

A THEORY OF DEVELOPMENT, OR MARKETS AND HUMAN
CAPITAL IN PRIMITIVE SOCIETIES

by

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Introduction

This study analyzes the specific pattern of human capital and of organization of markets in primitive societies, and it suggests a theory of development. The analysis, in addition to illuminating many puzzling questions raised when evidences from both primitive and developing societies were examined, also permits some insights into the nature of institutions of modern societies.^{1/}

The place of this study relative to the existing ones in anthropology is this: in a profound study of 60 primitive societies, Pryor (1977) has rigorously examined whether the predictions of various theories offered to explain the specific features of primitive societies are consistent with the empirical evidence. Many hypotheses were rejected, and many evidences were left unexplained--the theoretical model suggested here fills part of this gap. This model, which is based on economic theory, clarifies the meaning of markets in primitive societies, and it enables one to gain insights into their patterns of speech, art, and myths, all social activities that few economists have related to economic theory.

The analysis also contributes to the understanding of market behaviour by analyzing the transition from non-market modes of distribution to formal market mechanisms. The

theoretical discussion implies that in economies where the size of the population or per capita income (or both) is relatively small, exchanges based on personal relationships rather than on formal markets are efficient. In these circumstances trust and honor substitute for the price mechanism, and this requires a more extensive definition of "market activity." The statistical evidence supports this view of markets. Recently, Posner (1979b) used the economic approach to analyze the laws of primitive societies--this study complements the picture given there, since it stems from a similar approach, but it deals with other factors.

The first section presents the theoretical arguments. The second section concentrates on the empirical evidence related to education, patterns of speech, arts, and myths of primitive societies. The third section presents the statistical analysis, which concentrates on the organization of markets in primitive societies. The fourth section analyzes the implications of the results for developing countries and the conclusions follow.

I. Human Capital and Markets in Primitive Societies

The arguments presented below show how human beings allocate their resources when they face, or expect to face, a static environment. In previous research where the economic approach was used to explain the structure of laws in primitive societies, Posner defined such a society as one which is preliterate. Since my attempt is to show that literacy is relatively less demanded in primitive societies, I shall not use this definition.^{2/} Instead, I shall distinguish between two types of societies: one expecting to face a static environment and another, a dynamic one. Both terms will be precisely defined below.

Let us assume that the size of the population is relatively small and exogenously given. This exogeneity can be viewed as the result of a biological adaptation process to a static environment (see McNeill (1976, 1978)). The first question which arises is what are the implications of this assumption for the organization of markets. The analysis of a competitive market is not helpful, for this market structure requires both a great number of buyers and a great number of sellers. Thus, alternative mechanisms of exchange must be analyzed.

Where the size of the population is relatively small, each individual expects repeated transactions with the other members of the society. Suppose that W is the individual's

expected wealth from allocating his resources optimally and honestly. The probability that an individual will commit fraud is determined by the following condition: let P be the profits that can be accumulated by fraud, and let R be the loss of wealth or of reputation (which is similar to the loss of wealth)^{3/} if the fraud is discovered. Then, whether the individual cheats or not is determined by the following condition:^{4/}

$$(1) \quad U(W) \geq pU(W + P) + (1 - p)U(W + P - R) ,$$

where $(1 - p)$ denotes the probability that the fraud is discovered, and U is the individual's utility function. Approximating the terms on the right-hand side, we obtain the condition for not cheating, which is given by:^{5/}

$$(2) \quad U'(W)(P - (1 - p)R) < 0 .$$

Since $U'(W)$ is positive (being the marginal utility of wealth), individuals will avoid cheating where P is relatively small and $(1 - p)R$ relatively large. This means that where the probability of cheating being discovered and the costs due to the loss of reputation are relatively large, fraud will be avoided. Notice that the term "reputation" necessarily refers to a market which is "personal" in the sense that repeated transactions are expected among the buyers and sellers.^{6/} Otherwise, this term is undefined; in a competitive market, for example, where the value of repeated transactions between any particular buyer or seller is zero, reputation does not exist. Indeed, competitive

markets are impersonal. We may then deduce that in economies where there are high information costs in discovering the qualities of goods, and where the costs of using the price mechanism are prohibitive (owing to the relatively small size of the population), a substitute channel of information-- call it reputation, trust, or honor--prevents fraud. This argument holds not only in the markets where goods are exchanged, but also in labor markets. For example, suppose that there are high transaction costs in discovering an employee's level of effort, and let "w" be the wage paid for a high level of effort. Then, if the employee provides only a low level of effort but receives the wage "w," he would be better off than if he worked honestly, since producing a low level of effort is cheaper. But if only one transaction is expected, the employer knows this attitude, takes into consideration the lower expected marginal productivity of the worker, and pays him only the lower wage. However, if repeated transactions are expected, then the employee will provide the high level of effort and the employer will pay the higher wage, since he now expects the employee to be honest. Again then, expectations for repeated transactions bring about an efficient outcome, although this is not the result of the market mechanism, but a consequence of information capital in the form of trust, honor, and reputation which stem from expectations for repeated transactions. The term efficiency refers here to a

condition where goods and services are exchanged under circumstances of "simulated" certainty, since the uncertainty of fraud occurring and being detected is eliminated by expectations for repeated transactions. In other words, personal acquaintance between buyers and sellers substitutes for information costs required to discover the qualities of goods in circumstances where using the price mechanism for discovering these qualities is prohibitive.

The discussion above is a particular application of the prisoner's dilemma, the two-person, non-zero-sum game.^{7/} This game refers exactly to situations where one player faces information costs in discovering both the strategy chosen by the other player and this player's intention to play just one or repeated games. The two strategies open to one player--the seller of the good or service--can be viewed as the decision to choose between providing a high or a low quality good at a price P_1 (or in exchange for a high quality good), or providing a high or a low quality good at the price $P_0 < P_1$ (or in exchange for a low quality good). The other player can be viewed as the buyer of the good or service who offers either the price P_1 (or a high quality good) or the price P_0 (or a low quality good). The seller of the good or service knows that the buyer cannot assess without additional costly information the quality of the good offered. In these circumstances, the equilibrium outcome of the game, when just one transaction

is expected to be carried out, is that a low quality good is exchanged at a low price. However, when repeated transactions are expected, the equilibrium of this game is characterized by the exchange of high quality goods.^{8/}

