

THE PROCESS OF INDIVIDUAL MODERNIZATION:
A PATH MODEL

THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

MICHIGAN STATE UNIVERSITY

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1972



This is to certify that the
thesis entitled

THE PROCESS OF INDIVIDUAL MODERNIZATION: A PATH MODEL

presented by

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has been accepted towards fulfillment
of the requirements for

Ph. D. degree in Sociology

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Date 2-23-72

ABSTRACT

THE PROCESS OF INDIVIDUAL MODERNIZATION: A PATH MODEL

By

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This thesis presents a general definition of individual modernity, a processual model of individual modernization, and a test of this model using survey data from five nations.

Individual modernity, as here defined, is a configuration of values, attitudes, and behaviors characterized by individual autonomy and rational decision making. Autonomy is the individual's perception of his ability to participate successfully in a variety of social systems. Rational decision making is typified by a purposive consideration of alternate solutions. The social systemic characteristics which facilitate individual modernity are discussed.

This definition of individual modernity is contrasted and compared to earlier definitions found in this field, including relational, listing, and relativistic definitions, and more recent, abstracter, definitions.

A processual model of individual modernization is presented and explicated. The salient importance of formal education is noted and discussed. The processual, or path, model states that success in formal education (which is positively related to the antecedent personal and family characteristics) contributes to an individual's power.

Education also contributes to physical and psychic mobility, which in turn are also positively related to power. The individual's perception of his power, which is self-perceived efficacy, is positively related to the components of individual modernity--autonomy, rational decision making, and behavioral modernity. And, behavioral modernity, assuming modern social systems, increases the individual's power, thus intensifying the process.

The model was tested using data from national sample surveys of the United States, Japan, Finland, Mexico, and Costa Rica administered in 1966 and 1967. The central hypotheses were that none of the components of the path model would be negatively related, and that the relationships between components would decrease as theoretical distance between them increased. A majority of the components use multiple indicators.

The path model was transformed into a matrix, and the resulting correlation matrices were inspected. Two matrices for each of the five nations were constructed--one for ordinal and nominal dichotomized indicators using the contingency coefficient (C) and one for those indicators measuring at the assumed interval level or higher using the product moment correlation coefficient (r).

The five matrices of interval indicators support the hypotheses and the path model to a moderate degree. Of the five ordinal and nominal indicators matrices, only one clearly supports the model, but the others do not indicate any one alternate model.

Finally, an analysis of attitude items which were deleted because of intra-component inconsistency, but which bore strong face validity

as indicators of individual modernity as it was traditionally defined, was conducted. Their lack of consistent ties to other components of the model justified their omission, and cast serious question on the utility and validity of earlier listing definitions of individual modernity.

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By

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A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology

1972

6741575

ACKNOWLEDGMENTS

I wish to first acknowledge the contributions to this study of my guidance committee. Fred Waisanen, as chairman, was instrumental in stimulating my interest in the topic of modernization, and his suggestions and criticisms were essential in its growth from tentative ideas to final version. Denton Morrison, through my graduate training, instilled an appreciation for the problems and satisfactions of research. John Useem created and nurtured an early interest in comparative studies. Jim McKee opened the tradition and excitement of sociology to me. Bo Anderson's insightful comments broadened the scope of the study.

To these I must add Frank Camilleri's presentation of statistical issues, orientations, and techniques; Frank Holland's library and his arguments against the thesis of this study; and Chris Vanderpool's intellectual support and cribbage matches.

Included in a list far too long to present here are the invaluable people who participated and participate in my study of sociology as teachers, fellow students, friends, colleagues, and students.

And Carlin, who as friend, wife, colleague, researcher, and teacher, made this entire project possible with her constant support in so many ways.

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CHAPTER I

THE CONCEPT OF INDIVIDUAL MODERNITY

Historical Interest in Individual Modernity

The related processes of industrialization and urbanization-- worldwide and accelerating--have had major impacts on the nature of all societies. The resultant changes have altered practically all the social systems of these societies, and restructured the pattern of relationships within and between these systems. Kahl (1959) succinctly presents the major changes occurring in modernization and their character and ramifications. Major alterations are: initial dramatic population growth from the reduced death rate; an increasingly urban nature of the society, through internal migration, efficiency of agriculture, and a cash nexus of social and economic relationships; a broadening of the person's perceptual world, from local concerns to national concerns, and to an awareness of and empathy with diverse persons; increasing horizontal and vertical occupational specialization alter social stratification systems; education becomes more formal, more universal, and closely tied to the new occupational structure; the nuclear family eclipses the extended family in significance to its members; the average material standard of living is raised; and societal cohesion is more dependent on recognized interdependence than on similarities of the participants (pages 54-70). (See also Hoselitz and Moore, 1963, and Braibanti and Spengler, 1961.)

Sociological interest in the process of societal modernization has been strong since the beginnings of the discipline and the Industrial Revolution. The works of Durkheim, Toennies, Marx, Weber, and others show a dominant interest in the intellectual and social problems of nascent modernization in their time. However, with the notable exceptions of Durkheim's work on anomie, and Weber's study of the Protestant Ethic, strong interest in the psycho-social aspects of modernization did not appear until the advent of modernization in Asia, Africa, and Latin America in the years following World War II.

Survey research and public opinion polling in the developing areas asked questions concerning the psycho-social aspect of modernization (Lerner, 1958; Inkeles, 1960; Cantril, 1951; Buchanan and Cantril, 1953; and others). What kind of social psychological orientations, what attitudes and values, were required for a person to interact effectively in the changed and changing societies? How were they different from the orientations of actors in pre-industrial systems? What processes and experiences facilitated the learning of these new orientations? Answers were sought in the responses of people in exploratory surveys. While the information found in these early surveys has been crucial, the "new" concept of individual modernity tended to be more empirically based than other concepts in sociology, and lacked the abstractness and theoretical sophistication of other concepts which had their origins in the grand theories of classical sociology.

Definitions of Individual Modernity

Given the origin of the concept of "individual modernity" in empirical studies rather than contemplative theory-building, it is not surprising to note a moderate-to-low level of abstraction in the concept's definition. It is possible to distinguish three types of standard definitions--the relational, the listing, and the relativistic--and a fourth, newer, more abstract, approach.

The first of the three traditional types is what I have labeled the relational definition. In it, the writer simply states that individual modernity is that collection of attitudes, values, and actions that enable the individual to participate effectively in a modern social system (Smith and Inkeles, 1966:353). While this definition clearly states the essential tie between societal and individual modernity, it does little to specify what individual modernity, as a discrete concept, is. And by placing individual modernity in a position of total dependence upon success in modern systems, it becomes difficult to use this definition in constructing measures of individual modernity as a discrete variable, or to explore a varying relationship between the two.

Another approach to a definition of individual modernity is the listing approach. These lists and discussions of the various characteristics and measures contain from seven (Inkeles, 1969:210) and nine (Inkeles, 1966:141-44)* to thirty-three "major themes" (Smith and Inkeles, 1966:354), and up to 119 indicators of "over-all modernity"

*The content of this definition will be discussed below in comparing it to a new definition of individual modernity (see pages 13-17).

(Smith and Inkeles, 1966:353). Lerner (1958:47-52) provides a discussion of a collection of more abstract components of individual modernity emphasizing a positive value on change, coming from physical, vicarious, and social mobility; rationality; and empathic capacity. Rogers (1969:51-56), in a collection of behavioral and attitudinal components of modernity, which is typical of thinking in this field, includes: literacy, mass media exposure, cosmopolitaness, empathy, achievement motivation, aspirations, lack of fatalism, innovativeness, and political knowledge. Doob (1967) in presenting measures of psychological modernization gives scales which emphasize these eight dimensions of modernity: an emphasis on the future rather than present or past; a belief in the utility of the present legal government; a feeling that one's life is pleasant and controllable; loyalty to one's country; a faith in science; a generous, trusting view of other people; approval of the nation's present leaders; and a de-emphasis of tribal ties and values (415-16).

A third approach is exhibited by Stephenson (1968) who takes a strong relativistic stance. "Those values defined by the local culture as traditional comprise what may be called traditionalism; those defined as modern constitute modernism" (Stephenson, 1968:268, *italics omitted*). The relativistic approach presents its own set of theoretical and operational problems, as it essentially denies the possibility of comparative research or universally valid concepts. Each population's perceptions of the amount and type of change, and its perception of the nature of modernism and traditionalism, are valid and intriguing topics for study. However, using the respondents'

collective definition of the amount, type, and rate of change will not yield results which are comparable to other studies, except on the most impressionistic basis (Schnaiberg, 1970:402-03).

The three approaches to defining modernity all have weaknesses. The relational approach inhibits theory and research on individual modernity as a discrete variable. The listing approach tends to be too concrete, and is subject to criticism of specific items and debate on the relative importance of each item. And the relativistic approach inhibits comparative studies.

A fourth type of definition of individual modernity has been evolving. This type attempts to specify the more general, abstract, nature of modernity in a variety of settings. With Lerner's approach (1958:47-52) as an apparent conceptual basis, Waisanen and Kumata (1969) present four cognitive-attitudinal correlates of modern behavioral modes. These are: information seeking; planning and investment; inter-systemic participation; and creativity and innovativeness (pages 6-10). Kumata and Waisanen (1969:52) note three central attitudinal aspects which are: the perception of freedom of decision making; a willingness to experiment and take risks; and innovativeness and receptivity to new ideas. The definition of individual modernity presented in this thesis (see page 6), centering on autonomy and rationality, is of this school. Most recently, Waisanen (1971) has stated that "the essence of modernity is autonomy," with autonomy being "the perception of opportunity for decision-making on the basis of self-relevant criteria" (page 184).

A Definition of Individual Modernity

At this point, I offer a new definition of individual modernity. It is abstract, in order to avoid the theoretical and methodological cul-de-sacs of the three traditional types of definitions. It is a part of the newer abstract definitional approach, and subsumes the specific dimensions and characteristics used by other scholars of the field in their definitions of individual modernity.

Individual modernity is a configuration of values, attitudes, and behaviors characterized by individual autonomy and rational decision making.

Autonomy

Autonomy refers to the actor's perception of the nature of the relationship between himself and social systems.* Autonomy is the actor's perception of both his relative independence from any single social system, and his interdependence with several social systems. In this scheme, heteronomy would be the perception of complete dependence on a single social system, while ideal-typical alienation would be the perception of complete independence from all social systems. This conception of autonomy and heteronomy come from the work of Piaget (1932) on the source of rules and moral judgments of children. "For very young children, a rule is a sacred reality because it is traditional; for the older ones it depends on mutual agreement. Heteronomy and autonomy are the two poles of this evolution" (page 195). This

*I am using the term "social system" in a generic sense to indicate any "collectivity in organized pursuit of consensually carried goals" (Waisanen, 1963:18), and thus refers to families, communities, organizations, associations, nations, societies, etc.

development in the child is a result of contacts with more groups outside the family, and is analogous to the individual changes required as a society becomes increasingly specialized in its division of labor (pages 159-60).

The brief, general, conceptualization of alienation here is not inconsistent with other works on the concept (for example, see Seeman (1959)).

The relationship between these three perceptual states is most clearly seen as a space bounded by the three continua between the three ideal-typical end states (see Figure 1).

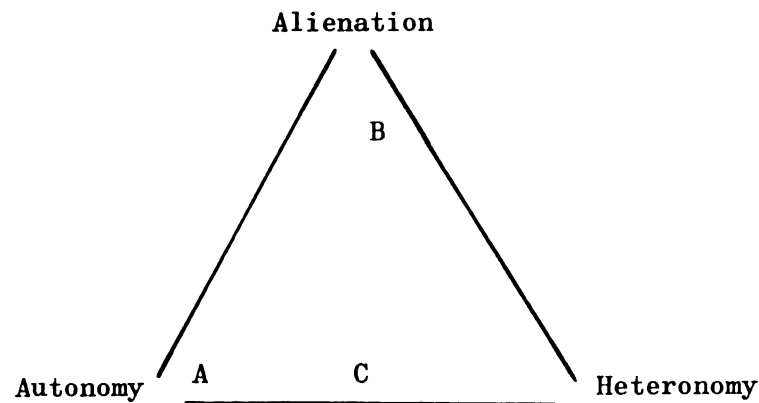


FIGURE 1
THE CONCEPTUAL RELATIONSHIP BETWEEN HETERONOMY,
ALIENATION AND AUTONOMY

Any actor may thus be seen as occupying some point with greater or less approximation to the three end states. Actor A (see Figure 1) would be a highly autonomous individual; B would be described as low in autonomy, but alienated from a source of earlier heteronomy; and C as a person between heteronomy and autonomy without significant loss of meaningful systems to participate in. (This conceptualization of these states permits easy discussion of a typical rural-urban migrant

in developing countries, with a move from heteronomy to alienation to perhaps autonomy.)

Also, in looking at the conceptual relationship of the three in this schema, one can easily understand why Armer and Schnaiberg (1971) found a strong negative correlation between alienation and autonomy (or "modernity") in an analysis of modernity scales which were designed to measure position on the modern-traditional (or autonomy-heteronomy) continuum.

Autonomy enables the actor to consider choosing among various social systems before making behavioral commitments. The autonomous actor perceives the possibility of participating in a variety of social systems for material gains and psychic rewards. (The heteronomous actor is able to consider participation in only one social system; while the alienated actor can conceive of no rewarding participation in any available system.)

Our definition of autonomy is not accidentally similar to several concepts found in theories of individual modernization. Kumata and Waisanen (1969:52) mention the individual's perception of "freedom of decision making." Inasmuch as alternate solutions to problems are often tied to different social systems, and each social system usually prescribes a preferred solution, the perception of the ability to make decisions indicates relative independence from any one, and interdependence with several social system(s).

It is also apparent that in speaking of autonomy in this fashion, I am speaking of the perception of "intersystemic participation," or

the perception of the opportunity for it (Waisanen, 1969:8; Waisanen and Kumata, 1969:5,6).

It should be noted that not all behavioral scientists regard autonomy as a characteristic particular to modernity. As an example, Cantril (1965:318) says, "Human beings have the capacity to make choices and the desire to exercise this capacity," and that this characteristic is part of "a genetically built in design that sooner or later must be accommodated" (page 315).

Rational Decision Making

The second characteristic of individual modernity is the ability and tendency of the actor to make rational decisions. The concept of rationality is problematic, with strong philosophical overtones and is susceptible to culture and value biases. (See Ginsberg (1965) for a philosophical discussion of rationality and social development.) To minimize to avoid these problems, I will be defining the concept in the most minimal and generic sense.

A rational decision is one made only after the actor has purposefully considered the implications of at least two alternate solutions to the problem.

In making a rational decision, the actor attempts to collect information about possible solutions, critically evaluates the sources of this information, and informally assigns probabilities to possible outcomes, and estimates the values of alternate rewards and costs. The rational decision is made after this process.

This definition follows Simon's discussion of rational choice (1957:241-60). He notes that among the "givens" or constraints common to all rational decisions are: "(1) a set of alternatives open to choice, (2) the relationships that determine the pay-offs ('satisfactions,' 'goal attainment') as a function of the alternative that is chosen, and (3) the preference-orderings among pay-offs" (page 242).

A thorough theoretical and empirical analysis of "the preference-orderings among pay-offs" is highly problematic within the boundaries of this project. I will therefore make the assumption that "purposive consideration of two or more alternative solutions" subsumes the constraints posited by Simon.

(It should be noted that this definition of rational decision making does not address the question of the conservative or "progressive" nature of any specific solutions nor the "correctness" of any solution as evaluated by a value position or by the eventual result. However, it can and will be demonstrated that the actor who is predisposed to making rational decisions is also generally predisposed to new and innovative solutions. Thus, the frequent selection of new and innovative solutions is a derived characteristic of rational decision making--not a defining characteristic.)

Several scholars have noted the continuation and, more interestingly, the revival of "traditional" traits among segments of societies which would appear to have become "modern." The continuation of some traditional traits is to be expected in any "modern" society. Modernization, while a force of the greatest magnitude, does not affect all segments of social life equally. Gusfield (1967) provides an

excellent statement on the nature of the complexities and segmentally differing nature of the play between tradition and modernity. Hoselitz (1961) makes the useful distinction between "traditional" norms and "traditionalistic" ideologies, the latter being a result of, though inimical to, economic development. The revival or revitalization of traditional traits, or "neotraditionalization" (Rogers, 1969:16-17) should not be seen as a denial of, or countervailing force to, modernization. Or, it can be argued that the success of modernization in some institutions (e.g., economic, politico-administrative) makes possible the renaissance of interest and activity in traditional traits in other institutions (e.g., religion, art). And the selection of traditional alternatives may well be made as a result of a rational decision.

The Tie Between Autonomy and Rational Decision Making

The two components of individual modernity (individual autonomy and rational decision making) are empirically interrelated, and each is logically necessary for the other to occur. If the actor is heteronomous, the opportunity for making individual decisions will not be perceived, and any problem requiring a decision will be referred to his social system for a solution (usually a traditional solution). The ideal-typical alienated person, being completely independent from all social systems, is unable to arrive at solutions which would require participation (and interdependence) with any social system.

In opposite direction, the actor who appears to have considerable inter-systemic ties and thus would be thought to perceive alternate

solutions, but who consistently makes decisions solely on the basis of the dictates of one social system is not truly autonomous. And the person who is unable to make decisions requiring participation in any social system is more correctly seen as alienated rather than autonomous.

The Tie as Seen in Waisanen and Kumata's Scheme

The interrelationship between autonomy and rational decision making is further explicated in inspecting the conceptual specification of individual modernity as presented by Waisanen and Kumata (1969:4-5). They suggest four behavioral-attitudinal modes: (1) information seeking, (2) planning and investment, (3) inter-systemic participation, and (4) creativity and innovativeness (page 4). Of these, "inter-systemic participation" is most similar to the core meaning of autonomy. "Information seeking," as the search will generally involve a variety of social systemic sources, is also exemplary of autonomy. And the search for information regarding the existence and evaluation of alternatives is also a crucial aspect of rational decision making.

"Planning and investment" is the most similar of these four to the concept of rational decision making. Planning and investment are behavioral commitments to the value of rationality. The selection of alternatives for future action (planning) and the commitment of scarce resources to these selected alternatives (investment) are indicative of rational decision making, and to the extent that these will generally involve several social systems, autonomy.

"Creativity and innovativeness" are examples of high degrees of autonomy and rational decision making. They indicate that the actor is willing to carry out the search for information with his own resources (experimentation) and attempt to develop previously unknown alternatives (creativity). These activities require both a commitment to rational decision making and the autonomy to inspect alternatives not prescribed (or even those which are proscribed) by particular, relevant social systems.

