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## THE FIRM IN DISEQUILIBRIUM: A MARKET PROCESS VIEW OF FIRM ORGANIZATION AND STRATEGY

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### ABSTRACT

*When understood as an inevitable inconsistency of individual plans, disequilibrium is not only a necessary condition for the existence, and hence understanding, of the market process as we know it, it is also the glue connecting three other "Austrian" themes. In equilibrium heterogeneity of resources would have no strategic significance, specific and private knowledge would be much less problematic, and no profits net of contractual rent payments would be earned. In the real world of disequilibrium firm differences are not a mystery, rent is not an indication of inefficiency or monopoly power, and there is room to analyze, admire, reward, and consult about successful business strategy. Rent appropriation comes from ownership of valuable resources. And a successful strategy, one that earns enhanced rents, is one that acquires ownership of valuable and value-creating resources. Such a strategy is dependent for its success on superior vision (or luck), something which cannot exist in equilibrium.*

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## INTRODUCTION

Economists are at long last emerging from the stage in which price competition was all they saw. In capitalist reality ... it is not that kind of competition which counts but the competition from the new commodity, the new technology, the new source of supply, the new type of organization ... competition which ... strikes ... existing firms ... at their foundations and their very lives. This kind of competition is ... much more effective than the other ... and [is] ... the powerful lever that in the long run expands output. (Schumpeter, 1962 [1942], p. 84)

### *The Firm from a Process Viewpoint*

Recent work has focused attention on those aspects of the firm which might be helpful in seeking to understand how modern business organizations arise and function in the market process (see, e.g., the papers in Foss & Klein, 2001; Chiles, Bluedorn, & Gupta, 2007; Foss & Ishikawa, 2007; Foss, Foss, Klein, & Klein, 2005, 2006; Roberts & Eisenhardt, 2003). This chapter seeks to identify and further examine those aspects. An interesting, not widely noted, feature of these contributions is that they can all be seen to derive, directly or indirectly, from the Austrian theory of capital. Austrian capital theory, beginning with Carl Menger, through Eugene von Böhm-Bawerk, Ludwig von Mises, Friedrich Hayek, Ludwig Lachmann, Murray Rothbard, and Israel Kirzner up to the present, presents us with a distinctive vision of the economic process, from which mainstream economics and other areas of research have, consciously and unconsciously, borrowed (Lewin, 1999). Furthermore, many current works on the theory of the firm, economic organization, and business strategy use ideas that bear a striking (no doubt mostly unconscious) similarity to ideas found in the evolved Austrian capital-theoretic approach. Placing this research in relation to its similarity and connection to Austrian capital theory, and market process theory more generally, may add an interesting perspective, one that will hopefully help to further research in this area.

I have divided these "Austrian" contributions into four related categories which I consider sequentially below, namely, *disequilibrium*, *heterogeneity*, *knowledge*, and *rent*.

- *Disequilibrium* is the key. It is an implication that emerges out of a consideration of Hayek's and Lachmann's work – closely related to capital theory (Chiles et al., 2007; Foss et al., 2006; Foss & Ishikawa, 2007).

- The *heterogeneity* of resources, explicit in Austrian capital theory from Menger to Lachmann, is a theme repeated frequently in modern work on economic organization and strategic management. Heterogeneity is relevant only in disequilibrium.<sup>1</sup>
- Hayek's insights into the nature of dispersed *knowledge* in society has proven crucial to the development of many approaches to economic organization. Dispersed knowledge is relevant only in disequilibrium.
- Finally, the Austrians have a distinctive view of the concept of *rent*, a concept much used (abused) in the theory of the firm and the strategic-management literature. It is related to the problem of appropriation of surplus value, which is an aspect also of value-imputation from Austrian capital theory (first considered in detail by Friederich Wieser). There is an important distinction between rent and profit (Lewin, 1999; Mathews, 2006a, 2006b). Profits are earned only in disequilibrium.

I conclude by attempting to gather the threads into a summary view drawn from these contributions.

We begin with a discussion of disequilibrium.

## DISEQUILIBRIUM

### *The Meaning of Equilibrium*

Following the work of F.A. Hayek (1937) equilibrium is here conceived as a situation in which individual knowledge and expectations, and the actions based on these, are compatible with the "data," where the "data" for one individual include the actions of other individuals. Scratching the surface of any of the alternative definitions that could be offered indeed reveals that it is impossible to think of equilibrium in economics without bringing in the perceptions of individuals (Lewin, 1999, Chapter 2; Lewin, 1997a, 1997b). After all, we are dealing with human actions and these are determined by the perceptions of the actors. So, in the case of the supply and demand of a single well-defined market, the price will not be observed to change when all individuals are fulfilling their mutually related plans to buy and sell, and where such plans are not fulfilled we may expect these plans to be revised. This is widely recognized, though the formal technical treatments of modern economics are often apt to lose sight of it. There is no doubt, however, that Hayek's insights have been accepted in principle and have been variously endorsed in the literature (Lewin, 1999, pp. 17–18).

Nevertheless, current economic approaches consider equilibrium not so much as a state of affairs in the world, as an axiom of economic analysis. In using equilibrium in this way, economists are really using it as a synonym for "rational action," or, more tautologically, for "purposeful action." Individuals can be seen to be always in equilibrium if one construes the constraints, including the time constraints, widely enough to explain any action as a constrained maximization subject to these constraints. Any action can be explained by reference to the fact that the individual is "doing the best s/he can" given the time available, the knowledge s/he has, the physical and financial resources available, etc. This "Chicago-School approach" is not without its considerable payoffs in deriving many important insights (see Becker, 1992 for a survey). It gives short shrift, however, to an examination of the implications of the differences in knowledge and expectations across individuals that one arguably has to look to in explaining important and sustained differences in economic performance or organization across firms. Subjective values and expectations turn out to be crucial for this. If everyone knew the "true" value of everything, if there were no room for differences in opinion, there would be no market process as we know it. The market process must be the result of this Hayekian *disequilibrium*; that is, the result of manifest, and inevitable, differences in the perceptions, hence valuations of economic resources. Out of these differences the trial and error process that we call competition emerges, in which the perceptions of most are falsified, at least in part. The question then arises; if we are in a state of perpetual disequilibrium, in which the market process is continually sorting out the more from the less accurate (prescient) perceptions, that is, if we are continually mistaken about things, how is successful action possible at all?

