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# TWO THEORIES OF DEMOCRATIC POLITICAL DEVELOPMENT:

# AN ANALYSIS USING COMPUTER SIMULATION

DISSERTATION

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By

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The research project entailed an intensive examination of two theories of democratic political development. The elaboration of the verbal theories required rather extensive quotations from the original works for the sake of accuracy, and appreciation is here expressed to the publishers of The First New Nation, by Seymour Martin Lipset (New York: Basic Books, Inc., 1963), and The Social Origins of Dictatorship and Democracy, by Barrington Moore, Jr. (Boston: Beacon Press, 1966) for permission to include these quotations.

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# CHAPTER I

## INTRODUCTION

Since the time of the French and American Revolutions there has been increasing support for the idea that there is a natural tendency to evolve toward what is called a democratic form of government. At times the soundness of this idea has been questioned when various democratic states experienced difficulties in maintaining stability or in preserving those freedoms for which democracy is noted. Nevertheless there has been a constant thread of belief in the idea that democracy or democratic government is the ultimate end toward which modernizing states will be moving. One exponent of this idea in the past century was John Stuart Mill who in Representative Government outlined a program of government for those states which had not sufficiently advanced to be suited for representative government.[1] At a later time, Robert M. MacIver stated that

> if we are right in our interpretation of state as an organ of community, we must regard all states in which the general will is not active as imperfect forms. This view seems to be confirmed by a study of the historical process, for it appears to be true that,

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[1] John Stuart Mill, Considerations on Representative Government, Chapter 18.

> in spite of reversions, the main trend of the state, after it has finally emerged as a state, is toward democracy.[2]

He was aware that this was a long, slow, evolutionary process and that many conditions were necessary for democracy finally to emerge. Among those conditions were a certain level of economic development and certain qualities which the members of those societies must exhibit, such as willingness to participate and cooperate with others in making democracy work through the electoral processes and interest group activity.[3]

More recently Daniel Lerner in his study of the Middle East and its several processes of urbanization, literacy, and the spread of mass communications media has concluded that modernization follows an historical logic, each phase of which tends to generate the next phase and whose ultimate stage is the participant society, that

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[2]Robert M. MacIver, The Modern State (Oxford University Press, 1926), p. 340.

[3]Robert M. MacIver, The Web of Government (New York: The MacMillan Co., 1947), pp. 174, 188-92.

MacIver defines democracy as ". . . not a way of governing, whether by majority or otherwise, but primarily a way of determining who shall govern and, broadly, to what ends. The only way in which the people, all the people, can determine who shall govern is by referring the question to public opinion and accepting on each occasion the verdict of the polls" /constitutionally sanctioned elections/ (p. 198). Emphasis in original.

"It was a necessary condition of democracy everywhere that opposing doctrines remained free to express themselves, to seek converts, to form organizations, and so to compete for success before the tribunal of public opinion" (p. 199).

is, a society with a democratic government.[4] Other writers have held similar views and have attempted to delineate the cultural, social, and economic patterns which a society must possess as it moves toward stable democratic government.[5] They have attempted to establish the necessary, if not sufficient, preconditions for democracy.

In a reaction to some of these conceptions of political modernization another approach has developed which does not concern

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[4]Daniel Lerner, The Passing of Traditional Society (Glencoe: The Free Press, 1958), pp. 60, 61. He asserts that "Democratic government comes late, historically, and typically appears as a crowning institution of the participant society" (p. 64). Democracy is defined in terms of voting in national elections (p. 57), but it is not clearly stated whether other conditions are relevant or necessary.

[5]Edward Shils, Political Development in the New States (Mouton & Co., 1965), pp. 7-10, states that modernity entail democracy and that democracy implies equality and responsible representative government (p. 8). Rupert Emerson, From Empire to Nation (Boston: Beacon Press, 1964), pp. 221, 292, implies that democracy means a representative system of government and states that an organized opposition that can compete for political office is a requisite (pp. 282, 290). Seymour Martin Lipset, Political Man (Garden City, N.Y.: Doubleday & Co., 1960), pp. 27-86, notes that "Democracy in a complex society may be defined as a political system which supplies regular constitutional opportunities for changing the governing officials, and a social mechanism which permits the largest possible part of the population to influence major decisions by choosing among contenders for political office." This also ". . . implies a number of specific conditions: (1) a 'political formula' or body of beliefs specifying which institutions--political parties, a free press, and so forth--are legitimate (accepted as proper by all); (2) one set of political leaders in office; and (3) one or more sets of recognized leaders attempting to gain office" (p. 27). Phillips Cutright, "National Political Development: Its Measurement and Social Correlates," in Politics and Social Life, ed. by Nelson W. Polsby, Robert Dentler, and Paul S. Smith (Boston: Houghton Mifflin Co., 1963). Cutright defines democracy (which he equates with political development) in terms of measures of competitive elections and multiple party systems.

itself with development toward democracy as a focus of concern. In attempting to explain political change the stress here is upon the factors which contribute to development toward stable and effective government, regardless of its democratic character.[6] The political system is viewed in terms of its capability to cope with stresses placed upon it by changes in the rest of society, and political change can be described in terms of factors which are detrimental to or beneficial for political system capability. If the political system is institutionalized enough and can adapt itself as the occasion demands, it will be able to continue its