Waisanen and Kumata suggest these four modes are in a developmental sequence (in the order listed above). My model would suggest that autonomy is antecedent to rational decision making. The apparent discrepancies in sequence are explained by their inclusion of behavioral modes, while I offer behavioral aspects as a separate component, related to both. Thus, by utilizing the feedback loop from behavioral aspects in my model, either model can address the same phenomena with little quarrel (see Figure 2, page 33). However, the Waisanen and Kumata scheme is much more parsimonious in this conceptual area.

This Definition Compared with Inkeles' Listing Definition

It is appropriate to compare these attitudinal components (i.e., autonomy and rational decision making) of individual modernity with previous definitions to note their similarities and differences. Inkeles (1966:141-44) discusses nine themes characteristic of individual modernity. Each of these themes can be generally subsumed in the two components of individual modernity presented in my definition. (As Inkeles' listing definition is very typical of listing

definitions, and is also one of the most extensive and adequate, a comparison with my definition is appropriate. As the concept of individual modernity is derived from, and generally thought of, in the terms presented by this and other listing definitions, it is essential that I demonstrate the consistency between those definitions and my more abstract definition.)

Inkeles notes a "readiness for new experience and . . . openness to innovation and change" (page 141). This orientation can be subsumed in the process of rational decision making, and also necessitates a high degree of autonomy. This orientation is antithetical to the automatic reference to traditional solutions for problem solving, characteristic of traditionality.

The central characteristic of rational decision making is the purposive consideration of at least two alternatives. Central to this characteristic is the positive orientation toward innovation, change, and new elements. While our definition stressed that any particular decision need not arrive at a "progressive" decision, we assert that in order for a person to make rational decisions, he must inspect alternate solutions. In most cases, some of these alternatives will be relatively new elements, and an awareness of these newer elements will facilitate rationality. As people tend to be most aware of those things they are attracted to, a positive disposition toward innovative or "progressive" alternatives facilitates an increased number of available alternatives. To summarize, the individual who makes rational decisions must be aware of several solutions (some of which

will be new); he must have a positive disposition toward new things.

Secondly, Inkeles notes: "a disposition to form and hold opinions over a large number of problems and issues" (page 141). This theme can be derived from the nature of autonomy, as by virtue of relative independence from one system, and contact with other systems, the actor can receive alternate opinions from other systems and receive support for these opinions.

Inkeles mentions a third theme regarding the modern individual's awareness of time and his tendency to be oriented toward the future and present rather than the past (page 142-43). This cognition of time as a scarce commodity and a concern for future states is an essential component of rational decision making. Implicit in the nature of decision making is a strong concern about the future and an awareness of time. One can only make decisions which have consequences in the future. The actor who avoids decisions (i.e., utilizes only traditional solutions) demonstrates either a lack of concern about the future or more likely a strong belief that fate alone decides the future. And a general belief in fatalism is usually accompanied by apprehension of the future, rather than anticipation of the future.

Inkeles says that the modern man is "oriented toward and is involved in planning and organizing and believes in it as a way of handling life" (page 143). Planning or the inspection of alternate solutions is the central aspect of rational decision making.

In the fifth theme, Inkeles speaks of the attitude of modern man toward his physical environment. He states that modern man believes

that he can learn "to dominate his environment in order to advance his own purposes and goals, rather than being dominated entirely by that environment" (page 143). Again we see the close tie between the autonomy to hold this position and the inspection of alternatives (one of which may be the manipulation of the physical environment) of rational decision making. (If the nascent environmentalism movement is successful, this "modern" attitude may come to be regarded as anachronistic. This illustration of possible changing criteria points out one of the flaws of the listing approach.)

Inkeles says that modern man "has more confidence that his world is calculable, that other people and institutions around him can be relied upon to fulfill or meet their obligations and responsibilities" (page 144). The theme of calculation of outcomes is central to rational decision making, and the theme of trust in impersonal others is a product of autonomy and experience in a variety of systems. Inkeles also speaks of a lack of fatalism in this context (page 144) which, of course, is central to the premise of decision making.

"The modern man has more faith in science and technology, even if in a fairly primitive way," states Inkeles (page 141). The elementary belief in a general scientific approach to problem solving shows a desire to make decisions rationally. Technology also provides an increased array of alternatives to choose among.

Inkeles notes an increased "awareness of the dignity of others" and the greater perceived importance of the individual in many situations (page 144). This value is closely tied to autonomy, as the actor, perceiving the independence and interdependence of himself as an

individual actor, projects this perception to other individuals.

This increased tolerance of others is also tied to rational decision making, as the modern man, with a positive awareness of, and curiosity about new things, sees other people as potential sources of help and information. The more traditional man, tending to avoid new or alternate means and goals, will likely regard others, particularly unknown others, as a source of threat or competition. However, this aspect is most correctly seen as an openness to rational decision making, and thus, most closely aligned with autonomy.

The modern man also "believes that rewards should be according to contributions" or believes in distributive justice" (page 144). This value orientation derives from the process and experience in assigning probabilities to rewards in the rational decision making process. And, the actor's autonomy permits him to reject those social systems and reward systems which violate his expectations generated in rational decision making.

Inkeles' definition can thus be adequately subsumed in the two major themes of autonomy and rational decision making. And as Inkeles' definition is one of the most adequate and extensive of the listing definitional approaches, my definition should be an appropriate and parsimonious substitution for the listing definitions of individual modernity.

This Definition Compared to the Relational Definition

The relational definition of individual modernity as those attitudes, values, and actions which enable effective action in a modern social system is useful in the issues which are raised by this definition.

The term "modern" and its derivatives "modernity" and "modernization" are mischievous in that they carry several unfortunate implications. They carry the idea that conditions of the present time are "modern," those of the past "not modern." Surely what was "modern" in the 1890's is far different from what is "modern" today. The referent of a "modern social system" is based on the time of one's writing as well as the nature of that social system. By forcing a present orientation on a phenomenon, "modern" makes it difficult to see similar patterns and characteristics in past ("pre-modern") and possible future ("post-modern") phenomena.

The term also carries a Western-industrial bias. Since present Western-industrial societies have passed through conditions presently existing in the "non-modern" countries, there is a strong, but often unstated, assumption that when countries become "modern" they will be industrial, urban, secular, nations. There is also a strong technological emphasis in the idea of "modernity." (Note Inkeles' inclusion of punctuality, science and technology, and domination of the environment.) While this association of "modern" with advanced technology is empirically justified, I feel it is unnecessary, and even misleading, to associate them in its conceptualization and definition.

Individual Modernity in Pre-Modern Systems

If we define individual modernity in terms of autonomy and rational decision making, it becomes possible to inspect this social psychological orientation in a variety of social, technological, and cultural settings.

Autonomy and rational decision making should result in behavior typified by both risk-taking and investment. (By risk-taking I do not mean a superstitious, fatalistic, or compulsive gambling, nor by investment do I mean a mere hoarding of existing resources. Nor do I wish to include in this conceptualization of risk-taking, risks taken solely for the immediate thrill received.) Behavioral modernity is typified by the calculated risking of time, material, and energy resources (investment) for some anticipated greater return in the future. The idea of some deferral of gratification is central to investment and risk-taking.

Viewed in this light, one can begin to notice individual behavioral modernity in a variety of "pre-modern" societies. Early traders, merchants, and money lenders must be seen as behaviorally modern in their economic activities. Explorers and military leaders attempting to discover, establish trade routes and relations, or conquer and exploit, must be seen as risking much to receive rewards. Colonists, settlers, and traders are clearly members of several social systems (autonomy) and facing new situations must purposively consider several solutions to problems (rational decision making). (As one example, see Mander's analysis of the Spanish conquistador in the Americas, 1969:83-91.)

These examples from pre-industrial societies also serve to emphasize the possible limitation of modern behavior to selected institutional segments of a society. It is not unreasonable to suggest that individual behavioral modernity is most likely found first in trade and other economic activities, both in internal (e.g., engineering, public works such as irrigation, and distribution systems) and in external areas (e.g., inter-societal trade, economically motivated conquest). Individual modernity is least likely to appear early in family and religious systems.

Individual Modernity and the Nature of the Social System

In viewing modernity as rational risk-taking rather than mere technological competence, we can begin to specify those social and ecological systemic conditions which facilitate risk-taking and modernity.

A society surviving at or near a subsistence level (e.g., hunting and gathering societies, horticultural societies (Lenski, 1970:123-25)) can ill afford to take risks or to reward or condone those who do. Having no storable surplus for subsistence, the cost of failure is so absolute that it proscribes risk-taking. In addition, time, resources, and energy apart from immediate subsistence concerns are minimal, and there is little to risk or invest.

With the creation of a storable surplus (surplus beyond the subsistence level) and the coordination of its collection, storage, and distribution (Sanders and Price, 1968), time, energy, and resources are available for investment in limited risks, and the possible failure is

not crucial to the social system. Trade, exploration, loans for interest are concurrent with an increase in technology and control of resources.

Thus socially rewarded risk-taking increases with the amount and surety of its economic surplus. If a society is technologically advanced and sure of access to sufficient raw material, risk-taking and investment is likely to be relatively commonplace. To the extent its resources are limited and its technology is simpler, risk-taking will be more proscribed, and less modernity (qualitatively and quantitatively) will be observed.

(Other variables must, of course, be considered. The society's system of stratification is one additional pervasive influence. Lenski (1970:248-50) following Childe (1951) in speaking of agrarian societies notes that the surplus was entirely controlled by the ruling classes, who lacked expertise and motivation for innovation or risk-taking. The peasant class was denied opportunity for reward for risk-taking or innovation, and thus, despite adequate surpluses, little modernity was observed.)

Thus, the large, predictable economic surpluses of Western industrial societies facilitate (and reward) widespread modern behavior, and as a result, Western industrial nations have the greatest amount of individual modernity, both as measured in the proportion of their people who are modern and in its prevalence in many institutional areas.

This above discussion has viewed individual modernity as a result of technological advances making a surplus available. It is equally

correct to look at individual modernity and its resulting innovativeness, experimentation, and risk-taking as producing the advances in technology, trade, and resources which increase the available predictable surplus. For this reason, governments of developing nations are generally anxious to increase the level and breadth of individual modernity in their people.

It is interesting to look briefly at the structures of a social system which supports, regulates, and rewards risk-taking (see Moore, 1961). At the higher levels of technology, societies contain a variety of organizations which have the specific goal of innovation and experimentation. Research institutes and foundations, and research and development centers are common in the technologically advanced nations, rare to non-existent in undeveloped nations. The growth of laws regulating risk-taking are noticed in social systems as they increase their level of technological development. Norms which make investment legal (and less risky) (through corporations, laws for collection of debts, and the resolution of bankruptcy) encourage risk-taking in economic areas. Finally, rewards for risk-taking in technologically advanced nations are not presented solely in economic terms but in social honor as well.

The degree to which achievement (vs. ascription) dictates one's standing in the stratification system is indicative of the social rewards for risk-taking and investment. The obvious comparison of the social prestige of the Medieval money lender and a present day banker illustrates this relationship (Hoselitz, 1960:61-66).

An Excursus on the Future of Modernity as Seen in the Youth Counter-Culture

Much has been written recently regarding the middle class adolescent and young adult bohemian reaction to the technologically advanced society of the present United States. In reaction to (as the counter-culture sees it) an over-rational, materialistic, impersonal culture, the new orientation emphasizes non-rationality, sensuality, and immediate gratification. This "counter-culture" or "the hippies" (Rozak, 1969; Berger, 1971; and others) can be viewed (certainly so in terms of their own rhetoric) as an anti-modern movement. While alienated from the institutions and organizations of the dominant culture, they attempt to participate solely within the systems of the sub-culture. Homogeneous youth ghettos and attempted communal subsistence farms intensify the heteronomy of its participants. The additional rejection of rationality and the substitution of intuition, sub-cultural dogma, astrology, emotional religions, etc. in its place further add to its non-modern nature. It may be seen as an "escape from modernity."

Some writers (for example, Reich, 1970) have argued that the counter-culture with its anti-materialism and non-rationality is the harbinger of a new society-wide culture which will be made in the image of the hippies. If this is likely, the concept of modernity would indeed become archaic and irrelevant for any future study.

However, I feel this prediction is simplistic and fails to consider all elements of the counter-culture. I would present the following speculations. I do not see the counter-culture as uniform

and monolithic but see at least three trends at the present which are related to the counter-culture and which will likely continue. First, many of the artifacts and activities of the counter-culture will be adopted (through the commercial market-place) by broad segments of the society as leisure time items. Many of these will be mere fads or fashions, but some will be more lasting. Middle class "weekend hippies" will continue to play an important role within bureaucratic and technological systems, with no reduction but perhaps an increase in their rationality and autonomy.

Secondly, some segments of the counter-culture will continue in self-imposed isolation, inhibited from participation in the larger society by deviant subcultural values ("anti-modern"), a lack of marketable skills, and discrimination from the dominant culture. It is highly unlikely that this style of life can become dominant, as it requires either a wholly non-productive role in the economic institution, or because the majority of the population would not (and could not) survive on the production style (subsistence farming and handicrafts) proposed by this group. It is essentially a millenarian-style movement, although it may continue for many years as a collection of deviant cults.

A third trend will likely have the largest innovative role in the future. This collectivity, presently best seen in the editors and contributors to the Whole Earth Catalog (Brand, 1971), is attempting an innovative combination of technology and counter cultural values. This group might well be considered the "most" modern, in that their autonomy permits participation in, and selection of ideas from, many

social systems. Their wide-ranging and critical inspection of goals and values as well as means shows an essential rationality. Their central concern with environmental and ecological concerns frequently shows an eco-systems awareness of considerable rationality. This movement is concerned with attaining humanitarian and individualistic goals but considers what rational and appropriate new and old knowledge and technology can be used to reach these goals. As this autonomy and rationality is identical to that presented in the new definition of modernity used here, this definition should serve as a viable definition for a variety of cultural situations.

Further, if this third trend proves to have a significant influence on future society, modernity, as now presented in some listing definitions, will be archaic. Technological and work aspects of future society will probably be de-emphasized (though not abolished). However, this new definition of modernity, centering on rationality and autonomy, should continue to be a viable concept for identifying and studying a class of phenomena.

This Definition Compared to Relativistic Definitions

Stephenson's relativistic definition (1968:268; also page 4, this paper) essentially denies the possibility of universally applicable concepts, and as such inhibits the comparison of results from different studies (see Schnaiberg, 1970:402-03). However, there is nothing in the operational definition of modernity presented in his study of Kentuckians which cannot be subsumed under the more abstract and universal dimensions of this new definition.

Behavioral Aspects of Individual Modernity

The attitudinal dimensions of individual modernity have been discussed above in comparison of Inkeles' definition with mine. It is now appropriate to mention some of the more concrete behavioral aspects of individual modernity.

As an expected behavioral result of rational decision making, we observe a tendency to experiment purposively, to test new things and methods, and to actively search for other methods of achieving goals. We also observe the tendency to make investments in time, energy, and materials for anticipated return in the future. We observe a greater punctuality in time related behavior and the treatment of time as a scarce commodity. And we note an approximation to the scientific method for gathering and evaluating information.

As a result of the belief in distributive justice, and the related idea that rewards are distributed on the basis of actual achievement rather than on the basis of ascribed characteristics, the modern man believes in the possibility of individual achievement. Thus we see not only evidence of increased aspiration but behavior which has the intended end of returning greater rewards to the actor. The modern man invests time, energy, and goods for a return, or in other words, tries to achieve. One writer, McClelland (1961), sees "achievement" as the crucial, central, and defining characteristic of modernity.

The modern man's perception of the greater value and importance of the individual leads not only to attempts to increase his self-esteem by individual achievement and participation in a variety of social systems, but also creates a belief in the value of individuals

per se. This leads to a greater tolerance of others and results in an increased amount of egalitarian behavior.

The belief in man's ability to affect change and the willingness to form and hold opinions leads to greater participation in pressure and interest groups. These would include labor unions, political parties, business organizations, and other voluntary organizations.

The belief in the calculability of life and trust in impersonal others has observable consequences in the modern man's ability to participate effectively in bureaucratic organizations as a client, and in consumptive participation in the mass media to gain information as well as entertainment.

CHAPTER II

A PATH MODEL OF INDIVIDUAL MODERNITY

Causes of Modernity

Having arrived at a definition of individual modernity which appears applicable to a wide historical and cultural range of related social psychological orientations, the question of the origin of this orientation remains to be answered.

This question may be approached at two levels: the societal, to explain the degree of aggregate psychological modernity in a population; or individually, to trace the factors in an actor's life leading to his own degree of individual modernity.

McClelland (1961) in looking for the causes of an aggregate increase in achievement motivation (a concept closely tied to individual modernity) was content to identify the cause as an increase in the achievement imagery of the teachings of religion, stories, and parents.

The most productive path toward explaining societal modernity would appear to be the tracing of the inter-relationships between ecological factors, economic surplus, and socially taught, supported, and advocated risk-taking. The conclusions of such an investigation should agree with the relationships presented above in the discussion of the tie between individual modernity and the nature of the social

system (see pages 20-22). However, such an investigation is beyond the scope of this research.

It is the purpose of this paper to identify those conditions affecting different individual orientations toward modernity, particularly as they exist in the Western world at present. A most salient variable, both empirically and theoretically, is formal education.

Education and Modernity

Many researchers have observed and noted this distinct configuration of values, attitudes, and behaviors that are associated with successful participation in modern and modernizing social systems (see Anderson and Bowman, 1965). The cause of this configuration (variously labeled "modernity," "modernism," or as a process, "modernization") has been attributed to a variety of factors. McClelland (1961) would attribute the cause of modernity to the acquisition of the "need to achieve." In an earlier paper, Inkeles (1960) found that employment in industry was the factor common to those ranking high in those attitudes and values. Later, Smith and Inkeles (1966) describe modernity as the product of (and requisite for) participation in modern systems. Lerner (1958) suggests that a combination of mass media participation, urban location, and literacy lead to individual modernity. However, most studies of individual modernity arrive at the conclusion that a most powerful predictor of individual modernity is success in formal education.

Inkeles states that education is the pre-eminent force for modernity (1966:146). Elsewhere (1966) he notes that "Formal education

is clearly the most consistently powerful influence in Table 3," (a table of correlations relating education, mass media usage, urbanism, work experience, factory environment, standard of living, and other variables to "active citizenship" (page 1132)). Almond and Verba note: "Among the demographic variables usually investigated--sex, place of residence, occupation, income, age, and so on--none compares with the educational variable in the extent to which it seems to determine political attitudes" (1963:379). Harbison and Myers (1964) speak of the crucial nature of education for economic development.

