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Economic Development  
Motivations Project  
C/56-26

**THE PROCESS OF ECONOMIC DEVELOPMENT**

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(A revision of Elements in a Theory of Economic Development,  
C/56-8a, May 10, 1956)

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Cambridge, Massachusetts  
October 31, 1956**

## THE PROCESS OF ECONOMIC DEVELOPMENT\*

### 1. The Problem

A basic concern of the theory of economic development is to explain the entry of continuing technological advance into "traditional" societies. Throughout all of human history until the last few centuries, in every society technological progress has been so slow and so intermittent that the trend is most appropriately described as constancy, and advances as discontinuities. But within the last two hundred years, in a number of societies technological progress has become so rapid that output per worker in the society as a whole increases considerably each decade. I define this rate of increase as "continuing technological progress."

By this imprecise but sufficient definition, such instances of accelerated innovation as that in ancient Rome and that in Florence and Venice during the Italian Renaissance were not "continuous technological progress." The line drawn is not merely one of convenience. Where technological progress has become sufficiently rapid and sufficiently widespread to increase productivity markedly per decade for as much as

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\*This paper is, in a sense, the first product of a research project which I shall be directing during the coming three years, with the aid of a grant to the Center for International Studies by the Rockefeller Foundation.

The paper presents a first statement of tentative hypotheses. I am acutely aware that many of the hypotheses need elaboration and enrichment that may lead to qualification and restatement. Constructive or destructive criticisms will be gratefully received.

I am indebted to James Abegglen, Francis Bator, Karl Deutsch, Richard Eckaus, David Gleicher, Suzanne Keller, Howard Perlmutter, Ithiel Pool, Jean Pool and Lucien Pye for helpful criticisms of an earlier draft. I am sure that none of the critics fully endorses my treatment of the problem.

three decades, the advance has continued subsequently,<sup>1</sup> whereas a number of spurts too brief or insufficiently pervasive in the economy to meet this test have proved to be temporary. The rate and breadth of advance is not necessarily itself the cause of continuing progress, but it is evidence that the causal factors underlying it have taken hold so deeply that they have changed the nature of socio-economic processes.

The type of traditional society taken as the starting point of analysis in this essay is one based on settled peasant agriculture. No analysis is made of prior development; the accumulation of knowledge, techniques, and capital and the development of culture and social structure up to the time when peasant agricultural society exists is taken for granted.

What is the natural history of the transition of a society from traditional peasant agriculture, with its static technology, to a state of continuing technological advance?<sup>2</sup>

1. In every case where the record is clear. There are one or two uncertain cases.

2. Few non-economists since Weber and Tawney have displayed interest in the question. Several economists have ranged outside the economic field. Professor J. A. Schumpeter has discussed entrepreneurship as a key factor in development, in his Theory of Economic Development and elsewhere. Professor B. A. Keirstead, in his Theory of Economic Change, recognizes the differing effects of differing "institutional frameworks." The range of both men, however, is too limited.

Professor W. W. Rostow has addressed himself brilliantly to the more general question. See his The Process of Economic Development (New York: Norton 1954), and "The Take-Off into Self-Sustained Growth," Economic Journal, March 1956, pp. 25-48. But he has concerned himself primarily with the period of rapid change which he terms "the take-off," which he defines as follows: "The purpose of this article is to explore the following hypothesis: that the process of economic growth can usefully be regarded as discontinuous, discontinuity centering on a relatively brief time

The answer to the question lies partly within every one of the behavioral sciences. But there is as yet no universal social scientist. The problem must be attacked initially by someone whose competence is less. In this essay, mustering up such expertise as I can from the several behavioral sciences, I therefore address myself to the entire question, in the hope that the initial effort will stimulate continuing interdisciplinary analysis.

If continuing technological progress is to occur, various activities must take place: (1) Continuing advance in pure science. (2) Continuing conception and translation into operation of new production techniques. (3) Various types of skilled labor. (4) Innovational business entrepreneurship. (5) Innovational political, governmental, and social administration of various types. This list suggests the range of performance that is necessary. There are similarities among the activities. It is a basic thesis of this essay that the number of activities that are distinct in the sense that the emergence of each requires separate explanation is small, so that the major forces explaining the transition to continuing technological progress in any human society may be comprehended in bold outline in a fairly simple analytical model.

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interval of two or three decades when the economy and the society of which it is a part transform themselves in such ways that economic growth is, subsequently, more or less automatic. This decisive transformation is here called the take-off." ("The Take-Off into Self-Sustained Growth," op. cit., p. 25.) He assumes as given the social economic changes underlying the take-off. (He recognizes fully their importance. See op. cit., pp. 25-28.) Usher has attacked the problem in its entire breadth and depth, in the revised edition of his History of Mechanical Inventions (1954). But he does not use the full battery of tools of analysis now available. For example, he rejects the developments of psychoanalytic theory, regarding it as "less consistent with the empirical point of view that the position taken by the gestalt psychologists." Ibid., p. vii.

## 2. Elements of Change

A traditional peasant society is a society of agricultural villages, consisting of a virtually unchanging group of families. Peasant agriculture is the basic occupation of all or almost all of the families. Methods of production are primitive and unchanging. Productivity is low. Since writing is little needed in village life, literacy is probably low. The family is the unit of organization for purposes of production. This identity between family and production unit which originates in peasant agriculture, is apt to be maintained as trade or other forms of economic activity gradually enter the economy. There too family members form the business enterprise.

The family may be the nuclear family of the West, consisting of husband, wife, and children, but it is more apt to be the extended family, consisting of several generations, and to be patriarchal, the oldest male making decisions for the group. For as family members marry, they continue to live close to each other, and relations must be regulated. Further, to cope with the mysterious forces in the midst of which life is carried on, the longest experience is the wisest guide.

Business relationships and all other interpersonal relationships in the village are among individuals and families who must live in intimate lifelong contact. Hence not only within the family but throughout the community, the harsh relations of contract and fixed legal rules are impossible. Enforcement of a contractual relationship that in the event worked hardship on one of the parties might create bitterness that could corrode village relationships. All interpersonal relations are therefore subject to mutual accommodation and adjustment according to the consensus of the village elders.

Relationships with other villages may be limited to a trickle of trade. If so, it may be that no code of national interpersonal ethics has developed parallel to that which binds members of the village together. To individual members of the village strangers not guests of the village may be fair game for banditry or personal violence; and even where national authority has developed and social standards forbid violence, the code of honesty and mutual responsibility of village life probably does not apply to strangers, who are fair game for craft, guile, and deception. Because no national code of individual rights has developed, the limits to capricious or arbitrary seizure of property or imprisonment of individuals by the government or the society's leaders are not clear, if they exist at all.

Some structure of classes exists. Vertical mobility may conceptually be considerable at the one extreme, as in Burma or China, or it may range through the very limited mobility in pre-Meiji Japan to the rigid caste system of India or the rigid feudalism of medieval Europe. Whichever situation prevails, individuals who constitute the vast majority view themselves as performing a given activity and function in life and do not conceive of their status and the circumstances impinging on them as subject to their influence. Various cultural inheritances from earlier periods, explicable only in terms of the history of each society, may govern many aspects of life.

