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“When Henry Met Fritz”: Rules As Organizational Frameworks For Emergent Strategy Process

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Abstract

Henry Mintzberg’s celebrated critique of the “design school” argued that strategy is best thought of as adaptive, bottom-up, and based on dispersed knowledge and learning. Yet Mintzberg’s account lacks a clear and comprehensive theoretical underpinning, especially regarding how to guide emergent strategy in dynamic environments, and leverage it to exploit value creation. We provide this foundation by showing how Mintzberg’s critique of planning and design at the level of organizational strategy is in key ways anticipated by F.A. Hayek’s critique of planning and design at the societal level. Both writers are critical of rationalist epistemology and instead stress experiential knowledge, fallibility, and unanticipated social consequences. Hayek also extends Mintzberg’s work by showing how rules in the firm capture adaptive, experiential, tacit, and dispersed knowledge in the context of dynamic environments. A framework of rules thus creates inimitable and non-substitutable resources that enable the firm to fully exploit its competitive advantage.

Keywords

Henry Mintzberg, F.A. Hayek, organizational strategy, tacit knowledge, dispersed knowledge, design school, emergent strategy, strategy as rules

Introduction

Henry Mintzberg’s critique of the “design school” of strategic management represents a key moment in the modern history of the strategy field (Mintzberg, 1972, 1977, 1981, 1990). What Mintzberg took to be the dominant approach to strategic management—exemplified by leading scholars like Igor Ansoff, Ken Andrews, and Michael Porter—focused on the use of centralized and expert knowledge for formal strategic planning. In contrast, Mintzberg proposed a process approach to strategy that was adaptive, bottom-up, and based on dispersed knowledge and learning. In making his critique of rational design approaches to strategy, and outlining an alternative, Mintzberg not only caused controversy but also raised a series of fundamental questions—rooted in organizational theory rather than strategic management theory—about the foundations and fundamental assumptions of strategy research (Ansoff, 1991; Mintzberg, 1990, 1991; Tsoukas, 1993, 1996). These have not yet been satisfactorily resolved or the scope of their application sufficiently appreciated, even considering Mintzberg’s high standing in the strategic management community.¹

Mintzberg’s critique is based on a series of claims about the nature of organizations and managerial work (e.g., Mintzberg, 1973, 1979) that contrast with classic tenets of strategic management. Strategic management has, of course,

moved dramatically beyond Ansoff and other early writers that Mintzberg criticized. Indeed, more recent developments like the knowledge-based and capabilities views of the firm (Bingham et al., 2007; Grant, 1996; Spender, 1996), the greater attention to middle-management strategic initiative (Glaser et al., 2016; Kanter, 1982; Wooldridge et al., 2008), the practice turn (Whittington, 1996), and the increased emphasis on adaptation in dynamic environments (Stieglitz et al., 2016; Teece et al., 1997) capture some key aspects of Mintzberg’s organization theory-based view of strategy, but not all. In particular, we do not have fully convincing answers to the following key challenge, implied by Mintzberg’s thinking: If firms need to make decisions that are adaptive relative to a changing environment *and* much of the decision-relevant knowledge in the firm is tacit and dispersed,

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how can firms best leverage that knowledge in the service of value-creation?

To help address this challenge and subsequent gap, we reconsider Mintzberg's critique in light of a parallel stream of research on organizations mainly associated with the Austrian economist, classical-liberal thinker, and Nobel Laureate Friedrich Hayek. Tsoukas (1996)—observing similarities between Mintzberg and Hayek—showed the importance of Hayek's work for strategy and organization scholars on “how to use widely dispersed knowledge and, therefore, how to extend the span of the utilization of resources in a way that exceeds the span of control of any one mind.” In making a similar case, Foss and Klein (2014, p. 482) suggest that Hayek's work has much to offer researchers in organization and strategy:

A Hayekian research programme in organization studies would amount to examining dispersed knowledge in terms of providing precise conceptualization of the construct, linking it to decision-makers' bounded rationalities, and exploring the implications for organizations and the management thereof of the combined effect of knowledge dispersal [authors: e.g., knowledge fragmentation and decentralization] and bounded rationality.

Interestingly, some of the best-known challenges to the traditional view of managers' epistemic capabilities have deployed versions of Hayek's knowledge-based critique of planning (e.g., Brusoni, 2005; Foss & Klein, 2014; Grandori, 1997; Sharma, 1997). To take only two examples, Jensen and Meckling (1992) argued that decision rights are best left to the most knowledgeable employees, while Aghion and Tirole (1997) argue that the need for knowledge to be outsourced and dispersed “strains the use of managerial authority as a mechanism for coordination” as “knowledge dispersal transfers real authority” (Foss & Klein, 2014, p. 476). These works hinted at various ways that Hayek's ideas can be applied in contemporary theory, and can even be foundational in management theory.

As we will show, Hayek and Mintzberg's research agendas include the same core premises. Specifically, they address environments where dispersed and tacit knowledge, combined with the cognitive limitations of entrepreneurs, managers, and planners, and dynamic internal and external conditions, represent major challenges to planning and strategy-making.

The Use of Knowledge in Society—And in Strategic Management

For some time, strategy research (e.g., which generic strategy to pursue, how to defend a competitive position, how to protect competitive advantage, and so on) has focused on strategy content (Teece, 2020). In contrast, the strategy *process* through which organizations formulate the strategies

that they may or may not follow has been explored less (Foss, Klein, & McCaffrey, 2019, pp. 45–46; Rumelt et al., 1991; Varadarajan, 1999). In the 1960s and 1970s, strategic management came to be dominated by a rationalist planning and design ideal associated largely with the work of Igor Ansoff (1965) (see also Moussetis, 2011), but also more broadly with the more prescriptive schools of thought in strategic management, and even more broadly with widespread confidence in the ability to rationally plan human affairs. This line of research, which leaned heavily toward the “content” side of strategy, remains prevalent in strategic management despite the existence of various competing schools of thought.²

These core tenets are parallel to, and perhaps even to some extent outgrowths of mainstream economic thinking of the 1950s and 1960s (Rumelt et al., 1991). This thinking was informed by two historical circumstances. First, the period following the Second World War was characterized by a general optimism about economic planning, promoted mainly by the alleged successes of wartime economic planning and controls. These in turn were the direct result of the enormous expansion of economic research during the war, enabled by new methods of data gathering and analysis intended to put economists' ideas to work in support of the belligerent nations. Planning, in general, became fashionable during the boom period of the “Thirty Glorious Years” until 1975 (Foreman-Peck, 2014); in other words, at about the time the field of strategic management was in its infancy.

