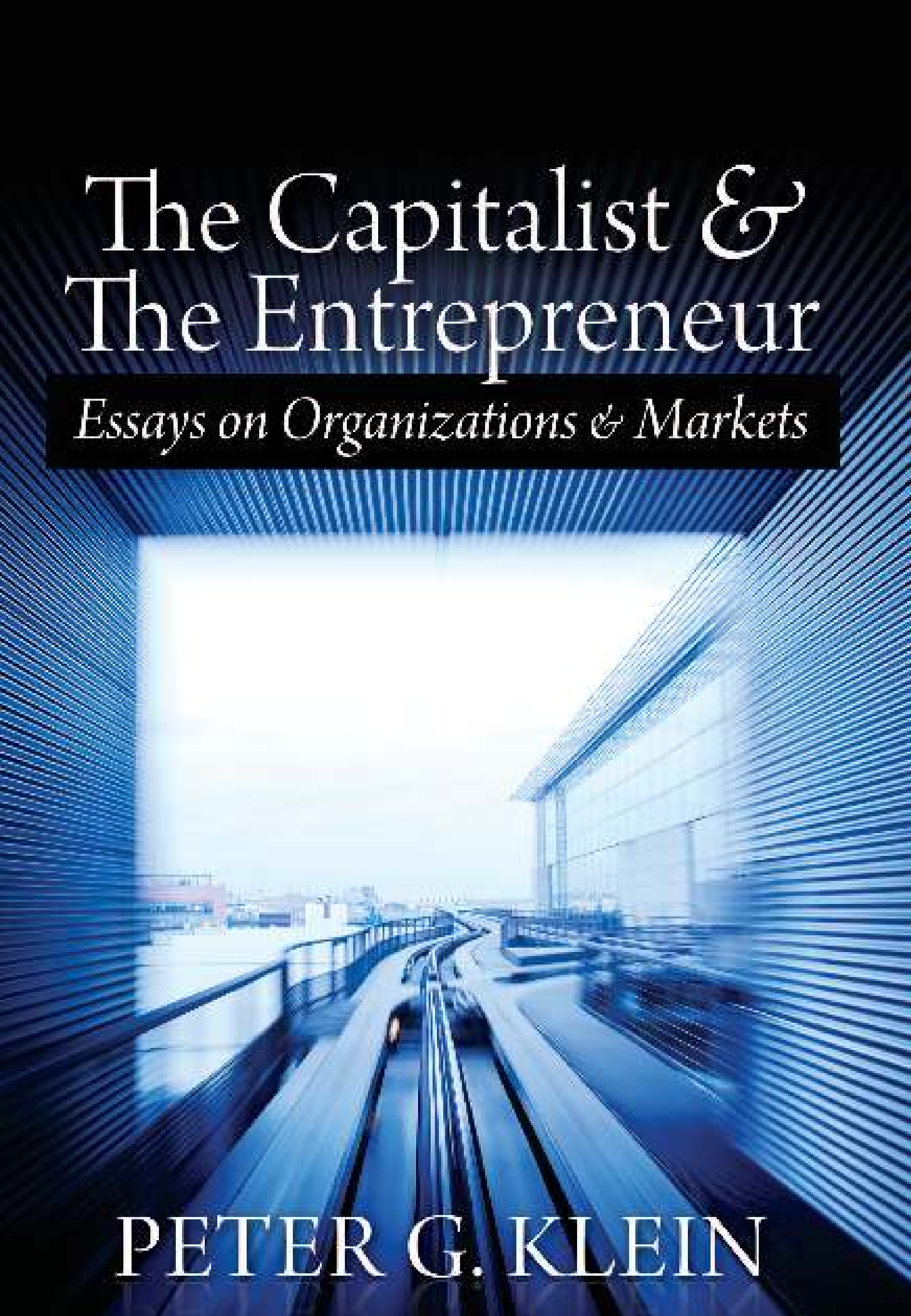
The Capitalist &
The Entrepreneur
Essays on Organizations & Markets
PETER G. KLEIN

