

THE EVOLUTION OF CIVILIZATION:  
A THEORETIC APPROACH TO THE  
DIFFUSION OF INNOVATIONS WITH  
SPECIAL REFERENCE TO MODERNIZATION

Thesis for the Degree of Ph. D.  
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NIELS GERARD ROLING  
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This is to certify that the

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Approach to the Diffusion of Innovations  
with Special Reference to Modernization.

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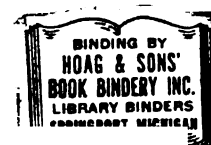
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## ABSTRACT

### THE EVOLUTION OF CIVILIZATION: A THEORETICAL APPROACH TO THE DIFFUSION OF INNOVATIONS WITH SPECIAL REFERENCE TO MODERNIZATION

By

Niels Gerard Røling

Emphasis on middle range analysis in diffusion research has led to many useful generalizations and little concern with consolidating them into a theoretical framework. The present thesis represents an effort to contribute to such a framework by developing assumptions and derived predictions. The resulting model is applied to phenomena, as observed especially by students of modernization. Library research thus provided the data.

Assume a controlling system consisting of (1) a criterion for well-being by which outcomes are evaluated and (2) a control mechanism which can make the environment yield desired outcomes. Assume the control mechanism to consist of a set of recipes (prescriptions for manipulating the environment). Consider a group of controlling systems. Assume its members have a similar criterion for well-being. Assume perfect vicarious experience of outcomes. Assume perfect communication of

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recipes. The following can be predicted.

1. If one member uses a recipe allowing better fit between outcomes and criterion than recipes used by others, all will adopt the recipe.

2. Seeking coincidence of outcomes and common criterion will lead to equilibrium when all members use the same recipes.

3. The recipes will consist of those which allow best fit between outcomes and criterion.

4. Two sets of recipes which allow differential fit between outcomes and criterion cannot co-exist within one group.

5. Members of two groups which come into contact will tend to use the same recipes.

These predictions seemed to impose parsimonious pattern on crucial diffusion phenomena. Hence the assumptions were elaborated for better fit. Thus, controlling systems were assumed not to have an in-built criterion but to learn to aspire to specific outcomes. However, they will learn to aspire to similar outcomes affecting physical well-being. Also assumed was that unsatisfied aspirations lead to their pacification by means other than adopting recipes, for instance, by construing external forces of control.

The resulting model focuses on the dynamic relationship of changes in aspirations and changes in recipes

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(and hence changes in outcomes or levels of living).

The model allows conceptual linkage with evolution theory and systems theory.

An effort was made to apply the model to reported phenomena, such as: (1) the increase in perceived efficacy during modernization; (2) the decrease in the use of external forces of control, such as gods, during modernization; (3) the diffusion of an innovation in a social system; (4) the similarity in recipes used by members of traditional societies; (5) social change resulting from contact between different social systems; (6) empathy and its role in modernization; (7) changes in aspirations during modernization; (8) pacification in situations of relative deprivation; etc.

The model seems useful for understanding such phenomena and heuristic in that it allows the identification of "blank areas" not "mapped" by previous research.

Chapter 4 represents an effort to elaborate on the assumption of perfect communication of recipes by asking the question: When and why is such communication imperfect? (A number of conditions were explored, the main being that a recipe must be perceived to lead to a desired outcome to diffuse autonomously.) The change agent's function of creating such a link was stipulated and his communication of instructional and motivational information explored.

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THE EVOLUTION OF CIVILIZATION:  
A THEORETIC APPROACH TO THE DIFFUSION OF INNOVATIONS  
WITH SPECIAL REFERENCE TO MODERNIZATION

By

Niels Gerard Røling

A THESIS

Submitted to  
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in partial fulfillment of the requirements  
for the degree of

DOCTOR OF PHILOSOPHY

Department of Communication

1970

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A thesis such as the present one is largely the product of one's struggle with views of the world given one by others. It is, of course, impossible to enumerate all who have contributed in this respect. Most influential for the present thesis were perhaps Dr. E.W. Hofstee, Dr. R.A.J. van Lier, Dr. D.K. Berlo, Dr. E.M. Rogers, Dr. F. Waisanen and Dr. J.R. Ascroft. I am grateful to them all for having enabled me to help in the exploration of an exciting field.

I am grateful also to the members of my guidance committee, Dr. L.E. Sarbaugh, Dr. V.F. Farace, Dr. F. Waisanen and especially its chairman, also my academic advisor, Dr. E.M. Rogers. They stimulated and encouraged the author, meanwhile zeroing in on the central shortcomings of the thesis and thus helping to keep the road to further exploration open. I want to especially thank Dr. Rogers for his sustained faith and encouragement and for providing me with the opportunity to participate in an exciting research project and equally exciting graduate program.

Dr. J.R. Ascroft served as an informal academic advisor. It was with him that I first explored the

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intriguing concept of control. It was he who took many hot potatoes out of the fire for me by first venturing on the risky road of exploring "control" in his dissertation. His wife, Mrs. Irene Ascroft, painstakingly typed the final copy of the thesis. Thank you Irene.

Then there are, of course, Kootje, Jorien and Arne, who put up with the thesis-writing zombie most of the time, that is, more often than could be reasonably asked. They contributed where it counts most.

## ACKNOWLEDGEMENT

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## OVERVIEW

### 1. Introduction

The present overview is given at the beginning of the thesis rather than at the end to allow the reader easier access to the material presented in the thesis. The overview looks at the basic formulations presented in the thesis from an angle which is slightly different from the one used in the main body of the text. It is hoped that the presentation of the main formulation from such slightly different perspective allows easier access also.

### 2. Objective

Diffusion research seems to have reached a stalemate because the lack of a systematic view of the process as a whole prevents the development of the field and leads instead to repetition. The present essay is an attempt to develop a systematic theoretical framework for the diffusion process, with a view of opening up new areas for research.

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### 3. Controlling system

Control implies (1) an outcome or actual state of being A, (2) a preferred state of being B and (3) the ability to change the state from A to B. A controlling system consists of (1) a criterion for well-being B with which A is evaluated and (2) a control mechanism which can change A. Assume that the control mechanism of the system contains recipes which are prescriptions for manipulating relevant aspects of the environment to change A to B. Assume that these recipes can be communicated.

### 4. Group of controlling systems

Now consider a group of controlling systems and assume that its members have a similar criterion for well-being. The following predictions can be made:

- (1) If one member of the group has a recipe which allows better fit between A and the common B than the recipes used by other members, that recipe will be adopted by all members.
- (2) The wish to make A coincide with a B which is similar to all members will lead to a steady state in which all members use the same set of recipes.
- (3) This set will consist of those available recipes which allow best fit between A and the common B.
- (4) Over time two sets of recipes which allow different goodness-

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of-fit between A and B cannot coexist within the same group of controlling systems.

These formulations form the core of the thesis. The assumption of the controlling system seems to hold promise for a better understanding of the diffusion process.

### 5. Man the controlling system

The controlling system assumed must be enlarged to allow better fit with man. Man's criterion for well-being is assumed to consist of outcomes which have been recognized as closer to well-being than others so that they have become desired outcomes or aspirations. Aspirations are assumed to motivate man to act to satisfy the aspiration. The set of man's aspirations is called his standard for living (B). By using recipes, man elicits certain outcomes from his environment, his level of living (A).

The following predictions can be made: (1) If the level of living coincides with the standard for living, man-the-controlling-system will reach a steady state or satisfaction. (2) If the level of living is higher than the standard for living, man will upgrade the standard by incorporating outcomes closer to well-being than those previously in the standard. (3) If the level of living is lower than the standard for living, man is

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motivated to upgrade the level for living by applying recipes. (4) If such recipes cannot be applied, man resigns to the difference between the level of living and the standard for living by pacifying motivation by means other than the application of recipes. (5) If pacification is used, application of recipes to reduce motivation in the normal manner will occur when opportunities to do so are perceived available.

#### 6. Group of man-the-controlling-systems

Now consider a group of man-the-controlling-systems. Assume that each can experience the outcomes of others as if they were his own. Assume that each will recognize similar outcomes as closer to physical well-being than others, because all man-the-controlling-systems have the same body. Assume perfect communication of recipes.

The following predictions can be made: (1) If man vicariously experiences a level of living higher than his standard for living, he will upgrade his standard to include the outcomes vicariously experienced. (2) Therefore, all members of the group will share in common the standard for living of those who upgraded their level most. (3) If a member of the group has a level of living which is lower than the common standard, he will be motivated to adopt the recipes used by those who upgraded

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their level most. (4) Therefore, the recipes which allow best fit between the level of living and the common standard will diffuse through the group until a steady state is reached in which all members use the same set of recipes. (5) If a new recipe is introduced into a group which allows better fit between standard and level, it will diffuse through the group until all members have adopted it. (6) If desired outcomes are sometimes experienced by some members of the group, while no recipes exist to elicit these outcomes, those who do not experience the outcomes will pacify their motivation by means other than the application of recipes. This situation will be called absolute poverty. (7) If a member of the group cannot apply some of the recipes available in the group, so that he cannot upgrade his level of living to coincide with the common standard, he will pacify his motivation by means other than the application of recipes. This situation will be called relative poverty.

## 7. Two groups of man-the-controlling-systems

Now consider two groups of man-the-controlling-systems. Assume that the groups have sets of recipes which differ in the extent to which they allow levels of living to approximate physical well-being. Assume the two groups come into contact.

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The following predictions can be made: (1) The members of the group with the lower levels of living will vicariously experience the outcomes of the members of the group with the higher levels of living, so that the standards for living of the former will be upgraded to include the outcomes of the latter. (2) Therefore, members of both groups will tend to have a similar standard for living. (3) The members of the group with the lower levels of living will try to upgrade them by adopting the recipes used by those in the group with the higher levels of living. (4) Therefore, members in both groups will tend to become similar in the set of recipes they use. (5) This set will include those recipes which allow best fit between the common standard for living and the level of living.

#### 8. Internal and external control

Call internal control the situation in which man perceives a causal relationship between his application of recipes and his outcomes. Internal control is generalized to the future when the causal relationships are repeatedly experienced. Such generalized expectancies of internal control can range from powerlessness, in which little internal control is generalized to the future so that apathy results, to arrogance in which very

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Call external control the situation in which man perceives a causal relationship between the activity of forces outside himself and his outcomes. External control is generalized to the future when the relationships are repeatedly perceived. 'External control perceptions serve to pacify motivation by means other than the application of recipes.'

The following predictions can be made: (1) The amount of internal control perceived increases as levels of living approach physical well-being and absolute poverty decreases. (2) The amount of internal control perceived increases as levels of living approach standards for living and relative poverty decreases. (3) The amount of external control perceived decreases as levels of living approach physical well-being and absolute poverty decreases. (4) The amount of external control perceived decreases as levels of living approach standards for living and relative poverty decreases.

#### 9. Applying model, assumptions and predictions to phenomena

The model of man-the controlling-system and the set of assumptions and predictions made, seem to make up a

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framework for accounting parsimoniously for phenomena related to diffusion and modernization.\*

In Chapter 2 and 3 of the thesis, an effort is made to test some aspects of the theoretical framework on their goodness of fit with aspects of the diffusion and modernization processes on which pattern has been imposed by others. "Evidence" used in this thesis thus consists of expert opinion and interpretation of empirical research by others. The method of evidence collection was basically "library research".

The result of the effort to apply the theoretic framework is considered both preliminary and suggestive by its author. The following remarks can, however, be made to illustrate the possible applicability and fertility of linkage of the theoretic framework.

1. A strong simile exists between the evolution of species and the development of the set of recipes, used in human societies, along a continuum which allows more control and more physical well-being.

2. The tendency for all members of a social system to use the same set of recipes invites comparison with

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\*The assumption of man-the-controlling-system seems an improvement over "economic man" who is axiomatic to the predictions of economic models. This connection with economic theory as well as such similar constructs as "demonstration effect" and "vicarious experience of higher levels of living" may allow a better integration between diffusion and economic theory (see Røling, 1966).

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3. [Empirical work on the psychological make-up of modern man seems to support the prediction that internal control is perceived to increase as levels of living approach physical well-being.]

4. Viewing religion and magic as pacification through construing forces of external control seems fruitful in that such external control perceptions seem to lose their function as the set of recipes develops to allow closer approximation to physical well-being.

5. Looking for methods of pacification in situations of relative poverty allowed the identification of voluntary curtailment of the reference group and voluntary isolation from outcomes of those not in the reference group as pacifiers. 'Evidence for powerless in extreme relative poverty seems available'. Exploration of the relationships between relative poverty, the amount of internal control perceived, voluntary curtailment of the reference group, empathy, voluntary isolation and class-formation seems necessary to qualify the important assumption of perfect vicarious experience made in the theoretic framework.

6. Expert opinion on the role of empathy in modernization seems to agree with the role of vicarious experience assumed in the theoretical framework.

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7. Expert opinion and some evidence seem to support the prediction that standards for living are upgraded to incorporate outcomes experienced as closest to physical well-being.

8. There is evidence from anthropologists, and diffusion research for the prediction that members of a social system, or of two social systems in contact, tend, over time, to use the same set of recipes and that this set is the one which allows most control over the physical environment.]

As a result of such and other "support", the present author feels that the framework developed so far is useful and that its further development could have high payoff. Further development will have to concentrate on substantiating the predictions and/or assumptions made.

Two assumptions, perfect vicarious experience and perfect communication,\* seem of crucial importance in further developing the framework. Both assumptions are clearly simplifications, while it is the imperfection of both, vicarious experience and communication, which seems a bottleneck in the normal process by which standards for and levels of living are upgraded.

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\*An assumption not stated in this summary refers to perfect availability of matter/energy to organize according to some recipe. This assumption seems to refer to the realm of scarcity and hence of economics.

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{Some remarks have already been made about the assumption of perfect vicarious experience. The communication of recipes is further scrutinized in Chapter 4.

#### 10. Communication of recipes

To talk meaningfully about communication, we must come back to the control mechanism of man-the-controlling-system because the communication of recipes changes this control mechanism. We call the control mechanism reality.'

Reality is a representation of the environment, a system of elements and their relationships, which stand for events in the environment. These elements and their relationships (1) have value or significance for well-being otherwise they would not be in the reality, (2) they are attributed with a probability of occurrence in the environment and (3) they are attributed with a cue which activates them when the event takes place for which the cue was recognized. The cue can be a sign or a symbol.

{The function of reality is to allow correspondence between intended and actual outcomes (i.e., existence) because it contains intentions and recipes. The adequacy of reality depends on the degree to which it allows intended, or at least predicted, outcomes to be experienced. Adequacy is thus a function of (1) intentions

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and (2) recipes. A reality can become inadequate when the environment changes, either because intentions change so that previous recipes become irrelevant, or because recipes become useless, even if intentions remain unchanged. We are concerned with the former case. A reality can become adequate again by the reception of new recipes. Diffusion of recipes is thus based on reality change.

Information is experience which leads to reality change by increasing or decreasing its adequacy, i.e., by affecting the goodness of fit between reality and experience. In view of the theoretic framework developed earlier, the following types of information can be distinguished.

(1) Feedback is the information about the change in the environment which occurs as a result of action on the basis of a recipe. Feedback thus allows man to evaluate the adequacy of his reality.

(2) Environmental information increases the number of options perceived available in the environment. It allows recognition of previously unknown outcomes as closer to well-being than others and hence the creation of new aspirations.

(3) Instruction is information which leads to the incorporation of new recipes in the reality to improve its adequacy. Recipes, or minimally patterns imposed on

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(4) Motivational information links recipes with outcomes.

Of these four types, we are especially interested in the last two, because they allow increasing adequacy.

Communication implies the following minimal conditions: (1) parties, who have some communality of reality and share a set of cues for evoking reality, send (2) messages, which are packages of matter/energy organized so as to have ouing and informative ability, through (3) channels for sending packages of matter/energy and linking the parties, with (4) effect, which is the reality change or information received by the parties as a result of receiving messages.

We are now in a position to speak about the communication of recipes. The question guiding us is: Why is the communication of recipes imperfect? A few possible reasons were explored in the thesis.

1. Man can be expected to make efforts to apply the recipes of those who upgraded their level most. Levels of living cannot be thought of in isolation from the recipes which allow them to be elicited. Thus the vicarious experience of the outcome leads to the virulent desire to apply the recipe. Thus recipes which are

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clearly and directly linked to desired outcomes will diffuse autonomously, as is the case with so many consumer goods.

However, recipes which are newly introduced are not directly and clearly linked to desired outcomes because such outcomes cannot be vicariously experienced anywhere. Hence they will not diffuse autonomously so that change agents, advertisers or salesmen must be hired to promote such recipes. [It is with such recipes that diffusion of innovations research, in the restricted sense, is concerned.]

[The main job of change agents, advertisers, etc., is to give motivational information.] This deduction from our theoretical formulations seems to have important implications for change agent strategy. Many change agents consider themselves instructors only. In the thesis a number of aspects of motivational messages will be discussed.]

[In a sense, motivational information is an alternative to instruction.] Instruction implies the acceptance of the diagnosis of an unwanted situation, so that the recipe is accepted as a method to change the unwanted situation. [However, getting a diagnosis accepted implies a certain commonality of reality between change agent and client.] Such commonality may not exist, especially in reality premises, the unspoken assumptions on which reality is constructed. In the thesis a number of reality

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premises based on experience before the great discontinuity of modernization will be discussed, and an effort will be made to show how such premises may hamper instructional effort by the change agent. Therefore, motivational information is stressed. It seems to shortcut the need to get a diagnosis accepted because it makes clients understand that a new recipe really works, regardless of the reasons why.<sup>7</sup>

2. Once the change agent has convinced a few clients in a social system that a recipe really works, so that the outcomes it allows can be vicariously experienced, one would expect the recipe to diffuse automatically. This does not always happen.

To impose some pattern on the process of diffusion within a social system, we look upon the social system as a communication system, i.e., as a network of channels connecting nodes with certain communication functions and ask: What happens to such a system as it becomes more open to inputs of information from outside the system? For a recipe introduced from outside the system to diffuse, a number of network nodes must acquire the following functions: (1) they must receive external information, (2) they must pass it on to others. Nodes which perform both functions are called development elite. It seems that sometimes a development elite fails to emerge because the nodes who perform each function do not overlap. Possible reasons for this are explored.

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## INTRODUCTION

### 1. Objectives

This essay grew out of dissatisfaction with the accomplishments of research on the phenomenon of modernization in general, and the diffusion of innovations, as an aspect of modernization, in particular. These accomplishments are quite substantial--so substantial, in fact, that the results of a million dollar research project on the diffusion of innovations recently completed in three developing countries largely corroborated the main generalizations of the classic work (Rogers, 1962) on the subject of diffusion.

But this corroboration also points to the source of dissatisfaction. [We seem to be playing the same record over and over again, while our results have so far not allowed us to greatly affect the modernization process in desired ways.] [Gaining such control over the modernization process seems, meanwhile, to be the most important objective of the research endeavor.] In short, we seem to be asking the same questions over and over without gaining increased payoff for our efforts. In the present essay, an attempt is therefore made to do something about

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this situation, by creating a theoretical framework which allows asking a new set of questions.

The main bottleneck in the development of an adequate body of knowledge about modernization is, in our opinion, the inadequacy of our theory. According to Rogers with Svenning (1969, p. 67), a theory is a "postulated relationship between two or more concepts, which are defined as dimensions stated in their most basic terms." The existing body of knowledge about modernization consists of such "postulated relationships between two or more concepts." In developing them, we have tended to limit ourselves to relationships which are closely linked to the empirical results of correlational analyses, so that the theories never go beyond what our limited statistical tools allow us to say.

Our so called theoretic rationale consists of sketchy reasoning, based on small pieces of information. Under such conditions, each hypothesis requires specific empirical support before we can have any confidence in it. The lack of theory leads to the use of the name 'correlational science' for what most of us are about (Berlo, 1967, p. 10).

As a result we have long shopping lists of attributes of people, villages and societies which we know change in relation to each other during the process of modernization while we are still virtually unable to say how the process works.

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of the working of a combustion engine. One can postulate many relationships between aspects of the engine, such as "the amount of fuel consumed is positively related to the number of revolutions per minute." However, even a large number of such perceived relationships does not lead to complete understanding of the process by which the engine operates because the different relationships have not been combined into a logical story, a cognitive pattern imposed on the engine, which allows us to understand the process of its operation.

Our statement that the main bottleneck in the development of the body of knowledge about modernization is the inadequacy of our theory therefore does not refer to theory in the sense of a "postulated relationship between two or more concepts," but to the somewhat broader meaning of theory as "a set of interrelated constructs (concepts), definitions and propositions that presents a systematic view\* of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena" (Kerlinger, 1966, p. 11). Theory in this sense includes not only the relationships between two or more variable attributes, but also is a logical story in which the observed relationships are related to form a "systematic view" of a process.

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It is with this broader meaning for theory as a systematic representation of a process as a whole that the inadequacy of our theory of modernization is a bottleneck in the development in our field of interest. In fact, we do not seem to have a "systematic view" of the modernization process while little attempt is made to arrive at one. Since all research, however exploratory, must start with questions and since questions must always derive from a logical story, a reality or systematic representation of the phenomena of study in our mind, the lack of a systematic view of modernization leads, in our opinion, to repetition and stunted development in our science, while new vigor can only come from new questions and hence from the development of a systematic view of modernization.

In this essay, an attempt has, therefore, been made to develop a theory of modernization in which a systematic understanding of the whole process has been emphasized, because such an attempt is seen as having a high potential for academic and, eventually, practical payoff in the present stage of development of our science.

In the present stage of development of our science, many lower generalizations about the modernization process have been coined and confirmed by other researchers. The theory building attempted in this essay can, therefore, differ somewhat from similar attempts by the "grand

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theorists" who could only evaluate their theories by drawing on the rules of logic or individual incidents. Such evaluation resulted in the fact that many such attempts could not withstand the onslaught of more substantial feedback.

In this essay we are in a position to make an effort to draw on the host of existing generalizations which can be confidently made about modernization. In fact, the effort made can be called integrative, in that it endeavors to fit together parts to arrive at a more parsimonious explanation of the modernization process as a whole, and thereby of the relative roles of the individual parts studies thus far.

However, the effort made would defeat its purpose if it did not go beyond existing knowledge. To be worthwhile, it has to open new areas and raise new questions. An integrative effort allows the raising of new questions, if alone because the systematic view one thus develops tends to highlight the blanks to be filled in, as well as the misunderstandings resulting from limited perspectives.

In summary, the lack of a systematic theoretical framework for the process of modernization is seen as the bottleneck in the development of the body of knowledge about modernization because it is only the development of a systematic view which can lead to new questions. The objective of this essay is to contribute towards developing

such a systematic view in which lower order generalizations developed thus far by others can be integrated. It is hoped that a more systematic view will highlight blanks and misunderstandings in our knowledge of modernization.

## 2. Problem statement

A confirmed theory is a prerequisite for solving problems because it allows identification of crucial aspects in the environment which can be profitably manipulated to change a state of the environment which causes the problem. If one's car stalls in the morning, one may test the battery, kick susceptible parts and perform other purposeful behaviors which are suggested by one's theory of how a car operates. Since I have set about, in this essay, to develop theory and since theory is a prerequisite for solving problems, the implication is that I have a problem which I wish to solve.

Being of modern vintage, I believe that a paradise on earth can be created by man's own effort. I am, therefore, interested in the optimization of man's well-being during his lifetime and especially in the recipes man uses for interacting with his environment so that it yields outcomes which are experienced as well-being. If a paradise is to be created, it must be through the

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development and use of such recipes, that is, through the development and use of man-made rules for acting upon the environment to change its present state to one which is preferred.\*

The interest in creating an earthly paradise through the application of man-made recipes is served by several approaches. One such approach is the creation of recipes through research and experimentation. An example is the research and experimentation which led to the new wheat and rice varieties which have changed areas where mass starvation was common to food exporting areas.

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\*The recipe, which prescribes how certain aspects of the environment are to be manipulated to yield preferred environmental states, must be based on theory, i.e., on a representation of the environment which identifies relevant aspects in the environment and their relationships. [The payoff of good theory is good recipes.] The concept of recipes differs from that of innovation, defined by Rogers (1962, p. 13) as an idea perceived as new by the individual. [In the first place, a recipe does not have to be novel, in that it refers to any set of rules which are used to elicit preferred states of being from the environment.] In this sense, recipe refers to more phenomena than does innovation. However, apart from the novelty aspect, recipe is seen by this author as more specific than innovation in that it refers to the subset of ideas which have to do with manipulating the environment. I have chosen the term recipe over means, a concept used by Merton (1957, p. 133) to indicate possible modes of reaching culturally defined goals.] Merton (1957) was especially interested in acceptable, institutionally prescribed means for reaching goals in his effort to create a typology of deviant behavior. In using "recipe" I stress my concern with the cognitive, ideational aspect of means and my lack of interest in physical resources and their distribution among members of a social system.

Another approach is that of economics, which studies the implications of the choices man makes in seeking well-being, given his ends and given scarce means which have alternative uses (Robbins, 1946, p. 43). The theories developed by economics serve to enhance the success of efforts at manipulating the economy so that it yields such outcomes as increased levels of living for the participants in the economy. [One's level of living is a measure of the types and number of recipes one can apply, be it hot running water, a car, etc.] Thus economics is also concerned with optimizing well-being through the use of recipes, be it that it assumes as given a set of such recipes in a social system and mainly concerns itself with the distribution of the use of the available recipes.

We shall take still another approach to the creation of an earthly paradise through the application of man-made recipes. This approach does not assume as given a set of recipes in a social system. Instead, it makes the object of study the development of such a set of the diffusion of new recipes within and between social systems. And, having seen children die because people lacked the knowledge of recipes which I knew to be available elsewhere, I think I am concerned with an important cause of variation in human well-being.

Given my general concern I wonder how people, who have lived well-adjusted lives for centuries with a set

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of recipes which we now perceive as inefficient, can become mobilized into frenetic activity upon contact with a social system with a more efficient set of recipes. Conversely, I wonder how such people have been able to live well-adjusted lives before. I also wonder why the people of the richest nation of them all, my current host, are perhaps more concerned with the good life than any other people and feel more deprived if they do not have it, even though their well-being may still be regarded as greater than that of more content people elsewhere.

My viewpoint allows me to perceive powerful forces which are kept at bay or unleashed, depending upon changes in the set of recipes for interacting with the environment and the diffusion of such recipes within or between societies. And I wonder about these powerful forces and their effect on society. I believe that these forces are a fruitful area for investigation. Understanding them may well lead to the development of recipes for controlling them, thereby yielding powerful tools for those concerned with improving well-being.

[One can call the set of recipes which has developed over time in a social system the civilization\* of the social system.] The theory which shall be developed in

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\*This definition of civilization is inspired by MacIver and Page (1957, p. 500) who refer to civilization as the utilitarian, the means used to reach cultural goals.]

this essay is thus concerned with civilization. More specifically, we shall set about to construe a reality\* of civilization which explains the dimension along which it changes, the forces which make it change and the mechanics of its change: the communication of recipes.