This description does not apply to the whole of any "underdeveloped" society today. Every society has felt the impact of contact with the West. Part of the society has become urbanized, and there is some measure

of interaction and interdependence with other societies. But the relationships sketched here in broad outline are elements of the present society of the great majority of the people of every "underdeveloped" country today, and we will not understand the past or future process of transition unless our analysis begins with these social relations.

What changes must occur in such a society if it is to enter upon continuing technological progress? This section identifies the types of change which are associated with this transition. These elements of change are discussed here under six heads: technical knowledge, interpersonal relations, social status, cultural lags, economic factors, and motivations. The categories as stated are not mutually exclusive, but the headings are convenient, and the scope of each will become clear in the discussion. The elements are stated in their most general form, so that they are applicable to a centrally controlled and authoritarian society such as the Soviet Union as well as to a mixed or private enterprise economy. No specified degree of any given combination of these changes is a prerequisite to the economic and technological transition. Section 3 attempts to formulate some tentative hypotheses about the necessary interaction among them.

### Technical knowledge

The society must acquire new technical knowledge, ranging from literacy to elements of modern science.

Technological advance and advance in scientific ideas are mutually interdependent. The rate of scientific advance depends also on the previous accumulation of scientific knowledge. For every invention or scientific

discovery is a combination of previously existing ideas. The larger and the more basic the stock of existing scientific ideas, the larger is the number of possible new advances; and the possibility increases vastly, more rapidly than the increase in the accumulated stock of knowledge.<sup>3</sup> Technological advance frequent enough to constitute a continuing flow becomes more and more feasible as the increase in scientific knowledge accelerates.

The exuberant scientific advances of the sixteenth and seventeenth centuries reached a climax in the great Galileo-Newton theoretical synthesis concerning the nature of the physical world.<sup>4</sup> This synthesis and the concomitant discoveries in mathematical and physical method provided an expanding base for continuing scientific and technological progress. Before the seventeenth century, continuing technological advance was highly improbable in any society. But because the existing stock of scientific ideas is now available to every society in the world, lack of scientific basis is no longer a bottleneck preventing development anywhere. Ideas existing in one culture are not necessarily available to another culture; but the difficulties involved lie in the social structure and the motivation of the technically non-progressive societies, not in the limited nature of human technical knowledge.

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3. With two items, only one combination is possible; with three, four; with four, eleven; with five, twenty-six.

4. See Alfred North Whitehead, Essays in Science and Philosophy (New York: Philosophical Library, Inc., 1948), Chapter on "The First Physical Synthesis" (pp. 166-176).



Interpersonal relationships

In Levy's terms,<sup>5</sup> the society must move in economic relationships from "particularism" toward "universalism," and from "functional diffuseness" toward "functional specificity." By particularism or ascription is meant the selection of one's associates on the basis of one's personal relations to them (e.g. family membership); and by universalism, selection on the basis of objectively evaluated capability to perform the function at hand. By functional diffuseness is meant the undefined nature of rights and duties in interpersonal relationships. In local relationships, the term comprehends both the indefinite liability of each individual to meet claims of members of his family and the indefinite obligation to yield individual claims if they conflict with the welfare of the community. From one viewpoint, it signifies an absence of individual rights. The change from custom and personal relationships to contract and the rule of law is a change from functional diffuseness toward functional specificity.

The new ethics must extend to national and international relations. The individual must move toward respect for the person and property of everyone in the society and in the international community. This implies

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5. Marion J. Levy, The Structure of Society (Princeton: Princeton University Press, 1952). I believe that the basic set of categories is originally Parsons'. See Talcott Parsons and Edward A. Shils, eds., Toward a General Theory of Action (Cambridge, Mass.: Harvard University Press, 1951), pp. 80-91; and Parsons, The Structure of Society (Cambridge, Mass: Harvard University Press, 1951). pp. 58-67.

I am following Levy's terminology. Parsons uses the terms diffuseness and specificity without the adjective functional, and includes part of the content here included under particularism and universalism under the terms ascription and achievement respectively.

an end to banditry and personal violence, the end of capricious seizure of persons and property by group or national leaders, and acceptance of contractual commitments by individuals, national leaders, and the government.

The need for the changes indicated is obvious. Insofar as individuals are motivated to select their associates in economic functions on the basis of their capabilities rather than according to the accident of personal relationship, the level of ability applied to each task in the economy will be higher and, other things being equal, progress will be faster. Diffuseness of rights and obligations, at least within the family, does not necessarily lessen economic incentive; one may be as eager to improve the economic status of one's family group as one's own. Diffuseness of rights and obligations with the firm similarly may be favorable to economic development. However, the indefiniteness of property rights and of business obligations outside the family hampers the accumulation of capital from outside the family and creates uncertainties of costs and income which hamper the operation of almost any economic venture that is producing for the market.

The differences between traditional and "modern" societies with respect to both functional diffuseness -- specificity and particularism-universalism are ones of degree. Relations in traditional societies are not wholly diffuse. And some degree of particularism is present, even in business relations, in every society. No given development

of universalism, functional specificity, and law and order is an absolute prerequisite for economic development. If these have developed only in small degree, other forces may nevertheless bring about the transition, and if they do, the requirements of the new economic relationships will alter these social relationships subsequently.

In the setting in which they are typically found particularism and functional diffuseness may further, not impede, business relationships. The arbitrary imposition of contract in a traditional society may not aid economic development; rather, by preventing ethical adjustments by the customary process of mutual accommodation, it may merely disrupt all economic relations. Or, as another example, where one can neither trust a stranger or an acquaintance as a business associate, nor persuade him to lend one money, then the extended family may be a necessary source of capital and a necessary bond between business associates. Its abolition would not modernize the society; in the circumstances it would merely paralyze large-scale business relationships.

Further, even the assumption that movement away from particularism and functional diffuseness in all important economic relationships will occur at some time in the course of economic development may be unwarranted. Japan's economic progress is among the most rapid in the world's history. Yet particularistic and functionally diffuse relationships persist within her business firms, and in her culture they seem to have aided, not hindered, her economic onrush.

### Social status

The society must move toward a class structure conducive to technological change. Any class structure will present some barriers to innovations that may alter relative social position, and this is certainly true of all important economic innovations. Feudal lords, guilds, a landed gentry, absentee landlords, or a moneylending class may be injured by technological change and the changes in relative power accompanying it. The greater the power of such groups to block adverse changes, the greater the deterrence to the commencement of technological progress.

Moreover, if the class structure prevents or curtails communication of certain sorts, it will obviously block economic change. More generally, the greater the constriction of communication, presumably the greater the barrier to economic and technical change.

Perhaps the most interesting generalization that can be made concerning the relationship of class structure to economic change relates to social mobility in the society. The nature and degree of social mobility may greatly affect the likelihood and pace of economic change by affecting the incentive to make it.

It is often mistakenly stated that the incentive to economic change is the greater, the greater the degree of social mobility. But this statement is incorrect or at least seriously incomplete.

