

Entrepreneurship and the Institutions of Growth: Toward a Theory of Economic Institutions

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I. Introduction.

The study of economic growth has itself been a growth industry since the end of World War II. Neoclassical growth theory has been the dominant segment of the industry. Working with aggregate production functions and focusing on steady states, neoclassical theory highlighted the importance of savings, investment, and technical change. Investment increases capital per worker; technical change improves the efficiency with which capital and labor are used. In the original neoclassical models, developed by Solow and Swann, technical change was exogenous to the theory, but Lucas, Romer and others have endogenized technical change, by modeling it as spillover effects from expenditures on education, research and development. A second segment of the industry, closely related to neoclassical theory, is growth accounting. This branch has developed aggregate measures of output and of inputs into the production function—labor, physical and human capital, raw materials, and energy. Kuznets, Denison, Schultz, Jorgenson and other pioneers in this tradition have searched for correlations between growth and various parameters, and have emphasized the importance of education to economic growth. A third segment of the industry is development economics. This is a large and diffuse body of work whose main task has been to devise and implement workable policies for the poorer countries after World War II. Many of the policies did not work well, and this segment of the industry experienced a catharsis during the 1970s. The result was a move to integrate development

economics with microeconomic theory. A fourth segment of the study of economic growth is historical research. Historians have produced in-depth studies of the industrial revolution in Europe, the United States, and Japan; the rise of big business (the so-called second industrial revolution) in the industrial world; the revolution in information technology (the third industrial revolution), and panoramic sweeps of the social, commercial, and scientific changes that wrought the modern world.¹

Economists working in the Austrian tradition have produced important research on economic growth. Garrison has integrated secular economic growth into macroeconomics. Increases in the rate of savings deepen the structure of production and expand future output. Linking savings to economic output through the structure of production has been a distinctive feature of Austrian economics since Menger and constitutes an important source of economic growth in Austrian theory.² Kirzner has emphasized the distinction between secular growth, i.e., the planned growth that comes about from increasing resources through savings, and entrepreneurial growth, 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 towards reconciling his theory of entrepreneurship with Schumpeter's.³

¹ At the cost of omitting many important works, I cite the following as noteworthy examples of contributions in each segment. Solow (1957); Solow (1970); Romer (1986); Lucas (1988); Kuznets (1956); Denison (1974); Maddison (1991); Hirschman (1958); Bauer (1972); Landes (1969); Braudel (1979); Mokyr (1990).

² Garrison (2001, 33-83). Menger (1976[1871], 71-74). See also Rothbard (1962, 283-290). For a criticism of Garrison's theory of secular growth, see Salerno (2001, 38-61).

³ Kirzner (1985) 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,

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. In another important contribution to Austrian growth theory, 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, creates opportunities in meat packing (through refrigerated cars and national distribution systems); the introduction of the internal combustion engine creates opportunities in oil refining; advances in computer chips create opportunities in software design, etc. Holcombe's theory, like Schumpeter's classic exposition, is not merely a theory of growth, but of development, i.e., the introduction of new goods and services that improve economic efficiency.⁴

Boettke and Coyne have advanced the provocative thesis that entrepreneurship is not the cause of 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

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."

⁴ Holcombe (2003, 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, 10-28) and Schumpeter (1934, 63-68).

economic growth.” Boettke and Coyne single out private property and the rule of law as the main institutions that lead to productive entrepreneurship and growth.⁵

Boettke and Coyne are quite right to emphasize that market entrepreneurship and economic growth both result from proper institutions and that the absence of growth comes from improper institutions, not an absence of entrepreneurship. But once we consider the evolution of institutions, we cannot say that entrepreneurship is simply a consequence of institutions, because institutions themselves are the result of entrepreneurial processes. Entrepreneurship creates the institutions that cause economic growth. This essay explains the entrepreneurial processes that create institutions. The theory offered here is derived from the work of Menger, Mises, Schumpeter, Hayek, Rothbard, Kirzner, Holcombe and other economists working explicitly within the Austrian tradition, but it also draws on the work of historians, anthropologists, and archaeologists. We will first provide a brief statement of the theory, then apply it to the division of labor, money, monetary accounting, and property rights. We will offer examples from anthropology and history to demonstrate the principles at work. Finally, we will discuss limitations and criticisms of the theory.

II. Entrepreneurship and the Emergence of Institutions.

“...in any real and living economy, every actor is always an entrepreneur and speculator.”