Second, the research methods of the hard sciences heavily influenced economic research in the post-war period, and thereby imparted many assumptions to strategic management scholars. The (then) core of economic theory (general equilibrium theory) was transformed into a field of applied mathematics, and empirical economics became synonymous with econometrics, itself based on the methods of the natural sciences (Rumelt et al., 1991). It is worth noting that several major figures associated with the design school—and with current strategic management more broadly—such as Igor Ansoff, Kenneth Andrews, and Michael Porter came from professions outside management and were sympathetic to the new economics (applied mathematics, statistics, and engineering, respectively). In light of these circumstances, it is not surprising to find that the ideal type of the strategic planner is a top decision-maker in possession of a clear and transparent corporate objective function. The strategist, armed with all relevant data, can work out the optimal course of action needed to guide the company through a future whose uncertainty is handled through scenario analysis and contingency planning (Foss, Klein, & Bjørnskov 2019).

Despite the success of rationalist, planning-oriented strategy thinking, subsequent work on organizations explicitly or implicitly challenged many of its central tenets. For example, population ecology research (e.g., Hannan & Freeman, 1984) challenged the assumption of a high degree of organizational

flexibility inherent to rationalist strategy thinking, and culture research (Schein, 2010) pointed to the limitations imposed by organizational belief systems. Organizational learning research (March, 1991) suggested that firms have a tendency to end up in suboptimal “competence traps,” and research on strategy as practice eschewed traditional models and recognized that these tools are only used in a modified, loose way by strategy practitioners (Jarzabkowski & Spee, 2009). Many of these critiques were developed from at least an implicit process perspective. Following Simon (1982), scholars acknowledge that bounded rationality (i.e., the limits of human decision-making in changing complex environments) “prevents any single individual from collecting and processing all the relevant knowledge necessary to make an optimal decision” (Sull, 2005, p. 93), and concur that strategy is actually the result of a process of dispersed actions and decisions rather than a well-thought-out central plan (Mintzberg, 1978; Mintzberg & McHugh, 1985). However, the questions of dispersed or tacit knowledge are not tackled upfront; the Simonian influence directs research more toward the cognitive and behavioral aspects of strategy praxis.

Existing research that highlights dispersed knowledge neglects change (e.g., Grant, 1996; Hoopes & Postrel, 1999), or it highlights change, but mainly considers adaptation as resulting from the decisions of the top management team (e.g., Hambrick & Mason, 1984; Teece et al., 1997). This overlooks knowledge dispersed throughout the organization, as such knowledge often cannot be concentrated in the hands of top management, even taking into account such tools as enterprise planning systems, Business Process Improvement methods, knowledge management programs, balanced scorecards (Kaplan & Norton, 1992, pp. 71, 79), dashboards (Few, 2006, p. 35), Executive Information Systems (Watson et al., 1991, p. 22), and the like. The knowledge-based strategy literature acknowledges the importance of tacit knowledge as underpinning sustainable competitive advantage (Ambrosini & Bowman, 2001; Cavusgil et al., 2003; Spender, 1996). However, because this literature does not really deal with managerial decision-making, it stops short of explaining how this tacit knowledge is actually captured successfully in strategizing and adapting to dynamic environments and leveraged to create competitive advantage. More interestingly, Mintzberg does not offer such an explanation, either.

However, a combined focus on strategy process *and* the challenges of dispersed and tacit knowledge are the direct implication of Mintzberg’s approach, and the complete challenge raised to the emphasis of the design school. Mintzberg’s understanding of the nature of knowledge in decision-making and how such knowledge is dispersed in an organization provides the initial insights into strategy processes by highlighting the difficulties of identifying and integrating such knowledge (Mintzberg, 1989, 1990). Thus,

if we take learning and emergence seriously, we cannot help but look at process and change as well.

Thus, while most strategy content research remains based, one way or the other, on timeless equilibrium models that do not explicitly treat process,³ strategy process research remains a relatively small area in strategic management (Foss, Klein, & McCaffrey, 2019, pp. 45–46). This can be partly explained by the fact that, unlike strategy content, it lacks a clearly articulated economic foundation (Foss, 2007; Foss & Klein, 2014, p. 479; Kogut & Zander, 1992).

Hayek’s work can fill this gap by providing vital micro-foundations for understanding the role of dispersed and tacit knowledge in a changing environment, and how organizations can best leverage that knowledge in the service of value-creation.⁴ Hayek (1937, p. 49) defined the central problem of economics as the problem of the coordination of knowledge:

“how the spontaneous interaction of a number of people, each possessing only bits of knowledge, brings about a state of affairs in which prices correspond to costs, etc., and which could be brought about by deliberate direction only by somebody who possessed the combined knowledge of all those individuals.”

Furthermore, his program in political economy arose in similar historical circumstances to Mintzberg’s critique, namely, as part of a larger mission to review “unrealistic and untenable assumptions that are made about the cognitive powers of decision-makers” (Foss & Klein, 2014, p. 467). Hayek was aware, very early on, that the fundamental tools of economic analysis (e.g., general equilibrium models) could not address this knowledge problem satisfactorily, because

“in our analysis, instead of showing what bits of information the different persons must possess in order to bring about that result, we fall in effect back on the assumption that everybody knows everything and so evade any real solution of the problem” (Hayek, 1937, p. 49).

Hayek’s work on the use of knowledge in society was inspired by the mid-twentieth century debate over the feasibility of socialist central planning (see e.g., Hoff, 1949; Lange & Taylor, 1938; Mises, 1990 [1920]). This controversy mainly revolved around the question of how centrally-planned economies would function without private ownership of capital goods and without a functioning price system that entrepreneurs could use to allocate them (Mises, 1990 [1920], pp. 17–23; 1951 [1922], pp. 131–135; 1998 [1949], pp. 201–232). Hayek’s entry into the debate shifted the discussion toward emphasizing the dispersion of knowledge in an economy and how it affects the planning process and associated decision-making of economic actors (Hayek, 1948a, 1948b, 1948c). According to Hayek, planning “will in some measure have to be based on knowledge which, in the first instance, is not given to the planner

but to somebody else, which somehow will have to be conveyed to the planner” (Hayek, 1945, p. 520). Hayek (1948c, p. 155) further argued that,

Much of the knowledge that is actually utilized is by no means ‘in existence’ in this ready-made form. Most of it consists in a technique of thought which enables the individual engineer to find new solutions rapidly as soon as he is confronted with new constellations of circumstances. To assume the practicability of these mathematical solutions, we should have to assume that the concentration of knowledge at the central authority would also include a capacity to discover any improvement of detail of this sort.

This problem provided the core of his critique of centrally planned economies; according to Oğuz (2010, p. 146), Hayek “made tacit knowledge a key part of his work on spontaneous order and evolution. The impossibility of conveying tacit knowledge of market participants to a higher authority became central to his defense of decentralization and free market.”