Prediction and co-variation are, of course, not sufficient to establish causality. Formal education is often used as a control variable by those who wish to study the effects of other variables on individual modernity. As a result, formal education is often the recipient of adequate analytical but minimal theoretical attention. And when education is considered as a theoretically relevant variable, immediate causality is often attributed to it. Inkeles (1966:146-47) states that allowing for social class differences in attendance and the traditionality of some schools,

We may still say that education, especially in the schools emphasizing the more modern type of curriculum, seems to be the most powerful factor in developing a population more modern in its attitudes and values. This effect depends in part on the direct instruction provided, but we assume as well that the school as a social organization serves as a model of rationality, of the importance of technical competence, of the rule of objective standards of performance, and of the principle of distributive justice reflected in the grading system.

To these, I can add several other important functions of the formal education system as it contributes to individual modernity. Participation in school teaches an awareness of and respect for time, and

rewards punctuality. It provides experience with impersonal authority and rules. It also presents semi-modern or modern role models for emulation in form of older students, teachers, and administrators.

While these observations on the significant contributions of formal education to individual modernity are all generally valid, I find that looking at education as the direct and immediate cause of individual modernity has serious shortcomings. Waisanen (1971) and Waisanen and Kumata (1969) offer similar observations on the theoretical and empirical ties between formal education and modernity.

If education is seen as the immediate cause of individual modernity, it would suggest that we disregard the large number of very important experiences in adult life which contribute greatly to modernity. This view would imply an "educational determinism" which is unjustified on theoretical and empirical grounds. (See Waisanen's (1971) caveats regarding the conditions influencing the effectiveness of education in stimulating the growth of modernity.) Secondly, it allows no consideration of the nature of the social environment and the manner in which this environment may inhibit or stimulate the utilization of the educational experience. Thirdly, it implies an excellence of educational experience that is rarely encountered.

Education and Modernity--A Path Model

In an attempt to explain the profound effects of education on individual modernity (but avoiding the deficiencies inherent in attributing immediate causality to education), I have developed a

processual model which considers intervening social and psychological factors. (See Figure 2, page 33)

The model states that success in formal education (positively related to antecedent conditions) contributes to the individual's power. Education also contributes to physical and psychic mobility, which in turn are positively related to the actor's power. The actor's perception of his power, which is self-perceived efficacy, is positively related to the components of individual modernity. And behavioral modernity, assuming a modern social system, increases the individual's power.

Hypotheses and Analysis

While the test hypotheses and proposed analytic techniques will be more fully discussed in a later section (see Chapter III), it is appropriate to make a general statement at this time.

My major concern is in ascertaining the degree of empirical support for the model as presented. In this sense, the model itself can be regarded as the major hypothesis or a collection of hypotheses. The model will be tested independently with data from each of five national sample surveys, from Costa Rica, Finland, Japan, Mexico, and the United States.

I hypothesize that the analysis will show that:

- I There are no negative relationships between components in the model; and
- II The degree of association between components is strongest when they are theoretically adjacent, and weakest when they are theoretically distant.

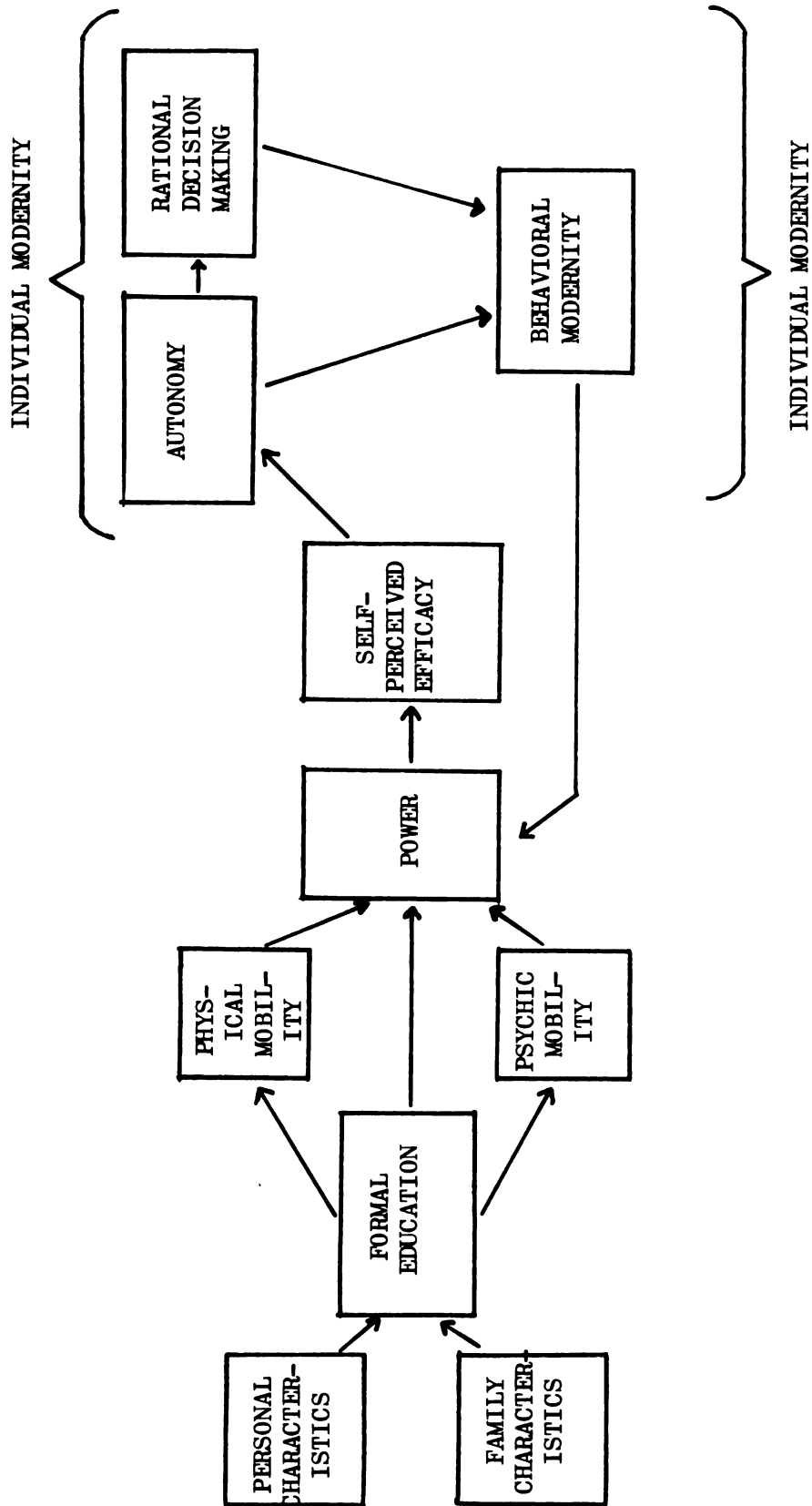


FIGURE 2

SCHEMATIC REPRESENTATION OF THE MODEL OF THE PROCESS OF INDIVIDUAL MODERNIZATION

Components of the Model

I will now present a discussion of the various components of the model. In the discussion of each component I will provide a definition, where appropriate, and a discussion of the nature and effects of the component.

Following the discussion of the rationale for, and theoretical effect of, each component I will include the actual indicators used in measuring the component and in analyzing its relationship with other components. (The items presented here are those used in the United States survey. Following each indicator is mention of its values which are hypothesized to be most directly associated with a high level of individual modernity.)

Because of the differing levels of measurement for the various indicators, two tests of the model were conducted with each sample. Those indicators assumed to measure at the interval level or above (i.e., ordinal, interval, and ratio measures) are noted by an (I), and were analyzed as a collection. Those measuring at the nominal level were analyzed as a collection and are indicated by an (N). In addition, some indicators which measured at the assumed interval or higher were also dichotomized and included in the analysis of the nominal indicators. These indicators are followed by both (I and N).

Antecedent Conditions--Personal Characteristics

The initial factors to be considered in this model are "Personal Characteristics" and "Family Characteristics." Together they make up

"life chances," or more specifically in this model, "chances for success in education."

"Personal characteristics" are those which are often labeled "demographic." They consist of the individual's age, sex, and race. Age serves as a crude estimator of the social and educational system at the time of his childhood, and as an indicator of the number of possible years in extra-familial social systems. Sex estimates one structural constraint on participation in education and employment, as does race.

What was your age on your last birthday? (I)

(Younger persons are likely to be more modern.)

Sex (noted by interviewer) (N)

(Maleness is related to modernity)

Race (noted by interviewer) (N)

(Whites are more likely to show individual modernity.)

(Used with United States data only.)

Antecedent Conditions--Family Characteristics

"Family Characteristics" refer to those characteristics of the actor's family of socialization, which are frequently labeled "social class." More specifically, they refer to the occupation and education of the person's parent or guardian. These two variables are felt to be good predictors of the individual's opportunity for participation in educational systems, and indirectly of the individual's success in the economic field. Another factor which has a similar effect is "place of childhood."

What is the occupation of the person who raised you? (I)

(Higher occupation related to modernity.)

What was the last grade or class completed by the person who raised you? (I)

(Higher education related to modernity.)

Where did you grow up? (coded for size of community) (I)

(Urban response related to modernity.)
(Data available for Finland only.)

Formal Education

While formal education is a central concept in the model, it is conceptually and operationally simple. I am concerned here only with the level of achievement in formal education, as measured by the last year or grade completed.

While it would be informative and interesting to have data on the nature of the school (public, private, or parochial; rural or urban; size, etc.) and the nature of the curriculum (technical, general, vocational) we must infer this information, where possible, from other measures. And as these inferences are of necessity tenuous, they will not be included in the formal analysis.

Formal education serves a variety of functions in the context of increasing individual modernity. As Inkeles suggests, it does "teach" modernity and does partly contribute to individual modernity (see quotation on page 30). However, I see education's more major contribution in preparing the individual for participation in a modern social system--and the successful participation in a modern social system is the more immediate determinant of individual modernity.

Formal education prepares the individual for participation in a modern social system in a variety of ways (see pages 29-32 above). It gives the individual opportunity to learn both general and specific skills which are necessary for participation in a modern system. General skills include the ability to read and write and the ability to perform elementary mathematics. Specific skills include advanced training in mathematics, improved verbal skills, and specific vocationally related skills.

Formal education also presents certain social psychological orientations (including those mentioned by Inkeles and myself above) including trust in impersonal others, an orientation to individual achievement, a belief in distributive justice, and an awareness of time as a scarce commodity.

The idea that is central to the model is not only that formal education introduces the student to these components of modernity, but the model emphasizes a consideration of the ways in which participation in the modern system as an adult either reinforces or diminishes the effects of formal education.

What was the last grade or class you completed in school?
(I and N)

(Higher levels of education are related to high levels of individual modernity.)

Physical Mobility

Physical mobility refers to the actual physical mobility of the individual to a variety of social systems. The effects of increased physical mobility are generally to reinforce the aspects of modernity

introduced to the student in school. Physical mobility tends to: increase awareness of new ideas and new things, emphasize the importance of time, and illustrate the effectiveness of social arrangements new to the individual.

Where were you born? (answer compared with present residence, and coded for nature of difference) (N)

(Change of residence is associated with individual modernity.)

(Data missing for Finland)

Have you ever visited or lived in any foreign countries including Canada and Mexico? (other neighboring nations substituted in other samples) (N)

(Foreign travel is associated with individual modernity.)

Psychic Mobility

Psychic mobility is conceptually similar in its effects. Psychic mobility refers to vicarious travel, and results in the individual's ability to imagine himself in different social contexts, to see new things, to see the possibility of change, and to imagine himself as a different social person. Psychic mobility is closely related in its process and effects to Lerner's (1958:49) concept of "empathy."

This acquired ability to incorporate the perspectives and attitudes of others of different social groupings into the individual's "self" makes possible participation in a wider variety of social relations (Mead, 1934, in Strauss, 1964:218-22). "Only through the taking by individuals of the attitude or attitudes of the generalized other toward themselves is the existence of a universe of disclosure, as that

system of common or social meanings which thinking presupposes at its context, rendered possible" (Mead, 1934, in Strauss, 1964:220).

Psychic mobility is greatly facilitated by physical mobility and by consumptive participation in the mass media, in which the individual sees, reads, or hears about a variety of situations different from his own immediate social system.

The indicators of psychic mobility are those activities which generally result in increased psychic mobility. These items measure the respondent's participation in the mass media in the consumer role.

About how much time each day would you say you look at TV? (I)

(Greater viewing is related to individual modernity)

About how much time each day would you say you listen to the radio? (I)

(Greater listening is related to individual modernity)

Which, if any, magazines do you read either regularly or occasionally? (coded by number of magazines read) (I)

(Greater reading is related to individual modernity)

Which, if any, newspapers do you read regularly or occasionally? (coded by number of newspapers read) (I) Also as (N) for Finland

(Greater reading is related to individual modernity)

I have included a residence variable as an indirect indicator of psychic mobility, as residence in an urban area exposes the individual to a large number of sensory inputs in much the same way the mass media does (and rurality inhibits these). It also presents the individual with the opportunity to participate in movies, displays of various kinds (store windows, billboards), and many different kinds of styles of life. (Place of present residence is also not explicitly an indicator

of physical mobility, as even at the urban end of the scale the respondent may have spent his entire life in that one city.)

Size of place of residence (I and N)

(Urban place of residence and modernity are related.)
(No data for Finland)

The Effect of Physical and Psychic Mobility

Mobility may be thought of as one possible channel of "self-education," as the individual who has either very low or no formal education but is highly mobile physically and psychically may well develop the cognitive skills necessary to participate effectively in a modern social system. Formal education, however, increases the probability of increased mobility, and mobility, both physical and psychic, reinforces the elements of modernity presented in school.

The location of the mobility components as exerting their influence after the education experience is problematic. Lerner (1958:71) suggests that media participation and urbanism are antecedent to literacy. However, Lerner's model stems from research prior to the availability of the transistor radio and when extra-urban modernity was less prevalent. In other situations mass media and formal education have been combined to increase literacy (e.g., Roy et al., 1969).

The temporal (and therefore spatial) arrangement of this model is predicted on a number of assumptions. In particular, I assume that the most common period of lifetime for formal education is in childhood. This assumes a society with moderate to adequate primary school systems throughout the country. (This assumption is met in the five nations surveyed.)

The model also assumes a national social system which allows and rewards individual innovation and achievement in some major institutional arenas. This assumption is also met by the five nations studied.

The effects of achievement in formal education and of increased mobility are to increase the individual's chances of possessing increased power. (However, I hypothesize that education will have the strongest effect of these three components.)

Power

The indicators I will use to measure the individual's power are such things as: total income, ownership of a farm or a business, economic authority, and occupation. These indicators derive from a non-zero sum conception of power. More specifically, I am utilizing the conceptualization of power as presented by Adams (1967:31-46).

According to this conceptualization, power is seen as control over the environment of other social actors; each actor in a social interaction has some power, although almost always each has a differing amount, and decisions as to appropriate action are based on estimates of one's own power relative to that of others (Adams, 1967:32-35).

Power is found in all aspects of social life, but the data I have available limits consideration to the economic sector. However, this is not a serious deficiency as most would concede that in the five nations studied the economic sector and economic power are predominant in determining action in other sectors.

Power was defined above as "control over the environment," and the most relevant indicators of this concept are those which deal with

the individual's ability to provide himself and his dependents with material goods, his ability to influence others, and his ability to manipulate his social and physical environment.

What is your occupation? (I)

(Higher status occupations is related to individual modernity)

Counting rents, interests, wages, salaries, and things like that, in which of these categories did your family's total income fall last year before taxes? (I)

(Higher income is related to modernity)

Do you own, rent, or work this farm on shares? (N)

(Ownership is related to modernity)

Are you now employed? (N)

(Employment is related to modernity)

Are you self-employed? (N)

(Self-employment is related to modernity)

How many employees do you usually supervise? (N)

(Supervision is related to modernity)

Do you own your home here, or do you rent it? (N)

(Ownership is related to modernity)

Education, Mobility, and Power

The causal relationship between education and mobility and power is fairly apparent and is often assumed in sociological writings. Power, in most cases, comes as a result of individual achievement (in the economic sector, in this case). Assuming a system which minimizes ascribed characteristics in distributing economic rewards, individual achievement is made possible by the cognitive and technical skills

imparted and increased by the educational experience. Education also serves an obvious "gate-keeper" function for the economic sector, and a certain level of success in formal education is often required to participate in the more rewarding areas of the economy. And the greater the socio-economic level of development in the country, the higher are the specific educational achievement standards which must be met.

Having determined the individual's quantum of power, the next stage in the model is an examination of the individual's perception of this amount of power. I have labeled this perception "self-perceived efficacy."

Self-Perceived Efficacy

Self-perceived efficacy is the individual's perception of the amount of power he possesses. More specifically it refers to his perception of his own effectiveness, his own ability to affect change, his own relevance to his family, his community, and other social systems, and his competence in various activities. An alternate, insightful, definition of self-perceived efficacy is the absence of fatalism. "Fatalism," states Rogers (1969:32), "is the degree to which an individual recognizes a lack of ability to control his future."

The following attitude items measure the strength of this perception of power.

Sometimes I have the feeling that other people are using me. (I)

(Disagreement is related to modernity.)

There is little chance to get ahead in this life unless a man knows the right people. (I)

(Disagreement is related to modernity.)
 (Used in United States, Costa Rica, and Finland
 analyses only.)

Here is a ladder. At the top stands someone who can do very much to make his life happier. At the bottom stands someone who can do very little to make his life happier. Where do you stand right now? (I and N)

(Higher steps reported related to modernity.)

Here is a ladder. Suppose at the top of the ladder stands a person who has very much influence over people at work, with neighbors, friends, and people of that sort. At the bottom of the ladder is a person with little or no influence over others. What step do you stand on now? (I)

(Higher steps reported related to modernity.)

Efficacy and Autonomy

I hypothesize that a high degree of self-perceived efficacy will result in a high degree of autonomy. The man who sees himself as a powerful, competent, and effective person has a psychological base from which to attempt participation in other systems and to be able to disregard the dictates of any particular social system. The man who has a low degree of self-perceived efficacy will tend to be unwilling to risk participation in a variety of social systems, preferring to remain in one social system (or a few) where his rewards, though possibly minimal, are certain.

Individual Modernity--Autonomy

A person who is autonomous or who has a relatively high degree of autonomy is able to perceive the possibility of selecting different means to achieve standard goals, or of selecting different goals. The perception of these alternate goals and/or means is made possible by

the perception of power. The efficacious individual has a belief in his own, as distinct from his social system's, ability to control and manipulate the social and natural environment.