[I will endeavor to develop the reality of civilization in such a way that it does not contradict historical phenomena, but rather incorporates them. A reality which does not ". . . increase the correspondence between what man perceives in his environment and what that environment turns out to be when he acts within it to experience some intended consequence . . ." (Cantril, 1965, p. 11) is inadequate.

[In summary, the reality we propose to develop will deal with civilization which is the set of recipes for interacting with the environment so that it yields outcomes which are experienced as well-being. We will try

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\*Cantril (1965, p. 11) uses the notion of "reality world," which can be defined as the "pattern of assumptions which increase the correspondence between what man perceives in his environment and what this environment turns out to be when he acts within it to experience some intended consequences." I borrowed his notion but call it "reality." It is a concept that is central to this essay, while it is difficult to develop some meaning for it from a definition. It took me a year to do that, largely as a result of listening to the lectures of Doctor Berlo on the subject of reality. For the moment, let me leave the reader with the statement that reality can be reified because it is the subjective property of its bearer, which can, at most, be shared as a result of communication or similar experience.

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to explain change in civilization in terms of the dimension along which change takes place, the forces which make for change and the mechanics of change. An effort will be made to optimize chances that acting upon the reality will reinforce our confidence in it.

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## Chapter 1

### A DYNAMIC MODEL OF EVOLVING CIVILIZATION

#### 1. Introduction

In the present chapter I shall develop the model of evolving civilization which is the core of this dissertation. As such, the present chapter will be used to develop and define concepts, to further prepare the ground for the model, and to describe the model itself.

In developing the model, I shall use a systems approach. That is, I shall apply to the phenomenon of civilization, "a set of related definitions, assumptions and propositions which deal with [phenomena] as an integrated hierarchy of organizations of matter/energy"\* (Miller, 1965,a). By calling a phenomenon a system, one can make certain observations about the phenomenon because a system has certain properties, which shall be described in the next section. The systems approach is useful, therefore, in the same way as the normal distribution is useful.

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\*"Matter is anything which has mass (m) and occupies space. Energy (E) is defined in physics as the ability to work" (Miller, 1965, a). "Given Mr. Einstein's expression of the relationship between matter and energy ( $E=mc^2$ ), we can use the two terms interchangeably and simply speak about matter/energy . . ." (Berlo, 1969)

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## 2. Properties of systems

A system, as defined by Schramm (1963, p. 30) is a

Boundary maintaining set of interdependent particles. The key words are boundary and interdependent. By interdependent we mean a relationship of parts, in which anything happening to one of the components of the system affects, no matter how slightly, the balance and relationships of the whole system. By boundary maintaining we mean a state in which the components are so related that it is possible to tell where the system ends and where the environment begins.

Any phenomenon can be called a system, in that the identification of the system's boundaries is an arbitrary act of the observer. By looking at an event as if it were a system, one merely hopes to gain certain advantages in explanation and prediction, because systems have certain properties. I am largely concerned with man and groups of men and will regard both phenomena as systems.

A system is closed when its boundaries are impermeable and, therefore, do not permit the exchange of matter/energy (or the information\* carried by matter/

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\*Information is defined as a measure of the organization of matter/energy, i.e., the negative of its entropy (Brillouin, 1968, p. 154). This meaning for information allows one to say that bread has information. "The living organism can only keep alive . . . by continually drawing from its environment negative entropy" (Schrödinger, 1968, p. 144) (We shall define entropy later).

However, the social scientist runs into difficulties with the above definition of information, since man has no way of knowing about the organization of matter/energy except through imposing pattern on that matter/energy (Berlo, 1969), or as we would say, except through developing a reality of that matter/energy. In this sense, information does not exist until someone has imposed pattern. We shall come back to information in greater detail later.



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energy) between the system and its environment. No phenomenon has completely impermeable boundaries. However, a system's boundaries can be impermeable to certain specific matter/energy exchanges.

A system is open when it has "boundaries which are, at least, partially permeable, permitting sizeable chunks of matter/energy or information transmissions to cross them" (Miller, 1965,a). No system has completely permeable boundaries, because that implies absence of boundaries, while a system has a boundary by definition.

Therefore, every system is partly closed and partly open, while closedness or openness depends on the type of matter/energy exchange one has in mind.

Within any system, forces are at work which tend to bring the system in a steady state or equilibrium.\* The extent to which a system is open or closed determines

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\*A system can be described by certain critical variables. The relationship between these variables defines the behavior of the system. One can express the relationship by an equation. The behavior of the system is completely described by the equation. An example is the so-called perfect gas, for which  $PV=RT$ , where  $P$ =pressure,  $V$  volume and  $T$  temperature.  $R$  is a constant. If we impose a certain value on two out of the three variables  $P$ ,  $V$ , or  $T$ , the third will adjust to satisfy the equation. The equation, therefore, describes the steady state or equilibrium (Rapoport, 1968a, p. xviii). For most systems, the equation describing the steady state has not been created. A steady state is a state of a system in which the composition of the system remains constant (von Bertalanffy, 1968, p. 18). The steady state can be a dynamic equilibrium (open system) or a static equilibrium (closed system).

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the type of steady state the system will finally assume. The exchange of matter/energy with its environment allows an open system to reach a steady state in which difference between system elements are maintained. A closed system cannot maintain difference between system elements so that a steady state will only be reached when all system elements are the same.

As the Second Law of Thermodynamics states: "Entropy in a closed system will always increase toward a maximum, attained in equilibrium" (Rapoport, 1968a, p. xviii).

Entropy is a measure of the degree of sameness between system elements and is, therefore, an indicator of disorder, disintegration, or disorganization in the system.\*

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\*Entropy is a difficult concept. It has been called a "chaotic state," an "inert state" (Schrödinger, 1968, p. 145), a "state in which no observable events occur" (Schrödinger, 1968, p. 144), "roughly a measure of disorder" (Rapoport, 1968a, p. xviii), or of "disorganization" (Wiener, 1968, p. 33). A more precise definition of entropy results from the statistical interpretation of the Second Law of Thermodynamics: "The natural tendency of entropy to increase is interpreted now as corresponding to the evolution from improbable to the most probable structures." Entropy thus becomes "a physical substitute for probability" and "acquires a precise mathematical definition as the logarithm of probability" (Brillioun, 1968, p. 150). However, to regard the trend towards equilibrium as the "predominance of the occurrence of the more probable states over the less probable" (Rapoport, 1968b, p. 138) does not tell me much, since I do not know what the most probable state of the system is. Therefore, the statistical interpretation makes the concept of entropy less adequate, because it no longer predicts what happens across a wide variety of systems. In this respect, the notion of chaos was more powerful. But then, chaos is a vague term, which does not help in finding adequate measurements. I believe, therefore, that Wiener

Only when parts of the system differ in some respect, can one speak of interdependence and organization.

An example of a closed system is the battery-driven toy car. It is closed in terms of inputs of electrical energy. Therefore, the system cannot maintain the difference in electrical potential between its parts. As it works, the difference in electrical potential becomes smaller, until all elements are the same. Entropy has then been reached and the car stops its movement.

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\*(continued from last page) (1954, p. 12) spoke the magic words when he said: "As entropy increases . . . all closed systems . . . tend naturally to deteriorate . . . to move from the least to the most probable state, from a state of organization and differentiation . . . to a state of chaos and sameness." At minimum a system's organization implies difference between system elements. An increase in disorganization must be, at least, accompanied by an increase in similarity (in some attribute of interest) between system elements. That is why I minimally define entropy as the degree of sameness between system elements. I believe this definition to be applicable to a wide variety of systems and to allow for measurement, even in the social sciences.

As for the Second Law, I would speak of the natural tendency of a system to show an increase in similarity between its elements, with respect to attributes which are affected by matter/energy exchanges to which the system is closed. An example would be soil erosion, which demonstrates the tendency toward entropy because differences in height are diminished as long as the system remains closed to new inputs of height differential. The example illustrates that the observation of a tendency toward entropy in a system begs the question as to the force which makes for entropy. In case of erosion, the force normally is water which seeks its lowest point. The term entropy refers to a state of a system. However, knowledge of a future state allows us insight in the processes operating in the system. We are of course interested in process, in dynamics, in change. But the ability to characterize change of the system by saying that the system tends towards entropy allows us to understand the process.



An open system can resist the tendency toward entropy and maintain gradients by "throughputs" of matter/energy. Thus, in an open system, the steady state "does not depend on initial conditions. It will entirely depend on the properties of the system itself, that is, on the constants of proportionality which are independent of the conditions imposed on the system" (Rapoport, 1968a, p. xviii).

The degree to which a system's steady state is independent of the conditions imposed on it depends, however, on the type of open system one has in mind. Open systems differ in the range of variation within which they maintain a steady state. A lake cannot do much, for instance, about the amount of nutrient flowing into it. If the amount increases as the lake becomes polluted, a steady state is again established at a level which is marked by more plant growth.

Other systems have a much narrower range of variation within which they maintain a steady state. They can better regulate the exchange of matter/energy with their environment. An example is a mouse which has the ability to regulate its exchange of matter/energy with its environment within much narrower limits than the lake. Systems, such as the mouse, have a "preferred state" or a "purpose" to maintain a certain state, whatever the conditions imposed on it. For such systems,

one can indeed say that the steady state is determined by "system parameters and not by initial conditions" (von Bertalanffy, 1968, p. 18).

In summary, I shall regard man and groups of men as systems because systems have properties useful for my purpose. In all systems, forces are at work which tend towards a steady state. In closed systems, a steady state can only be reached when system elements are the same. An open system can maintain a steady state in which differences exist. But open systems differ in the range of variation they allow in their steady state, depending upon their ability to regulate matter/energy exchange.

### 3. Controlling systems

With the mouse, we touch upon living systems (Miller, 1965a, 1965b, 1965c), a subset of open systems, which have "the property of self-maintenance of structure in the midst of a throughput of material" (Boulding, 1968, p. 7). That is, the living system will try to maintain its variables within a given range of values (Miller, 1965a). (In order to do so, it must regulate its exchange of matter/energy with its environment. To the extent that it can regulate matter/energy, one can say that the system has achieved control over its environment (Ashby, 1968, p. 301).



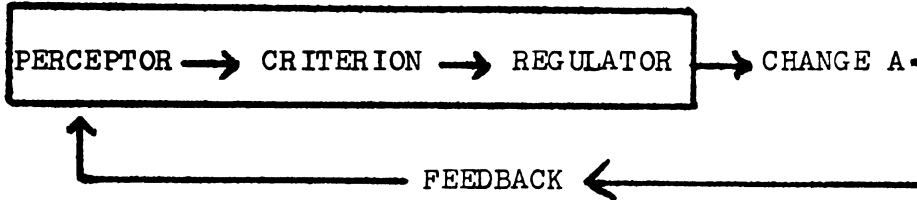
Control therefore implies (1) an actual state of being, A, (2) a preferred state of being, B, and (3) the ability to change the state from A to B. One could say that the living system has a criterion for well-being (B) programmed into it, by which it makes decisions on regulating its exchange of matter/energy.<sup>7</sup> One could liken this criterion to the temperature value set on a thermostat. It allows the thermostat to evaluate its A so that it can call for regulation if A becomes too different from it.

A controlling system thus (von Bertalanffy, 1968, p. 16) consists of (1) a sensory perceptor which tells the system about the state of being, A, (2) a criterion for well-being with which A is evaluated, and (3) a control mechanism or regulator which can act to change A. When the effect of the action, performed on the environment to change A, is again perceived by the system, one speaks of feedback.\* A simple model of a controlling system would thus appear as follows (von Bertalanffy, 1968, p. 16):

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\*Feedback is the perception, by the controlling system, of the change in the environment which results from the action performed by the controlling system. Such perception serves to guide subsequent action.





An example of a controlling system is the seven-year old boy who had not spoken a word since he was born, much to the consternation of his parents. One day, at the dinner table, he finally spoke two words: "Too sweet." His parents were overjoyed and asked him why he had not spoken before, to which he replied: "So far, everything was OK." The example shows that the goodness of fit between the controlling system and man's behavior still leaves much to be desired. However, since we aim to expand the model of the controlling system to arrive at a better fit between it and man, we shall, for purposes of this essay, assume that man is a controlling system.

[In summary, man is seen as a controlling system which regulates its exchange of matter/energy with its environment by acting upon that environment with a control mechanism, if its state of being does not coincide with its criterion for well-being.

#### 4. Regulation by non-human organisms

To understand man-the-controlling-system, we must first deal with non-human controlling systems. A living

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system does not just exchange matter/energy. It can only maintain A close to B if the matter/energy exchanged is organized in a certain way, in terms of quantity, time and type. Non-human organisms rely on organizations of matter/energy already available in their environment. Their control mechanisms are adaptations of the organism itself, used to optimize the input of available organizations of matter/energy.

In fact, in an ecological system, matter/energy is recycled through a multitude of organisms, each of which is a temporary organization of matter/energy available to others at any given time, while the whole system resists entropy by the intake of energy from the sun and matter from the earth. In observing such a system, one can focus on balance, that is, on the numerical availability of the units of matter/energy to each other, given their organization. This is essentially the viewpoint of the ecologist.

One can also look at the organisms in terms of their organization and especially in terms of changes in their organization. This is essentially the viewpoint of the evolutionist. According to his theory, the idea, or principle, according to which the living system is organized, is carried by the gene (Rapoport, 1968a, p.xx), while the organization of the living system only changes

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as a result of a mutation of the gene.

According to evolution theory, one can further say that a new idea or principle for organizing matter/energy will only diffuse in a species if that idea allows the members of the species, organized according to it, to regulate their exchange of matter/energy closer to the criterion for well-being than members of the species organized according to the old idea. This implies that "the general direction of evolution has been to produce systems with more information or greater complexity of organization." The more complex system is "likely to have more adjustment processes" and "is more likely," therefore, "to adjust to stresses in the environment and to survival (Miller, 1965b). Miller (1965b) also names, as some of the criteria for progress in evolution, "increased adaptability, control over the environment, success, independence from environment, self-regulation..."

In summary, a living system is organized according to an idea or principle which is carried by the gene. This principle implies a certain ability of the creature, organized according to it, to control its environment. A new principle for organizing matter/energy is invented by mutation. But that new principle only diffuses, if it allows the creature, organized according to it, to control its environment better than creatures not so endowed. Consequently, the trend in evolution has been

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the development and diffusion of principles for organizing matter/energy which allow greater control over the environment.

#### 5. The organization of matter/energy and man

One can assume that man's predecessor was just another organism in the ecological system, which adapted to optimize its use of available organizations of matter/energy, such as available wild fruits, etc. But then some remarkable change must have occurred.

For man acquired the prerogative of species. That is, man acquired the ability to organize matter/energy according to principles which are carried in his mind, so that his ability to control his environment became independent of principles for organizing matter and energy carried by the gene. Man further acquired the ability to communicate such principles as he invented, so that the diffusion ~~X~~ of a new principle became independent of the living system which embodied it.

Man, as a controlling system, does not have a static and built-in control mechanism for affecting his environment. Instead, he controls his environment, so that it yields outcomes which fit his criterion for well-being, according to recipes which are developed and stored in his reality or representational system. Thus man himself

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is responsible for making his A correspond to B, he knows he has the potential to do so, and consciously seeks control if his outcomes do not fit his criterion.

Thus man-the-scientist (Kelly, 1963) enters the scene. [According to Kelly (1963, p. 5), "it is customary to say that the scientist's ultimate aim is to predict and control." Or, as I would say, given (1) a state of being A and (2) a preferred state B, the scientist tries to explain A by developing a theory or reality which identifies the elements in the situation which he believes to have high probability of being related to A. He verifies this reality by testing hypotheses derived from it.

If his reality is supported by feedback, if there is "correspondence between what the environment is perceived to be and what it turns out to be when one acts within it to experience some intended consequences" (Cantril, 1965, p. 11), the scientist has some confidence in his reality, i.e., he has diagnosed A. He can now start to manipulate the elements which he has identified to change A to B. When B is attained, the scientist has gained control and developed a recipe for organizing matter/energy which can be used to change A to B over and over again.

[Now, says Kelly (1963, p. 5), "might not individual man, each in his personal way, assume more the stature

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of a scientist, ever seeking to predict and control the course of events with which he is involved?" Might not, in other words, every man operate the same way to get from A to B, whatever they may be? When the room becomes dark with a noise of "pop" do I not develop a theory which says: "The room has become dark because the light bulb is blown out?" Do I not shake the bulb for evidence of loose filaments to confirm my theory? And do I not act on the recipe of "new light bulb" derived from my confirmed theory? I do.

In short, says Kelly (1963, p. 43),

Mankind, whose progress in search of prediction and control of surrounding events stands out so clearly in the light of the centuries, comprises of the men we see around us every day. The aspirations of the scientist are essentially the aspirations of all men.

I add that, notwithstanding Kelly's claim that he avoids "push and pull theories" which use, respectively, stimuli and needs (1963, p. 36) to explain man's behavior, he does not say anything about the aspirations of all men. Kelly (1963) speaks of control as a goal in itself, while, in my opinion, control can only serve to achieve a preferred state. Thus Kelly (1963) seems to speak of a controlling system which has no preferred state or criterion for well-being, but only a control mechanism. Nevertheless, Kelly's contribution of man-the-scientist, given a criterion for well-being, is important to the present study.

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In summary, my postulation of man-the-controlling-system is expanded to where the control mechanism of the system is said to consist of a reality in which man "construes" (Kelly, 1963, p. 50) a replication of this environment or creates "images" (Boulding, 1956) of it. The reality serves to predict and control the course of events in that it can develop and store recipes for organizing matter/energy which serve to improve the goodness-of-fit between outcomes experienced and the criterion for well-being. The reality is amenable to change, it is adjusted on the basis of feedback and communicable.

## 6. Civilization

Given a controlling system with a control mechanism which contains recipes for organizing matter/energy which are communicable, let us now consider a set of such controlling systems and assume that they share a common criterion for well-being.

Under such assumptions, one can expect that a recipe, which allows a better fit between A and the shared criterion than other recipes, will diffuse throughout the set of controlling systems, until all members have adopted it. One can thus predict a tendency toward entropy in the set, in that all members will tend to become the same in terms of the recipes which they use to control their environment.

Over time, one can expect a number of such recipes to be developed or invented and to diffuse throughout the set. The members will thus share in a set of recipes.

Civilization is the set of shared recipes which members of a set of controlling systems use to make their state of being coincide with their shared criterion for well-being.\*

Civilization evolves as new recipes are added to the set by invention.\*\* However, not all invented recipes will diffuse. This happens only to those which improve the ability to make A coincide with a shared B. That is,

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\*Common parlance calls a people civilized when that people conforms to norms the speaker considers desirable. One can also speak of "Western civilization," "Chinese civilization," or "Egyptian civilization," indicating the highly developed state of arts and crafts by which a certain society distinguishes itself from others. The use of civilization in the present essay does not imply a certain level of civilization. A tribe of Bushmen also has its set of recipes for controlling its environment. I will, however, speak of different levels of civilization, depending upon the degree of control over the environment which the recipes, making up the civilization of a society, allow the members of the society to exert.

[\*\*Invention is the process by which new recipes are created or developed. This definition is slightly adapted from Rogers with Svenning (1969, p. 3). They speak of the creation and development of new ideas.] In my opinion, the typical inventor is someone who develops or creates a method of organizing matter/energy which better achieves a goal than previous methods. Although some new ideas may have been developed in this essay, the author is not considered an inventor.





only those recipes will diffuse which allow greater control over the environment. Civilization thus evolves along a certain dimension, the degree of control over the environment, which it shares with evolution.\* In fact, one can say that the development of civilization to levels, which allow more control over the environment, does for the controlling system assumed here what evolution does for the species. One can thus also speak of more or less evolved civilizations, or higher or lower levels of civilization, depending upon the degree of control the civilization allows the controlling systems participating in it.

Still assuming a shared criterion, one can predict that two levels of civilization cannot exist, over time, within the same set of controlling systems. The tendency toward entropy, caused by the wish to make A coincide with the shared B, will eventually lead to a steady state in which all members of the set share in the highest level of civilization available in the set.

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\*Evolution can be defined as the irreversible process by which the hereditary organization or genotype of living systems changes from one state to another, generally more complex, one (see Miller, 1965b). Evolution has been compared (Miller, 1965b) to learning. "Both involve feedback with reward and punishment for 'correct' or 'incorrect' responses. In case of the development of a species, these responses are mutations either capable of surviving or not." Man's ability to survive does not depend on his genotype, but on the recipes he is able to apply. However, the development of civilization to higher levels is very similar to the evolution of a species.

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The recognition of the tendency for all members to share in the highest level of civilization, in a situation which made this "normal" progress impossible, led Marx to predict the revolution of the proletariat.

[Though my predictions thus seem to hold promise of at least finding some support from expert opinion, they still depend on the assumption of a shared common criterion for well-being.] Since a model of man which assumes such a common criterion does not seem to fit man very well, we must now scrutinize the human criterion for well-being.

In summary, the assumption of man-the-controlling-system, enlarged to include a control mechanism which consists of a communicable set of recipes and a criterion for well-being which is shared in common with others, allows one to predict that: (1) A new recipe which allows better fit between A and a common B than other recipes will diffuse throughout a set of controlling systems of the type assumed; (2) All members in the set will thus tend to share a common set of recipes, so that one can speak of a tendency toward entropy in the recipes used; (3) Entropy will be reached as the highest level of civilization available in the set, that is, the members will all tend to apply those available recipes which allow best fit between A and the common B; (4) Only those recipes will diffuse which allow better fit between A and B than was previously possible and (5) Two levels of civilization,

which differ in the amount of control they allow those participating in each cannot persist, over time, within one set of controlling systems.

## 7. The human criterion for well-being

So far, I have assumed that the man-the-controlling-system has a criterion for well-being programmed into him much like the temperature value set on a thermostat. But such an assumption would lead to ridiculous conclusions. It would imply that Papouans of a generation ago were born with an ideal state which included being a successful headhunter, while for many of those recently born it would include owning a jeep.

From such examples, it would seem that man is born without a specific preferred state, but acquires one during his lifetime, so that an outcome which has never been experienced cannot be missed or aspired to. But, if man is born a tabula rasa, i.e., without a criterion or inherent ability to judge his state of well-being, how would he acquire specific and motivating tastes during his life-time?

Let us assume, for purposes of the present essay, that man is born with the ability to "recognize" a certain outcome as closer to well-being than another. That is, he is not born with a criterion which includes root beer, fast cars, head hunting, etc., but with the ability

to recognize such specific outcomes as closer to well-being than others, so that they take on the character of a criterion for well-being. That is, people learn to aspire to specific outcomes and make efforts to control their environment to experience them. The object of such efforts is thus the regulation of the frequency of occurrence of specific outcomes people have learned to aspire to. An outcome which never has been experienced cannot be part of the motivating set out outcomes.

I leave untouched the question as to what "really" constitutes human well-being. There have, of course, been efforts to answer that question, as we shall see. In the absence of measures of well-being actually experienced, but with the assumption that man will recognize a state of well-being when he experiences one and will, therefore, try to control the frequency of occurrence of that experience, one can try to infer the states man experiences as well-being by factoring the controls he seeks to apply or has applied.

One such effort was made by Cantril (1965), who studied the concerns of people in a number of countries and concluded that men share a concern for survival and physical well-being. Another such approach was by Maslow (1943), who suggested a "hierarchy of needs" based on the urgency with which man tries to satisfy them. Achieving physical well-being was considered the most

urgent need. However, such approaches as Cantril and Maslow's suffer from the fact that they are based on an historical situation and do not allow conclusions about human well-being as such because there may be a host of outcomes which have never been experienced and/or cannot be controlled, but which could be recognized and become aspirations.

Therefore, I continue to assume that man is born with the ability to recognize an outcome which he experiences as closer to well-being than another and that he thereby learns to aspire to that outcome. Since experience differs among men, aspirations may also differ. Likewise, they can be similar. And it is similarity we are interested in as social scientists. When would men recognize similar outcomes as closer to well-being than others, so that the former become shared common aspirations?

The experience of well-being is partly of a physical nature. That is, matter/energy exchange with the physical environment will, at least, partly determine well-being. Since men are of a similar physical make-up, since they share the same "cage of flesh," we shall further assume that men will recognize the same matter/energy exchange as closer to physical well-being than

others.\* In the present essay, the terms aspiration, recipe and civilization will thus apply to the seeking of physical well-being.

In summary, I expand man-the-controlling-system to include a criterion for well-being which develops as a result of recognizing outcomes as closer to well-being than others. Such outcomes become aspirations, i.e., man tries to seek control over the frequency of occurrence

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\*It is of interest to speculate about the consensus between men of different background on types of experiences other than those affecting the physical system. Do men recognize similar interpersonal relationships as closer to well-being than others, for instance, even if the men are from widely differing cultural backgrounds? I could certainly recognize the interpersonal relations between friends in Nigeria as closer to well-being than those which normally exist between Dutch and American friends. Conversely, I observe that Africans in Europe or America feel deprived of such relationships. One study (Child, 1968) did not look at the question of men's basic similarity in terms of interpersonal relationships, but in terms of art appreciation. The researcher showed a number of pairs of widely different art objects, such as two fairly similar modern paintings, two Japanese vases, etc., to artisans of widely differing cultures. The artisans had to judge the superior art work in each pair which had been so chosen by Western experts as to include superior and an inferior art work. The cross-cultural consensus on the superiority of the "superior" art work is highly significant. Such studies raise the question to whether man is indeed a tabula rasa when he is born, is often assumed in social science. Animals seem no bulae rasae at birth. In one experiment (Terres, 1965) work eggs from East Germany, from where the storks migrate via Israel to Egypt, were placed in nests of West German storks, which generally migrate to Egypt via Spain and the north African coast. West German eggs were placed in East German nests. When time came for the young, hatched from the eggs, to migrate, they did not join the flocks of their foster parents, but set out alone to eventually join the flocks of their real parents.



of such outcomes. Since men have a similar cage of flesh, they will be similar in the type of matter/energy exchange with the physical environment which they recognize as physical well-being, and which motivates them to seek control over their physical environment.

## 8. Motivation

Motivation is defined as the force which makes man act when the value of essential variables on one side of an equation describing man's reality are not equal to the value of the essential variables on the other side.\*.

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\*The definition of motivation used is a very general one. I have chosen it because it seems to provide room for the many different types of motives, needs, drives, desires, etc., which have been said to motivate man. All these concepts refer to an "inner state that activates or moves people toward goals and it results in purposive means/end behavior . . . The goal is the objective or condition or activity toward which the motive is directed and which will satisfy or reduce the striving" (Berelson and Steiner, 1967, p. 159). A large number of motives has been construed as the seemingly most parsimonious way of explaining certain behaviors. All terms such as need, drive, etc., imply a goal, a preferred state B which will cause man to act if A does not coincide with it. In the present essay, B will be limited to states of physical being which have been recognized as closer to well-being than others and hence have become aspirations. Man is seen as motivated to satisfy these aspirations. The present author is aware that there is a certain redundancy in using both aspiration and motivation. Aspiration implies a desired outcome which one does not experience so that one will do something to experience it. Motivation implies action to change an actual outcome to a preferred outcome. Therefore aspiring to experience an outcome and being motivated to experience that outcome refer to the same type of phenomenon.