The Capitalist and the Entrepreneur

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Essays on Organizations and Markets

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The entrepreneur hires the technicians, i.e., people who have the ability and the skill to perform definite kinds and quantities of work. The class of technicians includes the great inventors, the champions in the field of applied science, the constructors and designers as well as the performers of the most simple tasks. The entrepreneur joins their ranks as far as he himself takes part in the technical execution of his entrepreneurial plans. The technician contributes his own toil and trouble; but it is the entrepreneur qua entrepreneur who directs his labor toward definite goals. And the entrepreneur himself acts as a mandatary, as it were, of the consumers.

—Ludwig von Mises, *Human Action* (1949), p. 300

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Foreword
by Doug French

Entrepreneurship has been a hot buzzword recently. Classes in entrepreneurship are being taught at both the high school and college levels. The Ewing Marion Kauffman Foundation: The Foundation of Entrepreneurship has big fancy websites advertising that its President and CEO will give a "State of Entrepreneurship Address." There are global entrepreneurship conferences being held in far-flung places like Dubai. Learning programs are offered to test your "Entrepreneurial IQ." The United States government even has an entrepreneurship website, advertising a Presidential Summit on Entrepreneurship, Entrepreneurship Law, and a Global Entrepreneurship Week.

Is it that simple? If more classes, websites and conferences are offered will we really have more Ewing Kauffmans? A man who as a child was bedridden for a year with a heart ailment but used the time to read 40 books per month. After WWII he worked as a pharmaceutical salesman until, with a $5,000 investment, he started Marion Laboratories. Company sales were just $39,000 in the first year of operation but four decades later Kauffman's company would have revenues totaling $930 million. In 1989, Kauffman merged Marion with Merrell Dow Pharmaceuticals, making more than 300 millionaires of Marion investors and employees.

Kauffman himself would likely have not stepped into the role of entrepreneur if not for the stupidity of his employer, Lincoln Laboratories. A natural salesman and hard worker, Kauffman in just his second year earned more in commissions than the company president did in salary. In response, the president cut Kauffman's commissions. Despite the reduction, Kauffman still out-earned the Lincoln head man the following year, so "he took away some of my territory, which was the same as taking away some of my income," Kauffman related later. "So, I quit and I started Marion Laboratories in the basement of my home."

The government can talk about entrepreneurship and act like it is promoting it, but all of what government does by taxing and regulating impedes the entrepreneur. It's hard to imagine that even Ewing Kauffman could make a similar initial investment today (roughly $44,000 adjusted for inflation), start a firm in his basement, and build it to a billion dollar company. The local authorities in Kansas City were not all that concerned about a fledgling pharmaceutical company operating from Kauffman's home in 1950. Today, there would be permits to obtain, approvals to be gained and license fees to pay. The majority of the legislation that has given the Food and Drug Administration (FDA) its enormous power was enacted after Kauffman's company was up and running.

But as long as there is some shred of a market available, entrepreneurs find a way. They see opportunity others don't. They take financial risks that most people would consider unfathomable. The government edicts, bureaucratic roadblocks and oppressive taxation that discourage the hardiest of souls only serve to challenge and inspire creative entrepreneurs while weeding out potential competitors. All of the wonderful goods and services that we enjoy are due to entrepreneurship and the firms that are created to carry out the dreams of the entrepreneur and serve customers.

It is the firm where most people work. Maybe its a small firm or a big one or one in-between, but unless one is a solo contractor most people trade their time and talent for a paycheck to pay the bills. The vast majority of working people don't give much thought to this framework. They clock in, they clock out. Payday every couple of weeks. At the same time most people will spend the majority of their non-sleeping hours on the job, working for a firm or series of different firms. And work life maybe the single most important part of a person's life. Reportedly 95% of the people who are happy on the job are happy with their life as a whole. But salaried workers, from the lowest paid to the highest, take no risk. And although they are critical to the production of products and services, they are a cost of doing business.