Here is a ladder. At the top of the ladder stands someone who has all the opportunity and chances he wants to do anything he wants. Down at the bottom stands someone who can't do anything he wants to do. Where do you stand now? (I)

(Higher steps reported related to modernity.)

The above dimension deals with the individual's relative independence from any one system. The other equally important dimension of autonomy is the actor's meaningful participation in a variety of social systems. (I originally believed that this autonomous participation in a variety of systems would enable the individual to "stand above" the various systems, using them somewhat cynically for his own ends. Preliminary analysis showed the reverse to be true; the autonomous individual, in participating meaningfully in systems, regards them as more important than his own immediate ends.

Imagine that you are in the middle step of the ladder right now. On the top steps of the ladder are things, which, in your judgment, are more important than you as an individual. On what step would you put the political party you prefer? (I)

. . . On what step would you put your community? (I)

. . . On what step would you put your family? (I)

. . . On what step would you put your country? (I)

. . . On what step would you put your work? (I)

(Higher steps reported related to modernity.)

Individual Modernity--Rational Decision Making

The perception of the opportunity for independent individual action (or autonomy) creates the possibility, and the need for, decision making. At the minimum, the individual will fully consider two alternatives, if it is to be a rational decision (see pages 9-11).

One of the central derived characteristics of a predisposition to make rational decisions is a positive orientation toward new and innovative alternatives. In looking for alternatives to evaluate, there is a strong likelihood that some of these will be new. The propensity to inspect alternatives also requires a continual sensitivity to new items and ideas. Thus, a positive orientation to things new to the actor is an essential, but derived, characteristic of rational decision making.

Here is a picture of a ladder. At the top of the ladder stands a person who wants to do new things all of the time. He wants life to be exciting and always changing, although this may make life quite troublesome. At the bottom is a person who wants a steady and unchanging life. What step do you stand on now? (I)

(Higher steps reported related to modernity.)

Some people are more set in their ways than others. How would you rate yourself? (I)

(Easy to change related to modernity.)

Some people feel that, in bringing up children, new ways and methods should be tried whenever possible. Others feel that trying new methods is dangerous. What is your feeling on this statement: "New methods of raising children should always be tried out"? (I)

(Agreement related to modernity.)

In order to make rational decisions, the person must be aware of time and particularly aware of the importance of the future. The man

who makes rational decisions tends to be oriented toward the present and the future rather than the past. Barndt (1969:21) found that an increased awareness of time was positively related to being future-oriented or, equivalently, optimistic about the future. By determining the respondent's perceptions of conditions of life in the future and present, we can judge the degree of future orientation and awareness of time.

Here is a picture of a ladder. Suppose at the top stands a person who is living the best possible life, and at the bottom stands a person who is living the worst possible life. What step do you think you will be on five years from now? (I)

(Higher steps reported related to modernity.)

The combined nature of future orientation, awareness of time, and planning and investment also result in gratification deferral, an aspect of rational decision making. Investment also requires the actor to place trust in strangers (impersonal others) which, by widening the options for action beyond his circle of friends and family, opens more alternatives for rational choice.

If you received a gift of money today equal to your yearly income, would you invest most of it? (N)

(Affirmative response related to modernity.)

Have you ever thought about buying stock or other shares in any private enterprise? (N)

(Affirmative response related to modernity.)

Individual Modernity--Behavioral Aspects

The combined effects of the attitudinal states of autonomy and rational decision making are hypothesized to result in behavior which can be classified as "modern." These behavioral aspects of individual

modernity, as suggested above (see pages 25-27), include: searching for new elements and purposively experimenting with alternate methods, a tendency to make investments of time, money, and energy, and participation in interest and pressure groups.

Below are indicators of participation in interest and pressure groups and of investment behavior.

Do you belong to a labor union, farm organization, or business or professional organization? (N)

(Membership is related to modernity.)

Are you a member of any other organizations that meet more or less regularly, such as societies, fraternal organizations, educational groups, or recreational organizations? (N)

(Membership related to modernity.)

Do you own stock or any other shares in any private enterprise? (N)

(Ownership related to modernity.)

Behavioral Modernity and Power

If the individual engages in modern behavior, it tends to make him more successful in modern social systems. Success in modern social systems is generally seen in the form of greater power. And as this power is theoretically and empirically indistinguishable from the power discussed earlier stemming from education and physical and psychic mobility, I see behavioral modernity as a causal contributor to power.

Behavioral modernity leads to power, which in turn leads to efficacy, autonomy, rational decision making, and back to behavioral modernity. Thus, one sees the post-education process of individual modernization as a possibly endless, self-intensifying process.

The Process of Individual Modernization

I defined individual modernity as an ideal typical attitudinal-behavioral configuration. However, the process of becoming modern, or individual modernization, is likely to be a lifetime process. The crucial factor in this process is the individual's experience in the arena of power.

The effect of formal education is to permit the initial entrance into the self-modernizing cycle and to facilitate early experiences in the cycle. If these experiences meet with success, the individual continues to become more modern. If, or when, experiences in the cycle, particularly in the arena of power, do not meet with success and increased self-esteem, the individual ceases to become more modern and may even become more traditional.

Implications

If the model is substantially valid, it suggests that an increased number of persons demonstrating individual modernity will not result from education alone or from the creation of positions requiring modern man (e.g., bureaucracies, factories) alone. What is required to increase the level of individual modernity in a particular setting is a combination of both education (to facilitate early experiences) and the opportunity for individuals to utilize the skills learned in educational experiences.

CHAPTER III

THE METHOD OF TESTING THE MODEL

Analysis

The model presented above of the process of individual modernization outlines the intensifying (or diminishing) effects of various conditions throughout an actor's lifetime on individual modernity. To exhaustively test this theory, one would require numerous measurements over a long period of time on a cohort of individuals. In addition to the high cost of such a study, the problems of contamination by testing and of maintenance of the panel present insurmountable difficulties.

However, it was imperative that I have some empirical test of this model, and I therefore utilized survey data collected at one point in time to test the interrelationships of the components of the model. This testing can not definitively verify the model, but it does indicate a reasonable degree of support for the model.

The deficiencies inherent in testing a longitudinal model with cross-sectional data are apparent. One cannot be as confident of the adequacy of the theoretical model with this inferential test of it as one would be given relevant data from longitudinal studies. The model proposes a series of cause and effect relationships, and determining the nature of all dimensions at the same moment makes spurious inference of causality possible. The relationship may be a result of

a third, unobserved, causal factor, or the hypothesized effect may in truth be the cause. However, given the cost and difficulty of adequate longitudinal studies, it is appropriate to test the model now with existing cross-sectional data to determine the model's promise.

The Data

The data which will be used to test this model comes from surveys administered in the United States, Mexico, Costa Rica, Finland, and Japan in 1966 and 1967. The original concerns of the Five Nation Study were to explore some relationships between change orientation, self-perceptions, and participation in the mass media.

The basic instrument consisted of 91 items which were administered in all five countries. The interview schedule was originally developed in the United States and was pretested on a sample of 200 respondents, in which low-income respondents were over-represented to detect possible problems with respondents in developing countries. Pre-test data are not included in the data to be analyzed.

The United States sample consists of 1,528 adult respondents selected by standard random sampling techniques from the national population. The study was carried out under contract with the American Institute for Public Opinion Research. Members of the academic research team were present and supervised the pre-test and training of the interviewers. The sample's distribution along demographic variables is very close to the distributions reported in census documents.

The survey in Costa Rica, conducted by Dr. Fred Waisanen, director of research for the American International Association, included 1,040

adult respondents selected randomly from the national population. The frequency distribution on demographic variables in the sample and in the national census are very similar, with the exception of an over-sampling of the better educated in remote rural areas.

The Japanese sample, consisting of 990 adult respondents, was conducted by Y.K.K., a marketing research organization, and was supervised by Dr. Hideya Kumata. Again, judging from its similarity to census information, the random sample is representative.

In Finland, the study was conducted by Dr. Yrjo Littunen through the Institute for Social Research at the University Tampere. The sample size was 893, and the sample is a representative random sample.

In Mexico, the survey of 1,414 adult respondents was conducted by International Research Associates. The sample was randomly selected from those living in cities and towns, but cost prevented sampling from a population which would include all rural and urban persons. In an attempt to increase the rural representation, rural persons in the proximity of small towns were interviewed. Nevertheless, there is a slight but significant urban bias to the sample.

In the four non-English speaking samples, the U. S. interview schedules were translated and back-translated by bilinguals to insure nominal equivalence. Senior researchers were present during the translation of the schedules and the pre-testing of the schedules in each language.

The major deficiency of the data was the slight urban bias of the Mexican sample, but a further problem was noticed in the responses of the Japanese sample. Japanese respondents showed a strong tendency to

choose the most noncommittal response. This, however, was probably an artifact of culturally defined behavior rather than an artifact of the instrument.

General Plan of Analysis

I analyzed the data from each sample independently. Given the constraints of cross-sectional measurement, the existence of direct co-variation of components was regarded as support for the model. (A more detailed explication of this analytic design appears below.)

Some Non-Applicable Analytic Schemes

On first inspection, the processual model appeared to be highly amenable to the technique of path analysis as presented by Blalock (1964), Duncan (1966), Wright (1934), and many others. However, Hiese (1968) presents a number of assumptions which must be met to correctly utilize path analysis. In summary, he states (pages 68-69):

To estimate path coefficients from correlational data using simple regression procedures, one must have theory and data meeting certain requirements.

The theory (1) can postulate only linear relations between variables; (2) can postulate no reciprocal relations between variables or feedback loops; (3) must clearly separate input variables from dependent variables and must order dependent variables in terms of their causal priorities over one another; (4) must specify all system inputs so that they can be considered explicitly in analysis.

The data (1) must meet the usual criteria for regression analysis; and (2) must be based on measurements that have very high reliability and validity.

If any of the above requirements is not met, the analysis either cannot be carried out at all, or they will result in models that are nonsensical and misleading.

These data and particularly this theory met only a few of these requirements. While the theoretically essential feedback loop from behavioral modernity was the most obvious violation of these assumptions, questions could be legitimately raised concerning the adequacy of the other five required characteristics.

Other aspects of the model suggested the use of other common multivariate analytic techniques. The presence of several conditions (or "factors") which are composed of several indicators suggested the use of factor analysis (Thurstone, 1947) as a method of proof. Other schemes for the analysis of large numbers of interrelated measures, such as the study of multiple and partial correlation and regression, came to mind. The underlying assumptions of linear relationships and interval or ratio measurement required for all these techniques ruled out their use. The majority of our measures were at the ordinal and nominal level. Also, previous analysis of this (Waisanen and Kumata, 1969) and similar data (Waisanen and Briones, 1964) showed a persistent curvilinearity between several of the central components of this model.

The Sundquist and Morgan (1964) technique for detecting interaction effects does not assume linearity or an interval level of measurement but does impose its own order on the variables. This makes it a useful technique for discovery but deficient as a method of proof. In addition, the depletion of cell sizes and the rejection of small relationships make it a somewhat less than ideal technique for this problem.

The familiar contingency table analytic technique of "elaboration" (Lazarsfeld, 1955) has no unmet assumptions with this theory and data.

However, the practical limitation of considering only four variables at a time would have resulted in an analysis of the model segmented to the point where interpretation would be difficult at best. It would also be necessary to reduce the number of indicators by constructing composite indicators. The construction of composite indicators from measures of varying levels of measurement and differing numbers of response categories would result in the loss of much discrimination and information.

Test Hypotheses and Rationale

I will resume a discussion of analytic strategies shortly, but it is appropriate to consider the test hypotheses and the rationale leading to them. The two central test hypotheses of the study are:

- I There are no negative relationships between components in the model.
- II The degree of association between components in the model is strongest when the components are theoretically adjacent, and weakest when the components are theoretically distant.

The rationale leading to these two hypotheses can be most easily demonstrated with a hypothetical example of an ideal causal model.

An Ideal Causal Model

Given: A probabilistic model of positively related components "A" through "E" in this causal sequence:

A----> B----> C----> D----> E

Each of the components will be positively related to all other components.

("R" indicates "relationship" with a numerical value between +1 and -1.)

$$R_{ab} > 0$$

$$R_{ac} > 0, \quad R_{bc} > 0$$

$$R_{ad} > 0, \quad R_{bd} > 0, \quad R_{cd} > 0$$

$$R_{ae} > 0, \quad R_{be} > 0, \quad R_{ce} > 0, \quad R_{de} > 0$$

The above matrix corresponds to Hypothesis I.

Given: The assumptions of the causal ordering, it is reasonable to assert that the degree of association is dependent upon the proximity of the components. Thus:

$$\begin{array}{ccccccc}
 & R_{ab} & & & & & \\
 & \vee & & & & & \\
 & R_{ac} & < & R_{bc} & & & \\
 & \vee & & \vee & & & \\
 & R_{ad} & < & R_{bd} & < & R_{cd} & \\
 & \vee & & \vee & & \vee & \\
 & R_{ae} & < & R_{be} & < & R_{ce} & < & R_{de}
 \end{array}$$

The above matrix corresponds to Hypothesis II.

By observation one notes that the strongest relationships occur along the diagonal of the matrix, and the weakest relationships are found at the extreme.

This array is identical in structure to Guttman's "perfect simplex" (1954:271).

The Test of the Model of Modernity

It is convenient at this point to place the path diagram of the model of modernity as presented on page 33 in a 10 by 10 matrix (see Figure 3, page 57). In this format, the arrows representing causal relationships remain, and the theoretical proximity of components is indicated.

Those relationships between theoretically adjacent components are labeled " R_I "; those of intermediate proximity (with one component

Antecedent Components

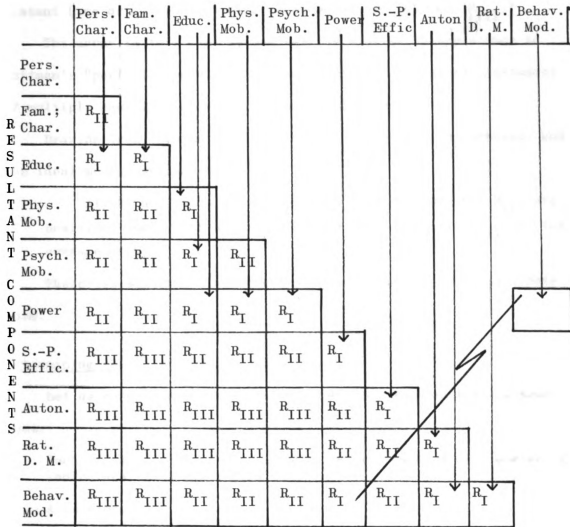


FIGURE 3

THE PROCESS OF INDIVIDUAL MODERNIZATION: CONVERSION OF SCHEMATIC PATH MODEL (FIGURE 2) TO MATRIX FORMAT

Arrows indicate causal paths, as represented in Table 1.

R_I indicates a relationship between theoretically adjacent components.

R_{II} indicates a relationship between components with intermediate theoretical proximity (i.e., one intervening component).

R_{III} indicates a relationship between theoretically distant components (i.e., two or more intervening components).

intervening) are labeled " R_{II} "; and those which are theoretically distant (two or more intervening components) are labeled " R_{III} ."

The array in this case is not exactly similar in appearance to Guttman's "perfect simplex" (1954:271) as there are several instances of multiple causality and non-recursive relationships.

Drawing from this matrix (Figure 3), the two test hypotheses, and the ideal model, we can state:

All R_I are positive, all R_{II} are positive, and all R_{III} are positive, and: (the average of R_I) $>$ (the average of R_{II}) $>$ (the average of R_{III}).

These two statements are the test hypotheses stated in alternate form.

Determining the Relationships

Let us return to the hypothetical ideal causal model and assume that:

Each of the components "A" through "E" is composed of a number of indicators, such that:

A is composed of a_1, a_2, \dots, a_n

B is composed of b_1, b_2, \dots, b_n

and similarly through E.

In order to determine the relationship between components, it is necessary to examine the relationships between their respective indicators.

Thus the relationship between A and B (R_{AB}) is a function of the combined relationships of their indicators (r).

R_{AB} is a function of:

$$r_{a_1 b_1} + r_{a_1 b_2} + \dots + r_{a_1 b_n} +$$

$$+ r_{a_2 b_1} + r_{a_2 b_2} + \dots + r_{a_2 b_n} + \\ + \dots + r_{a_n b_n}$$

As there will be a different number of indicator relationships comprising componential relationships, and the componential relationships must be compared, it is necessary to determine the arithmetic mean of the indicator relationships in each componential relationship. Thus:

the sum of the indicator relationships $r_{a_1 b_1}$ through $r_{a_n b_n}$

R_{AB} = the product of n_A and n_B

(where n_A is the number of indicators in A and where n_B is the number of indicators in B)

(It is mathematically legitimate to average statistics of relationship when each of them, as in this case, is based on an equal number of cases (Edwards, 1950:132).)

The Search for a Statistic

Having established that the test of Hypothesis II is the varying strengths of relationships between indicators, it was necessary to select a statistical measure of association.

As the majority of the indicators measure at the ordinal and nominal level, the contingency coefficient (C), computed from the Chi-square statistic, would appear appropriate. However, the contingency coefficients drawn from tables of different sizes are not directly comparable (Siegel, 1956:201). Thus, one would be forced to collapse all indicators to the spread of the smallest (i.e., two categories only). This is particularly costly as many of the ordinal indicators

(ladder and attitude items) are assumed by many to measure at the interval level.

To avoid the loss of discrimination unavoidable in collapsing all indicators to dichotomies, I divided the indicators into two groups--those which are clearly nominal and ordinal measures (the "N" group) and those which measure at the ratio, interval, or assumed interval level (the "I" group).

I determined the Pearson product moment correlation coefficient (r) for each of the relationships between ratio, interval, and assumed interval indicators. (While the use of this statistic also requires the assumption of normal distributions, the required assumptions are fewer and less stringent than those required for multiple regression analysis (Hiese, 1968:57). The value of the Pearsonian r is reduced by curvilinearity, as are all other measures of association. The curvilinearity of relationships will reduce the derived Pearsonian r in several cases, and the correlation coefficient, based on the assumption of a straight line of regression, will be lower than it would be if the variable(s) were transformed to reduce the curvilinearity.) The coefficients of multiple indicators of components were then averaged. I computed the contingency coefficient (C) for the nominal and ordinal indicators, collapsing all indicators, if necessary, to dichotomies. The coefficients of multiple indicators of components were then averaged.