Of course, we are in no position yet to define and measure the variables on each side of the equation. For the purposes of the present essay, I shall use the criterion for well-being (B) and the actual state of being (A) as the main variables on each side of the equation  $A = B$ .

Motivation occurs if  $A \neq B$ . The normal result of motivation can be said to be a change in A to make it equal to

B. However, motivation to experience an outcome not only predicts search to control the frequency of occurrence of that outcome, but also search for pacification of the motivation if such control cannot be exerted.\* Pacification is defined as ways of making A equal to B, other than through changing A to make it coincide with B. I shall come back to pacification in greater detail later.

Having gained control over an outcome implies that one applies the recipe for organizing matter/energy which leads to that outcome, whenever one wants to experience it. However, having learned to aspire to an outcome does not necessarily lead to seeking a repetition of that

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\*The notion that motivation must be pacified if A cannot be made to coincide with B is inspired by the theory of cognitive dissonance (Deutch and Krauss, 1965, p. 68), although the construed "need for cognitive consistency" on which the theory is based is not at issue here. What makes dissonance theory of interest to us is that it deals with cases where a choice leaves motivation which cannot be reduced by what I have considered the normal method. Hence alternative modes of drive reduction must be used, such as "rationalization" (Deutch and Krauss, 1965, p. 74), voluntary isolation from information which would increase motivation, and other "mechanisms of defense" (Deutch and Krauss, 1965, p. 74).

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outcome (Rotter, 1966). Instead, such repetition is only sought when experiencing the outcome is perceived as contingent upon the actor's own activities in organizing matter/energy, i.e., when the experience of the outcome is perceived as caused by the actor's own exertion of control. [Rotter (1966) defines internal control as the perception of a causal relationship between actor's outcomes and his behavior.

However, when man has a number of motivating outcomes over which he cannot exert control, he is likely to perceive his outcomes as caused by luck,\* fate,\*\* chance, the control of powerful others, gods, or other external forces. Rotter defines external control as the perception of a causal relationship between actor's outcomes and the influence of forces external to the actor. [Construing such external forces rationalizes man's failure to exert control and pacifies the motivation to experience desired outcomes.

During his lifetime, man learns to attach a certain probability to the extent to which his efforts to control lead to desired outcomes, depending upon the results of

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to   [\*The belief in luck is said (Merton, 1957, p. 149)  
to   "serve the psychological function of enabling people  
to   preserve their self-esteem in the face of failure."

ad  
less   \*\*Foster (1962, p. 67) calls fatalism the "best  
ad   adjustment the individual can make in an apparently hope-  
less   less situation."

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such efforts. That is, man develops a generalized expectancy of internal or external control (Rotter, 1966), depending upon the nature of his experiences. Thus, experience gives rise to a reality in which past experience is extrapolated into expectations of internal or external control.

A generalized expectancy of external control can be expected to exist when the frequency of occurrence of a host of motivating outcomes cannot be controlled, so that pacification is necessary. Therefore, the generalized expectancy of external control implies a vacuum, a gap between control desired and actually gained, so that its existence allows prediction of eventual movement toward gaining more control.

[In summary, man-the-controlling-system is motivated to experience outcomes which he has learned to desire. He tries to experience these outcomes by applying man-made recipes for organizing matter/energy. If such recipes are not available, or cannot be applied, motivation must be pacified. In that case, man construes external forces of control which rationalize his failure to exert control himself. The regular experience of desired outcomes, as a result of control exerted, leads to a general expectancy that such control can be applied in the future. The regular experience of failure to experience desired outcomes leads to a generalized expectancy that external

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forces determine the extent to which desired outcomes are experienced.

#### 9. A model for the evolution of civilization

In the previous sections, I have assumed and expanded a word model of man-the-controlling-system, making an effort to ensure that I covered essential elements on one hand, and did not make some major unspoken assumptions on the other hand. With the expanded model of man-the-controlling-system, I can now come back to civilization and develop a rather succinct model of its evolution.

The experience of an outcome which is recognized as closer to physical well-being than others teaches man that such an outcome is possible. Thus he learns to aspire to its repetition. The set of outcomes to which man has learned to aspire is his standard for living. It is the criterion by which he evaluates his every-day outcomes which constitute his level of living.

If the level of living does not fit the standard for living, man will be motivated to compromise between the two. Such compromise can be achieved in the following ways:

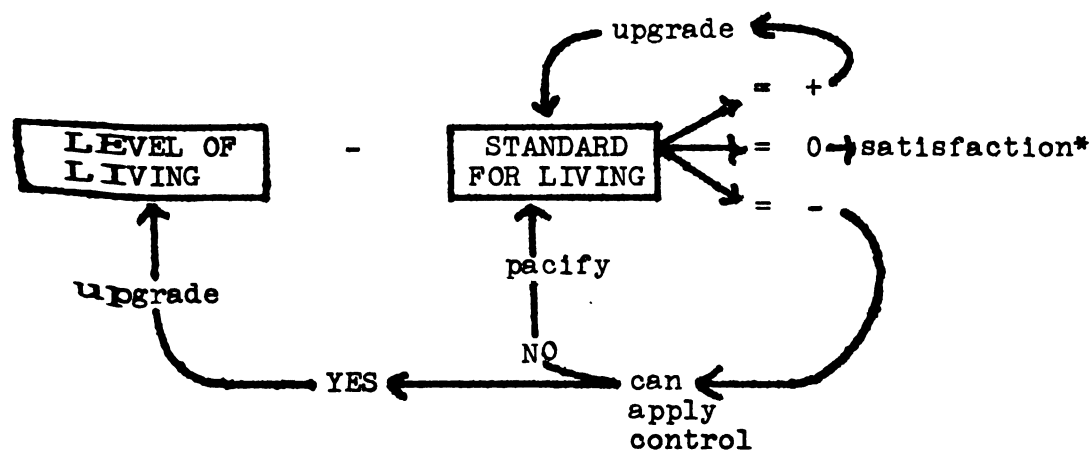
1. If the level of living is higher than the standard for living, man will upgrade the standard for living by incorporating new aspirations.



2. If the level of living is lower than the standard for living, man will try to upgrade the level of living by seeking control over the frequency of occurrence of aspired-to outcomes by applying recipes for organizing matter/energy.

3. If man cannot exert such control, he resigns to the difference between standard for living and level of living, but pacifies his continuing motivation by construing external forces of control.

The following illustration can, perhaps, clarify the simple model developed so far:



Let me now improve this simple model by adding one other source of aspirations: The outcomes experienced by

\*This view of satisfaction is consistent with Lerner's (1963, p. 333) notion of the wants:gets ratio:  

$$\text{satisfaction} = \frac{\text{achievements}}{\text{aspirations}} = \frac{\text{gets}}{\text{wants}}$$

others. Man is able to experience outcomes vicariously,\*  
 he is able to empathize with others (Lerner, 1958).  
 That is, he will upgrade his standard for living if he  
 perceives others to experience a level of living which  
 is higher than his standard for living.

Therefore, members of a closed social system will  
share in common the standard for living of those who up-  
graded their level of living most. Given perfect vicar-  
 ious experience of outcomes, they will thus have a simi-  
 lar standard for living, even if their chances of exper-  
 iencing levels of living which fit that standard are not  
 the same. Thus, perfect vicarious experience of outcomes  
leads to entropy at the highest standard for living poss-  
ible in the closed social system.

Those members, whose level of living does not fit the  
 common standard for living, will be motivated to upgrade  
 their levels of living by adopting the recipes for org-  
 anizing matter/energy used by those who upgraded their  
 levels most. Given perfect communication of recipes and  
perfect availability of matter/energy to those who want  
to organize it according to some recipe, the most super-  
ior recipes for organizing matter/energy available in a

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\*Vicarious experience is defined as the experience of  
 others' outcomes as if they were one's own. Outcome is  
 defined as an exchange of matter/energy with the environ-  
 ment of a system, a state of being which is experienced.

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closed social system will diffuse through it, creating entropy at the highest level of civilization which that social system is capable of producing.

Under the conditions specified, all members of a social system will thus have a similar standard for living and experience a similar level of living. The standard and the level do not necessarily have to coincide, however, for even those who upgraded their level of living most may not have gained control over the frequency of occurrence of all their aspired-to outcomes.

Then, pacification will be sought in the creation of supernatural forces of external control, be it that their creation implies a pacified motivation, which will eventually be filled when inventions are made within the social system, or when it comes into contact with another social system with a higher level of civilization. The situation in which motivation, even of those who participate in the highest level of civilization available in the social system, must be pacified is called absolute poverty.

My assumptions of (1) perfect vicarious experience of outcomes, (2) perfect communication of recipes and (3) perfect availability of matter/energy is not always realistic. However, the first assumption seems more realistic than the last two because vicarious experience seems to face least restraints. Thus, some members of a social system will, although motivated, not be able to

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upgrade their levels of living and will, therefore, look for a pacifier.

However, to the extent that they perceive other's outcomes as a result of application of recipes by others, they will find it difficult to pacify their motivation by construing supernatural external forces which rationalize their failure to exert control. Thus pacification will be more difficult. Yet, it is also more necessary because one can expect the motivation to experience outcomes to be more acute, if one knows that recipes are available which allow control over the frequency of occurrence of those outcomes. The outcomes in question will be more salient.

I will call the inability to participate in the highest level of civilization, available in the social system, relative poverty.<sup>\*</sup> Vigorous efforts to find

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<sup>\*</sup>The concept of relative poverty is identical to relative deprivation (Merton, 1957, p. 227). Relative poverty or deprivation implies a reference group with which one can compare oneself in some crucial respects but not in other crucial respects, so that an individual can say: If those persons are in the same boat I am, why are they better off in some respect? Relative deprivation was first introduced in the "American Soldier" studies as an intervening variable in relationships between status and attitude variables to explain such seemingly paradoxical findings as "The less the promotion opportunity afforded by a branch . . . , the more favorable the opinion tends to be toward promotion opportunity" (Merton, 1957, p.236). But relative poverty/deprivation and the implicit concept of reference group seems of much wider usefulness. We shall come back to these concepts in Chapter 2. It may be mentioned here that the concept of empathy (Lerner, 1958), as used in modernization research, seems

pacification can be expected in the situation of relative poverty, while the existence of pacifiers again allows prediction of movement toward gaining more control.

In summary, assuming man-the-controlling-system developed in earlier sections, civilization is said to evolve as a result of upgrading standards for living, which motivates man to upgrade his levels of living also. Under perfect vicarious experience of outcomes, entropy in the highest standard for living can be predicted. Under perfect communication of recipes and perfect availability of matter/energy, entropy in the recipes used can be predicted at the highest level of civilization available in a social system.

## 10. Conclusion

One has to be a little strange to act upon the reality one has construed, regardless of the feedback one obtains during such action. In fact, one has to be as crazy as the Christs of Ypsilanti (Rokeach, 1967). I therefore hasten to say that the reality of the evolution of civilization which I have construed in Chapter 1

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(continued from last page) to especially refer to the ability to include in one's reference group individuals who are different (especially more modern and better-off) than oneself, which leads to new desires (Lerner, 1958, p. 72). As we shall see in Chapter 2 and 3, changes in the reference group are crucial in explaining changes in civilization. In fact relative poverty seems a necessary condition for the adoption of new recipes and hence for modernization.

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is, so far, nothing but a raw creation, which must still be validated in terms of its goodness-of-fit with experience. One could even say that creating realities is a waste of time, unless the new reality allows one to account for experience more effectively than other realities, otherwise the new reality will not diffuse through the social system.

Coupled to the need for reality validation is my realization that the hall-mark of the scientist is not the creation of realities, but the painstaking validation of realities which he has created. In fact, one can say that the development of the scientific method has been a giant step in the evolution of civilization because it consists of a set of rules for controlling how to gain control.

It behooves me to follow these rules as best I can in validating the model I have developed. I shall set about this task, not by using data which I have collected because they were not collected with a view of confirming the reality developed thus far. In fact, I did not have the reality at the time. Also, I have set about to construct a systematic framework into which existing lower order generalizations may be integrated. Rogers with Shoemaker (in process), for instance, developed 103 theories, i.e., generalizations, in their book, many of which are based on considerable evidence. It seemed,

therefore, that an effort to integrate some of the existing lower order generalizations about aspects of modernization might have higher payoff than an effort to create yet another lower order generalization, which must necessarily be the outcome of a single fieldstudy-bound research effort.

Therefore, I shall use as feedback for my reality accounts and analyses of historical situations which are already available. I believe that there are enough empirical results and adequate explanations of part aspects of modernization which have not been accounted for in an integrated reality to make worthwhile an effort to create a more systematic view of the whole process.

In summary, the following two chapters will be concerned with demonstrating the correspondence between my reality and experience.

## Chapter 2

### GENERALIZED EXPECTANCIES OF CONTROL

#### 1. Introduction

The present chapter will be concerned with demonstrating the goodness-of-fit between my model of evolving civilization and reported historical phenomena. In particular, it will be concerned with supporting the following hypotheses:

If civilization evolves from lower to higher levels, depending upon the degree of control which it allows man to gain, then that development to higher levels of civilization should be accompanied by a change in the reality based on the outcomes the civilization allows man to experience. More specifically, the evolution of civilization should be accompanied by (1) an increase in the degree to which individuals have a generalized expectancy of internal control, and (2) a decrease in the degree to which individuals have a generalized expectancy of external control.

If evidence can be provided for these crucial hypotheses deriving from my model of evolving civilization,

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I would have come a long way in establishing its overall validity. Such evidence does not seem lacking. Let us look at it from both angles: The increase in the expectancy of internal control, and the decrease in the expectancy of external control.

## 2. Internal control

Battle and Rotter (1963) found, in a study on perceptions of internal and external control of 80 sixth and eighth grade children from five metropolitan schools, that

lower-class Negroes were significantly more external than middle-class Negroes or whites. Middle-class children, in general, were significantly more internal than lower-class children.\*

If one is willing to accept his social class as a measure of the degree to which a member of a social system is able to participate in the highest level of civilization available in the system, these findings seem to support the hypothesis that internal control is perceived to be greater when the level of civilization (participated in) is higher.

Smith and Inkeles (1966) went further, in that they constructed measures of "individual modernity," i.e., scales designed to differentiate between individuals

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\*See also Polansky (1969).

with a modern, versus those with a non-modern reality. As a first step, Smith and Inkeles assigned their respondents a summary score based on their answers to all interview items measured. These summary scores were correlated with "social factors presumed to be associated with modernity," i.e., education, years of factory experience and rural/urban origin. "These independent variables did indeed correlate significantly with the overall modernization score."

The next step was to develop a shorter scale on the basis of methods which were "maximally empirical." For each of the six countries studied, the 50 items with the highest correlations with the summary score based on all items were listed. Any of these 50 which "appeared on top in four countries out of six was automatically judged to have survived the competition." The scale made up of the surviving 38 items is "heavily weighted toward what Parsons calls: instrumental activism," i.e., it is made up of items measuring attitudes toward family planning, openness to new experience, but especially efficacy.\*

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\*Smith and Inkeles (1966) do not define any of their terms because of lack of space. Efficacy is the degree to which the life trajectory is perceived to be manipulable. I shall consider it as equivalent to Rotter's (1966) concept of "expectancy of internal control." Inkeles (1966, p. 143) says, in relation to the efficacy of modern man: "The modern man is one who believes that man can learn, in substantial degree, to dominate his environment in order to advance his own purposes and goals." Inkeles (no date) speaks, in relation to efficacy, of domination of environment, rather than being dominated.

In fact, the efficacy items seem to constitute a coherent core of items in the short form of the modernity scale.

In another effort to develop a shorter scale of individual modernity, Smith and Inkeles (1966) correlated each of the total set of items with the three social factors mentioned before, education, factory experience and rural/urban origin. For each country the 50 items with the highest correlations were listed. The six lists were compared and items which appeared in at least four of the lists were retained, leading to a short version of the scale with 34 items. Only three of the eight efficacy items\* did not survive these criteria. The others are among the set of items which correlate highest with the total score on the short scale.

Thus Smith and Inkeles (1966) seem to have developed a scale measuring the degree to which the individual has

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(1966) as follows (underlined response is response scored as efficacious):

Accident prevention at work depends on: luck always/  
care always

Man's position in life depends on: fate always/own effort always

Do you prefer job with many/few/no responsibilities

Which is most important for future of your country:

work/gov't planning/God/luck

If man explores nature's secrets (by science) is it:  
good/bad (ungodly).

Notice that some of these items use external control (luck, God, etc.) and internal control on one dimension. We shall come back to the distinction later.

a modern reality. The scale seems to be applicable across different settings, since it was developed from findings across six different countries, five of which are considered less-developed. Furthermore, and importantly, the scale seems to show that efficacy is closely related to the degree to which a person has experience in a modern environment (city, school, or factory). If we accept that participation in modern civilization\* allows greater control over the environment, we can say that the work of Smith and Inkeles (1966) demonstrates that people perceive more internal control when they participate in a higher level of civilization.

A further example of the relationship between level of civilization and degree to which internal control is perceived is the optimistic belief in man's ability to create an earthly paradise which gave rise to the philosophy of Enlightenment (Gay, 1969) during the early stages of the industrial revolution in 18th century Western Europe. This optimism seems to be a special characteristic of those who perceive high internal control, in that the expectancy of internal control not only holds for

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\*Modern civilization is defined as the set of recipes developed in industrialized society, largely as a result of the application of scientific research. Modernization is not to be confused with modern civilization. It is the process by which a social system becomes acquainted and starts to use modern civilization. I shall come back to modernization in greater detail later.



control already gained, but is generalized to the extent of arrogance in face of the presently uncontrollable, in that the presently uncontrollable is believed to be controllable in the future.

The generalized expectancy of internal control is, as said, the core element of the reality which Smith and Inkeles (1966) seem to have observed in modern man. Other elements, which seem related to this core, have been observed by Inkeles (no date) and Rotter (1966).

Thus Rotter (1966) observed a greater alertness to those aspects of the environment which provide useful information for future behavior, while Inkeles (no date) speaks of a concern with planning, a readiness for new experience, and energetic collection of information. Where Rotter (1966) mentions a readiness to take steps to improve environmental conditions, Inkeles (no date) speaks of openness to innovation and change. While Rotter (1966) observes a greater critical attitude toward messages that try to influence, Inkeles (no date) observes a similar unwillingness to be pushed around in modern man's greater sense of dignity, which he is also willing to accord to others, in that modern man believes more strongly in social justice than does his traditional counterpart. /

Other concomitants of his greater sense of efficacy are said (Inkeles, no date) to be modern man's

willingness to hold opinions on diverse matters and respect of others' opinions of same; his greater trust in others; his concern with ability; his valuation of skill and achievement; and his higher aspirations.

In short, says Kahl (1968, p. 133), in conclusion to an effort to measure individual modernity in Brazil and Mexico:

The modern man, through the way he perceives the world around him and its opportunities for himself, and through the way he chooses which paths to follow, is a man who seeks to control his life, plan his future, climb up a bit in the status hierarchy, and improve his material circumstances because these ends are desirable and also because they are seen as obtainable.

The reality of this confident modern man, who not **only** knows what he wants, but also believes that he will **get** it, can be seen as the counterpart of a situation in **which** new recipes for organizing matter/energy become **available**, together with the opportunity to apply at **least** a number of them. This situation seems to occur in **case** of a number of persons who live in a society with a **low** level of civilization which has come into contact **with** industrialized society.

However, it does not seem that the modern reality **emerges** to remain. "When men are prosperous, they are **rational**," said Spinoza (Smith, 1962, p. 392), "but when **they** fall into misfortune, they trust childish omens, or **be** **take** themselves in still more childish remedies in **the** **same** way." Constandse (1964) observed the loss of modern

exuberance in prosperous Dutch farmers, who began to doubt the future viability of their enterprises, while they even showed a certain conservatism\* in their unwillingness to accept new forms of organizing those enterprises which might be more viable in future.

In other words, modern reality, and especially the perception of internal control, seem to depend on the degree to which control can actually be exerted.

In summary, the hypothesis that an increase in the level of civilization is accompanied by an increase in the expectancy of internal control seems not without support. However, more research seems necessary, while more precise distinctions will have to be made, operationally and conceptually, between internal and external control. The notion that under certain conditions internal control is extrapolated to include future control over the presently uncontrollable seems worthy of further exploration.

### 3. External control and absolute poverty

In the model of evolving civilization, I defined absolute poverty as the situation in which the highest level of civilization available in a social system does not allow control over all desired outcomes. In this

\*The farmers studied were a group of carefully selected settlers in one of the new "polders." These persons are normally regarded as most innovative.

situation, I predict pacification by the creation of supernatural forces of external control.

Gods and deities, the external forces par excellence, which man creates when controls over desired outcomes are unavailable and inconceivable, abound especially in societies with a less evolved civilization. In fact, one could do a content analysis of gods and deities, created over the years, to make explicit what man experiences as well-being, just as Cantril (1965) tried to do with the outcomes over which man tries to gain control.\* In this sense, religion seems to be the negative of civilization.

Man turns to prayer if faced with a hopeless situation, he turns to prayer, even in modern South Africa, if the rains do not come in time, he turns to prayer if he lacks control over desired outcomes. Thus man uses his gods either for instrumental purposes, as when he asks his gods to bless his crops, or he uses them to make acceptable the very things his nature cannot make him accept otherwise. It is under such circumstances that man says: ["God's will is well, even if I do not understand it."]

This view of the function of religion is fairly consistent with views developed by others. It is said to provide;

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\*See Chapter 1, section 7.

. . . a sense of security in a world which appears to be full of the unpredictable, the capricious, the accidentally tragic. By giving consistency and reality to experience, the religious system carries man over areas of life beyond control of ordinary techniques and rational understanding which work so well in ordinary affairs (Keesing, 1960, p. 329).

Under the term "magic," anthropologists summarize a variety of methods

. . . by which man purports to influence automatically the course of events by mechanisms that touch the supernatural. A magical act is a rite carried out to twist nature in a specific way to satisfy human desire.\* It comes to play in areas of experience not mastered by knowledge . . . and has been called primitive science\*\* (Keesing, 1960, p. 332).

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/\*As we would say, a magical formula is a recipe not based in a reality supported by feedback, although an element of self-fulfilling prophecy is present (Keesing, 1960, p. 332).

\*\*Malinowski (1928, p. 82) speaks of the "three-cornered constellation of magic, religion and science." "By acquainting man with his surroundings, by allowing him to use the forces of nature, science, primitive knowledge bestows on man an immense biological advantage, setting him far above all the rest of creation." But "wherever man has to recognize the impotence of his knowledge and his rational techniques (1928, p. 34) . . . magic acts are directed toward the attainment of practical aims (1928, p. 79), . . . while the theories of magic are not dictated by logic, but "by the association of ideas under the influence of desire," which cannot be satisfied by practical action (1928, p. 80). Religion is said to have a reintegrative function in the centrifugal effects which characterize unavoidable results of human impotence, such as death (1928, p. 51). However, Malinowski (1928) also ascribes religion with functions of a more purely social nature, such as providing moral control (1928, p. 41), the enhancement of reverence for tradition (1928, p. 82) and other functions which allow the continued existence of the society.

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Although most anthropologists feel that no clear-out distinction can be made between magic and religion (Keesing, 1960, p. 334), magic exemplifies the instrumental function of religion, in that it provides make-believe control where actual control does not exist. Magic, therefore, has a pacifying function. "Short of more confident substitutes provided by scientific knowledge, it is argued . . . that the forced cessation of magic . . . would leave a people psychologically defenseless before the unknown" (Keesing, 1960, p. 334), or as we would say, before the uncontrollable.

I do not say that religion only has an instrumental purpose.\* But it seems logical to assume that man was motivated to create gods after having become dependent on man-made recipes for his well-being, which made himself responsible for his well-being. It is in this sense that religion is the negative of civilization (an "opium for the masses"), because religion spells the negation of man's responsibility for his well-being and, thereby, for his ability to control his outcomes. But the beneficial function of gods, thus created, in keeping man pacified over the centuries cannot be acknowledged sufficiently, although their creation still testifies to man's suffering.

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\*Buber (1958) points out that man's relationship to his environment is not limited to the technical (I-it) relation, but that one can also speak of an "I-Thou" relationship.

If religion has indeed, as one of its functions, to be the negative of civilization, to pacify man when he lacks control, if religion is indeed "born of the need to make tolerable the helplessness of man" (Freud, 1957, p. 67), then there must be evidence that an increase in the level of civilization is accompanied by a decrease in the importance of religion in man's everyday life, simply because he needs his gods no more.

And we can indeed point to such evidence, which ranges all the way from the myriad of gods and deities documented in anthropological descriptions of societies with a less evolved civilization, to the cries of "God is dead" in our own society, typifying the arrogance born in prolonged success.\*

Redfield (1955, p. 229) documented the change at some intermediate state between these two extremes.

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\*Even though some proclaim that "God is dead," the success of such men as Billy Graham in the most technically advanced society-ever needs to be explained and seems to contradict my contentions. My hypothesis is that Graham's success is not based on the proclamation of a god which pacifies unsatisfied aspirations to experience physical well-being, but aspirations to experience other types of well-being, such as dissatisfactions with a social or economic system which people feel they cannot affect. The element of external control is clearly present in Graham's speeches. In a recent mass sermon, he proclaimed that peace cannot come about through human effort, that we will have to wait for the "Prince of Peace." Compare this with the perceptions of internal control evident in the activism of the "Chicago Seven," also interested in peace.



He compared communities in Yucatan at different levels of civilization and observed that the belief in gods and deities disappears as the community becomes more modern. Other support for the pacifying function of religion is [Weber's (1963, p. 97) statement that the non-privileged tend to embrace religions of salvation, while privileged classes assign religion the "primary function of legitimizing their own life pattern and situation in the world."] This view jibes with the finding (Lewis, 1969) that poor Mexican families spend more, in absolute terms, on religious paraphernalia than the more prosperous. It also fits the finding (Fliegel and others, 1968, p. 47) that Indian peasants who have adopted more modern recipes for organizing matter/energy tend to be more secular, indicated by their negative answers to such questions as: "In case of serious illness in your family, would you bring a sacrifice in the temple?"

But quite apart from such carefully documented evidence, one can see the demise of supernatural forces of control in any developing country that one visits: The tourist can now buy the idols of once revered gods, while the art of making them vanishes with the death of old men who leave no apprentices. Meanwhile, the modern men in those societies are embarrassed at the tourist's interest in the exhibits of their people's former weakness.

My view of religion seems to conform to the functional

theory (O'Dea, 1966, p. 5) which sees the "role of religion as assisting men to adjust to the three brute facts of contingency, powerlessness and scarcity (and consequently frustration and deprivation)," so that there are "secular alternatives to religion . . . and religion-non-religion can be seen as a continuum\*" (O'Dea, 1966, p. 17).

From the functional point of view,

Technological development in the sphere of work has reduced the impact upon human experience of the three elements we earlier saw as closely related to the function of religion: contingency, powerlessness and scarcity. The need for the related functions of religion was thereby reduced . . . Moreover, man learned through this successful betterment of their control over their environment, to achieve security through the active manipulation of natural elements and forces, rather than finding it in a religious relationship (O'Dea, 1966, p.83).