The meaning of "the same game," or of repeated transactions, is necessarily both that the buyers and the sellers stay the same and that relative prices are relatively stable. We will define these circumstances as "stationary." These conditions imply that the market structure discussed above will be efficient in eliminating fraud only when the population is relatively immobile and stable in size. In order to perceive the institutions (or the lack of institutions) which are efficient when the economy is stationary, consider the following case. Suppose that due to exogenous reasons the relative advantage of trade based on personal acquaintance decreases. This will happen when income increases (because of exogenous reasons such as international trade),^{9/} the population increases, the mobility of the population increases (due to lower transportation costs, for example), or the costs of obtaining information on quality through markets decrease. Each of these changes decreases the probability of carrying out repeated transactions with the same individuals in the future and thus, they increase the incentives to enter impersonal markets. These developments, however, change not only the relative price of anonymous versus personal markets, they also change the value of oral

versus written communication.^{10/} Due to the increase in the size of the population or its mobility, the value of oral communication decreases while that of written communication increases. In particular, while exchange in personal markets is based on trust and honor, exchange in anonymous markets requires money and contracts. Both imply an increased demand for literacy, for a legal framework, and for institutions enforcing contracts. In contrast, notice that in stationary conditions, ethics or morals substituted both for the price mechanism and for enforcement costs.^{11/}

This view of market structures implies that the economy may be efficient in eliminating fraud even if the population is relatively small (so that no competitive markets can exist), is illiterate, and has relatively low levels of income. Moreover, these economies may be more efficient than modernizing ones, the term "efficiency" referring now to the accuracy by which marginal conditions in the allocation of resources are fulfilled.^{12/} These conditions can be achieved more easily in an economy where the population is stationary. Indeed, this was Schultz's view when he argued that farmers in traditional economies are more efficient than modern farmers:^{13/}

Farm people who have lived for generations with essentially the same resources tend to approximate the economic equilibrium of the stationary state. When the productive arts remain virtually constant over many years, farm people know from long experience what their own effort can get out of the land and equipment. In allocating the resources

at their disposal, in choosing a combination of crops, in deciding how and when to cultivate, plant, water and harvest and what combination of tools to use with draft animals and simple field equipment--these choices and decisions all embody a fine regard for marginal costs and returns. These farm people also know from experience the value of their household production possibilities; in allocating their own time along with material goods within the domain of the household, they too are finely attuned to marginal costs and returns. Furthermore, children acquire the skills that are worthwhile from their parents as children have for generations under circumstances where formal schooling has little economic value. This simplified economic picture of traditional life, which includes knowing how to live with variations in weather, strongly implies a high level of economic efficiency.

Following Becker's and Schultz's views^{14/} I may restate the aforementioned arguments in terms of the optimal allocation of time of economic agents. People have various abilities: to acquire education, to memorize, to invest in personal relationships, to learn discipline, and so forth. Developing any of these abilities is time consuming and since time is a scarce resource, the supply of these abilities can be viewed as similar to the supply of any other service provided by an economic agent. The amount supplied of these abilities is a function both of the existing technology of their production (some hereditary ability, for example) and of the anticipated returns on alternative investment opportunities. The anticipated returns on various allocations of time depend on the circumstances economic agents expect to face, and the

previous discussion implies that in stationary conditions, the allocation of time that was optimal in the past continues to be expected to be optimal. Thus, we should find the same forms of human capital generation after generation, since economic agents only allocate their time to adapt to rates of return which have prevailed in the economy for long periods of time. Notice that a relatively small amount of specialization in stationary conditions (as defined here) is an implication of the relatively small size of the population. This follows from Adam Smith's point on the division of labor being limited by the extent of the market.^{15/} Since specialization facilitates technological innovation, less specialization and fewer technological and scientific innovations are expected in societies with a relatively small, immobile and isolated population.

Primitive societies will thus be technically static, although dynamic vis-à-vis the participating economic agents, and there will be repeated learning as the elder generation retires and the new one starts to work. In these circumstances, we would expect specific channels of information to evolve--call them customs or imitations--which simplify learning. Today we are accustomed (!)^{16/} to receive communication from the older generation either orally, in writing, or visually. However, in stationary conditions (as defined here), which require both a relatively small and immobile population and imply a specific

market structure, the incentives to invent or use writing are relatively small. Because the methods of exchange do not require literacy, the existing stock of knowledge can be transferred orally or visually through customs and imitations. These methods are efficient in stationary conditions, since relative prices are expected to stay constant.

In these circumstances "memory" is the form of human capital more likely to be found.^{17/} Where "memory" is the input into the production of knowledge transfer between economic agents, economic theory predicts that there will be several technological innovations in speech that would facilitate memorizing, innovations which would no longer exist today.^{18/} Speech in public or religious rituals will be accompanied by music or some form of rhythm, and speeches will be more ornamented. When knowledge is transmitted orally, we would expect the younger generation to spend more time with the older than is common today, since they embody (literally) the existing stock of knowledge, and since the customs and the traditions of the society are expected to be as efficient as they have been in the past. Thus, in such societies the difference between generations will be smaller than it is today, the lack of literacy playing a special role that I specify in the last section. It is useful to note that in each generation some new information is

nonetheless produced under stationary conditions, information which replaces forgotten (i.e., depreciated) ones, so that the stock remains constant. The empirical evidence shows how exactly this process takes place.

The fact that the younger generation learns from the older generation either by imitation or by oral communication and that the costs of specialization are prohibitive, imply that there is relatively a smaller demand for mental activities which require solitude; and consequently, there will be a relatively smaller demand for intermediary goods protecting privacy like doors, partitions, and so forth than in modernizing societies. Moreover, we would expect people to live within the frame of an extended family, since the oldest member of the family represents its greatest stock of knowledge. In the last section the subject of privacy and that of the generation gap will be addressed in detail.

Before confronting the empirical evidence with the implications of the hypotheses presented in this section, it is useful to relate briefly the discussion here with some general aspects of information models. Arrow,^{19/} for example, argued that an individual starts off with a set of expectations as to the range of signals that he expects to receive in the future. The channels of information initially open to an individual may be augmented by the creation of new channels, and the choice is determined

by a cost-benefit analysis. This was one of the arguments made above: education, which can be achieved by oral, visual, or written communication, is one intermediary good which enables an economic agent to increase the number of channels he or she may sample. The choice of channels and their stock depend, however, on the circumstances economic agents expect to face. The previous arguments thus imply that in all societies expecting stationary conditions (which determine the expected range of signals), some similar channels of information will develop. However, there is no reason to expect to find precisely the same channels in each society; their characteristics depend on the specific geographic pattern, weather, or, in general, the initial distribution of wealth each society has faced. These arguments show why the hypotheses advanced in this section will have general implications for all stationary societies, but there is no reason to expect them to explain all their diversity of institutions.

II. Education, Art, Myths--Empirical Evidence

The arguments presented in the previous section imply that economies in stationary conditions will be characterized by customs, traditions, and by being technically static. That these features fit primitive societies is well known and widely described in the anthropological literature.^{20/} In order to show the usefulness of the economic approach, I first concentrate on other predictions related to non-market activities, predictions that were not made by other models which have tried to explain the structure of primitive societies. Only in the next section will I turn to the statistical analysis of market activities.