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

An entrepreneurial theory of emergent institutions must first define entrepreneurship in a way that is serviceable to the theory, and it must define what we mean by an entrepreneurial process. Entrepreneurship is usually considered within the confines of the market economy. From

⁵ Boettke and Coyne (2003, 3, 15) check page nos. xxx

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 explains market coordination across space and time, accounts for technological progress and economic growth, and completes the theory of income distribution.⁶

If we are to construct an entrepreneurial theory of institutions, then we must define the term so that it is not confined to an already existing market. Extending entrepreneurship from its market 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, 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 nexus of profit and loss. We will rely heavily on Mises’ broad

⁶ For a succinct history of entrepreneurship in economic thought, see Robert Hebert and Albert Link (1982.) For a discussion of the entrepreneur and income distribution, see Rothbard (1962, 537-541).

definition of entrepreneurship in our explanation of institutions. We will also rely on an extension of Schumpeter's definition. Schumpeter defines the entrepreneur more narrowly than Mises, as someone who introduces new combinations into the circular flow of economic life. This definition readily extends 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 a new combination into social life. We will also 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. This of course restricts entrepreneurial activity to markets; property rights, an extensive division of labor, and the use of money and monetary calculation are all necessary for the exercise of Kirznerian entrepreneurship. However, we can easily imagine the exercise of alertness outside the market; someone may be alert to an opportunity for a happy marriage or child-adoption. We can also readily imagine that 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 to new animals that would increase the food supply or improve transportation services. Extended, Kirzner's entrepreneur becomes someone that is alert to opportunities for economic gain.⁷

With little modification to traditional definitions, then, 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

⁷ For a detailed discussion of extended entrepreneurship, see Pozen (2008, 283-340) See also Coppin and High (1991, 96-98), and High (2004, 52-54).

that flow from the exercise of entrepreneurship and leads eventually 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, *et cetera*, until, at the end of the process, a new institution exists. With these definitions in mind, we explain in general terms how institutions emerge.

We 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 laws regarding property. We presuppose that the society has an existing set of practices that enable it to function as a society and we assume a common language. For analytical clarity, we assume that this society is in an institutional 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. The motive is 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 for other goods that a person desires more urgently, a specialized producer accepts in exchange a good that is more marketable than the good he possesses, so that he may more easily obtain the goods he wishes to use. The first use of indirect exchange is an entrepreneurial act; it introduces a new practice into the society and it occurs because a trader exercises alertness and judgment in an attempt 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 to for gain discovers a new method for improving their economic output and introduces a new practice into the community. Whatever particular form it takes, this entrepreneurial act is *sui generis*. It 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 (or, more widely, the more complete satisfaction of wants) 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 they may be

unaware that someone is using an improved weapon, or that a particular family has assigned responsibility for particular animals to particular members. Although oversight of new practices may occur, often 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, so 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 emergence of early adopters.⁸

⁸ Sumner (1906, 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, 27): “it can be stated

The emergence of early adopters is a crucial one in the entrepreneurial theory of institutions; it reveals the means by which the practice will spread. There are two main influences at work—imitation and persuasion. In his theory of the emergence of money, Menger emphasized imitation.⁹ 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. Imitating success occurs, not only with the use of indirect exchange, but also with the introduction of a new tool, or with 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 can also motivate persuasion. Innovators often benefit from others adopting the innovation. This is obvious in modern society, where innovators work hard 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 is now has a foothold

with considerable confidence *that individuals tend to notice that which it is in their interest to notice.*” Emphasis in original.

⁹ Menger (1994 [1871], 271-285; Menger (1892, 239-55).

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 practices and successes of the early adopters increase the likelihood that the new practice will be observed by other members of the community. Once these members observe the practice, they will consider whether the new practice will benefit them. If their judgment is favorable, they will then adopt the practice for themselves. The early adopters may also persuade others; they 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. Assuming that some of them do adopt the new practice, there is a yet larger base of practitioners that can be observed and imitated, and who 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, by which I mean a common practice, is established.

We will return later to a general discussion of the process by which institutions are established, but we will first illustrate how this general explanation applies to the division of labor, money, monetary calculation, and private property. We will begin with the division of labor, since some division is necessary to the evolution of money. We will then apply the theory money and monetary calculation, and property.

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...” Smith (1976 [1776], 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 Ricardo’s Law of Association.¹⁰

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.¹¹ 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

¹⁰ Smith (1976 [1776], 7-9); Ricardo (1911, 82-830; Mises, (1966, 157-65).

¹¹ I 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.

increasing his or her food supply. The entrepreneur, her partner, and the clan 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 are likely to 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 or more secure 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 themselves, a next group, whom we may call the middle adopters, 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 a new practice. Feelings of kinship and solidarity will motivate the innovators to share their information with others close to them. They will explain to their brothers or sisters or parents or children what they are doing. They will display their new 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. The early adopters will do the same, expanding the network of kin and friendship through which communication occurs, thus spreading the practice to the 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 encourages it 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 widely as well as more deeply.¹²

This process will not necessarily proceed smoothly or with complete harmony. 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 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 new practices and establish new institutions.

¹² The 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 (1992,238) 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).

Division of labor will also occur between clans. Once entrepreneurs succeed in exploiting comparative advantage with 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 among the 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 may also 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 history, and with many fits and starts and setbacks, specialization will spread further and further between different peoples.