The true relationship is somewhat as follows: the social structure is most conducive to economic innovation if:

(1) The possibility of social rise via traditional types of activity is at a minimum. In ways that are discussed in Section 3, below, ease of ascent to positions of esteem and power via traditional activities lessens the incentive to seek new fields of achievement.

(2) The possibility of gaining entry into the traditional channels of social ascent by initial economic prowess is at a minimum (thereafter rising via traditional types of activity).

(3) Rise in social power and esteem through economic prowess is possible.

The history of China and Japan illustrates the point. In China, high social prestige was associated with status as landed gentry. Trading was in low esteem, but members of a family that was under economic pressure sometimes left the land and turned to the less respectable occupation of trading in order to improve the family's fortune. However, movement from trade upward to landed gentry status was possible. Hence persons who made money in trade moved back to the land. This mobility deterred economic development by channeling energies back toward "landedness." In Japan, on the other hand, where a strictly feudal class structure existed and mobility between classes was not possible, the merchant class could not escape from its role. Purchase of land was illegal, or at best not protected by law, and a trading family that bought land had no recourse against its seizure by a feudal lord. Hence no road to security

except economic power was open to trading families. They continued to devote their energies to trade, and, when opportunity occurred, to economic innovation. This devotion of energies was a significant force toward economic development.<sup>6</sup>

Class structure probably affects economic change in a number of other and perhaps more important ways. The theory of the relationships is yet to be developed.

#### Cultural lags

The society must dissolve inappropriate cultural inheritances of various kinds.

A trait firmly fixed in the culture by the intensity of the emotional stress out of which it first arose may persist long after it no longer serves an important function, and may be an important barrier to economic innovation. A conspicuous example of such a barrier is the pervasive demands made by loyalty to family in China. Less important ones are the taboo on killing animals in Hindu India, and certain elements of the caste system.

Some writers would state that religious beliefs of certain types are among such cultural traits. While this is true of specific religious practices, for example, those cited in the preceding paragraph, the

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6. See Marion J. Levy, "Contrasting Factors in the Modernization of China and Japan," in Kuznets, Moore, and Spengler, eds., Economic Growth: Brazil, India, Japan.

statement is not helpful as applied to religious systems as a whole. The religious system of a society is a complex projection from the needs, fears, and social relationships of the society. To state that a religious system must change does not illuminate the elements in the problem.<sup>7</sup>

### Economic institutions

There are several economic institutions which economists sometimes list as prerequisites for economic development. One set of these is the institutions necessary to finance "social overhead capital" projects. Another set is those conducive to an adequate rate of saving. Both statements need careful qualification.

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7. Some writers, I suspect, would state that one of the culture traits that must change is traditionalism, which must change to rationalism. This statement, I think, involves verbal confusion. The terms traditionalism and rationalism, like the term continuing technological progress, describe complex patterns of behavior, each of which is a resultant of a number of elements. Traditionalism is the philosophy or practice of following tradition in some field of behavior; it involves unchanging behavior in the field referred to. Rationalism is the philosophy or practice of guiding behavior by objective criteria of the suitability of the behavior to the desired end; it may involve changing or unchanging behavior. The transition from static technology to continuously changing technology is sometimes said to be the transition from traditionalism to rationalism in production. The accuracy of this statement is doubtful. Unchanging technology may be entirely rational in a peasant agricultural society, and the transition may be from a situation in which unchanging technology is appropriate to one in which continuous technological change is appropriate. (This statement, if generalized, has implications concerning the entire concept of traditionalism. In its social environment, traditionalism may be rational. The concept of traditionalism may be an ethnocentric concept held by individuals who apply the criteria of their culture to a different culture.) However that may be, to state that traditionalism must change to rationalism is of the same order of generality as to state that static technology must change to continuous technological progress. It defines a problem, rather than stating a causal element in the problem.

Many types of social overhead capital -- capital which serves many industries and the economy generally -- are economic only in large units. Examples are transportation and power facilities. Hence their financing requires institutions either to accumulate large aggregates of capital or to encourage the flow of capital from abroad.

Social overhead capital is obviously important in the transition. A national capital market in existence when the need for social overhead capital arose would be a factor favorable to economic development; but it is difficult to conceive of this situation, since typically before the need for social overhead capital exists a national capital market would serve no function and could hardly have come into existence.<sup>8</sup>

In some circumstances the provision of capital from outside the economy for large social overhead projects will permit technological change to proceed while the institutions of a capital market are gradually developing and other necessary changes are occurring, whereas otherwise it would be retarded.

But many types of technological progress in traditional societies are possible without large units of physical capital, for example, improvements in methods in agriculture and cottage industries, mentioned above. In fact, such changes in England preceded most of the social overhead capital formation, and it is arguable that the latter was as much the effect as the cause of the transition. It is probably true that

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8. Joint stock trading companies were formed in Britain by public subscription long before the Industrial Revolution. The device, however, was not thought applicable except for these rather speculative ventures, and was used hardly at all to finance canals or toll roads until these had become fairly common.



in many instances where lack of social overhead capital is advanced as the reason for lack of development in traditional societies today, in fact the social structure and motivations necessary for development are little developed in any case and development would proceed only haltingly even if the social overhead capital projects were constructed in generous quantity.

If motivations and other conditions conducive to development exist, and other aspects of technological innovation have proceeded to the point where lack of social overhead capital is a serious deterrent, means of financing it will probably be devised, by the government if not privately. The concept of social overhead capital as a key prerequisite, without which development cannot proceed, and with which it would race ahead, is a completely unrealistic one.

Economists sometimes list as a basic deterrent to technological progress lack of a sufficient flow of savings to finance the necessary capital formation. This idea seems to me to constitute in unusual degree a confusion between cause and vehicle.

It is true that capital formation has been and may be expected to be important in technological progress. It is also true that the rate of saving is low in traditional societies. But the questionable link is the assumption that the rate of saving is low because of the need in some absolute sense to consume virtually all of output, and that the inability to save is the deterrent to capital formation.<sup>9</sup>

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9. The absolute flow of saving will of course be low, because income is low, but a flow (net of capital consumption) equal to say 10 per cent of income will permit technological progress just as truly as will a flow equal to the same percentage of income in a high income economy.

The main basis for belief that peasant societies are at a physiological minimum level of consumption and hence cannot save much is an ethnocentric one. Because we, the members of a Western society, could not live at the level of income of peasant societies, much less save, we assume that the members of peasant societies cannot save.<sup>10</sup> By the same reasoning, however, they could not live. But they do. A considerable amount of evidence suggests that with favorable motivations they could also increase their saving and capital formation. No people, even at the lowest level of living recorded in peasant agricultural society, devotes all of its income to providing for the physiological necessities of life. An appreciable share is devoted to festivals, construction of temples, and accumulation of gold, gems, or other symbols of position. Further, historical accounts suggest that the economies of traditional societies were typically slack rather than "taut." Labor was not used to the maximum. Thus inability to spare productive resources for capital formation does not seem to have been the cause of low capital formation. The evidence is persuasive that the problem is one of the psychological and sociological conditions, rather than one of the physiological minima.