In stationary conditions the stock of knowledge is transmitted by oral and visual communication. Imitations, customs, and traditions are viewed as efficient since relative prices are expected to stay constant. Thus, neither the recalculation of rates of return nor the understanding of how they were determined is demanded. Anthropological studies have emphasized that ways of cooking, of growing crops, and of handling children are transmitted in such societies by imitation. Cooking, for example, is carried out in the open and so conformity and homogeneity of methods of cooking and types of food result. Games children play are imitative of the actions and daily routine of adults,

and the greater part of the training of young women is given indirectly by imitation and an unconscious absorption of ideas. Children gain knowledge of the law both by oral instruction and by observation: retributions for theft, adultery, and cowardice are watched by all the tribe, including the children.^{21/} Notice that in these circumstances the scientific method has a relatively small value, for the value of science consists largely in telling us what would happen if some facts were different from what they are. The statements of empirical and theoretical science today interest us insofar as they make predictions of what would happen if some circumstances changed. But in stationary conditions the question "what would happen if . . ." is less relevant given the imperceptible rates of change. Accordingly, the ability of science to predict has less utility in a stationary state than in a dynamic one. Notice, however, that this does not imply that people in such conditions are not "rational" or are "inefficient." On the contrary, all the aforementioned predictions stem from the assumption that "primitive" persons are efficient, just facing other circumstances. As a consequence, they allocate their time differently from persons in a dynamic setting.

In an environment where the size of the population is relatively small, and where the methods of exchange do not require literacy, human memory fulfills the role

of the stock of knowledge. This human capital, call it memory, plays a further role in such societies, that of insurance. As Posner (1978) argued, many of the institutions, laws, and social relationships in stationary societies can be explained by the fact that insurance, specifically against hunger, is an important product in such societies. The conditions of production, the difficulty in storing food (which eliminates the possibility of self insurance),^{22/} and the relatively small size of the population (which implies that the law of large numbers is not relevant) imply that insurance will be provided by various members of the society one to another on a personal basis rather than by the market. While the family, as we know it today, is too small to create an adequate risk pool for insurance purposes, the extended family or the kinship could provide this type of insurance and indeed, much time is devoted to memorizing the genealogy of the family in these societies.

Since memory plays such important roles, we would expect various technological innovations in speech and in the education of youngsters which would facilitate memorization.^{23/} The drum is mentioned in anthropological studies as one of the principal instruments possessed by primitive societies, or a rhythmic clapping of hands is mentioned as a background for songs.^{24/} The reason for these characteristics is that rhythm facilitates memorization of songs

and rituals. It is also noted that songs consist of monotonous refrains which are chanted hour after hour, until they would drive anyone, but a native, to absolute distraction.^{25/} Again, this evidence fits the prediction of the hypothesis: repetition facilitates remembering rituals, songs, and so forth. In another context, Goody found that among the LoDagaa of northern Ghana, the days are reckoned according to the incidence of neighboring markets; the very word for day and market is the same; the "weekly" cycle is a six-day revolution of the most important markets in the vicinity.^{26/} The explanation for this phenomenon is the same: such associations facilitate acquiring a stock of memory.

That speech in "primitive" societies was different from today's has been emphasized by many anthropologists, and Posner^{27/} has attributed the difference to the lack of privacy. My hypothesis sheds light on another aspect of the specific technology of speech: since this was the way knowledge was transmitted, we would expect this art of communication to be developed and elaborated. The Homeric epics are not a unique empirical evidence of the decorum of speech of what was first oral poetry.^{28/} Parry²⁹ has found the same type of evidence in Yugoslavian ballads. Lord³⁰ also found that it is the illiteracy of the epic singers

which determines the particular form their composition takes and which distinguishes them from the literary poet. In societies where writing is unknown . . . the art of narration flourishes, provided that the culture is in other respects of a sort to foster the singing of tales On the other hand, when writing is introduced . . . this audience seeks its entertainment and instruction in books rather than in the living songs of men, and the older art gradually disappears.

Ong^{31/} has argued that rhetoric, which means the art of composing as well as delivering a speech, was "the art developed by a literate culture to formalize the oral communication skills which had helped determine the structure of thought and society before literacy." That rhetoric also meant the art of composing stems from the fact that oral transmission could rarely be verbatim, and the deliverer of songs, or of the history of the tribe, generally made adjustments which fitted the circumstances.^{32/}

Three further implications of the role memory has in societies facing stationary conditions should be emphasized. First, we would expect old people to be respected (i.e., to be considered more valuable) since they embody the stock of knowledge. This is, indeed, a common feature of all primitive societies. Second, what comprises "history" would have a different meaning than it has for us. Although the limited amount of information that can be stored in a human mind implies that information which is not relevant will be forgotten, the process of generation continuously

lengthens the line of genealogy. However, if the population is stable, despite its increasing length the genealogy may refer to a constant number of ancestors. Goody^{34/} takes note of this genealogical shrinkage, which has been confirmed by many studies of primitive societies. The third implication is suggested by the statues of gods in primitive societies, which share one common element: they always have some unusual characteristic, either disproportionately big eyes or mouths, or eight legs, several hands, and so forth, in contrast to the Greek or Roman gods who have a rather human shape. This basic similarity also exists between mythical animals from different societies. The Griffon, Phoenix, Centaur, Sphinx, Manticore, Ganesha, and Ch'i-lin share one common characteristic: they are all creatures consisting of familiar parts in unfamiliar combinations. This pattern can also be related to the role memory plays in such societies, since it is easier to remember unusual shapes than ordinary ones.^{35/} Once, however, societies become literate, this role of memory is less important and gods can be remembered by reading the texts they have dictated rather than by their visual forms. In a further study this issue of myths and religion will be more closely examined.

That the existing stock of knowledge is stored in memory rather than in written texts has further implications: since memory is subject to depreciation (we simply forget

things), in each generation the stock of knowledge will slightly differ from that of the previous generations.