#### *The Individual Plan and the Existence of Social Institutions*

The answer (Lewin, 1997a, 1997b, 1999, Chapter 3), lies in unpacking the notion of the individual plan. Examination of the epistemology of the individual plan reveals that it must be based on three different kinds of knowledge (see Table 1) – (1) knowledge of the natural world (facts and "laws" of nature, the law of gravity), (2) knowledge of the social world (people stop at red lights), and (3) knowledge of specific facts and events (his mother is a film star, about which we can all agree; my product will be a best seller, about which we most certainly may not agree). Many (most?) social laws are known tacitly, knowledge about how others are going to act in

**Table 1.** Action Depends on Different Type of Interrelated Knowledge.

Type of Knowledge	Example	Expectations Converge to Equilibrium?
Type 1 – Natural laws	Things are expected to fall when dropped	Yes
Type 2 – Social laws	People stop at red lights	Yes
Type 3 – Specific facts and events	His mother is a film star, My product will be a big seller	Often not

various circumstances. Each individual plan is informed by these three types of knowledge and contains some contingencies. However, the set of contingencies imaginable is strictly limited (bounded rationality) and, in this sense, all plans must be open-ended. The passage of time always brings with it some new knowledge, sometimes important, sometimes trivial, and the experience is never exactly as we imagined it would be in every detail (O'Driscoll & Rizzo, 1996). Plans are also multilayered. We plan at many different levels simultaneously. We plan our commute to and from work every day, we plan our weekly appointments, and we plan for our children's college opportunities. Every individual has a complex and tacit structure of plans. Obviously some plans are more likely to succeed than others. We hardly stop to notice the success of the majority of our plans. We commute successfully every working day, manage to meet our weekly appointments, etc. We *do* notice when they are unsuccessful and we are late for work or forget an appointment. That is a situation of plan disappointment, a situation of disequilibrium in which the frustrated plan of one person implies the frustration of all those plans of others which depend on it. Clearly disequilibrium plays an important role in regulating our lives, in reorienting our actions, so that we do not forget the next appointment, or leave home a little earlier in order to make the train.

That most of our "routine" plans do *not* end in disappointment is due in no small measure to the existence of knowledge types 1 and 2, the latter implying social institutions, designed and spontaneously evolved, that provides a mechanism for coordinating plans. They do so by providing shared categories, like the way we keep time; by providing common rules of conduct, like the way we greet each other or decide who goes through a door first; and in multiple other ways, some only dimly perceived or not perceived at all. The market itself is an evolved social institution with evolved rules, norms, and customs governing individual behavior and so is the business firm. These social institutions rest on shared knowledge that

condition actions so that people tend to behave much in the way we expect most of the time, thus ensuring that *most* of our plans are, indeed, coordinated.

We cope with the complexity and change in the world by converging on institutions. For example, once the arrival of a new range of products, made possible by the developments of a new technology, has been digested, new categories of classification tend to be developed, into which these products are grouped. The categories emerge spontaneously out of individual attempts to communicate the attributes of the new products. A good example is the product set associated with the personal computer. A whole range of products exist, whose inner workings remain a mystery to the vast majority of people, but whose purposes need to be explained by way of new categories of performance (the refresh rate on a monitor, the download speed of a wireless connection). Shorthands develop to provide an increasingly informed public with a way to tailor their expectations when choosing between products. They enhance predictability by enhancing the interpretability of information. Of course, these relatively predictable elements change with time and it is no accident that conscious innovation involving product differentiation is often referred to using the phrase "category killer."

#### *Equilibrium within Evolutionary Change*

About some things, some specific events, however, there is no predicting. These are the intricate specifics of each historical situation. Plans can never be coordinated in every detail. In that sense we are never in complete equilibrium. Nevertheless, in peaceful, lawful societies behavior is *ordered*. Hayek, in his later work, spoke less of equilibrium and more of order. The (extended) order of society is the result of the component orders which we call institutions. Many of them are "spontaneous orders." They represent equilibria of a sort, in that they are states of convergence around which expectations are formed and conform. In this sense, we may say that the social process is composed of equilibrating and disequilibrating sub-processes. Economic growth, the arrival of new and better products and services and better methods of production is the result of unpredictable, disequilibrating processes. There is no *overall* tendency for expectations to cohere in these particular processes. They are "non-expectable" and thus non-convergent.

The degree of predictability of any event is related to the extent to which it tends to exhibit repeatable, typical, or recognizable characteristics. Many routine events fall within the "very predictable" range, hence the emergence of "routines." However, in the realm of the innovative activities of the firm in the market, many events fall very definitely outside of this range. New methods of production, new producer and consumer goods and services, new methods of organization, all embody and depend on new knowledge to a high degree and their emergence is intimately related to, and crucially dependent on, a *divergence* of expectations, which leads to a variety of implicit experiments. But, for this process to be coherent these experiments must play out within a framework of stable institutions, like the rule or law and property rights, that coordinate the expectations of most *other* things, so that, for example, peace is maintained and contracts are honored. They constitute the "rules of the game" as it were, even though the outcome of the game itself is intrinsically unpredictable, and must be for a dynamic society. Paradoxically, those societies that are in one sense most dynamically unstable (experience rapid and incessant change) are in another sense the most stable (exhibit stable laws and respected property rights, and customs and norms that condition human behavior in a predictable way). Those societies that experience constructive change are thus those societies best able to peacefully *absorb* change. This has obvious implications for the economics of transition (for example, North, 2005).