Conversely, the entrepreneur is only paid when the market accepts his or her product. If the market rejects the product, the entrepreneur is not only not rewarded, but most times will lose capital that had been saved previously and was invested in the idea and production. As Kauffman explained, "The odds were strongly against me when I started. There were two or three thousand pharmaceutical businesses started after World War II, and only three ever really succeeded."

As vital as entrepreneurship and the firm are to the working of the market and lives of virtually all working men and women, most schools of economic thought are silent on the subject. Even the work that has been done is incomplete and contradictory. Economists can't even agree on what entrepreneurship is or what exactly entrepreneurs like the late Ewing Kauffman do. And the apparatus that facilitates the manifestation of the entrepreneurial vision—the firm—is but a "black box" where inputs enter and outputs emerge, like so much magic.

But like so many market phenomena that modern economics chooses to ignore or get wrong, an Austrian economist has entered the black box, examining its contents for a better understanding of not only what entrepreneurs are, but what they do and why they do it. Peter G. Klein has devoted his entire career to understanding the entrepreneur and the firm, bringing a distinctive Austrian approach to the problem while drawing from what all schools of thought have to contribute.

This book contains the fruit of Dr. Klein's labors. And while the majority of the book was taken from articles appearing in academic journals, this book should not only be read by students and academics. Klein provides valuable insight that business owners and managers will find useful. As heroic as the entrepreneur may appear or thoughtful as the manager may seem, they don't operate in a vacuum. Often they have no one to talk to and nothing to keep them in check but their own egos, which in many cases offers no check at all but the opposite.

The yearning for knowledge in this area is considerable. Considerable space at most any bookstore is provided for the many and varied management books. There are nearly as many different management books offered as diet books, with each genre being as faddish as the next. Management theorists crank out a continual stream of books full of business advice that "readers find unreadable," writes *The Economist*'s Adrian Wooldridge, "and managers find unmanageable."

While many great entrepreneurs cash in by writing books about their management secrets and entrepreneurial exploits, their supposedly keen insights are often weathered by time and selective memory. But most importantly, these books imply that capital is homogeneous, that the would-be entrepreneur can do what Jack Welch did, or emulate T. Boone Pickens, or apply Ewing Kauffman's strategies and expect the same result. These kind of books are good for inspiration but nothing more.

As Klein makes abundantly clear, capital is instead heterogeneous. Entrepreneurship can't be formulated in equations and sprinkled like pixie dust on the masses by government initiatives or well-meaning foundations with the hopes that the inner-entrepreneur in every citizen will be summoned. Although the brilliant Mr. Kauffman supported the use of his accumulated wealth to support programs promoting entrepreneurship, such programs are often a malinvestment of capital. And the use of taxpayer dollars towards such an endeavor is doubly wasteful.

It is however vital that we understand the function of the entrepreneur and the process that is so critical to the advancement of society and well-being of its members. As Klein pries open the entrepreneurial black box, the glories and special talents of the entrepreneur are exposed, along with the limitations of the firm. The market environment that allows entrepreneurs to thrive is revealed. It is not that the society requires multitudes of entrepreneurs, but only that those with this rare talent be allowed to flourish unfettered. And for those readers who work for an agreed-upon wage helping some entrepreneur become wealthy, an appreciation is gained with the realization that ultimately it is only by satisfying customers that their entrepreneur bosses become successful.

Introduction

As far back as I can remember, I always wanted to be an Austrian economist. Well, not quite, but I was exposed to Austrian economics early on. I grew up in a fairly normal middle-class household, with parents who were New Deal Democrats. In high school, a friend urged me to read Ayn Rand, and I was captivated by her novels. I went on to read some of her nonfiction works, in which she recommended books by Ludwig von Mises and Henry Hazlitt. I don't remember which economics books I read first, maybe Hazlitt's *Economics in One Lesson* or Mises's *Anti-Capitalistic Mentality*. I didn't understand the more technical parts of their analyses, but I was impressed with their clear writing, logical exposition, and embrace of liberty and personal responsibility. I took a few economics courses in college and, while they lacked any Austrian content, I enjoyed them and decided to major in the subject. I had a very good professor, William Darity, who himself preferred Marx and Keynes to Mises but who appreciated my intellectual curiosity and encouraged my growing interest in the Austrians.