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[6]Samuel P. Huntington, "Political Development and Political Decay," World Politics, XVII (Jan., 1965), pp. 386-430. Huntington wishes to explain change toward or away from stability. The former he terms political development and the latter political decay. Political development is identified with ". . . the institutionalization of political organizations and procedures" (p. 386) and is to be distinguished from modernization defined as social mobilization and increasing political participation. Although the political modernization--political development distinction appears to be a useful one, his subsequent discussion of the processes of institutionalization includes characteristics to be achieved (complexity, integrity, adaptiveness, autonomy, and coherence) that might also be used to differentiate a "traditional" from a "modern" political system. G. Lowell Field, Comparative Political Development (Cornell University Press, 1967); Gabriel A. Almond and G. Bingham Powell, Jr., Comparative Politics (Boston: Little, Brown and Co., 1966). Almond and Powell include in their concept of development (which may be regressive, they note, making the term equivalent to change) not only capability, but also structural differentiation and cultural secularization which can contribute to capability (p. 34). Since they later (p. 306) assert that differentiation, secularization, and subsystem autonomy tend to vary together, they implicitly posit democracy (defined primarily as a system with high subsystem autonomy, such as the United Kingdom which they cite as an example) as the highest level of development. Their inclusion of capability analysis, however, seems to justify placing them in this category rather than the previous one.

effective operation. Effective and stable government activity on a national scale is the crucial aspect of political development in this view, and not whether the political system is developing towards an expansion of certain freedoms or liberties for broader publics, developments which may indicate that the state is becoming more democratic. The crucial point is stability and the ability to carry out the function of government.

A somewhat similar viewpoint, which is not directly concerned with the development towards democracy or with the establishment of a stable or institutionalized political system at any particular level of modernization, is advanced by those writers who examine the general processes of change and the patterns which such change takes as a society evolves over time.[7] These writers note especially the change towards greater complexity and diversification in social and political organization and try to measure the degree to which this process is carried on in any one country or group of countries. Usually it is assumed that change toward greater complexity and diversity is part of a worldwide trend, and it is not posited that this process will necessarily move toward what we consider a democratic form of government, but that it is only a possibility. The understanding of patterns and processes of change is of central concern in this approach.

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[7]See, for example, Karl W. Deutsch, "Social Mobilization and Political Development," American Political Science Review, LV (Sept., 1961), pp. 493-514; S. N. Eisenstadt, "Modernization: Growth and Diversity," India Quarterly, XX (Jan., Mar., 1964), pp. 18-42, and Modernization: Protest and Change (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966).

Differing from those who consider development towards democracy as a necessary outgrowth of economic and social change and diversification, and beyond those who examine political and social development without any consideration of democratic development, there are writers who consider that the development of democratic government will be desirable and useful (but not necessary) for dealing with the complexity and diversity which modernization brings.[8] They consider that a democratic form of government would be the most efficient way of containing the stresses and strains which develop in a modernizing society and that therefore its utility and greater efficiency will recommend it to political elites who are trying to cope with these stresses and strains. According to this view, if democratic government is not a necessary outcome it is deemed to have a high probability of becoming established given a certain level of modernization and the guidance of enlightened elites.

This brief review of political development and modernization frameworks and propositions illustrates that there has been a continuing interest in the development of political democracy, and that a clear distinction can be made between patterns of development

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[8]Lucian Pye, Aspects of Political Development (Boston: Little Brown & Co., 1966), pp. 80, 81, 87; Politics, Personality and Nation Building (Yale University Press, 1964), p. 301. Pye defines democracy as representative government based upon competitive politics, broad participation in the political process, and an open society. See also David Apter, The Politics of Modernization (Chicago: The University of Chicago Press, 1965), pp. 38, 463. Apter equates democracy with the secular-libertarian system which he defines as one characterized by legal equality, limited representative government, political competition for power and office, and open channels of communication (pp. 28-31, 38, 463).

toward political effectiveness and stability, and development towards political democracy. Lipset and Moore also note this distinction and direct their efforts toward explaining the latter process.[9] Both writers have produced a book length analysis of the factors they feel are important for the development of conditions for democratic government. These analyses are focused more narrowly on the development of democracy than other recent studies of modernization which may include some discussion of democracy (such as those by Lerner, Pye, Apter, and Emerson cited above), and they present a longitudinal and more extensive analysis of conditions for democracy than those presented recently by people such as Cutright and Neubauer.[10]

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[9]"The issues involved in the emergence of legitimate national authority and a sense of national unity, and those which pertain to the establishment of democratic procedures, are clearly separate problems--although they are sometimes confused in discussing the politics of new nations. Democracy may be conceived of as a system of institutionalized opposition in which the people choose among alternative contenders for public office." Seymour Martin Lipset, The First New Nation (N.Y.: Basic Books, Inc., 1963), p. 36. Emphasis added.

Moore states that ". . . in politics successful modernization involves the establishment of peace and order over a wide area, the creation of a strong central government" (pp. 467, 468). He notes, however, that he sees the development of a democracy ". . . as a long and certainly incomplete struggle to do three closely related things: (1) to check arbitrary rulers, (2) to replace arbitrary rules with just and rational ones, and (3) to obtain a share for the underlying population in the making of rules" (p. 414). Barrington Moore, Jr., Social Origins of Dictatorship and Democracy (Boston: Beacon Press, 1966).

