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Abstract

We briefly survey Hayek's work and argue for its increasing relevance for organizational scholars. Hayek's work inspired aspects of the transaction cost approach to the firm as well as knowledge management and knowledge-based view of the firm. But Hayek is usually seen within organizational scholarship as a narrow, technical economist. We hope to change that perception here by pointing to his work on rules, evolution, entrepreneurship and other aspects of his wide-ranging *oeuvre* with substantive implications for organizational theory.

Keywords: Friedrich Hayek, organizational theory, dispersed knowledge, evolved rules, subjectivism, entrepreneurship.

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INTRODUCTION

Friedrich A. von Hayek (1899–1992) is one of the most important intellectuals and social scientists of the twentieth century. Over a career that spanned more than six decades Hayek moved from technical economics (Hayek, 1928, 1931, 1941, 1948, 1984) to the methodology of the social sciences (Hayek, 1942, 1952a), psychology (Hayek, 1952b), political philosophy (Hayek, 1944; 1960; 1973), and philosophy proper (Hayek, 1964). In the diversity of his interests Hayek rivals the great polymath Herbert Simon, and, like Simon, holds a Nobel Prize in economics. Again like Simon, Hayek’s wide-ranging scholarly interests and achievements were organized around few core insights, the most important of which is the role of evolved rules and institutions in coordinating dispersed and largely tacit knowledge. Both were highly critical of the foundations of the dominant paradigm in economics, so-called “neoclassical” or “mainstream” economics, and in some ways their critiques are converging, particularly regarding the unrealistic and untenable assumptions that are made about the cognitive powers of decision-makers in this paradigm.

However, while Simon’s influence on organizational studies is undeniably vast, Hayek is less well known within organizational scholarship. Simon’s career began with organizational studies and featured a continual interest in organizations. Hayek, in contrast, had little interest in organizations *per se* and typically addressed organized activities, such as those of state bureaucracies or full-scale socialism, with considerable skepticism. However, one Hayek paper has been frequently cited in organizational studies (broadly conceived) is his 1945 essay, “The Use of Knowledge in Society.” This paper emerged in context of the “socialist calculation debate” of the 1920s and 1930s, in which academic economists argued about the viability and efficiency of planned resource allocation under state control (Lavoie, 1985; Rothbard, 1991; Salerno, 1993). Hayek (1945) famously argued that an economy-wide central planner, no matter how well-intentioned, is constrained by the fact that the

knowledge necessary for efficient resource allocation is dispersed, subjectively held, fleeting, and largely tacit. Top-down planning runs up against the “knowledge problem,” which makes comprehensive, overall management of a complex, dynamic economy inherently infeasible. A decentralized market system works because market processes generate prices that embody such information and communicate it among market participants.

Hayek’s emphasis on dispersed, tacit knowledge has been much cited in research on knowledge management (e.g., Nonaka and Takeuchi, 1995) and the knowledge-based view of the firm (e.g., Grant, 1996; Spender, 1996; Tsoukas, 1996). Thus, while a variety of thinkers and philosophers have dealt with aspects of tacit knowledge (e.g., Aristotle on *phronesis*, Gilbert Ryle on “knowledge how,” Merleau-Ponty on bodily knowledge, and, of course, Michael Polanyi, who coined the term “tacit knowledge”), Hayek was arguably the first to raise the issue of how the best use of tacit knowledge is secured, asking what institutions make best use of such knowledge. On a highly abstract level, research on the knowledge-based view of the firm shares this aim (Grant, 1996).

However, there is much more in Hayek’s work that is useful to organizational scholarship. Researchers critical of “rational,” design-oriented approaches in organizational theory who favor more constructivist approach will appreciate Hayek’s emphasis on the inherently complex nature of social phenomena (Hayek, 1964), his critique of scientific design ambitions of planners and the underlying rationalist model of action (Hayek, 1933b, 1952a), and his subjectivism (which in many ways harmonizes with constructivist and sensemaking perspectives) (Hayek, 1952b) (see Tsoukas, 1996). Organizational scholars working with evolutionary or population ecology models will appreciate Hayek’s general evolutionary outlook (Hayek, 1973), his emphasis on competition as “discovery procedure” (rather than an incentive device) (Hayek, 1968a), his sophisticated distinction between spontaneous and planned orders and the rules that underpin them, and his

argument for the rule-governed, partly tacit basis for all action in the social world (Hayek, 1973, 1988). Organizational scholars interested in relationships between technology and organization can benefit from Hayek's analysis, derived from the unique capital theory of the "Austrian" school of economics, of production as staged, time-consuming, and involving the deployment coordination of specific and complementary capital goods (Hayek, 1931, 1941; Foss, Foss, Klein, and Klein, 2007).

In this chapter we briefly survey Hayek's work and argue for its increasing relevance for organizational scholars. Hayek was a subtle writer, and a less gifted stylist than his fellow Austrian Joseph Schumpeter, perhaps explaining why his contributions are not better known outside of economics. There is a small circle of Hayekians working on the economic theory of the firm (see, e.g., the essays collected in Foss and Klein, 2002), and, as discussed below, Hayek's work inspired aspects of Oliver Williamson's transaction cost approach to the firm. But Hayek is usually seen within organizational scholarship as a narrow, technical economist. We hope to change that perception here.