As a college senior, I was thinking about graduate school—possibly in economics. By pure chance, my father saw a poster on a bulletin board advertising graduate-school fellowships from the Ludwig von Mises Institute. (Younger readers: this was an actual, physical bulletin board, with a piece of paper attached; this was in the dark days before the Internet.) I was flabbergasted; someone had named an institute after Mises? I applied for a fellowship, received a nice letter from the president, Lew Rockwell, and eventually had a telephone interview with the fellowship committee, which consisted of Murray Rothbard. You can imagine how nervous I was the day of that phone call! But Rothbard was friendly and engaging, his legendary charisma coming across even over the phone, and he quickly put me at ease. (I also applied for admission to New York University's graduate program in economics, which got me a phone call from Israel Kirzner. Talk about the proverbial kid in the candy store!) I won the Mises fellowship, and eventually enrolled in the economics PhD program at the University of California, Berkeley, which I started in 1988.

Before my first summer of graduate school, I was privileged to attend the "Mises University," then called the "Advanced Instructional Program in Austrian Economics," a week-long program of lectures and discussions held that year at Stanford University and led by Rothbard, Hans-Hermann Hoppe, Roger Garrison, and David Gordon. Meeting Rothbard and his colleagues was a transformational experience. They were brilliant, energetic, enthusiastic, and optimistic. Graduate school was no cake walk—the required core courses in (mathematical) economic theory and statistics drove many students to the brink of despair, and some of them doubtless have nervous twitches to this day—but the knowledge that I was part of a larger movement, a scholarly community devoted to the Austrian approach, kept me going through the darker hours.

In my second year of graduate school, I took a course from the 2009 Nobel Laureate Oliver Williamson, "Economics of Institutions." Williamson's course was a revelation, the first course at Berkeley I really enjoyed. The syllabus was dazzling, with readings from Ronald Coase, Herbert Simon, F. A. Hayek, Douglass North, Kenneth Arrow, Alfred Chandler, Armen Alchian, Harold Demsetz, Benjamin Klein, and other brilliant and thoughtful economists, along with sociologists, political scientists, historians, and others. I decided then that institutions and organizations would be my area, and I've never looked back.

The essays collected in this volume reflect my efforts to understand the economics of organization, to combine the insights of Williamson's "transaction cost" approach to the firm with Austrian ideas about property, entrepreneurship, money, economic calculation, the time-structure of production, and government intervention. Austrian economics, I am convinced, has important implications for the theory of the firm, including firm boundaries, diversification, corporate governance, and entrepreneurship, the areas in which I have done most of my academic work. Austrian economists have not, however, devoted substantial attention to the theory of the firm, preferring to focus on business-cycle theory, welfare economics, political economy, comparative economic systems, and other areas. Until recently, the theory of the firm was an almost completely neglected area in Austrian economics, but over the last decade, a small Austrian literature on the firm has emerged. While these works cover a wide variety of theoretical and applied topics, their authors share the view that Austrian insights have something to offer students of firm organization.

The essays in this volume, originally published between 1996 and 2009, deal with firms, contracts, entrepreneurs—in short, with the economics and management of organizations and markets. Chapter 1, "Economic Calculation and the Limits of Organization," first presented in Williamson's Institutional Economics Workshop in 1994, shows how the economic calculation problem identified by Mises (1920) helps understand the limits to firm size, an argument first offered by Rothbard (1962). It also offers a summary of the socialist calculation debate that has worked well, for me, in the classroom. Along with chapter 2, "Entrepreneurship and Corporate Governance," it offers an outline of an Austrian theory of the firm, based on the Misesian concept of entrepreneurship and the role of monetary calculation as the entrepreneur's essential tool. "Entrepreneurship and Corporate Governance" also suggests four areas for Austrian research in corporate governance: firms as investments, internal capital markets, comparative corporate governance, and financiers as entrepreneurs. Chapter 3, "Do Entrepreneurs Make Predictable Mistakes" (with Sandra Klein), applies this framework to the problem of corporate divestitures.