Indeed, we may say, therefore, that *predictability in one sphere is the necessary ingredient for coping with its absence (novelty) in another sphere* (Loasby, 1994). The amazingly wide range of ever emerging products and the persistent improvement in methods of production, are the results of a multitude of continual experimentations that would be completely out of place in a world of perpetual (Hayekian) equilibrium.<sup>2</sup>

## HETEROGENEITY OF RESOURCES

### *The Productivity of Roundabout Methods of Production*

Carl Menger, the founder of the Austrian School, pointed out that production depends crucially on time. There is a *time structure* to the production process as men take the fruits of nature and fashion them into products more useful to their purposes. The *first order* of goods are consumption goods, second and higher order goods are capital goods which are used to make other capital goods or (ultimately) consumption goods.

Goods proceed from higher to lower order along a "supply chain" and emerge with time as consumption goods. This observation is hardly novel. Adam Smith, for example, very clearly identifies the need for an accumulation of resources to maintain the workers while the work was in progress (Smith, 1776 [1982], p. 343). Production takes time. Menger affirms that the "more" time it takes the more value will be added; but, this is not only because of natural growth, it is also, and more relevantly, because the more time is available, the more can be learned about how to do things more productively and the greater the division of labor that can be achieved. This is the germ of the idea spelled out in much more detail by Menger's disciple Eugene von Böhm-Bawerk in his three-volume work on *Capital and Interest* (1959) that the more "roundabout" production is, the more productive it is likely to be. Böhm-Bawerk postulates that wisely chosen roundabout methods of production are more productive than ones of shorter duration.

This postulate is related to the intuitive idea that a higher level of savings leads to a higher level of sustainable consumption for the economy. A larger accumulated fund of savings for sustaining workers over a longer period of time allows for more productive, but more indirect (roundabout), production methods yielding a greater consumption value. So one needs to balance the gains in consumption value against the costs of "waiting" longer for that value, a balance that is captured in the interest rate, which balances impatience (or time preference) against the rewards for waiting. For any set of known productive techniques of equal value the shortest will be chosen; so if one is going to move to a technique which has a longer duration, one, necessarily, will require some compensation for the lengthening of the process unless waiting is irrelevant.

This idea became a hallmark of the Austrian theory of capital, the area of study for which the Austrian school is most renowned. It is an idea that is quite intuitive and was expressed by Böhm-Bawerk in different places in his voluminous work. In the process of capital accumulation, "lengthening" the production process could result in learning and thus an improvement in technology. Capital accumulation and technological change are kept conceptually separate in most modern economic theorizing, but this is a relatively recent development. Clearly Adam Smith saw them as inextricably connected as did Menger (Lewin, 2005). Böhm-Bawerk considered the capital stock to be composed of heterogeneous items of varying specificity that fitted into a complex mosaic of production in a way not easily understood but clearly influenced by the fruits of the division of labor.

### Changing Technology and the Heterogeneity of Capital

Ludwig Lachmann is the modern Austrian scholar most well known for capital theory. He saw much to admire in Böhm-Bawerk. He considered his proposition about the productivity of roundabout methods of production to contain an essential insight, one of enduring and underappreciated relevance. But he sought to cast it in a more accessible and defensible form. He considered the whole idea of trying to measure capital or its "length" to be misguided. Instead of thinking about the capital *stock* we should think about the capital *structure*. Like Hayek before him, he seems to have been much influenced by the Joseph Schumpeter's views of the dynamic market process. Like Schumpeter, Lachmann envisages production as a process driven by the entrepreneur who forms new and continually changing *capital combinations*. Within these combinations the individual capital items (resources)<sup>3</sup> stand in complementary relationship to one another. They are *joint inputs* into the achievement of a *production plan* in the broadest sense. When the plan fails, in part or in whole, the entrepreneur has to adapt by making *substitutions*. Thus substitutability and complementarity are not so much attributes of capital resource inputs (as in neoclassical economics with its emphasis on equilibrium) as they are of states of the world. Complementarity is a feature of *stability*, substitution is a feature of *change*. Together they describe two aspects of the capital structure (broadly understood), its resilience and its flexibility (Lachmann, 1947, 1978 [1956]).

When substitutions have to be made, the entrepreneur must change the capital combination in a manner constrained by the physical (technical) and institutional constraints. Some resources will have only one use and will be rendered useless by the change. Their value will fall to zero. These, as explained, are completely specific resources. Most resources will have more than one use (they are characterized by multiple specificity). The more adaptable a resource the greater its value in alternative uses. A resource that has to be sold for scrap in the face of change has limited uses, while a resource that can be used in a variety of alternatives (an opera house can be turned into a movie theater) is more resilient.

Economic progress and capital accumulation take the form of an increasing complexity of the capital structure. This is a recasting of Böhm-Bawerk's essential truth. Production becomes more roundabout by becoming more *complex* – the capital structure comes to embody more elements with more complex interactions. In place of, or equivalent to, increasing roundaboutness, we have increasing complexity. Though there is

no simple way to measure complexity one may plausibly argue that modern scholars will readily understand this assertion. It seems natural then to turn attention to the question of how modern organizations and societies at large develop and cope with increasing complexity in production.