The origins of specialization lie too far back in human evolution for us to know the specific circumstances of its emergence but the entrepreneurial theory of specialization fits well with the “out-of-Africa” account of human development advocated by Kuhn and Stiner (2006).

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 that is evident in the archeological record appears about 50,000 years ago among so-called “anatomically modern humans” living in Africa. Surviving bones and artifacts indicate that 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 (2006, 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.” Of course, the archeological record cannot tell us the process by which early humans adopted the division of labor or why Neandertals failed to do so, but both patterns are illuminated by our theory. First, the physical differences between men and women were greater for 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 Neanderthals than for humans and perhaps did not exist. Second, the division of labor by sex among modern humans occurred in a particular 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 Neanderthals hit upon the idea of specialization, it would be more difficult for the practice to spread to the entire population. Third, plant and animal life 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 adept 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 through specialization 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 is also consistent with 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.¹³

¹³ Kuhn and Steiner (2006, 953-980); Richard G. Klein (2000, 17 – 36). There is an extensive anthropological

IV. The Emergence of Money.

“...we 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...”

Menger (1892, 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 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.¹⁴ We will only point out the role that entrepreneurship plays in this process. In Menger’s story, a specialized 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.

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); Zihlman (1981). The theoretical importance of division of labor by sex is discussed in Mises (1936, 292-295). 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, 2-5).

¹⁴ White (1984, 703-05), White (1999, 1-24), O’Driscoll (1986, 223-238) reprinted in Blaug (1992, 223-238), Jones (1976, 757-775).

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 (1994[1871], 261) the success of the first entrepreneurs leads others to adopt the practice through imitation. 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 it 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 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. The metals were widely used in production and consumption—tools, weapons, vessels, and ornaments were made from metals—and the metals had a high value to weight ratio, so 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 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.¹⁵

Menger's theory has been criticized by anthropologists, who have emphasized that the State has played a larger role in the emergence of money than Menger acknowledges. Philip Grierson, for example, has argued that money has its origins in *Wirgeld*, which is a mandatory payment to families who have lost a member to violence at the hands of others in the community. Both the amount and the kinds of goods acceptable as *Wirgeld* payments were established by political authority in many societies. This mandatory payment established a standard of value, and this standard, argues Grierson, is the origin of money. While the criticisms and impressive historical knowledge of Grierson and others have certainly increased our understanding of means of payment in early societies, their explanations are complementary to Menger's theory rather than substitutes for it. The critics arrive at their conclusions by defining money as a standard of value rather than a commonly accepted medium of exchange. While the cattle or copper rods mandated by *Wirgeld* would certainly influence the choice of *m* in Menger's theory, as Menger himself pointed out, the payment of fines is not sufficient by itself to establish a generally accepted medium of exchange, or even trade. Money can emerge only in the nexus of trade relationships.¹⁶

¹⁵ Menger (1976 [1871], 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).

¹⁶ Grierson (1978, 1- 35). See also Einzig (1949); Polanyi (1957, 264-5); Dalton (1965, 44-65). Bohannon (1959, 492) documents the existence of means of payments in a primitive economy without the evolution a general medium

Points of similarity between the emergence of specialization and the emergence of money are worthy of emphasis. First and foremost, these institutions would not emerge were it not for entrepreneurship. Both institutions require alertness to opportunity for gain, judgment regarding uncertain outcomes, and the introduction of new practices into economic life. Second, innovation and imitation are essential to both processes. While innovators tend to get most of the attention in economic life, the imitators are required in order for any new practice to become an institution. We could not have an entrepreneurial theory of institutions were it not for the imitators. Third, both processes exploit scale economies, or learning by doing, or increasing returns. It is usually easier to do something a second time than it is the first; easier to imitate than to innovate, so that each successive repetition of a new action is achieved at a lower cost than the earlier one. Fourth, both processes are actuated by self-interest. Each step in the emergence of both institutions redounds to the (subjective) benefit of those who undertake specialization and indirect exchange. Fifth, no social contract or extra-economic force such as government compulsion is required to understand these institutions; they emerge spontaneously.

There are also important differences between the two processes. 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. Of course, the process can work to the disadvantage of some traders as well. If the

of exchange, i.e., without a Mengerian process establishing a general purpose medium of exchange. Menger's theory of the evolution of money, and especially Robert Clower's, which is similar, have been criticized by some anthropologists for being historically inaccurate. The critics maintain that money emerges very early in primitive society, before barter really gets established. Menger's theory seems perfectly consistent with this particular evolutionary path. Solving the problem of the double coincidence of wants could occur very early in the process of specialization and exchange, before barter had developed very far at all. Caroline Humphrey's criticism (1985, 49) that "barter was indeed very rare as a system dominating primitive culture economies," is an important point historically, but theoretically we only need recognize the inconveniences of barter are very great, so that the emergence of indirect exchange appears early in the division of labor. Her point that barter seems to be most important in economies where the monetary system has broken down (as in centrally planned systems) is also consistent with the evolutionary theory of money presented by Menger and others. See also Crump (1981, 54).

additional demand for m raises its price against x more than it does against y , and the unfavorable terms of trade outweigh the benefits of easier exchange, then specialists in producing x will be hurt by the process of m becoming more widely demanded. 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 the emergence of money is a less complex process than the division labor. Indirect exchange is a single, well-defined practice whereas the division of labor encompasses a huge set of 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 at large.

