

ENTREPRENEURSHIP AND ECONOMIC GROWTH: THE THEORY OF EMERGENT INSTITUTIONS

JACK HIGH

ABSTRACT: This paper enlarges Menger's theory of the origins of money by making explicit the role of entrepreneurship in the theory and by extending the theory to market institutions other than money. Drawing on the research of anthropologists, archaeologists, and historians, the paper considers the origins of three institutions that underlie economic growth—the division of labor, monetary accounting, and private property. Menger's generalized theory of the origins of institutions is used to interpret each of these institutions.

I. INTRODUCTION

Although economic growth has not been high on the research agenda of modern Austrian economists, they nevertheless have made important contributions to the subject. Garrison (2001, pp. 33–83) has integrated economic growth into macroeconomics by showing how time preference, saving, and technological innovation deepen the structure of production and expand future output. The structure of production has been a distinctive feature of Austrian economics since Menger, and its integration into growth theory is a significant advance on the neoclassical theory of growth, which contains no structure of production.¹ Kirzner

Jack High (high@gmu.edu) is professor of economics and public policy at George Mason University. I thank Peter Boettke, Chris Coyne, Jelmer Eerkens, Peter Leeson, Israel Kirzner, Virgil Storr, members of the Austrian Economics Workshop at George Mason University, and two anonymous referees for their criticisms of earlier drafts of this paper.

¹On the structure of production, see Menger ([1871] 1976, pp. 71–74) and Rothbard (1962, pp. 283–90). On neoclassical growth theory, see Solow (1957, 1970)

(1985) has emphasized the distinction between secular growth—the planned growth that comes about from increasing resources through savings—and entrepreneurial growth, which is the spontaneous growth that occurs through the discovery of previously unexploited opportunities. These opportunities take three forms—arbitrage (simultaneously buying low and selling high), speculation (buying low now and selling high in future), and innovation (introducing new combinations that exploit existing price discrepancies between factors of production and future goods.) Innovation powered Schumpeter’s capitalist engine and Kirzner has gone some way toward reconciling his theory of entrepreneurship with Schumpeter’s.² Entrepreneurs who successfully exploit any of the three kinds of opportunities increase the value of output by increasing the efficiency with which scarce resources are used. Holcombe (1998) has extended Kirzner’s theory by linking present entrepreneurial opportunities to past entrepreneurial behavior. Complementarity in the capital structure creates a sequence of opportunities for innovation. The introduction of the railroad, for example, created opportunities in meat packing (through refrigerated cars and national distribution systems); the introduction of the internal combustion engine created opportunities in oil refining; advances in computer chips created opportunities in software design. Holcombe’s theory, like Schumpeter’s classic exposition, is not merely a theory of growth, but of development—the introduction of new goods and services that improve economic productivity.³

and Romer (1986). For a criticism of Garrison’s theory of secular growth, see Salerno (2001, pp. 38–61).

²See especially p. 78, where he says, “And it is here that we recognize the existence of two distinct avenues along which economic development may proceed: through expansion of opportunities arising through increased availability of resources, or through the discovery of hitherto unperceived opportunities,” and pp. 84–85, where he writes,

There appear to be three major types of concrete entrepreneurial activity: arbitrage activity, speculative activity, and innovative activity. . . . *Alertness* is a concept sufficiently elastic to cover not only the perception of existing arbitrage opportunities, but also the perception of intertemporal speculative opportunities that can be definitely realized only after the lapse of time, and even also the perception of intertemporal opportunities that call for creative and imaginative innovation.

³Holcombe (2003, p. 2) emphasizes this point: “yet to summarize economic progress by looking only at the growth in the value of economic output seriously misrepresents the nature of the economic progress that took place in that [the twentieth] century.” See also Holcombe (2007, pp. 10–28) and Schumpeter (1934, pp. 63–68).

Boettke and Coyne have advanced the provocative thesis that entrepreneurship is not the cause of economic growth. Because entrepreneurship is so widespread, it cannot explain differences in growth rates between different regions. In their words

. . . entrepreneurship cannot be the cause of development, but rather . . . the type of entrepreneurship associated with economic development is a consequence of it. That is, development is caused by the adoption of certain institutions, which in turn channel and encourage the entrepreneurial aspect of human action in a direction that spurs economic growth. (Boettke and Coyne 2003, p. 3)

Boettke and Coyne single out private property and the rule of law as the main institutions that lead to productive entrepreneurship and growth.

Boettke and Coyne's emphasis on institutions leads directly to the question of how proper institutions emerge. This is a question that Austrian economics, with its emphasis on social processes, is well equipped to answer. Menger, in fact, provided a theoretical explanation for the emergence of money, one of the market's quintessential institutions. The purpose of this paper is to extend Menger's theory to other institutions that undergird economic growth, viz., to the division of labor, monetary calculation, and property rights. Like Menger, I focus on the origins of these institutions and argue that they emerge as an unintended consequence of human action.

II. ENTREPRENEURSHIP AND THE EMERGENCE OF INSTITUTIONS

[I]n any real and living economy, every actor is always an entrepreneur and speculator.

Ludwig von Mises, *Human Action*, p. 252

A theory of emergent institutions relies crucially on entrepreneurship. In order for a new institution to emerge, two conditions are essential. First, someone must conceive of and implement a new practice. Second, the new practice must spread beyond the innovators to others in the community. Both of these conditions require entrepreneurs, and our first task, then, is to explain how entrepreneurship applies to the discovery and adoption of new practices. Entrepreneurship is usually considered within the confines of the market economy. From Cantillon to Kirzner, the entrepreneur has been identified with the functions that he or she performs within the market. The entrepreneur shoulders uncertainty, coordinates plans, and introduces new goods and production processes. Crucial to all of these activities is the pursuit of monetary profit. Profit

provides the incentive to exercise the alertness, judgment, creativity, and will to formulate and carry out plans that capture monetary profit. Profit also guides the entrepreneur. Profit and loss calculations let the entrepreneur know whether or not she is using resources efficiently. In addition to acting as an incentive and a guide, profit constitutes a distinct kind of income in the market. Common to all conceptions of the entrepreneur is a particular form of remuneration. The entrepreneur earns profit, as opposed to the wage income of labor, the rental income of capital goods, and the interest income of loans. Although there are many differences in the particular conceptions of entrepreneurship, we can say generally that entrepreneurship coordinates markets across space and time, accounts for technological progress and growth, and completes the theory of income distribution.⁴

To construct an entrepreneurial theory of institutions, we must define the term so that it is not restricted to a pre-existing market. Extending entrepreneurship to extra-market activity is straightforward. In the case of Mises, no extension is necessary. As emphasized by Boettke and Coyne, Mises defines entrepreneurship so broadly that the term already encompasses extra-market activity. Mises (1966, pp. 252–53) defines entrepreneurship as “acting man exclusively seen from the aspect of the uncertainty inherent in every action.” Defined this way, entrepreneurship is an aspect of human action that existed long before markets developed and that operates in areas of social life—such as family, religion, and government bureaucracy—that lie outside the market nexus. We will rely heavily on Mises’s broad definition of entrepreneurship in our explanation of institutions. We also will rely on an extension of Schumpeter’s definition, who defines the entrepreneur more narrowly than Mises, as someone who introduces new combinations into the circular flow of economic life. This definition extends readily to activity outside markets. As an example, imagine a social state where religious institutions are stationary period after period. Into this steady state of religious institutions, someone introduces a new religion (say Islam or Buddhism or Lutheranism) that disrupts the stationary state and becomes so widely accepted that a new institution takes its place among the old. In this wider sense, Schumpeter’s entrepreneur is someone who introduces new combinations into social life. We also will rely on an extension of Kirzner’s definition of entrepreneurship. In its usual sense, Kirzner’s entrepreneur is someone who is alert to profit opportunities,

⁴For a succinct history of entrepreneurship in economic thought, see Robert Hébert and Albert Link (1982). For a discussion of the entrepreneur and income distribution, see Rothbard (1962, pp. 537–41).

which restricts entrepreneurial activity to markets. However, alertness to opportunities for gain also exists outside the nexus of monetary exchange; for example, men and women are alert to opportunities for a happy marriage. Early humans were alert to opportunities for economic gain before markets developed; hunter-gatherers were alert to new and fertile territories to ply their trades, pastoralists to new pastures and animals that would increase the food supply or improve transportation. Extended, Kirzner's entrepreneur becomes someone who is alert to opportunities for economic gain.⁵

With little modification to traditional definitions, entrepreneurship can be conceived of as the causal agent that recognizes and evaluates opportunities and introduces new practices into social life. What, then, is an entrepreneurial process in this context? It is a sequence of steps actuated by entrepreneurship that leads to the establishment of a new institution. Each step in the process occurs because entrepreneurs, alert to opportunities for economic gain, take action. The actions taken in the first stage logically lead to actions taken in the second stage, which lead to actions taken in the third stage, until, at the end of the process, a new institution exists. With these definitions in mind, I explain in general terms how institutions emerge.