[10]Cutright, op. cit.; and Deane E. Neubauer, "Some Conditions of Democracy," American Political Science Review, LXI (Dec., 1967), pp. 1002-1009.

Although they are extended works on the problem of democratic development, neither writer presents a comprehensive theory. Both focus on a few key variables or factors in an attempt to gain conceptual clarity and analytic focus while explaining a rather broad scale phenomenon. Because of these considerations, and because the theory building effort is inductive rather than deductive, however, the narrowed focus appears justified.[11]

The two writers differ in focus and in variables used in explanation of the process under analysis. Moore is primarily

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[11] In The Theory and Method of Political Analysis (Homewood, Illinois: The Dorsey Press, 1965), Eugene J. Meehan labels this type of analytic effort factor theory. He states that

> "whenever a political scientist enumerates the factors leading to a particular development or the motives involved in a particular behavior pattern, he is stating a weak factor theory. In fact, almost every effort at causal explanation involves the use of a factor theory" (p. 515).

He goes on to note that

> "The two essentials of any factor theory are: (1) the selection of factors to be included and excluded; and (2) the stipulation of the rules by which the factors combine. Except in very simple cases, a large number of possible factors have to be considered by the theorist, some favoring a given outcome and others tending in quite different directions.
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> . . . . . .
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> In practice, political scientists will do well to stipulate the necessary factors in a theory and indicate relative strength and relative direction of influence in rough terms" (p. 152).

He uses an excerpt from Lipset's Political Man (Doubleday, 1960) as an example of good factor theory, and although he points out shortcomings of this type of theory building (such as low predictive power and complexity of multiple factors), he asserts that political scientists will likely produce only factor theories in the near future (pp. 154-157).

concerned with the patterns of social and economic change (especially the landlord-peasant relationship) which produce the conditions (or pre-conditions) under which a democratic form of government can emerge.[12] He implies that these conditions, if present at its inception, will tend to enable the democratic system to persist (or be stable). Lipset, on the other hand, is primarily concerned with patterns of values and system performance which enable a newly established democracy (democratic primarily in form) to persist and remain viable (stable, and democratic in content or operation as well as in form).[13] These two analyses of democratic political development, therefore, represent different, yet not entirely alternative or competitive approaches to the similar problem of specifying, from their respective points of view, some key necessary conditions for stable democratic government. They

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[12]In addition to the defining characteristics of democracy mentioned in footnote number 9, Moore adds the following (called characteristics of the liberal and bourgeois order of society, which he equates with Western democracy);

> ". . . the right to vote, representation in a legislature that makes the laws and hence is more than a rubber stamp for the executive, an objective system of law that at least in theory confers no special privileges on account of birth or inherited status, security for the rights of property and the elimination of barriers inherited from the past on its use, religious toleration, freedom of speech, and the right to peaceful assembly."

[13]In addition to the defining characteristics noted in footnotes 5 and 9 above, Lipset, in The First New Nation, employs additional concepts to denote other aspects of a democracy including rule of law, a clear distinction between source of sovereignty (legitimating factor whether a written constitution, tradition, etc.) and the agents of authority (elected officials), and protection of minority rights (pp. 10, 11, 238, 239).

are different in terms of the explanatory factors utilized and in historical focus. Although Moore implies that the conditions he specifies are relevant to the newly formalized democratic system, the difference in explicit focus opens the possibility that they may be complimentary and not entirely competing or contradictory explanations, in the sense that the economic and social conditions (of Moore's analysis) which precede the founding of a democratic state may be useful or necessary to produce the values (of Lipset's analysis) which sustain it after its inception.

The examination of the relationship of these two theories, as well as of their individual validity, are matters for empirical testing. It is the purpose of the following analysis to facilitate such examination by explicating in more detail the implications of these two verbal theories by developing propositions of greater specificity which will enable empirical tests to be made as data become available.

## CHAPTER II

## USING SIMULATION IN RESEARCH

Recent research on the relationship of social and economic development to the development of democracy indicates that beyond a certain threshhold level there is no direct correlation between economic and social development and democratic political development.[1] It is pointed out that once a certain threshhold of economic and social development is reached other factors may be crucial in determining whether or not democratic practices will be firmly established. Among the possible factors noted are the pattern of values embedded in the political culture and the patterns of conflict resolution which have characterized the history of the political development of the country. These factors may or may not be the crucial ones, but an investigation of their relationship to democratic political development is relevant to the development of a more adequate theory. It is not necessary that these factors be proven necessary and/or sufficient factors in explaining democratic political development in order that an examination of

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[1]Deane E. Neubauer, "Some Conditions of Democracy," American Political Science Review, LXI (December, 1967), pp. 1002-1009.

them prove worthwhile. Their confirmed irrelevance to a theory of political development would also be an important part of the theory-building enterprise.[2]

It is in this context of concern for development toward a democratic polity that I propose to examine the theories of Seymour Lipset and Barrington Moore, Jr. A conclusive test will not be possible, but at least a clearer understanding of the implications of the theories can be developed which will allow a more thorough empirical check of them in future research efforts as data become available. As Verba notes "a simulation adds an important link between theory and the real world. It can be designed to work as if the theory were correct; and in this way can generate the implications of the theory."[3] If certain conditions imply certain outcomes the simulation results will specify these in a way that provides for empirical testing a more detailed array of the hypotheses implicit in the theory.[4] Modeling for simulation purposes also

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[2]On the relevance of exclusion to the theory building enterprise see John R. Platt, "Strong Inference," Science, Vol. 143 (Oct. 16, 1964), pp. 347-53.