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 can now 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.¹⁷

V. The Emergence of Capital Accounting.

“Is it not possible or likely...that double-entry book-keeping 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.

¹⁷ The 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 (1935 [1920], 87-130).

The emergence of money, by creating a medium of account leads to the possibility of monetary calculation. This can take many forms, from simple mental calculations to written records of transactions to sophisticated systems that calculate the values of assets, liabilities, revenues, expenses, depreciation, profit, and rates of return. Like the division of labor, the origins of monetary calculation lie too far back in human history for us to know is the precise events by which it was established. In simple form, profit calculations probably originated with money itself. In Menger's example, the Greek artisan who traded his armor for money could easily calculate whether the sale of his armor covered the expenses of buying the copper, fuel, tools, and food necessary to continue his enterprise. These simple calculations could occur mentally without the need to keep records. No profit and loss calculations have come down to us from ancient times. Financial records of banks, trading firms, and governments in Babylonia and Assyria dating from about 3500 B.C. have survived, but they simply keep track of goods and transactions. The same is true of China, Egypt, Greece, and Rome, all of whom kept extensive records of economic transactions but none of which regularly calculated profit and loss. As Chatfield (1977, 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 book-keeping, may have first appeared among Muslim traders during the early Middle Ages, as Labib (1969) persuasively argues, but the first records of profit and loss accounting come from Italy during the 1300s. It is here that we first find direct evidence of our modern methods of accounting. The importance of accounting to capitalism has been emphasized Sombart, Weber, and Mises, and its emergence is the object of extensive historical research and lively debates that are ongoing. We will confine ourselves

to a brief discussion of the gradual emergence of double entry book-keeping, to illustrate our thesis that economic institutions are the result of an entrepreneurial process.¹⁸

The term double entry can simply mean that entries into an account book include simultaneous and entries of credit and a debit, but as a system of book-keeping it means considerably more. It means recording the capital invested in the enterprise; it means balancing the credit and debits periodically to insure accuracy; and it means calculating the profit and loss of the enterprise. 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 an innovation motivated by economic gain. The advantages of double-entry bookkeeping to Italian merchants can be seen by considering its use in *commenda*, partnerships in 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% 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, transporting and selling the goods, and the revenues obtained by selling them. Double-entry book-keeping 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

¹⁸ Edward Boyd (1968 [1905], 17-18); Chatfield (1977, 3-18); Labib (1969, 79-96); Sombart (1967 [1915], 125-139); Weber (1925, 275-78); Mises (1966, 212-214, 229-30).

not impossible to form without double-entry book-keeping 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.¹⁹

The use of *commenda* also exemplifies how knowledge of double-entry book-keeping 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 many 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 partner who had learned the methods of double entry book-keeping would be in a good position to judge its effects and adopt the practices in his new ventures, perhaps improving them along the way. In this way, the accounting practices of one *commenda*, would spread from merchant to merchant in the home country. 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 would enable foreign merchants to learn of the methods of the *commenda*, including their accounting methods, and adopt them where they judged them to effective. The *commenda* form of partnership spread

¹⁹ Winjum (1971, 335) discusses various meanings of the double-entry system; we have adopted his third meaning. See also Littleton (1966, 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, 405-420; the quotation is from p. 405; Weber (2003 [1889], 65-67); Peragallo (1938; 1-37); Yamey (1947, 263-72); Littleton (1966, 28-40).

throughout the Mediterranean and its use after the appearance of double-entry book-keeping in Italy spread the practice abroad. The dissemination of double-entry book-keeping 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 German merchant who sends an apprentice to Italy in order to improve the accounting practices of his firm is exploiting an opportunity for economic gain.²⁰

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 traders who had no direct contact with Italian merchants.²¹ In 1494 Luca Pacioli, a Franciscan monk, renowned mathematician, and sometime collaborator of Leonardo da Vinci, published *Summa di Arithmetica*.²² 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 book-keeping was so thorough and lucid that Pacioli is known today as the father of accounting. Accounting historian J. Fogo 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

²⁰ Miskimin (1975, 118); (Weber (2003 [1889], 71-75); Fogo (1905, 125-26, 153-54).

²¹ On the importance of weak ties to establishing institutions, see Granovetter (1973, 1360-1380); Chamlee-Wright and Myers (2008, 151-166).