Begin by considering a society with an existing set of common practices. This society may be relatively primitive economically—meaning that it has no division of labor, no exchange, no money, and no private property—or it may be fairly sophisticated economically, with an extensive division of labor, an established money, and well-defined rules regarding property. Assume that the society has an existing set of practices, such as a common language, that enable it to function as a society. For analytical clarity, further assume that this society is institutionally in a steady state in which common practices are observed—period after period—as customs. An entrepreneurial process begins when a person, or a small group of persons acting in concert, introduces a new practice into the traditional routine with a motive of economic gain. The paradigmatic example of this in the Austrian economic literature is the adoption of indirect exchange. In order to overcome the difficulties inherent in selling a specialized good, a specialized producer accepts in exchange a good that is more marketable than the good he possesses, so that he may obtain more easily the goods he wishes to use. The first use of indirect exchange is an entrepreneurial act; it introduces a new practice into the

⁵For a detailed discussion of extended entrepreneurship, see Pozen (2008, pp. 283–340). See also Coppin and High (1991, pp. 96–98), and High (2004, pp. 52–54).

society and occurs because a trader exercises alertness and judgment to improve his economic position. Other examples that fit our criteria may be briefly mentioned. Two members of a family decide to specialize in production—one decides to hunt, the other to gather; or members of a hunting community decide to tame and domesticate a wild animal that has not been tamed before; or a communal, pastoral tribe decides on the exclusive care and use of particular animals by particular families. In each case, someone alert to the opportunity for economic gain introduces a new practice into the community. This is the first step of the process by which institutions are established.

We now come to the second step in the process. Once a new practice is introduced, other members of the group will learn of the new practice and judge its effects. A trader who adopts indirect exchange attains the final goods she wants more easily than if she barter; other members of the community observe this and ask whether the same practice will work for them. A hunter who introduces a new weapon becomes a superior producer of meat; other hunters observe this practice and consider whether they, too, can benefit from the new weapon. A small group of pastoralists who decide on the exclusive care and use of livestock find that their animals are healthier and more fertile; their prosperity leads other members of the tribe to consider whether they, too, should adopt the practice. In general, the reduction of scarcity serves as the standard by which to judge the desirability of new practices. Just as the first step in the evolution of institutions requires the exercise of entrepreneurship, so does the second. Observation requires alertness of the kind emphasized by Kirzner; deciding whether or not to adopt the new practice requires judgment in the face of uncertainty, as emphasized by Mises.

The second step in the evolutionary process may not follow from the first. Other members may not notice that one of their members is practicing indirect exchange, or is using an improved weapon, or is caring for particular animals. Although oversight of new practices may occur, as a rule it will not. Economic activity is social, meaning that it takes place in close physical proximity to others who share a common language, so that there is opportunity for observation and communication. Observation occurs because members of the community are alert to opportunities for economic gain. Humans may not have a propensity to truck and barter, as Adam Smith claimed, but we do have a propensity to notice opportunities for economic gain.

A practice may not spread, too, because it is misjudged—other members of the community decide that a new practice will not improve their lot in life when in fact it would. We should expect that misjudgment will often occur, because a new practice by definition is strange and

unfamiliar. Its results are more uncertain than the comfortable routines of daily economic life. The slow and halting emergence of institutions attests to the difficulty of judging new practices.

Even though a community may often misjudge, there will be times when it does not. The social nature of economic life provides evidence that a new practice is working; that is, members of the community in close contact with the innovator will be able to directly observe the success of the new practice or be convinced of it through persuasion. Just as there is a human propensity to notice opportunities for gain, there is a human ability to correctly judge the effects of human action, even when those effects are not readily apparent. In short, the social nature of production and the human capacity to exercise entrepreneurship will lead to observation and favorable judgment of the new practice. This leads to the third step in the evolution of institutions: the appearance of early adopters.⁶

The emergence of early adopters is a crucial one in the entrepreneurial theory of institutions; it reveals the means by which the practice spreads. There are two influences at work—imitation and persuasion. In his theory of the emergence of money, Menger emphasized imitation.⁷ The first trader to adopt indirect exchange succeeds where his fellow traders fail. His enhanced ability to achieve his ends gives him a high status in the community and he becomes an object of emulation. The entrepreneur becomes the Jones with whom the Smiths try to keep pace. Imitation occurs, not only with the use of indirect exchange, but also with the introduction of a new tool, or the adoption of exclusive property, or with any new practice that increases output. Persuasion occurs when the entrepreneur shares his new practice with his kinsmen or close neighbors and encourages them to adopt the new practice. Feelings of kinship and friendship encourage this kind of activity; once we possess knowledge that leads to economic success, we try to instill this knowledge in our children or share it with our friends. Self interest also can motivate persuasion. Innovators often benefit from others adopting the innovation. This is obvious in modern society, where innovators work hard

⁶Sumner (1906, p. 2) writes, “The struggle to maintain existence [in primitive societies] was carried on, not individually, but in groups. Each profited by the others experience; hence there was concurrence towards that which proved to be most expedient.” On the propensity to notice opportunities, see Kirzner (1985, p. 27): “it can be stated with considerable confidence *that individuals tend to notice that which it is in their interest to notice*” (emphasis in original). We also should recognize that the opposite kind of misjudgment can occur; individuals can decide a new practice will benefit them when in fact it does not. This kind of misjudgment is responsible for many misguided practices, but is not of concern in this essay.

⁷Menger ([1871] 1994, pp. 271–85) and (1892, pp. 239–55).

to win acceptance of their discovery—from the use of automobiles to the adoption of personal computers. The same motivation works with institutions. The entrepreneur who adopts indirect exchange directly benefits if others also adopt the practice, because it makes a medium of exchange more marketable than before. The creator of a new tool may be able to increase his wealth by specializing in its production. Or he may realize that its general adoption will enable his group to better defend itself against hostile marauders, thus increasing his own security. Thus do imitation and persuasion lead to a set of early adopters. The new practice now has a foothold and the stage is set for the fourth step in the process, the diffusion of a new practice to the rest of the community.

The diffusion of a new practice from a few early adopters to the wider community takes place through the same mechanisms—imitation and persuasion—that established early adoption. Once a new practice is established among early adopters, the prospects for further imitation and persuasion are increased. The success of the early adopters increases the opportunities for other members to observe the new practice. Once these members observe the practice, they will consider whether the new practice will benefit them. If their judgment is favorable, they then will adopt the practice for themselves. Early adopters also will persuade others; they will explain the advantages of the new practice to their families and friends, who now have the opportunity to judge for themselves whether the new practice is worth adopting. As others adopt the new practice, there is a yet larger base of practitioners that can be observed and imitated, and that can persuade others of the advantages of the practice. In this way, what was once a new practice radiates out through the community and a new institution, meaning a common practice, is established.

We will return later to a general discussion of the process by which institutions are established, but will first illustrate how this general explanation can be adapted to the historical origins of the division of labor, money, monetary calculation, and private property. We begin with the division of labor, since some division is necessary to the evolution of money.

III. ENTREPRENEURSHIP AND THE DIVISION OF LABOR

This division of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature . . .

Adam Smith, *Wealth of Nations* ([1776] 1976, p. 17)

The division of labor is usually presented as a set of activities occurring within firms, as in Adam Smith's pin factory, or between nations, as in

Ricardo's theory of comparative advantage. Mises, however, emphasized that the theory of comparative advantage applies to individual activity whether or not it takes place within firms or across national borders. As long as individual abilities differ, or geographical conditions vary, the law of comparative advantage applies: two or more persons can increase output by specializing in those activities for which they possess a comparative advantage and then exchanging or otherwise sharing the output. Mises called this general principle the Law of Association.⁸

To see how the division of labor evolves, we begin with a situation in which it is absent, say a clan of hunter-gatherers where each person both hunts and gathers for his own account, but where comparative advantage exists because physical capacities differ.⁹ An alert member of the group perceives an opportunity for gain. She convinces another member of the group, a husband or brother, that each can have more to eat if they undertake one task only—one hunts and the other gathers—and divide up the catch. If our entrepreneur has correctly identified comparative advantage, and if the two specialists divide up the output appropriately, each succeeds in increasing his or her food supply. The entrepreneur and her partner are wealthier than before. This is the first step in the process of emergence of the division of labor; a new practice is introduced into economic life and it immediately benefits those who introduced it. Once this first step is taken, the other steps follow. The new practice and the increased prosperity will be noticed by those in the clan closest to the innovators; they see evidence that that a division of labor is possible and that it results in a greater food supply. These observers decide that they, too, should practice the division of labor in pursuit of their own interests. They become early adopters. As the early adopters begin to practice the division of labor, this process repeats itself a third time with yet greater numbers. Those close to the early adopters will learn of the new practice and judge its results. In an attempt to secure the beneficial results for

⁸Smith ([1776] 1976, pp. 7–9), Ricardo (1911, pp. 82–83), and Mises (1966, pp. 157–65).

⁹I am using the word clan to mean an extended family that functions as a more or less cohesive social unit. Lewis Morgan, in his classic *Ancient Society*, uses the term gens, which signifies kin, to correspond to clan. Morgan also uses the term phratry to designate extended gentes, and tribe to designate extended phratries. For us, the term clan may extend as far as Morgan's tribe and I use the terms more or less interchangeably. The key theoretical issue is that the members of the group exhibit trust and use a common language, both of which facilitate cooperation and the spread of ideas.

themselves, a next group, will decide to divide their labor into the same specialized tasks. Once this process is carried far enough, the practice becomes common. The division of labor has been established as a new institution.