[3]Sidney Verba, "Simulation, Reality, and Theory in International Relations," World Politics, XVI (April, 1964), p. 515. Emphasis in original.

[4]E. W. Kelly notes limitations on this process, stating that "If certain initial conditions are present and certain hypotheses true (the programmed hypotheses), then certain conditions can be deduced for a future time (assuming no other factors operating). Computer simulation, then, can not be used to generate or confirm hypotheses. It can tell us what will happen for various possible initial conditions if the hypotheses employed are true and no variables other than those programmed are relevant." "Techniques of Studying Coalition Formation," Midwest Journal of Political Science, XII (Feb., 1968), p. 74.

provides another opportunity to specify implications of a theory, not by generating them in the output, but by specifying the necessary assumptions and conditions without which the process could not be realized in the way desired.[5] The verbal theory may sound plausible, but it may leave implicit or unspecified many propositions relating variables which must be made explicit if a model of the theory is to be constructed and made to "work" as intended by the theorist.

In order to carry out a computer simulation, then, it is necessary that the theory (or the propositions comprising the theory) be stated systematically in the form of a model. The model expresses the theory, the referent of which is the external world. A simulation model is not an ideal type nor does it reproduce every detail of a referent system. Rather, it extracts those factors which are deemed most relevant by the theory and does so explicitly while attempting to insure that the variables and the relationships included in the model respond in a manner comparable to that of the behavior of the real system as stated by the theory.[6]

It might be asked why simulate? What is the advantage that one might gain using a computer simulation of models of these two theories? It should be noted that both of the theories that will be examined are attempts to explain or illuminate a very complex

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[5]Nico H. Frijda, "Problems of Computer Simulation," Behavioral Science, XII, 1967, p. 60.

[6]Richard Dawson, "Simulation in the Social Sciences," in Harold Guetzkow (ed.), Simulation in the Social Sciences (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962), p. 3.

process, the process of development towards a democratic polity. Because it is a complex process the theories must examine many variables, and many propositions concerning interactions between variables are advanced. It is true that neither author deals with all the variables involved,[7] but their constructs do involve sufficient complexities and involve a number of assumptions, some explicit and some implicit, which must be dealt with in a systematic manner to facilitate a more precise understanding and evaluation of the implications of the theories.

A computer simulation offers several advantages in dealing with these kinds of data. Among them are the vividness with which the model delineates the relationships which are important in the operation of the model plus the ability of the model to cope accurately and rapidly with the complexities of a large number of variables in a way that would be most difficult to do without the use of such a model, enabling the analyst to observe the outcomes or consequences of the initial conditions and theoretical propositions, posited by the theory to be tested, which structure the operation of the model. In addition one has the ability to manipulate the operation of the system in a way that may not be available in the

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[7]Lipset, for example, notes that his analysis of value systems does not deal with all the relevant variables, that it is intended only to "illuminate" the importance of value analysis, and is not a general theory (pp. 10, 208, 343, 344). Nevertheless a complex interaction of values is posited and system-wide consequences are derived from differing patterns of values. Seymour Martin Lipset, The First New Nation (N.Y.: Basic Books, Inc., 1963).

empirical world, thereby gaining insight into processes which an empirical investigation may not be able to uncover.[8]

A simulation study is especially useful when one wants to study a developmental process. This is so because a computer simulation is an activity or process and not a simple analysis of a static model. It is a study of the interaction of variables over time by observing the behavior of a theory based model of a referent system which changes as it is posited that the referent would change under similar conditions.[9]

The two theoretical formulations to be examined rely on data which are primarily qualitative in nature and designed to be illustrative. As a result it is very difficult to devise empirical tests of their theories inasmuch as hard empirical data, especially for the long time span involved, are not readily available and perhaps will not be for some time in the future. There are data archives being developed which offer some possibility that sufficient data will be collected in the near future which will enable a more

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[8]Zelditch and Evans note that in dealing with many variables it is possible that "through simulation, such processes may be simplified, measured, and manipulated, so that rare states may be created, reasonably exact replicates ensured, necessary contrasts obtained, confounding factors randomized, extraneous disturbances eliminated, and the process observed comprehensively, precisely, and more or less at the will of the observer." Morris Zelditch, Jr., and William M. Evans, "Simulated Bureaucracies: A Methodological Analysis," in Simulation in the Social Sciences: Readings, ed. by Harold Guetzkow (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962), p. 49.

[9]George W. Evans, II, Graham F. Wallace, and Georgia L. Sutherland, Simulation Using Digital Computers (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), p. 6.

thorough testing of these and other theories. In the meantime the relevant step of theory elaboration and specification can be undertaken on the important question of democratic political development. Rather than change the research subject for lack of empirical data a change in analysis technique is proposed.

The most relevant technique for elaboration and specification appears to be that of using computer simulation of models of the theories to be examined and to use, where necessary, empirically derived propositions to elaborate the theories for the model building process. Even if the propositions are only plausible they can fill the gaps in the theoretical knowledge of conditions and of interactions of variables by making explicit assumptions about these conditions and interactions such that a working model can be developed and put into operation for a series of runs in the computer simulation process.