The process which takes place is of the following type:

A person appeals to a shrine and perhaps obtains relief from suffering, but then witchcraft is seen to return because children still die and people fall ill [Then one] may switch one's attention from one aspect of a deity to another. This later solution is adopted in many simple societies and accounts for the turnover phenomena, the circulation of certain types of shrine.^{36/}

The agents who introduce or invent these new shrines are often responding to the pressures from below, the demand for new ways.^{37/}

Or, in the case of ordinary songs, the process found by anthropologists was this:

[A] young man gets acquainted with the art of metrical singing, not by verbatim remembering but by constructing a song out of the phrases, themes and narratives that he has heard before. The singer cannot, and does not remember enough to sing a song; he must and does learn to create phrases. So phrases get adjusted; there is no rigidity in what he hears and certainly none in what he does.^{38/}

The meaning of such demands becomes clear from the following examples: a) Goody describes this evidence from Nigeria. The British administrators, being aware of the importance of genealogies, wrote them down. Forty years later, the natives maintained that they were incorrect.^{39/} The explanation consistent with the hypothesis presented here is this: the knowledge stored in memory was readjusted

to the existing marriage pattern, eliminating members of the tribe who left, and remembering only those who mattered for the present pattern of social relationship (for insurance or other purposes). b) At the beginning of the century some myths in northern Ghana were recorded. The founder of the state at that time had, according to the myths, seven sons. Sixty years later, the myths mentioned only five. An examination revealed that one division of the tribe had become separated by boundaries set by the British, and another had been absorbed by a neighboring tribe.^{40/} These evidences point out that when knowledge is stored in memory, history becomes a flexible tool serving the present, rather than being a mere collection of data. These arguments also shed light on why the first written documents of civilization abound in inconsistencies and contradictions, dates are rarely mentioned, and the concept of time is rather blurred. The explanation for these characteristics stems from the same source: these are written documents which preserve the form and style of oral communication at one particular time, and when communication is oral, it is relatively hard to discover inconsistencies. Also, if the first texts that we are acquainted with today were written down in different periods, when most of the population was still illiterate, we would expect to find inconsistencies; while the oral text was adjusted to replace depreciated knowledge, the

written document preserved the "objective" past. That the concept of time is unclear is related to the fact that it is hard to memorize lists,^{41/} and so the "history" we find is that of relationships or some specific phenomena or special events. Again, these implications of the role memory plays in stationary conditions are attested to by the evidence on the myths of all illiterate societies.

In this section it was shown that the empirical evidence with respect to education, speech, myth, and so forth seems to be consistent with the predictions of economic theory. In this sense, then, there is no such thing as a "primitive mind." The activities of primitive people--memorizing, imitating, spending time with the elder and respecting them--are simply efficient in an environment perceived to be static and where specialization is prohibitive because of the relatively small size of the population.

III. Markets and the Methods of Exchange-- Statistical Evidence

First, let us turn to some semantics. The value of repeated transactions, as discussed in the first section, was positive because of a positive probability of fraud. The origins of words connected with trade suggest that the malevolent aspects of trade were evident to market participants. For example, the word "barter" originates from the archaic French word "barater," which means to cheat. Sumner and Keller point out the similarities in German between the word "Handel" (trade) and "Händel" (quarrel), and among the words "tauschen" (to trade) and "täuschen" (to deceive) and "enttäuschen" (to disappoint).^{42/}

The specific forms of some information markets, in particular, of education and the arts, were discussed in the previous section. I concentrate below on the methods of exchange of goods in the market and show the implications of the theoretical framework presented in the first section. Pryor defines market exchange as a type of balanced distributional transaction involving goods and services where the forces of demand and supply are visible, in contrast to reciprocal exchange, which is also balanced but where such economic forces are less visible.^{43/} The hypothesis advanced in the first section sheds light on the existence of these two methods of exchange in stationary societies. In economies where repeated transactions

are expected among buyers and sellers, exchange can be carried out not only in formal markets, but also among the family or the kinship, in which case personal relationships (i.e., information capital in the form of honor and reputation) substitute for the market mechanism. The hypothesis presented in this study implies that we would expect a relatively smaller role for the market mechanism to allocate resources in a society where the size of the population is relatively small and immobile, and a relatively greater role in these economies for reciprocal exchange.

Pryor correlated in his analysis various multiple regressions where the dependent variables were the presence or absence of various markets, while one of the independent variables was always a measure of economic development. These indices of economic development were computed in order to make comparisons between the complexities of various primitive societies, and they included measures on the number of markets, number of professions, extent of specialization, and so forth. This analysis raises several questions as to the meaning of the coefficients in the regression analysis, since the variable that Pryor wanted to explain (the emergence of some markets) is already implicitly included in the independent variable measuring the extent of economic development. The model presented in this study avoids

this type of test: according to the assumptions used here, the size of the population, its density, and the mobility of its members one relative to the other can be viewed as exogenous, reflecting a biological adaptation to a stationary environment.^{44/} The two independent variables in all the tests carried out below are therefore the size of the population and its density, and the data are taken from Pryor's study.^{45/} It is, however, impossible to compare the results below with Pryor's results, since in many cases Pryor's independent variables were both the indices of economic development and the population, which, according to the model presented here (and the test presented below), are highly correlated. The other difficulty in making the comparison is that in the text, Pryor uses an ordinary regression analysis which is inappropriate (as Pryor himself admits in the Appendix to his book) where the data are qualitative, rather than quantitative. The means of estimating the parameters used below is through the maximum likelihood method.

Table 1 presents the number of various markets in economies at different levels of development. The measures indicating the extent of economic development used by Pryor are based on data computed by Robert L. Caneiro. The test below shows what fit just the information on the size of the population and its density gives to this measure of economic development:

Table 1

Market Exchange and Market Phenomena Occurring
at Different Levels of Economic Development

	Number of Societies				Total
	Groups of societies classified according to relative levels of economic development				
	Lowest 15 Societies	Second Lowest 15 Societies	Second Highest 15 Societies	Highest 15 Societies	
A. MARKET CHARACTERISTICS					
Market exchange of food	0	4	7	15	26
No marketplace (formal markets)	14	12	10	1	37
Occasional marketplaces (formal markets occur less than 4 days a week)	0	0	2	4	6
Permanent marketplaces (formal markets occur 4 or more days a week)	1	1	1	8	11
B. LABOR MARKETS					
Skilled internal labor market	1	4	6	11	22
Unskilled internal labor market	1	4	1	7	13
Total (skilled + unskilled) internal labor market	2	7	6	13	28
C. CREDIT MARKETS					
Occurrence of a real inter- est rate (pseudointerest rates excluded) ^{a/}	2	6.5	10	9.5	28
D. LAND MARKETS					
Occurrence of land sales	0	1	3	8	12
More than occasional land sales	0	0	1	4	5

Table 1 continued

Source: Pryor (1977), p. 126.

a/ Interest rates took sometimes extremely subtle forms: for example, returning after a while similar goods, but of a higher quality, or giving gifts.^{46/} Since these forms of interest payments are excluded, the numbers in this classification take account only of formal markets in borrowing and lending.