HAYEK'S CAREER AND THOUGHT

Early Work on Business Cycles

Born in 1899 to a distinguished family of Viennese intellectuals, Hayek studied economics, law, and psychology at the University of Vienna and joined the private seminar of Ludwig von Mises along with Gottfried Haberler, Fritz Machlup, Oskar Morgenstern, Felix Kaufmann, Alfred Schütz, and other promising young Viennese social scientists. Inspired by Mises's 1912 book on monetary theory (Mises, 1912), Hayek began writing on money, capital, interest, and the business cycle, publishing important papers in the late 1920s and early 1930s. In 1931 he became Tooke Chair at the London School of Economics, where he specialized in monetary economics and helped promulgate the "Austrian" theory of the business cycle, becoming known as a chief rival of John Maynard Keynes.

Hayek (1931, 1933a) showed how fluctuations in economy-wide output and employment are related to the economy's capital structure. Production takes time, so factors of production must be committed in the present for making final goods that will have value only in the future after they are sold. However, capital is heterogeneous: capital goods differ in durability, complementarity, substitutability, and specificity. Consequently, these assets cannot be easily redeployed to alternative uses if demands for final goods change. The central macroeconomic problem in a modern capital-using economy is thus one of intertemporal coordination: how can the allocation of resources between capital and consumer goods be aligned with consumers' preferences between present and future consumption? Hayek argued that monetary injections, by lowering the rate of interest below what Mises (following Wicksell) called its "natural rate," distort the economy's intertemporal structure of production, leading first to a boom and then to a bust, as the investment projects that are started under the impact of a lowered rate of interest have to be abandoned. Hayek held that absent distortionary monetary policies or exogenous shocks that cause the money rate of interest to diverge from its natural rate, the economy is fundamentally self-regulating. Moreover, his theory directed attention to relative prices between capital goods as key to understanding economy-wide fluctuations, a perspective swept aside by Keynes's emphasis on "aggregate demand" and other abstractions. While Keynesian economics views the economy in engineering terms, as a giant machine to be manipulated (and even "fine-tuned") by government planners, Hayek's Austrian approach sees the economy as a complex, adaptive ecosystem resistant to top-down planning, as well as more or less temporary government intervention in the form monetary and fiscal policy or detailed industry or labor-market regulations.

After Keynes's *General Theory* was published in 1936, the Austrian approach largely fell out of favor, out of step both with the Keynesian emphasis on aggregate demand management and the explicit positivism of neoclassical economics (Friedman, 1953), and Hayek turned away from

technical economics and toward epistemology, methodology, psychology, political theory, and intellectual history. In 1950 Hayek joined the Committee on Social Thought at the University of Chicago, which housed Allan Bloom, Daniel Boorstin, T. S. Eliot, Frank Knight, Shirley Letwin, and Edward Shils (and later Hannah Arendt, Saul Bellow, and Michael Polanyi) and where Hayek stayed for ten years before returning to Europe to teach at Freiburg University. In 1974 he shared the Nobel Prize in economics with Swedish economist Gunnar Myrdal for his work on business-cycle theory and his analysis of the role of knowledge in the price system.

Hayek's Later, Trans-disciplinary Work

Hayek's work on business cycles led him to revisit the fundamental issues of economics, notably the "coordination problem" (Foss, 1996). In the process, Hayek became increasingly skeptical of the explanatory value of neoclassical economics. Hayek never doubted that the economic system "works itself"—which he emphasized with frequent references to "spontaneous order"—but he thought that economists had not sufficiently explained the bottom-up, coordinating capacities of market competition (Hayek, 1937). How, in particular, do decision-makers obtain the knowledge that allows them to make decisions consistent with those of other decision-makers? How, in other words, is market equilibrium possible?

In "The Use of Knowledge in Society" (1945) Hayek argued that the central economic problem facing society is not, as commonly expressed in textbooks, the allocation of given resources among competing ends. "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 those individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality" (Hayek 1945: 78). Much of the knowledge necessary for running the economic system, Hayek contends, exists in the form not of "scientific" or technical knowledge—the conscious awareness of the rules governing natural and social phenomena—but of tacit knowledge, the

idiosyncratic, dispersed bits of understanding of “circumstances of time and place.” This tacit knowledge is often not consciously known even to those who possess it and can never be communicated to a central authority. The market tends to use this tacit knowledge through a type of “discovery procedure” (Hayek 1968a), by which this information is unknowingly transmitted throughout the economy as an unintended consequence of individuals’ pursuing their own ends.

Hayek argues that market competition generates a particular kind of order—an order that is the product “of human action but not human design” (a phrase Hayek borrowed from Adam Smith's mentor Adam Ferguson). This “spontaneous order” is a system that comes about through the independent actions of many individuals, and produces overall benefits unintended and mostly unforeseen by those whose actions bring it about.