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10. In support of this thesis, it is stated that the rate of saving in traditional societies increases only as income rises. The facts are uncertain. Available data are too poor to give precise information. But in any case if this relation sometimes or typically holds, it provides no indication which change is the cause of the other, or whether common forces cause both. It is plausible that motivations that lead to increased saving and capital formation also lead, at the same time, to technological advance or fuller utilization of productive resources or both, and hence to higher income. As another alternative, there may merely be a Keynesian relation between investment and income. This taken alone seems the least likely explanation, but this relationship may be a contributing factor.

It is also true that Westerners have until recently consistently underestimated the rate of "productive investment" in traditional societies, because much of it has not passed through the money market. A series of national income studies of "underdeveloped" economies has shown capital formation higher than had been estimated before detailed examination of the economies had been made. It follows both that the rate of saving has been higher than often assumed, and that the increase in investment necessary for technological progress is less than has often been assumed.

#### Motivations

If the transition is to occur, the operation of motivations in traditional societies must change. While it is certainly true that the typical member of virtually every society prefers more goods to less, other things being equal, this motivation conflicts and competes with other motivations. The relationship to technological progress of change in motivations themselves and of environmental acceptance and recognition is discussed in Section 3, below.

It is plausible to believe that certain complex motives, of which the persons who possess them are often unconscious, are closely related to the problem of technological progress.

To understand how such motives may be acquired, consider achievement motivation, or the need to achieve -- an attitude of a person by which he gains pleasure and satisfaction from attacking problems that involve

unknowns, and hence a risk of failure, but one of a type that can be controlled by the exercise of his abilities. In this performance an achievement-motivated individual strives to meet an internalized or "built-in" standard of excellence. It should be noted that both a need to succeed and a need for independent or autonomous effort are involved in achievement motivation.<sup>11</sup>

Social psychologists are now well aware of the processes by which this and other motives may develop. Mother-child relationships are of crucial importance. For example, a baby finds that his mother does things which satisfy his viscerogenic needs -- his hunger, desire for a comfortable temperature, desire for a dry skin, and so forth. Because his mother is the source of all that is good, he may come to feel satisfaction directly in her presence, and anxiety--tension--in her absence. By a further association, he may feel satisfaction and security in her approval and anxiety in her disapproval. As he grows, he will find repeated occasion to explore an unknown environment. If when he does so -- when he toddles, plays boisterously, wanders down the block, tries to use his own knife, tries to dress himself, or makes his own truce

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11. Achievement motivation has been studied by David C. McClelland and his associates. See David C. McClelland, John W. Atkinson, Russell A. Clark, and Edgar L. Lowell, The Achievement Motive (New York: Appleton-Century-Crofts, Inc., 1953). They treat it as a single or unitary motive, but its dual composition is implicit in their discussion. Though Murray, in his original listing of needs, defines n Achievement and n Autonomy separately, an element of need for autonomy is clearly present in his n Achievement. See H.A. Murray, Explorations in Personality (New York: Oxford University Press, 1938), pp. 156, 164, and passim.

(or warfare) with his playmates, he senses in his mother a repeated attitude of fear at venturesome action, or disapproval at his initial ineptness or at the inconvenience he causes her, he may come to feel tension in any independent action, and to feel security in dependence. If, on the contrary, she lets him face tasks alone at as early a date as he can accomplish them, rejects him if he turns to her for help, and shows pride and love in his successful self-reliance, he may come to feel the same security and emotional satisfaction in meeting new problems "on his own" that he felt as a baby when his hunger was satisfied or his skin soothed.

The individual is similarly influenced by his relations <sup>with</sup> his father, his brothers and sisters, his playmates, and other early associates. He is influenced by his reading, the radio, television, and the movies, and, indeed, by all of his associations throughout his life. Nevertheless, the contacts with the persons on whom the baby is dependent are by far the most important, and contacts in early life are crucially important. By the age of say eight years there will usually be built into an individual a degree of motivation toward achievement which will set both a floor and a ceiling to his initiative. Except under very unusual circumstances neither will change much throughout life.

Experiencing and mastering risk -- the risk of failure to meet one's own standard of excellence when venturing into the unknown -- is apparently an essential element in the satisfaction derived from achievement. This risk should be distinguished sharply from chance or uncertainty. The

risk that motivates to achievement is risk that can be mastered by the exercise of one's capabilities. Challenge of this sort is encountered in performing any non-routine function, and is encountered in a high degree in creative scientific endeavor or innovational political, governmental, or social administration, as well as in innovational business entrepreneurship. Many economists have defined the function of business entrepreneurship as risk-taking, meaning the taking of economic risks. But the basic risk is that of failing to meet one's standard of excellence, and business entrepreneurship shares this risk with many other functions.

The studies by McClelland and his associates may so far have yielded only a gross and imperfect understanding of achievement motivation -- as they would perhaps be the first to assert. They apparently believe that "achievement motivation" is a single motive, like hunger, not the complex result of a group of motives, and that a person acquires, not a motive to achieve in a given area, e.g. art or warfare, but a generalized motive to achieve, which is channeled into one or another field by the values with which the person comes into contact after acquisition of the motive.<sup>12</sup> Both judgments are questionable. "Achievement motivation" may be complex, a bundle of elements.<sup>13</sup> Further, at the time that a child acquires his

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12. See loc. cit., passim. The facts discussed by McClelland himself in a 1955 paper strongly suggest the opposite to me. See D. C. McClelland, "The Calculated Risk: An Aspect of Scientific Performance," (mimeo.) a paper delivered at a conference on scientific creativity sponsored by the National Science Foundation at Brighton, Utah, August 27-30, 1955.

13. Certainly, for example, the cause of varying degrees of effort to achieve, among a number of persons, may be either varying degrees of achievement motivation, or may be an equal and high degree of achievement motivation in all of the persons countered in varying degree by an (unconscious) fear that achievement is dangerous because it threatens to rival an authority who should not be rivaled, for example, the person's father. In other words, a passive and non-exploratory person may simply be not motivated, or he may be highly motivated but inhibited.

motivations, the achievement motive he acquires may be, not a general one, but motivation to achieve in a given type of performance.

Related to need for achievement is need for autonomy or freedom from control or restriction. Contrasted to both is need for dependence. Presumably a person whose early nurture has created in him a high degree of need for dependence will throughout his life be bound by unconscious bonds from thinking effectively about questions to which there is no routine answer. For if he explores, he may venture ideas or behaviors which he fears would be unacceptable to the individual or group with which he associates himself, whose values are emotional yardsticks that he carries with him. More important, by independent thought he would be rivaling the person (or persons) to whom he must feel dependence for comfort, even if the thought were acceptable; and such rivalry is forbidden by his need for dependence.