Imitation is not the only force leading to the adoption of divided labor. Feelings of mutual regard will motivate the innovators to share their information with those close to them. They will explain to their brothers or sisters or parents or children what they are doing. They will display their newly found wealth. They will try to convince them to adopt the new practice. Friendly persuasion will speed understanding of the innovation and increase the likelihood that others will adopt the new practice. Early adopters will do the same, expanding the network of kin and friendship through which communication occurs, thus spreading the practice to middle adopters, etc. Another influence will be at work as well. Once the division of labor has proved successful in one venture, entrepreneurs will be alert to its possibilities in other ventures. The increased food supply resulting from the division of labor enables the clan to invest in more roundabout methods of production. An entrepreneur with a comparative advantage in fashioning tools from grass or wood or stone, or caring for offspring while others hunt and gather, has more opportunity to exploit her specialization. This exemplifies Holcombe's complementarity of opportunities. The success of specialization in one activity creates opportunities in others. Alert entrepreneurs who associate the increase in food production with the division of tasks apply the idea to other activities. The task of building shelter, for example, can be broken down in gathering materials and assembling them, or constructing furnishings. Thus can the band extend the division of labor more deeply as well as more widely.¹⁰

This process will not necessarily proceed smoothly. There may be a period of trial and error, as various members of the clan decide whether they, too, should specialize and, if so, who should do what; we cannot

¹⁰The changing use of tools and types of flora and fauna hunted and gathered has been extensively studied by anthropologists. There is no doubt that considerable innovation occurred throughout the Pleistocene and Paleolithic eras, which led to increasing specialization. Kuhn and Stiner (1992, p. 238) write, "Improvements in weapons efficiency . . . implies a change in the value of foragers' time—time that could be allocated to other tasks. Large-scale resource pooling could favor greater individual task specialization . . ." Again, this illustrates Holcombe's insight that innovation in one area (weapons improvement) leads to entrepreneurial opportunity in another (greater specialization).

assume that identifying comparative advantage is self-evident. Also, there may be outright opposition. Some members of the clan may believe that specialization is a mistake on practical grounds. Others may resent the new-found wealth or prestige or influence of the innovators, and work to undercut them. Or a new specialization may run afoul of accepted religious belief and meet stiff resistance from the priestly classes. Despite the resistance that the division of labor can encounter within the clan, the law of comparative advantage holds out rewards both for the entrepreneurs and for the clan as a whole. The superiority of the innovation in increasing output provides a persistent incentive to adopt a new division of labor.

Division of labor also will occur between clans. Once entrepreneurs succeed in exploiting comparative advantage within their own group, they will look for opportunities to extend the practice to more distant groups. In fact, the incentives to exploit the division of labor between groups are greater than within the group, because members of different groups can exploit geographical variation, the source of comparative advantage identified by Ricardo, to a greater extent than members in close proximity. Differences in raw materials, climate, and animal and vegetable life are all differences that will confer comparative advantages above and beyond differences in innate abilities. Entrepreneurs from different clans that can identify comparative advantages and develop the communication and trust necessary to carry out exchanges will find that they can increase output. Once again, success will inspire imitation and the practice will spread. More and more inter-clan co-operation will take place, either through designated representatives such as chieftains or through more frequent contact between clan members, until the division of labor between clans becomes common. Establishing specialization and exchange between two clans will give their members the knowledge and experience necessary to establish trade with yet other clans, so that the practice spreads more widely. Of course, the difficulties of establishing the division of labor between clans are greater than they are within the clan. Different languages and customs hinder the growth of trust that is necessary for exchange. Even more seriously, other clans are often enemies. War, enslavement, and tribute can make peaceful exchange between groups all but impossible. It also may happen that exchange is too costly for specialization to be carried very far between clans; distance and terrain are significant obstacles in early economic life, where goods are moved mainly by muscle power. Nevertheless, comparative advantage provides a durable incentive for gain and sooner or later, entrepreneurs will succeed in establishing the division of labor between clans just as they do within. Over long stretches of time, and

with many fits and starts, specialization spreads further and further between different peoples.¹¹

The origins of specialization lie too far back in human history for us to know the process by which specialization emerged; the facts are too sparse. However, our theory does provide a reasonable interpretation of the limited facts that we do possess. Two noted anthropologists, Steven Kuhn and Mary Stiner (2006), argue that the division of labor helps to account for the evolutionary success of modern man. According to Kuhn and Stiner, Neandertals, early humans who lived from about 300,000 to perhaps 30,000 years ago in Europe and parts of Asia, did not specialize by sex; both men and women hunted large animals. The first division of labor among humans evident in the archeological record appears about 50,000 years ago among “anatomically modern humans” living in Africa. Surviving bones and artifacts indicate that anatomically modern men specialized in hunting larger game while women and children focused on plants and smaller animals. The division of labor was established as an institution while modern humans were restricted to this geographical area. As these specializing humans migrated from Africa to Europe and Asia, their superior productivity gave them a competitive advantage over the Neandertals, who eventually died out as a result. Kuhn and Steiner argue that the superior productivity afforded by the division of labor enabled the modern humans to expand their numbers, take over more territory and eventually crowd out the Neandertals. They write (p. 961),

The competitive advantage enjoyed by moderns came not just from new weapons and devices but from the ways in which their economic lives were organized around the buffering advantages of cooperation and complementary subsistence roles for men, women, and children.

Our theory supports Kuhn and Stiner’s interpretation. First, the physical differences between men and women were greater for anatomically modern humans than for Neandertals; the strength of Neandertal women was comparable to that of men, which means that comparative advantage between hunting and gathering was smaller for Neandertals than for modern humans; consequently, the economic advantages of the division of labor are less likely to be noticed. Second, the division of labor by sex among modern humans occurred in a confined geographical area, thus making it easier for observation and communication to occur. Neandertals were spread out over a much larger area, so even if particular Neandertals

¹¹For examples of prehistoric markets, see Earle and Ericson (1977).

hit upon the idea of specialization, it would be more difficult for the practice to spread widely. Third, flora and fauna were more diverse in Africa than in Europe and Asia. Greater diversity of plant and animal life increases the opportunities for comparative advantage to occur. A pair may be equally skilled at digging roots, but one may be more adept at climbing trees than the other. Greater diversity of food supplies implies that the gains from specialized labor were greater for humans than for Neandertals, thus making it easier for innovators to spot an opportunity for economic gain and for imitators to perceive the beneficial effects of a new practice. Fourth, specialization was an established institution before humans began to migrate out of Africa. Although the comparative advantage of specialized labor diminished as the diversity of plant and animal life diminished, humans did not have to develop a new institution under the less favorable circumstances; they already had an institution in place that would exploit whatever advantages existed. Our theory also supports the controversial thesis of Richard Klein, who argues that a biological change in the human brain occurred about 50,000 years ago in Africa. An increase in the neural networks of the brain enhanced the human ability to innovate and communicate through language. In our terms, humans in Africa possessed entrepreneurial abilities superior to those of their Neandertal brethren.¹²

IV. THE EMERGENCE OF MONEY

[W]e can only come fully to understand the origin of money by learning to view the establishment of the social procedure, with which we are dealing, as the spontaneous outcome, the unpremeditated resultant, of particular, individual efforts of the members of a society.

Carl Menger, *Principles of Economics*, p. 250

As specialization becomes more extensive within and between groups, the lack of a double coincidence of wants increasingly impedes exchange, as has been noted at least since the time of Adam Smith. In an important contribution to economics, Menger explained how indirect

¹²Kuhn and Steiner (2006, pp. 953–80) and Richard G. Klein (2000, pp. 17–36). There is an extensive anthropological literature on the prehistoric division of labor by sex. For examples, see Elston and Zeanah (2002), Jones (1996), Jochim (1988), Graham (1985), Dahlberg, ed. (1981), Galdikas and Teneka (1981), McGrew (1981), and Zihlman (1981). The theoretical importance of division of labor by sex is discussed in Mises (1936, pp. 292–95). The “out-of-Africa” theory is not universally accepted among anthropologists; a rival “theory of multi-regional evolution” is also a plausible explanation. See Klein (1995, pp. 2–5).

exchange provides a solution to the absence of a double coincidence and also leads to the emergence of money. Menger's theory of the origins of money has been nicely summarized by White and by O'Driscoll, so we will not repeat it here.¹³ We will only point out the role that entrepreneurship plays in this process. In Menger's story, a specialized producer who possesses good x (which is desired by a small percentage of persons in the trading community) but prefers good y , can reach his goal of obtaining y by trading x for an intermediate good, m , which is more widely demanded than x , and then exchanging m for y . The first persons who adopt this strategy are entrepreneurs in the sense that Schumpeter, Kirzner, and Mises use the term: The use of a medium of exchange introduces a new practice into economic life; it is an opportunity for gain spotted by an alert trader; there is risk associated with this strategy, because the entrepreneur may find that she cannot trade m for y on terms that make the exchange advantageous for her. That is, she may find that, by the time she completes the transaction, she would have preferred the amount of x that she surrendered to the amount of y that she gained. In Menger's account ([1871] 1994, p. 261), the success of the first entrepreneurs induces others to imitate the practice. The early adopters also exercise entrepreneurship in the sense of both Kirzner and Mises; they are alert to opportunities for gain and, because the practice is new and untested, they also must judge in the face of uncertainty. Once the early adopters use m as a medium of exchange, more potential imitators have the opportunity to observe, judge, and adopt the new practice. Observation and judgment become easier as the practice spreads, but they are still necessary; the need for entrepreneurship diminishes but does not disappear. Eventually, as more and more people use m as a medium of exchange, it becomes generally accepted. The entrepreneurial process has run its course and m has become money.