Hayek’s notion of spontaneous order has sometimes been equated to the neoclassical economics model of a “competitive equilibrium” and its associated welfare properties (i.e., an allocation of goods and services that is “Pareto optimal”). So-called “perfect competition” is an abstraction with no practical relevance for applied economics or economic policymaking. Its main use is to serve as a foil, in which “market failure” is defined by the presence of characteristics such as public goods, external benefits and costs, asymmetric information, and the like that are absent from the perfectly competitive equilibrium model. However, Hayek’s notion of spontaneous order has little to do with perfect competition or general equilibrium; his claim is simply that individual action often generates social outcomes that are desirable or beneficial, even if they fall short of some abstract theoretical ideal, and that such outcomes cannot be replicated by government intervention, which substitutes a planned order for the spontaneous order that results from individual choice.

Specifically, spontaneous orders refer to both states of affairs—such as the allocations produced by market activity at a given point in time—and institutions, such as morality, money, and

other evolved institutions. Hayek asserts that government action usually cannot improve on the resource allocation brought about, spontaneously, by the operation of market forces. This allocation may not be “optimal,” from the point of view of textbook models of efficient resource allocation. But such models aren’t relevant because they describe idealized settings that cannot be realized by real-world governments in a world of dispersed, tacit knowledge (Hayek, 1946). Relatedly, Hayek posits an ongoing cultural evolutionary process that selects some institutions rather than others, and suggests that government interference with this process is likely to hamper the selection of the fitter institutions (Hayek, 1973).

With respect to the spontaneous order nature of market outcomes Hayek uses this to attack the notion of “social justice”: As market outcomes are unintended and partly unpredictable, it is a category mistake to apply the notion of “just”—a potential property of willed actions—to such outcomes (Hayek, 1976). Social justice is notoriously hard to define precisely. It can have a distributional aspect (i.e., the distribution of income or wealth is “just” if it conforms to some pre-specified standard, such as perfect equality), a procedural aspect (i.e., extant regulation and laws are just if they respect basic liberties and rights), and an interactional perspective (i.e., practices are just if individuals are treated with respect by other individuals and by public authorities) (Elster, 1992; Jost & Kay, 2010). Hayek rejected the distributional aspect of social justice, while his emphasis on the rule of law and his general classical liberal outlook represents an embrace of the procedural aspect (and there is no reason to suspect he would have difficulties with the interactional aspect). Hayek did not make these distinctions explicitly, however.

Regarding the spontaneous order nature of institutions, Hayek embeds this view in a highly ambitious theory of cultural evolution. In line with the optimism of classical liberalism in general, Hayek asserts that those institutions that are best capable of mobilizing and making efficient use of dispersed knowledge will have an evolutionary advantage that will lead to their dominance over

time. The precise mechanisms by which this functional-evolutionary process works are, however, not spelled out in great detail in Hayek's works.

To distinguish between spontaneous order and that of a deliberate, planned system, Hayek (1968b: 72-76) uses the Greek terms *cosmos* and *taxis*, respectively. Examples of a *cosmos* include the market system as a whole, money, the common law, and even language. A *taxis*, by contrast, is a designed or constructed organisation, like a firm or bureau; these are the "islands of conscious power in [the] ocean of unconscious cooperation like lumps of butter coagulating in a pail of buttermilk" (D. H. Robertson, quoted in Coase 1937: 338).

HAYEK AND ORGANIZATION THEORY

Perhaps of Hayek's stature as one of the leading economists of the 20th century, his work as it pertains to organization has been frequently cited by (new institutional) economists who specialize in organization, but rarely by organization scholars working from more sociological, anthropological, and psychological perspectives. We begin by briefly discussing the relations between Hayek and his new institutionalist/organizational economics, fellow Nobel laureates, Ronald Coase and Oliver Williamson. We then broaden the view beyond new institutional economics and consider the relevance of Hayek's thinking form thinking about how knowledge influences economic organization, specifically the boundaries and internal organization of firms. As we argue the Hayekian challenge to planning applies to firms as well as to centrally planned economies, and raises fundamental issues that are still not resolved in organization theory relating to the use of authority, planning, and direction in the presence of dispersed knowledge.

Hayek and New Institutional Economics: Coase and Williamson

Ronald Coase studied at the LSE in the late 1920s and early 1930s. He reports that Hayek's concept of the "structure of production" was "the subject which dominated the discussion of economics at LSE" (Coase, 1988: 7). Coase's own interest lay on a related, but distinct concept, the

“organizational structure of production.” While Coase’s main influences were his teacher Arnold Plant and a fellow student, Ronald Fowler (Coase, 1988), he was familiar with Mises’s and Hayek’s arguments in the socialist calculation debate, and cites Hayek’s “Trend of Economic Thinking” (1933b) when describing the idea of “the economic system as being coordinated by the price mechanism,” making society “not an organization but an organism” (Coase 1937: 387). “Indeed,” he adds, again citing Hayek, “it is often considered to be an objection to economic planning that it merely tries to do what is already done by the price mechanism” (Coase, 1937: 387).