### *Quantity and Structure*

One might say that there exist two broad, and exclusive, approaches to capital theory. The first, tracing from Adam Smith, but more so from Carl Menger, may be thought of as a *structural* (or compositive) approach. The second, tracing from David Ricardo (1973 [1821]), having been incorporated into most modern economic approaches, may be thought of as a *quantitative* approach (Lewin, 2005). We have suggested that the former, a legacy of the Austrian tradition, is more relevant to an understanding of the modern business environment.

Consider the relationship between quantities and structures. A structure of things can be described by a list of items that stand in a certain orientation to one another. Complex structures are composed of many items with many possible interactions. A structure as opposed to a list (which could be unmanageably detailed and devoid of meaning) is distinguished by the fact that one can infer properties about the whole list from a description or observation of just a few component (or typical) parts together with an articulation of the principles of interaction. Quantities are formed by aggregating commensurable items. Structures can be aggregated (quantified) if the elements of the structure can be counted (valued) and if their orientation is constant, or, in other words, if substantial redundancy exists in the structure, so that similar principles of interaction are present in many different parts of the structure and these remain constant. Sometimes certain types of interaction are considered irrelevant and are ignored, while the focus is turned to interactions at other levels. If the latter are fixed while the former are irrelevant, aggregation may be facilitated. For example, if differences between firms (their internal structures as described by the interactions of their component parts) are considered to be irrelevant, while the interactions between firms is considered to be describable (hence quantifiable), as in the neoclassical case of perfect competition or monopoly for example, then aggregating firms (or their estimated values) may provide a meaningful conceptual result. However, if such interaction is not describable, when neoclassical perfect competition or monopoly is not a defensible or helpful description, and, by implication, the neglect of

intra-firm interactions is not defensible, the result will have dubious meaning and relevance.

By recognizing the importance of structure as a phenomenon to be investigated in and of itself, economists could indeed broaden and enhance the value of their investigations. A rich and growing literature on economic organization illustrates the unlimited insights to be mined. A recent example considers the question of interactions at various levels within structures. If interaction patterns are such that they occur more at some levels than at others, we may make use of the phenomenon known as *modularity* to gain a better understanding of the structure – its behavior and development (see Garud, Kumaraswamy, & Langlois, 2003 for a general treatment). Modularity is a ubiquitous property of many types of structures like electronic systems, biological systems, social systems (like firm hierarchies) and, presumably, capital structures.

### *Modularity as a Roundabout Method of Production*

Taking structure seriously leads to an investigation of principles involved in understanding and designing structures. This refers to both the structure of production itself and the structure of organization for production. Production is a set of activities or tasks that has to be organized (coordinated). It should not be surprising that specific organizational structures are related to the logic of specific production structures. Clearly organizations design production, but, in a less obvious but equally true sense, production designs organizations (Langlois, 2002). The nature of decision-making, information-sharing, design responsibility, etc. must accord with the logic of the structure of the production for the product being produced. The contrast between the vertically integrated production organizations of the 1920s and the largely decentralized organizations of the digital age has much to do with considerations of this nature. Modularity is a helpful concept in this context. Much depends on what capabilities are available already in the market and can be purchased (already modularized-providing external knowledge economies) and what has to be produced internally because new capabilities are called for. So the degree of vertical integration may change with circumstances as these considerations vary over time and space (Langlois & Robertson, 1995).

Modularity is implied by *decomposability*. A system is (wholly or partially, nearly) decomposable if the inner components of the subsystem interact exclusively (or almost exclusively) with each other and not at all

(or very little) with components outside of the subsystem. In other words, interaction is encapsulated or modularized. In social systems interaction is a matter of coordination of actions. "The basic idea of coordination is simple; the effectiveness of one activity depends on what other and related activities are being performed and how . . . a central principle of organizational design is to divide the work among components in such a way as to minimize needs for coordination" (Simon & Augier, 2003, p. 40). Modularization is a way to do this. So, in the first instance, we may say that modularization is a way of dealing with complexity in the performing of production tasks by economizing on the need for communication, a way of economizing on information.

Clearly, this is an aspect of the division of labor. Productive resources are organized (internally or in the market) into modules that specialize in the performance of certain necessary tasks. But insofar as the module is self-contained, and can be replaced easily with a similar one without disrupting the entire production project, the knowledge required by those performing tasks in other modules need not include any knowledge about the workings of the one being substituted. Indeed each module needs knowledge pertinent only to its own set of specialized tasks, plus a minimum of knowledge necessary to allow it to connect to other modules in the structure. Each structure is thus describable as an *architecture* of (many or few) modules that *interface* according to a given *standard*. So the use of modularization is a way of economizing on knowledge by effecting a *division of knowledge* (Hayek, 1945), a theme we shall return to later. In terms of, and augmenting, Lachmann's capital-theoretic framework, a module is a specialized combination of heterogeneous, complementary capital resources. A module is a synergistically specific component of the capital structure.

But modularity is more than this. Modularization provides the firm or the market with *dynamic capabilities* (Teece, Pisano, & Shuen, 1997). In the absence of change (equilibrium) modularization would not be necessary. The system architecture once in place need not be changed. Individual components can simply be replaced by identical substitutes when necessary. There is no vulnerability or need for redundancy. Stability is inherent in a static environment. In a dynamic system, however, one in which changes in technology are sought after and require continual upgrades to various parts of the system, modularity is crucial. This is perhaps the starkest shortcoming of a static neoclassical perspective on the firm. The modern firm is not simply an allocator of known resources possessing known capabilities in order to maximize shareholder value. In the modern economy the firm *must actively plan for, and design its organization to accommodate and aggressively*

*achieve continuing changes in production methods, organization, product design and quality, new products, etc.* "The potential for technological change is enhanced when modules are independently upgradeable and *can be designed to be so*. [Also] modularity improves adaptability and reduces the risks of rapid obsolescence" (Garud & Kumaraswamy, 2003, p. 49). A prototypical example is the use of "object oriented programming" in software product design, where subcomponents of a program are designed as separate stand-alone "objects" that can be separately upgraded over time. This is both an example of, and a metaphor for, modularity more generally (Baetjer, 1998). But these benefits come at a price!