The core theme that developed in Hayek’s social philosophy was addressing the simultaneous challenges of making the best use of dispersed knowledge while adapting to unforeseen changes (Hayek, 1945, 1978, 1982). For Hayek (1978, p. 182), the market is a learning process of trial and error in which “practically every individual has some advantage over all others in that he possesses unique information of which beneficial use might be made, but. . . only if the decisions depending on it are left to him or are made with his active cooperation” (Hayek, 1945, pp. 521–22). Thus, economic competition is “a capacity to find out particular circumstances, which becomes effective only if possessors of this knowledge are informed by the market which kinds of things or services are wanted, and how urgently they are wanted.” Hayek (1982, p. 17) thus saw a relationship between dispersed and tacit knowledge, practical learning, and the evolution of market orders and organizations (Oğuz, 2010, p. 158) in which “what is the best way of utilizing knowledge initially dispersed among all the people” is the central problem of any efficient economic organization (Hayek, 1945, p. 520).

Nonetheless, rather than searching for answers in other disciplines, Hayek (1937, p. 52) contended that economic microfoundations were indispensable:

economics has come nearer than any other social science to an answer to that central question of all social sciences, how the combination of fragments of knowledge existing in different minds can bring about results which, if they were to be brought about deliberately, would require a knowledge on the part of the directing mind which no single person can possess. To show that in this sense the spontaneous actions of individuals will under conditions which we can define bring about a distribution of resources which can be understood as if it were made according to a single plan, although nobody has planned it, seems to me

indeed an answer to the problem which has sometimes been metaphorically described as that of the ‘social mind.’ (Hayek, 1937, p. 52)

His further contributions to the economics of knowledge are positive descriptions of the market economy and its organizations as much as they are criticisms of central planning, and as such, they have value beyond their original context. In particular, if we consider strategy as a higher-level problem analogous to the production of capital goods by individual firms, Hayek’s ideas are relevant for managerial and entrepreneurial decision-making in an organizational context. Hayek’s key challenge can be summarized in his own words: “we can show in imagination what would happen if all these data were given to us. But we often forget that these data. . . are *not available to any single mind*, and, therefore, do not really lead to an explanation of the *process* we observe” (Hayek, 1983, p. 36; emphasis added).

We elaborate on this below. Mintzberg’s arguments appear distinctly Hayekian, stressing the same issues, sometimes even using the same language⁵, and his criticism of strategic planning in firms parallels Hayek’s critique of central planning in the overall economy.⁶ Like Mintzberg, Hayek highlights the fleeting, subjective, tacit, and dispersed nature of knowledge as a potential source of advantage, and pits this insight against the notion of an ideal central planner, whether in society or a business organization. Even though Mintzberg was not consciously influenced by Hayek, Hayek can be used to expand on Mintzberg’s positive approach to strategy and organization, as well as his critique. In this sense, Hayek might even be considered a foundational thinker for management theory.

Economic Planning and Strategic Planning

The Strategic Problem and the Economic Problem

Ansoff (1965, pp. 118–121) defined strategy as a rational plan “for making decisions determined by product/market scope, growth vector, competitive advantage and synergy.” Mintzberg (1979, p. 25) agreed, suggesting that “strategy is a mediating force between the organisation and its environment: consistent patterns in streams of organizational decisions to deal with the environment.” Scholars before (Chandler, 1986 [1962]; Drucker, 2018) as well as after (Porter, 1996) their debate have presented similar definitions. The key theme connecting all of these is the idea that strategy is a *higher order framework* essential to the formation of coherent competitive positioning on the market, generating a product portfolio, and executing an efficient production process. Strategic planning also implies decision-making to address these problems, as well as bearing responsibility for creating this higher-level framework.

This common understanding of strategic planning is congruent with Hayek’s definition of economic planning in

general, which he defines as “the complex of interrelated decisions about the allocation of available resources” (Hayek, 1945, p. 520). The difference between the two views is, therefore, mainly one of scale: while Hayek referred to the “economic problem” as concerning the optimal production structure and allocation of scarce resources throughout society, Mintzberg’s critique of the prescriptive schools of strategy concerned the design of strategic frameworks and allocation of resources within an organization. For both authors, therefore, the problem is one of understanding what are the best means for a rational organization—at the level of economies and companies, respectively. And for both, this in turn is “a problem of the utilization of knowledge not given to anyone in its totality” (Hayek 1945, p. 520).

The parallels between Mintzberg’s and Hayek’s thoughts become apparent when Mintzberg identifies the conditions under which an organization “tilts” toward the design school model of strategy-making (Mintzberg, 1990). He highlights four such conditions—remarkably, roughly the same ones Hayek identifies as underlying comprehensive socialist planning (Hayek 1948b, pp. 122–124; 1948d, pp. 181–182; 1994). For example, Mintzberg’s argument that the relevant knowledge cannot be established and set in stone before a new strategy has to be implemented—in other words, that the environment cannot be considered predictable—mirrors Hayek’s (1948d) point that dynamic conditions make centralizing knowledge even more challenging than it is under static conditions.⁷ Mintzberg, however, seems to be unaware of these parallels and there is no mention of Hayek in his article. To draw out the comparison, therefore, we will now examine their individual views more closely.

We consider four claims that, according to Mintzberg (1990), distinguish the design school model from his own view of strategy.⁸ He contends that each claim often proves false, both descriptively and prescriptively. Each theme in Mintzberg’s critique is also mirrored in Hayek’s works on knowledge, competition, and production. And like Hayek (1945), Mintzberg strongly stressed the distinction between practical, explicit knowledge and the fleeting, subjective, and often tacit knowledge acquired through learning by engaging with the environment (Mintzberg, 1990, p. 182).⁹

Thinking vs. Learning. First, strategic planning, like economic planning, takes place under uncertainty and requires forecasts of the uncertain future (Foss & Klein 2012, pp. 70–71, 180–181; Knight, 1971 [1921], pp. 90, 201–203). Both the central planner and the strategist operate in an economic environment where the future is uncertain, in which economic data and coordinates change all the time. For Mintzberg (1990, p. 185), “[d]espite implications to the contrary, the external environment is not some kind of pear to be plucked from the tree of external appraisal, but a major and sometimes unpredictable force to be reckoned with.” Mintzberg’s work on the “structure of unstructured decisions”

(Mintzberg et al., 1976, p. 246) focuses on decisions for which “no predetermined and explicit set of ordered responses exist in the organization.” Strategic choices exemplify such decisions, as they respond to major non-routine problems that have to be diagnosed, framed, and understood before appropriate responses can be devised. For Hayek (2009 [1941], pp. 330–332), entrepreneurs constantly face an uncertain future that requires present decisions about how to invest and build capital goods, and “the amount of capital available at any moment in a dynamic society depends. . . on the amount of foresight which has been shown by entrepreneurs” (Hayek 2009 [1941], p. 331). Therefore, the stock and continued employment of capital goods in the pursuit of profit—in society in general, and in an individual organization—depends crucially on “how correctly the entrepreneurs foresee what the situation will be at that future moment,” and thus entrepreneurial anticipations and interpretations of the external environment are, as for Mintzberg, “quite as important a datum” (Hayek, 2009 [1941], p. 331) as physical resources.