Menger pointed to several historical examples of early monies to support his theory. The earliest forms of money were cattle and sheep, which were a common form of wealth among nomadic clans and early farmers. Cattle were widely demanded as well as being easily transportable and inexpensive to maintain as long as grazing land was inexpensive. Cattle and sheep were the primary means of exchange in Greece as late as the Homeric period and also in Italy as late as 450 B.C. In Arab countries, cattle were used as money during the time of Mohamet, around 650 A.D. The eventual rise of cities and of trade over longer distances, especially by sea, made the use of cattle and sheep

¹³White (1984, pp. 703–05; 1999, pp. 1–24), O'Driscoll (1986, pp. 223–38), reprinted in Blaug (1992, pp. 223–38), Jones (1976, pp. 757–75).

inconvenient as media of exchange. Gradually the metals—at first copper, later gold and silver—replaced livestock as monies in Asia, India, and the Mediterranean region, especially under the influence of the Romans. Metals were widely used in production and consumption—tools, weapons, vessels, and ornaments were made from metals—and because of their high value to weight ratio, they were suitable for long-distance trade. Menger also provided examples of widely used commodities emerging as money in less developed economies. In the Aztec civilization of meso-America, for example, extensive markets existed at the time of the European invasion. Cocoa, cotton, cloth, silver and gold, were commonly used media of exchange in these markets. These currencies were also commonly used as goods among the Aztecs.¹⁴

Although the emergence of specialization and money result from similar entrepreneurial processes, there are differences between them. Every additional person who uses the medium *m* confers additional marketability, thereby making it easier for everyone else to execute exchanges using *m*. There is a positive network effect at work in the emergence of money. A positive network effect *may* accompany the division of labor. For example, when enough people wish to purchase a good, or when the division of labor extends over many different goods, entrepreneurs can establish specialized trading posts. As Clower has explained, these posts make individual goods more marketable, just as the use of money does. These trading posts redound to the benefit of all specialized producers. Although network effects may accompany the division of labor, they need not. Explaining the emergence of divided labor cannot rely on network effects as a necessary part of the process, whereas explaining the emergence of money can. Another difference between the two processes is that an entrepreneur must secure the agreement of others to practice the division of labor, whereas a person can adopt indirect exchange unilaterally. Persuasion and mutual consent are fundamental to the emergence of specialization, but not to the emergence of money. A third difference between the two is that emergence of money is a less complex process than the division of labor. Indirect

¹⁴Menger ([1871] 1976, pp. 262–71). Menger gives several other examples of commonly used goods serving as money. However, he did not provide anthropological evidence in his article on the origins of money in *The Economic Journal* (1892). On the forms and uses of money in Roman times, see Howgego (1992), Crawford (1970), Jones (1953). For criticisms of Menger's theory, and of Robert Clower's (1967), which is similar, see Grierson (1978, pp. 1–35), Einzig (1949), Polanyi (1957, pp. 264–65), Dalton (1965, pp. 44–65), Bohannon (1959, p. 492), Humphrey (1985, p. 49), and Crump (1981, p. 54).

exchange is a single, well-defined practice whereas the division of labor encompasses diverse activities. For each new division of labor, the process must begin anew. In primitive societies, the process does not progress very far. In modern societies, however, through repeated innovations, a process that begins with a simple division of labor by sex some fifty thousand years ago evolves into dozens of specialized crafts and other occupations with the rise of cities and many thousands different occupations in today's global economy. Even though this process exhibits greater and greater diversity through time, it is still subject to the same economic forces that brought about money; a new practice is introduced by innovators, judged to be beneficial by others, and gradually adopted by the community.

So far, we have considered the emergence of the division of labor as if it were independent of the emergence of money. Of course it is not. The evolution of indirect media of exchange, and eventually of money, creates opportunities for additional specialization by lowering the costs of exchange. This means that the network effects that help to establish money also work to further specialization. But the emergence of money has another and more profound effect on the division of labor; it enables monetary calculation. A good that enters into both the purchase of materials for production and the sale of the output enables the specialist to compare expenses with revenues. Individual members of the social unit now can tell whether they are using resources economically in very complex situations because profit and loss calculations are possible. The importance of profit and loss calculations for the further development of specialization and exchange can hardly be over emphasized. Without such calculations, specialized production runs the risk of inefficient utilization of resources; a specialized producer can use factors of production in one activity that have more highly valued uses elsewhere. Without profit and loss calculations, this risk can be held in check only if specialized producers know with tolerable accuracy the value of all the uses to which their materials can be put. This is possible within a group as long as the number of persons, goods, and production processes is small. But once specialized producers figure out how to compare the value of the resources that they use with the value of the goods that they produce, a new power to exploit comparative advantage has been unleashed. A development process that results in a remarkably complex division of labor is now possible.¹⁵

¹⁵The necessity of monetary calculation to a complex division of labor was pointed out by Mises and formed the basis of his argument that modern socialism is unworkable. See Mises ([1920] 1935, pp. 87–130).

V. THE EMERGENCE OF CAPITAL ACCOUNTING

Is it not possible or likely . . . that double-entry bookkeeping is to be explained as one event, albeit a momentous one, in a gradual evolutionary process of development?

B.S. Yamey, "Notes on the Origin of Double-Entry Bookkeeping," p. 263

The emergence of money, by creating a unit of account, leads to the possibility of profit and loss accounting. Financial records of banks, trading firms, and governments in Babylonia and Assyria dating from about 3500 B.C. have survived, as have records from China, Egypt, Greece, and Rome. However, none of these early firms regularly calculated profit and loss. As Chatfield (1977, p. 11) observes, ". . . their failure to produce unified accounts was certainly less damaging to the Greeks and Romans than their inability to use accounting as an aid to decision making. They had nothing like cost accounting." Systematic profit and loss accounting, which is derived from double-entry bookkeeping, first appears centuries after the emergence of money, perhaps among Muslim traders during the early Middle Ages, as Labib (1969) persuasively argues, but certainly among fourteenth century Italian merchants. The importance of accounting to capitalism has been emphasized by Sombart, Weber, and Mises, and its history is the object of extensive research and lively debates. We will confine ourselves to a brief discussion of the emergence of double-entry bookkeeping as an institution.¹⁶

The term double-entry can mean simply that entries into an account book include simultaneous entries of credit and debit, but as a system of bookkeeping it means considerably more. It means recording the capital invested in the enterprise, balancing the credit and debits periodically to insure accuracy, and calculating profit and loss. In Italy, the system may have originated in one city, Genoa or Florence, and from there spread to other cities, or it may have been simultaneously adopted in several cities, where merchants were, as de Roover says, "searching for a system that would minimize errors, facilitate control, and give them a comprehensive view of the financial state of their business." Whether the system was originated by one person or a few, it was motivated by economic gain. The advantages of double-entry bookkeeping to Italian merchants can be seen by considering its use in *commenda*, partnerships

¹⁶Edward Boyd ([1905] 1968, pp. 17–18), Chatfield (1977, pp. 3–18), Labib (1969, pp. 79–96), Sombart ([1915] 1967, pp. 125–39), Weber (1925, pp. 275–78), Mises (1966, pp. 212–14, 229–30).

used in long-distance trading by Italian merchants. In the *commenda*, a partner in the home country provided all or most of the capital for the venture, while the partner who traveled with the goods to the foreign destination, and who disposed of them there, shared in the profits. Typically, if one investor put up all the capital, he received 75 percent of the profits; if the traveling agent put up one-third of the capital, the profits were shared equally. In order to calculate the profits, the enterprise had to know the value of the original investment, the expenses incurred in acquiring and transporting the goods, and the revenues obtained by selling them. Double-entry bookkeeping enabled the partners to accurately keep track of investments, expenses and revenues, and to calculate the profits at the end of the venture. *Commenda* are not impossible to form without double-entry bookkeeping and this kind of partnership evolved prior to its use, but the advantages to systematic accounting are manifest; it is easier to form and execute a partnership, and the agreement is less subject to dispute and litigation, if the profits can be accurately calculated. There is no doubt that economic gain motivated the adoption of double-entry methods.¹⁷

The use of *commenda* also exemplifies how knowledge of double-entry bookkeeping spread among merchants. The *commenda* were partnerships limited to particular ventures. One way of spreading risk was for an investor to enter into several partnerships at the same time. Miskimin writes, "In Genoa, for example, during the fourteenth century, it was not uncommon for a merchant to leave an estate of several, or even a dozen or more, *commenda* contracts at the time of his death." Thus one merchant who used double-entry bookkeeping would transmit his knowledge to different partners. Moreover, once the goods had been sold and the profits divided, the partnerships were dissolved. The participants were free to form new ventures with other partners. A person who had learned double-entry bookkeeping from his partner could now judge its effects and adopt the practice in his new ventures. In this way, the accounting practices of one *commenda* spread from merchant to merchant in Italy. The traveling agent also worked with merchants in foreign countries who helped him dispose of his goods. Contact between merchants in Italy and foreign lands enabled foreign merchants to learn of profit