Such influences are important in determining a person's choice of occupation. An individual feels satisfaction in a given activity or occupation, not for the logical "reason" that he may advance, but primarily because the activity or occupation recreates in him feelings of security and pleasure that he felt as an infant or a child. For example, early experiences may cause some achievement-motivated children to find pleasure in rivalry with or manipulation of other persons. Others, while achievement-motivated, may have developed unfavorable emotional reactions to such interpersonal relations, and may seek to achieve in activity which obviates the necessity for them. McClelland

has suggested<sup>14</sup> that as between business and science, such a reaction determines the choice of achievement-motivated persons. Those who enjoy interpersonal relations choose business; those who do not, choose science. Of course, the terms "business" and "science" are used far too broadly in this hypothesis; but it would probably be possible to define two sets of occupations, choice between which is determined largely by precisely the influence indicated.

The broader question arises, what influences direct individuals into any given occupation, out of the total number that are open to them (which may of course be small)? Specifically, what influences direct them into economic, technical, or scientific innovation, rather than into some other activity? Obviously, possession of need for achievement or for power is not an explanation. Persons motivated by either or both may instead develop an effective system of government administration, or may make advances in art, philosophy, or literature, or as a group they may conquer their neighbors.

Psychologists do not know the answer to the question. I suggest some possible influences below. An individual will channel his energies into science or business, and will be an innovator, given a sufficiently

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14. In his Brighton, Utah, speech, loc. cit., p. 8. Evidence of the importance of such influences is an eloquent commentary on the lack of realism of the economic assumption that a man's choice of occupation is determined by his desire to maximize his economic income. The lack of realism does not necessarily impugn the analytical usefulness of the assumption for static analysis.



high degree of intelligence, if in his early life he acquired on a number of occasions the following "feelings,"<sup>15</sup> and especially if these feelings are reinforced by the values of his social environment as he grows older:

(a) A view of his environment as subject to being influenced by him.

(b) Need for autonomy.

(c) A feeling of achievement in manipulating or studying the physical world.

(d) A feeling of power in manipulating or studying the physical world. The power that is relevant may be an extension or magnification of oneself through control (actual or intellectual) of some power of nature or science, or by some early association it may be power over other persons.

(e) A feeling that such activity wins recognition from his "reference group," the group whose esteem gives him satisfaction.

(f) A "direct" favorable emotional attachment. It is probable that a child breathes in ("learns") satisfaction in some activities or occupations, and discomfort in others, in ways not comprehended by (c), (d), and (e) above, from the contentment of his parents (or other early associates whose emotional reactions affect him strongly) in some situations, their discontent in others, their reverence or respect for some persons or symbols, their antipathy to others. It may well be that

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15. In psychological terminology, "affective states."

these direct emotional attachments plus the esteem attached by the reference group to a given occupation, channel ~~on~~ the individual's generalized drives for autonomy, achievement, and power into a specific occupation, so that (e) and (f) are the crucial variables in determining the field of work, and (b), (c), and (d) determine the nature of the individual's activity within that field.

This list is undoubtedly neither complete nor fully correct. But it may be a useful starting point for analysis.

The importance of the reinforcement of these early attitudes by his society has been mentioned. A person whose early motivations are affirmed by the approval of his culture as he grows older is impelled systematically in a given direction; if his early motivations are contradicted, he is confused and unhappy.<sup>16</sup> In a traditional society, an individual's experience tends to inculcate in him the same motivations, attitudes, and values that his parents and their ancestors possessed. One of the crucial questions of economic development is, How does a person acquire motivations different from those of his elders?

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16. The fact that in a changing society, many individuals are driven by the need of making a living into jobs that do not satisfy their early motivations is an important source of industrial, social, and political unrest.

This discussion omits the situation in which early motivations are themselves contradictory--perhaps an even more important source of difficulty in a changing industrial society.

This list of influences determining a person's use of his energies during his lifetime does not include the one assumed by many economists to be the basic relevant motive, namely the "economic motive" or "goods motive," the desire to maximize income. This is because the goods motive, though real and powerful, is initially merely the surface reflection of the influence already discussed. Goods are wanted because they symbolize achievement or accomplishment of the processes of production to which there was initial emotional attachment, or give power or prestige.

A secondary goal, once learned, may become a goal in itself, and economic reward may become a symbol without which motivation is lacking. However, unless economic effort yields social status, it may not be felt to constitute achievement.

### 3. The Process of Change

The path from a traditional state to one of continuing technological change is a long one, in logic, and for every society which has made the transition in the past, in time as well. The elements of change sketched in Section 2 are cumulative changes, occurring over a long course of development. The problem of the transition is the problem, not merely of the final change to continuing technological progress, but of the preceding long sequence of change from a traditional state.

The concept of a traditional society, in which no change in institutions or techniques occurs over time, is an ideal form, an analytical model, rather than a description of historical reality. However, all the elements in it have existed historically, and exist in many societies today. It is only the concept of equilibrium in such a state that is unrealistic. But the equilibrium concept is a useful starting point for analysis.

Such an equilibrium implies absence of any tendency to increase one's rate of economic income. It seems a safe principle that between two rates of income flow, almost any individual in any human society will like the greater of the two as well as or better than the smaller, other things being equal, and that the modal preference of the members of a group will be for the larger flow. Exceptions to this rule must be so rare that they can be treated as abnormal cases. But this fact does not interfere with the concept of a society in which no change in per capita output is taking place. For the desire for increased income is counteracted by other forces determining individual behavior.

In a traditional society, applying energy and income from other uses to the study of production methods promises little achievement, power, or prestige, since fruitful change in production methods lies outside the experience of the society. On the other hand, it involves fulfilling obligations to one's family less well, neglecting religious duties, losing esteem through lessened contributions to festivals, etc.

Occasional technological advance may occur in two ways. First, the more or less random action of intelligent minds may bring discovery of improved methods. Secondly, in any society some deviant individuals<sup>17</sup> appear. Some combination of influences during the early years of life makes an occasional individual dissatisfied, tense, driven to use his energies in unconventional ways, including devotion of more than the typical amount of energy to the study of the physical world, or to technological innovation.

From time to time, therefore, new techniques will be discovered. Some, because their use involves change which runs sharply counter to attitudes and values in the society, may not be adopted, but some will be. In the typical society, over time there will be technological advance, though the advances may be spaced so far apart in time that the society is appropriately described as technologically in static equilibrium, with advances as discontinuities.

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17. A term which includes Alexander the Great and Henry Ford as well as village fools and tinkerers.

From this stage, what is the course of transition to a state of continuing technological progress? Two conflicting theses may be sketched. For convenience I shall term one of them techno-economic, the other sociological.

When consideration is centered on technological and economic factors, the transition to continuing technological progress seems to have the inevitability of mathematical logic. With the accumulation of scientific and technological knowledge, the rate of discovery of new techniques will accelerate, simply because there is a growing body of ideas in existence to be combined into new ones. As the prospect increases that the devotion of energy to science or technical innovation will be fruitful, the balance of attractiveness between various activities will gradually shift, even though traditional roles and activities remain absolutely as attractive as before. Thus a steadily increasing number of individuals, and ultimately large groups, will devote their energies to the new activities. Appropriate changes in economic and social institutions will be induced. The trickle of technological progress will become a rivulet, a current, and finally a rushing tide.