The role of the increase in man's level of control in the demise of gods and deities is perhaps highlighted by the fact that the belief in magic remains or even increases in the initial stages of modernization (Redfield, 1955, p. 303; Field, 1960). Given that a people perceive

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\*Moulik and Lokhande (1969) use fatalism-scientism as a variable which they found correlated .48 with "parochialism-cosmopolitanism." See also Kluckhohn and Strodtbeck (1961, p. 13), who make a distinction between mastery-over-nature and subjugation-to-nature as value-orientations. Two attitude scales used by Beal and Sibley (1967, p. 98), measuring control-over-nature orientations, were found to correlate .31 and .42 with a farm practice adoption score.

control over desired outcomes to be available while they lack the recipes to achieve them, they turn to familiar models for help or explanation of their failure to gain control.

Field (1960, p. 107), in her study of the shrines that had recently sprung up in the Ghanaian countryside, said of the people who come to them for remedy: "Of all the supplicants who bring their troubles to the shrine, the most frequent is the frustrated, unhappy and despairing man whose complaint is: 'I am not prospering.'"

In summary, my model of evolving civilization allows the statement of two hypotheses: (1) the creation of supernatural forces of external control serves to pacify motivation which results from experience of a state of being which does not coincide with the preferred state; and (2) when civilization evolves to higher levels, the supernatural forces of external control, created under a lower level of civilization, gradually lose their function. Both hypotheses seem to have some support.

#### 4. The conditions which give rise to relative poverty\*

When people learn that a recipe exists, which allows control over the frequency of occurrence of a desired outcome, the aspiration to experience that outcome

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\*Partly based on Røling (in press).

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becomes virulent because it can be experienced, thus rendering secular what could be imagined only in paradise. Therefore, the availability of recipes determines which outcomes are salient and are actively aspired to, because their availability shows that hitherto unattainable outcomes can be experienced. That is, people upgrade their standards, as a result of recognizing a certain outcome as closer to well-being than others, especially when that outcome is seen as caused by applying a man-made recipe.

People may have lived for centuries in thatched roofed houses, but accepted this situation because there was nothing one could do about it. But since zinc roofs became available, the latent aspiration to have an adequate roof became virulent. Asked why he started planting Cocoa many years ago, an old Yoruba farmer replied: "To get money." Asked, then, why he suddenly wanted money, after centuries during which the Yoruba had not much use for it, he said to have been in a city where he saw zinc roofs and then planted cocoa to be able to buy one.

This process, by which the vicarious experience of controllable outcomes leads to virulent aspirations, is aptly called the "demonstration effect" by economists. And it evokes new standards for living rapidly. Lerner (1963, p. 330) spoke of the 1950's as the decade of the "revolution of rising expectations" in developing

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countries, indicating that, in those ten years, standards for living were upgraded tremendously. The outcome experienced, as a result of the application of recipes developed in industrialized societies, were vicariously experienced by many in the developing nations who had, hitherto, been isolated from them.

But a higher standard for living creates motivation, which can, in the end, only be satisfied by upgrading the level of living to a point where standard and level coincide. Upgrading levels of living can only occur through adoption of the recipes which allow control over desired outcomes. Entropy at the highest level of civilization available, the steady state of the social system, can thus only occur through the adoption of recipes which I, therefore, consider the "normal" method of satisfying the motivation created by upgrading standards for living.

When a steady state cannot be reached, powerful forces are rampant which determine societal processes, in that methods of pacifying those forces must be worked out. And a steady state is indeed difficult to attain. For the acquisition of recipes is a slow process which is compounded by labor division and specialization. Where once upon a time, people could only experience desired outcomes as a result of applying recipes themselves, such direct control is now the exception. Instead, one exerts

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control which results from the application of recipes by others, while one can only exert such control in exchange for the products of one's own skill in applying certain recipes. The level of one's skill determines the degree to which one can exert controls resulting from other people's skill.

The acquisition of sufficient skill is difficult and will lag behind the acquisition of virulent aspirations, a reason why Lerner (1963, p. 331) called the 1960's the decade of the "revolution of rising frustrations." But such frustrations not only characterize the developing, but all societies in which the steady state has not been reached.

In the following section, I shall deal with the ways by which such frustrations are pacified, other than by the adoption of recipes. And these methods must be ingenious, because pacification can now not so easily be found in the creation of gods and deities, because man-made recipes are known to exist. It is difficult to believe in Santa Claus if father is seen putting on the costume. Yet, pacification is all the more necessary when relative, rather than absolute, poverty is experienced because the availability of recipes makes the desire for the outcomes, over which they allow control, all the more virulent.

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In summary, people become relatively poor when the demonstration of others' outcomes, experienced as a result of applying man-made recipes, leads to the virulent desire to experience those outcomes, but when adoption of the recipes which allow control over the outcomes is, at least temporarily, impossible so that the resultant motivation must be pacified otherwise. Pacification by supernatural forces of external control seems difficult in case of relative poverty.

#### 5. Relative poverty and pacification\*

In the absence of opportunities to apply all available recipes for organizing matter/energy, other methods for reducing continuing motivation must be developed.

In societies in which unscaleable class-barriers do not exist, the principle method for reducing motivation is to allow the members to adopt recipes in piece-meal fashion. Thus the members experience achievement and improvement and it is perhaps then that the modern reality, with all its self-confidence and efficacy arises.

And where two societies are in contact, which differ in the extent to which opportunities for such piece-meal improvement are provided, one can expect massive migration to that society, where more such opportunities are

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\*Partly based on Röling (in press).

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perceived to be available. The favelas in Brazil, the school leavers' problem in West Africa, and even the "brain drain," seem adequate evidence to support this expectation. These phenomena may be seen as the result of people's preference for social systems where participation in a higher level of civilization seems possible, if they are given a choice.

But piece-meal improvement may not be able to sufficiently minimize motivation. The differences in outcomes experienced between the members of a social system may be too great to be annihilated, even by piece-meal satisfaction. A simple device for pacifying the motivation which results seems to have developed.

For relative poverty results from invidious comparison, and can, therefore, be reduced by selecting the group of one's comparison or reference group\* to be composed of people with opportunities to exert control which are similar to those one has oneself. This reduction of one's range of comparison must, of course, be well-supported by rationalization of one's inability to compare with those more fortunate. Such rationalizations, or ideologies, which not only pacify the motivation of those below, but also legitimize the privileges of those

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\*See Merton and Kitt (1950, p. 40). Reference group refers to the set of persons which become points of reference for the individual in shaping his attitudes, evaluations and behavior (Merton, 1957, p. 233).

above, give rise to perceptions of external control among the former.

For throughout history, the stratification of society in caste, estate or class, has not only been seen as preordained by a god, or birth, or luck, or the color of one's skin, but also as the result of unscaleable barriers which society has erected. Thus people replaced the supernatural forces of external control with social forces, also of their own creation. An example is the illiterate Africans, who explained away the unattainable outcomes of expatriates by calling them the "makers of money."\*

The importance, even in societies where no unscaleable class barriers exist, of reference groups for the self-limitation of the level of living actively aspired to, is illustrated by a recent change in the reference group of Dutch farmers, who started to compare themselves with small businessmen, rather than with factory workers. This shift had implications for guaranteed milk-price regulations because the norm for "acceptable income" had changed substantially.

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\*It is possible that the reduction of motivation by class formation is a social invention which must be learned by people in societies in which differences in relative poverty have recently been introduced. In Nigeria where the villager often knew of village brothers who had become top government officials, professors, etc., it was often difficult for him to pacify his aspirations by limiting his reference group.

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How hard it sometimes is to rationalize away the levels of living of the more fortunate is suggested by a study (Parker and Kleiner, 1966), which compared the incidence of mental disease among black immigrants and black natives in a U.S. seaboard city. The researchers found the latter group to have the higher incidence and reasoned that the immigrants could blame their poverty, relative to whites, on differences in opportunity and training, while the natives could not.

This example also shows how powerful the forces are which must be kept at bay by social stratification. And, as in case of gods and deities, the existence of stratification spells a vacuum and potential movement toward greater equity. Of interest, however, is when and why such movement occurs. People accept inequity for centuries, but suddenly reject it. In this connection I ask you to remember one of the elements of the modern reality observed by Inkeles (in process): A belief in distributive justice. We saw that the modern reality develops when opportunities for, albeit piece-meal, improvement become available. (Therefore, one would expect rebellion against stratification to occur sometime after such opportunities have been provided, but when such provision is not fast enough or reversed. That hypothesis is the very one which recent studies of the Russian and other revolutionary movements have supported



(Davies, 1962).\*

The limitation of the range of comparison in social stratification is, of course, facilitated by isolating oneself from those outside one's reference group. For isolation to be effective, the vicarious experience of the outcomes of those above must be avoided. And one finds evidence of this avoidance, especially in cases where effort to gain controls, available in the social system, have been persistently frustrated; where, in other words, no opportunities for piece-meal improvement are perceived to exist, now or in the foreseeable future.

[Hofstee (1964) speaks of the "voluntary isolation" of Dutch ultra-conservative and less successful farmers, while Mayer (1963, p. 90) speaks of "incapsulation" in case of Xhosa tribesmen who refused to become modernized. Frey (1966, p. 179) found in Turkey that mass media exposure was strongly related to the degree to which a respondent felt relatively deprived. "It would seem that some of the differences (between rich and poor) in exposure are of such magnitude that it is unlikely they could be entirely attributed to variations in access to the media" (Frey, 1966, p. 80).\*\*

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\*See also Brinton (1938, p. 46).

\*\*It is of interest to remind the reader here of Inkeles' (1969) remark that modern man seems to "strive energetically to keep up with the news."

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The experience of frustration of efforts to exert control is often also accompanied by a ritualistic persistence in old forms of behavior, which has even been induced in rats under such conditions (Maier, 1949, p.52). Merton (1957, p. 140) mentions ritualism\* as one of the methods to achieve compromise between ends and means, while Mead (1955, p. 274) reports, as one of the consequences of persistent frustration in developing countries:

The return to old forms of behavior, which . . . are now less satisfactory. The village people, who ignored the changes which took place in the larger town, may actively combat them when they have failed to incorporate them into village life.

[The voluntary isolation against stress-renewing messages and the ritualistic persistence in old forms of behavior can be expected to occur together with a perception of internal control low enough to speak of powerlessness, which Seeman (1959) defines as "the expectancy or probability held by the individual that his own behavior cannot determine the occurrence of the outcomes . . . he seeks."\*\*/In such conditions, one can also expect a high

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\*Merton (1957, p. 184) defines ritualism as a pattern of response in which . . . aspirations are abandoned while one continues to abide almost compulsively by institutionalized norms.

\*\*Fatalism is defined (Rogers with Svenning, 1969, p. 32) as the degree to which an individual recognizes a lack of ability to control his future. However, I would like to make it conceptually distinct from powerlessness in that powerlessness refers to a perception of low internal control, while fatalism refers to a perception

generalized expectancy of external control. One could say that these elements constitute a poverty reality\* with which one copes but does not control.

Notice that the reality and the behaviors, expected to accompany extreme relative poverty, are the opposite of some aspects of the reality and of behaviors observed by Smith and Inkeles (1966) to characterize modern man. Yet the poverty reality can also be seen as a result of a situation in which a mass of new recipes for controlling desired outcomes become available to a social system, and thus as one possible result of modernization.

The poverty reality can be expected to make its bearer hard to change. One could thus raise the question as to what extent the resistance, which is so often said to thwart change efforts, is not more the result of

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(continued from last page) of high external control. These two may well be impossible to separate operationally, but it is worth trying. So far, most researchers (e.g., Smith and Inkeles, 1966) have phrased their questions to respondents on this topic in a way which makes external and internal control each other's opposite. Bose (1962) differentiated "rationality" (ability to manipulate one's fate) and "religious inclination." These two variables, together with "scientific outlook" loaded resp. +.73, -.72 and +.82 on one factor. Adoption loaded +.43 on the same factor.

\*Poverty reality refers to certain patterns in reality which characterize poor individuals, especially the extremely poor ones, and which distinguish them from others.

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anomalies in the modernization process, than of traditionalism. } If that were so, the "revolution of rising frustrations," said to mark the past decade, would spell severe problems ahead. But with this indication that the reality can become independent of the situation which gave rise to it, we have the topic of the next section.

/ In summary, it seems that phenomena have been identified which allow us to say that the situation of relative poverty gives rise to efforts to seek pacification. As such efforts we mentioned piecemeal innovation, voluntary curtailment of one's group of comparison, voluntary isolation,\* and ritualism. By suggesting that relative poverty is a motivational state which must be pacified, the model of evolving civilization was heuristic in suggesting us to look for pacifiers. A view of class ideology which recognizes it as equally necessary to pacify the frustrations of those below as to legitimize the position of those above is, to my opinion, new and invites research, especially on the voluntary curtailment of the comparison group.

[The identification of voluntary isolation as a defense against stress-bearing messages, and a necessary concomitant of search for pacification, seems of practical importance. Where modern man's eagerness to "keep

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\*Voluntary isolation is defined as the non-use of available external channels of communication. I shall come back to it in Chapter 4.

up with the news" can be expected to act as a multiplier of his ability to gain control, voluntary isolation can be seen as a dampener, a self-imposed barrier which keeps the poor poor. [Thus those who need information most are least likely to obtain it.\*] It seems that research on voluntary isolation is necessary to provide a basis for developing strategies to change agents working in poverty areas. Further search for pacifiers in case of extreme relative poverty may well allow the development of a model of poverty reality, not unlike the one Inkeles (in progress) has developed in the case of modern reality.

#### 6. Expectancies of control as independent forces

So far, I have implicitly accepted Marx's notion that the system makes the man. That is, I have treated expectancies of internal and external control as the result of probabilities man learns to attach to certain events on the basis of the frequency with which he actually experiences such events. One can expect, however, that expectancies of internal and external control have a certain momentum of their own, in that the learned probabilities will be used for the prediction of future events, so that they continue to determine behavior,

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\*Similar remarks have been made by van den Ban (1963b, p.114) about farmers who seek advice from extension agents. Those who need it least seem to get the most advice.

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even if the conditions which gave rise to the expectancies are no longer present.

Thus the generalized expectancy of external control may have the character of a "self-fulfilling prophecy"\*: once one believes that forces outside oneself determine one's outcomes, one cannot be expected to actively try to affect those outcomes. Besides, one can assume that the pacification, found in the generalized expectancy of external control, will not be easily deserted.

We already had occasion to mention that a high generalized expectancy of internal control leads to arrogance in the face of the presently uncontrollable, in that it is believed to be controllable in the future. One can assume that a low generalized expectancy of internal control also has this character of self-fulfilling prophecy: When one takes one's impotency to affect one's life trajectory for granted, one cannot be expected to actively seek to change it.

Let us look at both types of expectancies and the degree to which they continue to determine behavior, even if the conditions which gave rise to them have changed.

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\*Merton (1957, p. 423) defines a self-fulfilling prophecy as a false definition of the situation evoking a new behavior which makes the originally false conception come true. One cannot only speak of the self-fulfilling prophecy when new behaviors are evoked, but also when old behaviors continue to be performed in a changed situation.

There is little evidence that the generalized expectancy of external control continues to determine behavior when conditions change. It seems, indeed, to be a defense mechanism which vanishes with the threat. Evidence for this notion is supplied by the fact that the fatalism of the peasant does not seem a strong explainer of resistance against social change. In fact, "the research results suggest the possibly greater utility of viewing a reduction in fatalism as a result of previous modernizing activities, rather than as a barrier to modernization" (Rogers with Svenning, 1969, p. 289).\* [A similar observation can be made for gods and deities, which seem to leave the scene without much fuss, although their destruction by missionaries in the early stages of modernization may have to be more carefully explored.]

It seems that expectations of internal control are not rapidly affected when circumstances change. The results of a few studies support this statement. In one study (Seligman, 1969) the experimenters compared two sets of dogs. Dogs in group A underwent a painful electric shock in a box from which they could escape. Such dogs soon learned to escape the shock, whenever lights dimmed, warning them that shock was imminent. Dogs in

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\*See also Niehoff (1966).

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group B, however, underwent shock in a harness 24 hours before they received a treatment similar to that of dogs in group A. But once in the box, dogs in group B did not make serious efforts to escape. In fact, after a number of trials, they gave up altogether and underwent the ordeal by "howling and whining." Dogs in group B had become helpless. (They had learned that the trauma was inescapable. "Learning that the environment cannot be controlled is central to developing the helplessness syndrome.") The experimenters found that they had to physically pull the helpless dogs out of the box a few times, before they learned to escape. However, "If a dog first received escapable shock in the box, and then controlled shock in the harness, it will escape normally when it is returned to the box."

The study suggests the momentum of both a low and a high expectancy of internal control. Let us look at other evidence of the former. It seems that the development of modern reality is a slow process, Inkeles (1969) compared an individual's score on the scale of individual modernity with his number of years of formal education and observed that "the amount of formal schooling a man has had emerges as the single most powerful variable in determining the score on our measures."\* "On the average, for

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\*Inkeles (1969) does not mention many other independent variables which competed with education for special mention, except years of factory experience.

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every additional year a man spent in school, he gains somewhere between two and three additional points on the scale of modernity scored from 0 to 100." The gain per year of factory experience is about one point. Both in case of education and factory experience, the development of modern reality seems to be a slow process.

Where Inkeles (1969) gives the impression that the development of modern reality relates to years of education in linear fashion, Waisanen and Kumata (1969) provide evidence to show that the development of modern reality is related to years of education in curvilinear fashion. In fact, it seems that modern reality "takes off" after a certain number of years of education, a number which seems to depend on the level of development of the nation in question. However, the fact that a number of years is involved still attests to the momentum of non-modern realities.

Waisanen and Kumata (1969) attribute the relatively long period before take-off to the fact that certain "manipulative skills are demanded of modern man" and that these skills are taught in school. "However, it is one problem to acquire these skills and quite another problem to see a situational relevance to these skills and to apply them to the consequence of self-enhancement."

Of special interest to us is the fact that Waisanen and Kumata (1969) do not use a composite scale of modernity

but individual dependent variables, one of which is efficacy. Notwithstanding the logical expectation that it would take longer for perceptions of internal control to develop in a less developed country than in a more modern one, the authors find that this is not the case. In fact, the take-off point of efficacy was estimated to be 3.7 years in Costa Rica and 10.7 years in the U.S. This difference seems to indicate that perceptions of internal control are determined by the level of civilization in which one can participate, in that it takes less effort to participate in a satisfactory level of civilization in Costa Rica than in the U.S. One could even explain the data by the fact that it requires a certain amount of education to get a job which allows one to apply the recipes available in one's society. This required amount of education is higher in more developed countries.

It seems to take quite long for old realities to lose their momentum and for modern reality, and especially efficacy, to emerge even when opportunities for gaining more control have been provided. [Therefore, the necessity may arise to help people to shorten the time lag with which efficacy follows the situation. This necessity may arise especially in case of individuals who feel powerless as the result of having experienced prolonged and severe relative poverty.] In such cases, the careful nursing of a

new reality may be called for (van den Ban, 1963a).\* The ability to do so may be one of the more necessary skills in the years ahead.

When a high expectancy of internal control exists, but opportunities to exert it are not available, one can expect that opportunities will be created or grasped as soon as they become available. The success of the Marshall Plan in Europe and the failure of similar plans in developing nations may well be partly due to higher expectancies of internal control in Europe (Rogers with Svenning, 1969, p. 10).

A study by McClelland (1961, p. 63) shows that significant increases in the development of several nations occurred after popular children's stories in those nations began to deal with characters who had achieved success and excellence in life through their own effort.\*\* It is not certain, of course, whether those children's stories were an expression of prevailing cognitive modes, or whether they gave rise to them. In the latter case, one would have uncovered an important tool for developing a more modern reality. It is under this impression that McClelland and Winter (1969) tried to teach Indian business men to have a higher expectancy of internal control.

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\*See also the case study by Eugster (1964).

\*\*The effects of Superman, Superboy and especially Superdog can be awaited with some interest.



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He claims considerable success as a result of a course of short duration (1969, p. 230).

In summary, the expectancy of internal control seems to have considerable momentum. This momentum seems relevant, especially in case of a low expectation of internal control because such perceptions can be expected to lead to apathy, even when opportunities for improvement are available. Where the momentum of an expectation of high internal control can be expected to create opportunity, powerlessness may lead to losing opportunity. Strategies to affect control perceptions, a la McClelland (1961 and 1969) may be one of the more necessary skills in the years ahead.

But before suggesting recipes, considerably more research seems necessary, for instance, to decide between the two alternative (or possibly complementary) hypotheses: (1) perceptions of control are the result of experience and therefore follow the situation more or less automatically, but with some lag, and (2) perceptions of control determine experience, in that they explain the willingness to grasp opportunities once they are provided.

## 7. Conclusion

Chapter 2 served the purpose of supporting some critical hypotheses which derive from my model of evolving civilization. These hypotheses concerned the relationship

between expectancies of control of the individual and the level of civilization in which he can participate. The hypotheses for which some support, be it from expert opinion or empirical work of others, seems to be available are:

1. The internal control people expect to be able to exert increases together with the level of civilization in which they participate.

2. Supernatural forces of external control serve the function of pacifying motivation in situations of absolute poverty.

3. The supernatural forces of external control created by the members of a social system lose their function when the level of civilization available in the social system becomes higher.

4. In situations of continued relative poverty, motivation must be pacified in some fashion. This hypothesis led to the identification of some methods of pacification.

As a result of the support\* found for these hypotheses, I am now more confident in saying that the

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\*When I speak of "support" I am fully aware that my individual hypotheses have not been supported to the extent that they are knowledge claims which stand above dispute. However, the individual hypotheses are related to each other since they derive from the model of evolving civilization developed in Chapter 1. Therefore, the albeit insufficient support found for the individual hypotheses considerably strengthens my confidence in the model as a whole.

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individual seeks to gain control over the outcomes which he recognizes as closer to well-being than others; that he must be pacified to the extent that he has not gained it and that gaining it is a necessary condition for behaviors and a reality which we believe to be desirable.

In the next chapter, I shall scrutinize the correspondence between my model of evolving civilization and historical phenomena in case, not of individuals, but of social systems. That is, I shall be concerned with my predictions of entropy in standards for and levels of living.

## Chapter 3

### THE TENDENCY TOWARD ENTROPY AND CIVILIZATION

#### 1. Introduction

Having in my opinion, increased our confidence in the enlarged model of man-the-controlling-system, we must now turn our attention to groups of men, to see whether they behave as can be expected of groups of man-the-controlling-systems. That is, I shall in this chapter scrutinize accounts of historical situations for evidence for two basic hypotheses (and their derivatives) which derive from the model of evolving civilization:

1. A social system displays a tendency toward entropy in standards for living, in that all its members tend to share in the highest standard for living possible in the social system.

2. A social system displays a tendency toward entropy in levels of living, in that all members tend to share in the highest level of civilization available in the social system.

#### 2. Entropy in less evolved civilizations

In a not-too-distant past, many areas of the world were occupied by small societies which were more or less

isolated from each other for long periods of time. This isolation implied that no communication occurred between those societies and, therefore, that neither vicarious experience of outcomes, nor communication of recipes for organizing matter/energy could take place across their boundaries.

To the extent that no inventions were made in these societies, one can consider them as systems which were closed in terms of information affecting both standards and levels of living. Where closed systems are characterized by their tendency toward entropy, one would expect these societies to show entropy in standards and levels of living. And that is precisely what accounts of such societies tend to demonstrate.

For among those who first opened such societies were anthropologists who took great pains to describe the societies in their still fairly pristine state. In reading such descriptions, one is struck by the extent to which entropy was encountered. In fact, the early anthropologists had no need for statistics: variables were few but constants many. Thus, the description of farm operations, tools, shelters, sources of power, clothes, food, beverages and so on, used by one household, was sufficient to describe them all. Few did with less and few did with more, except where the means to apply

available principles for organizing matter/energy were not distributed equally.

And even where such relative poverty existed within the small range of variation allowed by the less evolved civilization, very humane systems were sometimes developed to soften the stress. An example is the system of social stratification of the Natchez, who

Were divided into two halves: the aristocracy and the common people, referred to as Stinkers. The catch to this was that the common people could marry as they pleased, but the aristocrats could marry only Stinkers. When a male aristocrat married a common woman, his children . . . became ordinary Stinkers. When a female aristocrat married a male Stinker her children inherited her rank. Thus even the Sun king himself was half Stinker on his father's side (La Farge, 1966, p. 21).

But the overriding impression one obtains from anthropologists' accounts is that

/Before coming into touch with Western technology, the number of needs and ways to satisfy them was practically constant. As a consequence the ideal and the real were practically identical (Friedmann, 1954, p. 1)./

Although Friedmann does not deal with absolute poverty, his view adequately supports our expectations regarding small, isolated societies with a less evolved civilization: since recipes were few and simple to apply, everyone could apply them and did. Given this set of recipes, there were no virulent aspirations to control outcomes not yet controlled, so that standard and level could coincide, except for absolute poverty.



In summary, accounts of small, isolated societies with a less evolved civilization seem to support our expectations regarding entropy in standards and levels of living.

### 3. Mainstreams of civilization

When the isolation of such small societies which had reached stability in sameness was broken by coming into contact with societies with a different level of civilization, new movement toward entropy, within the now larger communication system\* tended to occur.

Or, as Herskovitz (1962, p. 4) puts it:

The development of wants is irreversible. Small isolated, non-literate societies may seem to the observer to live in a degree of stability and conservation that belies this. But there is no study of cultural change in process or of contact between peoples having different cultures, which does not document the proposition that people give over an item in their cultural store only when it becomes apparent to them that a more desirable substitute, iron implements for stone tools, for example, is at hand, or when circumstances beyond their control dictate this. There is nothing more difficult to accept than a lowered level of living

or, as I have called it, relative poverty.

Thus, some societies provide their members with a higher level of civilization than others. Members of

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\*I define communication system minimally as a set of parties linked by channels of communication and using those channels. I shall return to communication systems in Chapter 4.

societies with the lower level will adopt the recipes of the society with the higher levels, as soon as communication permits. A tendency toward entropy at the highest level of civilization available in a communication system seems, therefore, indeed to be at work.

This is not to say that the societies within a communication system will become similar in culture, but just that the utilitarian, the recipes for organizing matter/energy which allow control over the environment, will pass relatively unchanged from one society to another, whatever the cultural differences between them (MacIver and Page, 1957, p. 500). After all, his civilization determines man's relative ability to optimize well-being.

In summary, one can say that societies which belong to one communication system will develop a mainstream of civilization, which is also the highest which those societies are capable of producing in concert, while all members of the communication will tend to participate equally in that level. Examples of such mainstreams are provided throughout history, such as the civilizations which developed around the Gulf of Mexico, the Mediterranean, in Europe, or in New Guinea.

#### 4. The development of modern civilization

In all these mainstreams, the level of civilization was never high enough, however, to obliterate absolute poverty and the reliance on gods and deities, except in the case of one. It was perhaps because it was based on the broadest communication system of them all, which included, in written records, the memory of civilization which had long since crumbled, that one mainstream was able to accumulate recipes\* to a level of civilization never reached before.