¹⁷Winjum (1971, p. 335) discusses various meanings of the double-entry system; we have adopted his third meaning. See also Littleton (1966, pp. 22–27). The system did not spring forth fully developed, but was a series of gradual improvements. On the origins of double entry bookkeeping in Italy, see de Roover (1955, pp. 405–20; the quotation is from p. 405), Weber ([1889] 2003, pp. 65–67), Peragallo (1938, pp. 1–37), Yamey (1947, pp. 263–72), and Littleton (1966, pp. 28–40).

and loss accounting and to adopt it where they judged it to be effective. Imitation of Italian merchants spread the practice abroad. The dissemination of double-entry bookkeeping also occurred through education. Foreign merchants sent apprentices to Italy to learn Italian methods. We normally do not think of education as entrepreneurship, but a Spanish merchant who sends an apprentice to Italy in order to improve the accounting practices of his firm is exploiting a new opportunity for economic gain.¹⁸

Another important means by which the practice became known throughout Europe was the printing press. Printing expanded the possibilities for observation and judgment beyond the strong ties of partnerships and apprentices to the weak ties of distant firms who had no direct contact with Italian merchants.¹⁹ In 1494 Luca Pacioli, a Franciscan monk, renowned mathematician, and sometime collaborator of Leonardo da Vinci, published *Summa di Arithmetica*.²⁰ The book was a comprehensive treatise on the mathematics of the day and Pacioli, who was intimately familiar with the accounting techniques of the merchants of Venice, devoted a section to accounting. Although Pacioli's treatise contained no innovations, its presentation of existing practice in double-entry bookkeeping was so thorough and lucid that Pacioli is known today as the father of accounting. Accounting historian J. Fogo (1905, p. 111) remarks, "It is remarkable how many of our present methods are described in the quaintest language by this monk of four hundred years ago." Of particular interest to us is that Pacioli regarded the calculation of assets and liabilities in monetary terms as the main object of double-entry bookkeeping, which is precisely what a merchant needs to know to assess the profitability of his undertaking. Pacioli's book went through three printings in Venice, where several thousand copies were printed. Over the next century, Pacioli's treatise was translated into Dutch, English, French, Spanish and German and it inspired others to write their own books on double-entry bookkeeping. The authors were often teachers who used their books as texts for their students. This was an important means

¹⁸Miskimin (1975, p. 118), Weber ([1889] 2003, pp. 71–75), and Fogo (1905, pp. 125–26, pp. 153–54).

¹⁹On the importance of weak ties to establishing institutions, see Granovetter (1973, pp. 1360–80), Chamlee-Wright and Myers (2008, pp. 151–66).

²⁰The accounting portion of Pacioli's treatise, whose full title is *Summa di Arithmetica, Geometria, Proportioni et Proportionalita*, has been translated into English by John B. Geijsbeek and published in 1914 under the title of *Ancient Double-Entry Bookkeeping*.

of spreading Pacioli's work throughout Europe. Political and economic events also encouraged the adoption of double-entry bookkeeping: The creation of nation states promoted more uniform coinage; Arabic numbers (which Pacioli used, but many Italian merchants did not) replaced Roman numerals; international trade increased with the opening of trade routes to the Americas and the Orient. These events increased the value of capital accounting, brought it to the attention of merchants, and encouraged commercial firms to adopt its practice throughout Europe. Cushing argues that double-entry bookkeeping began to emerge as a paradigm in sixteenth century Europe and Fogo says that in the sixteenth century, "Book-keeping, in fact, becomes international. Down to the minutest details we find identically the same methods prevailing among book-keepers whether they hail from Venice, Nuremburg, Antwerp, or London." By the sixteenth century, through a process of innovation, persuasion, and imitation, profit and loss accounting was established as an institution in European commerce.²¹

VI. ENTREPRENEURSHIP AND PROPERTY

Private property again, as the legally defined, exclusive right to use and to consume tools and goods respectively, is essential, and without such a principle there would occur a chronic chaos and disorganization even in the simplest activities of primitive man.

Branislaw Malinowski, *A Scientific Theory of Culture and Other Essays*, p. 194

Menger and Mises emphasize that property, in its basic economic sense, means physical control of a good. When goods are scarce, controlling particular units of a good enables a person to attain particular ends that she would otherwise have to forgo. The control of consumers' goods enables someone to attain ends directly; the control of producers' goods enables a person to attain her ends indirectly. Following Mises, we define economic property as control of a good. Physical control is fundamental in the sense that social forms of property, including legal rules, derive their importance from physical control of scarce resources.²²

²¹J. Row Fogo (1905, pp. 111, 124), Chatfield (1977, pp. 52–61), Cushing (1989, p. 150), Littleton (1966, pp. 77–121), and Sangster (2007, pp. 125–45). For an argument that double-entry bookkeeping was not regularly used to calculate profit and loss in the sixteenth century, see Yamey (1949, pp. 99–113; 1964, pp. 99–113).

²²See Mises (1936, pp. 37–43) and Menger ([1871] 1994, pp. 74–76).

Economic property is not necessarily controlled individually; physical control often can be shared or undertaken jointly. Neighboring farmers who use an ox on alternate days, or villagers who erect a building together and share its use once built, exercise ownership jointly. Shared control may proceed according to the individual plans of each person, as in the example of the ox, or it may proceed according to a single plan that everyone in the group adopts, as in the building of the church. This latter is organizational ownership, and it is important in modern society because of its widespread use by corporations. It is common in ancient societies as well, in public works whose construction and use were undertaken jointly and in goods used for public ceremonies. Another manifestation of economic property in society is the possibility of separate decision making and physical execution. In isolation, deciding how to use a good and using it are done by the same person. In society, one person can decide how to employ resources, while another carries out the decisions. This is common in modern organizations (Knight [1921] 1971, p. 268).

In social settings, economic ownership creates conflict. The control of a good by one person or group often excludes control by others. The conflict gives rise to the incentive to acquire goods through violence and fraud. A primary purpose of rules that govern the acquisition, use, and alienation of property is to reduce such conflict. Commonly observed rules constitute the social and legal forms of property, the “behavioral relations among men that arise from the existence of [scarce] things and pertain to their use” (Pejovich 1975, p. 40). Economists usually assume that the State is necessary for the enforcement of property rights, although Rothbard, Benson, and others have persuasively argued otherwise. Among anthropologists, ethnographers generally believe in a governmentally enforced concept of property, whereas archaeologists argue that “[c]odified laws of property can be considered as but one mechanism through which objects and land relate behaviorally to people’s use, allocation, and transfer.” Our theory sides with the archaeologists; property rules do not require the existence of governments to specify or enforce rights in property. Our theory explains how rights emerge spontaneously.²³

Different rules governing the acquisition of property establish different systems of ownership. Typically, economists and anthropologists identify three general systems of property. Rules that permit anyone to appropriate a resource (say pick fruit or hunt animals in a geographic

²³The quotation is from Earle (2000, p. 40). See also Mises (1936, pp. 42–50), Demsetz (1966, p. 62), Benson (1989, pp. 644–61), and Rothbard (1970, pp. 1–7).

region) create an open access system, or *res nullius*. Rules that restrict the use of a resource to a particular group and govern uses within the group, create exclusive common property or a system of common-pool resources. Rules that restrict use of a resource to a particular person is property held in severalty or private property, which usually permit the owner wide latitude in use of the good, including alienation. Rules that allow free exchange of property among owners create a market system, with its twin pillars of competition and price. A general theory of spontaneous property formation explains (a) how common resource and private property systems emerge from *res nullius*, (b) how common property emerges from private property, and (c) how private property emerges from common property. Although our theory is broad enough to explain all three cases, in the interests of space we will confine ourselves to the third category, the emergence of private property from common. The transformation of common into private property has been of interest to economists since Demsetz published "Towards a Theory of Property Rights" in 1967. In that article and a subsequent one published in 2002, Demsetz identified several factors that will transform common into private property—the strength of external effects, the ease with which goods can be privately controlled, the increased economic value of a good, the weakening of social ties associated with a growing population, increasing specialization, and increasing complexity of production. Demsetz's pioneering work explains the incentives to establish private property, but not the process by which it emerges. What is needed, as Epstein (2002, p. S520) noted, "is a much more precise step-by-step analysis of the shift, taking into account the position of those who opposed it as well as those who defended it."

The analysis called for by Epstein is supplied by our theory. Consider a hunter-gatherer society in which food sharing is a long-established custom. Sharing, we assume, is practiced because it reduces risk by smoothing out consumption. Over time, as the size of the group grows larger, social ties are weakened, the costs of sharing rise, and shirking increases, as explained by Demsetz. Under these changed circumstances, one of the more productive gatherers realizes that she and her family will have more food if they withdraw from the sharing group and keep their output for themselves. This will not only increase the wealth of the family that withdraws, it will also lower average income in the sharing group. A second productive family, observing the first, realizes that it too can increase its wealth by withdrawing from the sharing group and keeping what it produces, etc. This process continues until private property in food production is established as an institution.