Internal Consistency of Multiple Indicators

As I selected the indicators on the basis of apparent relevancy to the components and not on the basis of prior knowledge of their relationships with other co-indicators, it was necessary to check their consistency with other indicators of the same component.

Thus, prior to the construction of the test matrices I inspected the relationships between co-indicators. Numerous indicators which have been selected were observed to show consistently negative or very low degrees of association with the other indicators of the same component, and these indicators were dropped from analysis. Judgment of which collection to delete from the major analysis was determined on their relevance to the definitions and relationships of the components as discussed theoretically in presenting the model. No indicators were deleted solely because of a weak relationship with indicators of other components.

(Most of the indicators which were deleted from the major analysis were analyzed. The relationships they show and an interpretation of them will appear below in Chapter VI.)

The statistics used in this test of internal consistency were the same ones used in the respective test matrices (i.e., product moment correlation coefficient for the ratio, interval, and assumed interval measures, and the contingency coefficient for ordinal and nominal measures).

Summary Averages

Upon completion of the test matrices and average measures of relationship for each componential relationship, I combined the averages to test Hypothesis II. The scores were combined as indicated in Figure 3 (page 57) into the three categories of theoretically adjacent intermediate theoretical proximity and theoretically distant.

Procedures Used for Calculation

Data for the tests were stored in tape form. The data tape used is from the Michigan State University Political Science Department's Data Bank. Variables were selected and, because of an incompatibility of the data tape format and the Computer Center's computers, were transformed to data card form.

Contingency and correlation coefficients were calculated using the ACT II program of the Michigan State University Computer Institute for Social Science Research on the CDC 6500 computer.

These coefficients were then averaged to determine the internal consistency of multiple indicators. After inspection of multiple indicators and the selection of those indicators to be used, test matrices were constructed and the analysis of deleted indicators was performed.

Levels of Statistical Significance

While not central to the test of the model, statistical levels of significance were calculated. These levels appear below each table. Because of the large samples used, many small coefficients are statistically significant. However, my concern is not with specific

coefficients but with the general pattern they present. Thus the levels of statistical significance are merely included to support the assumption that the results obtained were not caused by chance alone but by relationships which exist in the social world. The patterning of relationships and a possible explanation of them are of major significance here and not the statistical levels of significance.

For correlation coefficients, the levels of significance are derived from the one-tailed z-test based on Fisher's transformation of sample and population coefficients to standardized scores, assuming a random sample, a normal distribution of coefficients, and an actual correlation coefficient of .00 in the population (Haber and Runyon, 1969:195-97).

For contingency coefficients, statistically significant values of the Chi-square distribution were selected, then these were transformed to the contingency coefficients appropriate to the specific sample.

Because of a concern with accuracy (particularly regarding positive and negative coefficients), all test matrices and the analysis of deleted indicators were constructed a second time. Any discrepancies were re-checked and reconciled, thus giving a high level of confidence concerning the accuracy of the calculations.

CHAPTER IV

A TEST OF THE MODEL: INDICATORS AT ASSUMED INTERVAL LEVEL OR ABOVE

Review of Method

Presented here are the results of testing the model as presented above. The methods used are discussed above. This section consists of the tests of the model using those indicators which measure at the assumed interval (i.e., ordinal) level and above.

The measure of association used is the Pearsonian product moment correlation coefficient (r). Where more than one correlation coefficient measuring the relationship between components is present, the unweighted arithmetic mean (\bar{x}) was calculated, and the mean correlation coefficient for the two components is shown.

Order of Presentation--Level of National Development

The tests are presented in descending order of the five nations' level of national development. The ranking of the countries comes from Farace's (1966) article. In it the United States ranks 1, Finland ranks 11, Japan 22, Mexico 42, and Costa Rica 43. Farace's ranking is a result of a factor analysis of 54 variables in the areas of government, health and nutrition, agriculture, education and religion, economic indicators, population characteristics, and mass communications (pp. 306-08). While other studies of national development might well arrive at different ranks, the relative ranking of the five countries studied

here would be unlikely to change significantly. (Because of the moderate urban bias in the Mexican sample, results from this particular survey may represent a population more developed than results from a survey representative of Mexico as a whole.)

United States Survey--Interval Indicators

The indicators used in the test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean correlation coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

Indicators and Their Internal Consistency

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient</u>
Personal Characteristics	
Age	
Family Characteristics	
Parents' Education	
Parents' Occupation	.180*
Education	
Years of formal education	
Physical Mobility	
No indicators	

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 1528$) are: $p \leq .10 = .03$; $p \leq .05 = .04$; and $p \leq .01 = .06$.

Hours of television viewed	
Hours of radio heard	
Number of newspapers read	.069*
Number of magazines read	
Place of residence	

Annual family income
Occupation .259

Ladder item--influence over people	
Ladder item--can do much to make his life happier	
Attitude item--little chance to get ahead unless one knows the right people	.120
Attitude item--the feeling that other people are using him	

Self related to: political party
community
family .261
country
his work
Ladder item--chances to do anything he
wants to

Ladder item--living the best possible
life, five years from now
Ladder item--wants to do new things
Attitude item--new methods of raising
children should always be .105
tried
Self-rating item--how "set in his ways"
is he

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 1528$) are: $p \leq .10 = .03$; $p \leq .05 = .04$; and $p \leq .01 = .06$.

Components and Their Indicators (cont)	Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient
--	---

Behavioral Modernity

No indicators

Comments on the Internal Consistency of Indicators: United States

The coefficients measuring internal consistency are generally at an acceptable level, with the possible exception of the indicators of psychic mobility. In the United States, participation in the various mass media appears to be unrelated as measured by zero-order correlation. Individuals who are heavy and light consumers of all media are found with individuals who vary in their own use of different media, thus erasing a simple linear relationship. With the exception of a strong (.339) relationship between newspaper and magazine usage, the other factors, including place of residence, are unrelated in this test. This low internal consistency undoubtedly detracts from the absolute value of the psychic mobility cells in the test matrix, but without other means of analysis it is an unavoidable consequence.

The Test Matrix and Summary Averages

Using the above indicators, the test matrix was constructed. It appears on the following page, followed by the summary averages.

Comments on the Test Matrix--United States

The results, as presented in the Test Matrix (Table 1), are generally consistent with the two hypotheses of the study.

TABLE 1

TEST MATRIX FOR UNITED STATES, USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	↓ Personal Characteristics								
Pers. Char.		↓ Family Characteristics							
Fam. Char.	.020		↓ Education						
Educ.	.320 [#]	.273 [#]		↓ Physical Mobility					
Phys. Mob.					↓ Psychic Mobility				
Psych. Mob.	.056	.041	.190 [#]			↓ Power			
Power	.193	.096	.450 [#]	.133 [#]		↓ Self-Perceived Efficacy			
S.-P. Effic.	.029 [@]	.072 [@]	.155	.038	.113 [#]		↓ Autonomy		
Auton.	.022 [@]	.004 [@]	.020 [@]	.013 [@]	.013	.130 [#]		↓ Rational Decision Making	
Rat. D. M.	.105 [@]	.012 [@]	.062 [@]	.029 [@]	.039	.097	.084 [#]		↓ Behavioral Modernity
Behav. Mod.									

ANTECEDENT
COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{x}_{RI}^{\#} = .212 \quad .450 \quad \text{to} \quad .084$$

Theoretically
Intermediate
Relationships

$$\bar{x}_{RII} = .075 \quad .193 \quad \text{to} \quad .013$$

Theoretically
Distant
Relationships(@)

$$\bar{x}_{RIII}^{\circ} = .032 \quad .155 \quad \text{to} \quad -.022$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1528) are $p \leq .10 = .03$, $p \leq .05 = .04$, $p \leq .01 = .06$.

All but two correlations are positive, as hypothesized, and these two negative correlations are very small in absolute value, indicating a null relationship rather than a negative relationship. Several others are very low in absolute value and, while positive, probably indicate a near null relationship. The presence of the null relationships is not counter to the hypothesis that no relationships would be negative. However, as the negative coefficients are in the clear minority and occur primarily between components which are theoretically distant, and therefore a low coefficient was expected, I see support for the first hypothesis. Put another way, there is far more evidence for accepting the hypothesis than rejecting it.

While not every cell coefficient is within a discrete range for relationships of its type (adjacent, intermediate, or distant theoretical distance), the summary averages and ranges stand in the hypothesized relationship to one another, thus supporting the second hypothesis.

Overlapping ranges of the three types are expected, and for this reason the use of an average as a test was proposed. (A discussion of the cell coefficients which appear consistently within the ranges of other types of relationships appear in an evaluation of the interval level test matrices of all five nations.)

Finland Survey--Interval Indicators

The indicators used in the test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II of this paper).

Also presented here are the mean correlation coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

Indicators and Their Internal Consistency

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient</u>
Personal Characteristics	
Age	
Family Characteristics	
Parents' education	
Parents' occupation	.283*
Size of place of childhood	
Education	
Years of formal education	
Physical Mobility	
No indicators	
Psychic Mobility	
Hours of television viewed	
Hours of radio heard	
Number of newspapers read	.045
Number of magazines read	
Power	
Annual family income	
Occupation	.484
Self-Perceived Efficacy	
Ladder item--influence over people	

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 893$) are: $p \leq .10 = .04$; $p \leq .05 = .061$; and $p \leq .01 = .08$.

Comments on the Internal Consistency of Indicators

The Test Matrix and Summary Averages

Using the above indicators, the test matrix was constructed. It appears on the following page followed by the summary averages.

TABLE 2

TEST MATRIX FOR FINLAND, USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	↓	↓ Personal Characteristics							
Pers. Char.		↓ Family Characteristics							
Fam. Char.	.039		↓ Education						
Educ.	.171#	.338#		↓ Physical Mobility					
Phys. Mob.					↓ Psychic Mobility				
Psych. Mob.	.021	.062	.120#			↓ Power			
Power	.080	.247	.449#	.109#			↓ Self-Perceived Efficacy		
S.-P. Effic.	.094@	.107@	.169	.080	.203#			↓ Autonomy	
Auton.	.042@	.031@	.015@	.030@	.039	.112#			↓ Rational Decision Making
Rat. D. M.	.181@	.088@	.142@	.072@	.138	.221	.073#		↓ Behavioral Modernity
Behav. Mod.									

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{RI}^{\#} = .196 \quad .449 \quad \text{to} \quad .073$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{RII} = .110 \quad .247 \quad \text{to} \quad .021$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{RIII}^{\circ} = .072 \quad .181 \quad \text{to} \quad -.042$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 893) are $p \leq .10 = .04$, $p \leq .05 = .06$, $p \leq .01 = .08$.

Comments on the Test Matrix--Finland

All coefficients save one are positive. If the one negative coefficient is interpreted, because of its low absolute value, as measuring a null rather than a negative relationship, I see reasonable support for the first hypothesis.

Summary averages and ranges are in the relative positions hypothesized for adjacent, intermediate, and distant relationships, and despite the expected problem of overlapping ranges I see a pattern which supports the second hypothesis.

Japan Survey--Interval Indicators

The indicators used in the test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean correlation coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

Indicators and Their Internal Consistency

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient</u>
--	--

Personal Characteristics

Age

Family Characteristics

Parents' education	
Parents' occupation	.356*

Education

Years of formal education

Physical Mobility

No indicators

Psychic Mobility

Hours of television viewed	
Hours of radio heard	
Number of newspapers read	.103
Number of magazines read	
Place of residence	

Power

Annual family income	
Occupation	.344

Self-Perceived Efficacy

Ladder item--influence over people	
Ladder item--can do much to make his life happier	.381

Autonomy

Self related to: political party	
community	
family	.360
country	
his work	
Ladder item--chances to do anything he wants to	

Rational Decision Making

Ladder item--living the best possible life, five years from now	.092
--	------

*The levels of statistical significance for correlation coefficients for samples of this size (N = 990) are: $p \leq .10 = .04$; $p \leq .05 = .05$; and $p \leq .01 = .07$.

No indicators

Using the above indicators, the test matrix was constructed. It appears on the following page, followed by the summary averages.

The Japanese survey and its results present the highest relationships in absolute values and the greatest absolute difference in summary averages. The range of coefficients in adjacent, intermediate, and distant relationships all overlap but are in the hypothesized relative position.

The three negative coefficients and several low positive coefficients should best be interpreted as null relationships but are not frequent enough to cast serious doubt on the validity of the first hypothesis.

The indicators used in the test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

TABLE 3

TEST MATRIX FOR JAPAN, USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	↓ Personal Characteristics								
Pers. Char.		↓ Family Characteristics							
Fam. Char.	.272		↓ Education						
Educ.	.556 [#]	.379 [#]		↓ Physical Mobility					
Phys. Mob.					↓ Psychic Mobility				
Psych. Mob.	.141	.157	.177 [#]			↓ Power			
Power	.138	.321	.359 [#]		.198 [#]		↓ Self-Perceived Efficacy		
S.-P. Effic.	-.025 [@]	.039 [@]	.055		.040	.130 [#]		↓ Autonomy	
Auton.	-.040 [@]	.009 [@]	.017 [@]		.018 [@]	.017	.268 [#]		↓ Rational Decision Making
Rat. D. M.	.154 [@]	.075 [@]	.166 [@]		.065 [@]	.107	.150	.106 [#]	
Behav. Mod.									↓ Behavioral Modernity

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{RI}^{\#} = .272 \quad .556 \quad \text{to} \quad .106$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{RII} = .140 \quad .321 \quad \text{to} \quad .017$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{RIII}^{\circ} = .044 \quad .166 \quad \text{to} \quad -.040$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 990) are $p \leq .10 = .04$, $p \leq .05 = .05$, $p \leq .01 = .07$.

Also presented here are the mean correlation coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

Indicators and Their Internal Consistency

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient</u>
Personal Characteristics	
Age	
Family Characteristics	
Parents' education	
Parents' occupation	.209*
Education	
Years of formal education	
Physical Mobility	
No indicators	
Psychic Mobility	
Hours of television viewed	
Hours of radio heard	
Number of newspapers read	.353
Number of magazines read	
Place of residence	
Power	
Annual family income	
Occupation	.131
Self-Perceived Efficacy	
Ladder item--influence over people	

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 1414$) are: $p \leq .10 = .03$; $p \leq .05 = .04$; and $p \leq .01 = .06$.

Ladder item--can do much to make
his life happier .329*

Autonomy

Self related to: political party
community
family .249
country
his work
Ladder item--chances to do anything
he wants to

Rational Decision Making

Ladder item--living the best possible
life, five years from now
Ladder item--wants to do new things .096
Attitude item--new methods of raising
children should always
be tried
Self-rating item--how "set in his ways"
is he

Behavioral Modernity

No indicators

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 1414$) are: $p \leq .10 = .03$; $p \leq .05 = .04$; and $p \leq .01 = .06$.

The Test Matrix and Summary Averages

Using the above indicators, the test matrix was constructed. It appears on the following page, followed by the summary averages.

Comments on the Test Matrix--Mexico

The positive relationships and the expected ranking of summary averages and overlapping ranges argue strongly for accepting both hypotheses.

TABLE 4

TEST MATRIX FOR MEXICO, USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	↓ Personal Characteristics								
Pers. Char.		↓ Family Characteristics							
Fam. Char.	.077		↓ Education						
Educ.	.259 [#]	.345 [#]		↓ Physical Mobility					
Phys. Mob.					↓ Psychic Mobility				
Psych. Mob.	.127	.168	.372 [#]			↓ Power			
Power	.061	.195	.389 [#]		.198 [#]		↓ Self-Perceived Efficacy		
S.-P. Effic.	.062 [@]	.115 [@]	.186		.084	.158 [#]		↓ Autonomy	
Auton.	.072 [@]	.066 [@]	.123 [@]		.081 [@]	.078	.199 [#]		↓ Rational Decision Making
Rat. D. M.	.086 [@]	.045 [@]	.115 [@]		.062 [@]	.040	.203	.104 [#]	
Behav. Mod.									↓ Behavioral Modernity

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{RI}^{\#} = .253 \quad .389 \quad \text{to} \quad .104$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{RII} = .122 \quad .203 \quad \text{to} \quad .040$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{RIII}^{\circ} = .083 \quad .115 \quad \text{to} \quad .062$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1414) are $p \leq .10 = .03$, $p \leq .05 = .04$, $p \leq .01 = .06$.

Costa Rica Survey--Interval Indicators

The indicators used in the test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean correlation coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

Indicators and Their Internal Consistency

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Correlation Coefficient</u>
Personal Characteristics	
Age	
Family Characteristics	
Parents' education	
Parents' occupation	.480*
Education	
Years of formal education	
Physical Mobility	
No indicators	
Psychic Mobility	
Hours of television viewed	
Hours of radio heard	
Number of newspapers read	.222
Number of magazines read	
Place of residence	

*The levels of statistical significance for correlation coefficients for samples of this size ($N = 1040$) are: $p \leq .10 = .04$; $p \leq .05 = .05$; and $p \leq .01 = .07$.

Power

Annual family income	
Occupation	.459*

Self-Perceived Efficacy

Ladder item--influence over people	
Ladder item--can do much to make his life happier	.169
Attitude item--little chance to get ahead unless one knows the right people	
Attitude item--the feeling that other people are using him	

Autonomy

Self related to: political party community family country his work	.274
Ladder item--chances to do anything he wants to	

Rational Decision Making

Ladder item--living the best possible life, five years from now	
Ladder item--wants to do new things	
Attitude item--new methods of raising children should always be tried	.105
Self-rating item--how "set in his ways" is he	

Behavioral Modernity

No indicators

*The levels of statistical significance for correlation coefficients for samples of this size (N = 1040) are: $p \leq .10 = .04$; $p \leq .05 = .05$; and $p \leq .01 = .07$.

The Test Matrix and Summary Averages

Using the above indicators, the test matrix was constructed. It appears on the following page, followed by the summary averages.

Comments on the Test Matrix--Costa Rica

The positive relationships (though several would be better seen as null relationships) and the expected ordering of summary averages and ranges again argue for accepting both hypotheses.

Comments on Interval Test Matrices of All Five Nations

The observed patterns of relationships in all five studies support the two hypotheses and lend considerable support to this model of the process of individual modernity. Despite overlapping ranges and a number of null relationships, I see a convincing demonstration of support for the hypotheses.

The lack of assumed interval level (or higher) indicators for physical mobility and behavioral modernity is unfortunate. However, extrapolating from the test matrices for nominal and ordinal indicators (which appear in the next chapter), it seems likely that they would have generally made the hypothesized contributions to the test of the model.