Designing a system upfront to be modular is more difficult and takes more resources than simply designing the system to achieve the immediate tasks at hand, ignoring the need for future adaptation and change. In this sense we may consider it a species of Böhm-Bawerk's more roundabout production and of Lachmann's progressively more complex evolving capital structure.

Of course modularity is not always a result of conscious design. Modularity is also, perhaps even more so, a characteristic of spontaneously evolved systems like markets. And design and evolution interact insofar as more resilient designs tend to survive the competition of the marketplace where those that survive are often more complex and roundabout.

#### *Firm Differences and the Economics of Organization are Related to Heterogeneity*

Aggregation of the capital stock is a condition necessary for doing modern neoclassical growth economics, in order to account at an aggregate level for the contributions of the various categories of productive inputs to economic growth. But in order to arrive at such an aggregation one must forego investigation into the morphology of the capital structure. The neoclassical theory of the firm is thus not really a theory of the firm, but rather a theory of industry structure, in which there are no real firms. The inner workings of the firm are assumed away (as explained earlier). In fact, the neoclassical industry, and, indeed, the whole economy, can be described as a remarkably simply modular productive structure. Each firm is identical and produces a common homogeneous output, using combinations of individually homogeneous resources (land labor and capital), employed in identical constant-returns-to-scale production functions. Each firm constitutes an identical, and redundant, production module. Any level of the economy, firm,

industry, and economy, looks identical except for size. The "aggregate" production function is a mere "blow up" of the individual micro production functions. There is no room for the consideration of organizational structure – actions and decisions are subsumed away. Many strands of modern economic and strategic-management thought have sought to remedy this shortcoming in one way or another. Lachmann's approach invites application to an examination of the firm as a living economic organization in the spirit of much of this work.

Heterogeneity, and the complementarity and multiple specificity that it implies, are relevant only in conditions of disequilibrium. In equilibrium where no unexpected changes occur the capital structure will be perfectly sustainable requiring no changes. In this way, heterogeneity and change are intimately related. In fact, only if *ex ante* values (as seen by someone in the market) turn out to be different from *ex post* values, will heterogeneity matter. "Matter" in this context relates to the question of strategic behavior, including organizational design, by decision-makers in the production process broadly understood. If the values of all resources always turn out as expected, their heterogeneity would have no strategic significance. No decision maker would be able to discover a way to combine known or newly created resources in a manner that conferred a competitive advantage to her or him. But in the absence of equilibrium, the heterogeneous nature of resources significantly reflects the fallible decisions of the past as well as the possibilities and constraints of the future. And that is why firms are different, and that is why there is room for strategic action.<sup>4</sup> Heterogeneous resources give rise to differing expectations of their worth as conceived in various possible capital combinations. Those expectations that turn out to be correct give rise to profits. So, in a fundamental sense, it is the *heterogeneity of expectations*, that matters more than the heterogeneity of resources as such.

## KNOWLEDGE

### *Knowledge is Tacit and Dispersed*

Hayek published what is perhaps his most famous journal article in 1945 (Hayek, 1945). This much-cited article has elicited many interpretations and applications. It arose out of the Socialist-Calculation-Debate of the 1930s. Two key ideas relevant to the economics of organization are *dispersed* knowledge and *tacit* knowledge. Hayek asserts that the totality of

knowledge used by a modern market economy is far beyond anything that could be perceived by a single human mind or even a central-planning-committee of minds. This is true because of the very nature of knowledge. Knowledge is necessarily widely dispersed across the individuals of the economy. There is a necessary *division of knowledge* that underlies the complex division of labor in the economy. The impossibility of centralizing *knowledge* is the result of more than the computational difficulties of centralizing *decentralized information (data)*. Information requires interpretation to be useful as knowledge, and to accurately and usefully interpret information collected from local sources, out of context, is impossible. Individuals, pursuing their everyday specialties, make use of the special "knowledge of the particular circumstances of time and place," knowledge acquired painstakingly, over extended time, often unconsciously. That is, much of this knowledge is tacit knowledge, knowledge of which we are not (or not completely) aware (Polanyi, 1974). Tacit knowledge is knowledge that we have about how to do things (like riding a bicycle) that is not knowledge we can articulate in any useful detail (you cannot provide the instructions about how to ride a bicycle to someone who wants to learn how). In addition, in the absence of a market, and therefore a market process, most of this knowledge, acquired in the pursuit of commercial goals, would simply not exist. Suppressing the market would suppress the *generation* of productive knowledge.

All kinds of centralized direction suffer to some extent from these problems. The centrally directed economy suffers the most, but regulation of all kinds must solve this Hayekian "knowledge problem." And the business firm is no exception. Every firm faces a mini-knowledge problem (Minkler, 1993).

### *The Firm and the Knowledge Problem*

There is a large and ever-growing literature on this problem of managing knowledge that is drawn, directly or indirectly, from Hayek's insights. They are, in the first instance, concerned with appropriate incentive-alignment; trying to ensure that those who have control over resources have the incentive to use them in the interest of the resource owners (the firm). Making the most important (indispensable, specific) member of the team "the owner" (residual claimant) is one way of trying to do this (Klein, Alchian, & Crawford, 1978). Jensen and Meckling (1992) pay careful attention to decision-rights and the rights to alienate those decision-rights.