It should be noted that the number of assumptions made in computer simulation models do not greatly exceed those made in the course of developing the verbal theories. The assumptions are more obvious because all of them have to be made explicit in order for the theory to function as an operating model for a simulation. Many factors that verbal theories leave implicit, or assume to be constant factors, have to be explicitly noted and, if necessary, given definite values so that the model functions and generates output

that can be traced to certain input variables. In other words it is a more rigorous explication of verbal theory.[10]

A simulation model is useful for dealing with complexity. But a model, if it is to be analyzed adequately, should not be so complex that it is difficult to understand or impossible to trace patterns of variable interaction. The simulation model, therefore, must be complex enough to include the variables to be examined yet not too complex to prevent adequate analysis. Perhaps a rule of thumb might be that the stronger the theory the fewer the variables one need use. Conversely the less adequate the theory the more variables one must consider.[11] In the present state of theoretical development in political science one can argue that the models would have to be rather complex. This does not mean, however, that the model must include all the variables deemed important for a political system, but may, as Lipset does, exclude certain variables and concentrate on others which are most pertinent to the purpose of the research. In Lipset's case, of course, this framework focuses on the impact of prevalent societal values on the operation of the political system. In dealing with a reduced number of variables, the researcher is enabled to set aside a good deal of "noise" that might otherwise distract him.[12]

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[10]Edward P. Holland with Robert W. Gillespie, Experiements on a Simulated Underdeveloped Economy (MIT Press, 1963), pp. 206-207.

[11]Zelditch and Evans, op. cit., p. 52.

[12]Andrew M. Scott with William A. Lucas and Trudi M. Lucas, Simulation and National Development (New York: John Wiley and Sons, Inc., 1966), p. 70.

The preceding comments about computer simulation are not meant to imply that this analysis technique is a foolproof shortcut to greater knowledge and understanding. There are difficulties to be faced with this approach just as there are with any alternative one may choose. Among these difficulties are at least three of some importance. The first is that one cannot be certain that the assumptions made concerning quantification and scaling of variables and constants are adequate. There is a danger that the resulting model operation will not follow the same behavior characteristics of the modeled theory. Validity checks can be attempted and the judgment and advice of others can be a helpful check on these assumptions.[13] Second, at the analysis stage there will be no obvious path of causation between input and output. The intervening framework of theoretical propositions is complex. These propositions must, nevertheless, be tested to determine the implications which they have for output given certain initial conditions.[14] Third, it is not a simple task to compare simulation results with the referent system. The empirical world is not conveniently organized in patterns that might be labeled, "low," "medium" or "high." It

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[13]The first step in this type of simulation procedure is to check internal validity of the two models by making several runs with identical values to determine if between-run variance is sufficiently small. In these and other early runs the face validity of the simulation will also be evaluated as a gross check on how well model operation represents the modeled theory. Charles F. Hermann, "Validation Problems in Games and Simulations with Special Reference to Models of International Politics," Behavioral Science, XII (1967), pp. 216-231.

[14]Tests of this kind (sensitivity tests) were performed on the two models under examination, as noted in Appendixes C and D.

is hoped, nevertheless, that enough patterns can be perceived as data become available to allow at least tentative conclusions to be reached concerning the empirical validity of the models.

Briefly, then, the purpose of this research is to make an investigation of two theories of democratic political development through the construction of a computer simulation model of each theory, one stressing value patterns and one stressing patterns of social, economic, and political power concentration. Employing a series of simulation runs using a variety of posited initial conditions for each model, the implications of various conditions for each model will be analyzed and the two models will be compared, if possible, for similarity of conditions and outcomes. It is hoped that this analysis will present a basis for insight into future areas of investigation as more data become available.

## CHAPTER III

## A MODEL OF LIPSET'S THEORY

I wish here to present a general overview of Lipset's approach to democratic political development and a tentative flow chart of an extrapolated model incorporating the variables which Lipset thinks important together with the propositions which he puts forward to relate the variables in a pattern which establishes whether or not a stable democracy will continue to operate.[1] In his book The First New Nation Lipset's main concern is ". . . to illuminate the way in which sociological value analysis

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[1]Seymour Martin Lipset, The First New Nation (N.Y.: Basic Books, Inc., 1963). Where there are gaps in the explicit formulation of propositions and assumptions implied but not explicated, I have attempted to complete the theory by using my best judgment to make explicit the missing or vague formulations.

The development of the basic structure of the first half of the flow chart has been guided by the efforts of Ronald D. Brunner of Yale University who has developed computer simulation models of the theories of Lipset (primarily from Political Man), John Kautsky, and Samuel Huntington. Some of his formulations were presented in a paper for the Symposium on Simulation Models of the Decision-Maker's Environment, held at Wayne State University, Detroit, Michigan, May 11-13, 1967. The title of the paper is "Some Comments on Simulating Theories of Political Development." It has since been published in the volume edited by William D. Coplin entitled Simulation in the Study of Politics (Chicago: Markham Publishing Co., 1968).

may contribute to generalizations about the sources of variation among complex societies."[2] He does not claim to have proved anything conclusively, but he has attempted ". . . to use a certain conceptual framework to point out possible relationships between the pattern of dominant value orientations and the content of their internal differentiations."[3] And again ". . . a major purpose of this book has been to demonstrate the independent explanatory power of value analysis, seen as the codification of historical experiences."[4] More specifically, what we are interested in is Lipset's relation of value patterns of political development. This is emphasized in Part 3 of the book where he ". . . attempts to show by comparative analysis some ways through which a nation's values determine its political evolution."[5] He goes on to say that "the emphasis on values . . . is intended merely to demonstrate that values are one important source of variation among social systems."[6]

Although value patterns seem to be rather stable over long periods of time Lipset still recognizes that values do undergo change and are affected over time by the social and economic developments

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[2] Ibid., p. 343.