Several of the cells in all tests consistently show values which are not consistent with the appropriate theoretical distance between the respective components. In order to more easily inspect these deviations from the ideal causal model, which appear consistently (or perhaps vary with the level of national development), I will present a matrix consisting of the unweighted means of all cell coefficients (see

TABLE 5

TEST MATRIX FOR COSTA RICA, USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	Personal Characteristics								
Pers. Char.		Family Characteristics							
Fam. Char.	.063		Education						
Educ.	.207 [#]	.421 [#]		Physical Mobility					
Phys. Mob.					Psychic Mobility				
Psych. Mob.	.016	.236	.278 [#]			Power			
Power	.040	.336	.479 [#]		.226 [#]		Self-Perceived Efficacy		
S.-P. Effic.	.025 [@]	.129 [@]	.202		.102	.168 [#]		Autonomy	
Auton.	.008 [@]	.082 [@]	.121 [@]		.085 [@]	.106	.124 [#]		Rational Decision Making
Rat. D. M.	.044 [@]	.082 [@]	.157 [@]		.109 [@]	.109	.091	.085 [#]	Behavioral Modernity
Behav. Mod.									

ANTECEDENT COMPONENTS
(read down)

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{RI}^{\#} = .248 \quad .479 \quad \text{to} \quad .085$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{RII} = .130 \quad .336 \quad \text{to} \quad .016$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{RIII}^{\circ} = .084 \quad .202 \quad \text{to} \quad .008$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1040) are $p \leq .10 = .04$, $p \leq .05 = .05$, $p \leq .01 = .07$.

Table 6). (As this averaging is not wholly legitimate mathematically (see Edwards, 1950:132), it is not intended as a test of the hypotheses, and thus no summary averages or ranges are calculated. It is intended to serve only as a crude indicator of average patterns in all five matrices.)

Of the indicators used, I am least satisfied with the indicators of autonomy. The concern felt at the theoretical and indicator selection stage is supported by the weak relationships seen in the test matrices. However, the indicators of autonomy which were deleted (see Chapter VI) because of a lack of internal consistency show even weaker, more negative, and less consistent coefficients than the items retained. Thus, I am satisfied that the best available indicators of autonomy were used, although these are not as empirically dramatic as had been hoped.

(It may be that the concept of autonomy, as I have defined it, is intrinsically difficult to operationally define. The tri-polar nature of the concepts and the empirical dependence on respondents' reporting of independence and involvement in social systems make it difficult to evaluate empirically. This is particularly the case as many such allegiances are prescribed by publicly endorsed values and norms of a culture, and respondents would be hesitant to express a lack of allegiance to family, community, or nation. While better indicators of autonomy may appear, or be developed, those used here are less than satisfactory. Thus, the evaluation of the utility of the concept of autonomy (as here defined) must be held until further instrumentation

TABLE 6
 MEANS OF CELL COEFFICIENTS OF ALL FIVE NATIONS
 USING ASSUMED INTERVAL MEASURES OR HIGHER

RESULTANT COMPONENTS									
	↓ Personal Characteristics								
Pers. Char.		↓ Family Characteristics							
Fam. Char.	.094		↓ Education						
Educ.	.303#	.357#		↓ Physical Mobility					
Phys. Mob.					↓ Psychic Mobility				
Psych. Mob.	.072	.133	.228#			↓ Power			
Power	.102	.239	.425#		.173#		↓ Self-Perceived Efficacy		
S.-P. Effic.	.037@	.093@	.154		.069	.154#		↓ Autonomy	
Auton.	-.005@	.037@	.052@		.045@	.051	.167#		↓ Rational Decision Making
Rat. D. M.	.114@	.060@	.128@		.067@	.087	.153	.090#	
Behav. Mod.									↓ Behavioral Modernity

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.)

is attempted. However, the outlook for the concept's empirical utility must be seen as less than totally sanguine.)

In the table of cell means of all five samples, the coefficient measuring the relationship between family characteristics and power (an intermediate distance relationship) is higher than many of the coefficients of adjacent relationships. However, it is never greater than the coefficients for the relationships between family characteristics and education, and education and power (the causal path in the model). Thus it creates no need to revise the model.

This relationship (family characteristics and power) can legitimately be seen as a measure of inter-generational mobility. The greater the coefficient, the less the inter-generational mobility. Judging from these correlations, the United States has had the most inter-generational mobility, Costa Rica and Japan the least. (This is due more to the amount of change (or lack of change) in the occupational structure of these countries and not likely due to individual factors such as motivation or skills.)

Education shows a high correlation with power. The ranks of the values of these coefficients do not show a consistent relationship with the level of development of these five nations. However, a larger sample of countries should show that as social status and economic rewards become increasingly based on achievement rather than ascribed characteristics (an assumed characteristic of developed nations), the strength of the education and power relationship should become stronger. This change in the reward system should also show a declining relationship between family characteristics and power (i.e., more

inter-generational mobility). However, this sample of five nations is too small to test this hypothesis. (Simpson (1970) discusses the relationships and anomalies of inter-generational mobility and aspects of alienation in the United States, Mexico, and Costa Rica. Findings are based on the same data as this study.)

(Because of the small sample of nations and the lack of a clear consistent ordering of coefficients along the dimension of level of development, continued discussion of the effect of level of development on the relationships of this model is unjustified. I feel confident that the level of a nation's development does directly affect the process of individual modernization or level of individual modernity, but we have insufficient evidence here to evaluate these ideas. (For one possible pattern, see pages 20-22, this paper.)

After education's strong tie to power, it continues to have strong ties with the socio-psychological components of self-perceived efficacy, autonomy, and rational decision making. These ties, which are more distant theoretically than these components' ties to power, are frequently slightly stronger than their ties to power. This is counter to the path suggested in the model.

However, it does support the theoretical arguments for the supreme importance of education in the modernization process. And while personal characteristics (as indicated here by age) has a strong tie to rational decision making (as indicated here by a positive orientation toward newness and the future), education's ties are stronger than antecedent, ascribed factors.

The fact that power, as well as education, exercises an influence on these social psychological components indicates that the model is not entirely without support, and that adult experiences are nearly as important as education in determining modernity. (But because of the strong interdependence of the two components, it might be theoretically futile to go beyond saying that both are extremely important as determinants of modernity, with education being the more important of the two.)

CHAPTER V

A TEST OF THE MODEL: INDICATORS AT THE NOMINAL AND ORDINAL LEVEL

Review of Method

Presented here are the results of testing the model of individual modernity as it was presented in Chapter II. The methods used in testing the model were discussed in Chapter III. This section consists of the tests of the model using those indicators which measure at the nominal and ordinal level and some selected assumed interval indicators which were dichotomized.

The measure of association used is the contingency coefficient (C) which is derived from the Chi-square value for each relationship. (Being derived from the Chi-square value, all values are necessarily positive.) Where more than one contingency coefficient measuring the relationship between two components is present, the arithmetic mean of the contingency coefficients was calculated and is presented in the test matrices.

The tests are presented again in descending order of the five nations' level of national development. The ranking of the nations is from Farace's article (1966).

United States Survey--Nominal Indicators

The indicators used in this test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are

referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean contingency coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Contingency Coefficient</u>
Personal Characteristics	
Sex	
Race	.011*
Family Characteristics	
Parents' occupation	
Education	
Years of formal education	
Physical Mobility	
Has visited a foreign country	
Change from place of birth	.088
Psychic Mobility	
Place of residence	
Power	
Owns own home	
Owns own farm	
Presently employed	.133
Self-employed	
Supervised employees	

*The levels of statistical significance for contingency coefficients for samples of this size are: (N = 1528) $p \leq .10 = .033$; $p \leq .05 = .042$; and $p \leq .01 = .059$.

Self-Perceived Efficacy

Ladder item--can do much to make
his life happier

Autonomy

Has considered moving from present town .147*
Can imagine moving from country

Rational Decision Making

Considered buying stock
Would invest a large gift of money .061

Behavioral Modernity

Member of work related organization
Member of voluntary association .120
Presently owns stock

*The levels of statistical significance for contingency coefficients for samples of this size are: (N = 1528) $p \leq .10 = .033$; $p \leq .05 = .042$; and $p \leq .01 = .059$.

TABLE 7

TEST MATRIX FOR UNITED STATES, USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS									
	Personal Characteristics								
Pers. Char.		Family Characteristics							
Fam. Char.	.015		Education						
Educ.	.114 [#]	.032 [#]		Physical Mobility					
Phys. Mob.	.107	.062	.125 [#]		Psychic Mobility				
Psych. Mob.	.036	.150	.107 [#]	.111		Power			
Power	.160	.080	.048 [#]	.077 [#]	.130 [#]		Self-Perceived Efficacy		
S.-P. Effic.	.011 [@]	.012 [@]	.141	.044	.008	.036 [#]		Autonomy	
Auton.	.052 [@]	.028 [@]	.112 [@]	.078 [@]	.031 [@]	.068	.037 [#]		Rational Decision Making
Rat. D. M.	.068 [@]	.003 [@]	.147 [@]	.069 [@]	.062 [@]	.054	.074	.078 [#]	
Behav. Mod.	.106 [@]	.055 [@]	.157	.087	.016	.076 [#]	.138	.034 [#]	.141 [#]

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{R_I}^{\#} = .080 \quad .141 \quad \text{to} \quad .034$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{R_{II}} = .083 \quad .160 \quad \text{to} \quad .008$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{R_{III}}^{\circ} = .060 \quad .147 \quad \text{to} \quad .011$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1528) are $p \leq .10 = .033$, $p \leq .05 = .042$, $p \leq .01 = .059$.

Finland Survey--Nominal Indicators

The indicators used in this test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean contingency coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Contingency Coefficient</u>
Personal Characteristics	
Sex	
Family Characteristics	
Parents' occupation	
Education	
Years of formal education	
Physical Mobility	
Has visited a foreign country	
Psychic Mobility	
Number of magazines read	
Power	
Owns own home	
Owns own farm	
Presently employed	.214*
Self-employed	
Supervises employees	

*The levels of statistical significance for contingency coefficients for samples of this size (N = 893) are: $p \leq .10 = .043$; $p \leq .05 = .055$; and $p \leq .01 = .078$.

Self-Perceived Efficacy

Ladder item--can do much to make
his life happier

Autonomy

Has considered moving from
present town
Can imagine moving from country .218*

Rational Decision Making

Considered buying stock
Would invest a large gift of money .178

Behavioral Modernity

Member of work related organization
Member of voluntary association .150
Presently owns stock

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 893$) are: $p \leq .10 = .043$; $p \leq .05 = .055$; and $p \leq .01 = .078$.

TABLE 8.

TEST MATRIX FOR FINLAND, USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS									
	Personal Characteristics								
Pers. Char.		Family Characteristics							
Fam. Char.	.006		Education						
Educ.	.001#	.154#		Physical Mobility					
Phys. Mob.	.090	.091	.326#		Psychic Mobility				
Psych. Mob.	.146	.101	.169#	.170		Power			
Power	.247	.034	.127#	.124#	.072#		Self-Perceived Efficacy		
S.-P. Effic.	.061@	.128@	.134	.120	.098	.045#		Autonomy	
Auton.	.081@	.057@	.203@	.177@	.064@	.124	.060#		Rational Decision Making
Rat. D. M.	.177@	.091@	.157@	.124@	.040@	.117	.091	.096#	Behavioral Modernity
Behav. Mod.	.153@	.130@	.150	.159	.114	.111#	.115	.058#	.201#

ANTECEDENT COMPONENTS
(read down)

ANTECEDENT
COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{x}_{RI}^{\#} = .120 \quad .326 \quad \text{to} \quad .001$$

Theoretically
Intermediate
Relationships

$$\bar{x}_{RII} = .117 \quad .247 \quad \text{to} \quad .006$$

Theoretically
Distant
Relationships(@)

$$\bar{x}_{RIII}^{\circ} = .117 \quad .203 \quad \text{to} \quad .040$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 893) are $p \leq .10 = .043$, $p \leq .05 = .055$, $p \leq .01 = .078$.

Japan Survey--Nominal Indicators

The indicators used in this test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean contingency coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Contingency Coefficient</u>
Personal Characteristics	
Sex	
Family Characteristics	
Parents' occupation	
Education	
Years of formal education	
Physical Mobility	
Has visited a foreign country	
Change from place of birth	.043*
Power	
Owns own home	
Presently employed	.229
Self-employed	
Supervises employees	

*The levels of statistical significance for contingency coefficients for samples of this size (N = 990) are: $p \leq .10 = .041$; $p \leq .05 = .052$; and $p \leq .01 = .074$.

Self-Perceived Efficacy

Ladder item--can do much to make
his life happier

Autonomy

Has considered moving from present
town

Can imagine moving from country .225*

Rational Decision Making

Considered buying stock

Would invest a large gift of money .257

Behavioral Modernity

Member of work related organization

Member of voluntary association .059

Presently owns stock

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 990$) are: $p \leq .10 = .041$; $p \leq .05 = .052$; and $p \leq .01 = .074$.

TABLE 9
TEST MATRIX FOR JAPAN, USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS									
		Personal Characteristics		Family Characteristics		Education		Physical Mobility	
Pers. Char.									
Fam. Char.	.015								
Educ.	.008 [#]	.306 [#]							
Phys. Mob.	.095	.039	.106 [#]						
Psych. Mob.	.025	.289	.207 [#]	.168					
Power	.223	.081	.109 [#]	.106 [#]	.237 [#]				
S.-P. Effic.	.049 [@]	.067 [@]	.175	.039	.000	.069 [#]			
Auton.	.027 [@]	.100 [@]	.194 [@]	.042 [@]	.029 [@]	.073	.068 [#]		
Rat. D. M.	.082 [@]	.163 [@]	.173 [@]	.047 [@]	.125 [@]	.063	.142	.084 [#]	
Behav. Mod.	.176 [@]	.054 [@]	.079	.057	.136	.093 [#]	.121	.062 [#]	.182 [#]

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{RI}^{\#} = .126 \quad .306 \quad \text{to} \quad .008$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{RII} = .101 \quad .289 \quad \text{to} \quad .000$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{RIII}^{\circ} = .094 \quad .194 \quad \text{to} \quad .027$$

The levels of statistical significance for correlation coefficients for samples of this size ($N = 990$) are $p \leq .10 = .041$, $p \leq .05 = .052$, $p \leq .01 = .074$.

Mexico Survey--Nominal Indicators

The indicators used in this test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussions of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean contingency coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Contingency Coefficient</u>
Personal Characteristics	
Sex	
Family Characteristics	
Parents' occupation	
Education	
Years of formal education	
Physical Mobility	
Has visited a foreign country	
Change from place of birth	.007*
Psychic Mobility	
Place of residence	
Power	
Owns own home	
Owns own farm	

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 1414$) are: $p \leq .10 = .034$; $p \leq .05 = .044$; and $p \leq .01 = .062$.

Presently employed	.149*
Self-employed	
Supervise employees	
Self-Perceived Efficacy	
Ladder item--can do much to make his life happier	
Autonomy	
Has considered moving from present town	.220
Can imagine moving from country	
Rational Decision Making	
Considered buying stock	
Would invest a large gift of money	.014
Behavioral Modernity	
Member of work related organization	
Member of voluntary association	.115
Presently owns stock	

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 1414$) are: $p \leq .10 = .034$; $p \leq .05 = .044$; and $p \leq .01 = .062$.

TABLE 10

TEST MATRIX FOR MEXICO, USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS									
Personal Characteristics									
Pers. Char.		Family Characteristics							
Fam. Char.	.000		Education						
Educ.	.088#	.086#		Physical Mobility					
Phys. Mob.	.109	.081	.130#		Psychic Mobility				
Psych. Mob.	.071	.013	.278#	.081		Power			
Power	.129	.069	.117#	.063#	.180#		Self-Perceived Efficacy		
S.-P. Effic.	.000@	.045@	.109	.013	.025	.025#		Autonomy	
Auton.	.005@	.059@	.108@	.069@	.041@	.028	.021#		Rational Decision Making
Rat. D. M.	.132@	.040@	.117@	.073@	.034@	.087	.035	.067#	Behavioral Modernity
Behav. Mod.	.201@	.070@	.094	.068	.049	.113#	.015	.060#	.130#

ANTECEDENT COMPONENTS
(read down)

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{X}_{R_I}^{\#} = .104 \quad .278 \quad \text{to} \quad .021$$

Theoretically
Intermediate
Relationships

$$\bar{X}_{R_{II}} = .060 \quad .129 \quad \text{to} \quad .000$$

Theoretically
Distant
Relationships(@)

$$\bar{X}_{R_{III}}^{\circ} = .071 \quad .201 \quad \text{to} \quad .000$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1414) are $p \leq .10 = .034$, $p \leq .05 = .044$, $p \leq .01 = .062$.

Costa Rica Survey--Nominal Indicators

The indicators used in this test are presented here in abbreviated form. Readers wishing to check the exact wording of the items are referred to the previous discussion of the theoretical components and their indicators (Chapter II, this paper).

Also presented here are the mean contingency coefficients between the multiple indicators of those components so measured, indicating the internal consistency of these multiple indicators.

<u>Components and Their Indicators</u>	<u>Internal Consistency of Multiple Indicators as Measured by the Mean Contingency Coefficient</u>
Personal Characteristics	
Sex	
Family Characteristics	
Parents' occupation	
Education	
Years of formal education	
Physical Mobility	
Has visited a foreign country	
Change from place of birth	.047*
Psychic Mobility	
Place of residence	
Power	
Owns own home	
Owns own farm	

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 1040$) are: $p \leq .10 = .040$; $p \leq .05 = .051$; and $p \leq .01 = .072$.

Presently employed	.112*
Self-employed	
Supervises employees	
Self-Perceived Efficacy	
Ladder item--can do much to make his life happier	
Autonomy	
Has considered moving from present town	.230
Can imagine moving from country	
Rational Decision Making	
Considered buying stock	
Would invest a large gift of money	.113
Behavioral Modernity	
Member of work related organization	
Member of voluntary association	.188
Presently owns stock	

*The levels of statistical significance for contingency coefficients for samples of this size ($N = 1040$) are: $p \leq .10 = .040$; $p \leq .05 = .051$; and $p \leq .01 = .072$.