As Richard Langlois explains, granting alienability is a form of modularization more extensive than the granting only of control "since the owner with alienability needs to engage in less explicit coordination with others to use the asset effectively under all circumstances ... it is alienability that solves both the problem of knowledge decentralization and the problem of incentives: the asset may be placed under the control of the person whose knowledge best equips him or her to use it, and alienability disciplines the owner's use of the asset by making its value (to which the owner has a residual claim) measurable on a market" (Langlois, 2002, p. 37).

There is also a whole other level of the Hayekian knowledge problem concerned not only with knowledge management, but also with *knowledge development*. Knowledge assets, in one form or another, are vital to the competitive performance of firms. And knowledge is an ever-changing phenomenon. Firms in the knowledge economy have to manage not only to use their knowledge and other resources correctly, they have also to manage in such a way as to encourage the continual profitable development of new knowledge. The problem extends beyond allocation to "discovery." Hayek argued that competition should be seen as a "discovery process" (Hayek, 1978) and much of what firms do to remain competitive is to discover knowledge of how better to produce goods and how to produce better goods. There is an inextricable research element involved in production. The problem of organizational design must consider then how best to organize production not only to align incentives for appropriate resource usage but also for appropriate resource development and creation, that is, for *learning* (Nonaka & Takeuchi, 1995). New knowledge obviously cannot be had before its time, its fruits cannot be predicted, so the revenues attributable to knowledge-creating assets must be extremely uncertain. There is ample room for different assessments and outcomes. In the event, valuable knowledge is unlikely to be distributed evenly across competitors, so resource heterogeneity is hardly a mystery or a rare event in this (disequilibrium) framework.

Having developed knowledge assets, firms need to consider how best to protect them from alienation by others, and how best to replicate them internally for purposes of growing (Liebeskind, 1996; Winter, 1995). Competitive advantage derives fundamentally from resource heterogeneity. As explained in the previous section, resource heterogeneity derives from the nature of knowledge and the expectations to which it gives rise (as distinct from physical heterogeneity). Firms do things differently and do different things because they have developed the knowledge (much of it tacit) to do it "their way." Knowledge is not simply replicable across individuals and

organizations. Much of it becomes embodied in routines that withstand the test of time and competition (Nelson & Winter, 1982). Further, there is inescapable *causal ambiguity* (Lippman & Rumelt, 1982). Even successful players may not fully understand the secrets of their success.

*Inimitability* of some resources is thus a twin-edged sword (Winter, 1995). On the one hand, it affords the resource-owner a measure of protection from competition by replication. Making resources inimitable is an *insulating mechanism* – whether by making them difficult to copy, or by obtaining an exclusive property right over them (patent, copyright). On the other hand, inimitability may inhibit the ability of the firm to grow by replicating its successful resources and resource combinations. The ideal for the firm, therefore, is to develop (or otherwise acquire) resources that it knows how to replicate, but are relatively difficult for others to do so. This not only protects the value of existing resources, but encourages the accumulation and discovery of new ones. The knowledge of how to replicate is, then, itself an inimitable resource.

The value of the firm is no more nor less than the value of the resources that comprise it. And the value of these resources at any time depends exclusively on their perceived ability to produce products that consumers value. This is the first proposition of (Austrian) capital theory. Strategies to enhance the value of the firm by enhancing the value of the resources it controls (by inhibiting their replicability, or enhancing the appeal of the products they produce) are important aspects of the strategy equation. To this, however, must be added considerations of how any enhanced resource-value may be appropriated and by whom. To this final topic we now turn our attention.

## RENT AND APPROPRIATION

### *Rent through Austrian Eyes*

Austrian capital theory begins with Carl Menger (1871), who emphasized that the value of productive resources (higher order goods) derive from their contributions to the value of the prospective outputs of consumer (first order) goods. This proposition (called *Menger's Law* by Israel Kirzner) inverted the classical cost-of-production theory, most clearly developed by David Ricardo, according to which consumption goods are to be valued by the value of the resources used to produce them. Menger showed that *cost derives from value* and not the other way round. Menger's Law provides us

with the universal logic of present value, whereby the value of any asset (and hence the maximum price that the valuer will pay for it) is *imputed* from the value of the expected product attributed to its use in production, suitably discounted. Discounting is necessary because of *time preference*, the premium of present utility over future utility. Other things equal, a dollar now is worth more than a dollar sometime in the future – the premium being greater the further into the future we look. Böhm-Bawerk (1959 [1921]) provided a path-breaking analysis of the nature of interest and time preference and their relation to the productivity of resources. He showed that the more productive an asset is perceived to be (in terms of value) the higher will be the price that people are willing to pay to buy it, or the higher the rental rate they will pay to rent it. Frank Fetter (1977) extended Böhm-Bawerk's insights and Murray Rothbard (1977) provided the definitive syntheses. This rental rate is to be understood as *the price of the services of the asset*. All productive assets earn rent, explicitly if rented or implicitly if employed by the owner. The wages of labor are the rents earned by human capital.

From the perspective of the economy as a whole, adopting, as it were, a "God's eye" view, the value of resources, at any point in time, can be seen as the discounted total of the (estimated) income stream attributable to them. In other words, the value of any economic resource is logically the present value of any income stream that can be attributed to the use of that resource in production. That is the maximum price that anyone appraising that resource would be prepared to pay for it. We may leave aside the question of how it is possible to attribute to any resource an income flow. Clearly, as discussed earlier, insofar as resources must invariably be used in combination, it is no simple matter to impute to any single resource a value for its individual contribution – this is the ubiquitous imputation problem. And the estimation of the value of any production plan is in itself a speculative matter. The point is that anyone considering the purchase of any resource cannot avoid (perhaps implicitly) referring to the value that this resource is expected to add to economic production. Even if the resource is purchased for resale, ultimately its value must derive from some potential productive use.