Coase’s argument is that reliance on the spontaneous order of the market imposes particular costs: searching for trading partners, discovering the relevant prices, negotiating and enforcing contracts, and so on. Within the firm, the entrepreneur may be able to reduce “transaction costs” by coordinating these activities himself. Coase recognizes that there are limits to the firm—he refers in the 1937 paper to “diminishing returns to management” (Coase, 1937: 395)—but does not spell out these limits in detail. The modern economic theory of the firm conceptualizes the optimal boundary by comparing the transaction costs of using the market with what might be called internal transaction costs: problems of information flow, incentives, monitoring, and performance evaluation. The boundary of the firm, then, is determined by the tradeoff, at the margin, between the relative transaction costs of external and internal exchange.

Coase’s “Nature of the Firm” appeared in 1937, the same year as Hayek’s “Economics and Knowledge,” and there are obvious connections between the two. Kirzner (1992: 162), for example, describes Coase’s argument in Hayekian terms: “In a free market, any advantages that may be derived from ‘central planning’ . . . are purchased at the price of an enhanced knowledge problem. We may expect firms to spontaneously expand to the point where additional advantages of ‘central’ planning are just offset by the incremental knowledge difficulties that stem from dispersed

information.” Indeed, much of the new institutional economics draws heavily from Hayekian themes, if not always explicitly.

The modern flag-bearer of the economics of the firm, Oliver Williamson has been influenced more directly by Hayek’s approach to knowledge, adaptation, and coordination. Williamson (1975: 4-5) makes highly approving reference to key Hayekian themes, notably that the “problem of a rational economic order is trivial in the absence of bounded rationality limits on human decision makers,” “[m]uch of the knowledge required to make efficient economic decisions cannot be expressed as statistical aggregates but is highly idiosyncratic in nature,” the “economic problem is relatively uninteresting except where economic events are changing and sequential adaptations to changing market circumstances are called for,” and that the “‘marvel’ of the economic system is that prices serve as sufficient statistics, thereby economizing on bounded rationality.”

Besides bounded rationality, tacit knowledge, and the informational role of prices, at least two other Hayekian concepts appear in Williamson’s work. One is Hayek’s (1967) emphasis on the role of general, abstract rules, rather than particular mandates, and his claim that social scientists should study patterns, rather than specific outcomes. Williamson sees his general model of contractual relationships or “simple contracting schema,” in which contractual hazards pose problems that require safeguards such as incentive alignment, specialized governance mechanisms (like vertical integration), or reputation through repeated dealings (Williamson, 1985:32-35), an example of a Hayekian general rule. “Although the particulars differ, vertical integration, nonstandard contracting for intermediate goods, the employment relation, corporate governance, and regulation are all, according to the argument developed [here], variations on a theme” (Williamson, 1985: 348). Transaction cost economics, in Williamson’s view, is a highly general theory of economic organization.

The other important Hayekian concept in Williamson's work is the idea of spontaneous order, in the context of adaptation to unanticipated change. Williamson (1991) argues that economists, following Adam Smith and Hayek, have tended to focus on "spontaneous governance," the ability of decentralized market systems to evolve in response to changes in resource availability, technical knowledge, demand characteristics, and the like. The study of coordinated or intra-firm adaptation, Williamson argued, has received less attention, though it was a chief concern of earlier scholars of administrative behaviour such as Chester Barnard (1938) and Simon (1947). Barnard too argued for the importance of adaptation, but in a bureaucratic context. Williamson (1991: 163-64) reconcile Hayek and Barnard by arguing that markets have superior properties with respect to adapting to "autonomous" external changes (changes that do not require explicit coordination with other decision-makers), whereas hierarchy is superior when the relevant adaptation requires coordination ("bilateral adaptability") among many decision makers.

Williamson does not make the link between the transaction cost economics concept of asset specificity and Austrian capital theory, which also stresses specificity. On a high level of abstraction both theories share a concern with specificity in a temporal context and the resource allocation problems arising from specificity. In Williamson's work, asset specificity refers to "durable investments that are undertaken in support of particular transactions, the opportunity cost of which investments are much lower in best alternative uses or by alternative users should the original transaction be prematurely terminated" (Williamson, 1985: 55). Williamson emphasizes the temporal aspect of production in his notion of the "fundamental transformation": relationship-specific investment transforms a competitive, market situation with many potential trading partners to a case of bilateral monopoly, ex ante competition for trading partners does not result in competitive behavior after contracts are signed and investments are sunk (Williamson, 1985). Like

Klein, Crawford, and Alchian (1978), Williamson emphasizes the “holdup” problem that can follow such investments, and the role of contractual safeguards in securing the returns to those assets.