The shift to private property is illustrated by privatization of food among the Paiute Indians who lived in the Great Basin of the United

States. Jelmer Eerkens (2004) has persuasively argued that around 1400 A.D. the native inhabitants of the Owens Valley in eastern California changed their ownership of plant food from common to private property. Eerkens examined pottery fragments, milling stones, and seed intensity in the region. Fragments indicate that the pottery used to prepare food changed from large pots, which were used to cook meals for large groups, to small pots, which were used to prepare family meals. At the same time, seed intensity and the number of millstones increased. Eerkens attributes the simultaneous increase of seeds, stones, and small pots to the emergence of private property in plant foods. Instead of preparing plant foods in a central location and sharing them with the group, Paiute women kept what they had gathered or grown for themselves and their families. Gathered plants became private rather than common property. Eerkens considers several possible motives for the change—a desire to prevent freeloading, to increase the ability to save food for future use, to accumulate goods for exchange, or to adopt a property system that conformed to that of small animals. He also notes that the simultaneous occurrence of increased seed production and privatization is widespread in early societies. Citing the work of Flannery (2002), Eerkens notes that increases in food production in Meso-America and the Near East were also accompanied by changes in pottery and housing that were conducive to food preparation in the home, where it did not have to be shared with the group. Eerkens favors a reduction of freeloading and an increase in savings as explanations for this pattern. He writes (2004, p. 665):

If pots allowed for individual ownership of seed resources, eliminated the “freeloader problem,” and fostered storage and the production of surplus, certain enterprising individuals may have seized on these factors, time and again, to build wealth. . . . A focus on seeds and pottery technology may have allowed certain individuals to cook food within their houses and circumvent traditional leveling mechanisms (e.g., sharing) that promoted egalitarianism. These hardworking individuals and their families may then have inspired others to pursue similar strategies, thereby spreading seed intensification and pottery technologies over large areas. As more and more individuals withdrew from traditional sharing networks, others may have been forced to follow suit because they no longer had access to reliable sources of food.

The quotation above describes a process much like the one advanced in this paper. An entrepreneur, alert to opportunity for gain, introduces a new practice into the social group. Others observe, evaluate, and imitate the new practice, which spreads throughout the society until it becomes an institution.

An important objection to our theory has been raised by Robert Bettinger, who analyzed the privatization of animal food among the Paiute of the Great Basin. He writes (1998, p. 71):

It is highly implausible that the concept of resources as private goods could spread from just one individual gradually to others within such a system. Such renegade hoarders risk social ostracism, and the surpluses they acquire are simply regarded as public property and appropriated by the majority, by force if necessary.

The pressures against a person withdrawing from communal property are no doubt substantial. This is true for the disruption of all social routine, but it is especially acute with food sharing and so casts doubt on the relevance of our theory for establishing private property in food. However, even if the pressures are insurmountable for a single person, an entrepreneurial process similar to the one described above may still occur. The process begins when a single person recognizes the advantages to withdrawing from the sharing group but understands that she cannot withdraw on her own; she needs the support of others. So she identifies other productive families who, like her, would gain from withdrawal, and persuades them that they should withdraw as a group. Even a small group of a dozen or so families will be able to withstand the ostracism better than a single family and can better protect itself against theft. Once a first group is established, the more productive members of the now smaller sharing group can observe the results of private property, evaluate its effects, and decide to join the non-sharing group, either family by family or small group by small group. Note that establishing the critical mass of the first group would occur by a process similar to that described above. An entrepreneur perceives the benefits of private property and takes it upon herself to convince others. Her deliberations include not only benefits of withdrawing to herself, but also identifying other productive persons, judging how receptive they would be to the new practice, and figuring out how many would be needed to successfully withstand the negative reactions. Entrepreneurship perceives not only the personal benefits of the new practice, but also the benefits to others and the means of organizing a group action that would withstand opposition. In such instances, entrepreneurship requires not only alertness and judgment, but also persuasion and leadership, characteristics emphasized by Schumpeter ([1911] 1934, pp. 83–90) in his treatment of entrepreneurship.

It is perhaps worth emphasizing at this point that we are not claiming a general tendency for entrepreneurial processes to replace common property with private. Common property is itself the result of an

entrepreneurial process and there are many situations in which private property is impractical. Properly managed commons are as beneficial in some circumstances as private property is in others. Even where private property would be economically advantageous it does not necessarily evolve if it conflicts with deeply held communal values, as illustrated by the Hadza (Woodburn 1998) and the !Kung San (Lee 1979). All we claim is that, where private property is economically advantageous, it will sometimes be spotted as an opportunity for gain by an entrepreneur, adopted by others, and spread through the community until it becomes an institution.

VII. CONCLUSION

This paper has extended Menger's theory of the origins of money to other institutions that underlie economic growth. Menger's theory is one of an entrepreneurial process: entrepreneurial in that each step in the process is actuated by the alertness and judgment of economic actors intent on economic gain; a process in that it consists of stages in which each later stage follows logically from the previous stage. At the beginning of the process, a new practice, which was previously absent in the society is introduced. At the end of the process, the new practice is common; it has become an institution. This process underlies the development of the institutions that are responsible for economic growth in the long sweep of human history. It is responsible for the evolution of the division of labor, monetary accounting, and property rights, and we have used the theory to interpret early episodes in the emergence of each of these institutions.

The theory presented here has several shortcomings. The most important of these is that it ignores the powerful influence of coercion in establishing institutions. Our theory is one of economic gain pursued through voluntary adoption of new practices. Obtaining scarce resources through physical force plays no part in the theory. Historically, coercion has been a common method of establishing institutions. Ancient practices such as slavery, plunder, and conscripted armies fall outside the purview of our theory. So do more modern institutions such as central banking, tariffs, subsidies, and taxation, institutions common to most modern societies. Not only do coercive practices establish their own institutions, they also impinge on voluntary ones. War and plunder inhibit exchange and the formation of capital. Coercion also has been used to change property rights, as exemplified by the enclosure of land in England, and the re-assignment of rights in land among the Maori tribes of New Zealand, the pre-Columbian Mayans, and, more recently,

among users of water in the Los Angeles basins. Our theory of the emergence of institutions is not complete until it has incorporated coercive processes into economic life.²⁴

A second limitation of our theory, related to the first, is that it does not account for large scale collective action. Some rules, such as driving on the right-hand side of the road, cannot be adopted in steps. They must be adopted collectively. Vanberg (1992, pp. 114–18) has devised a useful classification in which practices can be initiated either individually or collectively and where they can be adopted individually or collectively. Our theory pertains only to institutions that can be initiated and adopted individually or by small groups within a larger community.

A third limitation of the theory is that it says little about the length of time that it takes institutions to get established. In Menger's theory of the origins of money, the process he describes could take a few months, a few years, a few decades, or a few centuries. The same is true of our theoretical explanation of the division of labor among anatomically modern humans, of profit calculation in Europe, and of private property among hunter-gatherers. The halting and uncertain evolution of institutions has led Kirzner to differentiate between market and institutional processes. In markets, Kirzner argues, we can be confident that entrepreneurs in markets will exploit profit opportunities fairly rapidly. Outside of markets, profits, in the sense of revenues exceeding expenses, do not exist. Kirzner writes (1992, p. 178) "[n]o entrepreneur could, by himself, discover opportunities for pure profit by attempting to move the barter society towards the use of money." From this he concludes (1992, p. 179) "There is thus no systematic discovery procedure on which we can rely for the spontaneous emergence of superior institutional norms."

Kirzner is right to differentiate market from institutional processes. Monetary profit is both a powerful incentive and indispensable guide in modern markets and it is absent, or at least weaker, in the introduction of institutions. Moreover, as Kirzner points out, entrepreneurs in modern markets explicitly intend to introduce railroads, automobiles, and

²⁴On the role of Parliament in the enclosure of English land, see Mingay (1997, pp. 55–82). For an account of the reassignment of rights among the Maori, see Banner (2002, pp. S359–S70). Ostrom (1991, pp. 103–42) covers the combined efforts of private actors and the courts in re-assigning rights in the Los Angeles water basins. Earle (2000, p. 48) gives a brief description of coercive property allocation among the Incas. Earle (2000) and Hunt (1998) provide useful overviews of property rights research among anthropologists; Banner, Ostrom, Hunt, and Earle have made important, though very different, contributions to the roles of coercion in establishing property rights.

computers, whereas institutions are an unintended consequence of human action. While Kirzner has identified two important distinctions between market and institutional processes, we should not conclude that systematic forces leading to the adoption of benign institutions are absent. Economic gain is not monetary profit, but it is still a powerful incentive, and it is economic gain that motivates the adoption of new practices. Profit and loss calculations are essential to judging the efficiency of new production processes in markets, but it is often possible to judge whether a new practice is beneficial even in their absence. Menger's alert traders, Africa's early homo sapiens, and the Paiute women who introduced private property in food production could all foresee that they would be economically better off by adopting new practices, even though they did not have profit and loss figures to aid them. As Kirzner (1985, p. 83) noted in an earlier essay, "[t]he truth is that all human decision making is guided by an extremely powerful force—the motivation to see relevant facts as they are." The motivation to see relevant facts that can improve one's economic position is the systematic force that establishes new institutions. This force is no doubt weaker than market entrepreneurship and therefore institutions take longer to establish themselves. Rail systems, automobiles, and personal computers were established within decades. Eerkens (2008, p. 262) estimates that it took a century or two to introduce private property in plant food among the Paiute. Historians estimate that, even with the aid of the printing press, it took something like two hundred years for double-entry bookkeeping to become an institution in Europe.