This level was high enough to allow the emergence of a reality which had, as its characteristic element, a high expectancy of internal control. Thus Renaissance man\*\* was the first to question the validity of models of external control and the blows exchanged, as a result of this questioning, between secular interests and the church, between modern man and the institutionalized pacification for which he no longer had any use, reverberated throughout history up to this very day.

It was indeed a remarkable development. For man, who has thus far always relied on external forces of control to take the responsibility for his failure, threw

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\*Ogburn (1964, p. 24) speaks of "accumulation of culture" in a society over time.

\*\*See Smith (1962) and Gay (1969).

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those crutches overboard to face the music alone. That is, he developed a completely new reality, which included an expectation of internal control which was generalized to outcomes not yet controllable. And this element of generalization, of arrogance, of undiluted faith in his own capacities, is perhaps the most significant of modern man's emergence.

Whether, as I tend to believe, this development was the predictable outcome of a period in which the accumulation of new principles for organizing matter/energy allowed a rapid succession of successes in gaining control, or whether the new world view was an invention, only historians can tell. It seems, however, that in taking full responsibility for his well-being and in developing the expectation that he would be able to live up to it, modern man developed a new set of models of his environment, in which the emphasis was no longer on pacification, but on manipulation through accurate prediction. Instead of placing all hope on entering heaven after death, man started working for a heaven on earth. And it seems thus that science was born and that the generalized expectancy became a self-fulfilling prophecy with unbelievable consequences.

Science allowed modern man to develop a great number of new recipes for organizing matter/energy in quick succession. This led to a slightly slower upgradation

of standards, while man is still trying to catch up with the new level of civilization, as far as his levels of living are concerned.

In summary, one can thus say that a very high level of civilization was reached in one of the mainstreams carried by the world's communication system. This civilization signified a break with the slow development which had characterized the previous centuries, in that it "took off," because the basic parameters of man's reality had changed. This change allowed the development of science. The members of the societies, in which that civilization developed, are still busy catching up with it, in that the tendency toward entropy at the new level is still ongoing, while the development of the new recipes for organizing matter/energy has so far never stopped.

## 5. Modernization

Modern civilization allowed the communication system, in which it developed, to expand to a point where it virtually encompasses the whole globe. In fact, the daring exploits of early European travelers and conquerors are perhaps the best examples of modern man's new found arrogance.\* The establishment of the world-

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\*To me, Pizarro's conquest of the Inca empire and the killing of 70 million buffalo, to a point where the last 20 had to be protected, are all-time monuments of this arrogance.

encompassing communication system is by no means complete, in that there is still great variation in the degree to which societies are isolated from it. However, the continuation of that isolation can only be temporary.

This breakdown of isolation from the mainstream of modern civilization results in the rapid process of change which we call modernization. This rapid process is in essence not different from the one which characterizes other periods in history in which different levels of civilization came into contact. It seems, however, that the difference between the levels of civilization coming into contact is greater, and that the impact of the contact is more sudden, than was the case in previous instances of contact between different levels of civilization. Also, the adoption of modern civilization seems to allow a generalized expectancy of internal control to emerge to a point where supernatural forces of external control are no longer needed so that absolute poverty is abolished. However, notwithstanding such aspects which make modernization a unique phenomenon, it seems that our reality of evolving civilization can be profitably applied to the modernization process.

One can say that modern civilization, i.e., the set of recipes developed in industrialized society, allows the individual more control over his physical environment than any other civilization. Therefore, the

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vicarious experience of the level of living possible by applying modern recipes leads to a rapid upgrading of standards for living: The revolution of rising expectations. This tendency toward entropy in standards for living within the world-encompassing communication system seems one crucial aspect of the modernization process.

The upgrading of standards for living implies that relative poverty is introduced, that individuals become motivated to reduce the difference between their new standard for living and their levels of living. When modernization runs its normal course, the motivation is reduced by the adoption of modern recipes. A second crucial aspect of modernization is therefore the tendency toward entropy in recipes used within the world-encompassing communication system.

However, in many cases the novel recipes cannot be applied as fast as desired, giving rise to the revolution of rising frustrations. In that case the motivation resulting from the emergence of relative poverty is reduced otherwise.

L Thus modernization is the change process which results when societies come into contact with modern civilization, so that (1) individuals in those societies become relatively poor and therefore (2) make efforts to reduce the ensuing motivation. The crucial elements in *the* modernization process seem to be:

1. The breakdown of isolation from modern civilization in the establishment of a world-encompassing communication system.

2. The upgrading of standards for living to incorporate outcomes possible by the application of modern recipes, i.e., a tendency toward entropy in standards for living within the world-encompassing communication system;

3. The effort to upgrade the levels of living to make them coincide with the new standards for living by adopting modern recipes. In normal modernization these efforts are successful and result in a tendency toward entropy in modern recipes used. In case of anomalies in the modernization process, efforts to upgrade levels are not successful so that motivation must be pacified otherwise. However, such pacification implies the potential for eventual movement in the direction of normal modernization.

4. In case of normal modernization, the emergence of the modern reality.

There seems to be but one steady state in which the feverish change, brought about in modernization, can come to rest, regardless of temporary anomalies which can be expected: The state in which all men partake more or less equally in the highest level of civilization available in the modern communication system. In fact, the spread of the highest level of civilization is inevitable, as soon



as communication permits it, simply because one cannot seriously continue to seek well-being with recipes which are less efficacious than the ones one knows to be available. Given that the communication system encompasses the whole globe, the predicted entropy implies a steady state which can only be upset by invention, or contact with higher levels of civilization which evolved in outer space.

In summary, the communication system which carries modern civilization has expanded to include the whole world. This led to feverish change, in that the tendency toward entropy in standards for and levels of living has begun to operate in the communication system. This change process is called modernization.\*

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\*Rogers with Svenning (1969, p. 8) make a distinction between development and modernization, in that the former refers to the social system and the latter to the individual. Development is defined as "the process whereby a contemporary society improves its control over the environment by means of an increasingly competent technology applied by increasingly complex organizations" (Caplow and Finsterbush, 1964), and modernization as "the process by which individuals change from a traditional way of life to a more complex, technologically advanced and rapidly changing, style of life" (Rogers with Svenning, 1969, p. 14).

My view of modernization as outlined in section 5 of the present chapter also refers to individuals and aggregates of individuals. To me development is the change in production, distribution, political, educational and other systems of societies so that these systems allow the application of modern recipes by members of the societies. In this essay, such system changes have not been dealt with.

## 6. Research on modernization

The modernization process is perhaps better documented than other historical changes in modernization because men want to gain control over the process, to speed it up, or to avoid its anomalies. More thorough documentation does not mean, however, that the mass of studies of the process have led to a reality which allows a systematic process view of modernization as a whole.

As a reaction to both the grand theories of men like Parsons and the descriptive particularism of anthropology, research on modernization has often taken the route of developing middle range theories\* as suggested by Merton (1957, p. 5). An example of this orientation is the work of Rogers with Svenning (1969). Such an orientation has led to a large number of useful and testable propositions for which support has often been provided.

However, little effort has been made to integrate the many propositions developed into a theoretical framework. The resultant situation can be likened to a group of men studying a combustion engine. One of them observes a high correlation between the gasoline level and number of revolutions per minute, another has removed the spark plugs and observes that the engine cannot

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\*Working in the middle range implies using "postulated relationships which are testable but deal with rather limited particular types of behaviors" (Rogers with Svenning, 1969, p. 44).

operate without them, etc. But the insights thus gained do not add up to an integrated dynamic model of the engine which allows statement of the functions of the different parts of the engine, and thereby its repair or improvement.

In short, we have not needed the advice Merton (1957) gave when he made his plea for theories of the middle range:

I believe, and beliefs are of course notoriously subject to error, that for some time to come, it is theories of the middle range which hold the largest promise, provided that,\* underlying this modest search for social uniformities, there is an enduring and pervasive concern with consolidating\* the special theories into a more general set of concepts and internally consistent propositions (Merton, 1957, p. 10).

The lack of a more comprehensive theoretical framework can have serious consequences for our efforts to impose reality on the complexity of the modernization process.

Except for hunches we have little guidance in determining which phenomena to categorize into a concept and in determining the types of relationship between concepts. It is as if we are working on a prefabricated house without regard to a blueprint of the whole house.

I do believe with Merton (1957) that the effort to create theories of the middle range is useful and possibly the only way to advance our ability to impose reality on modernization. But that reality should be our

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\*Merton's emphasis.

ultimate goal and I protest the fact that we seem to have lost sight of this ultimate goal. In my opinion, efforts to develop testable propositions AND a framework into which they fit must go hand in hand and mutually revitalize each other.

It is the lack of an adequate theoretic framework for understanding modernization as a whole which provided the motivation for this essay. Therefore, this essay is an effort to contribute to a theory that includes more than a single proposition.

In continuing my effort, I shall endeavor to further underpin the reality developed thus far by using some of the insights others gained in aspects of the modernization process. I shall only be concerned with evidence for the expected role of vicarious experience, standards for living, and levels of living. I single out these elements for scrutiny and postpone the examination of the role of communication for good reason. The tendency toward entropy, the dynamic of modernization, occurs in standards for and levels of living. Communication, on the other hand, is the tendency toward entropy at work, the mechanism of change, in that its occurrence implies difference in the process of being minimized. One could even go as far as to say that entropy, once reached, obviates the need to communicate, because it implies similarity. When they are similar, people have nothing to say to each

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other, although they would understand each other perfectly if they communicated.

In summary, some of the many accounts of the modernization process, which themselves have not led to an adequate reality of modernization, will be used to further underpin my effort to arrive at one.

### 7. Vicarious experience

According to the model of the evolution of civilization, the process of modernization starts when members of a society with a less evolved civilization vicariously experience the ~~outcomes~~ of those who participate in modern civilization. This vicarious experience leads the former to upgrade their standards for living. Vicarious experience is the experience of others' outcomes as if they were one's own. It not only implies knowledge of others' outcomes, but also the ability to see oneself as having those outcomes.

In Chapter 2, we suggested that the frustrations which result from relative poverty can be minimized by the voluntary curtailment of one's reference groups, but that the modern reality, with its belief in social justice, tends to destroy such self-imposed curtailment. The man who can see himself as having others' outcomes, regardless of who those others are, can be said to have accepted the fact that he has as many rights and chances

as others. However, the man who can only bring himself to vicariously experience outcomes of people more similar to himself, probably has a limited reference group. One can thus expect one's ability to experience outcomes vicariously to vary with the nature of one's reality.

The concept that comes closest to our notion of vicarious experience is Lerner's (1958) empathy. According to one of the several definitions he gives the concept, empathy is "the capacity to see oneself in the other fellow's situation" (1958, p. 50) which is similar to my definition of vicarious experience. The role this capacity is supposed to play in modernization is, however, difficult to understand. Thus empathy, or "the ability to arrange the self-system on short notice" (1958, p. 51) is said to allow the mobile person to identify with new aspects of his environment. It is seen (Rogers with Svenning, 1969, p. 53) "as one result of communication with the world outside the village," while the lack of it is said "to act as a sort of 'mental insulator' which immunizes the villager against cosmopolite influence" (1969, p. 38).\*

Lerner measured empathy by asking his respondents to

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\*This is not necessarily contradictory: one encounters many such chicken-and-eggs problems in studying modernization, which can probably only be solved by viewing them as the result of the mutual influence of variables on each other (Zetterberg, 1965, pp. 72-73).

imagine themselves in the position of the head of government, the editor of a newspaper, the owner of a radio station, and by further asking what people miss by not getting a newspaper, how people who attend movies differ from those who do not, what other country they would like to live in, what they would like to know most about that country, what problem people like them face in life, and what such people can do to solve this problem.\* Lerner's empathy seems a mixed bag. But it does include measures of the respondent's knowledge of the outcomes of, be it "far out others," including foreign nationals, and the ability to see oneself in the position of those others. Though not exactly the same as our notion of vicarious experience, empathy seems close enough to it to serve our purpose.

We suggested that the type of persons with whom one can empathize indicates the range of his reference group. It is interesting, in this respect, that Lerner used such distant others, as newspaper editors. Most respondents probably had a good knowledge of the outcomes of people a little more like themselves and could identify with them. It seems logical to assume that trips to the market, the city or a friend's house, lead to vicarious experience of outcomes of people more like oneself, as was the case

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\*This is more like a Smith and Inkeles (1969) efficacy item.

with the Yoruba farmer who saw zinc roofs in Ibadan and raised cocoa to get one. Such small increases in standards, followed by small successes, probably lead eventually to a modern reality and Lerner's empathy. However, even with his meaning for empathy, Lerner (1958, p. 71) could develop the following conceptual typology of his respondents:

	Literacy	Urbanization	Media participation	Empathy
Modern	+	+	+	+
Transi- tional 3	-	+	+	+
Transi- tional 2	-	-	+	+
Transi- tional 1	-	-	-	+
Tradi- tional	-	-	-	-

In other words, Lerner sees empathy as the first change toward modernity, which implies that links, less sophisticated than through the mass media, with the modern communication system must have been established, as I suggested. That this type of empathy is acquired easily, and does not seem to hamper modernization, is supported by the revolution of rising expectations which Lerner (1963, p. 330) himself identified. After all, rising expectations come about as a result of empathizing with persons with a higher level of living than oneself.

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Notwithstanding the somewhat fuzzy role of empathy in the modernization process, Lerner thus still provides support for the role of vicarious experience as it is envisaged in the model of the evolution of civilization. In fact, Lerner (1958, p. 72) says of the transitionals, who "were marked less by their manifest ways than by their latent wants":

The true Transitional is defined, dynamically by what he wants to become. What differentiates him from his Traditional peers is a different latent structure of aptitudes and attitudes. The aptitude is empathy, he 'sees' things the others do not see, 'lives' in a world populated to imaginings alien to the constrictive world of the others. The attitude is desire, he wants to really see the things he has hitherto only 'seen' in his mind's eye, really to live in the world 'lived in' only vicariously.\*

And thus we pass from empathy to the desire which results from it.

In summary, our identification of vicarious experience and the role it plays in the evolution of civilization is supported by Lerner's empathy if one is willing to see a correspondence between it and vicarious experience.

## 8. Standards for living

Let us turn to a study of standards for living (Cantril, 1965), for support of their expected role in

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\*The underlinings reflect Lerner's emphasis.

the evolution of civilization. Cantril's point of departure is man's reality, a notion I borrowed from him and rely on heavily in the present essay. "Man's desires are embedded in his reality," (1965, p. 19) for man "has to learn what to desire," so that "desires spring from society." "Because desires are social, they are relative." If society changes, in terms of the outcomes people experience, the desires embedded in reality will change. Where the demonstration of outcomes, allowed by modern civilization, causes a "great discontinuity" (1965, p. 17) in the experience of many, one can expect a great change in man's desires to result from it.

Where desires are seen as relative, Cantril sets out to measure them, not by an absolute yardstick, but with a ten-point, self-anchoring scale. That is, with a continuum of outcomes, for which the respondent himself defines the poles in terms of the best and the worst set of outcomes he can imagine from his social experience. On this scale, the respondent then identifies the step he respectively is at now, was in the past and expects to be at in the future. This instrument was used with 20,000 respondents in 15 countries, which vary across a wide range of levels of civilization. It should, therefore, yield some interesting results in view of the predicted entropy in standards, although Cantril's results are sometimes difficult to assess because they are not

always consistent. I will often rely on Cantril's own emphasis and interpretation.

A content analysis of the hopes and fears expressed by people, when defining the poles of the continuum, allows Cantril (1965, p. 279) to say that the "vast majority of both hopes and fears revolves around the complex well-being as this is rather simply defined: A decent level of living." But what constitutes a decent level of living appears subjectively defined. In poor countries, people are more concerned with survival, while in richer nations there is an increased sophistication and complexity of the concerns people express. Improvement in one area therefore seems to lead to a wider range of concerns in other areas. "If satisfaction is constantly experienced, it becomes part of a neutral world and loses its original value satisfaction until threatened or otherwise brought into awareness" (1965, p. 273). An outcome which is constantly experienced, therefore, allows seeking of other types of satisfaction.\*

When considering the pure volume of concerns expressed by people, Cantril observed a wide variation between countries. People in nations which seemed "on

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\*Thus Cantril suggests, as does Maslow (1943), that there is a certain priority in desires, in that worry about basic necessities "blankets out" (Cantril, 1965, p.227) more sophisticated concerns. This may be another mechanism for relieving the stress of relative poverty.



the go," such as Nigeria, Germany, Yugoslavia and Israel, express a larger volume of concerns, while Brazil, India and the U.S. are called "complacent," because people in them expressed a low volume of concerns. This may be attributed to absence of relative poverty: In India and Brazil because people are not yet aware of outcomes which are possible, and in the U.S. because such outcomes are always enjoyed.

Cantril developed an objective development index out of such items as Gross National Product per head, number of doctors per 10,000 population, etc. This development index was found to correlate highly with people's assessment of their present situation on the ten-point, self-anchoring scale. If one compares individuals who rank their present situation as high, middle or low on the ladder, one finds that the percent of individuals in a country, who rate the present high, rank-order correlates .60 with the development index. The percent who rates their present situation low correlates  $-.74$  (1965, p.257). Thus people know where they stand, which can only have come about through comparison and vicarious experience. If desires spring from society and are relative to what others in it have, that society seems indeed to be the world-encompassing, modern communication system.

In comparing a country's score on the development index with the difference between the ratings of present

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and future by the people in it, Cantril observes that future ratings are "dramatically high" relative to the present for developing countries while this was not the case in rich nations, such as the U.S. and Germany (1965, p. 195).\*

Such findings allow Cantril to reach conclusions, which seem to support our notions: "It is clear that the West, with its abundance and technology that diminishes burdens, serves as a model by which other people define and expand their wants," or, as I would say, what people want out of life is determined in terms of the outcomes allowed by modern civilization, as it has developed in the industrialized nations. "In a world where more people are becoming aware of what others have and what is potentially available, they perceive and assess their own situation in terms of relative difference between what is and what might be for them." If modern civilization serves as the model by which people define and expand their wants, entropy in the types of outcomes which are aspired to can be predicted, while this shared standard for living can be expected to include the outcomes, which can be controlled with the set of recipes which constitutes modern civilization.

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\*There may be a ceiling effect at work here. The richer nations scored their present higher than the poorer nations, so that there is less room for difference with future ratings on the ten-point scale.

In view of his results, Cantril (1965, p. 303) also develops a number of stages of development, which are described as follows:

1. "Acquiescence to circumstances," for which the modal respondent in India and Brazil is given as an example.\* In this stage people are not yet awakened to potentialities, while "fatalism makes them accept their lot." They are unable to rate themselves on the scale because they have no comparison. They are not yet frustrated or mobilized. Their concerns are restricted to survival needs.

2. "Awakening to potentialities": People become aware of possibilities and learn what to want out of life. They become mobilized. Frustration results from the constraints imposed by the social environment, which has not changed yet. This period is one of chaos, characterized by the break-up of established institutions and loyalties which, we would add, have developed over time in a relatively stable state at a low level of civilization.

3. "Awareness of means to realize goals," when people sense the possibility that the new potentialities perceived can become real. Cantril thus sees this as the stage in which perceptions of internal control emerge.

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\*The study was reported in 1965, so that the data are even older than that. Present news reports from India and Brazil make us believe that Cantril's characterization no longer holds.

"But faith must be engendered" in this stage, while people are not interested in freedom, as long as better levels of living are made possible. Cantril sees this as the situation in which strong leaders emerge.

4. "Awareness and self-reliance" in the experience of intended consequences through action. This stage may thus be likened to Rostow's "take-off."

5. "Satisfaction and gratification," in which general satisfaction with the way of life achieved is experienced, while continued development is seen as possible. It is characterized by general confidence and few frustrations. The typical case is the modal U.S. respondent.

The last stage is said to be different from the one described for India because the former is marked by satisfaction with the level of modern civilization achieved, while people in the latter stage are not yet awakened to its potentialities, and still need pacification by the reification of forces of external control. However, both stages can be said to be characterized by complacency, in that perceived potential is attained, while many alternatives are not perceived available. One could thus say that both are characterized by entropy, but differ in the level at which it is attained.

In summary, Cantril's (1965) views seem to support our expectations about standards for living by showing that individuals are mainly worried about a decent level

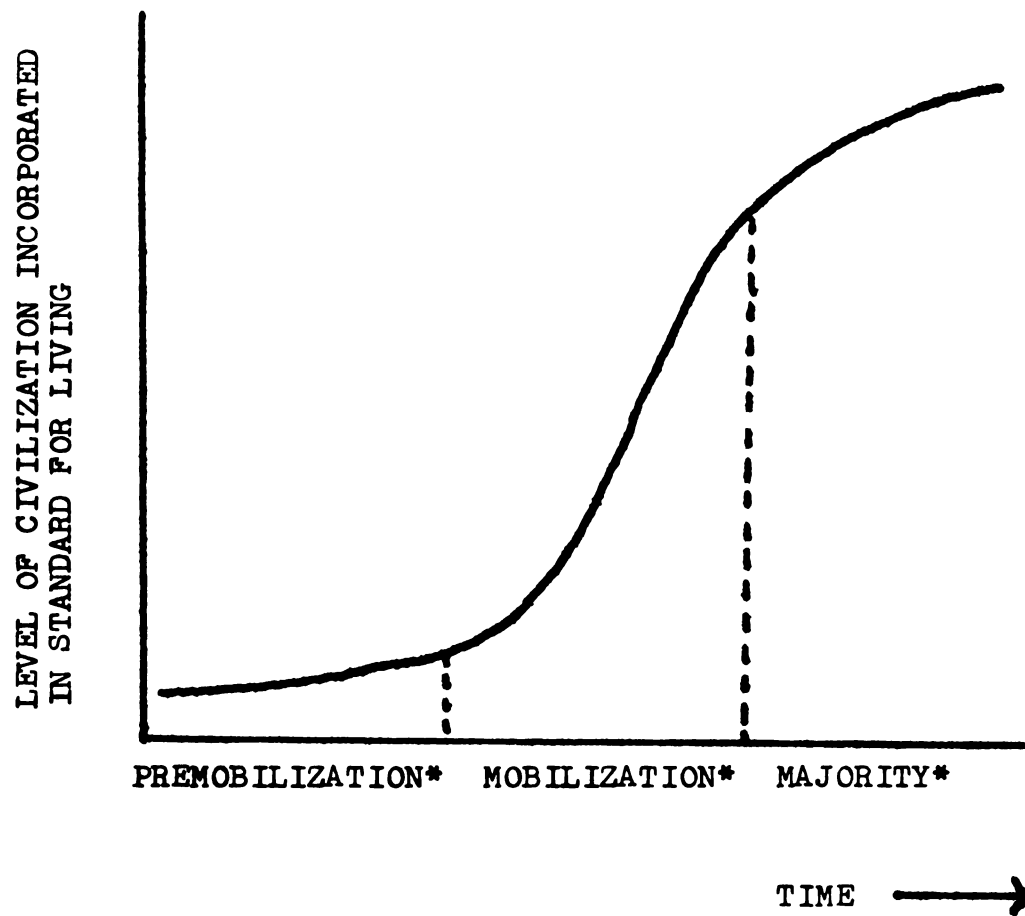


Figure 3-1: Curve describing the upgrading of standards for living

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\*The terms are Cantril's (1965).

of living, where decent is subjectively defined; by showing that those concerns are expressed by those who have become relatively poor, but that volume of concerns is unrelated to objective measures of poverty; by pointing to felt poverty as a function of the difference between standards for and levels of living; by showing that individuals know where they stand so that a world-encompassing communication system can be assumed; and by showing that individuals become poor relative to what individuals in industrialized society have. Cantril puts some more flesh on our model, in that his comparison of the aspirations expressed in different nations, in terms of the development index, suggests drawing the curve (Figure 3-1), along which standards for living are upgraded from entropy at a low level to that at a high level, as a result of the "great discontinuity," which occurs in modernization.

### 9. Levels of living

According to Rogers (1962, p. 162), the diffusion of a novel recipe for organizing matter/energy throughout a social system can be described by a growth curve, which has been depicted in Figure 3-2. The diffusion of the recipe starts slowly, takes off, and tapers off when most members of the system have adopted, while the process ends when the members are similar, once again, in

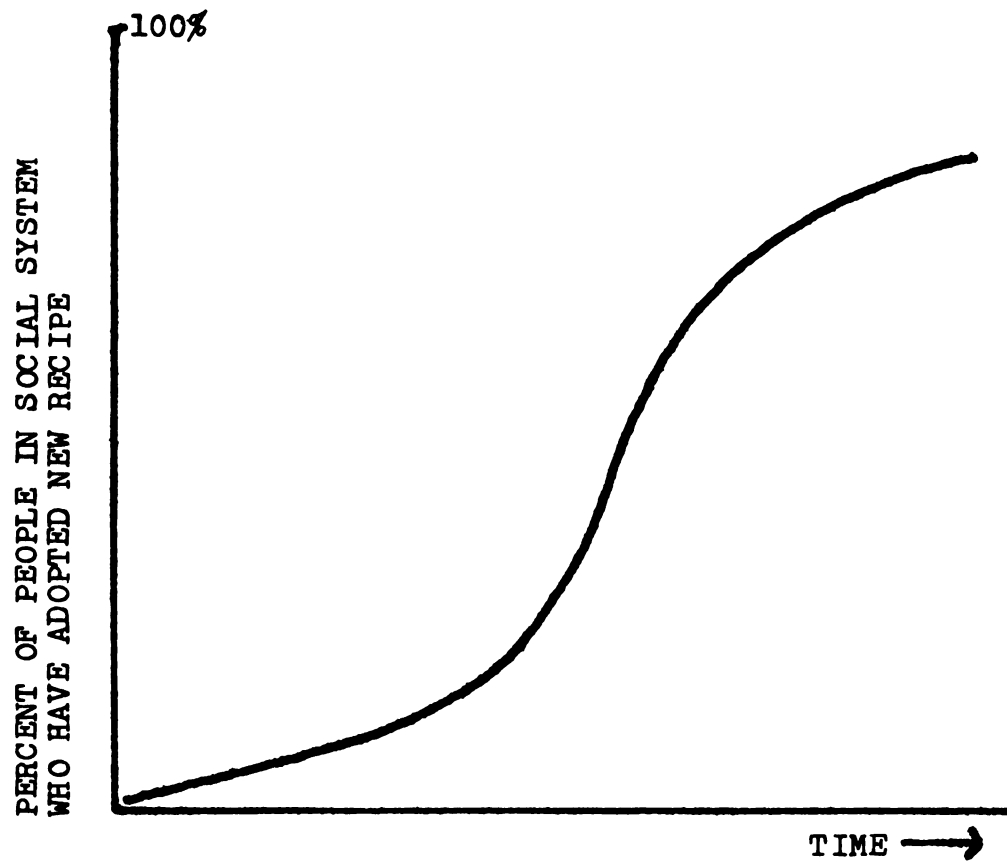


Figure 3-2: Curve describing the diffusion of a novel recipe in a social system (Rogers, 1962)



the recipes they use, i.e., when entropy has been reached.