Hayek’s (1931, 1933a, 1941) theory of capital focuses on a different type of specificity, namely the extent to which resources are specialized to particular places in the time structure of production. The capital specificity Hayek addresses is a specificity of use whereas Williamson’s is a specificity that is specific to a particular relation. Hayek builds on older Austrian thought here. Carl Menger (1871), founder of the Austrian school, famously characterized goods in terms of orders: goods of lowest order are those consumed directly. Tools and machines used to produce those consumption goods are of a higher order, and the capital goods used to produce the tools and machines are of an even higher order. Building on his theory that the value of all goods is determined by their ability to satisfy consumer wants (i.e., their marginal utility), Menger showed that the value of the higher-order goods is given or “imputed” by the value of the lower-order goods they produce. Moreover, because certain capital goods are themselves produced by other, higher-order capital goods, it follows that capital goods are not identical—at least by the time they are employed in the production process. Menger’s and Hayek’s claim is not that there is no substitution among capital goods, but that the degree of substitution is limited. As Lachmann (1956) put it, capital goods are characterized by “multiple specificity.” Some substitution is possible, but only at a cost. This becomes problematic once the business cycle’s boom turns into a bust: specific capital built during the boom to produce goods no longer needed cannot be redeployed to other, more productive uses because of its specificity, and will be left idle. Because there is a shortage of capital to pool with the available labor, unemployment results. In Hayek’s as well as in Williamson’s work misallocation is the dark side of specificity.

Hayek beyond New Institutional Economics: Knowledge and Organization

While new institutional economists who write on organizational issues pay frequent homage

to Hayek, his work has certainly influenced other organizational scholars. As we indicate, however, the implications of Hayek's thinking have not always been fully appreciated by the scholars who have cited his work.

For example, Hayek's work on dispersed knowledge and its implications (e.g., Hayek, 1937, 1945) has frequently been cited by management scholars with an interest in knowledge management (e.g., Nonaka & Takeuchi, 1995; Grant, 1996). However, there is a certain irony in this, for knowledge management is partly about the codification and centralization of dispersed knowledge in firms—which runs totally counter to Hayek's thinking on dispersed knowledge. Thus, his key argument against planning and socialism is that it presupposes the centralization of knowledge that inherently *cannot* be centralized because of its fleeting, subjective, and tacit nature. This is not just a matter of the cost of searching for, identifying, transmitting, etc. such knowledge and/or setting up complex mechanisms for its revelation; like Polanyi (1959) Hayek seems to have held the view that there is knowledge that is inherently personal and cannot be communicated at any cost (Hayek, 1952b, 1973). Given such costs, the best knowledge management practice may often not be to try to seek to centralize knowledge, but to secure its optimal use through the proper choice of delegation of decision rights to employees (Jensen & Meckling, 1992), and *via* the establishments of rules and other institutions.

The implication for knowledge management is that firms should tailor-make their knowledge management practices to reflect the different characteristics of different organizational knowledge. A broader implication is that firms' choice of organizational design need to reflect the characteristics of the knowledge held by the firms and its input-owners (as partly reflected in organizational design theory, e.g., Galbraith, 1974). Thus, dispersed knowledge constrains the (efficient) use of centralized allocation and coordination mechanisms, and that proper organizational design must take this into account.

Research on the exercise of managerial authority in organizations makes strong assumptions about the knowledge held by managers. Thus, it is often assumed that managers are at least as (and often more) knowledgeable about relevant tasks as employees; that they can instruct the latter to carry out these tasks, and that they can somehow ascertain whether employees are sufficiently skilled to carry out the task adequately. However, much work in management and organization explicitly or implicitly challenges the traditional view of managers' epistemic capabilities, deploying versions of Hayek's knowledge-based critique of planning (e.g., Mintzberg, 1990; Grandori, 1997; Sharma, 1997; Brusoni, 2005). These scholars argue that if the knowledge that is essential in a work setting is partially unknown to the manager, dispersed across several employees, and perhaps even—because of its tacit nature—it must remain unknown to the manager, the exercise of managerial authority is fundamentally compromised. As Grandori (2002: 257) argues “[dispersed] knowledge causes authority (as a centralized decision-making system) to fail in all its forms” (cf. also Minkler, 1993).

This argument may seem to acquire particularly force under the knowledge conditions that characterize what is often rather loosely described as the “knowledge economy” —specifically an increased need to source outside knowledge, rely on knowledge workers and engage in distributed innovation processes. These conditions would if anything seem to make knowledge more dispersed, and indeed many authors have argued exactly this, pointing out that firms increasingly need to rely on a growing number of knowledge specialists, inside as well as outside their boundaries (e.g., Coombs and Metcalfe, 2000; Wang & von Tunzelman, 2000; Brusoni, Prencipe and Pavitt, 2001; Orlikowski, 2002; Brusoni, 2005). This tendency strains the use of managerial authority as a mechanism of coordination (Grandori, 1997, 2002) as knowledge dispersal transfers “real authority” (Aghion & Tirole, 1997) to employees, that is, those who know which decisions should optimally be made, when and where, in response to changing contingencies.

Note that consistent (or heavy-handed?) application of Hayek's decentralization argument leads to an apparent absurdity: if decentralization always and everywhere improves the utilization of dispersed knowledge, it would be hard to find any rooms for firms, and certainly for contemporary mega-sized firms (Jensen & Meckling, 1992). Yet (large) firms exist. There seems then to be a problem of accounting for the existence of firms, given the dispersion of knowledge.