Chapter 4, "The Entrepreneurial Organization of Heterogeneous Capital" (with Kirsten Foss, Nicolai Foss, and Sandra Klein), shows how Austrian capital theory provides further insight into the firm's existence, boundaries, and internal organization. The Austrian idea that resources are heterogeneous, that capital goods have what Lachmann (1956) called "multiple specificities," is hardly surprising to specialists in strategic management, a literature that abounds with notions of unique "resources," "competencies," "capabilities," "assets," and the like. But modern theories of economic organization are not built on a unified theory of capital heterogeneity, simply invoking *ad hoc* specificities when necessary. The Misesian concept of the capital-owning entrepreneur, seeking to arrange his unique resources into value-adding combinations, helps illuminate several puzzles of firm organization.

Management scholars, and some economists, are familiar with Israel Kirzner's concept of entrepreneurship as "discovery," or "alertness" to profit opportunities, typically seeing it as "the" Austrian approach of entrepreneurship. Kirzner, Mises's student at NYU, has always described his approach to entrepreneurship as a logical extension of Mises's ideas. However, as I argue in chapter 5, "Opportunity Discovery and Entrepreneurial Action," one can interpret Mises differently. Indeed, I see Mises's approach to the entrepreneur as closer to Frank Knight's (1921), a view that makes asset ownership, and the investment of resources under uncertainty, the hallmark of entrepreneurial behavior. This suggests a focus not on opportunities, the subjective visions of entrepreneurs, but on investment—on actions, in other words, not beliefs. I suggest several implications of this approach for applied entrepreneurship research. Chapter 6, "Risk, Uncertainty, and Economic Organization," written for the Hoppe *Festschrift* (Hülsmann and Kinsella, 2009), further discusses the Knightian distinction between "risk" and "uncertainty," or what Mises called "class probability" and "case probability."

Chapter 7, "Price Theory and Austrian Economics," challenges what I see as the dominant understanding of the Austrian tradition, particularly in applied fields like organization and strategy. Scholars both inside and outside economics tend to identify the Austrian school with Hayek's ideas about dispersed, tacit knowledge, Kirzner's theory of entrepreneurial discovery, and an emphasis on time, subjectivity, process, and disequilibrium. Despite renewed interest in the Mengerian tradition, the Austrian approach to "basic" economic analysis—value, production, exchange, price, money, capital, and intervention—hasn't gotten much attention at all. Indeed, it's widely believed that the Austrian approach to mundane topics such as factor productivity, the substitution effect of a price change, the effects of rent control or the minimum wage, etc., is basically the same as the mainstream approach, just without math or with a few buzzwords about"subjectivism" or the "market process" thrown in. Even many contemporary Austrians appear to hold this view. Chapter 7 suggests instead that the Austrians offer a distinct and valuable approach to basic economic questions, an approach that should be central to research by Austrians on theoretical and applied topics in economics and business administration.

A final chapter, "Commentary," collects some shorter essays on the nature and history of the Internet, the role of the intellectuals in society, the relationship between management theory and the business cycle, biographical sketches of Carl Menger and F. A. Hayek, and a note on Williamson's contributions and his relationship to the Austrian tradition. Some of these first appeared as Daily Articles at Mises.org and were written for a nonspecialist audience. Indeed, I think scholars in every field, particularly in economics and business administration, have an obligation to write for the general public, and not only for their fellow specialists. Ideas have consequences, as Richard Weaver put it, and economic ideas are particularly important.

In preparing these essays for publication in book form I have made only light revisions in the text, correcting minor errors, eliminating some redundant material, and updating a few references. I think they work well together, and I hope readers will see the end result as an integrated whole, not simply a collection of "greatest hits."