TABLE 11

TEST MATRIX FOR COSTA RICA, USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS																			
		Personal Characteristics								ANTECEDENT COMPONENTS (read down)									
Pers. Char.		Family Characteristics																	
Fam. Char.	.063		Education																
Educ.	.010 [#]	.317 [#]		Physical Mobility															
Phys. Mob.	.070	.151	.153 [#]		Psychic Mobility														
Psych. Mob.	.093	.308	.268 [#]	.131		Power													
Power	.167	.052	.057 [#]	.063 [#]	.142 [#]		Self-Perceived Efficacy												
S.-P. Effic.	.095 [@]	.199 [@]	.190	.105	.048	.057 [#]		Autonomy											
Auton.	.020 [@]	.088 [@]	.086 [@]	.103 [@]	.076 [@]	.055	.079 [#]		Rational Decision Making										
Rat. D. M.	.068 [@]	.098 [@]	.114 [@]	.045 [@]	.065 [@]	.067	.163	.072 [#]				Behavioral Modernity							
Behav. Mod.	.097 [@]	.109 [@]	.146	.095	.092	.069 [#]	.157	.066 [#]	.148 [#]										

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

SUMMARY AVERAGES:

RANGES:

Theoretically
Adjacent
Relationships(#)

$$\bar{x}_{RI}^{\#} = .115 \quad .317 \quad \text{to} \quad .010$$

Theoretically
Intermediate
Relationships

$$\bar{x}_{RII} = .119 \quad .308 \quad \text{to} \quad .052$$

Theoretically
Distant
Relationships(@)

$$\bar{x}_{RIII}^{\circ} = .089 \quad .199 \quad \text{to} \quad .020$$

The levels of statistical significance for correlation coefficients for samples of this size (N = 1040) are $p \leq .10 = .040$, $p \leq .05 = .051$, $p \leq .01 = .072$.

Comments on Test Matrices Using Nominal Indicators--All Five Nations

As contingency coefficients are always positive, it is impossible to test the first hypothesis that no relationships would be negative. The inability to test this hypothesis is unfortunate, but unavoidable, given this usual measure of association of nominal indicators. (Yule's Q , a measure of association for dichotomous relationships, would have permitted this test but was unavailable in existing computer programs.)

However, assuming that the majority of relationships in these matrices are positive or null (as was the case with the interval level indicators), I arrive at the very tenuous conclusion that had a suitable measure been feasible, few negative relationships would have appeared.

The test of the second hypothesis, dealing with the descending value of coefficients as theoretical distance increases, is disappointing and somewhat inconclusive. In only one of the five samples (Japan) do the summary averages appear in the hypothesized rank order. If I arbitrarily select an absolute difference of .05 as being a meaningful difference, I note that in two cases (United States and Costa Rica) the adjacent and intermediate associations are essentially equal, but both are greater than the mean of the theoretically distant relationships. In the Mexican sample, the mean of intermediate relationships is less than the means for the other two, although adjacent values are greater than distant values, as hypothesized. Finally, in the Finish sample, all three means are essentially equal, although the mean for adjacent associations is again greater than the mean of theoretically distant relationships.

Thus there is little support for the second hypothesis and the causal path presented in the model. However, there is even less support for any alternate ordering of relationships. Despite the inconsistent ordering of summary means and the almost erratic appearing values of cell coefficients, adjacent associations consistently have a higher average than do theoretically distant ones. The concluding statement is most accurately stated in the negative: I see no consistent support for any ordering of components other than the order presented in the model.

Comments on Indicators--Nominal Indicator Matrices

The inconclusive pattern found across the five nations leads to further inspection of the indicators of components. I noted that a large number of the indicators deal directly with activities and plans in the economic area, with items concerning occupations, employment, stock and real estate ownership, and economic plans. This heavy emphasis on economic items was not intentional but appears because of an early decision to use as few items which appeared in the interval matrix in the nominal matrix as possible. Thus, if a component had at least one indicator at the nominal level, no additional interval level items were dichotomized and analyzed here. This decision, resulting in an over-emphasis on economic activity, was unforeseen and unfortunate.

To further inspect the matrices for possible effects or causes of this economic emphasis, it may be somewhat useful to present a summary matrix constructed by averaging (without weighting) the respective cell coefficients of the five nominal level matrices. Caution is urged in

interpreting this table, as many cell coefficients vary widely between nations. The averages presented here reflect a centrality that, for several relationships, is more mathematical than actual. (See Table 12.)

It will be noted that personal characteristics (as measured by sex, and sex and race in the United States) exercise a strong relationship on power (an intermediate association) and rational decision making and behavioral modernity (distant relationships). This pattern appears in all five samples. All of these last three are measured primarily by economic indicators. As the effect of sex upon economic participation is well documented and personal characteristics is not a central component of the model (although obviously empirically salient), a trial was made by excluding personal characteristics as a component. The ordering of the summary averages remained unchanged in all five nations. (However, the United States summary averages did comply with the hypothesized ranking when race was retained but sex excluded.) Thus, personal characteristics was retained, with the original indicators, as a component.

The raw coefficients (the relationships of indicator to indicator) were examined to determine if excluding some of the economically based indicators from the analysis would possibly result in greater conformity of results to the model. No meaningful improvement appeared likely.

Further after-the-test alterations were not attempted for the practical reason that no increase in consistency or compliance to the model or any other ordering of components seemed likely. Also, since the only tactic open was the deletion of indicators, and thus

TABLE 12
MEANS OF CELL COEFFICIENTS OF ALL FIVE NATIONS
USING NOMINAL AND ORDINAL MEASURES

RESULTANT COMPONENTS									
	Personal Characteristics								
Pers. Char.		Family Characteristics							
Fam. Char.	.020		Education						
Ednc.	.044#	.179#		Physical Mobility					
Phys. Mob.	.094	.085	.168#		Psychic Mobility				
Psych. Mob.	.074	.173	.206#	.132		Power			
Power	.185	.063	.092#	.087#	.152#		Self-Perceived Efficacy		
S.-P. Effic.	.043@	.090@	.150	.064	.036	.046#		Autonomy	
Auton.	.037@	.066@	.140@	.094@	.050@	.070	.051#		Rational Decision Making
Rat. D. M.	.105@	.079@	.142@	.072@	.065@	.078	.101	.079#	Behavioral Modernity
Behav. Mod.	.146@	.084@	.105	.093	.081	.092#	.109	.056#	.160#

ANTECEDENT COMPONENTS (read down)

ANTECEDENT COMPONENTS
(read down)

(# indicates theoretically adjacent cells, @ indicates theoretically distant cells. Remaining cells are at a theoretically intermediate distance.

sacrificing the validity of components, it seemed appropriate to present the matrices as they first appeared. The addition of other indicators was desired but was not feasible.

Comments on Components--Nominal Indicator Matrices

It will be noted that in the summary matrix (and in the five test matrices) education shows a high relationship with resultant components. While the association is generally greater than hypothesized for components at theoretical intermediate and distant distance, it again argues for the importance of formal education in the process of individual modernity.

A great deal of variation is noted across nations in the interrelationships of the first five components. Explanations for this variation undoubtedly lie within the unique occupational, educational, and stratification histories of the nations. As was the case for the interval level matrices, I see no pattern consistent with the relative level of national development.

The tie between self-perceived efficacy and behavioral modernity (a relationship of intermediate distance) is high in all samples and is almost always greater than nearby, theoretically adjacent, associations. On the face of these coefficients alone, it would argue for revising the order of the path model. In addition, efficacy generally has a stronger tie to rational decision making (intermediate) than it does to autonomy (adjacent). (This same pattern appeared frequently in the interval level matrices also.)

However, I am reluctant to reorder the components of the model on the basis of this evidence alone. The weakness of the interval level indicators of autonomy was discussed, and the questionable economic emphasis of the nominal indicators is sufficient to permit me to retain efficacy in its theoretical position adjacent to power. As efficacy is essentially the perception of power, its logical location is adjacent to power. Stronger tests than these will be required to alter the theoretical location of this component.

CHAPTER VI
RESULTS OF THE ANALYSIS OF DELETED
INTERVAL INDICATORS

Reasons for Further Analysis

As was noted above, a number of the indicators which measured at the assumed interval level were deleted from the major analysis. The original reason for their deletion was their lack of consistency with the other indicators of the same component. (Evidence of this inconsistency is presented here by circled coefficients in Tables 13-20.) The possibility also existed that despite the inconsistency with the retained indicators, the "wrong" groups of indicators may have been retained and deleted. (The evidence here and previously in the interval level matrices indicates that the correct group was chosen.) In addition, some previously unseen pattern may have appeared, shedding further light on the process of individual modernity.

As a result, the degree of association between scales of the deleted indicators and the retained indicators of the theoretical components was calculated and the results presented here.

Scales and Internal Consistency

The deleted items were collected into eight scales by the apparent abstract meaning of their content. (One item is analyzed by itself--a one-item "scale.") In a general sense, they reflect some of Inkeles' (1966) major themes of individual modernity (see also pages 13-17, this

paper). Those themes reflected in these scales of deleted items include: a willingness to hold opinions and a tolerance for other opinions, a faith in planning and science and technology, a positive attitude toward change, an openness to strangers and foreign things, a belief in distributive justice, and by extrapolation, a faith in one's own individual ability. As such, these eight scales provide a tangential evaluation of these more specific themes of Inkeles' definition of individual modernity.

The internal consistency of the scales is frequently low, and thus their analysis as multiple indicators of one phenomenon is often unjustified. However, as this is not the major test of the model, it is useful to continue with them as though they were internally consistent to explore the evidence of their relationship to the components of the model. (Items which show erratic internal consistency which is not readily apparent in the mean correlation coefficient will be noted.)

In addition, I will briefly mention the original rationale for attempting to include them in the original test of the model, noting the theoretical component I thought they should be a part of and thus also indicating the rationale for their combination into the scales appearing here.

Absence of Powerlessness

(These two items were used in the major interval test matrix for the United States and Costa Rica, and the first item was used in the interval test matrix for Finland. They were deleted from the major

analysis of Mexican and Japanese samples, and the second item was deleted from the Finland test matrix.)

These two items were felt to be indicators of self-perceived efficacy and were originally intended for use in all five nations. As efficacy is a perception of one's power, an absence of fatalism, and a faith in one's own effectiveness, these items should have been indicators of this orientation.

Sometimes I have the feeling that other people are using me.

(Disagreement related to modernity.)
(Used here for Mexico and Japan only.)

There is little chance to get ahead in this life unless a man knows the right people.

(Disagreement related to modernity.)
(Used for Mexico, Japan, and Finland only.)

Internal Consistency:

Japan: .129

Mexico: .217

The generally null relationships seen here, in a pattern which does not consistently follow the model, justify the deletion of these indicators from the interval test matrices of these countries. The fact that they were included in the test matrix of two countries and one of them in a third and that they there present a pattern which conformed to the model (see Tables 3, 4, and 7) strongly suggests that these items mean different things in the different countries. This apparent lack of a consistent relationship to a model of modernity (which appeared consistent in five separate cultural contexts) strongly

TABLE 13
 MEAN CORRELATION COEFFICIENTS BETWEEN
 "ABSENCE OF POWERLESSNESS"
 AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.		.076	-.013	-.016	
Fam. Char.		-.007	.001	.039	
Educ.		.082	-.030	.060	
Psych. Mob.		.038	.005	.068	
Power		.043	.006	.053	
S.-P. Effic.	.120*	-.013	.034	.025	.169*
Auton.		-.036	.009	.049	
Rat. D. M.		.007	.011	-.031	
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

suggests that the phenomenal equivalence of these items is low across the five nations.

Political Opinions and Tolerance

Inkeles (1966) notes that a modern man has opinions on a wide variety of topics but is also tolerant of the opinions of others. I saw this dimension as an aspect of autonomy, as the man who is relatively independent of any one system and interdependent with several social systems is likely to have opinions about the preferable means and ends of a variety of activities. Also because of a widely based participation, he must be tolerant of the opinions of others.

I always try to keep my political beliefs to myself.

(Disagreement related to modernity.)

Political beliefs should have nothing to do with a person's work.

(Agreement related to modernity.)

Internal Consistency:

United States:	.192
Finland:	.108
Japan:	.193
Mexico:	.200
Costa Rica:	.283

Despite the acceptable level of internal consistency between the two items, they present an inconsistent pattern when compared with the components of the model. In the two most developed countries, they show null and negative relationships, while in the other three generally present null associations. Again, the phenomenal equivalence of these

TABLE 14

MEAN CORRELATION COEFFICIENTS BETWEEN
 "POLITICAL OPINIONS AND TOLERANCE"
 AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	-.050	-.006	.035	.008	-.046
Fam. Char.	-.069	-.049	.068	.053	.004
Educ.	-.127	-.107	.059	.057	.009
Psych. Mob.	.009	-.036	.031	.041	.049
Power	-.065	-.082	.055	.012	.050
S.-P. Effic.	-.025	-.026	-.017	.040	-.022
Auton.	.038	-.014	-.025	.032	.027
Rat. D. M.	.001	-.011	.000	.045	.019
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

two items must be questioned. While I am satisfied with their nominal equivalence (because of the translation, back-translation process in the preparation of interview schedules), people's response to these two items seems to be calling forth different orientations to the general issue of political opinion.

Religious Tolerance

Continuing with Inkeles' theme of tolerance and my inclusion of tolerance as a likely indicator of autonomy, here are two items dealing with the person's orientation to the religious beliefs of others.

It really doesn't matter what an individual believes about religion as long as he is happy with it.

(Agreement related to modernity.)

I believe the world would be a better place if more people had the religious beliefs which I have.

(Disagreement related to modernity.)

Internal Consistency:

United States:	.118
Finland:	-.058
Japan:	-.326
Mexico:	.034
Costa Rica:	.014

This curious inconsistency between the relationships between the two indicators for the five nations is probably due to a lack of phenomenal equivalence. The dimension most likely involved here is the second item, which could evoke a response based on the person's faith in his own religion, or the person's

TABLE 15
 MEAN CORRELATION COEFFICIENTS BETWEEN
 "RELIGIOUS TOLERANCE"
 AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	-.014	.090	.015	.023	-.026
Fam. Char.	.003	.041	.004	.069	.100
Educ.	.039	.038	.010	.144	.125
Psych. Mob.	.041	.033	.010	.067	.089
Power	.038	.076	.007	.104	.111
S.-P. Effic.	.000	.003	-.048	.042	.071
Auton.	(.012)	(-.024)	(-.040)	(.001)	(.001)
Rat. D. M.	.009	.031	-.017	.042	.031
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

tolerance of other religions. Apparently (particularly in Japan), faith and tolerance are not mutually exclusive.

The lack of consistent phenomenal equivalence is again apparent. The highest coefficients are found in the Mexican and Costa Rican data, and it is possible to guess that respondents in these two Roman Catholic countries are responding to the dimension of faith in their own religion, rather than on tolerance for others. The low coefficients with the other indicators of autonomy suggest that this might be the case, and the guess is also based on the low correlation between the two items used here in the "Religious Tolerance" scale.

Absence of Xenophobia

By extending Inkeles' theme of tolerance in modern man and this paper's theme of autonomy, it appears that the modern person should be tolerant of, in fact desirous of, contacts with strangers and foreign people and institutions.

We should be as helpful to people we don't know as we are to our friends.

(Agreement related to modernity.)

It is a good thing for companies and business firms from other countries to do business and have factories in our country.

(Agreement related to modernity.)

It is a good thing for our young people to marry people from other countries.

(Agreement related to modernity.)

Internal Consistency:

United States:	.149
Finland:	.123
Japan:	.119
Mexico:	.090
Costa Rica:	.221

(It should be noted that these mean coefficients reflect a strong relationship between the last two items, and a relatively weak tie between the first and the last two.)

The lack of conclusive findings regarding the relationship of this scale and the components can be viewed in light of the various dimensions of the items. Responses to the items could have been based on cultural proscriptions ("help strangers") without actual intention or orientation, nationalism, or racism ("marry foreigners"), and a variety of orientations to national-foreign economic policy. A response to the item regarding foreign business should have greatly differing meanings and intensity depending on the respondent's citizenship in a country where foreign competition is feared, encouraged, prohibited, or negligible.

Perhaps because of this variety of dimensions, the scale fails to develop any consistent pattern or even a relationship when compared to the components of the model. The vast majority of coefficients should be seen as representing null relationships.

TABLE 16

MEAN CORRELATION COEFFICIENTS BETWEEN
"ABSENCE OF XENOPHOBIA"
AND THE COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	.050	-.039	.040	-.029	.000
Fam. Char.	-.015	-.058	.036	.028	.068
Educ.	.040	-.046	.067	.023	.091
Psych. Moh.	.039	-.016	.022	.013	.052
Power	.004	-.065	.051	.020	.076
S.-P. Effic.	.031	-.005	.071	.031	.023
Auton.	(.028)	(.037)	(.038)	(.013)	(.022)
Rat. D. M.	.056	-.002	.089	.019	.053
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.
*Coefficient from major test matrix.

Preference for Individual Action

As a final aspect of the concept of autonomy, a scale is presented which measures the person's preference for individual action. This aspect is central to the idea of autonomy, as it is the individual who must move from system to system, inspecting ends and means and choosing between them. The autonomous man has a preference for and propensity to individual action.

Everyone should think the same about what is right and what is wrong.

(Disagreement related to modernity.)

I find it easier to follow rules than to do things my way.

(Disagreement related to modernity.)

Whatever we do, it is necessary that our leaders outline carefully what is to be done and exactly how to go about doing it.

(Disagreement related to modernity.)

Children should be taught that there is only one correct way to do things.

(Disagreement is related to modernity.)

Internal Consistency:

United States:	.278
Finland:	.361
Japan:	.320
Mexico:	.205
Costa Rica:	.239

(These high levels of internal consistency reflect a relatively consistent pattern among the four items.)

TABLE 17

MEAN CORRELATION COEFFICIENTS BETWEEN
"PREFERENCE FOR INDIVIDUAL ACTION"
AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	.115	.137	.041	.024	.030
Fam. Char.	.106	.136	.016	-.004	.068
Educ.	.291	.275	.081	-.030	.139
Psych. Mob.	.075	.058	.023	-.026	.025
Power	.201	.157	.007	-.000	.136
S.-P. Effic.	.073	.051	-.081	-.022	.052
Auton.	<u>-.027</u>	<u>-.043</u>	<u>-.114</u>	<u>-.026</u>	<u>-.004</u>
Rat. D. M.	.011	.082	-.009	-.033	-.009
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

Because of the strong internal consistency of these four components, their clear theoretical relevance to the concept of autonomy, their deletion from the model did not occur automatically. However, their negative and null relationship to the retained indicators of autonomy would mean that those other indicators would have to be discarded if these four were to be used in the main test of the model as indicators of autonomy.

The issue then is which of the two collections of items provide the best indicator of the concept, on theoretical and empirical grounds. The rationale for including the items pertaining to the individual's ties to social systems is more circuitous than the one arguing for including the items related to a reference for individual action. However, both appear equally valid on theoretical grounds. (Problems encountered in operationalizing the concept of autonomy were discussed above, pages 84 and 86.)