Hayek recognized that planned orders, such as firms, faced a "problem which any attempt to bring order into complex human activities meets: the organizer must wish the individuals who are to cooperate to make use of knowledge that he himself does not possess" (Hayek, 1973: 49). Hayek's solution to the problem was to apply his arguments that rules assist the coordination of dispersed knowledge, but with a modification: Whereas the rules that underlie spontaneous orders are abstract, applies to an unknown number of instances, and are un-designed, the rules that coordinate dispersed knowledge in designed orders are specific and designed. "[E]very organization must rely . . . on rules and not only on specific commands," Hayek notes, and goes on to observe that the "reason here is the same as that which makes it necessary for a spontaneous order to rely solely on rules: namely that by guiding the actions of individuals by rules rather than specific commands it is possible to make use of knowledge which nobody possesses as a whole" (1973: 48-49).

Such rules are "rules for the performance of assigned tasks" and therefore "necessarily subsidiary to commands" (1973: 49). In other words, firms may well exist under dispersed knowledge conditions, but essentially because they substitute other mechanisms of coordination for managerial authority. The role of the top management team is to create and enforce a kind of "constitution" that specifies the organization's rules of the game, while interfering as little as possible with the play of the game (Langlois, 1995). This is consistent with Simon's (1991: 31) view that "[a]uthority in organizations is not used exclusively, or even mainly, to command specific actions." Instead, he explains, it is a command that takes the form of a result to be produced, a

principle to be applied, or goal constraints, so that “[o]nly the end goal has been supplied by the command, and not the method of reaching it.” We think Hayek would have agreed.

However, Hayek does not fully explain how the problem of making use of dispersed knowledge inside firms is resolved: If knowledge dispersal obtains, how can management choose good “rules for the performance of assigned tasks”? How are employees assigned to tasks and how are standards for performance chosen when these actions are partially dependent on knowledge that management does not hold itself? There seems to be a fundamental design problem here. Given Hayek’s general evolutionary outlook, it seems warranted to suggest that this is done in the same way that societies discover rules, namely by trial-and-error processes, but Hayek is not forthcoming about this.

A HAYEKIAN AGENDA FOR ORGANIZATION THEORY?

While Hayek said relatively little about organizations *per se*, he identified a key design problem that any social system, whatever its scale, has to address: how to make best use of dispersed knowledge. Although much work has been done in the broad organizational field over the last two to three decades on “knowledge in organizations,” Hayek’s theme still challenges extant thinking. In the following, we use Hayek’s thinking to identify some research gaps in organizational theory, using both Hayek’s work on knowledge and his ideas about resource heterogeneity.

Improving Our Understanding of Dispersed Knowledge in Organizations

The research space of the “knowledge in organizations” theme is a vast one (e.g., Grandori & Kogut, 2002; Eisenhardt & Santos, 2003). It emerged in the 1990s with the advent of a number of tendencies that are often summarized under the rubric of the “knowledge economy” (Foss, 2005). Among these tendencies is the increasing importance of human capital inputs, immaterial assets and scientific knowledge in production, the increasing importance of immaterial products, the need to control inhouse an increasing number of technologies (even if product portfolios are shrinking) (Brusoni, Prencipe & Pavitt 2001), and in general to tap an increasing number of knowledge nodes,

not just through internal but also through an increasing number of alliances and network relations with other firms as well as public research institutions (Doz et al. 2004).

These tendencies are often seen as profoundly impacting economic organization and competitive advantages (Adler, 2001). Virtually all who have written on the subject agree that tasks and activities in the knowledge economy need to be coordinated in a manner that is quite different from the management of traditional manufacturing activities. However, there is considerable divergence in the accounts of what exactly are the changed coordination requirements in the knowledge economy. Thus, some argue that “traditional” coordination mechanisms such as price, authority, routines, standardization, etc. will diminish in relative importance, because knowledge-intensive production requires the increased use of mechanisms such as trust, communication, community, democratic procedures, etc. that can better cope with the particular metering problems and exchange hazards that are characteristic of knowledge transactions (e.g., Ghoshal, Moran and Almeida-Costa, 1995).

These scholars typically also argue that the increasing reliance upon cross-functional processes, extensive delayering, and empowerment reflect an aim is to create highly specialized and motivated units by means of extensive delegation of discretion. Cross-functional processes substitute for hierarchy in the coordination of tasks. Proponents of this view will tend to see the boundaries of firms blurring and employment relations undergoing dramatic change as a result of knowledge networks increasingly cutting across the boundaries of the firm and participative governance being increasingly adopted. However, the mechanisms through which dispersed knowledge drives changes in economic organization are not always transparent, and there is a distinct need for identifying and theorizing such mechanisms.

This explanatory task requires clarifying what exactly dispersed knowledge is and how it can be coordinated. Hayek’s (1945) discussion of the use of knowledge in society has often been

invoked by economists in the context of positioning discussions of asymmetric information. However, as Kirzner (1997) clarifies, when Hayek and other Austrians talk about “dispersed knowledge” they have more in mind than the mainstream economics notion of asymmetric information. First, dispersed knowledge goes beyond the dyads usually (if not always) considered in information economics, and refer to larger social systems. Second, dispersed knowledge implies genuine or “sheer” ignorance, in contrast to the standard treatment of asymmetric information, in which the parties’ are quite knowledgeable about what they are ignorant about (e.g., while they do not know about the realization of some stochastic variable, they know the underlying distribution).