I've been greatly influenced and helped by many friends, teachers, colleagues, and students, far too many to list here. Three people deserve special mention, however. From my father, Milton M. Klein, a historian who taught at Columbia University, Long Island University, SUNY–Fredonia, New York University, and the University of Tennessee, I learned the craft and discipline of scholarship. He taught me to read critically, to think and write clearly, to take ideas seriously. Murray Rothbard, the great libertarian polymath whose life and work played such a critical role in the modern Austrian revival, dazzled me with his scholarship, his energy, and his sense of life. Rothbard is widely recognized as a great libertarian theorist, but his technical contributions to Austrian economics are not always appreciated, even in Austrian circles. In my view he is one of the most important contributors to the "mundane" Austrian analysis described above. Oliver Williamson, who supervised my PhD dissertation at Berkeley, is my most important direct mentor and a constant source of inspiration. Williamson is no Austrian, but he appreciated and supported my interest in the Austrian school and encouraged me to pursue my intellectual passions, not to follow the crowd. His encouragement and support have been critical to my development as a scholar.

I'm deeply grateful to the Contracting and Organizations Research Institute, the University of Missouri's Division of Applied Social Sciences, the University of Missouri Research Foundation, the Coase Foundation, the Kauffman Foundation, and, above all, the Mises Institute for generous financial and moral support over the years. I've learned so much from my university colleagues, coauthors, fellow bloggers, conference participants, and other members of the Academic Racket that it would be impossible to name all those who've influenced my work. My frequent coauthor Nicolai Foss, who thinks and writes more quickly than I can listen or read, keeps me on my toes. I've learned much about Austrian economics, firm strategy, economic organization, and a host of other topics from Joseph Salerno, Lasse Lien, Joseph Mahoney, Dick Langlois, Michael Cook, Michael Sykuta, and many others. Others who offered specific comments and suggestions on earlier versions of these chapters include Sharon Alvarez, Jay Barney, Randy Beard, Don Boudreaux, Per Bylund, John Chapman, Todd Chiles, Jerry Ellig, David Gordon, Jeff Herbener, Stavros Ioannides, Dan Klein, Mario Mondelli, Jennie Raymond, David Robinson, Fabio Rojas, Ron Sanchez, Ivo Sarjanovic, Narin Smith, Sid Winter, and Ulrich Witt. My colleagues have also tried to teach me about deadlines, but I'm still working on that one. I agree with Douglas Adams, "I love deadlines. I like the whooshing sound they make as they fly by."

Special thanks go to Doug French for suggesting this project and to Jeff Tucker, Arlene Oost-Zinner, Paul Foley, and Per Bylund for seeing it to fruition. Most important, I thank my wife Sandy and my children for putting up with my frequent absences, endless hours in front of a computer screen, and occasional irritability. They are my greatest inspiration.

Peter G. Klein
Columbia, Missouri
March 2010

CHAPTER 1

Economic Calculation and the Limits of Organization[†]

Economists have become increasingly frustrated with the textbook model of the firm. The "firm" of intermediate microeconomics is a production function, a mysterious "black box" whose insides are off-limits to respectable economic theory (relegated instead to the lesser disciplines of management, organization theory, industrial psychology, and the like). Though useful in certain contexts, the textbook model has proven unable to account for a variety of real-world business practices: vertical and lateral integration, geographic and product-line diversification, franchising, long-term commercial contracting, transfer pricing, research joint ventures, and many others. As an alternative to viewing the firm as a production function, economists are turning to a new body of literature that views the firm as an organization, itself worthy of economic analysis. This emerging literature is the best-developed part of what has come to be called the "new institutional economics.[1] The new perspective has deeply enhanced

[†]Published originally in *Review of Austrian Economics* 9, no. 2 (1996): 51–77.