$$(3) \quad M = -23.0683 + 8.75 PO + 4.19 D$$

(-4.45) (7.82) (3.3)

$$n = 60$$

$$R^2 = 0.69 \quad ,$$

where M denotes the index of economic development, PO denotes population, D is its density, n is the number of observations, and the numbers in parentheses denote the t-statistics. Where the same regression was done without a constant number, the results were:

$$(4) \quad M = 4.48 PO + 4.28 D$$

(6.76) (2.93)

$$n = 60$$

$$R^2 = 0.58 \quad .$$

In the analysis below the prediction of the hypothesis presented in the first section is tested. According to that hypothesis in an economy with a greater population or a greater density of population, the probability that exchange will be carried out through formal markets is greater. At the same time, the extent of exchange based on reciprocity should be smaller when the size of the population is greater. As to density, the implication for reciprocal exchange is unclear: density and immobility make reciprocity relatively cheaper, but at the same time a greater density decreases the probability of carrying out repeated transactions between any two individuals. The dependent variables used below are qualitative: if domestic trade accounted for more than five percent of the total production of goods

used in the society, the value given to the index was 1; otherwise, it was zero. Similarly, if reciprocal exchange accounted for more than five percent of total production, the value given to the index was 1, otherwise, zero.^{47/} Since these hypotheses are related to the function personal relationships fulfill in the economies, the third probability estimate indicates the presence of extensive lineages, where lineages are defined in terms of corporate economic activities among patrilineal, matrilineal, and duolineal groups. Again, the value 1 was given by Pryor to economies where these relationships played a relatively important role, and 0 otherwise.

The likelihood function for the type of model examined above (one observation per cell) is:^{48/}

$$(5) \quad L = \prod_{i=1}^n F(x_i, \beta)^{y_i} [1 - F(x_i, \beta)]^{1-y_i} ,$$

where y_i are the dependent, x_i the independent variables, n the number of observations, and β the coefficient vector. For the logistic the first-order conditions are:

$$(6) \quad \frac{\partial L}{\partial \beta} = \sum_{i=1}^n y_i x_i - \sum_{i=1}^n (1 + e^{-x_i \beta})^{-1} x_i = 0 .$$

These equations were solved with the Newton-Raphson method, and "m" denotes below the number of iterations at which convergence was achieved.

For domestic trade, DT, the following result is obtained:

$$(7) \quad \begin{array}{l} DT = -4.43 + 0.745 PO + 0.45 D \\ \sigma = 1.4 \quad \sigma = 0.29 \quad \sigma = 0.25 \\ (-3.18) \quad (2.57) \quad (1.75) \\ \\ m = 16 \\ \\ n = 60 \quad , \end{array}$$

where σ denotes the standard deviations, and the numbers in parentheses represent the t-statistics.

For reciprocal exchange, RE, the density of the population turns out to be insignificant (maybe because of the two effects discussed above that cancelled each other), and the size of the population turns out to be significant, with the expected negative sign:

$$(8) \quad \begin{array}{l} RE = 2.92 - 0.539 PO \\ \sigma = 1.2 \quad \sigma = 0.25 \\ (2.44) \quad (-2.14) \\ \\ m = 13 \\ \\ n = 60 \quad . \end{array}$$

The probability of finding personal ties, LI, as being relatively important in determining economic activity as a function of the size of the population and its density is given below:

$$(9) \quad \begin{array}{l} LI = -1.29 + 0.11 PO + 0.59 D \\ \sigma = 1.17 \quad \sigma = 0.25 \quad \sigma = 0.29 \\ (-1.1) \quad (0.437) \quad (2.02) \\ \\ m = 4 \\ \\ n = 60 \quad . \end{array}$$

Thus, the density of the population, rather than its absolute

size, determines a dominant role for kinship in economic activities.

Finally, the presence or absence of a money market is discussed below. In monetary theory the argument found in textbooks is that when the number of transactions increases, money saves transaction costs. We would then expect that the presence of money in the economy will be positively related to the absolute size of the population. As to its density, the size of the population staying constant, the implication is unclear: although a greater density implies a greater number of expected transactions, it also lowers the price of reciprocal exchange and thus decreases the demand for a medium of exchange (family ties and trust substitute for it). The results below show that the absolute size of the population, rather than its density, is the predictor of the presence or absence of money markets:

$$(10) \quad \begin{array}{l} \text{MO} = -4.44 + 0.74 \text{ PO} + 0.24 \text{ D} \\ \sigma = 1.35 \quad \sigma = 0.27 \quad (\sigma = 0.27) \\ (-3.27) \quad (2.71) \quad (0.87) \end{array}$$

$$m = 14$$

$$n = 60$$

$$(10a) \quad \begin{array}{l} \text{MO} = -4.40 + 0.82 \text{ PO} \\ \sigma = 1.37 \quad \sigma = 0.26 \\ (-3.2) \quad (3.19) \end{array}$$

$$m = 14$$

$$n = 60 ,$$

where MO denotes the qualitative money market variable,

and (10a) is the maximum likelihood function calculated without the presence of the density variable.

To summarize: these results support the predictions of the model presented in the first section as to the relationship between formal market activities, reciprocal exchange, the presence of money markets and the size of the population and its mobility, when, as a substitute for an index of mobility, a measure of the density of the population was used.

In order to complete this picture of primitive societies, an evidence from Pryor's research should be mentioned that concerns the previous results and is related to the subject of insurance.^{49/} Relying on the family, the kinship, the tribe--in decreasing order--is one way of providing insurance against hunger. The empirical implication of this argument is that after excluding transfers like dowries, inheritance, presents at specific occasions, and so forth, the transactions between kins may still be unbalanced in the long run. The reason is this: suppose that one member of the kinship is a more skillful hunter than the others. Then, this hunter will continuously receive gifts, which represent insurance premiums people are also ready to pay today.^{50/} For the same reason that insurance companies have profits, the skillful hunter would also have in the long run unbalanced transactions with other members of the family. This

conclusion does depend on the fact that the family trusts the member who receives these gifts. Thus, while the non-kin transactions would represent exchange rather than insurance payments, with the closer family the contrary may hold. Pryor's empirical evidence supports this hypothesis. He found that transactions are generally balanced between non-kin, while between kin they are unbalanced, and the distance of kinship is an explanatory variable for net transfers among groups.

In conclusion, there are certainly other independent variables, in addition to those that appear in the statistical analysis above, which affect the presence and the relative importance of formal markets and other features of primitive societies. However, since my hypothesis has concentrated on the relationship between methods of exchange and the size of the population and its mobility, the inclusion of additional variables from undetermined endogenous or exogenous sources adds little to this analysis. More rigorous and extensive theoretical models are needed, where causations can be clearly established, before carrying out a more elaborate empirical analysis.

IV. A Theory of Development

The arguments developed in the first section and the empirical results presented in the previous one enable us to identify some of the characteristics of the transition period from a stationary to a dynamic state.