A fourth limitation of this essay is its focus on origins to illustrate the theory. The division of labor, money, and private property acquired more significance after the Neolithic revolution, when increases in agricultural output and population enabled a greater degree of specialization and exchange. Specialized production of textiles, ceramics, metalworking, brickmaking, and leatherworking—and market economies to exchange these products—flowered in Sumeria, Babylonia, ancient Greece, the Roman Empire and the pre-Columbian societies of the Aztecs and Mayans. In addition, although profit and loss accounting was important to the commercial enterprises of the Middle Ages, it was vital to the development of the joint stock companies, factories, railroads, and the large enterprises that ushered in the second industrial revolution. Much of our modern day accounting—including the valuation of original shares in enterprises, the computation of dividends, depreciation of fixed assets, and auditing practices—developed after the seventeenth century. The entrepreneurial processes that advanced and diffused specialization, exchange, the use of money, and accounting techniques would

profit immensely from an historical examination of these comparatively modern events.²⁵

Finally, Leslie White has criticized any theory of institutional origins that relies on entrepreneurship as an explanation. He writes (1962, p. 283):

According to this point of view, to explain an element of culture, all you have to do is to invoke a hypothetical individual who first “got the idea” of the trait in question. . . . The sterility of such reasoning is obvious. Events are “explained” in terms of ideas. But the occurrence or nonoccurrence of ideas is not explained at all.

To denigrate the origin of ideas in an evolutionary theory of culture is a peculiar criticism; it cuts the ground from beneath the theory. Culture is nothing if not shared ideas, and culture would not evolve were it not for the evolution of ideas. To leave ideas unexplained is to leave culture unexplained. More to the point, the theory presented here does indeed explain where ideas come from; they come from entrepreneurs alert to their own interests. From time immemorial, humans have coped with a niggardly Nature and an uncertain future by conceiving new ways of doing things. An idea by itself is not enough to explain culture, of course; it must be followed by action. Moreover, the action based on the new idea must provide evidence of its merits. Unless the new practice reduces scarcity, enabling actors to better cope with their environment, it is not likely to assume importance in our economic life. Ideas are not sufficient to explain the emergence of institutions, but they are a necessary part of the process that establishes the institutions of economic growth.

BIBLIOGRAPHY

- Baladouni, Vahé. 1990. “An Early Attempt at Balance Sheet Classification and Financial Reporting,” *The Accounting Historians Journal* 17 (1): 27–45.
- Benson, Bruce. 1989. “The Spontaneous Evolution of Commercial Law.” *Southern Economic Journal* 55 (3): 644–61.

²⁵On ancient markets, see White (1959, pp. 293–96, 330–31), Earle and Ericson (1977, *passim*), Nettle and Dunbar (1997, pp. 93–99), Hirth (1998, pp. 451–54). North and Thomas (1977) interpret the Neolithic revolution as a revolution in property rights rather than technology. For accounting practices in the seventeenth and eighteenth centuries see Fogo (1905, pp. 149–68), Littleton (1966, pp. 118–21, 140–14), Chatfield (1977, pp. 64–85). An early (1782) example of an external audit of the East India Company appears in Baladouni (1990, pp. 29–31).

- Bettinger, Robert L. 1999. "What Happened in the Medithermal?" In *Models for the Millennium*. Charlotte Beck, ed. Salt Lake City: University of Utah Press. Pp. 2–74.
- Blaug, Mark. 1992. *Carl Menger*. Aldershot, U.K.: Edward Elgar Publishing.
- Boettke, Peter J., and Christopher J. Coyne. 2003. "Entrepreneurship and Development: Cause or Consequence?" *Advances in Austrian Economics* 6: 67–87.
- Bohannon, Paul. 1959. "The Impact of Money on an African Subsistence Economy." *The Journal of Economic History* 19 (4): 491–503.
- Boyd, Edward. [1905] 1968. "Ancient Systems of Accounting." In Richard Brown, ed. *History of Accounting and Accountants*. London: Frank Cass & Co.
- Chamlee-Wright, Emily, and Justus A. Myers. 2008. "Discovery and Social Learning in Non-priced Environments: An Austrian View of Social Network Theory." *Review of Austrian Economics* 21 (2–3): 151–66.
- Chatfield, Michael. 1977. *A History of Accounting Thought*. Huntington, N.Y.: Robert E. Krieger Press.
- Clower, Robert. 1967. "A Reconsideration of the Microfoundations of Monetary Theory." *Economic Inquiry* 6 (1): 1–8.
- Coppin, Clayton, and Jack High. 1991. "Entrepreneurship and Competition in Bureaucracy: Harvey Washington Wiley's Bureau of Chemistry, 1883–1903." In *Regulation: Economic Theory and History*. Jack High, ed. Ann Arbor: University of Michigan Press. Pp. 95–118.
- Crawford, Michael. 1970. "Money and Exchange in the Roman World." *Journal of Roman Studies* 60: 40–48.
- Crump, Thomas. 1981. *The Phenomenon of Money*. London. Routledge & Kegan Paul.
- Cushing, Barry E. 1989. "A Kuhnian Interpretation of the Historical Evolution of Accounting." *The Accounting Historians Journal* 16 (2): 1–41.
- Dahlberg, Frances, ed. 1981. *Woman the Gatherer*. New Haven, Conn. Yale University Press.
- de Roover, Raymond. 1955. "New Perspectives on the History of Accounting." *The Accounting Review* 30 (3): 405–20.
- Demsetz, Harold. 2002. "Toward a Theory of Property Rights II." *Journal of Legal Studies* (31).
- . 1967. "Toward a Theory of Property Rights." *The American Economic Review* 57 (2): 347–59.
- . 1966. "Some Aspects of Property Rights." *Journal of Law and Economics* 9: 61–70.

- Earle, Timothy. 2000. "Archaeology, Property, and Prehistory." *Annual Review of Anthropology* 29: 39–60.
- Earle, Timothy K., and Jonathon E. Ericson. 1977. *Exchange Systems in Prehistory*. New York: Academic Press.
- Eerkens, Jelmer W. 2004. "Privatization, Small-Seed Intensification, and the Origins of Pottery in the Western Great Basin." *American Antiquity* 69 (4): 653–70.
- Einzig, Paul. 1949. *Primitive Money in its Ethnological, Historical and Economic Aspects*. London: Eyre and Spottisworde.
- Elston, Robert G., and David W. Zeanah. 2002. "Thinking outside the Box: A New Perspective on Diet Breadth and Sexual Division of Labor in the Prearchaic Great Basin." *World Archaeology* 34 (1): 103–30.
- Epstein, Richard A. 2002. "The Allocation of the Commons: Parking on Public Roads." *The Journal of Legal Studies* 31 (2): S515–44.
- Hannery, Kent V. 2002. "The Origins of the Village Revisited: From Nuclear to Extended Households." *American Antiquity* 7: 417–33.
- Fogo, J. Row. 1905. "History of Book-keeping." In *A History of Accounting and Accountants*. Richard Brown, ed. London: Frank Cass.
- Galdikas, Birute M.F., and Geza Teleki. 1981. "Variations in Subsistence Activities of Female and Male Pongids: New Perspectives on the Origins of Hominid Labor Division." *Current Anthropology* 22(3): 241–56.
- Garrison, Roger W. 2001. *Time and Money: The Macroeconomics of Capital Structure*. London: Routledge.
- Graham, Susan Brandt. 1985. "Running and Menstrual Dysfunction: Recent Medical Discoveries Provide New Insights into the Human Division of Labor by Sex." *American Anthropologist. New Series* 87 (4): 878–82.
- Granovetter, Mark S. 1973. "The Strength of Weak Ties." *American Journal of Sociology* 78: 1360–80.
- Grierson, Philip. 1978. "The Origins of Money." In *Research in Economic Anthropology*. George P. Dalton, ed. Greenwich: JAI Press. Pp. 1–35.
- Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162: 1243–48.
- Hébert, Robert, and Albert Link. 1982. *The Entrepreneur*. New York: Praeger Publishers.
- High, Jack. 2004. "The Roles of Entrepreneurship in Economic Growth: Toward a Theory of Total Factor Productivity." In *Entrepreneurship and Regional Economic Development: A Spatial Perspective*. Henri deGroot, Peter Nijkamp, and Roger R. Stough, eds. Cheltenham, U.K.: Edward Elgar. Pp. 46–103.
- High, Jack, ed. 1981. *Regulation: Economic Theory and History*. Ann Arbor: University of Michigan Press.