²² The 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*.

his undertaking. Pacioli's book went through three printings in Venice, where several thousand copies were likely printed. Over the next century, Pacioli's treatise was translated into Dutch, English, French, Spanish and German and inspired others to write their own treatises on double-entry bookkeeping. The authors were often teachers who used their books as texts for their students. This was an important means of spreading Pacioli's work throughout Europe. Political and economic events also encouraged the adoption 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 seventeenth century, through a long process of innovation, persuasion, and imitation, profit and loss accounting was established as an institution in European commerce.²³

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

²³ J. Row Fogo (1905, 111, 124); Chatfield (1977, 52-61); Cushing (1989, 150); Littleton (1966, 77-121); Sangster (2007, 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, 99-113); Yamey (1964, 99-113).

and disorganization even in the simplest activities of primitive man.” Branislav 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, ends that she would have to forego if she did not control the good. The control of consumers’ goods enables someone to attain ends directly, as when a person drinks water, or eats grains, or stays warm by wrapping herself in hides or wool. The control of producers’ goods enables a person to attain her ends indirectly, as when a hunter uses stone tools to separate meat from bone, or uses water to grow crops. Following Mises, we call physical control of a good economic property or economic ownership. Physical control is fundamental in the sense that social forms of property, including legal rules, derive their importance from physical control of scarce resources. Economic well-being depends on property in this sense.²⁴

Economic property is not necessarily controlled individually; physical control can often be shared or undertaken jointly. Neighboring farmers may use an ox on alternate days or villagers may decide to erect a building together and share its use once built. Shared control may proceed according to the individual plans of each person, as in the example of the farmers, or it may proceed according to a single plan that everyone in the group adopts, as in the building of the church. This latter we may call organizational ownership. It is important in modern society because of its widespread use by corporations, but it is common in ancient societies as well, in the large public works whose construction and use were undertaken jointly and in the goods used in public ceremonies. Economic goods may be controlled not only for consumption or

²⁴ See Mises (1936, 37-43), Menger 1994 [1871], 74-76).

production, but also for exchange. Another manifestation of economic property in society is the possibility of separating 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 and in ancient societies as far back as chieftans. [Reference Frank Knight here and probably Earle on Hawaiian chieftans.]

In social settings, economic ownership creates conflict among members of the group. The control of a good by one person usually 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.”²⁵ Economists usually assume that the State is necessary for the enforcement of property rights, although Rothbard, Benson and others have 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 through an entrepreneurial process.²⁶

²⁵ Svetozar Pejovich, (1975, 40).

²⁶ The quotation is from Earle (2000, 40). See also Mises (1936, 42-50,); Demsetz (1966, 62); Benson (1989, 644-661); Rothbard (1970, 1-7).

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 in a group to appropriate a resource (say pick fruit or hunt animals in a geographic region) create an open access system, or *res nullia*. 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 private property, or property held in severalty. Private property not only restricts use to a particular person, but also permits the owner wide latitude in use of the good, which may include the right to exchange, although in many primitive societies exchange is a minor activity if it exists at all. Rules that allow free exchange of property among owners create a market system, with its twin pillars of competition and price. We wish to explain how common resource and private property systems emerge from *res nullia*, and how private property emerges from common property and vice-versa. As before, we will rely on the agency of entrepreneurship to actuate the process.

We begin with a primitive society in which all goods are *res nullia*. For consumption goods—clothing, food, shelter—anything found at any location can be consumed by any member of the group. As long as resources are abundant, there is no need to change the form of property; all members of the group can appropriate all that they wish. However, once scarcity appears, everyone cannot consume all that he or she desires. There is immediate conflict; what one person consumes another cannot. At this point, if they are to cohere as a group, rules governing the use of resources must emerge. The same is true of production goods. A wood or stone tool used by one person cannot be used by another, at least not at the same time. The water used by one family to irrigate crops cannot be used by another. The simplest rule, and the one that

probably emerged first for most goods, is a rule of private property; those who first acquire food, clothing, and shelter may consume it without interference from others. This, to some degree, is a rule that humans inherited from their primate ancestors; primates do not share food with other adults. We cannot argue that primates observe a rule of private property; stronger primates also take food from weaker ones. All we can claim is that communal property is not a part of our primate heritage.

Private property will emerge for most goods mainly because feelings of mutual regard dictate this. Consider an alert hunter in a primitive group who fashions a new tool that enables him to more efficiently kill game. We will use a bow and arrow for illustration. Another member of the band observes the superior productivity of the bow and judges that he, too, can obtain more meat by use of the bow. At this point, the observer has a choice: he can either take the bow and arrow by force or stealth, or he can fashion his own. If the observer obeys a rule of *res nullia* and takes the bow, he deprives the creator of its benefits. Feelings of mutual regard will lead him to the alternative; he will fashion his own. The observer has become an early adopter of a new technology and he has implicitly adopted a rule of private property. Other members of the group will observe the new technology and its superior productivity and face the same choice—to take from a neighbor or to produce. The same mutual regard for members of the band induce them to produce their own bows. As this process repeats itself, a rule that respects the possessions of others establishes itself. Private property becomes an institution. We have used the example of a producers' good, but the same logic applies to consumption goods. An alert tribal member who for the first time fashions a jacket of fur for the winter months will be observed by others, who now face the same choice as the hunters mentioned above—to deprive a fellow member of her jacket or to make their own. The decision by others to imitate the innovator, by making their

own jackets, will again result in a process that establishes a rule of private property regarding clothing. This process will occur with any good that cannot be readily shared. In the absence of sharing, private property will emerge from *res nullia* because of the feelings of regard that members of a group have for one another. In short, private property in objects will emerge as an expression of respect and caring for others in small groups.