Suppose that due to exogenous reasons, improvements in health achieved in other countries, for example, the population in a stationary economy increases. Since the probability of carrying out repeated transactions with the same individuals decreases, the optimal structure of the market changes, and it becomes less personal. The empirical evidence on developing countries shows that at the early stages of this transition period, the productivity in the economy decreases. This phenomenon was attributed in the literature to diminishing returns.^{51/} But the hypothesis advanced here suggests an additional explanation. During the transition period from personal to anonymous competitive markets, the probability of fraud increases, decreasing both the quality of goods^{52/} and incomes per capita. Notice that this transition period can be rather time consuming: while exchange in personal markets was based on trust, competitive and anonymous markets require contracts, money, and literacy. These conditions are necessary for the development of formal markets and thus, they constrain the rate at which markets may grow, limiting "the growth rate" as measured today.

The empirical evidence supporting this relationship between trade in competitive markets and literacy and education is presented in Brenner (1979b). Indirectly, evidence from the agricultural literature support this view that in a traditional setting, production is efficient and education (as we understand this term today) does not improve the allocation of resources. However, in a dynamic setting education permits a more rapid adaptation to change. This role of education in facilitating the reallocation of resources in agriculture was emphasized by Schultz and Welch,^{53/} and several empirical analyses support this view. Patrick and Kehrberg (1973) found no contribution of education to farm output in areas of Brazil considered as traditional. Haller (1972) found that in Columbia in regions described as traditional, education did not have statistically positive effects on farm production, but in regions considered modern a positive effect was found. In a study of U.S. agriculture, Petzel (1972) explored the relationship between farmers' education and the dynamics of acreage allocation to soybean production in response to changes in prices, and found a more rapid adjustment in regions where the average levels of education were higher.

As argued in the previous sections, in stationary conditions human memory is sufficient to store the existing stock of knowledge. It can then be expected that

people will be relatively homogeneous, in the sense that each individual possesses a relatively large fraction of the same existing stock of knowledge.^{54/} This situation changes with the secular increase in the size of the population, its mobility, or its income per capita. An increase in the size of the population induces specialization; together with an increased mobility, a larger population increases the relative advantage of carrying out exchange through formal markets. These changes induce an increased rate of technological innovation (including writing), which in turn imply that each individual is now able to learn only a relatively small fraction of the existing stock of knowledge.^{55/}

The changed incentives of economic agents because of the developments mentioned above shed light on the subject of the generation gap in modernizing societies. In stationary conditions, knowledge being transmitted orally and customs and traditions thus transmitted being efficient, the younger generation has greater incentives to spend time with the elder, who embody the existing stock of knowledge. A relatively small difference in the behaviour of generations results as a consequence. In a dynamic setting, however, since yesterday's experience has less informational content in comparison to its content in a stationary state, the value of time being spent with the elder decreases while the value

of learning recent developments increases. Thus, a greater difference between generations results. Literacy plays a special role here, because when communication is oral, it is hard to discover inconsistencies. Once, however, observations are written down, the younger generation can more easily detect inconsistencies in the myths and the knowledge of the older generation. Indeed, the word "skeptical" is absent from the vocabulary of primitive societies.^{56/} Also, since part of the existing knowledge is transmitted in writing rather than orally, the memories and experiences of the elder are no longer the sole source of information vital to the society's continued existence. If my hypothesis is correct, this should lead to a decrease in the "status" or respect given to the elderly in modernizing societies (since their value has decreased). This hypothesis has a more general implication: it follows that the status, or the respect, some groups in the society receive depends on the existing production function. Ester Boserup's analysis of dowries and bride prices in primitive societies seems to support this hypothesis indirectly.^{57/} She found that in primitive societies where a major part of the agricultural work was done by women (so that they had a greater value), they were more "respected" (they enjoyed more freedom of movement and more economic independence) than in economies where they only worked at home.

Finally, let me relate the hypothesis advanced here and in the first section to Posner's^{58/} theory of privacy. As Posner notes, people whose work is mental rather than physical require a more tranquil environment, which will often entail greater solitude. Assuming that education (as we understand it today) can be more efficiently acquired when there is some form of physical privacy, the hypothesis implies that we should observe a simultaneous increase in the demands for education and for privacy, in particular, for legislation protecting privacy. The explanatory variable suggested in this study for the increased demand for such legislation is the transition from a personal market structure to one which is impersonal, and which is accompanied by increased specialization.

These conclusions are in contrast with Epstein's views on privacy legislation.^{59/} He argues that invasion of privacy as a separate and distinct tort only emerged at the end of the nineteenth century. According to Epstein, this is not because civilization required centuries to advance to the point where the importance of protecting privacy is recognized, but rather because this issue is the least important tort for a civilized society. The analysis in this study disagrees with this statement: as a logical inference, both the timing of this legislation and the increased value of privacy are consequences of the increased level of education and of the greater and

more diverse amount of information economic agents have come to be exposed to in modernizing, less personal economies.

Another aspect of privacy was also analyzed by Posner, namely, the economic value of gossip. Posner argued that while in primitive societies people could allocate time to watch neighbors since this was relatively cheap, in developed economies this function was taken over by the press. This view is related to several aspects of the hypothesis presented in this paper. First, it gives one further example of the market mechanism substituting for gossip based on personal relationships. When the population increased, it became relatively cheaper to use the market mechanism for prying. Second, the hypothesis sheds light on why "prying" is demanded. In primitive societies one channel of information is imitation by observation. Today we are familiar with impersonal channels (e.g., movies, television, journals on fashion), and the benefits of imitation have decreased. However, imitation is still a channel of learning: teenagers dress like their pop-idols; women dress (or undress) like some trendsetters in fashion; and in child-rearing practices we still, in part, imitate our parents, rather than learn everything from a "How to Do . . ." book. Originality is a scarce resource (like any other ability), and the demand for gossip is a demand for ideas to be imitated. Thus, gossip about how some people are dressed,

what they ate, how much they weigh, how they divorced (isn't palimony information?), and so forth is not idle,^{60/} but it provides information. This further example of an institution of modern societies emphasizes the point I have tried to make in this study, namely, that there is no sharp difference between primitive and modern societies. The difference is that due to the secular increase in the size of the population, its income, and its mobility, it became relatively more profitable to use the market mechanism, rather than personal relationships, in the production of exchange. But patterns of human behavior we are familiar with today did also exist in primitive societies.

V. Conclusion

In this study I have applied the economic approach to analyze the features of primitive societies and to derive from the results a theory of development. I have argued that the institutions of primitive societies can be best understood as adaptations to stationary conditions. In addition to shedding light on the organization of markets, the analysis also clarifies why memory is the human capital more likely to be found in stationary economies.^{61/} The implications this form of capital has for the patterns of speech, education, and arts, as well as for the meaning of inconsistencies found in ancient myths (or history?), for the lack of generation gap, and for the greater respect for the elderly were then analyzed.

