the farm, the plant, the firm, the corporation, and the various associations, and all the public institutions including government, are organizations that in turn are integrated into a more comprehensive spontaneous order. [1973, 46]

That is, Hayek does not see government as an overarching organization, but rather as one among many other organizations that constitute the open, spontaneous order. The state is not conceived as an encompassing leader, where leadership is understood in the political sense as expressing common goals and aspirations, and not understood in the legal sense of guarding property and rights as a judge or a policeman. Aside from the identification of the leader *qua* judge or government administrator of public goods and guardian of public institutions, Hayek's spontaneous order is leaderless.

The absence of leadership, in the sense of a sovereign self expressing common goals in Hayek's open society, would impede the development of the individual person. The individual would be unable to benefit from the examples set by leaders. Leibenstein [1987] discussed the question of group spirit in relation to productivity and effort expenditure within the firm. Likewise, invoking the examples of ancestral leaders or some abstract purposes for which the social order stand enhances the development of one's paradigm. Of course, such higher-level principles or exemplars can, if they are hegemonic or stagnant, inhibit the development of personal knowledge paradigms. But if the higher-level paradigms are vibrant, they can invigorate the development of personal potential.

So Hayek's leaderless liberal organization order deprives persons from possibly greater personal development. Such a conclusion need not totally negate Hayek's thesis about how a hegemonic socialist organization order can muffle the advancement of personal knowledge. Equally, however, the absence of any leadership can pose limits to the full flourishing of personal paradigms. If one may generalize, leadership and common goals are usually most conspicuous in the early stages of development of any social order. The absence of a catalytic leadership may entail that the social order will fail to appear in the first place.

The recent experience of totalitarianism, whose body count is immense, should not serve as the spectacles for evaluating states that are illiberal. To wit, the Stalinist and the Nazi regimes are hardly representative of illiberal states in history. The expression of unified identity, loyalty to queen or flag, or unified social purpose have usually not engendered massive repression, starvation, and genocide. The Nazi/Stalinist experience is an aberration; it is not typical of states acting with a unified purpose.

Thus, the observation about the paradigmatic, developmental nature of knowledge and individuality does not necessarily entail the superiority of a leaderless social order. Spontaneous order in the sense of being a leaderless as well as a hegemonic socialist order can, at least theoretically, equally enhance the development of

personal paradigms or frustrate their development. Which society is more damaging depends on the stage of development of the social order and its level of division of labor. Only empirical research can determine which order or mixture of orders is most suitable at a certain juncture for the development of knowledge. Similar to the local character of information, the paradigmatic nature of knowledge cannot offer a theoretical proposition about the superiority of leaderless liberal order. Such a proposition can only be historically contingent.

CONCLUSION

Hayek's ideas of the inevitability of dispersion of information and the paradigmatic character of knowledge certainly show the limits of the socialist order. However, careful examination shows that they also expose limits to Hayek's open society. Thus, the ideas concerning fragmented cognition cannot provide a solid positive theory from which one can criticize the shortcomings of a socialist society. One can equally use Hayek's ideas to show abstractly the shortcomings of an open society. Only empirical research, which takes the dominant technology, institutions, and stages of development as given can determine which society is more efficient and functional at that particular historical juncture. It is ironic that Hayek's ideas about fragmented cognition afford the ingredients for a non-ideological theory. Hayek's ideas about the nature of human interaction and organization are general enough to support diverse combinations of market and plan mechanisms, on the one hand, as well as leaderless and authority-guided knowledge development, on the other. Interestingly, Hayek's reliance on Darwinian group selection to support his view of the evolution of institutions also provides a non-ideological theory: The outcome of selection— institutions suited for socialist society or open society—can be judged only according to contingent circumstances. The Darwinian method cannot provide a positive scientific criterion according to which one can determine which social order is superior [Khalil, 1996a].

While this paper is restricted to Hayek's arguments, other research may be needed to see if other intellectual traditions can provide a solid positive theory for the abstract advocacy of an open society. However, given that Hayek's political economy expresses the most profound attempt at providing a positive ground for the superiority of one type of society over other types, it would be a challenging task to find non-ideological theories that defend the superiority of a particular society.

NOTES

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1. The term knowledge used here corresponds with Charles Peirce's [(1877) 1958] notion of belief, which arguably anticipates Simon's notion of procedural rationality.
2. For instance, the laws of thermodynamics are incompatible with the basic laws of nature that depict the four forces (electromagnetic, weak, strong, and gravitation). While unified field theory attempts to articulate the basic laws as stemming from a single coherent law, the attempt does not try to

integrate the laws of thermodynamics. This disjunction between unified field theory and thermodynamics does not make them exclusive. Given that each deals with a different aspect of the phenomenon, the disjunction between them is inclusive.

3. I use the terms information and knowledge differently from Lachmann [1986] and Strydom, 1990]. I do not distinguish information as a flow per period of time that augments cognition from knowledge as the stock or state of cognition at a point in time. Rather, the proposed lexicon suggests that the difference runs deeper, related to two kinds of order.
4. If cognition is understood as about dispersed information and market structure, Boland [1978] cannot be faulted when he argues that Hayek's interest in discovery and change (economics in time) and rational decision making (time in economics) shows that the neoclassical concern with optimization is not inconsistent with dynamics as argued by critics such as Nicholas Georgescu-Roegen and G. L. S. Shackle. For Boland, the two research arenas are not incompatible once one takes into account that rational decision making is embedded in a dynamic discovery and learning process where knowledge acquisition (but only understood as information collection) is irreversible.
5. Knight's notion of ignorance still differs from Simon's bounded rationality, (that is, how limited cognitive capability of individuals gives rise to rule-following behavior that is more efficient on average in comparison to case-by-case decision-making). See also Heiner [1983].
6. Bolton and Farrell [1990] make the same point with an economic model. I appreciate the comments of an anonymous referee who alerted me to the reference.

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