For goods that can be readily shared, rules of common property will be established in the society through the same process described above. If the hunter who innovates the use of the bow is able to kill enough game in a day to last him the week, his regard for other members of the tribe will motivate him to share the bow during the days that he has no use for it. The sharing will no doubt come with rules—the bow must be returned to the owner at a particular time; it must be returned in good condition; loss or damage must be made good, etc. The sharing arrangements will increase output for the members involved in it and will be observed by other members of the tribe, who will produce their own bows and sharing arrangements, and eventually a common property regime regarding bows will be established.

Whether a social process establishes private or communal property will depend on how easily goods are shared, which in turn depends on the physical characteristics of the good and the economic situation. Clothing that keeps a person warm in winter will perforce be privately owned; sharing is impractical. On the other extreme, with a good like water from a lake, which can be used to irrigate numerous small plots of land, rules for sharing are the only feasible option; no one person can make productive use of all the water in the lake. In between are goods for which private or exclusive communal systems will develop depending on circumstances. If a hunter uses his bow every day to keep him and his family in food, he is not likely to share, since other members of the group can benefit from his innovation by producing their own bows and

arrows. If a hunter uses his bow only occasionally, he is likely to share, since it costs him so little to do so and benefits others with whom he is close.

Sharing, with its concomitant rules of communal property, may also develop from a regime of private property if there are economic reasons to do so. We noted earlier that other primates do not share food and it is likely that the first rules regarding food established private property. However, we know from the study of primitive peoples that sharing food is widely practiced, which raises the question of how sharing evolved. The practice was likely adopted and spread for three reasons. First, there is variability in the success of hunting and gathering, especially hunting. Some days a person would succeed in killing a deer, but on other days he would not. Under these circumstances, two persons who agree to share their food on days they succeeded in return for the other sharing on days they were not would even out their consumption and thus improve their health and strength. This practice would be observed by others in the group, who would either form their own sharing arrangements or join the sharing group. By forming a larger group, the risk of failure is spread out over larger numbers. As long as the benefit of a more regular food supply were increased by additional members, the practice would spread among members of the group until it became a common practice. However, against the gain of a more regular food supply is the cost of sharing. Goods that are shared cannot be stored for future use. Furthermore, sharing creates an incentive to shirk, a problem that grows larger as the size of the sharing group increases, because the costs of shirking and the rewards of work are spread out over larger numbers. Unless work effort can be monitored, or members of the group can be trusted to do their best, sharing will decrease the productivity of the group as a whole. Group solidarity, the feelings of mutual regard that persons in close proximity have for one another, will facilitate sharing and reduce shirking, but this has limits. Even siblings do not always have

mutual regard for one another, especially where one is hard working and the other is a ne-er do well. And mutual regard will not normally extend to those with whom one has little contact, which limits the size of the sharing group.

A second reason for the emergence of sharing is the superior productivity of co-ordinated group activity, or team production. For some animals, such as antelope or jack rabbits in the Great Basin of North America, output per person can be increased by forming a team and herding animals into a pen or net, where they can be easily killed. In order to avail themselves of this superior production technique, the group has to divide the output among members of the group; no individual will contribute to the team effort unless he shares in the output. The first persons to employ coordinated action and sharing will experience an increase in their food supply, which will be noticed by other members of the group or by neighboring groups, who will decide that they, too, should adopt the technique. As the practice of team production spreads, so will sharing and with it, rules of communal property.

A third way that sharing gets established as an institution is through the division of labor. We have already noted this in the division of labor among the sexes in early human society. Men hunt and women gather, then share the joint output. This kind of sharing need not be confined to the family. If one woman (a younger one, perhaps) has a comparative advantage in gathering food and another (an older one) has a comparative advantage in preparing it, they can both gain economically by specializing and sharing. Once bi-lateral sharing is established, it can spread to group sharing for either of the reasons mentioned above. An irregular supply of food would lead the food preparers to band together, so that they all contributed something toward the preparation of food for their sharing group. Or, if preparing food in large quantities is cheaper than individual preparation, an organized kitchen will result in a larger quantity food for less labor.