For the prescriptive schools of management thought, complexity and uncertainty suggest the need for and inevitability of strategic planning as well as the concentration of planning. According to Mintzberg, they view strategy “as [a problem] of design to achieve an essential fit between external threat and opportunity and internal distinctive competence” (Mintzberg 1990, p. 171). Thinking of strategy this way is reminiscent of what Hayek (1982) called “constructivist rationalism,” that is, the notion that only institutions that can have their relevant premises understood to substantiate a rational syllogism can be justified. It is also easy to see how this vision resembles the ideal of resource allocation under central planning so strongly criticized by Hayek: both view planning as a mechanical or technological process of gathering and analyzing data in order to generate a fit between either the internal and external environment (strategic planning) or the inputs and outputs of a production function (economic planning) (e.g., Hayek, 1948b, pp. 122–124, 1948d, pp. 181–182).

For both Mintzberg and Hayek, the trouble with this view is that it overlooks the crucial problem of learning. As Mintzberg (1990, p. 190) explains, “strategy formation must above all emphasize learning, notably in circumstances of considerable uncertainty and unpredictability, or ones of complexity in which much power over strategy-making has to be granted to a variety of actors deep inside the organization.” Similarly, for Hayek,

There would be no difficulty about efficient control or planning were conditions so simple that a single person or board could effectively survey all the relevant facts. It is only as the factors which have to be taken into account become so numerous . . . that decentralization becomes imperative . . . [A]ll the details of the changes constantly affecting the conditions of demand and

supply of the different commodities can never be fully known or quickly enough be collected and disseminated by any one centre. (Hayek, 1994, p. 55)

The data needed to develop a complete plan cannot be made instantaneously or costlessly available to a strategist: they can only be learned through experience and trial and error. In a sense, the data do not even exist “out there” waiting to be discovered, but in fact, are created through action in the marketplace. Therefore, even thorough deliberation will not be enough to formulate an adequate strategic plan, as the raw material (the knowledge) required for deliberation is not available to any one mind. Put another way, decision-makers cannot simply know the strengths and weaknesses of the firm without first testing them in the marketplace (Mintzberg 1990, p. 182). In dynamic environments, finding a way to make use of knowledge and in turn learning from it requires some type of decision framework, which we identify below as rules.

Concentration vs. Dispersion. Second, in a complex and uncertain environment, both strategic and central planning require the possession of a wide range of information and knowledge. The type, quality, and details of this knowledge are of primary importance. However, because of the limitations of human learning and the existence of uncertainty, relevant knowledge is dispersed among different actors and is not available to any one person in its totality. For Mintzberg, it is unlikely that the strategist’s “brain has full, detailed, intimate knowledge of the situation in question,” and furthermore, “he or she can only *know* the organization by truly being *in* the organization. This precludes the image of the case study classroom, the detached CEO with a pithy report, the “quick-fix” consulting contract, the quarterly directors’ meeting, even the weekend retreat of executives” (Mintzberg, 1990, p. 190). Although Mintzberg does consider circumstances in which this deeper knowledge of the firm can exist in one mind (e.g., a major organizational shift, or the creation of a new organization, both of which would require a “green-field” approach to strategy, a “period of reconception”), he nevertheless emphasizes the challenge to CEOs of creating those circumstances.

Knowledge does not exist in a concentrated form in the possession of the central (strategic) planner (Hayek, 1945). Hayek observes that “[t]he 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” (1945, p. 519). This view is based on his understanding of the “inarticulate knowledge” every individual possesses about the world (Oğuz, 2010, p. 155). Hayek argues that “we are not in fact able to state all the rules which govern our perceptions and actions . . . [W]e always know not only more than we can deliberately state but also more than we can be aware of . . .

and that much that we successfully do, depends on presuppositions which are outside the range of what we can either state or reflect upon” (Hayek, 1967, pp. 60–61).

If we were to paraphrase Hayek and apply his reasoning in the context of Mintzberg’s critique of the design school we might say that: “the data from which strategic thinking and planning are supposed to start are never for the whole company given to a single mind which could work out the implications, and can never be so given.” Using the example of firms’ cost curves, Hayek (1948d, p. 196) argues that,

[I]n the discussion of this sort of problem. . . the question is frequently treated as if the cost curves [of individual firms] were objectively given facts. What is forgotten is that the method which under given conditions is the cheapest is a thing which has to be discovered, and to be discovered anew, sometimes almost from day to day, by the entrepreneur, and that, in spite of the strong inducement, it is by no means regularly the established entrepreneur, the man in charge of the existing plant, who will discover what is the best method. The force which in a competitive society brings about the reduction of price to the lowest cost at which the quantity salable at that cost can be produced is the opportunity for anybody who knows a cheaper method to come in at his own risk and to attract customers by underbidding the other producers.

In addition, not all knowledge exists in a form that can be communicated. Much of the relevant knowledge needed to craft a firm’s strategy, for instance, is tacit knowledge that cannot be consciously articulated, let alone plugged into a model of the external environment. According to Hayek, “so much knowledge of particular circumstances is unarticulated, and hardly even articulable (for example, an entrepreneur’s hunch that a new product might be successful) that it would prove impossible to make it public quite apart from considerations of motivation” (Hayek, 1988, p. 89).

Hayek’s view actually pushes further than Mintzberg’s. Mintzberg allows for knowledge centralization in the context of “sufficient access to, and experience of, the organization and its situation to enable the strategist to understand *in a deep sense* what is going on,” or when a strategist has “developed a rich, intimate knowledge base over a substantial period of time” (Mintzberg, 1990, p. 190; original emphasis). Yet for Hayek, it is difficult for any entrepreneur or CEO to “know” the organization and the external environment enough to articulate a complete strategic plan at any point in time, regardless of whether the strategy is considered during a period of operational stability or during a period of (re) conception. The crux of Hayek’s argument is that the strategist is *never* in possession of “objectively given facts,” not even when creating a new plan rather than modifying an existing plan. There is nothing to suggest, à la Mintzberg, that entrepreneurs or managers are more likely to articulate or communicate a vision or complete strategic plan during strategic reassessments, technological breakthroughs, or

organizational creation than during the regular operation of the company. Again, this indicates that the need for some type of mechanism to effectively utilize knowledge in the firm is universal, and is not limited only to certain kinds of organizations.

Formulation vs. Implementation. Furthermore, even assuming that full knowledge of past conditions could be obtained by a single planner or a small board (thus eschewing the problems of identifying, selecting, curating, and accurately conveying this information), this is not the same as knowledge of future conditions and changes (Mihelic & Siegrist, 2018), which require foresight to cope with. For Mintzberg (1990, p. 182), “[e]very strategic change involves some new experience, a step into the unknown, the taking of some kind of risk. Therefore, no organization can ever be sure in advance whether an established competence will prove to be a strength or a weakness.”