[3] Ibid., pp. 343, 344.

[4] Ibid., p. 348.

[5] Ibid., p. 3.

[6] Ibid., p. 4.

of a society. He notes, for example, that he can account for differences in nations

> . . . by indicating variations in the social development of these countries which presumably created and sustained structures carrying these values, and then "derive" differences in their political systems which seem related in value patterns.[7]

And again, he notes that the importance of differing national value systems can be seen although technological change can affect values over time.[8] Nevertheless these value patterns are very slow to change and their change is accomplished primarily through the socialization process from generation to generation. Once the values are established they become ". . . determinantes of the direction of social change."[9] The values become determinantes because the historical process has shaped their character and they have, therefore, become "structured predispositions" which, though perhaps slowly changing, are stable enough to influence the course of future political development for generations to come in areas of politics, religion, the status system, and the class interests of workers.[10] In the political sphere the value patterns operate to condition institutional arrangements and to shape the outcomes of group conflicts so that they make adjustments to new conditions,

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[7] Ibid., p. 250.

[8] Ibid., pp. 7, 123.

[9] Ibid., p. 7.

[10] Ibid., p. 207.

as they arise, within the framework of the dominant value system.[11]

It appears that for Lipset the major focus of activity in the political realm is the activity of various groups as they try to assert themselves as the economy grows and new social patterns emerge. These groups compete with one another and also seek access to the political system for the advantages which participation in the political system can bring to them in their other activities. As the society develops the existing distribution of resources and privileges, as well as the legitimacy of the political decision making process, come under severe tension. The existing elite may adjust either by incorporating the new groups, or by insulating themselves from the new rising elite.[12] The first option may offer more possibilities of continued stability for the existing structure of authority, whereas the second tends to result in a polarization of interests and of values resulting in an unstable political situation.

As is noted in the accompanying flow chart (see Appendix A) the pattern of acceptance by the ruling elite of the rising groups as they seek access to the political sphere depends upon the level

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[11] Ibid., p. 103. Lipset also says elsewhere that "For the purposes of this book, I have tried to think in terms of a dynamic (that is, moving or unstable) equilibrium model, which posits that a complex society is under constant pressure to adjust its institutions to its central value systems, in order to alleviate strains created by changes in social relations; and which asserts that the failure to do so results in political disturbance," pp. 7, 8.

[12] Ibid., p. 239.

of tolerance that the elite has for the new groups, the effectiveness of the social and economic systems for the competing groups, and the level of legitimacy which the political system has for these groups. The pattern of legitimacy, tolerance, and effectiveness which characterize the political system will indicate its stability.[13] These patterns, together with certain environmental and value patterns, will determine whether or not progress towards democratic government will also be possible, as the remainder of the flow chart indicates. It illustrates that as a nation develops toward an increasing acceptance of democratic principles (especially the "rules of the game" for democratic succession to political office), a broader socialization of conflict (broader peaceful participation in the political process) and a reduced identity of the source and agents of authority (greater distinction between legitimating factor and those individuals acting in the name of that factor), the probability of democracy becoming stable improves. As Lipset notes, it is these groups in their political activity, together with the established elites, which are the key to democratic development and political stability. These are the elements of society which maintain that value patterns of the society and are the ones whose commitment to democratic principles will determine whether or not the society will remain democratic, even though a broad public adherence to

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[13] In the model to be developed, legitimacy and tolerance are dependent variables used as two indicators of stability. Lipset does not define stability explicitly, mentioning only the institutionalizing of a democratic process (Lipset's definition of democracy was noted in Chapter I) and its persistence over time. Ibid., p. 364, passim.

democratic principles is evident.[14] In other words, the organized groups and the political elite are the keys to stability and democratic political development.

To illustrate the impact of values upon stability of democratic political systems Lipset has chosen several nations that have a fairly similar religious background. They also all have democratic political systems, yet some are stable (United States, Britain, Canada, Australia) while two are unstable (France and Germany).[15] This examination does appear to have wider applicability, however, because he does point out that these nations were chosen only to illustrate the relationships in which he is interested, namely the relationship between value patterns and democratic stability. To do this more clearly other factors needed to be held constant.

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[14] Ibid., pp. 237, 250, 268, 289.

[15] Ibid., pp. 212, 213. The choice of historical focus and end state to be explained presents some analytic differences. For example, Lipset attempts to evaluate post World War II democracy in West Germany in terms of its value patterns and concludes that it is not yet institutionalized enough to be termed stable. Barrington Moore, Jr., on the other hand (as noted in Chapter V), examines the pattern of economic and social development of Germany which he sees producing the reactionary political system of Nazi Germany. Moore views post-World War II developments in West German politics as being determined essentially by international political and military intervention rather than by domestic changes, hence not explainable by his propositions concerning indigenous change. Moore attempts to explain (by examining indigenous variables) why democratic government tends to emerge given certain conditions (even if the system is unstable, as Lipset concludes in the case of France), whereas Lipset attempts to explain why a democratic form of government tends to develop stability, however initiated. These considerations again indicate the limited nature of these theoretical efforts in terms of range of factors considered.