[1]For overviews of the new institutional economics and the theory of the firm, see Coase (1991); Holmström and Tirole (1989); Langlois (1994b); Furubotn and Richter (1997); Williamson (2000); Ménard and Shirley (2005), and Brousseau and Glachant (2008). For surveys of related empirical work see Shelanski and Klein (1995); Klein (2005), and Macher and Richman (2008).

and enriched our understanding of firms and other organizations, such that we can no longer agree with Ronald Coase's 1988 statement that "[w]hy firms exist, what determines the number of firms, what determines what firms do ... are not questions of interest to most economists" (Coase, 1988, p. 5). The new theory is not without its critics; Richard Nelson (1991), for example, objects that the new institutional economics tends to downplay discretionary differences among firms. Still, the new institutional economics—in particular, agency theory and transaction cost economics—has been the subject of increasing attention in industrial organization, corporate finance, strategic management, and business history.[2]

This chapter highlights some distinctive Austrian contributions to the theory of the firm, contributions that have been largely neglected, both inside and outside the Austrian literature. In particular, I argue that Mises's concept of economic calculation—the means by which entrepreneurs adjust the structure of production to accord with consumer wants—belongs at the forefront of Austrian research into the nature and design of organizations. There is a unique Austrian perspective on economic planning, a perspective developed over the course of the socialist calculation debate. As was recognized in the early Austrian reinterpretations of the calculation debate (Lavoie, 1985; Kirzner, 1988a), Mises's conception of the problem faced by socialist planners is part and parcel of his understanding of how resources are allocated in a market system. Mises himself emphasized that planning is ubiquitous: "[E]very human action means planning. What those calling themselves planners advocate is not the substitution of planned action for letting things go. It is the substitution of the planner's own plan for the plans of his fellow men" (Mises, 1947, p. 493). All organizations plan, and all organizations, public and private, perform economic calculation. In this sense, the calculation problem is much more general than has usually been realized.

With their unique perspective on markets and the difficulties of resource allocation under central planning, third- and fourth-generation Austrian economists have always implicitly understood the economics of organization. In this context, as Nicolai Juul Foss (1994a, p. 32)

[2]The framework of transaction cost economics has already made it into textbook form: Kreps (1990b, pp. 744–90), Rubin (1990), Milgrom and Roberts (1992), Acs and Gerlowski (1996), Brickley, Smith, and Zimmerman (1997), and Besanko, Dranove, and Shanley (1998).

notes, "it is something of a doctrinal puzzle that the Austrians have never formulated a theory of the firm." Foss points out that many elements of the modern theory of the firm—property rights, relationship-specific assets, asymmetric information, the principal–agent problem—appeared, at least in elementary form, in Austrian writings since the middle stages of the calculation debate. Indeed, Rothbard's treatment of firm size in *Man, Economy, and State* (1962) was among the first discussions to adopt explicitly the framework proposed by Ronald Coase in 1937, a framework that underlies most contemporary theorizing about the firm. Mises's discussion in *Human Action* (1949) of the role of the financial markets foreshadows Henry Manne's seminal 1965 article on the market for corporate control along with the recent recognition of finance as an essential part of economics.

Besides anticipating parts of the modern literature, Mises and Rothbard also introduced significant innovations, though this has not yet been generally recognized. Their contributions, while not part of a fully articulated, explicit theory of the firm, deserve attention and development, especially by those working on such issues from within the Austrian School.[3] These contributions are Rothbard's application of the calculation problem to the limits of the firm, and Mises's discussion of how the financial markets both limit managerial discretion and perform the ultimate resource allocation task in a market economy.

The Textbook Theory of the Firm

In neoclassical economic theory, the firm as such does not exist at all. The "firm" is a production function or production possibilities set, a means of transforming inputs into outputs. Given the available technology, a vector of input prices, and a demand schedule, the firm maximizes money profits subject to the constraint that its production plans must be technologically feasible. That is all there is to it. The firm is modeled as a single actor, facing a series of relatively uncomplicated decisions: what level of output to produce, how much of each factor to hire, and so on. These "decisions," of course, are not really decisions at all; they are trivial mathematical calculations, implicit in the underlying data. In the long run, the firm may also

[3] Foss and Klein (2010) summarize some of this literature.

choose an optimal size and output mix, but even these are determined by the characteristics of the production function (economies of scale, scope, and sequence). In short: the firm is a set of cost curves, and the "theory of the firm" is a calculus problem.