In his response to Mintzberg, Ansoff (1991, p. 457) failed to address this Hayekian challenge when he contrasted Mintzberg’s emergent, experimental strategy-making with the “rational model of learning.” According to Ansoff (1991, p. 457), the “age of enlightenment ushered a new model which recognized the importance of cognition in the affairs of man. In this model decision-making is the first stage, followed by implementation of the decision. It became the standard model of the natural sciences, and it was the model used in the early prescriptions for strategic planning.”

Hayek, in fact, can provide a strong foundational critique of Ansoff’s prescriptive view of planning outlined here. According to Hayek (1945, p. 523),

there are few points on which the assumptions made (usually only implicitly) by the “planners” differ from those of their opponents as much as with regard to the significance and frequency of changes which will make substantial alterations of production plans necessary. [. . .] It is, perhaps, worth stressing that economic problems arise always and only in consequence of change. So long as things continue as before, or at least as they were expected to, there arise no new problems requiring a decision, no need to form a new plan.

Hayek’s epistemological and methodological critique thus pushes Mintzberg’s arguments—which emphasize the practical problems facing managers—even further. Hayek (1945, p. 524) shows that maintaining the continuous activity of the organization does not require a detailed plan followed by a thorough implementation, but “constant deliberate adjustments, by new dispositions made every day in the light of circumstances not known the day before, by B stepping in at once when A fails to deliver.” In other words, as Williamson (1996) has pointed out, a key concern in Hayek’s thinking is adaptation, specifically, with those institutions that are best capable of securing adaptation to unforeseen events in the face of dispersed knowledge. As Hayek (1945, p. 523) notes,

in the absence of unforeseen contingencies, the task of “drawing up a comprehensive plan governing all economic activity would be much less formidable,” as “economic problems arise always and only in consequence of change.” Because a comprehensive plan is impossible, managers will need to rely on a more adaptive framework.

The kernel of Hayek’s challenge rests on the impossibility for the decision-maker to gather all the necessary knowledge before acting, that is, before implementation of the strategy, as Ansoff suggests. Hayek (1945) focuses therefore on the importance of organizationally embedded, tacit knowledge, which

by its nature cannot enter into statistics and therefore cannot be conveyed to any [planner] in statistical form. The statistics which such a [planner] would have to use would have to be arrived at precisely by abstracting from minor differences between the things, by lumping together, as resources of one kind, items which differ as regards location, quality, and other particulars, in a way which may be very significant for the specific decision.

These other particulars are embedded in habits, institutions, and practices, and, therefore, beyond what statistical data can capture, and—in a dynamic environment subject to change—beyond what can be profitably transformed into information (Oğuz, 2010, p. 151) for centralized forecasts, including through Business Process Improvement methods, knowledge management programs, enterprise planning systems, and so forth. According to Hayek (1948a, p. 80), all individual economic actors perform “eminently useful functions based on special knowledge of circumstances of the fleeting moment not known to others,” both at a market and at an organizational level, and “any attempt to make them subject to [central] direction would necessarily mean that we restrict what social activity can achieve to the inferior of the individual” (Hayek, 1952, p. 88).

Hayek (1945, p. 524; original emphasis) then concludes by highlighting that in this case, “planning based on statistical information by its nature cannot take direct account of these circumstances of time and place. . . the planner will have to find some way or other in which the decisions depending on them can be left to the *man on the spot*.” Once more, this means managers face the challenge of how to guide decisions and learn and adapt at the same time.

Structure vs. Strategy. The fourth and final major area of overlap between Mintzberg and Hayek involves the relationship between strategy and the structure of the organization. As Mintzberg argues, the design school approach holds that strategy must be fully formulated: only then can it be used to shape the structure and processes of an organization (1990, p. 179).¹⁰ In contrast, he observes that existing organizational structures heavily influence strategy formation (1990, p. 183). Strategists are constrained by a

wide range of factors, including the current structure of a firm and the external and institutional environments:

Structure may be malleable, but it cannot be altered at will just because a leader has conceived a new strategy. . . In effect, strategy and structure both support the organization. None takes precedence; each always precedes the other, and follows it, except when they move together, as the organization jumps to a new position. Strategy formation is an integrated system, not an arbitrary sequence. (Mintzberg 1990, p. 183)

Hayek's contribution to this discussion can be seen through his work on capital and business cycle theory. Here he stresses the importance of entrepreneurial forecasts in creating a "structure of production," in this case, the firm's unique combination of heterogeneous assets that it uses to create and sustain its competitive advantage (Foss et al., 2007; Hayek, 2008, pp. 236–37; Hayek 2009 [1941], pp. 23, 37, 309–310). Capital goods have varying degrees of specificity and complementarity, and when assets are combined in production, they cannot be un-combined whenever a new strategy is formulated. Of course, entrepreneurs do their best to alter the structure of production in response to anticipated changes in the internal and external environment, but Hayek observes that this cannot be done instantaneously and without incurring costs. In fact, his business cycle theory stresses that entrepreneurs commit heterogeneous resources to production and that these assets cannot instantly and seamlessly be repurposed to meet changing conditions and demands for new strategies (e.g., Hayek, 2008). Hayek's economic theory thus adds support to Mintzberg's argument about structure and strategy by framing the relationship in terms of entrepreneurs' use of capital assets. Utilizing these assets for value-creation, however, requires awareness of local and tacit knowledge.

Implications for Strategy of a Combined Mintzberg-Hayek View

The previous sections have shown several ways in which Mintzberg and Hayek's views on organizations are similar and complementary. It remains to be fleshed out though how integrating their theories in this way helps to advance contemporary organization and strategy research.

In this section, we address this problem in two ways. First, we show how Hayek's approach broadens Mintzberg's own view, and explain how this synthesized view provides support for a theory of strategy-as-rules (as sketched by Eisenhardt & Sull, 2001) by looking at the process of integrating and coordinating dispersed knowledge in an organization in a dynamic context. Hayek's implicit answer, we argue, is that emergent strategy can be fostered within a framework of *rules*, where the role of top management is not to formally plan or centralize strategic-decision making, but to create and discover guidelines that allow for the dispersed

and tacit knowledge in the organization to be captured successfully, stored, and coordinated effectively in strategizing. Not only is this knowledge a source of inimitability for organizations through firm routines and capabilities, but also rules themselves may be unique to individual firms and without strategic equivalents in rival firms. Emergent strategy fostered in a framework of rules can thus be used for value-creation in organizations. Hayek thus complements and extends Mintzberg's approach, and helps to fulfill the promise of Mintzberg's positive research program on the emergent properties of strategy process.

Second, we explain how this modified strategy-as-rules framework sheds light on the process of how organizations shape strategy—relative to how strategy shapes organizations. That is, contrary to the emphasis on top manager-driven quick decision-making and reconfiguration based on rapid scanning of hyper-competitive environments that the dynamic capabilities view implies (Teece et al., 1997), we argue that a rule-based framework shows the value of strategies that evolve by aggregating the dispersed, tacit knowledge of the organization. The latter allows for organizations to shape strategy in two ways: both through providing a better understanding of the external environment where the firm operates (use of tacit knowledge), and by facilitating decision-making under uncertainty for entrepreneurial managers (adaptation).