The hypothesis and the empirical results supporting its predictions serve as a departure point for a theory of development. A tentative conclusion is that the strategy of encouraging market activities in developing countries (in a world of increasing population and increasing specialization), while being correct, must take into consideration the constraints imposed by the fact that relatively large fractions of the population are illiterate and that the development of anonymous markets requires literacy and several, maybe more critical, adjustments. Unfortunately, we do not yet know how long it takes for people

to adjust to a situation where insurance markets substitute for extended families and friends, where cookbooks, books on fairy tales, and babysitters substitute for grandparents, where hospitals substitute for treatment at home, and where gossip journals, television, and other impersonal forms of entertainment and information substitute for neighbors and friends. Learning to live with these adjustments is time consuming and imposes a constraint on the rate of growth of impersonal markets in developing societies.

FOOTNOTES

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1. For theories of primitive societies see, for example, Firth (1970), LeClair and Schneider (1968), or for brief summaries, see Pryor (1977). For a theory of their laws see Hoebel (1974) and Posner (1979b).

2. In Posner (1979a, 1979b), stationarity seems to be both a result and an assumption: "I am suggesting in short, that people don't merely lack doors and partitions because they are primitive, but are primitive in part because they lack doors or partitions. This is rank conjecture, but conjecture that fits the facts as we know them" (1979a, p. 32). The question which arises is why in primitive societies there are no incentives to build doors and partitions, or to develop literacy. It is an answer to these questions, among others, that I try to provide in this study.

3. See Posner (1978, 1979a).

4. This is similar to a condition where an individual decides to gamble or to insure himself.

5. The approximation is by the Taylor series. Instead of (1) we obtain:

$$(1a) \quad U(W) \gtrless U(W) + U'(W) [P - (1 - p)R] \\ + U'' \left[p \frac{P^2}{2} + (1 - p) \frac{(P - R)^2}{2} \right],$$

neglecting terms of higher order. Since I do not want to discuss here risk preference or risk aversion, assume $U'' = 0$.

6. That repeated transactions decrease the probability of fraud in a market is noted in Darby and Karni (1976).

7. See Luce and Raiffa (1966), pp. 94-104. Also see Brenner (1979a) for the application of this game in examining the subject of long-term contracts and X-efficiency.

8. The two Nash equilibria are discussed in Luce and Raiffa, op. cit. Akerlof's (1970) market of "lemons" is another application of these same arguments. This view of markets may shed light on the theory of prices in the Medieval Ages, a period when the size of the population was relatively small. In the thirteenth century, for example, Saint Thomas' discussion on Just Prices reflects the view that prices are always at their normal competitive level, unless there are frauds perpetrated by sellers. In fact, the chapter which presents Saint Thomas' theory of Just Prices is called "De Fraudulentia." See Schumpeter (1972), pp. , and for further discussion, see Brenner (1979b).

9. It may be useful to notice that the English word "trade" originates from a German word referring to the path of a ship ("trade" or "trâ"), so that "trade" originally had a foreign commerce connotation. See Pryor (1977), p. 110. Also, notice that it is useful to think about a stationary society as one which is relatively isolated, otherwise extensive international trade would imply specialization. Of course, the discussion in this section refers to an idealized model. As a matter of historical fact, it would be rare to discover a situation when even primitive people were in a "perfect" stationary state. Also, see Schultz (1975) on this last point.

10. May these arguments shed light on why civilization developed in those places where, due to geographical conditions, contacts between people were made more frequently (the Mediterranean or China, for example)? See also Goody (1977), p. 22 and ch. 5.

11. An increased mobility, or a greater size of population, also facilitates committing frauds. See Brenner (1979b).

12. The formal meaning of "marginal conditions being fulfilled" is this: let "P" be the price of output, " f_i " be the marginal productivity of an input "i," and " P_i " be the price of this input. Then $Pf_i - P_i = \mu_i$, where μ_i is an error term. This dispersion can be divided into two parts: a) one that results from purely random fluctuations or fluctuations which are so far considered random due to the absence of enough observations, and b) one that results from the fact that estimates, or predictions of events, are imperfect because of ignorance. The second type of error indicates how much an investment in information is profitable. The first type of error is, however, not subject to control, and this type of error only characterizes a stationary economy according to my definition. See Welch (1978).

13. See Schultz (1975), pp. 381-832.
14. See Becker (1975), pp. 92-93, and Schultz (1975).
15. For interpretations given to Adam Smith's statement, see Stigler (1951).
16. Notice the word used! Indeed, also today many of the things that shape our behavior are learned by customs and imitations, such as child rearing and part of cooking, for example.
17. This is also a point made by Goody (1968): "The transmission of the verbal elements of culture by oral means can be visualized as a long chain of interlocking conversations between members of the group. Thus all beliefs and values, all forms of knowledge, are communicated between individuals in face-to-face contact . . . and they are only stored in human memory" (p. 29). Also, Levi-Strauss (1968) noted that people in primitive societies invest time in memorizing: "I see no reason why mankind should have waited until recent times to produce minds of the caliber of Plato or an Einstein. Already over two or three thousands of years ago there were probably men of a similar capacity, who were of course not applying their intelligence to the solution of the same problem as these most recent thinkers; instead they were more interested in kinship!"
18. The assumption that technology, in particular the alphabet, is a decision variable and not exogenous (being a result of man's basic inquisitiveness) appears in the economic literature. For the theoretical model see Becker (1971), pp. 129-134. In particular, it is emphasized there that the technological change will be in the direction of the good, the relative price of which has increased. The evidence from the anthropological literature attest to this view: see Goody (1968, 1977). Goody (1977), for example, writes: "One of the problems in earlier discussions was that . . . we attached particular importance to the introduction of the alphabet because of its role in Greece. In doing so, we tended to underemphasize the achievements of . . . earlier forms of writing [W]hile these systems did not equal the alphabet in its ease of operation, they could nevertheless be used to achieve some of the same ends" (p. 75). The endogeneity of innovations was widely investigated by Schmookler (1966) and Hayami and Ruttan (1971).
19. See Arrow (1974), ch. 3.

20. See Pryor's (1977) detailed discussion and references as well as his classification of primitive societies, chs. 1-3.

21. See Hambly (1926), chs. 2-4.

22. Although in some agricultural societies, climate permitting, there were various plants cultivated with different dates for harvesting and this may be viewed as an attempt at self insurance. See Sutti Ortiz, "The Structure of Decision-making among Indians in Columbia," in Firth (ed.), (1970).

23. See note 18 on the relationship between the relative price of a good (in this case, oral communication) and technological change in that good (in this case, speech).

24. Repetitions, associations, and categorization facilitate memorizing; see Farb (1978), pp. 319-327. Also, see Hambly (1926), ch. 1.