Most studies of this entropy process look at the diffusion of agricultural practices, but similar curves have been observed for a great variety of recipes. One could say, in the case of radio receivers, for instance, that most societies are still somewhere on the take-off part of the diffusion curve, so that researchers can still use "radio ownership" as a variable. In other societies, however, such as the U.S., there is a radio for every inhabitant, so that "ownership of radio" becomes a constant, similar to the ones encountered by the early anthropologists.

Given that individual recipes diffuse throughout a social system until entropy has been reached, we can expect modern civilization, the set of such novel recipes, to diffuse throughout the world-encompassing communication system in similar fashion, but more slowly and less orderly.

My prediction of entropy in levels of living at the highest level of civilization available seems to hold for historical phenomena observed during modernization. Meanwhile, there is also ample evidence that modern civilization improves the physical well-being man experiences. Hardship, hunger, and disease can be avoided if known recipes are applied. If one looks at the improvement of man's ability to survive relative to other organisms,

one sees the impact of modern recipes in a population explosion which becomes a threat in itself. In fact, the control over nature man can now exert is such that danger to survival no longer derives from what nature does to us, but from what we do to nature. The side effects of our relentless efforts to improve the physical well-being of the individual are beginning to upset us. The amount of DDT in the milk of American mothers is already higher than officially tolerated in food products which cross state boundaries (Look, 1969).

But one does not need such dramatic examples. The "dirt" which accumulates on your windshield during a summer day, and is casually washed off with a strong detergent, is evidence of the countless animals we deprive of food during the year and, implicitly, of our impact on the balance in the ecological system, a balance we carelessly neglect as long as our momentary convenience is safeguarded.

And it may be long before we take ecological balance seriously because it will take time before the unheeded warnings develop into serious consequences for our experience, while it is only a change in experience, which is, be it with a lag, followed by a change in the reality. Let us hope the change in experience will not be a "great discontinuity."

In summary, levels of living seem to be upgraded in the manner predicted, while an increase in physical well-being seems indeed the common result of such upgrading. The question can be raised as to whether the negative side-effects of our efforts are not beginning to offset the benefits of continued development in the same direction.\*

#### 10. Standards and levels combined

Having so far encountered nothing that would lead me to feel less confident of my reality of the evolution of civilization and the role of the tendencies toward

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\*In view of the fact that absolute poverty seems to be abolished ("God is dead") and that desire must now be created by a multi-million dollar industry, one can further ask whether the economic system should perpetuate the development and promotion of recipes for individual physical well-being, while neglecting to develop recipes which could lead to outcomes that would create and satisfy alternative desires, for instance, desires that can only be satisfied by community consumption (Galbraith, 1969).

After all, one cannot miss what one does not know, so that what people desire is relatively arbitrary, depending upon available outcomes which are recognized as superior to others. (The people who demonstrate such outcomes can be called "taste-makers." In our present society, taste-making seems very much the function of self-interested businessmen. One can ask the question whether this is more legitimate than government planning in this respect. Those who counter with Mannheim's (1950) "Who plans the planner?" can be assured that even government taste-makers can only create alternative tastes, if the outcomes demonstrated are recognized as superior to other by those whom they are trying to affect.

entropy in standards and levels as its dynamic, I shall now sum up the reality by describing the relationship between standards for living and levels of living, as it seems to develop when modernization takes its "normal" course.

Let us first look at the modal inhabitant of a modernizing society (Figure 3-3). The figure shows how the relationship between standards for and levels of living determines motivation by creating poverty. The type of poverty is determined by whether the desired outcomes are seen as out of human control, or under human control. In case no human control is perceived possible, absolute poverty results. When people learn that desired outcomes are under human control and when awareness of many new controllable outcomes is created, the standard "takes off," creating relative poverty. If the level of living does not show a concomitant increase, frustration and extreme relative poverty occurs. If the level of living can be upgraded, normal modernization occurs, which may, at some future date, lead to a coincidence of standard for and level of living, without absolute poverty.

Thus Figure 3-3 implies a relationship which Lerner (1963, p. 333) called the "wants/gets ratio":

$$\text{satisfaction} = \frac{\text{achievements}}{\text{aspirations}}$$

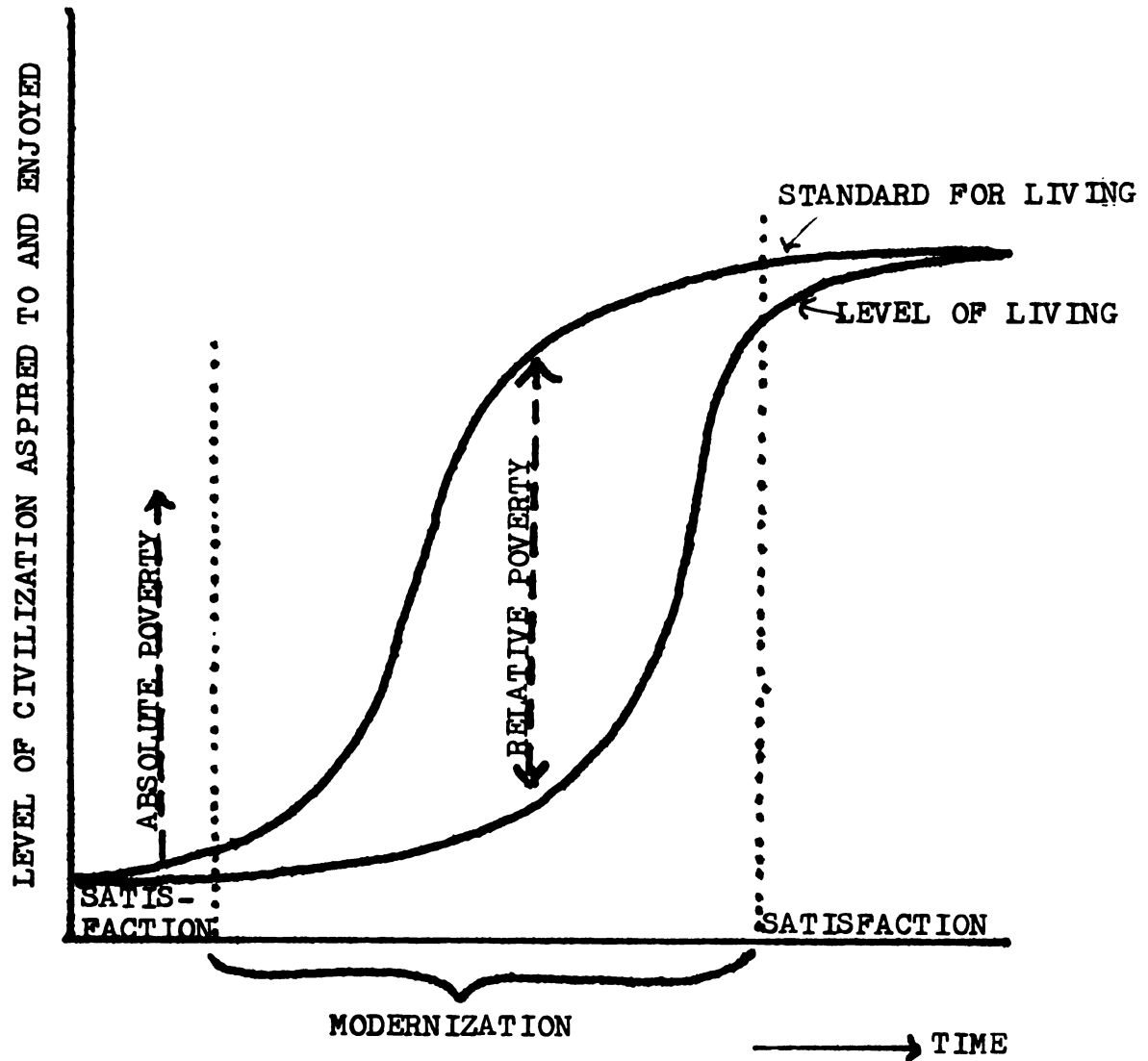


Figure 3-3: The relationship between standard for living and level of living during the modernization of the modal inhabitant of a developing country.

However, Lerner's formulation seems an oversimplification of the relationship between standards for living and levels of living which seem so crucial in the modernization process. [For one, the creation of relative poverty seems a necessary condition for modernization.] When it is followed by the adoption of new recipes, as assumed in Figure 3-3, normal modernization occurs.

A question worthy of further research is: Under what circumstances does frustration and abnormal modernization occur? [In view of the experiments with dogs (Seligman, 1969) discussed in chapter 2, one could suggest that an individual's experience in the early stages of his modernization may be crucial, in that those early experiences may teach him whether he can improve his situation or is helpless.]

There is evidence (Rogers with Shoemaker, in press) which shows that individuals learn to innovate, in that the time a new recipe takes to diffuse grows shorter after initial success at adopting new recipes. On the other hand, there are examples which show that the initial failure of new recipes may make a social system unresponsive to subsequent efforts to introduce new recipes.

Figure 3-4 shows the same relationships as Figure 3-3, but this time not for the individual, but for the whole social system. It illustrates how modern civilization as a "package" diffuses throughout a system.

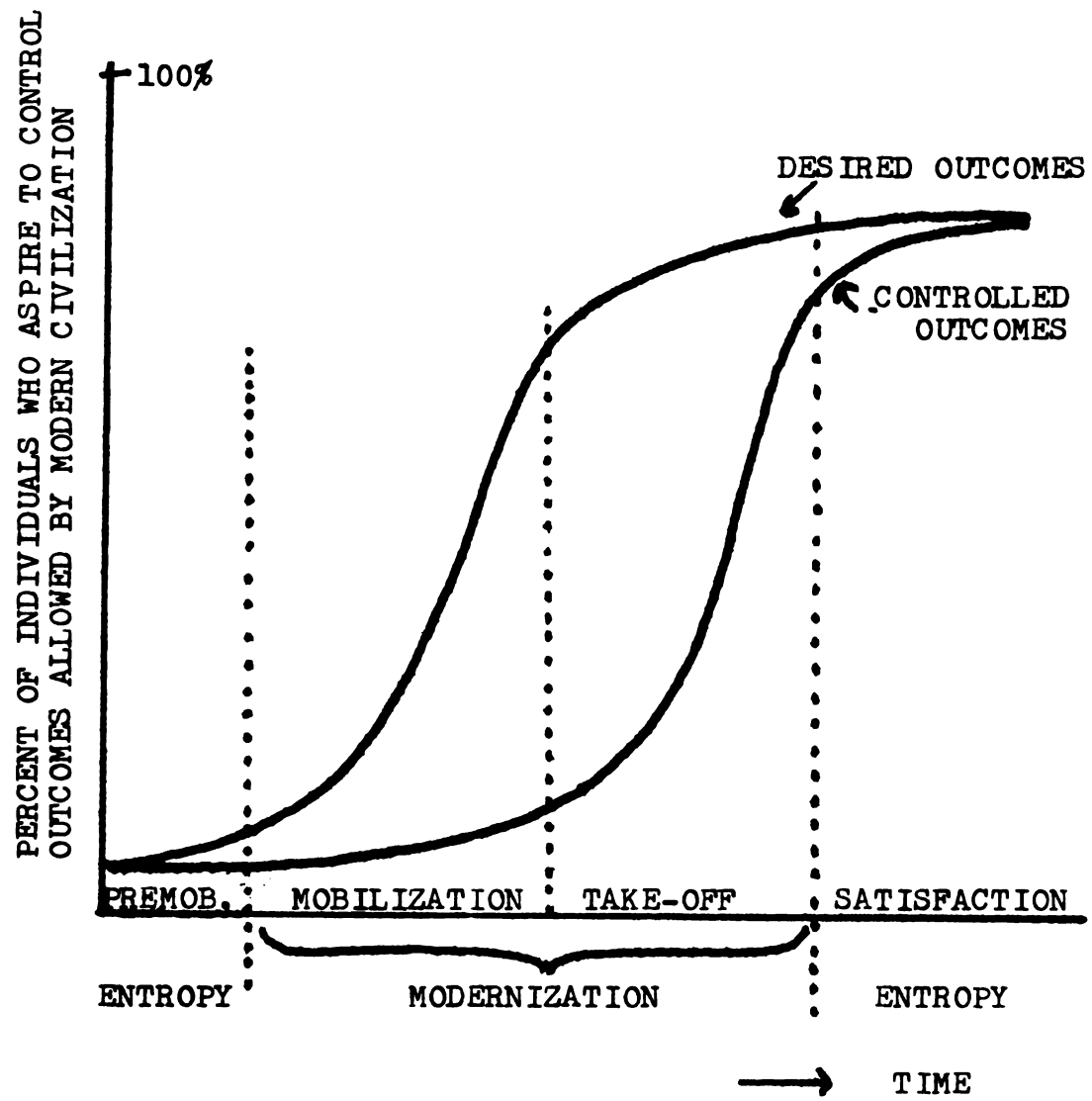


Figure 3-4: Diffusion of modern desires and recipes in the world encompassing communication system

Figure 3-4 clarifies what we meant by entropy in standards for living and levels of living and by our prediction that such entropy will be reached at the highest level of civilization available in the social system (see Chapter 1).

In short, the dynamic of modernization is said to be: (1) the emergence of a virulent desire to have outcomes experienced as well-being, which have become salient because they have been demonstrated to be controllable by the application of modern recipes, and (2) the consequent adoption of those recipes to control those outcomes.

To the extent that the number of outcomes, over which modern civilization allows control, is finite, will the modernization process end when all experience those outcomes. And even though the reality of most of us, developed in a period which at least includes the first TV set and the first man on the moon, will find it hard to accomodate the expectation that it might all end one day, this seems, nevertheless the more logical expectation. For the present world view of a growth curve which never tapers off, the view that modernization is a "mountain without a top" (Hofstee, 1964) cannot withstand our evidence on the tendency toward entropy in the world encompassing communication system.

What would happen when stability is reached at a new level of entropy and the gains are consolidated to become



a normal part of everyday existence, is a matter of speculation, since such a situation is not yet historical. Some observers have suggested that there are already signs which indicate that concerns shift from seeking control over outcomes experienced as physical well-being, to a search for meaningfulness (Berlo, 1969), which would conform to Maslow's hypothesized hierarchy of needs. After all, what do you do once you have ensured your physical well-being, once you have made sure that you will survive?"\*

In summary, our efforts to find support for our dynamic model of the evolution of civilization in descriptions of modernization seems to have been successful.

## 11. Conclusion

Our model of man as a controlling system, and of society as a group of such man-the-controlling-systems, seems to be able to account fairly parsimoniously for experiences which had, hitherto, not been patterned into a reality. In fact, some, who are convinced of the unique moral character of man, may find the power of

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\*Biologists (Portmann, 1965, p. 173) are beginning to ask similar questions, in that they have realized that survival is not an end in itself, but a necessary condition. Thus they raise the question: Condition for what? Portmann (1965) observes many aspects of animal bodily characteristics and behavior which do not have a purely survival function and probes such notions as animal self-expression.

man-the-controlling-system somewhat disheartening. But then, our respect for feedback should keep us from operating under disconnected realities.

As a result of observations made in Chapter 3, I feel I can have more confidence in making the following knowledge claims:

1. When two social systems with different levels of civilization come into contact (i.e., become part of the same communication system), vicarious experience of the outcomes of the members of the social system with the higher level of civilization by those of the system with the lower level leads to new desires, to a point where all members of the communication system share the same desired outcomes.

2. As a result of the new desired outcomes, the members of the social system with the lower level of civilization will make an effort to adopt the recipes which are used by those of the social system with the higher level of civilization, so that there is a tendency for all members of the communication system to use the same recipes, i.e., to share the same level of living.

These knowledge claims seem useful in that they explain and predict such phenomena as described by the diffusion curve, which indicates a tendency toward entropy, but for which the force, or gradient, leading to entropy, had never been identified. However, the

usefulness of the reality developed so far does not stop here, as we shall see in the next chapter, which deals with some pertinent characteristics of the mechanics of evolving civilization.

Meanwhile, our reality has so far definitely not accounted for some important aspects of modernization, even though we believe it to account for its dynamic. In Chapter 2 we made a distinction between consumption and production. In light of this distinction, we can say that we focused in this essay on the realm of consumption and neglected the realm of production. And where a tendency toward entropy is evident in the former, the opposite seems to hold in the latter.

In case of the realm of production, the evolution of civilization is accompanied by increasing specialization and interdependence. Where man once adapted himself to the ecological system because of his dependence on it, he now adapts to the economic system because it is only through participation in that system that he can enjoy the level of living possible under modern civilization.

But the economic system thereby places heavy constraints on us, and an effort to free ourselves from these constraints may well be the next step in our struggle for well-being, especially when physical well-being seems secured and absolute poverty abolished. People who started such a struggle would perhaps say: "I want to

do my own thing."\*

One could thus write another essay on the increasing interdependence and complexity of the economic system and its institutions that accompany the evolution of civilization, without even bothering to speak about the tendency toward entropy in standards and levels of living. But that is not our objective here. In the next part of the present essay, I shall continue to develop the reality of evolving civilization, and especially modernization, by scrutinizing its mechanics, i.e., processes of information and communication.

In summary, the model of evolving civilization seems powerful although limited. In Chapter 4, I shall expand it by looking at information processes which allow modernization to occur.

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\*The so-called "generation gap" may, in light of our reality of civilization, have developed because the adolescents of this age are the first who take physical well-being for granted. Their reality developed in a different stage of the modernization process than that of their elders; hence their concerns are different.



## Chapter 4

### INFORMATION AND COMMUNICATION

#### 1. Introduction

One of the advantages of a reality in which one has confidence is that it allows statements of the "if-then" type. Our reality of evolving civilization seems especially valuable in this respect. For our understanding of information and communication is very scanty on the one hand, while these processes seem so essential in the diffusion of desires and recipes on the other hand. Even though it assumes communication as given, our reality of evolving civilization can be very useful in guiding our specification of elements and functions of communication and information processes, because the entropy predicted in that reality can be seen as the result of communication and information. The reality thus becomes a heuristic tool.

But it might be able to do more for us than that. To the extent that it specifies how modernization normally occurs, or "should" occur, may it allow us to make statements about how information and communication processes should occur to allow modernization to progress

normally. And constructing such statements is the long term goal of the communication scientist interested in pay-off, for it is such statements which allow the development of recipes, or as one calls them in case of communication, strategies.

Our efforts to construe an understanding of the mechanics of modernization will rely, for guidance, on the reality developed so far, although we shall, again, endeavor to avoid a disconnected reality of information and communication processes, by taking into account empirical work which is available.

In foregoing pages, the world-encompassing communication network was the social situation of concern; the pages which are to follow will be more limited in this respect. In fact, I shall focus on a rural village in a developing society, because ensuring that such villages modernize normally is, perhaps, the most important task ahead, if alone because of their numbers.

In summary, our identification of elements and functions of information and communication processes in modernization will be guided by the reality of evolving civilization. Such guidance is possible because this reality can be said to have described the effect of information and communication. In our discussion, we shall limit the social situation to the modernizing rural village.

## 2. Reality

[The acquisition of new desires and the recipes to satisfy them are, in essence, changes in reality.] A discussion of the mechanics of modernization must thus start with scrutiny of reality.

Reality is a black box. That is, one can construe a reality of it, because this reality of reality cannot be based on feedback. All realities of reality are, therefore, based on inference from observation of action, under the assumption that all action derives from, and is therefore indicative of, reality. Let me go ahead and make some statements about reality anyway, because it may be useful.

Reality is a representation of the environment, a system (cognitive structure) of elements and their relationships (theories), which stands for events (changes, differences) in the environment. The elements and their relationships have (1) value or significance for well-being (connotative meaning, attitude, aspiration), otherwise they would not be in the reality, (2) they are attributed with a probability of occurrence in the environment (expectation, prediction) and (3) with a cue which activates them when it is appropriate, i.e., when the event takes place for which the cue was recognized, so that an epistemic or semantic link is



established. The cue can be a sign (operation) or a symbol (word). One can further say that the reality is internally consistent, so that individual relationships are logical, relative to the whole reality. Since reality is a system, change in one respect affects all others.

The function of reality is to allow existence, i.e., correspondence between intended outcome and actual outcome, when one acts within the environment to experience intended outcomes, by providing recipes and intentions.

A reality is like a blank sheet of paper which is gradually written upon by experience. One can assume, for instance, that expectations are based on the frequency of occurrence with which something is experienced. If one says of someone that he has a "lot of experience," one indicates that he probably has accumulated an adequate reality to deal with a certain problem.

The words "adequate reality" are important. A reality is not correct or incorrect, because the criterion for that is another reality. But a reality is adequate if intended, or at least predicted, outcomes are experienced. Adequacy depends on the amount of control the reality allows its bearer, and is a function of (1) its intentions, and (2) its recipes for arriving at intended outcomes.

If experience does not change, i.e., if the type of event in the environment, and the type of outcome that

results from it, stay fairly constant for a prolonged period, a reality will gradually develop which takes that experience into account, because it is adjusted to a point where feedback reinforces it most of the time. Thus an adequate reality will develop, especially where one can expect that intentions will be limited to what is possible, while the recipes allow the intended outcomes to occur. A group of people in such conditions will share the same reality, so that there are no alternatives. Then reality is reified to dogma.\*

If experience changes, either intentions change, so that recipes become irrelevant, or recipes become useless, even if intentions remain unchanged. Then reality becomes inadequate because it does not allow control and creates uncertainty instead (Berlo, 1969). One can expect that the "great discontinuity" in experience, brought about by modernization, will have the effect of rendering inadequate the reality of those who experience it (Cantril, 1965, p. 17). But, when modernization progresses normally, realities are adjusted to take into account the new experience, until they are adequate once again.

Therefore, the process of modernization can only be understood via the causes of reality change. Reality

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\*See Inkeles' (no date) observation that modern man is tolerant of opinions of others.

change can be said to be the result of receiving information, the topic of the next section.

In summary, we made some minimal and unverifiable\* statements about reality which will be useful for observations which are to follow. Since the interaction between changes in intentions and recipes, the essence of modernization can be seen as reality change, such reality change must be understood, if one is to control modernization. Reality change can be seen as the result of receiving information.

### 3. Information

Information is an exchange of matter/energy with the environment (an experience), which leads to change in reality by increasing or decreasing its adequacy. That is, information only occurs when experience does not conform to reality, when the goodness-of-fit between reality and experience is affected.\*\*

Because reality is a black box, it is difficult to assess its changes, except by the actions based on it.

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\*Since reality is a black box, computer simulation of reality change as a result of receiving information may be beneficial to our understanding of that process.

\*\*Our definition of information is consistent with Berlo's (1969) definition: information involves the imposition of pattern on previously undifferentiated matter/energy.

Thus we give students an examination to see whether our teaching (the student's experience) led to the desired reality change. The nature of the information received cannot be determined by the nature of the experience, because reality is not a snapshot of the environment. In short, a discussion of information is hampered by a "meanings are in people" problem (Berlo, 1960, p. 175). Let us, therefore, look at some of the ways reality must be affected by experience if modernization is to take place.

(1) Feedback. Given intentions and given recipes to achieve them, man acts in his environment guided by his recipes. Feedback is information about the change in the environment which occurs as a result of action and tells men how well his recipes allow him to experience intended consequences. Feedback thus reinforces or weakens the confidence in recipes, by affecting the probabilities attached to certain relationships. An example of feedback which reinforces reality and makes it more adequate, is the scientific theory which is supported by evidence. A reality is inadequate if actions based on it do not lead to feedback which shows that intended consequences were achieved. An inadequate reality can only be a temporary phenomenon and occurs, for instance, when changes in the environment lead to feedback which weakens the reality. An example is the expatriate's culture

shock, the "mental disease" one passes through before one is completely adapted to a new social environment (Foster, 1962, p. 187). A sufficiently weakened reality allows prediction of search for new recipes. An example are the Indians who took up ghost dancing after their environment had undergone a great discontinuity.

(2) Environmental information.<sup>\*</sup> An experience, which increases the number of options perceived available in the environment can be called environmental information. Environmental information is especially important because it allows changes in intention. This occurs when new options include outcomes which are recognized as closer to well-being than others. A change in intentions renders recipes, developed for attaining the old set of intentions, irrelevant. As an example is the Yoruba who became aware of zinc roofs, for the acquisition of which his ability to subsist as a self-sufficient farmer is irrelevant. Environmental information, in this sense, thus has the immediate effect of making the reality less adequate, because intended consequences are not experienced. Reality must thus be changed by incorporating new recipes or by pacification.

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<sup>\*</sup>See Ackoff's (1958) "information." Since Ackoff distinguishes three types of information, one of which he calls information also, people have been trying to find a better word for it. In using "environmental information," I adopt Berlo's 1969 term.

Modernization thus renders reality inadequate, either because the environment changes to a point where recipes no longer lead to intended consequences, or because intentions change which render irrelevant existing recipes. This also has the effect that intended consequences are no longer experienced. In both cases, search for new recipes can be predicted. Or, in Berlo's (1969) words, people will seek to impose new "pattern on matter/energy," while man only "acquires power to control" by imposing such pattern.

(3) Instruction. Information which leads to incorporation of new recipes in the reality, and thereby improves its adequacy, or the ability to experience intended consequences, is called instruction (Ackoff, 1958). Feedback and environmental information seem to render reality inadequate more or less automatically as the great discontinuity takes effect. The problem, in making modernization run its normal course, is to make realities adequate again. According to our discussion of instruction, normal modernization can only come about as a result of instruction.

Recipes, or at least, patterns imposed on the environment, are creations of human reality,\* because

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\*I limit myself here to human realities, although it is well known that animals impose patterns on the environment. Migrating birds which navigate by the stars must have some reality of the firmament by which they evaluate feedback and redirect their course. The same can be said for salmon, which seem to find the stream in which they were born by smell. Modern biology is very interested in such phenomena (Portmann, 1965).

such recipes or patterns can exist nowhere else. That is, one cannot pick them up by receiving information from the physical environment or other sources, except for such people as Mormons, who receive whole books full of revelations from God. Therefore, the only way to improve the adequacy of the reality is through one's own invention of recipes or through instructional information one receives from others through communication. We will not occupy ourselves further with invention and deal with communication in the next section.

(4) Motivational information. Information about outcomes, their value and assessment (Keith, 1968, p. 13) can be called motivational information (Ackoff, 1958). Such information is of crucial importance in ensuring that modernization runs its normal course. The typical modernizing villager will have acquired new intentions, but not the recipes to achieve intended consequences. The link between new recipes of which he grows aware and his existent intentions may not always be immediately obvious. Motivational information serves to link the outcomes, possible with the new recipe, to the villager's intended consequences.

These four types of information can be seen as essential to modernization. Since we are not interested in making realities less adequate, and since this seems to occur more or less automatically anyway, we shall not

consider feedback and environmental information with any special attention. We shall concentrate, instead, on the communication of instructional and motivational information.

In summary, crucial reality changing experiences or types of information are feedback, environmental information, instruction, and motivational information. The first two make the reality less adequate in the great discontinuity, while the last two increase such adequacy. We shall be especially concerned with them. Instruction and motivational information are received as a result of communication.