This theory is implicit in much economic thinking, and underlies the assumption by many economists that economic or technological changes alone will bring economic development. The evidence of history and general principles of sociology both suggest, however, that the model is unrealistic.

It suggests a steadily accelerating rate of change. But gradual acceleration to a stage of continuing technological advance does not seem to have been the typical course of technological progress. Indeed, such inexact historical knowledge as is available suggests that it may not have been the sequence anywhere. There was so marked a change of pace at some point in the transition, not only in Britain, but also in the countries of Western Europe and those Latin American countries where a transition seems to be near completion that a surge of change, rather than acceleration, seems the appropriate description. The concept of gradual acceleration runs into especial difficulty in explaining the transition in Japan, that in the Soviet Union, or those which seem to be under way at present in China and India.<sup>18</sup>

It is possible to argue that gradual acceleration may have been the underlying trend in each of these societies, and that when some especially favorable event was superimposed on that trend, it brought a surge. Such an event might have been a scientific or technological "breakthrough," a major increase in economic opportunity, the stimulus of a new economic problem facing the nation, a collapse of opposition by vested interests, or some other. In Japan, the Soviet Union, China, and India, the favorable event was the coming into power of a government eager to aid the transition. In this view, the surge is fortuitous; gradual acceleration would have completed the transition without it.

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18. The emergence of continuing technological progress in the United States, Australia, New Zealand, and Canada was not by transition from traditional or other pre-industrial societies. These cases are rather to be regarded as offshoots of the transition in Britain.

In support of this thesis it may be argued that with a favorable tide under way, there are virtually certain to be some occurrences which will accelerate the rate of change. However, the realism of this explanation is questionable. In every case for which we have reasonably good data, a surge has occurred. The apparent universalism of surges suggests that they are an integral part of the process. Further, the hypothesis is inadequate to explain all of the phenomena in which the student of economic development must interest himself. It requires us to include under the heading of "fortuitous" events so closely related to the transition as the Meiji restoration in Japan and the Bolshevik revolution in Russia. These were caused by a desire for change. A hypothesis that encompasses them would be preferable to one that must treat them as accidental or exogenous. This objection may be generalized. Basic social changes are necessary throughout the course of the transition. Due modesty requires that before concluding that these merely follow along after economic change, economists inquire what sociologists know about the processes of social change.

Economic change involves social change. It is a historical truism that socially dominant groups are not only not motivated toward economic change, but will oppose it, to protect their position. The one exception is that they may adopt it if it offers protection against outside pressures or internal revolt. Further, a movement toward important technological change in any traditional society, since it will involve major social change, will meet with strong resistance not only from dominant groups



but from individuals throughout the society. Important technological change is apt to require changes in individual occupations not sanctioned by existing values. These may disrupt family relationships. Both the family relationships and the other social relationships may be sanctioned by religious teachings, to which the new activity may run counter. For these several reasons, it may meet with disapprobation, low valuation, contempt; it may be regarded as undignified, sacrilegious, "queer." The weight of parental and patriarchal influence may oppose it. There may be positive social and political action against it. Radical social change is therefore not apt to occur by gradual acceleration.<sup>19</sup>

The long sequence of radical social changes which constitutes the transition probably occurs, not merely by the action of deviant individuals, but only when some sizeable group within the society exerts great energy toward that end. Only groups that are "subordinated" or fear "subordination" will do so. Before stating the sociological theory of the transition,

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19. If one regarded neo-Malthusian population theory as realistic, one might find in it additional reason to question the possibility of gradual acceleration of technological change. I do not advance the relevant argument here, however, because I believe that there are good reasons to regard neo-Malthusian population theory as not realistic. To discuss them would require more space than is available here. I hope to do so in a later paper. I will merely note the empirical fact that there seems to have been no case anywhere in the world in which continuing technological change, as defined here, once under way, was subsequently "swamped" by population increase, so that per capita income failed to rise cumulatively. I believe that this is not tautological, fortuitous, nor due to biological limits on population increase, but rather that there are forces not encompassed in present population theory which may be counted on to prevent population from rising as rapidly as aggregate income, once the virus of technological advance has taken hold.

it will be useful to consider the theory of "subordinated" groups. In the extreme case, such a group may be an entire society. The case in which it is a group within a society will be considered first.

A society is never perfectly integrated, in the sense that the motivations and values held by all of its constituent groups are consistent, and the role of each group in the society satisfies the emotional needs of the group. Some groups will be at a relatively disadvantageous and unsatisfying position in the social structure. The lines of their differentiation from dominant groups may be ethnic (Jews, Negroes, many immigrant groups), or on the other hand may be purely or almost purely cultural (many of the Dissenters in England, various classes under feudalism). For want of a better term I shall call such a group a "subordinated" group, but the term should not be thought to imply necessarily any subordination in civil or political rights. The discrimination may be purely social.

I have no suggestions to offer concerning the emergence of group subordination, beyond the sociological platitude that if two groups with different cultures come in contact, some friction between them is apt to occur. Beyond this it seems sufficient to assume group subordination as an event in the stream of human history.

I suggest that a crucial fact with respect to the transition is this: the tensions arising in a subordinated group, and between that group and other groups in the society, may tend to inculcate in the young motivations radically different from those that had been transmitted from generation to generation before the tensions arose. As examples of how this might

occur, when parents are tense, the home environment of the child will differ in various and subtle ways from that in previous generations with tensions absent; relations of children with children not of their group may have high emotional content and may therefore be of unusual influence in creating motivations; youths of the group may form groups of their own, with mores and standards different from those of their elders (so-called "youth cultures").

If such a change in motivations occurs in many members of a younger generation, or over several generations, the widespread approval within the group of new modes of behavior will insulate its members in considerable degree from the inhibiting effects of the disapproval of other groups in the society. Thus group pressures may both change the unconscious motivations that govern a man's use of his energies, and provide reinforcement for the new motivations throughout his life. It is a tentative thesis of this essay that reaction of a subordinated social group to its subordination has been a central force in each step of change from traditional society, and specifically that such a reaction by a subordinated group, in favorable circumstances, is requisite for the final surge by which continuing technological progress is institutionalized in a society.<sup>20</sup>

What are the necessary favorable circumstances? One is that the society, or groups in it that are important numerically and otherwise, have previously moved some distance from a traditional state with respect

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20. The take-off is like the last stroke of a chisel that splits a stone, no more important causally than previous strokes, nor different in general nature from them.

to the complex of elements of change discussed in Section 2. However, as has been suggested in Section 2, no given degree of any of these changes is a prerequisite. The circumstance that perhaps comes closest to being an absolute prerequisite is existence of and access to an accumulation of scientific knowledge sufficient for rapid continuing scientific and technological advance. But even the accumulation of scientific knowledge that is necessary will depend on the amount of energy poured into the process and on the economic circumstances.

A second favoring circumstance is that the subordinated group has an ideal of high or independent status -- presumably arising from their previous history -- so that their reaction to subordination is revolt, not submission.