Because Lipset is concerned with dynamic equilibrium (peaceful development) rather than static patterns of instability or stability, and because he is concerned not just with any kind of change but with the institutionalization of democracy, it might be legitimately assumed that his examination of the interaction of groups in the economic and social system, as influenced by the prevalent value patterns, will satisfactorily provide enough interrelated propositions to build a theory, a developmental theory, which explains development towards democratic government under specified conditions. This theory, it might further be assumed, would have broader application than to the countries specified, but this is a matter for testing as data becomes available. Using the context of his value analysis Lipset does allude to the problem of democratic political stability in other nations of the world which have yet to establish stable democratic governments and modern economies but are attempting to do so. For these reasons it would seem proper to consider this analysis of political activity, and the model here developed, to have wider application than to those countries which Lipset uses specifically to develop his propositions on democratic stability.

In the following section an overview of the model will be presented to indicate the assumptions underlying the flow chart pattern, and in the next chapter the details relevant to each branch point will be presented (see Appendix A).

The key framework of activity for Lipset is the political system as an institution of patterned activity to which rising groups attempt to gain access as their interests impel them to seek political remedies for problems which confront them. If the prevailing situation is adequate for their needs the effectiveness of the system is sufficient and they continue to work within the established political institutions, increasing the legitimacy of the system. If the effectiveness of the economic and social system is not sufficient, the legitimacy of the system is reduced and the group is confronted with the problem of whether or not the legitimacy of the system is still sufficient to warrant operation within it.

More specifically, as the outcome of the first branch point indicates, the level of effectiveness can have an effect on the level of legitimacy of the system for the group. If effectiveness is sufficient it will increase the legitimacy of the system, and if the effectiveness is not sufficient it will decrease the legitimacy of the system.[16] As the second branch point shows, if the legitimacy of the system based on past experience is too low, the group will attempt to seek its interests outside of the established political system and a polarization within the society will occur.[17]

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[16] Ibid., pp. 45, 60.

[17] Ibid., pp. 18, 239. See also Lipset, Political Man, pp. 64, 65.

If legitimacy is still sufficient, however, the group will attempt to present its demands through the political system, as indicated by the right hand side of the flow chart. Whether or not the group is successful will depend upon the tolerance of those in political control. The third and fourth branch points indicate that if the ruling elite has sufficient tolerance for the group seeking access, and the threat the group presents is sufficiently weak, the group will be given access. If the group is given access the tolerance of the threatening group for the political elite will be increased and they will continue to operate within the established political institution.[18] If they are not given access, that is if the tolerance of the ruling elite is not sufficient or the threat is too much for the ruling elite to accept, then their access demand will be opposed and the tolerance of the threatening group will be reduced.

It is assumed that if most major groups of the society continue to operate within the system and the tolerance levels remain sufficiently high, the system will remain stable in its operation. Beyond the condition of mere stability Lipset notes that "one of the necessary conditions for a stable democratic polity is a clear distinction between the source of sovereignty and the agents of authority."[19] To operationalize this for the model it might be assumed, therefore, that if tolerance levels are high enough and a sufficient number of groups are operating within the system, as

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[18] Ibid., pp. 239, 242, 289.

[19] Ibid., pp. 10, 11. Italics in original. See also pp. 313, 314.

indicated by the next branch point (no. 5), there will be a tendency toward a reduced identity of (an increased distinction between) the agents of authority and the source of that authority, whether it is a written constitution or an unwritten tradition which legitimates the regime. Conversely, if enough groups are operating outside the established political institutions and the tolerance level is low enough there will be a tendency for an increased identification of the established elite and their source of authority.

Another part of the democratization process is referred to indirectly by Lipset. It is concerned with the commitment to democratic principles or "rules of the game."[20] Following the implications of this concern it seems plausible to elaborate the theory for the purposes of the model by assuming that if conditions for the acceptance of democratic principles are sufficient there will be a possibility for an increase in that commitment if a new elite or a new group or coalition exerts itself and attempts to gain political control (Branch points 6 and 7). The conditions assumed to be relevant for this potential are two: First, that most politically relevant groups are commited to the system and, second, have sufficient tolerance for the system and its policies. Under these conditions a shift in political control will not be much of

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[20]Lipset speaks of leaders in new states ". . . who view criticism of themselves as tantamount to an attack on the nation itself. Such behavior characterizes leaders of politics in which the concept of democratic succession to office has not been institutionalized." Ibid., p. 43. A two party system also aids this process because "the 'out' party can always realistically aspire to gain office within a few years. . . ." Ibid., p. 307.

a challenge to the basic interests of the relevant groups. Since the peaceful change in power under democratic rules would not be destabilizing, there would appear to be a propensity to increasingly accept those rules as they repeatedly prove functional for peaceful political change. Similarly, if no challenge for power is made the rules are assumed to have been tacitly functional and a smaller increase in their acceptance is assumed to occur (see Appendix C). If such conditions are not present on the other hand, such an attempt by a new elite will result in reduction of the acceptance of democratic principles. It is through such experiences that the "rules of the game" of succession to office are developed.