25. See Hambly (1926), p. 47.

26. See Goody (1977), p. 30. Notice also that in English and in French the names of weekdays are derived from names of deities, the Moon, and the Sun. We may also relate the various benefits of memory to Arrow's (1974) theory of information. He argued that "an explorer in hitherto unknown territory will find it easier to explore new areas near those he has already covered" (p. 41). Thus, if people already had the incentive to develop the skill of memorizing for one purpose, it could have been easier for them to use the same skill for additional purposes. Also, notice that prayers today still consist of rather monotonous singing and not few repetitions.

27. See Posner (1979a).

28. Here, however, I must note a rather startling theory which was offered by Julian Jaynes (1976) to explain this same set of phenomena: the fact that people in the past memorized, the ornamented language of the Homeric epics, and so forth. He writes: "[W]hen musical accompaniment is no longer used, as it is not in later Greek poetry, it is, I suggest, because the poem is no longer being sung from the right hemisphere. . . . It is instead being recited from left hemispheric memory alone, rather than being recreated in the true prophetic trance. This change in musical accompaniment is also reflected in the way poetry is referred to [M]ore early poetry

is referred to as song (as in the Iliad and the Theogeny), while later poetry is often referred to as spoken or told" (p. 369). Jaynes explains this change, as well as the start of civilization, by a rather abrupt biological mutation. He emphasizes the role memory played in primitive societies, and the role "rational" thinking plays in modern societies. My analysis shows that no such drastic (and rather implausible) assumption is necessary to explain the fact that primitive men mainly memorized. In those conditions memorizing was simply efficient.

29. Parry (1951).

30. Lord (1960), p. 20.

31. Ong (1971), p. 49.

32. Lord (1960) shows how a young man gets acquainted with the art of metrical singing, not by verbatim remembering but by constructing a song out of phrases, themes, and narratives that he has heard before. "The singer cannot and does not remember enough to sing a song: he must and does learn to create phrases" (p. 43).

33. See Hambly (1926), ch. 5. Also, Hayek (1973) wrote: "Another consequence of this basic fact . . . is that only in the small groups of primitive society can collaboration between members rest largely on the circumstance that at any one moment they will know more or less the same particular circumstances. Some wise men may be better at interpreting the immediately perceived circumstances, or at remembering things in remote places unknown to others. But the concrete events which the individuals encounter in their daily pursuits will be very much the same for all, and they will act together because the events they know and the objectives at which they aim are more or less the same" (pp. 13-14). This issue is also treated in the last section of this study.

34. See Goody (1968), p. 32.

35. Farb (1978) notes that "[t]he full recollection of an experience can be triggered . . . by evoking a symbol for it" (p. 326), and he gives Proust's Remembrance of Things Past as an example; he also refers to several articles in the psychological literature supporting this view. Also, notice that the point I make in the text is related mainly to the fact that association facilitates memory, and association can only be achieved (by definition) with an unusual, rather than an everyday, phenomenon or object.

36. Consider also the Bible on the Sinai episodes, where the Jews shifted from God to deities whenever their expectations were not fulfilled. Many inconsistencies in the Bible can probably be explained by the approach advocated in this study--this would, however, be the work of a lifetime.

37. Goody (1977), pp. 29-30.

38. Ibid., p. 117. On pp. 26-27 he writes: "If the reader interprets oral learning as listening to something repeated in exactly the same form many times, if he equates it with oral memorization by rote, then he will fail to grasp the peculiar process involved in learning oral epic [W]ith oral poetry we are dealing with a particular and distinctive process in which oral learning, oral composition and oral transmission almost merge." The same point of remembering things depending on their utility is made on the various methods of calculation on pp. 13-14.

39. Goody (1968), p. 32.

40. Ibid., p. 33.

41. Goody (1977), ch. 5.

42. Pryor (1977), p. 121.

43. Ibid., p. 104. For some conceptual difficulties in defining "lack of markets," also see Pryor, ch. 5.

44. All the anthropological studies mentioned here refer explicitly or implicitly (as in Goody's constant genealogy) to the constancy of the populations, their density, and their relative mobility.

45. Pryor (1977), Appendix A, where both the measurement of population and its density are discussed.

46. Ibid., p. 108.

47. Again, see Pryor (1977), Appendix A.

48. See Dhrymes (1978), pp. 324-353. In particular, notice the discussion there on the inapplicability of OLS procedures, and on the loss of information when the "grouping" method is used.

49. Pryor (1977), ch. 4, in particular, pp. 11 and 96-99.

50. That the bosses of the Mafia receive, rather than give, gifts is a feature of the literature on this subject (although empirical investigation cannot be expected). Possibly the reason is the same as the one mentioned in the text: they provide insurance. Also, the fact that the Mafia is organized in families seems to be an empirical implication of my arguments.

51. Pryor (1977), p. 48.

52. The fact that there are relatively few goods in primitive societies does not mean that there are no variations in their qualities. Goody (1968), p. 29, writes that it has been observed that the vocabulary of primitive societies reflects the particular interests of the people concerned. The inhabitants of Lesu, an island in the Pacific, had a dozen words for "pig," a prolixity which mirrored the attention to the quality of pigs in a society which had no other sources of protein. Also, see note 46, which refers to the meaning of interest rates, or Hambly's (1926) discussions on the quality of brides.

53. See Schultz (1975) and Welch (1978).

54. See note 33.

55. Hayek (1973) notes that "civilization rests on the fact that we all benefit from knowledge that we do not possess" (p. 15).

56. See Goody (1977), pp. 11 and 43.

57. Boserup (1970), p. 50. Boserup's evidence seems to contradict Posner's view (1979b) that bride prices can be attributed to genetics. Boserup found that in societies where agriculture was based on women's work a bride price was paid, while in societies where women worked at home a dowry was paid. Also, the point that dowries may be part of the inheritance that the woman receives when she leaves her home may explain the lack of symmetry between male and female inheritance.

58. See Posner (1978, 1979a). Posner also argued in (1979a) that the lack of privacy prevents innovative activity in primitive societies.

59. See Epstein (1978). It is interesting to note, however, that in Gregory, Kalven, and Epstein (1977) we find that "in very early times the right to property secured to the individual his lands and his cattle. Later there came the recognition

of man's spiritual nature, of his feelings and his intellect Much later there came a qualified protection of the individual against offensive noises . . . [and] the law of nuisance was developed" (p. 1,131). However, the authors do not associate these developments with economic development, or specialization.

60. On privacy, see *ibid.*, p. 1,132.

61. Also, today memory plays a role in the various markets. The fact that we find prices of the type \$1.99, \$2.98, etc., is probably based on the fact that people remember first numbers more than last ones, since they have greater value.

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