Imagine for a moment that no ambiguity or uncertainty whatsoever attaches to the production processes in the economy. All individuals possess the same hard knowledge of what resources can do and, therefore, what they are worth. In such a world, when a resource is rented its rental rate must reflect the value of the current addition it makes to the value of production (its value-marginal-product), or else the owner would be reluctant to rent it

to the firm; and where the resource is not rented but is owned by the firm, the implicit "cost" of using the resource must reflect that same value. Thus there is no "surplus value" to be had, since all values are known and become incorporated into the (implicit and explicit) prices of resources. Nevertheless, in the sense advanced here, "rents" are earned by the factor owners.

"Rents" refers here to the income streams attributable to the resource inputs in the productive process. Resources can generally be conceived of as a stock of potential productive services. Rents are the prices paid for these services. Rents are the prices of the *flow* of services emanating from the *stock* of resources (Penrose, 1995 [1959]; Dierickx & Cool, 1989). The price of the any resource stock is the discounted present value of the prices of the services it yields. In this framework rent is nothing more nor less than the rental price of the service of a productive input. As Murray Rothbard has explained:

We are using "rent" to mean the unit price of the services of any good. It is important to banish any preconceptions that apply the concept of rent to land only. Perhaps the best guide is to keep in mind the well-known practice of "renting out." Rent, then, is the same as hire: is the sale and purchase of the unit service of any good. It therefore applies as well to prices of labor services (called "wages") as it does to land or any other factor. The rent concept applies to all goods, whether durable or nondurable. In the case of a completely nondurable good, which vanishes fully when first used, its "unit" of service is simply identical in size to the "whole" good itself. In regard to a durable good, of course, the rent concept is more interesting, since the price of the unit service is distinguishable from the price of the "good as a whole" ... The price of the "whole good," also known as the capital value of the good, is equal to the sum of the expected future rents discounted by ... the rate of interest. (Rothbard, 1970 [1962], pp. 417-418)<sup>5</sup>

This conclusion is not changed at all when we drop our assumption of perfect and certain knowledge. In the real world where the future is irredeemably uncertain, the value of any productive resource will still reflect the discounted value of its expected future rental stream. Certainly, different people will have different estimates of these rental streams and, therefore, will appraise differently the value of the resources that yield them. The market process of production and exchange will work in such a way that resources tend to move to those who appraise them most highly. As mentioned earlier, a firm may employ resources in production by owning or renting them. If a firm decides to purchase a resource it must do so because, in its estimation, the additional value to it of the future incomes streams attributable to the use of that resource meet or exceed the price paid for it. Similarly a firm will not rent a resource unless, in its estimation, the value

added to production, by combining that resource with others in the production process, meets or exceeds the rental rate asked. Once again this is not to deny or minimize the uncertainties or indeterminacies involved in the imputation problem. There may be significant bargaining problems associated with the inability to neatly apportion contributions to indivisible resources (Alchian & Demsetz, 1972) but none of this disturbs the conclusion that resource earnings are rents and that the value of these resources must derive from some way of estimating their contribution to production.

This framework suggests the following conclusions:

1. There is no categorical distinction between the earnings of some resources and others, they are all rents.
2. The value of any productive resource is the discounted value of the rent streams that can be attributed to it. There is no valid "cost of production" theory for the determination of value. All value derives from the value of final outputs to consumers. It follows then that there are no "unearned" rents in the sense of Ricardo or in the sense of any "monopoly rents." All rents reflect the "value contributed" to the production process.

#### *Recent Developments*

The use of the concept "rent" (deriving from Ricardo) is confused and inconsistent in both the standard economic model of perfect competition and in the strategy literature, a confusion that arguably would be banished by use of the simpler Fetter-Rothbard approach (deriving from Menger and Böhm-Bawerk). This has recently been realized (though not very explicitly) in three remarkable articles that address both strands of literature (economics and strategy) by Makowski and Ostroy (2001) and Lippman and Rumelt (2003a, 2003b, see also Lewin & Phelan, 2002 and Mathews, 2006b). The two articles by Lippman and Rumelt in particular evidence a notable, independent rediscovery of some perspectives outlined in this paper. All three articles aim at a conscious break with the past, with the standard model of perfect competition (generally referred to as neoclassical economics). Makowski and Ostroy provide an intriguing reformulation of "perfect competition" devoid of the usual heroic assumptions of full information, many buyers-sellers, no innovation or changes in technology,

etc. and in so doing arrive at a vision of the world of competition as a rivalrous process in which profits are earned in disequilibrium. Competition is "perfect" when all possible value that can be created *is* created and is fully appropriated by someone. So, in the familiar case of a perfectly discriminating monopolist, no value-creating opportunity is left unexploited and "competition" is actually "perfect." Paradoxically, but logically, all other perfectly competitive cases are variations of this theme in which full appropriation occurs. It follows that the price-taking condition of the standard model is not needed and bargaining, negotiation, and strategizing can occur.

Lippman and Rumelt's two companion articles acknowledge the relevance of Makowski and Ostroy's work, and of the Austrian tradition, to their own. But none of these three articles shows a clear perception of Hayek's notion of equilibrium, and its relevance for the nature and role of knowledge in the market processes they describe, or of the Fetter-Rothbard theory of rent. Yet, especially in Lippman and Rumelt's work, the similarity is striking. For example,

there is no residual part of revenue that is not attributable to a resource. The payments to resource are what we ... define as *simple rents* – they are neither Ricardian, transfer, differential, quasi, nor economic rents. (2003a, p. 903)

Rent is a payment for the services of a factor of production (one pays for an apartment or a car). (2003a, p. 904)