To be sure, these models are not advertised as realistic descriptions of actual business firms; their use is purely instrumental. As David Kreps (1990b, p. 233)—himself much less sanguine about the merits of the traditional model than most—puts it: if real-world firms do not maximize profits as the traditional theory holds, "that doesn't mean that profit maximization isn't a good positive model. Only the data can speak to that, and then only after we see the implications of profit maximization for observable behavior." However, even granting instrumentalism its somewhat dubious merits,[4] the production-function approach is unsatisfactory, because it isn't useful for understanding a variety of economic phenomena. The black-box model is really a theory about a *plant* or production process, not about a *firm*. A single firm can own and operate multiple production processes. Similarly, two or more firms can contract to operate jointly a single production process (as in a research joint venture). If we want to understand the scale and scope of the firm as a legal entity, then, we must look beyond the textbook model.

Coase and Transaction Costs

Ronald Coase, in his celebrated 1937 paper on "The Nature of the Firm," was the first to explain that the boundaries of the organization depend not only on the productive technology, but on the costs of transacting business. In the Coasian framework, as developed and expanded by Williamson (1975, 1985, 1996), Klein, Crawford, and Alchian (1978), and Grossman and Hart (1986), the decision to organize transactions within the firm as opposed to on the open market—the "make or buy decision"—depends on the relative costs of internal versus external exchange. The market mechanism entails certain costs: discovering the relevant prices, negotiating and

[4]For critiques of instrumentalism see Rizzo (1978) and Batemarco (1985). For references to the interpretative literature on Milton Friedman's 1953 essay on "positive economics"—the source of most economists' views on method—see Boland (1979), Caldwell (1980), and Musgrave (1981); all reprinted in Caldwell (1984) along with De Marchi (1988).

enforcing contracts, and so on. Within the firm, the entrepreneur may be able to reduce these "transaction costs" by coordinating these activities himself. However, internal organization brings another kind of transaction cost, namely problems of information flows, incentives, monitoring, and performance evaluation. The boundary of the firm, then, is determined by the tradeoff, at the margin, between the relative transaction costs of external and internal exchange. In this sense, firm boundaries depend not only on technology, but on organizational considerations; that is, on the costs and benefits of contracting.

The relative costs of external and internal exchange depend on particular characteristics of transaction: the degree to which relationship-specific assets are involved, the amount of uncertainty about the future and about trading partners' actions, the complexity of the trading arrangement, and the frequency with which the transaction occurs. Each matters in determining the preferred institutional arrangement (that is, internal versus external production), although the first—"asset specificity"—is held to be particularly important. Williamson (1985, p. 55) defines asset specificity as "durable investments that are undertaken in support of particular transactions, the opportunity cost of which investments are much lower in best alternative uses or by alternative users should the original transaction be prematurely terminated." This could describe a variety of relationship-specific investments, including both specialized physical and human capital, along with intangibles such as R&D and firm-specific knowledge or capabilities.

Economic Calculation and the Limits to Firm Size

Unfortunately, the growing economics literature on the theory of the firm focuses mostly on the costs of market exchange, and much less on the costs of governing internal exchange. The new research has yet to produce a fully satisfactory explanation of the limits to firm size (Williamson, 1985, chap. 6). In Coase's words, "Why does the entrepreneur not organize one less transaction or one more?" Or, more generally, "Why is not all production carried on in one big firm?" (Coase, 1937, pp. 393–94). The theory of the limits to the firm is perhaps the most difficult and least well developed part of the new economics of organization. Existing contractual explanations rely on problems of authority and responsibility (Arrow, 1974);