- Hirth, Kenneth G. 1998. "The Distributional Approach: A New Way to Identify Marketplace Exchange in the Archaeological Record." *Current Anthropology* 39 (4): 451–76.
- Holcombe, Randall. 2007. *Entrepreneurship and Economic Progress*. New York: Routledge.
- . 2003. "The Origins of Entrepreneurial Opportunities." *The Review of Austrian Economics* 16: 1, 25–43.
- . 1998. "Entrepreneurship and Economic Growth." *Quarterly Journal of Austrian Economics* 1 (2): 45–62.
- Howgego, Christopher. 1992. "The Supply and Use of Money in the Roman World 200 B.C. to 300 A.D." *The Journal of Roman Studies* 82: 1–31.
- Humphrey, Caroline. 1985. "Barter and Economic Disintegration." *Man*. New Series 20 (1): 48–72.
- Hunt, Robert C. 1998. "Properties of Property: Conceptual Issues." In *Property in Economic Context*. Robert C. Hunt and Antonio Gilman, eds. Lanham, Maryland: University Press of America. Pp. 7–27.
- Jochim, Michael A. 1988. "Optimal Foraging and the Division of Labor." *American Anthropologist* 90 (1): 130–35.
- Jones, A.H.M. 1953. "Inflation under the Roman Empire." *The Economic History Review* 5 (3): 293–18.
- Jones, Robert A. 1976. "The Origin and Development of Media of Exchange." *Journal of Political Economy* 84 (4): 757–76.
- Jones, Terry L. 1996. "Mortars, Pestles, and Division of Labor in Prehistoric California: A View from Big Sur." *American Antiquity* 61 (2): 243–64.
- Kirzner, Israel. 1992. *The Meaning of Market Process: Essays in the Development of Modern Austrian Economics*. London: Routledge.
- . 1985. *Discovery and the Capitalist Process*. Chicago: University of Chicago Press.
- Klein, Richard. 2000. "Archeology and the Evolution of Human Behavior." *Evolutionary Anthropology* 9 (1): 17–36.
- . 1995. "The Problem of Modern Human Origins." In *Origins of Anatomically Modern Humans*. Matthew H. Nitecki and Doris V. Nitecki, eds. New York: Plenum Press.
- Knight, Frank H. [1921] 1971. *Risk, Uncertainty and Profit*. Chicago: University of Chicago Press.
- Kuhn, Steven L., and Mary C. Stiner. 2006. "What's a Mother to Do? The Division of Labor among Neandertals and Modern Humans in Eurasia." *Current Anthropology* 47 (6): 953–80.

- . 1992. "Subsistence, Technology, and Adaptive Variation in Middle Paleolithic Italy." *American Anthropologist, New Series* 94 (2): 306–39.
- Labib, Subhi Y. 1969. "Capitalism in Medieval Islam." *The Journal of Economic History* 29 (1): 79–96.
- Lee, Richard B. 1979. *The !Kung San: Men, Women, and Work in a Foraging Society*. Cambridge: Cambridge University Press.
- Littleton, A.C. 1966. *Accounting Evolution to 1900*. New York: Russell & Russell.
- Malinowski, Bronislaw. 1944. *A Scientific Theory Of Culture, And Other Essays*. Chapel Hill: The University of North Carolina Press.
- McGrew, William C. 1981. "The Female Chimpanzee as a Human Evolutionary Prototype." In *Woman the Gatherer*. Frances Dahlberg, ed. New Haven, Conn.: Yale University Press. Pp. 35–73.
- Melitz, Jacques. 1970. "The Polanyi School of Anthropology on Money: An Economist's View." *American Anthropologist* 72 (5): 1020–40.
- Menger, Carl. [1871] 1994. *Principles of Economics*. Menlo Park, Calif.: Institute for Humane Studies.
- Menger, Karl. 1892. "On the Origin of Money." *The Economic Journal* 2 (6): 239–55.
- Mingay, G.E. 1997. *Parliamentary Enclosure in England*. London: Addison Wesley Longman.
- Mises, Ludwig. 1966. *Human Action*. Chicago: Henry Regnery.
- . 1936. *Socialism*. London: Jonathan Cape.
- . [1920] 1935. "Economic Calculation in the Socialist Commonwealth." In *Collectivist Economic Planning: Critical Studies on the Possibilities of Socialism*. Friedrich Hayek, ed. London: G. Routledge. Pp. 87–130.
- Miskimin, Harry A. 1975. *The Economy of Early Renaissance Europe, 1300–1460*. Cambridge: Cambridge University Press.
- Morgan, Lewis H. [1877] 1964. *Ancient Society*. Cambridge, Mass.: Harvard University Press.
- Nettle, Daniel, and Robin I.M. Dunbar. 1997. "Social Markers and the Evolution of Reciprocal Exchange." *Current Anthropology* 38 (1): 93–99.
- North, Douglass C., and Robert Paul Thomas. 1977. "The First Economic Revolution." *The Economic History Review, New Series* 30 (2): 229–41.
- O'Driscoll, Gerald P. 1986. "Money: Menger's Evolutionary Theory." *History of Political Economy* 18 (4): 601–16. Reprinted in Blaug, ed. 1992.
- Ostrom, Elinor. 1991. *Governing the Commons*. Cambridge: Cambridge University Press.

- Peragallo, Edward. 1938. *Origin and Evolution of Double Entry Bookkeeping: A Study of Italian Practice from the Fourteenth Century*. New York: American Institute Publishing.
- Pejovich, Svetozar. [1972] 1975. "Towards an Economic Theory of the Creation and Specification of Property Rights." *The Economics of Legal Relationships*. Henry G. Manne, ed. New York: West Publishing. Pp. 37–52.
- Polanyi, Karl. 1957. "The Economy as Instituted Process." In *Trade and Market in Early Empires*. Karl Polanyi, Carl Arensberg, and Harry Pearson, eds. Glencoe: The Free Press, 1957.
- Pozen, David E. 2008. "We Are All Entrepreneurs Now." *Wake Forest Law Review* 43 (1): 283–340.
- Ricardo, David. [1817] 1911. *The Principles of Political Economy and Taxation*. London: J.M. Dents & Sons.
- Romer, Paul M. 1986. "Increasing Returns and Long-Run Growth." *Journal of Political Economy* 94 (5): 1002–37.
- Rothbard, Murray N. 1970. *Power and Market*. Menlo Park, Calif.: Institute for Humane Studies.
- . 1962. *Man, Economy, and State*. Princeton, N.J.: D. Van Nostrand.
- Schumpeter, Joseph A. [1911] 1934. *The Theory of Economic Development*. Cambridge, Mass.: Harvard University Press.
- Seers, Dudley, and Robert Joy, eds. 1971. *Development in a Divided World*. Harmondsworth, U.K.: Penguin.
- Salerno, Joseph T. 2001. "Does the Concept of Secular Growth Have a Place in Capital-Based Macroeconomics?" *Quarterly Journal of Austrian Economics* 4 (3): 43–61.
- Sangster, Alan. 2007. "The Printing of Pacioli's *Summa* in 1494: How Many Copies Were Printed." *The Accounting Historians Journal* 34 (1): 125–45.
- Smith, Adam. [1776] 1976. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Chicago: University of Chicago Press.
- Solow, Robert M. 1970. *Growth Theory: An Exposition*. Oxford: Oxford University Press.
- . 1957. "Technical Change and the Aggregate Production Function." *Review of Economics and Statistics* 39 (3): 312–20.
- Sombart, Werner. [1915] 1976. *The Quintessence of Capitalism*. New York: Howard Fertig.
- Steward, Julian H. 1934. "Two Paiute Autobiographies." *American Archaeology and Ethnology*. A.L. Kroeber, Robert H. Lowie, and Ronald L. Olson, eds. Berkeley: University of California Press. Pp. 423–38.

- Stiner, Mary C. 2004. "Population Ecology, Predator-Prey Dynamics, and Paleolithic Society." *Processual Archeology*. Amber L. Johnson, ed. Westport, Conn.: Prager. Pp. 218–60.
- Sumner, William Graham. 1906. *Folkways*. Boston: Ginn.
- Turner, Ralph. 1941. *The Great Cultural Traditions: The Foundations of Civilization*. New York: McGraw-Hill.
- Vanberg, Viktor. 1992. "Innovation, Cultural Evolution, and Economic Growth." In *Explaining Process and Change*. Ulrich Witt, ed. Ann Arbor: University of Michigan Press. Pp. 105–21.
- Webb, Malcom C. 1974. "Exchange Networks: Prehistory." *Annual Review of Anthropology* 3: 357–83.
- Weber, Max. [1889] 2003. *The History of Commercial Partnerships in the Middle Ages*. Lanham, Maryland: Rowman and Littlefield Publishers.
- . 1923. *General Economic History*. London: George Allen and Unwin.
- White, Lawrence H. 1999. *The Theory of Monetary Institutions*. London: Basil Blackwell Publishers.
- . 1984. "Competitive Payments Systems and the Unit of Account." *The American Economic Review* 74 (4): 703–05.
- White, Leslie. 1959. *The Evolution of Culture*. New York: McGraw-Hill.
- Winjum, J.P. 1971. "Accounting and the Rise of Capitalism: An Accountant's View." *Journal of Accounting Research* 9 (2): 333–53.
- Woodburn, James. 1998. "'Sharing is Not a Form of Exchange': An Analysis of Property-Sharing in Immediate-Return Hunter-Gatherer Societies." In *Property Relations*. C.M. Hann, ed. Cambridge: Cambridge University Press. Pp. 48–63.
- Wieser, Friedrich von. [1914] 1967. *Social Economics*. New York: Augustus M. Kelley.
- Yamey, Basil S. 1964. "Accounting and the Rise of Capitalism: Further Notes on a Theme by Sombart." *Journal of Accounting Research* 2 (2): 117–36.
- . 1949. "Scientific Bookkeeping and the Rise of Capitalism." *The Economic History Review, New Series* 1 (2/3): 99–113.
- . 1947. "Notes on the Origin of Double-Entry Bookkeeping." *The Accounting Review* 22 (3): 263–72.
- Zihlman, Adrienne L. 1981. "Women as Shapers of Human Adaptation." In *Woman the Gatherer*. Frances Dahlberg, ed. New Haven, Conn.: Yale University Press. Pp. 75–120.