A third is that release from subordination via achievement in traditional modes of activity is barred. And a fourth is that opportunity for increase in power through economic achievement exists.<sup>21</sup>

Various fortuitous events will of course affect the success of the final surge. However, the presence of subordinated groups, eager to take advantage of them seems more important in an analytical model than the fortunate events which may loom large in an historical account.

The analysis so far has explained how a subordinated group may be motivated to economic zeal, and may enter upon continuing technological progress. One further condition must exist if the activity of the innovating group is to spread to the society as a whole and complete the

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21. Concerning these third and fourth points, see pages 11-13 above.

transition. The group must not be so alien -- so different from other groups -- that its activity creates emotional antipathy rather than desire to achieve equal success by doing likewise. If the society is to follow the innovators, it must have common cultural bonds with them. Otherwise, their very success may create a drive for their suppression. The Dissenters led the Industrial Revolution in Britain, but Jews were suppressed or expelled in many places and Huguenots in others.

The history of colonial areas, if read in the light of modern psychology and sociology, illustrates the nature of a society's reaction to an alien group. Westerners possessing advanced techniques came to traditional societies and subordinated the indigenous population. Why have the latter in many places been slow to react by economic achievement in an attempt to escape their subordination?

The Westerners were aliens, who subdued the indigenous peoples by force. In virtually every colony they also disrupted the native culture and violated its deepest ethical and moral values.<sup>22</sup> The result of such disruption and of the apparent hopelessness of rebellion is to create emotional uncertainty that almost certainly has two important relevant effects. First, it militates strongly against the acquisition of

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22. For example, in some areas, by introducing Western systems of land ownership by individuals in fee simple they destroyed rights in land that were the basis of community life and that were sanctioned by sanctions as deep-seated as, say, the right of parents to rear their own children in the West. By introducing Western law and rules of evidence they insured that court decisions would flaunt basic moral codes. By introducing contract, they deprived the unfortunate of their right to community alleviation of the unforeseen rigors of a tricky agreement. They showed contempt for religion. Etc.

achievement motivation and of a view of the world favorable to initiative. Secondly, it creates an intense need to hold on to the old values that alone stand between life and chaos, hence a deep unconscious antipathy toward the new occupations and new economic roles introduced by the aliens. Thus colonial administration effectively blocked incentive to participate in economic development, even where it provided capital and knowledge of advanced techniques.<sup>23,24</sup>

In Japan, on the other hand, the aliens created fear of subordination, but they did not occupy the land, disrupt its culture, and occasion the antipathy to their occupations which they created in colonial areas. This contrast between Japan and other Asian countries in relations with the West is perhaps of basic significance in explaining the rapid development of Japan.<sup>25</sup> Consideration of the history of Japan suggests the generality of the theory of reaction to subordination.

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23. The unconscious blocks to interest in the new occupations are not inconsistent with imitation of certain cultural values of the aliens-- e.g., their sports, their dress, various of their attitudes. On the contrary, certain principles of psychiatry suggest that the two modes of behavior are to be expected at the same time. This problem, however, involves too great a digression to discuss here.

24. I discuss this aspect of colonial administration in the case of one country, Burma, in a monograph now under preparation, mentioned in footnote 10 above.

25. It should be noted that this thesis concerning colonial areas and concerning Japan is a construction by the writer. So far as I know, no sociologist or anthropologist has suggested this causal relationship. My evidence is the psychological principles mentioned, plus subjective judgment based on personal observation in some "underdeveloped" areas.

The Tokugawa family, who held the shogunate (or office of military dictator) from 1603 to 1868, had as a main goal the prevention of change in the social order. They ejected foreign traders from Japan, except for a small group of Dutch at Nagasaki. They kept the Dutch there, partly to obtain desired imports, but partly deliberately to have a channel of information concerning the West. A contemporary Japanese said: "To defend ourselves against the barbarians, we must know them and ourselves: the way to know them is through Dutch studies"<sup>26</sup>

Before 1800 Dutch grammars and dictionaries had been prepared, language schools opened, and "scores of books or parts of books" on many fields of Western science, engineering, history, and politics translated. Later, important schools for "the study of barbarian books" were opened. In the first half of the nineteenth century, laboratories were established

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26. Thomas C. Smith, Political Change and Industrial Development in Japan: Government Enterprise, 1868-1880 (Stanford University Press, 1955), p.2. Smith cites only two non-Japanese works concerning early Japanese exploration of Western knowledge, one in Dutch, one in English: C.R. Boxer, Jan Companie in Japan, 1600-1817 (The Hague, 1936), and Donald Keene, The Japanese Discovery of Europe: Honda Toshiaki and Other Discoverers, 1720-1789 (London, 1952). He cites many Japanese sources. My account is mainly from him. See also M.J. Levy, loc.cit.; E.H. Norman, Japan's Emergence as a Modern State (New York: Institute of Pacific Relations, 1950); G.B. Sansom, Japan, A Short Cultural History, rev. ed., (New York: Appleton-Century, 1943), and The Western World and Japan (New York: Knopf, 1950); and J.C. Moloney, Understanding the Japanese Mind (New York: Philosophical Library, 1954). Moloney presents a psychological interpretation of Japanese culture and Japanese development whose validity I am unable to judge, but parts of which I believe other psychologists question.

and many pilot metallurgical processes were performed, guided purely by study of the books, and without technical aid. Full scale enterprises were then established. Before Perry's arrival in 1853, an iron ore smelter, one or more reverberatory furnaces, and an iron foundry were in operation. The center of interest was avowedly defense, and emphasis was on iron and steel, munitions production, and after revocation in 1853 of an order forbidding shipbuilding, on shipbuilding. After 1853, the Japanese imported European technicians on a considerable scale, and in addition to defense industries developed coal mining, textile manufacturing, and commercial enterprises. All of this activity was by the feudal "clans" which formed a part of the government structure, and by the Tokugawa themselves; in part the consumer goods industries were developed to meet the need for revenue to finance the defense industries.

This development had been in the name of defending the traditional social order against barbarian invasion. The Japanese knew of Western invasion of Asian areas, for example, Indonesia and India. During the nineteenth century they were keenly aware of Western intrusion into China. When Perry appeared with four warships in 1853 and demanded a treaty, anti-foreign feeling became intense. In succeeding years it was inflamed further by Western humiliation of Japan through forced treaties, violation of Japanese conventions of personal behavior, and acts such as the bombardment of Kagoshima by the British.<sup>27</sup> If the Westerners had

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27. In retaliation for the beheading by a samurai of an Englishman for an offense for which any Japanese would have been beheaded with similar despatch, namely raising his eyes and looking at the emperor as he passed.

for a serious (probably unwitting) breach of conventional behavior.



invaded Japan then, the Japanese would have resisted and been defeated, and, I suggest, colonial rule would have brought the emotional confusion it brought elsewhere.