How Hayek extends Mintzberg

Mintzberg's already influential critique of the rational planning ideal in strategy can be strengthened if reformulated along the lines provided by Hayek's insights into the market coordination process. First, Hayek's epistemological arguments provide a more fundamental critique of the rationalist assumptions of the design school. Second, strategy in any organization is a forward-looking process of what may be called "learning by implementation," understanding that knowledge is dispersed among many strategic actors within the organization and that the existing structure of the firm influences the creation and implementation of strategy. Note that, unlike Mintzberg, we refer to this process as applicable to all organizations, regardless of size or industry. This reformulation enriches and slightly corrects Mintzberg's original discussion as follows.

The Irrelevance of Firm Size. In identifying the "niche" of possible contexts in which the principles of the design school might apply, Mintzberg (1990, p. 192) contrasts small entrepreneurial firms (Mintzberg, 1979) with the "more complex types of organisation which depend on expertise for their functioning," and which require learning, analysis, and intuition. Informed by this distinction between entrepreneurial and non-entrepreneurial firms, Mintzberg argues that "the entrepreneurial mode of strategy making, where power is

highly centralized in a flexible organization” (Mintzberg, 1990, p. 186; see also Mintzberg, 1973), squares best with a design approach to strategy. However, this concession unnecessarily weakens Mintzberg’s argument by allowing a wider scope for strategy-as-planning than his core critique would otherwise indicate. The crucial point is that *in this context* the distinction between the two groups of firms, and between the different spheres of decision-making, is artificial.

Small and “simple” organizations, as well as large, “complex” organizations, are both fundamentally entrepreneurial as far as resource allocation decisions are concerned. In both cases, entrepreneurship is an experimental process, biased and cognitively constrained, of combining heterogeneous resources and the services of resources in a context that is uncertain and characterized by asymmetric information. However, organizations that differ in size also likely differ in terms of organizational structure and control. All firms must also use good judgment to allocate resources, make strategic decisions, and create value.¹¹ Equally then, within any organization, entrepreneurial judgment “centralizes” power over ultimate decisions about resource allocation, and crucially, this power exists in small and large firms. Within firm boundaries, however, further decision-making is decentralized and delegated to managers and employees, who act according to rules informed by the existing structure of the firm, and using the information embedded in the organization as well as their own knowledge of the external environment. This is in fact the only way in which “entrepreneurial power,” insofar as it is required for coordination and decision-making, can be effectively yielded in both large and small organizations. As Hayek (1994, pp. 159–162; 1973, p. 51) points out, yielding power over other actors is implied in the process of planning, but the extent to which such power is used to fully centralize decision-making clashes with the dispersion of knowledge in economies and organizations, and inevitably leads to suppression of managerial initiative and ineffectual results.

Mintzberg’s views about this can be confusing. For example, in his discussion of the “entrepreneurial school,” he states that centralizing strategic decisions in the CEO “can ensure that strategic response reflects full knowledge of the operations” (Mintzberg et al., 2009, pp. 151, also 145–149), even in large companies. Yet his own arguments about learning make the opposite point: that large organizations especially are often hurt by basing strategy on the unique vision of a single entrepreneur. Furthermore, the presence of an entrepreneurial vision does not eliminate the need for learning. If anything, it often overlooks the fact that learning is exactly what entrepreneurs are doing when exploring their visions—as they bear uncertainty through decision-making (Mintzberg et al., 2009, p. 152). If we recognize that knowledge can no more be centralized or contained in one mind within an organization than it can be in a market economy, it becomes clear that the only effective organizational decision-making (in small and large firms alike) is at least partly

decentralized and compatible with a learning-based, emergent, strategic process (Hayek, 1982, p. 49).

This reveals Mintzberg’s critique to be even stronger than he seems to believe: once the artificial distinction between small and large firms is removed, Mintzberg’s own thinking on organization and strategy has a wider scope for application. In Hayek’s terms once again, compared with decentralization “the more obvious method of central direction is incredibly clumsy, primitive, and limited in scope” (Hayek, 1994, p. 56), regardless of the size of the organization, from small to large firms and to the economy as a whole. We could thus reformulate Mintzberg’s insight in Hayekian terms to conclude that in all organizations, compared with the method of centralized strategic planning, decentralization of strategy-making has the potential to be more agile, refined, and wider in scope.

Guided Evolution. This reformulation of Mintzberg’s original proposal brings us to the most important insight: this type of decentralized decision-making and learning through implementation must nevertheless be guided in some way. Neither Hayek nor Mintzberg do in fact dismiss planning altogether, that is, they do not dispense with systematic thinking in making competitive decisions within organizations. Rather, the emphasis in both their works is placed on deciding the proper context and scope for planning. But while Mintzberg’s discussion of this stops short of addressing each fundamental question, Hayek can help to flesh out the implications of Mintzberg’s proposal of emergent strategies.

How do such strategies and strategic processes actually “emerge?” To paraphrase Hayek’s discussion of market coordination (1945, p. 45), instead of choosing to “direct and organize all economic activities according to a ‘blueprint,’ that is, ‘consciously direct the resources. . . to conform to the planners’ particular views,’ successful strategic planning is about creating “conditions under which the knowledge and initiative of individuals are given the best scope so that they can plan most successfully.” Hayek shows that in the market, the price system provides the rules for the coordination of production and exchange. And as we have shown above, uncertainty makes “mechanical,” “technological,” centralized strategic planning impracticable in organizations. What is required then, within an organization, is a substitute for the market’s price system that can capture tacit and dispersed knowledge in dynamic environments and allow for effective resource allocation and coordination of the process of production to achieve competitive advantage. According to Hayek (1945, p. 521), this substitute must “convey to the individuals such additional knowledge as they need in order to enable them to fit their plans in with those of others. . . [such that] fuller use will be made of the existing knowledge.” It consists essentially of rules (Hayek, 1982, pp. 49–50).