Conservation of firewood and economies of scale in pot production are two reasons that communal cooking can be cheaper than individual preparation. A more refined division of labor will also lead to group sharing. If half-a-dozen a dozen persons are involved in different activities of hunting (gathering the materials for weapons, fashioning them, killing the animals, dressing them, carving them into different portions, carrying the meat home), sharing will occur even if killing the animals is an individual activity. The individuals who first exploit specialization and sharing in these ways will see their output increase, and will be observed and imitated by others, until the division of labor and sharing, with its concomitant rules of common property, become widely practiced.

Economic reasons for sharing do not exhaust the possibilities. Sharing may also occur because it promotes group solidarity, which is valuable for defense of the group against hostile neighbors. Or sharing may become widely established because equality of wealth becomes an overriding value in a group. A successful hunter or gatherer is expected to share with others whether or not these others ever give anything back to the producers. According to Woodburn (1998, 50), this is the kind of sharing that occurs among the Hadza of Tanzania and many other hunter-gatherer societies. If equality became a dominant value among all primitive groups, so that common property was the norm for most goods, then a system of private property must emerge from a system of common property. The transformation of common into private property has been of interest to economists since Demsetz's "Towards a Theory of Property Rights." In that article and a subsequent one published in 2002, Demsetz identified several factors that will transform common property into private. 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 especially with a growing population, increasing

specialization, and increasing complexity of production will increase the incentives for transforming common into private property. Demsetz (1967) used his theory to explain the introduction of private property in beaver pelts among the Iroquois after the arrival of the Europeans and to explain the emergence of private property in Western economies leading up to and through the industrial revolution. We wish to show how an entrepreneurial process will lead to the transformation of common into private property under the simple conditions of a hunter-gatherer society.

We assume a hunter-gatherer society in which game sharing is the norm. Sharing is practiced because it serves two economic purposes. First, hunting is carried on in groups because of superior productivity, which requires sharing among members of the hunting group, and second, because the success of hunting is variable, so that sharing smoothes out consumption. Sharing is carried out according to fixed rules, which constitute an exclusive common property. These rules have been observed for generations so that common property is an institution. Into this traditional setting, an innovator introduces a new production technique, the bow and arrow. The superior productivity of bow hunting leads, through the entrepreneurial process described above, to the general adoption of the bow within the tribe. The new practice will produce several effects. First, hunting is now carried out individually rather than communally. Second, the variability of successful hunting diminishes, so that hunters, while not guaranteed of success on any given outing, succeed more often. Third, shirking becomes a bigger problem than before, because individual effort cannot be monitored. Fourth, average income goes up in the short run. Fifth, over time the increased food supply increases the size of the group, so that social ties are weakened. Sixth, variability among the output of individual hunters increases because of

shirking and because individual abilities vary. Some hunters will be adding more to the common pool than others and this fact will be generally known among members of the group.²⁷

With the introduction of the bow, sharing would still be valued but its advantages fall relative to a regime of private property. Hunters have less incentive to share because they are producing their output individually and their game supply is more regular. Moreover, the more productive hunters now see how much of their output is going to others, including those whom they don't know well and those suspected of shirking. Under these conditions, it is likely that one or more of the productive hunters will perceive that his income is large enough and steady enough, and that the loss of his output to shirkers and tribe members that he does not know is high enough, that he would gain by withdrawing from the sharing group. Withdrawal is a momentous step, to be sure. He is acting against the values with which he has been raised and he risks the wrath of his fellow tribe members. Against this he weighs the greater income for his own family, his increased ability to share with those for whom he really cares, his increased ability to save for a rainy day (primitive peoples know how to dry and store meat for future use), and the prospect of enduring the rigors of the hunt less often. Moreover, he realizes that average output is rising with the introduction of the bow, so that the pressures on him to remain in the sharing group are not as great as they would have been before the introduction of the bow. So our intrepid hunter decides to withdraw from the sharing group. This will have two effects. If he is correct in his assessment that his economic well being is improved, that he really does have more meat for his family and can give more to his close kin, he serves an example to other productive hunters that they, too, can gain by withdrawing from the sharing group. In addition, the average income of the rest of the group has fallen relative to his participation in the group,

²⁷ For an example of how much hunting abilities vary among hunters, see the two biographical sketches in Steward (1934, 425-438).

including the incomes of the remaining hunters that are more productive than the rest. These two effects inspire another productive hunter to withdraw from the sharing group. A second hunter's withdrawal will provide another example of the benefits of private property and further lower the income of the remaining group. So a third hunter leaves the sharing group, and so on, until private property is established in the tribe.

The process by which private property emerges need not occur person by person as described above. Robert Bettinger, who has closely studied Great Basin natives, says(1998, 71) that, "[i]t 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 are no doubt substantial. But in a situation like that posited here, where hunting patterns are changing and output is rising, the pressures need not be insurmountable. Even if the pressures are insurmountable for a single person, an entrepreneurial process similar to the one described above can still occur. The process will begin if a single person realizes the advantages to withdrawing, identifies others who would also gain from withdrawal, and organizes a group withdrawal. A group will be able to withstand the ostracism better than a single family and can better protect itself against theft. Once this critical mass is established by the first group, the more productive hunters remaining in the sharing group can 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 alert hunter perceives the benefits of private property and takes it on himself to convince others. His deliberations include not only benefits of withdrawing to himself, but also identifying the other productive hunters, 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 group action.