The decision to use the items which were used in the major test was made after considering the following points. Since autonomy is a product of both independence and interdependence, those items which best reflect this duality were chosen. The items actually used include an item relating to independence--the ladder item in which a respondent evaluates his chances to do anything he wants to--and this item related reasonably well to the social systemic ties (interdependence) items. These four deleted items would only reflect the independence aspect of the dual nature of autonomy. Secondly, the phenomenal equivalence of this type of opinion item has seemed to lack the level of phenomenal

equivalence of the ladder type of item, and for this added reason the choice was made.

The decision seems to be a correct one. In inspecting the relationship of this scale of "Preference for Individual Action" to the components (Table 17) and comparing it to the association of the retained indicators to other components (Tables 1-6), one notes that while neither yields totally consistent or large coefficients, the retained indicators present results more in keeping with the pattern of the model. The deleted indicators tend to show a higher relationship with the early antecedent components but a weaker relationship with those components which are theoretically closer.

A Belief in Planning and Technology

Two of the central characteristics of modern people, as seen by many writers, and by this model, is a positive attitude toward science and technology. Modern men also plan and do not leave the future to fate. These two items, both subsumed under the model's concept of rational decision making attempt to measure the respondent's attitude toward planning for the future and the use of technology to reach those desired goals.

Health experts say adding chemicals to drinking water results in less decay in people's teeth. If you could add these chemicals to your water, with little cost to you, would you be willing to have the chemicals added?

(Affirmative answer related to modernity.)

TABLE 18
 MEAN CORRELATION COEFFICIENTS BETWEEN
 "A BELIEF IN PLANNING AND TECHNOLOGY"
 AND THE COMPONENTS OF THE MODEL (INTERVAL ITEMS)
 Nation

	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	.137	-.050	.144	.023	.064
Fam. Char.	.033	-.012	.051	.101	.120
Educ.	.143	-.099	.110	.027	.178
Psych. Mob.	.030	.076	.037	.026	.108
Power	.095	.020	.019	.022	.141
S.-P. Effic.	.018	.003	-.041	-.003	.073
Auton.	.000	-.012	-.012	.001	.085
Rat. D. M.	(.022)	(.006)	(.072)	(.018)	(.098)
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

Family planning by birth control has been discussed by many people. What is your feeling about a married couple practicing birth control?

(Believing it acceptable related to modernity.)

Internal Consistency:

United States:	-.076
Finland:	-.097
Japan:	.059
Mexico:	.032
Costa Rica:	.065

In light of the low internal consistency between the two items, and the welter of political and religious issues raised by fluoridation and birth control, it seems surprising to achieve coefficients as great as these. However, they are most strongly related to the antecedent items, and generally show a null association with those components theoretically close to rational decision making. In addition, the items appear to lack phenomenal equivalence, with meaningful difference between Finland and Mexico and the remainder. (The meaningful difference in coefficients here between Mexico and Costa Rica is one of several in this paper. The difference between two countries at the same level of development and with the same general cultural heritage invite speculation and further research.)

Belief in Distributive Justice

The effort and cost of making rational decisions, as opposed to the relative ease of automatic referral to traditional solutions, must be offset by the anticipated reward; the man who makes rational

TABLE 19

MEAN CORRELATION COEFFICIENTS BETWEEN
 "A BELIEF IN DISTRIBUTIVE JUSTICE"
 AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	-.057	.067	.011	.003	-.006
Fam. Char.	-.066	.006	.065	.038	.051
Educ.	-.134	-.016	.063	.092	.018
Psych. Mob.	-.013	-.001	.046	.075	.031
Power	-.084	-.030	.070	.050	.014
S.-P. Effic.	-.031	.037	.009	.032	.020
Auton.	.051	.001	.017	.037	.033
Rat. D. M.	(.001)	(.044)	(.039)	(.027)	(.007)
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.
 *Coefficient from major test matrix.

decisions has a general faith that rewards will be commensurate with his contributions. Therefore, one derivative of rational decision making is a belief in "distributive justice."

A man who works hard and as well as he can deserves a comfortable standard of living.

(Agreement related to modernity.)

It is not difficult to explain the consistently low coefficients associated with this item. The item is stated as a general principle, and over 94 percent agreed with the item in every nation. At the least, we can assume the item is phenomenally equivalent.

Positive Attitude Toward Change

As rational decision making is predicated on the inspection of a variety of solutions, and the inspection of alternatives implies a partial dissatisfaction with conditions at present, modern men would be expected to be optimistic about change and the future.

People's ideas change so much that I wonder if we'll ever have anything to depend upon.

(Disagreement related to modernity.)

Running a city or village or any governmental organization is an important job. What is your feeling on this statement?
"Political leaders should be changed regularly, even if they are doing a good job."

(Agreement related to modernity.)

I like the kind of work that lets me do things about the same from one week to the next.

(Disagreement related to modernity.)

Some people feel that in bringing up children new ways and methods should be tried whenever possible. Others feel that trying new methods is dangerous. What is your feeling on this statement:
"New methods of raising children should always be tried out."

(Agreement related to modernity.)

(This item analyzed here for Finland only; it is included in the main analysis for the other four nations.)

Internal Consistency:

United States:	.077
Finland:	.045
Japan:	-.000
Mexico:	.048
Costa Rica:	-.008

These coefficients do not show a particularly strong pattern. The majority of them indicate a null association. While the highest coefficients appear in the United States sample, they are not divergent enough to seriously question the phenomenal equivalence of the items. Perhaps it is sufficient to say that they are apparently unrelated with the major components of the model. This seems strange, as the retained indicators of rational decision making (generally dealing with attitudes about the future) do show a reasonable relationship with other components of the model. This perhaps suggests that there is a significant difference between looking optimistically at the future and looking optimistically at change. Perhaps future rewards are defined very much in present terms, and the means to those rewards are defined in terms of the means available in the present. Thus, change may actually threaten one's hopes for the future.

Comments on the Associations of Deleted Indicators

The results of this analysis clearly show that the deletion of these indicators was justified on empirical grounds, for if they had

TABLE 20

MEAN CORRELATION COEFFICIENTS BETWEEN
 "POSITIVE ATTITUDE TOWARD CHANGE"
 AND COMPONENTS OF THE MODEL (INTERVAL ITEMS)

	Nation				
	United States	Finland	Japan	Mexico	Costa Rica
N =	1,528	893	990	1,414	1,040
Pers. Char.	.064	.091	.057	.025	.034
Fam. Char.	.060	.050	.012	.003	.029
Educ.	.175	-.012	.073	.016	.063
Psych. Mob.	.055	.022	.023	-.023	-.006
Power	.144	.033	.017	.014	.050
S.-P. Effic.	.086	.042	.017	.021	.038
Auton.	.009	.007	.018	-.017	-.017
Rat. D. M.	(.046)	(.027)	(.013)	(.010)	(.018)
Levels of Stat. Sign.	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .06$ $p \leq .01 = .08$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$	$p \leq .10 = .03$ $p \leq .05 = .04$ $p \leq .01 = .06$	$p \leq .10 = .04$ $p \leq .05 = .05$ $p \leq .01 = .07$

Circled coefficients indicate tie to original theoretical component.

*Coefficient from major test matrix.

been included, they would have threatened the pattern which did appear. Their exclusion can also be justified, in most cases, by a lack of phenomenal equivalence, a lack of discrimination, or a lack of total validity due to multi-dimensionality.

In themselves, they do not test Inkeles' themes of his listing definition adequately enough to question its validity. However, they do underline the extreme importance of valid, phenomenally equivalent indicators. The opinion item with specific content must be regarded with a great deal of suspicion in cross-cultural survey research.

CHAPTER VII

EVALUATION, COMMENTS AND IMPLICATIONS

General Evaluation

This section will present a restatement of the themes of the first three chapters in light of the results of the testing of them. The three themes are the definition of individual modernity, the path model of the process of individual modernization, and the method of analysis similar to Guttman's "simplex" (1954:271).

The results of the analysis of the data (Chapters IV-VI) establish no conclusive or definitive support for the three main aspects of the thesis. However, the results do strongly indicate that further study of all three areas is warranted.

The Definition of Individual Modernity

The findings of this study and the findings and experiences of many social scientists indicate that there is a social psychological orientation toward the social and physical world that characterizes those who are socially successful in urban, technological, and secular social settings. This orientation toward life is significantly different from that of those in rural, technologically primitive, and ascriptive societies. This orientation has been labeled "individual modernity."

The issue of the proper definition for this phenomenon is unresolved. The type of definition which is presently most popular in thinking and research is the listing definition of individual modernity. Inkeles' definitions (see Inkeles, 1966 as an example) are typical, salient, and important ideas.

Despite their success in leading to empirically reliable scales for measuring modernity (Smith and Inkeles, 1966), they are subject to the serious criticism that they are bound to the time and culture of Twentieth Century middle class North America for their ideal-typical end state. If the people of the world continue to strive for this style of life and middle class Americans remain unchanged, this listing definition would be adequate for theoretical and empirical purposes. However, the degree to which this striving and stability is likely is debatable and, in any event, a questionable assumption.

Thus, I attempted to construct a definition of this orientation toward life which would be less time and culture bound, leading to a greater conceptual equivalence in a variety of cultural settings. From the existing descriptions and definitions of modernity, I abstracted two characteristics which seemed central--autonomy and rational decision making. Using these concepts, we can visualize a man modern rather than traditional in his outlook on life but who can choose to be tardy, can question the efficacy of technology, can evaluate the desirability of change, and can celebrate many traditional and non-utilitarian aspects of life. All of these characteristics would violate the letter of Inkeles' listing definition. These two central

characteristics seem to be a more accurate conceptualization of the phenomenon known as modernity.

Problems of Operationalization and Equivalence

My satisfaction with the new definition at the conceptual level does not carry to the operational level. The tests of the so-defined orientation (and the model of its antecedent stages) were less than satisfactory or conclusive. Rational decision making and particularly autonomy showed themselves to be difficult concepts to operationalize. Part of the difficulty is undoubtedly caused by attempting to use existing items in a secondary analysis of collected data. However, had I constructed items before data collection, they would have been similar and likely would have met with the same lack of success.

Operational definitions of the two concepts should, in any future research, attempt to get at the essential characteristics of the two components. For operationalization, autonomy would likely have to be divided into sub-components of independence and multiple participation and items which would measure a person's evaluation of his standing relative to social systems devised. The "self-anchoring scale" items (Kilpatrick and Cantril, 1960) (here called "ladder items") seem to be a more valid and phenomenally equivalent ordinal measure than the typical opinion item having more specific content. Rational decision making also remains difficult to operationalize but should not be impossible. Items directly dealing with the process of decision making as well as the derived characteristics of innovativeness, planning, and risk-taking could be valid indicators. An attempt should also be made

to broaden the scope of this component from merely an economic context.

The listing definition, with its more specific characteristics, is easier to operationalize. This is not to suggest that the more specific characteristics are simple to operationalize. As seen in my analysis of the deleted indicators here (Chapter VI) and in Smith and Inkeles' (1966) use of 119 items to find reliable indicators for much shorter scales, face validity does not always, or frequently, result in reliability. However, operational validity and reliability at the expense of conceptual validity and equivalence is a dubious exchange.

The problems and questions of reliability and validity are intensified owing to the inter-societal nature of the data and the test of the model and definition. The issue of conceptual validity--or in the comparative case, conceptual equivalence--is one which must be raised regarding the general definition of individual modernity and the operationalization of the ten components of the model of modernization.

The definition of modernity presented here, by being an abstract definition, has greater potential for inter-societal equivalence than the listing definitions. In some cases (see Doob's and Rogers' listing definitions, page 4, this paper) listing definitions address and emphasize clearly different aspects of the concept of modernity. The more abstract definition here does have the potential for greater conceptual generality. "The theoretical significance of concepts defined in terms of specific measuring operations is limited. The

generality of such concepts is low and often specific to a social system" (Przeworski and Teune, 1970:95).

While the more general definition here has more potential for intersocietal validity, its conceptual validity is not yet established. Przeworski and Teune (100-103) present the general logic of establishing discriminant validity of general concepts, and this procedure was used in this research (see pages 58-59 and 61, this paper). The establishment or approximation of discriminant validity does not yet establish equivalency across social systems. Przeworski and Teune suggest that equivalence, using common indicators, is established (in probabilistic terms) if "the indicators behave the same way in all systems" (page 121) and if one examines and finds similar "correlations among the indicators in the pooled population" (page 122). In this test of the model, the behavior of indicators (internal consistency) and similarity of correlations was not identical in each of the ten tests of the model. However, a repetitive pattern was observed in the retained indicators and provides evidence that equivalence is approached, if not established.

Present Evaluation of the Definition

In spite of the problems of operationalization, I believe that this definition of individual modernity, emphasizing rationality and autonomy, is extremely useful at the conceptual and theoretical level. Its utility in research must await valid and reliable indicators. The rewards of efforts to create good indicators should outweigh the costs and difficulty of developing them.

The Path Model of the Process of Individual Modernization

The model of the process of individual modernization, as presented in Chapter II, was tested with data from surveys in five nations. The items were divided into two groups--those which measured at the assumed interval level and higher and those which measured at the nominal and ordinal level. Thus a total of ten tests of the model were conducted.

All of the tests utilizing interval items gave positive results. While the absolute degree of support was not great, a consistent pattern of coefficients did appear, decreasing as theoretical distance in the model increased. I interpret these results as supporting the path presented in the model.

One of the tests using nominal indicators gave positive results, and the other four did show that components which were theoretically adjacent had a higher degree of association than those which were theoretically distant. I interpret this as partial support for the selection of components and the theorized ordering as presented in the model.

Selection of Components

As the components of the model reflect a general consensus in the field regarding possible antecedents to modernity, it seems an adequate collection of possible and likely causes. The three components used to collectively identify individual modernity were discussed above as issues relating to the definition of modernity. With the possible exception of the division of autonomy into its independence and participation dimensions and the use of these as two separate components,

I can see no change in the components which would present a sounder theoretical statement or a more accurate empirical picture.

The Ordering of Components

Again the ordering of components reflects the thinking and writing of those in this field, and also mirror to a large extent the events and stages in a person's life. Educational achievement generally is a result of personal and family characteristics, economic power is a resultant factor of education, etc. The results of six of the ten tests indicate that this is a fairly adequate ordering of components, and the remaining four tests indicate no single alternate ordering.

Comments on Indicators

The most efficacious way to improve the empirical correspondence of the model would be, as often stated, the availability of more valid and representative indicators. Generally I was able to test only a few dimensions of each component. Among those dimensions missing and not tested were: the type and content of one's education, non-economic aspects of power, fuller information on domestic travel, more indicators of non-economic behavioral modernity, etc. However, it must be noted that for this purpose of an early and feasible test of the ideas, the quality of indicators and data collection were quite adequate.

As much of the model and its empirical test hinge on the operational definition of individual modernity, the problems discussed above in connection with the definition of modernity could be restated here.

Present Evaluation of the Path Model

Taking into account the problems with indicators and the partially positive tests, I see much to recommend this model of the process of individual modernity for further study. It is the only time ordered, processual, model of individual modernization and as such warrants further study to more conclusively test and refine it.

The Method of Analysis

This method of testing the path model of modernity was originally selected by default, as the traditional techniques of path analysis and other multivariate techniques made too many unmet requirements on the data and model.

Through the use of this method, I now find much to recommend its further inspection and possible use in a variety of situations testing path models which do not meet the rigorous requirements of the more advanced techniques.

Advantages of This Method of Analysis

The main advantage of this method of analysis lies in its ability to utilize a variety of data, its openness to inspection and alteration at all stages, and essentially its intrinsic simplicity.

Requirements of the Data and Theories

The more rigorous multivariate techniques of analysis (and specifically path analysis) generally require interval data, no reciprocal relationships or feedback loops, the inclusion of all

relevant variables, large samples, and certainty of the correct causal ordering before analysis. (See Hiese, 1968 and 1969.)

None of these assumptions need be met with the technique used here. As a result of its simplicity and flexibility, its results cannot be interpreted as precisely or finally as those of other techniques, but as an initial, exploratory device it would be very useful.

The technique can utilize any of a number of measures of association and thus any type of data. (However, all calculations must consist of the measure of association appropriate to the lowest level of measurement present.) The technique can utilize the contingency coefficient (C), Yule's Q , rank order correlation (r_{rho}), and product moment correlation (r). (However, as these measures of association are not directly comparable, one measure must be used consistently.)

The technique can be used as a method of proof and in the frequent combined practice of testing an original hypothesis while looking for alternate hypotheses. It can also be used as a method of discovery if the indicators of components are known, but the order of components is not known.

The method also does not require the prior development of index values for multiply indicated components prior to analysis, and items in multiply indicated components can be evaluated during the process.

The method's ability to incorporate feedback loops and reciprocal relationships is another advantage, and one can present these socially common relationships in theory and then test them.

Its Simplicity and Flexibility

The fact that the construction of final matrices is done with paper and pencil is also an advantage. (The construction could be handled by computer with a simple program.) This somewhat menial task does permit added insight into the workings of the various relationships and may lead to alteration of the model or indicators before final presentation. In addition it permits the development of alternate hypotheses and the possibility of quick tentative testing of them at the time.

Some Disadvantages of the Method

The method is crude and does not permit precise generalizations of relationships between components. This crudeness is primarily a result of the difficulty of control for multiple effects. Control is impossible for more than a few (one or two) variables and would require the construction of a complete matrix for each value of the variable controlled.

It also does not easily permit examination of curvilinear relationships, although this is dependent upon the measure of association used. Correlation coefficients and Yule's Q (based on a four-cell table only) would disguise any curvilinearity. The contingency coefficient, used with tables with more than one degree of freedom, would present some indication of a relationship which might be curvilinear. However, as the special characteristics of these common measures of association are well known, the researcher can easily evaluate what results are possibly artifacts of the measure of

association and inspect the relationship separately. The lack of control may mean that one or several variables exercise undue influence on variables far removed from them in theory. In this study, education showed such a tendency. However, it is frequently of great concern to inspect these relationships, reflecting such a strong relationship in reality, before they are controlled.

Present Evaluation of the Method of Analysis

While a scholar with greater statistical expertise than myself must evaluate this method of analysis, its simplicity and flexibility seem to offer a great deal to the researcher tentatively testing a causal model which violates the theoretical or empirical assumptions of more rigorous multivariate techniques. It strongly calls for further consideration, as it appears to fill a need for an analysis technique between the cumbersome two, three, and four variable analytic schemes and the more rigorous multivariate designs.

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