Given a durable resource, the simple rent is the total payment received by the owner of that resource. The value of the resource is the discounted value of future simple rent payments. The economic [differential] rent is a portion of the simple rent payments and depends upon the analyst's definition of "alternative use." Given a specified alternative use, economic rent is the difference between the present simple rent payment and the simple rent payment that would be received in that alternative use. Such alternative payments are out-of-equilibrium conjectures based upon various assumptions about what might change (and what might not) to force the resource into its alternative use. (2003a, p. 917; cf. Lewin & Phelan, 2002)

The capitalized stream of payments for the services of a resource is its value, the total payments ... for all resources in a firm is the value of the firm. The objective is to maximize its wealth by adjusting the ways in which it uses and combines resources and by its purchase and sale of resource. (2003a, p. 924)

Business management and strategy concerns the creation, evaluation, manipulation, administration, and deployment of unpriced specialized scarce resource combinations ... the strategy problem [is] one of discovering or estimating the value of various resource combinations. New wealth can be created by trade in resources as long as there

are hitherto unexamined combinations. (2003b, p. 1069, abstract, it is not clear why attention is confined to *unpriced* resources)

These articles are not without blemish (some misconceptions and terminological quibbles exist – opportunities for further research and fruitful dialogue). They do, however, represent a remarkable move toward a dynamic Austrian-type vision. In that vision competition is an open-ended discovery process in which the earnings of profits (most plausibly understood to be a residual earned after the payment of all contractual payments – rents) are possible because the *ex ante* prices of resource turn out to be different from their *ex post* values. As Ludwig von Mises has lucidly expressed it,

What makes profit emerge is the fact that the entrepreneur who judges the future prices of the products more correctly than other people do buys some or all of the factors of production at prices which, seen from the point of view of the future state of the market, are too low. Thus the total costs of production – including the interest on the capital invested – lag behind the prices which the entrepreneur receives for the product. This difference is entrepreneurial profit. (Mises, (1980), p. 109; see also Sautet, 2000)

## CONCLUSION

Of the four categories of contributions surveyed here two are integral parts of the attempts of the past few decades to remedy the limitations of the neoclassical theory of the firm, namely *heterogeneity* of resources and the nature of *knowledge*. These attempts are to be found in various literature strands including notably transactions-cost economics, the economics of organization, game theory, and strategic management and organization, especially in its RBV variety. Confusion and inconsistency concerning the concept of “rent” persists and, until the recent work of Lippman and Rumelt, the simpler, more plausible and more likely-to-be-consistent approach deriving from the Austrian tradition and definitively expressed by Fetter and Rothbard, was completely neglected, and is nowhere acknowledged outside of narrowly Austrian research.

It is in regard to the concept of equilibrium, however, that the Austrian vision stands to make its most valuable contribution (see Table 2). Hayek’s approach to equilibrium is almost never used explicitly and, even as theorists strive mightily to find a distance from the perfect-competition model, the allure of equilibrium theorizing remains untarnished. It seems to be an unspoken article of faith that disequilibrium theorizing is not possible, or is somehow undesirable. Yet, as argued in this chapter, when understood as

Table 2. The Importance of Disequilibrium.

	Heterogeneity	Knowledge	Rents
Disequilibrium	Resource (capital-good) capabilities and values have to be estimated – entrepreneurial judgment is exercised in creating productive capital combinations	Is dispersed and partially tacit, is never collectible, gives rise to disparate expectations	Are the earnings of resources (capital-goods) and have to be estimated and are often contracted; the residual after payment of rent is profit
Equilibrium	Has no operational relevance – resource (capital-good) values and capabilities, are known with certainty – no entrepreneurial judgment is necessary	Is shared in common. Expectations converge – are identical	Are the earnings of resources (capital-goods) and are known with certainty; there is no residual after payment to rent (no profit)

an inevitable inconsistency of individual plans, disequilibrium is not only a necessary condition for the existence, and hence understanding, of the market process as we know it, it is also the glue connecting the other three categories of consideration. In Hayekian equilibrium heterogeneity of resources would have no strategic significance, specific and private knowledge would be much less problematic, and no profits net of contractual rent payments would be earned. In the real world of disequilibrium firm differences are not a mystery, rent is not an indication of inefficiency or monopoly power, and there is room to analyze, admire, reward, and consult about successful business strategy. Rent appropriation comes from ownership of valuable resources. And a successful strategy, one that earns rents and profits, is one that acquires ownership of valuable and *value-creating* resources. Such a strategy is dependent for its success on superior vision (or luck), something which cannot exist in equilibrium.

## NOTES

1. This chapter also contains a discussion of the role of *modularity* in facilitating successful action in disequilibrium and in particular a discussion of the relationship between *structures* and *quantities* (*aggregates*).

2. As a referee points out an implication of this is Hayek’s (1973) point that to satisfy some expectations it is vital that other expectations be disappointed.

3. The notion of a *capital good* is interchangeable with the notion of an economic resource if we cast a wide enough net to include human capital. Then we may say that producers combine resources in order to use the services of those resources to produce some desired good or service.

4. To be sure, situations may exist where resource combinations promise to yield a surplus of *known value* whose distribution among the resource owners is up for grabs and therefore invites "strategic" behavior. Since there is no disagreement as to the value of the surplus, the disagreement over the distribution may not (though it may) affect the employment of resources in specific combinations. There are no real "discoveries," there is no innovation or entrepreneurial action. Whatever we mean by "strategic" then, we should like to analyze a world in which both types of disagreement (over the distribution and the size and nature of the surplus exist). I return to this later.

5. Also: "We have been using the term rent in our analysis to signify the hire price of the services of goods. This price is paid for unit services, as distinguished from the prices of the whole factors yielding the service. Since all goods have unit services, all goods will earn rents, whether they be consumer's goods or any type of producers' goods. Future rents of durable goods tend to be capitalized and embodied in their capital value and therefore in the money presently needed to acquire them" (Rothbard, 1970 [1962], pp. 502–503).

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