Bettinger (1998, 70-71) also points out another process by which private property can be established. He studied climate, population, and artifacts of Great Basin tribes during the Medithermal, the period after 2500 B.C. He argues that the increase in food production among the Great Basin tribes in the middle and late Medithermal (after 0 A.D.) is primarily due to the privatization of food supplies following the introduction of the bow and arrow around between 0 and 500 A.D. The Great Basin of North America contains both large and small animals. Large animals were communal property after the kill, while small animals were private property (presumably because large animals were hunted in groups and small animals were hunted individually.) The atlatl, a device for hurling spears, favored large game so that property in meat was primarily communal. The introduction of the bow and arrow made it easier to kill small game, which eventually replaced large game as the main source of meat among the inhabitants of the Great Basin. In this process, private property replaced common property in meat consumption. The move to small animals is readily understandable within our theory. After the introduction of the bow, a productive hunter alert to his economic interests would devote more of his attention to small game, which he did not have to share. Other hunters who would gain from withdrawing from the communal sharing of meat would observe this success and imitate the practice. As more and more hunters direct their efforts toward small game, a shift from common to private property occurs. Of course these hunters would face social pressures to hunt large game, but at the same time that the bow made small game more attractive, it also increased the

output of large game, which reduced the pressure to participate in the sharing system. The introduction of the bow may have had another effect that hastened the adoption of private property quite independent of entrepreneurship. Madsen (1986, 36-37) speculates that the bow may have rapidly depleted the population of large game. If so, it implies that hunters were forced to rely almost exclusively on small game. However, depletion is also relevant to our story because it implies that there was a period in which large game were so abundant that the pressures to remain in a sharing system would be significantly reduced.

The archeological record is not sufficiently detailed for us to know whether one or the other of the entrepreneurial processes described above occurred, singly or in tandem, or whether any entrepreneurial process occurred at all. Large game were *res nullia* and thus subject to the tragedy of the commons (Hardin, 1967). It may be that the depletion of large game forced everyone to rely on small game and private property was established willy-nilly. Our purpose is not to argue in favor on one explanation or another, but merely to show that an entrepreneurial process, this one set in motion by a technological advance, can lead from common to private property. The transition need not be instigated by a change in technology nor by any change in the environment at all. It can be solely the result of entrepreneurial alertness, judgment, and action. This can be illustrated by reference to another episode of privatization in the Great Basin, this one from common to private property in plant food.

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. Seeds 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 increase of food production in Meso-America and the Near East was 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, 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 posits a process much like the one advanced in this essay. 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. In Owens Valley, the Paiute women who established private property in plant food may have been reacting to an increased population, with its attendant freeloader problem, or they may have been reacting to the spread of private property in game. The move to private property may also have resulted from a change to simple agriculture, where seeds were spread on small plots of land and irrigated. Or Paiute women may have decided, even in the absence of any marked change, that private property in plant foods would enhance the well-being of themselves and their families. From an institutional point of view, the important point is that one or a few entrepreneurs introduced a new practice, which was then adopted by others until it became a generally accepted norm of behavior.

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. As noted above, 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.

Conclusion.

This essay 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 the origins 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 vitally important means 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 systems, 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 has also been used to change property rights, as exemplified by the enclosure of land in England, and the assignment of rights in land among the Maori tribes of New Zealand, the pre-Columbian Mayans, and, more recently, and 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.²⁸

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 left hand side of the road, cannot be adopted in steps. It must be adopted collectively. Vanberg (1992, 114-118) 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 at least by small numbers, within a larger community.

A third limitation of the theory is that it implies 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, 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, 179) "There is thus no systematic

²⁸ On the role of Parliament in the enclosure of English land, see Mingay (1997, 55-82). For an account of the reassignment of rights among the Maori, see Banner (2002, S359-S37). Ostrom (1991, 103-42) covers the combined efforts of private actors and the courts in re-assigning rights in the Los Angeles water basins. Earle (2000, 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.

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 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 there are no systematic forces leading to the adoption of benign institutions. 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 its 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, 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, 262) estimates that it took a century or two to introduce private property in 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 book-keeping 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 from an historical examination of these comparatively modern events.²⁹

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

²⁹ On ancient markets, see White (1959, 293-296, 330-331); Turner (1941, xxx-xxx). For accounting practices in the seventeenth and eighteenth centuries see Fogo (1905, 149-168); Littleton (1966, 118-121, 140-14; Chatfield (1977, 64-85). An early (1782) example of an external audit of the East India Company appears in Baladouni (1990, 29-31).

‘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 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 social life. Ideas are not sufficient to explain the emergence of institutions, but they are an integral part of the entrepreneurial behavior that establishes the institutions of economic growth.

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