Eisenhardt and Sull (2001, p. 109) refer to this substitute, in organizations, as “a small number of strategically

significant processes and . . . a few simple rules.” Eisenhardt and Sull (2001) identify five types of such rules: how-to, boundary, priority, timing, and exit.¹² These strategic rules are in fact complementary to the resource allocation decisions made through entrepreneurial judgment in an organization. That is, entrepreneurs or entrepreneurial top-management make judgments over how to best allocate resources to make a profit given the uncertainty of the future that pervades the external environment in which the organization operates. Within the parameters defined by these overall resource allocation decisions—what Foss and Klein (2012, p. 188) call “original judgment”—other actors in the organization (with dispersed knowledge and decision-making) are able to make further decisions as to the precise employment of those resources in particular uses at lower levels. Rules allow for the tacit, dispersed knowledge and decision-making in an organization to be integrated into an overall strategy for the organization through a non-formalized process. Simple rules “make sense for all kinds of companies—large and small, old and young—in fast-moving markets like those in the new economy. . . [whose] most profound strategic implication is that companies must capture unanticipated, fleeting opportunities in order to succeed” (Eisenhardt & Sull, 2001, p. 108). Nevertheless, a Mintzberg-Hayek framework expands upon Eisenhardt and Sull’s restricted approach to strategy-as-rules as (mostly) being applicable to “rapidly changing, ambiguous markets.” As we have seen, Hayek contends that virtually all markets are uncertain as far as strategic planning is concerned, thereby playing up uncertainty and ambiguity for all firms, not just those in the most rapidly developing industries. Furthermore, tacit and dispersed knowledge exist in firms of all types, regardless of how rapidly markets might be changing. Strategy rules that undergird the decentralization of the strategy-making process are therefore required more universally than either Mintzberg or Eisenhardt and Sull recognized.

According to Hayek (1994, p. 80), rules “make it possible to foresee with fair certainty how the authority will use its powers in given circumstances and to plan. . . on the basis of this knowledge.” Thus, in all markets and in all organizations, big or small, rules can be the conditions that give the best scope to individual knowledge and initiative striving to coalesce into a strategic plan for the organization as a whole (Hayek, 1982, pp. 48–50).

Overall, at the level of the organization, a strategy is thus created—or rather, emerges—through the implementation of localized strategic decisions following the general rules set out by top management. This learning process, which integrates the dispersed knowledge within the organization, creates the strategic direction to a large extent from the bottom up rather than from the top down, but of course steered by the general rules defined by top management (see also Barney et al., 2018). It allows strategy to be informed by the

organization at the same time as strategy informs and guides the organization. More interestingly, as Eisenhardt and Sull (2001) explain, this process of strategy-as-rules creation is not the result of “clever thinking,” that is, not the result of planning, but “of experience, especially mistakes,” that is, of learning. This resonates again with Mintzberg and Hayek’s view that a process of trial and error is implied in the strategic process, that is, strategic rules do not exist “out there” to be discovered, but are created through action in the marketplace and in the organization. Hayek and Mintzberg add to strategy-as-rules, however, by showing that from learning must arise a decentralized decision-making framework for the guided evolution of the firm.

Finally, it is worth mentioning how this dispersed knowledge can be stored and coordinated. Routines and capabilities are firm-specific patterns of coordinated action that can store and coordinate (largely tacit) knowledge (a view originally articulated by Nelson & Winter, 1982). Furthermore, this coordination system must allow for the organization to learn through implementation. Implementation and thinking are intertwined, and Mintzberg explains that organizations learn by doing and implementing strategy, rather than dichotomously thinking and implementing in two discreet processes.

In this view, strategy thus provides a “competitive constitution,” a mechanism for coordination, rather than specific strategic actions (Foss & Klein, 2014, pp. 15–16). It must be informed by the organization at the same time as it informs and guides the organization. In a pertinent discussion, Lachmann (1971, p. 81) points out that:

In a society in which it is generally known that frequent change of undesigned institutions is inevitable, the designers of designed institutions may deliberately confine their activity to designing a framework which leaves room for a good deal of change. . . In such a society it might be said that the undesigned institutions which evolve gradually. . . accumulate in the interstices of the institutional order. The interstices have been planned, though the sediments accumulating in them have not and could not have been.

Along similar lines, the “designers of designed strategy may deliberately confine their activity to designing a framework which leaves room for a good deal” of emergent strategy, that is, initiatives that respond to changes in the environment and reflect the use of local knowledge. However, there seems to be a paradox: How can such a framework be designed in the presence of dispersed knowledge (which means that employees know things the firm’s top management does not, and unanticipated change)? As Langlois (1986, p. 182) argues (see also Langlois, 1995), most events have both foreseeable and unforeseeable aspects, or what he calls “typical” and “unique” features. Typical features are those environmental features that are relatively stable. The unique features are, well, unique. We can often anticipate and therefore plan

for the typical features. However, the unique features can only be “filled in” when they emerge.

This basic idea is well-known in those parts of the economics of the firm that are based on incomplete contracting, informing Coase’s (1937) and Simon’s (1951) view of the employment contract (employers direct employees when the unique features of events materialize), Williamson’s (1996) view of governance structure (these are chosen to safeguard against “typical” instances of opportunism), and Kreps’ (1990) theory of corporate culture. Firms may indeed achieve internal plan consistency, as Malmgren (1961) argued, drawing on Hayek (1937), but only relating to the typical features of events (see also O’Driscoll & Rizzo, 1985).

As an example, consider the all-too-real case of demand or supply shocks due to a pandemic. These events are individually unpredictable, and cannot be completely accounted (or contracted) for in advance. Yet a framework of rules can be established within individual firms that guide behavior in response to these *types* of events, if and when they occur. Sull and Eisenhardt (2012), for instance, mention the importance of rules about minimizing up-front expenditures and reusing existing resources, both of which are relevant in the pandemic scenario: both provide simple frameworks within which employees can act according to clear guidelines and toward established goals. Furthermore, rules like this allow employees “on the ground” to exploit local or tacit knowledge. In the case of rules about reusing resources, this might include knowledge about discarded or unused machinery or equipment no longer on the company’s books that can be repaired or repurposed when a pandemic makes buying new machinery impossible.

In sum, from a combined Hayek-Mintzberg perspective, the role of top management in all organizations, regardless of size or how fast the environment changes, is to supply schemes or “rules” that are flexible enough to accommodate unforeseen events, and that help agents coordinate their interdependent activities. To quote Lachmann (1971, p. 13) again:

[T]he central problem of the institutional order hinges on the contrast between coherence and flexibility, between the necessarily durable nature of the institutional order as a whole and the requisite flexibility of the individual institution . . . the relative immutability of some institutions is always a necessary prerequisite for the relative flexibility of the rest.

In sum, rules allow an organization to integrate essential tacit knowledge and inform strategy process and content. The role of top management is then not only the creation or discovery of these rules, but the decision between how much of this knowledge to integrate and how much adaptation to preserve in the face of unforeseen contingencies. This may be seen as a knowledge-based variation of the familiar exploitation/exploration trade-off (March, 1991). However, while the latter indeed involves (more or less distant) learning, knowledge

considerations are usually reserved for the exploration part. Hayek and Mintzberg add that exploiting existing knowledge is an independent challenge. Whereas Mintzberg’s main concern is learning, Hayek’s (1982) social philosophy emphasizes the simultaneous challenges of making the best possible use of existing knowledge, adaptation, and social learning.