#### 4. Communication\*

Minimal conditions for communication are the following: at least two parties send packages of matter/energy through channels which connect them. Each organizes, or patterns, the matter/energy he sends to others in such a way that it serves as a cue, which activates reality according to linkage rules on which all more or less agree. The patterned matter/energy thus refers to, or is symbolic of, elements and relationships in reality,\*\*

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\*The present section will rely heavily on Berlo's (1969) discussion of the subject.

\*\*Here I differ from Berlo's (1969) opinion that the patterned matter/energy is symbolic of the environment. But we do not talk of the environment, we talk of our reality of it.



which, it will be remembered, in their turn represent the environment.

{Communication cannot occur (1) if there is no similarity in the realities of the parties, and/or (2) if they do not share rules for organizing matter/energy into a set of mutually agreed upon cues for activating reality. The set of cues can be called language.\*}

While communication is impossible if realities do not overlap, because cues will not activate similar reality elements and relationships, communication can have no informative effect if realities are completely similar. What is more, communication with informative effect can be said to make realities more similar.

These two extremes imply a paradox which has plagued attempts to develop a reality of the communication process. {On the one hand, the patterned matter/energy units which people send to each other can only function as cues for activating reality to the extent that it is already there. Or as Berlo (1969) says: "Matter/energy is transferred, pattern is transferred, but significance is not transferred," because "meanings are in people."}

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\*In this light, one can say that education has two functions: (1) to socialize new members of the group by ensuring that they share the set of cues and the reality used by the group, and (2) to give new group members an adequate reality. These two functions do not necessarily coincide. Teaching Nigerians the British Constitution can be said to serve the former function better than the latter.

The patterned matter/energy units "elicit an idea" in the one who receives them. Therefore, "the meanings you want other people to have must be in them . . . before you communicate."

But then Berlo (1969) also says: "If meanings are in people, where do they come from? They come from experience, they are learned . . . ." And that has been my position, especially in case of instructional information, which can only come about through receiving recipes from others through communication. In fact, the accumulation of recipes in the evolution of civilization would be impossible if the communicative act could not create or develop reality where it did not exist before.

Thus, the paradox: Communication can only occur when communality in meaning exists, but can only have an informative effect to the extent that communality does not exist. This paradox hampers the development of a reality of communication, because it affects our understanding of what is communicated, of message, directly. For, if meanings must be in people before they can be elicited, scrutiny of the message does not allow prediction of its effects, unless one knows that the reality to be evoked is already there, in which case it is useless to send the message in the first place. Clearly, the paradox must be resolved before we can speak of messages which instruct: the only means of improving the adequacy of reality.

I propose to solve the paradox by saying that a message can be informative, i.e., change reality by adding new recipes for instance, even though it can only do that by using cues to activate what is already there. That is, starting from a communality of meaning, a message can create meaning, expand reality. I would assume, for instance, that definitions, analogies, and examples serve that function, as well as a new juxtaposition of old reality elements evoked by familiar cues. If Whorf (Miller and MacNeil, 1968) is correct, the cognitive categories of the reality derive from the categories of language. I would go further and say that the use of familiar cues can create new reality elements and relationships and even new cues for them. "Are you beginning to get some meaning?" for cue and reality or "have I lost you?"

Thus, I concur with Berlo that "meanings are in people" but insist that it is misleading to say that meanings must be there before they can be elicited, for that negates the ability to learn, to be informed. I further conclude that the message must be of a certain nature, if it is to elicit and create a certain meaning: its potential effect. Effect itself can only be evident in the change in action based on it. Therefore, we look for feedback to see whether potential effect was indeed achieved, whether our recipe for organizing matter/energy into a message led to the intended consequences, in terms of

reality change.

In summary, our discussion of communication allows us to discern: (1) parties who have some commonality of meaning and share a set of cues for evoking meaning; (2) Messages, which are packages of matter/energy, organized in such a way as to have cuing and informative ability; (3) channels for sending the packages of matter/energy linking the parties; and (4) effect, which is the reality change (information received) as a result of the message. We already discussed the effect of our interest at length: making reality more adequate by expanding it to include new recipes. In the next sections we will, therefore, be mainly concerned with messages, parties and channels.

##### 5. Messages of instruction as a bottleneck in modernization

We saw that the existence of an inadequate reality allows prediction of search for new recipes. However, the new recipes found do not always make the reality more adequate, as in case of the Ghost Dance and other magical recipes. But, given a chance, people can be expected to be more rational: when they have upgraded their standards for living, they will make efforts to apply the recipe of those members of their social system who upgraded their level most. That, at least, is the prediction according to my reality of evolving civilization, in which I have

some confidence.

One can go further and say that it is the demonstration of outcomes, resulting from the application of recipes, which leads to virulent aspirations, so that the outcomes cannot be thought of in isolation from the recipe which allows its experience. Thus I desire to have a campmobile, which is not the outcome I hope to experience, but matter/energy organized according to some recipe.

However, this inseparability\* of recipe and outcome holds especially in case of consumption: the satisfaction of aspired-to outcomes. In modernization, such satisfaction can only come about by using matter/energy organized (produced) by others, according to recipes the consumer hardly knows. Meanwhile he can only acquire such matter/energy, organized by others, by applying recipes himself, in such a way that the matter/energy, organized according to them, can be exchanged for the products of other people's skills.

In such conditions, the recipes one applies oneself and the outcomes one experiences are no longer inseparable, in that one's recipes do not immediately allow the experience of outcomes one desires. Understanding this is crucial to understanding anomalies in the

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\*I shall come back to this when talking about advertisement.

modernization process. For, were it not for specialization and interdependence, people would more or less automatically upgrade their levels by adopting the recipes used by those who upgraded their levels most.\*

In many cases, such automatic upgrading still occurs, even where there is an indirect link between outcome and recipe applied. Remember our Yoruba cocoa adopter, for instance. In fact, cocoa diffused throughout Western Nigeria and Ghana in such fashion (Berry, 1968). The same can be said of groundnuts in Northern Nigeria (Hogendorn, 1968), which diffused notwithstanding the opposition by the then colonial government.

More dramatic examples of individuals' efforts to adopt the recipes used by those who upgraded their level most are, perhaps, the great migration to cities ("bridge-heads of modern civilization") to find wage-paying jobs, and the unbelievable rapid adoption of formal education in countries which have recently become mobilized. However, the fact that many governments find it necessary to promote back-to-the-land policies, that a school-leavers' problem exists in West Africa, that Indian doctors finally find employment in Akron, Ohio, that the former

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\*Given the availability of matter/energy to organize according to some recipe ("The availability of idle resources" (Hla Myint, 1966)). We shall leave scarcity for economists to worry about. They can, in turn, assume "perfect knowledge," i.e., communication.

Eastern Nigeria Government had to slow down voluntary school building, that 400 secondary school-leavers applied to 10 temporary jobs in that same region, which had, 50 years ago, been more or less completely isolated from the mainstream of modern civilization, all indicate that such autonomous efforts of those who upgraded their level most are often self-defeating, and can result in anomalies in the modernization process.

The problem, therefore, is to (1) develop and (2) communicate useful recipes, i.e., recipes which lead to intended consequences and avoid extreme relative poverty. Although I am convinced that the development of useful recipes is as important as their communication, I feel that the determination of the potential utility of a recipe (in an exchange economy) depends on the scarcity of the skill it gives the man who can apply it, and therefore, is a problem for economists. Meanwhile, the development of such recipes seems to be the realm of the technician. Therefore, I shall not be concerned with the development of useful recipes, but only with their communication.

The communication of such recipes is beset with special problems. According to my reality, people shall adopt a recipe only if it is linked with an outcome they aspire to. When this condition is satisfied, one does not have to make an effort to get people to adopt recipes.

In fact, we saw that people do that by themselves to an extent that it becomes dysfunctional.

But a special communication problem occurs in case of useful recipes which have been developed, but are not used yet in a social system, so that even their indirect link to desired outcomes is not evident. The autonomous diffusion of such recipes cannot be predicted, unless such a link has been made evident. And that is why communication of such recipes is a crucial bottleneck in modernization; that is why specialists (change agents) must be hired to communicate them; that is why their work is beset by special problems; and that is why Mr. Schultz (1964, p. 164) "misses the boat" completely, when he says: "Since differences in profitability are a strong explanatory variable, it is not necessary to appeal to differences in personality, education and social environment."

[In summary, a recipe will only diffuse if it is clearly linked to a desired outcome. In fact, if that is the case, the recipe will diffuse more or less autonomously. However, this very process can lead to severe anomalies in the modernization process, which can only be overcome or avoided by the diffusion of recipes not yet used in the social system. However, their not being used implies that their link to desired outcomes has not been demonstrated. Thus, they will not diffuse autonomously,



which defeats their purpose. Therefore, change agents must be hired to communicate such recipes, a fact that negates the strictly economic viewpoint. In the following sections we will be especially concerned with the communication of such novel recipes or innovations,\* because that is where the payoff is, if one wants modernization to take its normal course.

#### 6. Messages which motivate

We saw how the communication of recipes, which are not linked to desired outcomes, represents a special problem in modernization. We also saw that professional change agents are used to overcome this special problem, so that one can expect them to emphasize the creation of such links by giving people motivational information.\*\* Fact is, many change agents seem little aware that this is an important aspect of their function, and if they are, many operate under the assumption that it is sufficient to mention that such links exist to create belief and motivation. Because of this situation, which probably results from an inadequate understanding of the function of the change agent, the motivating message deserves some scrutiny.

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\*Rogers (1962, p. 13) defines an innovation as an idea that is perceived as new by the individual.

\*\*See Chapter 4 section 3.

The motivating message is, in essence, an advertisement:\* a young man (easy to identify with or emulate) is seen kissing the beauty (desired outcome) which is shown to be the direct result of the young man's use of a certain shampoo (application of recipe). It seems that the advertisement must convincingly show that there is a causal relationship between the desired outcome and the recipe, if it is to motivate.\*\*

In case of the change agent, the crucial words seem to be "convincingly show." For if we assume that the agent promotes a recipe which is potentially useful, in that it can lead to desired outcomes, the establishment of a causal link between outcome and recipe is a matter of conviction. Yet it seems difficult for the change agent to satisfactorily prove that causal relationship.

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\*Advertisement is defined as a message constructed so as to motivate its receiver to apply a recipe.

\*\*The modern commercial advertisement seems weakest in convincing people that the recipe can lead to the outcome, or when it does, that the outcome is desirable in the first place. Both weaknesses may be seen as indicative of a level of individual physical well-being at which absolute poverty has been abolished, so that the economic system, developed in another period, can only continue to grow by massive efforts to create deprivation by advertisement, that "merchant of deprivation" (Monane, 1967, p.96). One can ask whether such efforts can be successful in sustaining growth in a direction which has surpassed its utility. If one accepts this view, i.e., that the strife for individual physical well-being has reached its Rococo, there may be need for thought, either about stabilizing the economy, or the creation of desires for outcomes other than those concerned with individual physical well-being.

Because of the nature of his recipe, there are few comparable people he can point at in the environment. Meanwhile, he himself is not immediately trustworthy, being a stranger, sponsored by government and paid to make promises.

But there are a number of appeals and arguments which the agent can use in this situation. He can appeal to his own credibility or authority if he has developed a special position and reputation, based on past success, in the social system in which he works. He can also use the credibility and authority of others, by letting them speak for him. He can appeal to logic by explaining why the causal link between outcome and recipe exists, he can appeal to fear of force or to friendship.\* The final, and probably most generally effective, method is to actually demonstrate the link between recipe and outcome, so that feedback speaks for itself.

It seems that the agent must use such arguments or appeals to develop a small beachhead in the social system in which he works. After it has been established, one can expect the demonstration of outcomes, by those who have started to use the recipe, to render unnecessary further use of the appeals and arguments just mentioned,

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\*See Kelman (1958) on compliance, internalization and identification. We shall come back to internalization in the next section of this chapter. See also Ascroft (1969, p. 54).

so that the recipe spreads further throughout the system on its own. That the agent's crucial impact occurs at the beginning of this process, in fact, is the beginning of it, while the innovation spreads on its own afterwards, seems supported by research (Rogers with Shoemaker, in press).

There is, however, wide variation in the speed with which the whole process occurs, while speed seems imperative, if prolonged relative poverty is to be prevented. Apart from other factors to be discussed later, one reason for this variation in speed can be expected, and has been shown, to be the degree to which outcomes which result from adopting the recipe can be demonstrated (Rogers with Shoemaker, in press). A method of making such results more visible might be the identification of the houses of adopters with signs showing that they are using the recipe. So far such signs seem only to have been used to advertise commercial seed grains and livestock strains.

In summary, the special character of the recipes that change agents promote leads to the expectation that they will devote much effort to linking such recipes to desired outcomes - which does not always seem the case. The motivational message must convincingly show that a causal relationship exists between desired outcomes and recipe promoted, if the agent is to establish a beachhead

in the social system. A number of possible strategies for showing such a causal relationship were mentioned. It seems, however, that the use of motivational messages by change agents is a neglected but critical research area.

#### 7. Messages which instruct

As a result of upgrading standards for living in modernization, people desire to outcomes B, while they experience outcomes A, which do not fit B, in that they represent a lower level of living. The problem is to get from A to B, to change what is to what should be. As we saw, one can regard this as the fundamental human problem, which requires the fundamental human solution: the application of control.

This solution depends on the ability to answer two basic questions:

- (1) Given B, why do I have A? The answer to this question can be called the diagnosis.
- (2) Given the diagnosis, how can I change A to B? The answer to this question can be called the recipe.

Answering these two questions implies an adequate reality (pattern imposed on the environment, model, theory, etc.), which identifies the critical elements and their causal relationships in situation A (diagnosis), and prescribes methods for manipulating some of these

critical elements to change A to B (recipe).\*

An example is the reality of the juju priest in an African village, who diagnoses the occurrence of chicken pox in the village as a result of the anger of a hungry chicken-craving god, i.e., he identifies critical elements and their relationship in the situation. Based on this diagnosis, he prescribes a recipe: Sacrifice a chicken.\*\* When chicken pox occurs in the village, the juju priest, being the specialist, instructs the villagers to sacrifice a chicken. In order to be able to instruct them, the juju priest must have made the villagers accept his diagnosis, i.e., made them understand why the recipe can lead to the desired outcome.

Now imagine the African farmer, who has recently become poor,\*\*\* because he has received information about

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\*We saw, when discussing man-the-scientist in Chapter 1-5, that science has very much the function of developing such adequate realities, in that it emphasizes support of reality by feedback.

\*\*We laugh at this, not because the link between recipe and diagnosis is unacceptable, but because the diagnosis is not based on feedback.

\*\*\*Examples of how people can become poor by upgrading their standards of living are provided by the Pakistani camel driver who President Johnson took for a tour through the U.S. He is now an unhappy man. Erasmus (1961, p. 5) describes the same result of his taking a villager with him to the U.S. People can also not be poor enough for development to occur. There are many accounts of old "colonialist" who said it was a waste of time to pay the "natives" too much at the time, because the natives only needed a certain amount of money, so that paying them more simply meant that they would work less. Examples of young "do-gooders" arriving from the home country and doubling the pay of the local people, with the result

states of well-being which he recognizes as superior to his own, while he does not know how to get from this A to his new B. After all he cannot copy those who experience B: Educated city folk with wage-paying jobs. All he can do is to give his children a good education so that they, at least, will lead a better life. In fact, he expects a few crumbs for himself in his old age. Now suppose that this farmer comes into contact with a change agent promoting fertilizer. What would have to\* happen to instruct the farmer so that he adopts fertilizer. The following can be suggested.

The agent has to expand the farmer's reality of A, in such a way that it is patterned to include low yields as a cause of A and the need to feed crops to change A to B. That is, the farmer must start to see things the agent's way and to accept his diagnosis (Kelman's (1958) internalization). And it may not be easy to do that.

We saw before that the expansion of reality can only occur by building on elements and relationships which already form part of the reality, so that the agent can

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(continued from last page) that the local people did indeed work less have been given. Such examples of working till one has enough reflect on our own society. Are we kept in constant poverty, or at least, under the threat of becoming poor, or socialized to feel guilty if we are not busy?

\*Notice that we are still in the deductive business. I regard this as fruitful because we know so little about instructive messages that deduction from a relatively powerful reality can, at least, provide leads for investigation.

only succeed if he starts from a common base, from a commonality of meaning with his client. And it may be difficult to find such a common ground.

Examples of some of the difficulties, which our agent may encounter, are provided by efforts to diffuse fertilizer in the former Eastern Region of Nigeria. Some farmers, apparently holding an "image of the limited good"\* (Foster, 1965), believed that the cake of soil-fertility was of fixed size, so that the increase in fertility in one field by fertilizer could only have come about by the fertilizer draining the fertility from neighboring fields. Another problem was that farmers regarded the white powder as a medicine and found it difficult to accept it as a plant food, while many also found the notion of "optimum quantity" difficult to comprehend.

All these difficulties seem to point to differences in reality between agent and farmer, which have nothing to do with fertilizer as such, but derive from a more basic lack of communality of meaning, from differences in the fundamental premises in the realities of agent and client, which represent the unspoken assumptions on which each bases his actions.

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\*The image of the limited good can be defined as the perception that all desirables in life exist in finite quantity (Rogers with Svenning, 1969, p. 20).



An example of such a premise is the self-sufficiency syndrome. A poster used in a campaign to rejuvenate orchards in Holland showed a large apple tree, with the words "cut it down," because such trees had to be replaced by small, easy-to-pick, trees which are trained along wires. This poster was found to be ineffective, because people did not think in terms of efficient participation in the money exchange economy, but in terms of quantity of apples, regardless of production cost (Wichers, 1958).

Such major unspoken assumptions seem to affect the more specific relationships in the reality, so that one cannot change the latter without first changing the premises on which they are based. Such premises seem, therefore, to play a crucial role, in that they render communication of recipes more difficult between agent and farmer.

Apart from the image of the limited good and the self-sufficiency syndrome, one can mention such basic premises as: children are labor (which hampers birth control campaigns), the expectations of external and low internal control and, maybe basic to them all, the premise that reality is real. [All of them seem to be summaries of experience before the great discontinuity, and, therefore, represent carry-overs or cultural lags, which are no longer functional in the modernizing

stage.\*] Thus they must be unlearned before more adequate realities can be adopted. Specific instructional efforts to change such basic premises may pave the way for the change agent, in that they will make it easier for him to establish communality of meaning when he comes with his recipes. Perhaps formal education in developing countries should also direct its efforts more to changing such premises than to English literature, bible knowledge and what not.

Expanding peoples' reality to include the diagnosis of A, so that the recipe promoted becomes accepted as a method of changing A to B (internalization), is beset by some grave problems, reason why change agents, more often than not, have to resort to making people believe that the recipe works, whether they understand the why of it or not. It is then that the agent must use motivational messages of the type discussed before.

Apart from linking the recipe to desired outcomes, the instructing message must of course also give information about the specific rewards that can be expected

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\*Rogers (Rogers with Svenning, 1969, p.24) developed a model of the subculture of peasantry, which consists of (1) mutual distrust; (2) perceived limited good; (3) dependence and hostility toward government; (4) familism; (5) lack of innovativeness; (6) fatalism; (7) limited aspirations; (8) deferred gratification; (9) limited view of the world; and (10) low empathy. In view of the reality premises we discussed, it could be suggested that the subculture of peasantry be expanded and changed to a model of "traditional reality." Similar models could be developed for "severe poverty reality," and "modern reality" (Inkeles, no date and Hofstee, 1964).

from adopting the recipe, the steps involved in applying it and the cost and effort it takes to do so.

In summary, the agent's instructional message should, perhaps, have the following content to be effective (Lippit, Watson and Westley, 1958).

- (1) It must appeal to a desired outcome B;
- (2) It must diagnose A, so that the recipe is perceived to be able to change A to B;
- (3) It must give the recipe and show the rewards that can be expected from it;
- (4) It must give arguments why the agent's recipe can be believed to lead to the rewards mentioned (motivational information);
- (5) It must give the steps involved in applying the recipe; and
- (6) It must be specific on costs and efforts that can be expected.

## 8. Channels

Where the message is, at minimum, a set of matter/energy units, it can only reach another party, if the participants in the transaction are connected by a channel through which these matter/energy units can be sent. Channel thus refers to (1) the type of matter/energy unit chosen to cue reality concepts and their relationships, (2) the method by which the matter/energy units are transported to others, and (3) the fact that persons are connected by the channel (Berlo, 1960, pp. 63-65). We could add as a fourth element: (4) the frequency with

which messages are transported through the channel. Where the channel is a potential, it only becomes a link (Alchin, no date) when messages are actually transported through it, the more so, the more frequent the use of the channel.

When we speak of channel, we thus refer to the physical, visible and more measurable aspect of communication, reason why most communication research is concerned with channels and their frequency of use in some way. In fact, one could say that all communication variables used in modernization research are descriptive of channels. Thus we study the relationship between the adoption of new agricultural practices and the frequency of change agent contact, mass media exposure, number of trips to urban centers, etc., all the time assuming that the messages which were sent were instructive.

Mind you, this is not a bad assumption, because the results of some of these studies tend to be substantial. In a recent cross-national study (Rogers, Ascroft and Røling, forthcoming), it was found, for example, that sheer frequency of contact between change agent and farmer was the best explainer of variance in agricultural adoption at village level across three developing nations.

The existence and use of a channel between parties can be seen as a necessary condition for communication to take place between them and for them to progress

towards an entropic state. (One can, therefore, minimally define a communication system in terms of channels and the frequency of their use. A closed communication system is a set of parties interconnected by channels and using those channels. An open communication system is a set of parties more connected to each other by channels than to other parties and making more frequent use of the channels connecting themselves than of those connecting them to others.

One can describe a communication system, therefore, by its network or grid of channels, the communication functions of the nodes in the network and the frequency and direction of message transport along the channels connecting the nodes. With this framework, we shall look at the modernizing rural village in a developing country.\*

First, let us look at the closed village, i.e., a village not connected by channels to the modern communication system. All its inhabitants are potentially

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\*One could, of course, also use this framework to look at a whole country, using cities and villages as nodes, regarding the city as a beachhead of modernization. Similarly, the framework could be used with countries as nodes. Caplow and Finsterbush (1964) found, for example, in clustering countries on a modernization index, which they developed, that the cluster of least developed countries seemed to consist of those which were isolated from European influence in an earlier period, i.e., those which "did not have access to the methods of controlling the environment which diffused from Europe."

connected by interpersonal channels, but not all channels are used, while those that are, are not always used with the same frequency. Such a system thus has a characteristic network, which we will call its internal communication.

Suppose, now, that the isolation is broken, that channels between the village and the modern communication system are established which could, potentially, be used. The community could, of course, remain closed if it does not make use of these channels. In fact, one may find such relatively closed systems living in voluntary isolation in the middle of a metropolis. But let us assume that the system becomes open, that "its boundaries become, at least, partially permeable, permitting sizeable chunks of matter/energy or information transmissions to cross them" (Miller, 1965a). That is, we assume that the village starts to use external channels, linking the village to the modern communication system, its external communication.

As one example of such external communication, one can mention travel to cities, or geographic mobility (Lerner, 1963, p. 332). The degree to which people have made such travel is called cosmopolitaness (Rogers with Svenning, 1969, p. 159). But not only do people from the village travel to the city. City people, such as tax-collectors, priests, teachers, change agents and emigrated

villagers, also come to the village. Other examples of external communication are provided by channels in which some electronic or print medium is interposed between the parties. Such mass media allow communication without physical travel, they allow psychic mobility (Lerner, 1963, p. 332). In all the open village has "access and exposure" (Frey, 1966, p. 174) to informative messages emanating from the modern communication system.

Now we may ask: What happens to the village as it becomes more open? We shall try to answer this question especially in terms of changes in the internal network and in the communication functions of the nodes in that network. Scrutiny of these two aspects seems useful, because they seem to have much to do with the diffusion of recipes throughout the village, and with the speed with which this occurs.

In summary, the development of the notion of communication system, as a network of channels connecting nodes with certain communication functions, allows us to ask: What happens to the village as it becomes more open to inputs of information from the modern communication system? In answering this question, we shall concentrate in changes in the internal network and the communication function of the nodes, because these can be expected to be related to the speed with which modern recipes diffuse throughout the village. The schematic in Figure 4-1 may

illustrate our notions.

Communication System Type	External Channels Available	External Channels Used	Change in Internal Network	Diffusion Of Recipes
Closed	-	-	-	-
Transitional (also vol. Isolation)	+	-	-	-
Transitional	+	+	-	-
Transitional	+	+	+	-
Open	+	+	+	+

Figure 4-1: Communication system changes in modernization

### 9. Changes in the internal network

The basic characteristic of the closed system is that it tends to run out of information. The closed village is no exception: People give each other information until everyone has very much the same reality and entropy sets in. Except for incidents, routine and inter-generational information transfer, people have little to talk about. Therefore the members of the closed village can be expected to use communication channels infrequently, especially for messages of instruction.

When the village becomes more open, however, one can expect instructive messages to enter it.\* But some

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\*We shall assume upgradation of standards has taken place.



people will receive more instruction than others, in the beginning, so that the stable state of entropy is disturbed. People become different in terms of the recipes at their disposal. Instructional messages will therefore begin to flow from those with more instruction to those with less, so that a network for sending such messages will develop and channels are more frequently used. Instead of entropy, one now observes organization: "The greater the frequency of sending and receiving messages among system components, the more highly organized the system is likely to be" (Monane, 1967, p. 42).

A recent study (Guimaraes, 1969), showed that farmers in Brazilian communities with less external communication, were less interconnected with other farmers, than those in villages with more external communication. Other research (Rao, 1966; Yadav, 1967; Leighton and others, 1963) points in the same direction. In fact, it is implied in the generalization (Rogers with Shoemaker, in press) that a recipe diffuses throughout the system, once a small proportion of the members of the system have adopted as a result of external contact, e.g., with the change agent.\*

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\*Studies (e.g., Rogers with Svenning, 1969, p.132) show that most members of the system tend to adopt as a result of contact with other members. This has obscured the importance of the change agent in setting in motion the diffusion process, because the correlation between adoption and agent contact is suppressed for systems where many have adopted as a result of contact with other system members. If one studies communities where this is not

This brings us to the fact that the increased interconnectedness can be seen as a concomitant of greater differentiation between the nodes in the network (Yadav, 1967, p. 197), and a change in the communication functions of the nodes.

As the village becomes more open, it must develop organs\* for receiving, processing, distributing and acting upon external communication. The closed village does not need such organs. It is like a blind cave dwelling fish. When such a fish is swept into a sun-lit part of the river by a storm, it does not immediately acquire eyes. Likewise, one can expect that the organs for "taking into account" (Thayer, 1968, p. 26) external communication must be developed by a village as it becomes more open. We will look at such organ development in terms of the communication functions of network nodes, and especially at the set of communication functions of the nodes who play the role of "development elite" (Eisenstadt, 1966, p. 587).

In order for recipes to diffuse throughout the system, a number of network nodes must acquire the following

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(continued from last page) the case, agent contact becomes more important (e.g., Rogers, Ascroft and Röling, forthcoming).