Hayek’s concept of dispersed knowledge is perhaps most closely related to the notion of “distributed knowledge.” Loosely, knowledge is distributed when a group of agents knows something no single agent (completely) knows. Thus, the notions that firms (**Tsoukas, 1996**) or whole economies (Hayek, 1945, 1973) are distributed knowledge systems mean that the set of agents comprising these entities somehow can be said to collectively possess knowledge that no single agent possesses. This does not amount to asserting the existence of mysterious supra-individual “collective minds.” Knowledge still ultimately resides in the heads of individuals; however, when this knowledge is somehow combined, it means that considered as a system, the agents possess knowledge that they do not possess if separated. However, nobody possesses all this knowledge in its totality. This idea has relevance the context of the discussion across a number of management fields of routines and capabilities as firm-specific patterns of coordinated action that store and coordinate knowledge (a view originally articulated by Nelson and Winter, 1982).

Critics argue that this understanding, while appealing, is lacking in terms of clear micro-foundations (e.g., Abell, Felin and Foss, 2008). Micro-foundations in social science usually imply “methodological individualism,” the methodological tenet that aggregate social phenomena be reducible in principle to the actions (and, hence, intentional states) of individuals. Hayek (1952a)

was a well-known advocate for methodological individualism which he took to be almost trivially true. Indeed, it is important not to conflate *methodological* individualism with ontological and political individualism which, in different ways, are much stronger positions. And yet, methodological individualism is more complex than it may appear. Strong versions may rule out entirely collective constructs such as rules, norms, and institutions in social science explanation, in stark contrast to methodological *holists* who argue for the explanatory independence and even primacy of such collective constructs. Holists think explanation can, and perhaps even should, proceed without reference to specific individuals or models of individuals (e.g., “representative agents” in economics). Instead, collective-level “social facts” should be modeled as directly causing social outcomes.

However, some versions of methodological individualism allow for collective constructs such as institutions, though the effect of such constructs is always mediated through the actions and interactions of individual agents (e.g., James Coleman’s (1990) version). Hayek was never a hardcore methodological individualist in the first sense above, and arguably drifted increasingly toward collective-level constructs—his work on cultural evolution (e.g., Hayek, 1973), for example, makes rules, not individuals, the unit of analysis. Hayek’s perspective on evolved rules stresses that these embody and coordinate dispersed knowledge, albeit, unlike routines, at the level of societies rather than at the level of organizations. Scholars working on the microfoundations of routines and capabilities may be able to find inspiration in how Hayek grappled with combining his methodological individualism with his evolutionary view of rules.

Dispersed Knowledge as a Driver of Changing Organization: Opening the Black Box

Dispersed knowledge, as interpreted above, represent management and organizational challenges, because the knowledge sets of organizational designers, managers and employees may only be partly overlapping. The fact that the knowledge sets of organizational members are not fully

congruent does not, of course, compromise organized action. Another seminal social scientist, Frank Knight (1921) very clearly recognized this. The arguably key concept in Knight is that of “judgment,” that is, the human faculty that makes it possible for us to make decisions, even under severe ignorance. Knight explained that effective management (planning, organizational design, etc.) does not require full knowledge of other organizational members’ action sets and precise knowledge of exactly which action should be picked in response to contingencies: “What we call ‘control’ consists mainly of selecting someone else to do the ‘controlling.’ Business judgment is chiefly judgment of men. We know things by knowledge of men who know them and control things in the same indirect way” (Knight 1921: 291). Delegation, Knight argues, rests on judgment (see **Foss, Foss & Klein, 2007; Foss and Klein [2012]** for discussions of this).

Managerial (and entrepreneurial) judgment inherently refers to certain knowledge domains and not others, ultimately because of bounded rationality and the benefits of cognitive specialization. The judgment exercised by a biotech CEO may be less usefully deployed in the steel industry. Because of this (among other reasons), steel industry firms constitute poor acquisition targets for biotech firms. Such reasoning provides a microfoundation to Kirzner’s (1992: 162) point that “We may expect firms spontaneously to expand to the point where additional advantages of ‘central’ planning are just offset by the incremental knowledge difficulties that stem from dispersed information.” It is also consistent with Coase’s (1937) argument that as firm size grows, “dissimilarity of transactions” increases, and this is one reason why management commits an increasing number of mistakes as firms grow. Richardson (1972) argues that “similar” transactions will tend to be organized inside firms whereas “dissimilar” transactions will be organized in markets or hybrids (depending on the degree of complementarity between the underlying capabilities). Knowledge-based scholars in strategic management and organization have made very similar arguments (e.g., Kogut & Zander, 1992).