Hayek’s theory of cultural evolution predicts that those societies that have discovered and preserved social rules that encapsulate experiential knowledge that brings adaptation in the context of a dynamic environment and the division of knowledge will prosper relative to other societies. Moved down to the firm-level, this explains the importance of such rules for organizational success in dynamic, uncertain environments. Effectively dealing with the trade-off above can in fact become a source of value-creation; efficient rules that exploit the tacit knowledge in an organization while preserving adaptation can be seen as a distinctive capability (of the managerial or entrepreneurial kind). Rules are complex, social, organizational phenomena, and because they involve a large degree of learning by doing, they are not subject to direct management and planning themselves, and thus not subject to imitation by other organizations.

Successful rules can be without strategic equivalents in other organizations. This is due to two layers of uniqueness: first, dispersed, tacit knowledge is to a large degree bespoke and unique to each organization, and by definition non-transferable. Second, the exploitation of this knowledge through rules, and the balance of integration and adaptation can be more or less efficiently or completely done. The distinct capability of top management to develop and use these rules, combined with particular relationships, routines, and cultures existing in an organization that contextualize them may put—at least for some time—this socially complex resource beyond the scope of duplication or substitution by rival firms.

The distinct rules-based view of strategy that emerges from combining Hayek and Mintzberg’s critiques of excessive rationalism in planning and strategy is in fact stronger than the sum of its parts, and wider-reaching than the original scope of either Mintzberg’s view or the strategy-as-rules framework. Hayek’s role in this, as we have tried to show, is in offering a more all-encompassing theoretical foundation that illuminates the social complexity surrounding the strategy process. This can offer a blueprint for, or at least an appreciation of the necessity of, rules for organizational success and value-creation.

Conclusions

F.A. Hayek and Henry Mintzberg are towering individuals in their respective fields. Despite their different backgrounds and holding very different views in some respects (most obviously political), they nevertheless developed critiques of

rationalist planning that are remarkably similar. In this essay, we have compared their views across a number of topics, especially regarding the tensions in strategy research between thinking vs. learning, concentration vs. dispersion, formulation vs. implementation, and structure vs. strategy. Hayek's critique of "constructivist rationalism" in politics, economics, and political philosophy is mirrored in Mintzberg's critique of the rationalist planning ideal in strategy, as prominently instantiated in his debate with Ansoff.

While conducted at different levels of analysis and for different purposes, Hayek and Mintzberg's views help stress the underlying problems with top-down, centralized strategy formation independent of learning. Furthermore, Hayek extends Mintzberg's approach by showing how *rules* in the firm capture adaptive, experiential, tacit, and dispersed knowledge in the context of dynamic environments. This in turn increases the scope for strategy-as-rules, which had before been mainly confined to rapidly changing environments. A framework of rules creates inimitable and non-substitutable resources that enable the firm to use tacit knowledge in the service of value-creation.

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Notes

1. Nerur et al. (2008, p. 319), following Ramos-Rodriguez and Ruiz-Navarro (2004), identify Mintzberg as one of the "authors who play a pivotal role in bridging two or more conceptual domains of research" in the intellectual history of strategic management. His work both in strategy and across disciplines also remains highly relevant: according to Google Scholar data, Mintzberg has been cited over 200,000 times, with 50,000 citations since 2015, reflecting his influence on a wide range of literature.
2. There has been much discussion of the classification of different approaches to strategic management (see Sarbah & Otu-Nyarko, 2014; Volberda & Elfring, 2001). Here, we rely primarily on Mintzberg's (1990) distinction between prescriptive and descriptive schools of thought. This is partly for reasons of expediency, but also because Mintzberg's critique—and Hayek's insights—can contribute something to most if not all schools of thought, regardless of exactly how we classify them. At the risk of oversimplifying, some of the basic assumptions of the prescriptive approaches can be seen in the kinds of highly simplified diagnostic tools used in environmental analysis, e.g. SWOT, competitor analysis, the Five Forces Model (Porter, 2008), and other familiar tools of management teaching and research.
3. The capabilities view, which largely draws on evolutionary economics (Nelson & Winter, 1982; Teece et al., 1997), is more explicit about process.
4. While Simon acknowledged Hayek's role in the development of the concept of bounded rationality (1969, p. 34), their subsequent approaches differed: Simon focused more on the perspective of decentralized organizational planning, unlike Hayek's emergent spontaneous order (Fiori, 2010, pp. 154–55). Mintzberg et al. have highlighted the limitations of Simon's perspective, which "remained true to the broader but no less conventional notion of what might be labelled cerebral rationality, that decision making is a cognitive process that can be decomposed into a sequence of simple, programmed steps" (Langley et al., 1995, p. 262).
5. For example, Hayek (1945) speaks of bringing knowledge under the "control of any one mind," while Mintzberg (1990) discusses the challenge of strategy being "controlled in one mind." Mintzberg also mentions several times the difficulty of relevant knowledge being "comprehended in one brain," etc.
6. More recently Mintzberg (2015, pp. 4–5) has dismissed Hayek as a proponent of a narrow, mechanical, and self-interested orthodoxy in economics. We believe this opinion to be quite incorrect, given Hayek's critiques of rationalism and mainstream economics, emphasis on rule-based action, and general emphasis on cultural evolution (see also Tsoukas, 1996). In any case, Mintzberg's critique of Hayek has no bearing on the similarities we discuss in this article.
7. Equally, Mintzberg's view that strategic planning only works if the organization is prepared to cope with a centrally articulated strategy (Mintzberg, 1990, p. 191) refers to implementation problems of the mechanism design variety that have also been highlighted as a challenge to centralized resource allocation (Maskin, 2015).
8. Mintzberg argues that his critique also applies to other "prescriptive schools of planning and positioning" that "have accepted the most basic" assumptions of the design school (Mintzberg 1990, p. 181; see also Mintzberg, 1989).
9. Mintzberg (1990, p. 182) argues that "Our critique of the design school revolves around one central theme: its promotion of thought independent of action, strategy formation above all as a process of conception, rather than as one of learning."
10. Mintzberg (1990, pp. 179–180, 183) does explain that design school writers do not rigidly adhere to this claim, as they recognize the practical importance of existing structures for strategy formulation.
11. Chandler (1986 [1962], pp. 11–12; emphasis in original) explains that "[t]he executives who actually allocate available resources are then the key men in *any* enterprise. . . . [E]ntrepreneurial decisions and actions will refer to those which affect the allocation or reallocation of resources for the enterprise as a whole, and *operating* decisions and actions will refer to those which are carried out by using the resources already allocated. . . . [W]herever entrepreneurs act like managers, wherever they concentrate on short-term activities to the exclusion or to the detriment of long-range planning, appraisal, and coordination, they have failed to carry out effectively their role in the economy as well as in their enterprise."

12. How-to rules “spell out key features of how a process is executed”; Boundary rules “focus managers on which opportunities can be pursued and which are outside the pale;” Priority rules “help managers rank the accepted priorities;” Timing rules “synchronize managers with the pace of emerging opportunities and other parts of the company”; Exit rules “help managers decide when to pull out of yesterday’s opportunities” (Eisenhardt & Sull, 2001, p. 111).

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