\*Miller (1965b) describes the functions of a number of organs which must be developed by a living system in order for it to interact with its environment. Harp and Gagan (1968) take a similar "organ approach" in explaining the difference between the adoption of renewal plans by American townships.

functions: (1) they must receive external information, and (2) they must pass it on to others. Nodes which perform these two functions will be called the development elite of the village.

To receive external information, a node must be exposed to external channels, such as newspapers, radio and especially the change agent. To take into account such information, a node must have certain aptitudes, indicated by his education, literacy, mental flexibility (Frey, 1966, pp. 113 and 123), etc. In case of external instruction, a node can be expected to adopt the recipes promoted and to have the means to do so. If one accepts a node's frequency of change agent contact as descriptive of the degree to which its occupant receives external information, one finds that it is indeed strongly related with most of the characteristics mentioned (Röling, forthcoming; Rogers with Shoemaker, in press).

To pass on external information, a node must, first of all, occupy a central position in the network, indicated by its opinion leadership. Given that the link between the recipes of our concern and desired outcomes is not immediately evident, one can expect the node, who communicates the recipes, to occupy a position in the network which allows it to legitimize recipes (Pool, 1967, p. 251). In all, the node who passes on external information to others must occupy a central and legitimizing

position. These positions can be expected to already exist in the village, before it becomes more open, in the form of formal traditional leaders. In fact, one can expect that it is more likely that new functions are added to existing structural elements, than that new structural elements are developed to take care of the new functions. The expectation that opinion leaders, i.e., people who can be expected to legitimize and pass on external information, are traditional formal leaders is supported from many quarters (Sen, 1969; Frey, 1966; Leighton et al., 1963; Rao, 1966; Eisenstadt, 1966; Rogers, Acstroft and Røling, forthcoming).

We thus identified the functions of the development elite, operationalized by change agent contact and opinion leadership. We further saw that each function tends to be performed by a certain type of person. The problem is that the people who perform each function do not necessarily have to be the same and, in fact, are not (Røling, forthcoming).

Yet, one can expect that, for modernization to progress normally, these two functions must be performed by the same node. Evidence for this is found in a recent study (Røling, forthcoming), which compared two groups of villages across three developing nations: one group with a high mean adoption of modern recipes and one group with a low mean adoption of such recipes. The relationship

between change agent contact and opinion leadership was much stronger in the modern villages than in the traditional one.

One reason for the lack of overlap between the two functions in the more traditional villages may be the fact that, in the earlier stages of modernization, the people who have external contact and adopt recipes are people who are "too far out" for the other villagers to accept them as opinion leaders, while it is only in later stages that more central nodes begin to see the light (Rogers, 1962, p. 169). With Marsh and Coleman (1954), one could even say that it is only in later stages that leaders begin to perform a scarce service by becoming a development elite, because it is only then that the mass of the villagers begin to see the need to modernize. If this is the reason for the lack of overlap between nodes who receive and pass on external information, one can expect this lack of overlap to diminish as the modernization process progresses along its normal course. In that case, one can only admonish change agents to speed up the process by seeking out, as their clients, those who can also be expected to pass on the instructions they receive.

There may, however, be another reason for the lack of overlap. For it seems that, in some villages, a development elite fails to materialize. Rao (1966, p.41)

speaks of an "isolated village elite" and the unsuccessful efforts of "stalwarts" to perform the function of a development elite. Eisenstadt (1966, p. 587) mentions much the same phenomenon, except that he calls the stalwarts "aspirant elites."

From a study by Leighton and others (1963), it seems that such a situation can develop if the traditional communication network disintegrates, instead of changing to develop organs which allow modernization. In such a situation one can expect frustration to develop as a result of structural constraints (Damle, 1955), which cannot be removed by effective action.

When a system has no organs to take into account available external information, i.e., when available channels are not used, one can say that the system is voluntarily isolated or incapsulated. Rao (1966, p. 36), who describes a village in this state, says of its people that they were "utterly discontented and lost in confusion." "Their appetite was stirred, but no way to satisfy it shown." Thus, they had upgraded their standards but were frustrated in upgrading their levels.

Notice that this is a completely different situation from the traditional village which has not changed sufficiently yet for the existing communication system to take on new functions. In case of voluntary isolation, we encounter an anomaly of the modernization process.

So far our confusing inability to make a distinction between traditional situations and anomalies has kept us from understanding the causes of abnormal modernization, the effects of which are bound to become more pronounced, as increased upgrading of standards spreads relative poverty, while instruction is provided only slowly to allow upgrading of levels.

In summary, our distinction between closed and open villages allowed us to make a number of observations about changes in the village communication system as it becomes more open. One of these changes is the emergence of a development elite: network nodes who receive and pass on external information. However, one finds that nodes who perform these functions do not always coincide. Yet such coincidence can be expected to be essential for normal modernization. Two possible reasons for lack of coincidence were suggested.

## 10. Conclusion

In the present chapter, no effort has been made to give a comprehensive dynamic reality of instructive communication. The present author does not possess such a reality, be it by creation or instruction. This does not mean that such a reality is not needed. Therefore, the emphasis in this chapter has been on pushing the

frontier beyond the present stalemate in which the correlation of the same variables leads to the same conclusions.

The effort resulted in the identification of a number of bottlenecks in the normal progress of modernization. The communication of recipes not linked to desired outcomes, was seen as the biggest bottleneck of all, requiring special professionals to do it. But even then problems develop.

1. Methods for linking promoted recipes to existing desires must be an essential tool for the change agent. Yet we know very little about such methods. We identified two basic types: internalization (in which the client accepts the agent's diagnosis which paves the way for recipe adoption), and motivation (in which the agent provides reasons for believing that the recipe promoted really works). We know little about either one, because, so far, the function of the agent as a communicator of recipes, not linked to desired outcomes, has not been understood.

2. Traditional reality can be said to contain premises or summaries of traditional experience. Such premises are no longer functional, even though they can be expected to still determine specific reality elements. Such premises can, therefore, greatly hamper the establishment of communality of meaning between agent and client





and the acceptance, by the client, of the agent's diagnosis of his situation. We identified some of the reality premises, but much work needs to be done to develop models of traditional reality, depending on the type of traditional system in which the premises developed.

3. The communication functions of the nodes of an open communication system have only been given the roughest of treatments. Even then the importance of understanding them was evident. This importance derives from the fact that the bulk of adoptions of new recipes results from the autonomous diffusion of such recipes, one the change agent has "planted" them in the communication system. In this respect, our observation that, sometimes, certain communication functions do not emerge, so that abnormal modernization results, leads to the conclusion that much work must be done to acquire understanding of the communication functions which nodes must perform in a system, for it not to disintegrate in modernization.

4. The study of anomalies may throw much light on some of the questions posed. Yet anomalies have, so far, been heaped together with traditional situations, because of the simplistic view of modernization which has guided research efforts up to present time. It is high time to correct this mistake, by clearly identifying the differences between abnormal modernization, the traditional situation and the modern situation. One indicator of

anomalies may be voluntary isolation. The comparison of anomalies with other situations should do much to avoid the former. After all, we are not only after acceleration of the normal modernization process, but also after avoiding its anomalies.

## Chapter 5

### IMPLICATIONS FOR FUTURE RESEARCH AND LIMITATIONS

#### 1. Introduction

The present chapter serves to give a preliminary answer to the question "So what," which might occur to the research-minded reader of the results of the present efforts at theory building. The present chapter represents an effort to formulate a number of testable hypotheses from the theoretical formulations developed in foregoing chapters. The formulation of new questions and the suggestion of new research was, as will be remembered, one of the primary reasons for engaging in the present theory building in the first place. The present chapter will also deal with a number of limitations of the current undertaking.

#### 2. Aspirations

One of the advantages of developing an integrative theoretical framework is that it points to "blanks" or areas not "mapped" by existing research. One such area is the standard of living, the set of aspirations, and especially its role in development and the factors that

affect its change. Little past research has been done on aspirations in development. Lerner (1963) created awareness of the importance of aspirations when speaking of the "wants/gets ratio" and the "revolution of rising expectations." Also, diffusion researchers have used such independent variables as educational and occupational aspirations. However, the standard for living as the criterion by which the individual measures his well-being and the change in the standard for living as a prerequisite for innovation has not been sufficiently recognized and studied.

The theoretical framework developed in the present thesis emphasises the crucial role of changes in aspirations in determining change, be it towards improved levels of living via the adoption of new recipes, or toward increased poverty and pacification. Our basic proposition was that vicarious experience of outcomes of individuals with a higher level of living than oneself leads to new aspirations. However, this proposition must be qualified: Aspiration implies desire for an outcome not now experienced, it implies that one is motivated to act to experience that outcome. Yet slaves and servants have very intimate knowledge of their boss' outcomes and the creation of aspirations to experience them seems to be the ability to empathize, i.e., the ability to say: "That is for me too."

Thus we can rephrase our original proposition to read: "Exposure to outcomes of individuals with a higher level of living than oneself leads to the creation of aspirations to experience a higher level of living, given that one can empathize with the individuals with the higher level of living." This new formulation leads to the following proposition, which is offered as one illustration:

For individuals with high empathy, mass media exposure is positively related to aspiration level.

### 3. Empathy

Empathy, or the ability to see oneself in another person's position varies with the degree of difference between oneself and the person with whom one seeks to empathize. One could thus say that empathy would be higher when one's reference group includes individuals who are much better off than oneself and low if one's reference group only includes individuals much like oneself.

Increased empathy has often been seen as a result of exposure to and, therefore, knowledge of, individuals in different positions. Indeed, one cannot empathize with individuals of whose outcomes one is unaware. Exposure to such individuals is therefore a necessary condition for empathy with them. However, we have

suggested (Chapter 2) that voluntary curtailment of the reference group may be one of the mechanisms by which man avoids extreme frustration. Thus, one's reference group and one's ability to empathize are realistically limited, depending upon one's perception of ability to manipulate the environment to achieve desired outcomes. Therefore, the following proposition could be tested:

For individuals with high self-perceived efficacy (internal control), mass media exposure is positively related to empathy.

#### 4. Voluntary isolation

We suggested (Chapter 2) that voluntary isolation may be one of the devices by which man avoids frustration. If this is so, the adaptive mechanism of voluntary isolation could become dysfunctional if circumstances change to a point where this adaptive mechanism is no longer necessary so that voluntary isolation becomes a ". . . 'mental isolator' which immunizes the villager" (Rogers with Svenning, 1969, p. 38) against new desires and the adoption of new recipes. In view of this possibility, voluntary isolation deserves attention.

We saw that Frey (1966) suggested, as a measure of voluntary isolation to mass media messages, the ratio of mass media exposure/mass media access. More generally, one could say that voluntary isolation refers to the

degree of non-use of available communication channels.

Our view of the role of voluntary isolation leads to the following propositions:

Voluntary isolation is negatively related to empathy.

Voluntary isolation is negatively related to self-perceived efficacy (internal control).

Voluntary isolation is positively related to perceived external control.

Voluntary isolation is positively related to self-perceived relative deprivation. Testing this proposition would serve to confirm Frey's (1966) finding that mass media exposure is positively related to felt relative deprivation, a relationship which could apparently not be attributed solely to differences in mass media access.

Voluntary isolation is negatively related to innovativeness.

Voluntary isolation is negatively related to social status.

For individuals with high self-perceived efficacy, mass media exposure is positively related to mass media access.

## 5. Poverty reality

So far, modernization has been seen as a movement away from tradition. Rogers with Svenning (1969, p.14) paraphrase their definition of modernization by saying



that modernization is "the individual process by which one becomes psychologically non-traditional." Given this orientation, efforts have only been made to create models of modern reality (e.g., Smith and Inkeles, 1966) or traditional reality (e.g., the "subculture of peasantry," Rogers with Svenning, 1969).

In the present thesis, we had occasion to point to the fact that modernization may lead to anomalies, that is, to situations in which new desires do not lead to increased levels of living but to severe poverty and frustration. Considering such situations as "traditional" ones may lead to misinterpretations of findings and, ultimately, to inadequate strategies of change.

We therefore suggest research to establish the validity of our notion of poverty reality. That is, we suggest research to develop a scale of individual poverty. The following core elements of poverty reality are suggested: High voluntary isolation, perception of low internal control (powerlessness), perception of high external control (fatalism, religious inclination, dependency on government), felt deprivation, low innovativeness, low empathy (reference group limited to individuals similar to respondent), low level of aspirations, and high ritualistic persistence in old forms of behavior (high resistance to change).\*

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\*All these elements can be expected to relate positively to each other. Hypotheses could be formulated for each of these relationships.

We expect that these elements are strongly inter-related and scaleable. All of these elements are expected to be negatively related to social status, income, years of education, and job stability and to be positively related to such escapist behaviors as drinking, gambling, etc. and the degree of isolation of the respondent in the communication network of his social system.\*

#### 6. Motivation to innovate

In Chapter 3, we said that a certain degree of relative poverty is a necessary condition for innovation. One has to be discontent to adopt new methods of affecting the environment. However, very high relative poverty can lead to frustration and pacification by methods other than innovation. One can thus raise the question as to the point at which relative poverty becomes optimal for innovation. That this question is worthy of research is indicated by such findings as Frey's (1966), which suggest that there is a curvilinear relationship between proximity to the city and mass media access and exposure, and by the author's personal observation that very conservative farmers can be found under the smoke of Amsterdam.

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\*Individual hypotheses could be formulated for each of the individual relationships implied in this statement.

Such observations give rise to the expectation that perceived relative poverty increases, given the same absolute income level, as proximity to the city increases. Or, to say it differently, those who live closer to the city must have a higher income to feel the same relative deprivation as those further away from the city. This expectation leads to the following hypothesis:

A community's urban proximity is positively related to the average income level of the earliest adopters in a community.

Our expectation that there is an optimal degree of relative poverty for innovation, also leads to the following proposition:

Social status, measured by such variables as income, durable goods possessed, house type, etc., are curvilinearly related to innovativeness with highest innovativeness among those of intermediate social status.\*

## 7. Reference group change

In Chapter 2, we had occasion to discuss the concept of reference group and its voluntary curtailment.

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\*Research on this question (Cancian, 1967, and Wilkening and others, 1969) has been done. The curvilinearity predicted seems to be supported to some extent in that the very poor are less innovative than the lower middle group, who in turn are also more innovative than the higher middle group. However, those who are best off in the system seem to be the most innovative of all four categories. It might be suggested that the reference group of this fourth category lies outside the community, so that their relative social status must be measured in relation to a different social framework.

Of interest are changes in reference groups during modernization. One can expect that the reference group of the villager in a developing country consists of fellow villagers, especially if that country develops from a tribal society with relatively small differences in levels of living. One can expect that the reference group will change as the villagers become differentially successful in obtaining diplomas and jobs which allow them better levels of living. That is, one can expect the creation of rationalizations to curtail the reference group of not-so-successful villagers and changes in the reference groups of more successful villagers to include persons with life styles foreign to the village.

The following general hypotheses are suggested:

The more differentiated the social system in terms of education and income, the better developed will be rationalizations explaining differences in success.

The more differentiated the social system in terms of education and income, the greater the within-status layer interaction and the smaller the between-status layer interaction.

These propositions are not directly testable. The propositions are guides for explorative fieldwork which should, for instance, focus on the development of operations for identifying rationalizations, measures of

the extent to which such rationalizations\* have developed and are generally accepted, and into measures for identifying status layers.

In cases such as these, we feel that the results of our efforts to create a theoretical framework are more fruitful as guides for preliminary observation by relatively unstructured methods than for suggesting propositions which are immediately testable by highly structured techniques. Our "correlational science" often does not sufficiently recognize such non-quantitative observational techniques as a necessary research step prior to collecting comparative data on larger numbers of units of study.

#### 8. Link between desired outcomes and innovation

We suggested in Chapter 4 that a recipe only diffuses if its link to a desired outcome has been established. We saw that for many recipes, such as the bicycle, this link is evident in that use of the recipe is closely tied to the outcome. In other cases, potential adopters are aware of the link because other people, using the recipe, have been demonstrably successful. As an example of such recipes we mentioned education as a means of

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\*The present author remembers, as one such rationalization, the boasting of uneducated Nigerian villagers that they had been too fast for the teacher to catch in the old days, when student recruitment practices were rather unconventional due to the novelty of education.

acquiring a wage-paying job. We saw that such recipes diffuse rapidly and autonomously.

We also suggested that the recipes which must be promoted by change agents are those which are not directly linked to desired outcomes, so that the change agent's job is to demonstrate this link. We feel that this basic proposition is perhaps most promising of practical payoff. We already suggested that content analysis methods could be used to identify profitable strategies change agents can use to achieve linkage with desired outcomes.

Here we shall suggest a number of other researchable questions which derive from the stipulation of the importance of linkage to desired outcomes. It seems that concepts like "conviction," "persuasion," etc., which have been used in describing the stages of the decision process (Rogers with Svenning, 1969, p. 124) can be more precisely described in terms of awareness of and belief in the link between the innovation and the desired outcome.

Research questions of interest then become: What types of outcomes are most effective as appeals for trying an innovation? What experience made the adopter aware of the link between innovation and desired outcome? What experiences made the adopter believe that the link existed? Which persons created awareness of the link?

Which persons were most influential in making the adopter accept the link?

We stress these aspects of the decision process and the factors which influence it because, so far, diffusion research seems to have concentrated on awareness and perception of the innovation itself. In the light of our discussion it would seem that the perception of a link between desired outcome and innovation is a prerequisite for innovation. Therefore, it also seems fruitful to look at opinion leadership in terms of the type of linkage we have discussed. One function of the opinion leader must clearly be to make the potential adopter aware of and/or believe in the link between desired outcome and innovation. A second function of the opinion leader would be to give the potential adopter technical information, once the potential adopter is interested.

We may, by asking the standard question of "To whom do you go for advice and information regarding agricultural matters?", have mostly tapped the second function. It may be worth the effort to try and identify persons performing the first-mentioned opinion leadership function.

## 9. Knowledge

Our discussion of reality, and of the importance of changes in its cognitive aspects, invites research,





especially where the concentration on changes in attitudes and connotative aspects of the reality in past research has shown its severe limitations in developing adequate dependent variables for the study of communication. It may be that a concentration of inquiry on cognitive change could finally throw some light on the impact of the mass media. Right now, social science seems to be in the incongruent position of having to say that the mass media seem to have little effect, while everyone, including the social scientist, acts on quite different premises.

The remarks made about cognitive change hold for modernization as well. Admittedly, economic knowledge, political knowledge and awareness have been used as independent variables in diffusion research, but the seemingly important function of cognitive change in modernization has not been probed fully. It would seem, for instance, that for those living in a rapidly changing environment, the relative earliness of acquisition of an understanding of the new environment brings pioneer profit. The understanding of the role of education is an example. Misunderstanding the potential role in education in the early days by some chiefs in eastern Nigeria led them to send their slaves to school instead of their sons, an action which they came to regret. At present the perception of the role of education seems to have

become dysfunctional in that a B.S. degree is rapidly becoming a difficult but certain road to unemployment. In fact, pioneer profit may now befall those who realize that other areas of investment may be more profitable.\*

The relative earliness of such cognitions may well be related to agricultural innovativeness and/or the types of entrepreneurship which many developing countries need so badly. Therefore, cognitive change and the types of cognitions that affect development need careful exploration. Anthropological observational techniques seem, again, most suitable to serve this concern in its early stage. Cognitions which, though functional in an early era, have now outlived their usefulness, must be the focus of such observation. Making individuals unlearn such cognitions could be an important function of the mass media.

#### 10. Instructive communication

We have suggested that communication of cognitive reality elements is possible and is, in fact, the basis for the human cumulation of recipes and for education in general. We suggested also that the creation of new reality elements can only occur by building upon existing

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\*Such cognitions as those of the role of education seem to lay at the root of the imbalances which characterize the development process in many developing countries. The cognitions seem to lead to phenomena similar to economic cycles, such as the hog cycle.

reality. (Very little is known about the message aspects of communication which changes reality. Yet it would seem potentially possible, for instance, to distinguish certain functions which must be performed by such messages, such as baseline building, structure creation, feedback, etc. Another aspect of such communication which may be worth an effort at identification derives from the notion that the ultimate change in reality can only occur after the enactment, by both partners in the communication situation, of a chain of "proper" responses. Such chains of proper responses have been identified in animal communication patterns. In fact, sex recognition and mating often depend on it.

The best method of studying such message aspects of instructional communication seems to be some form of simulation because of the black box nature of the reality which does not allow ready determination of effect. We suggest the following type of simulation as a research approach.

Two actors are isolated by a screen. Actor A has a set of blocks of different forms, size and color; actor B has a set of blocks which may be the same as A's or different depending upon the complexity of the situation one wants to create. A obtains a blueprint according to which he must build a structure with his blocks. His task is to get B to build a structure similar to his own

by communicating with B. Observation of the building that goes on, in combination with the communication would seem to allow identification of the functions of particular messages and, possibly, the effectiveness of certain alternative strategies. With such methods hypotheses could be formulated which could, subsequently, be tested in "real" situations by using knowledge gain as the dependent variable.

#### 11. The control of aspirations

In the foregoing sections of the present chapter, we gave some examples of possible future research which derives directly from our theoretical formulations. If some of the hypotheses and questions given are not novel, the fact that one can derive them from our theoretical formulations still testifies to the usefulness of these formulations.

In the present section, an implication of our framework for a social concern broader than the development of diffusion research will be discussed.

In Lake Erie, one higher organism has been able to survive: A mutant of carp which feeds on polluted materials and has adapted to the unwholesome environment. Recently, this carp has been in the news because it allows raising the question whether man is, like the carp, adaptable to whatever circumstances he has to live in.

That man is thus adaptable would follow from our formulations which say, in effect, that man only desires to what he has learned to desire, that he does not desire to modes of living he does not know, while he is even able to pacify himself if he cannot experience desired outcomes.

These formulations have some severe implications for our present society. If we teach individuals to desire gadgets which lead to pollution, as we do now by allowing limitless advertising of industrial products which must necessarily be gadgets, we may never develop modes of living which can be perpetuated for prolonged periods. In fact, it seems that levels of living now experienced in the U.S. are out of reach for those other regions, not only because of insufficient resources, but also because the resulting pollution would make the earth uninhabitable.

Present thinkers about pollution problems seem to see the only solution in population control and clean-up. They seem to accept as given that nobody can feel content without his host of polluting gadgets. It would seem from our discussion that a lasting solution of the pollution problem must include the manipulation of desires, so as to ensure that further economic growth occurs by the creation of desires which do not lead to a destruction of the environment. There seems room for such



economic growth. In fact, indicants of what one can construe as pacification, such as drinking, drug consumption, etc., seem on the rise.

Concerns, as the one expressed in this section, suggest study of the type of desires which are now pacified, so that recipes for satisfying the desires can be developed. In case such recipes cannot be produced by industry, the possibility of advertisement of such recipes by government agencies may have to be explored.

## 12. Social movements

So far, the essay has avoided social change in the sense of social system change, in that it has concentrated on changes in individual reality and on the aggregate effects of individual reality change. The present section represents an effort to apply some of the theoretical formulations to social movements and especially to their emergence.

A social movement is a type of collective behavior in which a large number of individuals organize for social change to solve a perceived crisis. A social movement is begun by a collectivity of individuals who experience relative deprivation or when conditions are beginning to improve and they expect further improvement. As Eric Hoffer says: "It is not actual suffering but the taste of better things which excites people to revolt."

Our theoretical formulations would predict exactly the same conditions for the emergence of a social movement. It is not the very poor who have pacified their desires by voluntary isolation and the creation of external forces of control who can be expected to agitate for change. Rather, it will be those who have gone through a period of improvement in which they have learned that there is a causal relationship between their actions and their outcomes. It is when a large number of people with expectation of internal control experience frustration, be it because their own position deteriorates relative to others, be it because others improve their situation more than they, that social movement, or revolution for that matter (Davies, 1962), occurs.

Farmers' movements in the U.S. are an example of social movement. However, one can also say that the civil rights movement in the southern states of the U.S. taught students and minority groups that demonstrations and other activities could be effective. The more liberal and understanding administration can thus expect more civil disorders than the strict and iron-fisted administration. The reaction of the Russians to the Czechoslovakian revolt can probably be best understood from the Russian realization that, once you show deprived people a working recipe for a desired outcome, they will





adopt it, so that allowing the Czechs a successful revolt would have meant trouble in other satellite countries as well.

A third example of a social movement is the emerging feminist movement. Large numbers of women have been shown, during their education in college, that their ability to achieve good salaries, occupy responsible positions and to make creative contributions, is as good as that of men. However, upon graduation, they find themselves frustrated in attempts to make good on their potential. In fact most of them are reduced to being, in effect, cooks, charwomen and nursemaids. The difficulties of adapting to these roles and of pacifying their frustrations are evident in severe depression, voluntary isolation, "failure motivations," escapes in clothing, in preoccupations with looks and youth, in obsessive ersatz activities, etc., all of which have been extensively recorded. It even seems that the popularity of large families can be partly explained by the need for ersatz activities.

The fact that women have, so far, not formed a strong social movement, and the fact that attempts to organize such movements have so far not been very successful, may be partly due to the absence of workable recipes so that pacification is still the best adaptation available at present.



### 13. Limitations of the present undertaking

The present thesis set out to contribute to the development of an integrative theoretical framework which could account parsimoniously for the phenomena which have been roughly classified as diffusion and modernization. To what extent have we contributed to such a framework? To what extent can existing generalizations from diffusion and modernization be fitted in?

It seems to the present author that the endeavor holds promise for a better understanding of the dynamics of diffusion and modernization in that it deals with the forces which underly changes which are observed. However, the present thesis seems to fall short in the area of mechanics: The communication of innovations and the many generalizations which exist about the process are insufficiently accounted for. The theoretical framework seems to account better for the effects of communication than for communication itself, and is, therefore, partly of the "given communication" variety. Although Chapter 4 represents an effort to improve our reality of the communication of recipes, it certainly does not lead to a fully coherent framework for fitting in existing generalizations.

Another shortcoming of the present thesis, and diffusion research for that matter, is that it does not deal with the organizations and institutions which allow

change in modernization. That is, the present thesis focuses on individual change and on change in aggregates of individuals, but not on systemic change. It only deals with entropy, but not with growing complexity, with differentiation, specialization, integration and interdependence.

A shortcoming of the theoretical formulations itself is the treatment of the human criterion for well-being. Some explicit and implicit assumptions have been made which are difficult to defend.

If we want to speak of levels of civilization, that is, if we want to evaluate development, amount of control gained, well-being, or "progress" for that matter, it can only be through the use, as a yardstick, of a human criterion for well-being. We can all agree on criteria such as income, health and physical convenience or comfort. However, the fact that we know so little about the human criterion for well-being and have few objective measures of, yes, happiness, does not mean that the human criterion for well-being should be ignored by research. There are enough reasons for dissatisfaction with the society we have created to warrant further thought about our ultimate dependent variable: human happiness.

The present thesis has one thing going for it: It has not avoided the issue of the human criterion for well-being. However, the treatment of the criterion

seems still full of holes, even if the criterion for well-being is a cornerstone of many of the predictions made and even if many of these predictions seem not without support.

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