But the foreigners did not invade Japan and rupture Japanese culture. They gave Japan a breathing spell. During the fifteen years following 1853 an internal struggle raged. On one side were the clans (or clan leaders) who preached that the barbarians should be expelled, but who opposed the internal change, involving radical change in their own positions and functions, necessary to make the expulsion possible. Faced with reality, they were paralyzed. As each foreign demand forced the issue, they supported the shogun in his concessions, and took no other action. On the other side were the clans and individuals within clans who advocated dealing with the barbarians of necessity, meanwhile altering Japan's social institutions in order to create a modern army and navy and to carry out technological advance to the ultimate end of repelling the foreigners. Their analysis of the need for social change to accomplish the other changes was sound. With the prevailing class rigidities, it was not possible to obtain the necessary talent in the new functions. And under the feudal dispersion of power, the central government's only sources of revenue were the extensive landholding of the Tokugawa plus the enterprises developed by the Tokugawa themselves. It had neither the power to collect taxes nor other powers necessary for forceful action.

But the struggle was not merely one of ideas; it was a struggle of social groups to escape or avoid subordination for themselves, and also for Japan as a whole. In 1868 a group of fairly low-ranking samurai from the rebel clans took over the government, under the guise of restoring the power of the emperor. Allied with them were merchants, wealthy peasant landlords, and industrialists. Each had its own motivation. The warrior function of the samurai had gradually withered; their allowances had gradually been reduced by their daimyo or lords; they were heavily in debt to merchants and others, and repeated laws for their relief had been necessary. The motivation of the merchants was to burst the feudal restrictions on their social position which have already been discussed.<sup>28</sup> The wealthy peasants, who were educated both in government and war,<sup>29</sup> had found their social position steadily deteriorating, because of their weakening control of local communities and the deterioration of community institutions, both trends being consequences of the growing monetization of the economy. The industrialists were individuals drawn from the other three groups.

But the purpose of each group was not merely to restore or augment previous power. The victorious samurai moved to eliminate, not restore their old functions and status, and to move forward with technological change. A drive to save the nation from subordination was an important element in the motivation of all.

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28. Page 12, above.

29. See Smith, op.cit., Chapter II.

Thus the Japanese change was not sudden. Change in the elements discussed in Section 2 had prepared the way, and reaction to subordination or very real and justified fear of subordination provided the energy for the social revolution. Given these developments, Japan created the economic institutions that she lacked. But the old powerfully influenced the new; the course of her development from 1868 to the present was markedly different from that in the West because it was powerfully influenced by the persistence of previous social values and relationships.

The record of Japan's economic revolutions illustrates the principle of reaction to subordination operating between societies. The dominant groups in Japan began to introduce Western learning and modern industry during the Tokugawa era. They did so because they feared social subordination by foreign groups. Though dominant at home they were in prospect, in their own eyes, a subordinated group.

They could not however bring themselves to carry out the social revolution necessary to complete their economic program. This was done by groups who were subordinated within Japan. Thus the history of Japan doubly confirms the thesis suggested above that reaction to subordination is necessary for the transition.

In conclusion, the relationship of the theses presented here to a much-discussed alternative hypothesis should be suggested. This is the hypothesis that whether development occurs depends on the religious temper of the society. The transition occurs because the society possesses what Weber termed the "Protestant ethic."<sup>30</sup> Briefly, the Protestant ethic

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30. Max Weber, The Protestant Ethic and the Spirit of Capitalism, translated by T. Parsons (New York: Scribner & Sons, 1948).

is the doctrine that the duty of man is to glorify God by developing to the utmost the world that God has created. This religious value, where it exists, creates a high valuation on thrift, austerity, and economic achievement.

The theory that the Protestant ethic causes economic development is given a high degree of plausibility by the sequence of events in Western Europe in the seventeenth, eighteenth, and nineteenth centuries. Robert K. Merton has pointed out that the Protestant religious groups of the seventeenth century regarded the glorification of God by good works on earth as the supreme duty of man, and that good works came to be interpreted as successful economic activity, and has shown that the scientists and economic innovators of the period were predominantly Dissenters.<sup>31</sup> Calvinist doctrine presumably stimulated economic achievement in one way, the doctrines of the non-Calvinist Dissenters in another, but both effectively. The non-Calvinist Dissenters taught that man may gain salvation by good works on earth. Calvin taught that one's fate in life hereafter is predestined from birth, but that whether a person is possessed of a "state of grace" can be seen by his works. "A good tree bringeth forth good fruit." The non-Calvinist ethic, insofar as it affected human behavior, did so by creating in the individual an urge to save himself from eternal damnation by performing good works on earth.

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31. Robert K. Merton, "Science, Religion, and Technology in Seventeenth Century England," Osiris, 1938, Vol. IV, pp. 360-632. For a summary of the material there contained, see alternatively, Robert K. Merton, Social Theory and Social Structure, (New York: 1949).

Calvinist doctrine, on the other hand, created in each Calvinist a drive to demonstrate to himself that he stood in a state of grace and would be saved, by performing the good works which were the external evidence.

The effect of both the Calvinist and non-Calvinist Protestant doctrines, as sketched above, was via a rational or conscious channel. It is not man's conscious thought processes, but the emotional associations below the level of consciousness, that determine how he will spend his energies during his life. However, it is easy to see that the childhood environment in the homes of Dissenters might have created such motivations. McClelland has presented interesting evidence that the Protestant ethic leads to "independence training," that is, early childhood training encouraging independent actions at an early age, and tending thus to cause the child to feel satisfaction and emotional security in independent behavior.<sup>32</sup> The connection between this training and economic achievement has been suggested above.<sup>33</sup>

In Weber's version of the Protestant ethic thesis, the ethic comes to exist because of (unspecified) causes that are presumably quite unrelated to economic change, and then causes economic development. However, the Protestant ethic may be a result, not of religious doctrines but of

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32. D.C. McClelland, "Some Social Consequences of Achievement Motivation," in Nebraska Symposium on Motivation, Marshall Jones, ed.(1955) pp. 41-72.

33. Pages 18-26.

a drive by a subordinated group both to gain satisfaction through economic activity and to rationalize this activity in religious doctrine. The Protestants may have "created God in their own image," rather than the reverse. This seems to me to be a plausible explanation of the development of the ethic. Unless and until an alternative explanation is presented that seems more plausible in the light of Western European history, I suggest that the Protestant ethic should be considered as a channel through which reaction to subordination operated.

## 4. Conclusion

This essay has attempted to analyze causal sequences in the process of social change from a "traditional" to a technologically progressive state. The problem has received little attention in the professional literature, and parts of the theoretical structure presented here are new. The most obvious of these, it seems to the writer, is the loosely-structured discussion of elements of a traditional culture which may be expected to change as economic development occurs. A second is a brief statement of the factors which determine an individual's choice of occupation. Central to the entire argument is the hypothesis presented on pages 32-36 concerning the role of "subordinated" groups in the process of change. This includes discussions of the ways in which "subordination" may lead to radical alteration in the motivations of successive generations, and of the circumstances in which such a change in motivations may lead to the institutionalizing of continuing technological change.

All of these suggestions are tentative and untested, some of them may have to be discarded. Obviously, they will as a minimum be much modified, elaborated, and refined by professional discussion and by research insofar as research can be applied to test them. The essay is presented as a starting point for analysis and in the hope that it will stimulate discussion among scholars interested in the process of cultural change.