Such arguments may thus be seen as (Knightian) variations on the basic Hayekian theme, applied to the boundaries of the firm. In other words, while firms may make efficient use of knowledge that is dispersed inside their corporate boundaries, as they expand increasingly hierarchical failure related to knowledge dispersal sets in, and help determine the boundaries of the firm in a Coasian manner (Coase, 1937; see also Grant [1996] and Garicano [2000]). However, there are two fundamental (related) problems with these arguments. First, they neglect delegation. If it is accepted that managers can cope with dispersed knowledge by means of delegation (e.g., Jensen and Meckling, 1992), why exactly should expanding the firm's boundaries lead to increasing "knowledge difficulties" (Kirzner, 1992)? Second, the arguments are essentially black box in character. Thus, the link between knowledge dispersal and hierarchical failure is not spelled out. The link may indeed turn on the "similarity" and "dis-similarity" of transactions—so that more dispersed knowledge inside corporate hierarchies imply more dis-similar transactions, leading to more managerial errors and more mis-allocation, as suggested by Coase and Richardson. However, to our knowledge there is no explicit modeling of this idea, not to mention empirical work involving operationalization and measurement (but see Argyres [1996] for an attempt). In particular, there is no existing discriminating alignment framework that assigns transactions to governance structures based on their knowledge characteristics in terms of knowledge dispersal (and how this translates into bounds on the rationality of decision-makers).

These problems indicate a more general problem, namely that there are no clear micro-foundations for knowledge-based arguments in organizational studies (Foss, 2007). For example, it is not clear what is the fundamental unit of analysis, how this unit is dimensionalized, and how it (given some efficiency criterion) maps to governance structures and mechanisms. Our understanding of the faculty of "judgment" is incomplete. We know little about managerial ignorance (although some is known about biases to managerial decision-making) and how it relates to knowledge

dispersal, and how this in turn affects the quality of decision making and how this translates into organizational costs. We know little about how to conceptualize and measure the similarity/dissimilarity of knowledge.

Resource Heterogeneity, Entrepreneurship, and Organizations

One way forward is to combine Hayekian ideas with ideas from Frank Knight. The concept of judgment, as discussed above, is even more relevant for organizational theory and application when combined with Hayekian ideas about resource heterogeneity, complementarity, substitutability, specificity, and the like. **Foss and Klein (2012)** develop a theory of organization based on Knight's (1921) idea that entrepreneurial judgment is non-contractible, so that entrepreneurs wishing to exercise judgment must create an organization to bring these judgments to bear on economic reality. "The only 'risk' which leads to a profit is a unique uncertainty resulting from an exercise of ultimate responsibility which in its very nature cannot be insured nor capitalized nor salaried" (Knight 1921: 311) famously put it: Exercising judgment thus requires ownership and control of resources.

If resources are homogeneous, there is little for the entrepreneur to exercise judgment *about*. Indeed, most of the interesting problems of economic organization collapse under the assumption that resources are fungible and costlessly substitutable. If we take seriously the ideas of Hayek (and Austrian economists more generally) about capital heterogeneity, the time-structure of production, and the complexity of resource combinations, we understand more clearly the role of organizational experimentation and adaptation. As Lachmann (1956: 16) put it: "We are living in a world of unexpected change; hence capital combinations ... will be ever changing, will be dissolved and reformed. In this activity, we find the real function of the entrepreneur." Hayekian capital theory provides a unique foundation for an entrepreneurial theory of economic organization. Foss and Klein (2012) outline this theory in detail, showing how Knightian judgment combined with Hayekian capital theory generates new insight on organizational emergence, boundaries, and internal structure.

This may be one of the most potentially fruitful applications of Hayekian ideas, given the strong research, teaching, and outreach interest in entrepreneurship, particularly in business schools. Much of this interest is driven by a belief that entrepreneurship and innovation are key drivers of economic growth, and that they require a particular institutional environment—characterized by the rule of law, minimal government intervention, and substantial doses of personal liberty—to thrive (Klein, 2012). Curiously, Hayek’s direct influence on the entrepreneurship research literature is modest, though his work arguably underlies the “opportunity discovery” perspective that dominates the field (Shane and Venkataraman, 2000; Klein, 2008; Short et al., 2010). While Hayek did not write specifically about the entrepreneur, his idea of the market as process of mutual learning and discovery forms the basis of Kirzner’s (1973; 1992; 1997) theory of entrepreneurship as alertness to profit opportunities (Harper, 2003; Foss and Klein, 2010).

CONCLUSIONS

In this chapter we have argued that Hayekian ideas about knowledge, institutions, evolution, resources, and coordination have profound implications for organizational theories—and not only those based in economics. While organizational scholars recognize and appreciate Hayek’s approach to knowledge, we think the literature has not fully grasped the nature and essence of Hayek’s argument, which is not that knowledge problems can be solved by codifying knowledge, but that other mechanisms—rules, institutions, and most importantly, delegation and decentralization—can be effective means of “Coping with Ignorance” (Hayek, 1978).

Economic theories of the firm, and the New Institutional Economics more generally, have incorporated some of Hayek’s insights. Indeed, Hayek anticipates important issues and themes in transaction cost economics. But there is much broader scope for appreciating Hayekian ideas into modern theories of organization. In particular, a Hayekian research program in organizational studies would amount to examining dispersed knowledge in terms of providing precise conceptualization of

the construct, linking it to decision-makers' bounded rationality, and exploring the implications for organizations and the management thereof of the combined effect of knowledge dispersal and bounded rationality.

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