This leads to the next branch point (no. 8) which assumes that the greater the acceptance of democratic principles (see above) and the higher the tolerance levels of both the political elite and competing groups, the greater the probability that further democratization and stability will develop. This possibility arises on the assumption that on occasion insoluble problems will confront the decision making elite. If such an event occurs there will be a tendency to do one of two things, depending upon the level of the elements noted above. If they are not high enough and an insoluble problem develops, it will tend to result in either a nondemocratic (or non-peaceful) socialization of conflict or a repression of the challenging groups by the established elite, thereby lowering the legitimacy of the system for the challenging groups. On the other hand, if the levels are high enough and an insoluble problem presents itself, there will tend to be a democratic socialization of conflict to allow a

legitimate and more widespread opportunity for other groups, the general public, or the mass media to participate in the resolution of the problem at hand.

The inclusion of such a process in our model appears to be justified by Lipset's concern for both expanding the sphere of influence of public opinion as far as practicable and establishing opposition political parties to make government effectively democratic. Party competition implies that broader publics will choose between them and that there will be adherence to democratic rules of the game if stable democracy is to survive. It also implies that there will be protection of the attendant civil liberties, organized opposition, and rule of law required for a successful operation of such a democratic system.[21] Such a process of socialization of conflict, it would appear, also tends to further the reduction of the identity of the agents and source of authority. This would appear to be true because the tendency to include a wider population in the political process tends to legitimate that activity and tends, therefore, to reduce the legitimacy of the political elites to act on their own authority without the sanction of either popular demand in the electoral process or the sanction of popular sovereignty as authorized by a written or unwritten constitution, or both.

The model outputs of legitimacy, tolerance, and number of groups operating within the system would be indicators of the degree

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[21] Ibid., pp. 10, 11, 36, 208, 313, 314, 316, 317.

of stability of the political system. The model outputs of degree of identity of source of authority and agents of authority, the degree of socialization of conflict, and the degree of acceptance of democratic principles would be indicators of the degree of democratic development. The broader the participation that is possible, the freer the competition between opposing groups in and out of political office, the more representative the elected agents, and the more the people are deemed to be the source of authority for the government, the more democratic a given country may be considered. All the indicators together would be an index, therefore, of the degree of democratic political development.

## CHAPTER IV

## BRANCH POINT VARIABLES AND ASSUMPTIONS

This chapter will attempt to spell out in more specific detail the formulas for determining which option will be taken at each branch point of the model, and the assumptions concerning group activity and model operation sequences. These statements will make it possible to translate the verbalized model into computer programming language with a minimum of additional conceptualization.

For the purposes of model operation, it is assumed that there are five groups which form the center of activity in the political system. It is further assumed that these five groups will reflect the general pattern of prevailing values of society and, therefore, that all five groups will operate within the context of the value patterns which characterize a society. These five groups do not represent specific politically relevant groups of a given society, but it will be assumed that their behavior patterns in the model will parallel the activity patterns of the groups dealt with by the theory; groups such as the military, the trade unions, business organizations, religious organizations, agricultural interests, and the intellectual elite.

Because of the limitations of present computer operations, these groups will not interact at the same time within the political

system, but will operate in a sequential pattern, one group at a time. This is a distortion of reality, but there will still be a cumulative effect registered by their operation as the simulation proceeds, a process which will not be unlike that of the modeled theory. The five groups are also assumed to be roughly equal in terms of political resources and that therefore the concentration of a majority or more of them within or without the established institutions will have the stabilizing or destabilizing consequences one might expect. There is a further assumption that it is possible for the established political elite to continue in political control without the necessary support of any one of the groups. Consequently, any combination of groups could presumably make up an effective coalition able to maintain a stable and even democratic government. As an initial condition, each of the five groups will be randomly assigned a tolerance level. As the groups operate within or without the political institutions of the society, the tolerance levels will change and affect, therefore, the future operation of the system.

The pattern of values which shall characterize the model for each computer run shall be determined as initial conditions. Although Lipset deals with value patterns primarily at the national level he also examines the relevance of differing value patterns in subsystems of the society such as the economy, polity, and social status systems.[1] The primary politically relevant value patterns,

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[1]Seymour Martin Lipset, The First New Nation (New York: Basic Books, Inc., 1963), pp. 212, 217, passim.

however, are those which characterize the economy and the polity.[2] We will, therefore, include in the model only the value patterns for the economy and the polity and not concern ourselves with value patterns of the social status systems.

The value patterns which Lipset uses in his analysis are the four continua of achievement-ascription, equalitarianism-elitism, universalism-particularism, and specificity-diffuseness.[3] These values can usefully be depicted as varying along one hundred point scales for the economy and the polity as indicated in Figure 1.

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[2] Ibid., pp. 234, 268.

[3] Ibid., pp. 209-211. The value pattern variables used by Lipset appear to be useful for political analysis. The first three continua have been used, at least implicitly, by theorists for centuries. The achievement-ascription pattern is important for the type of legitimating factor that is acceptable for political leaders (an achievement orientation being important for accepting popular election as legitimizing). The equalitarianism-elitism pattern relates to suffrage rights and to representative government. And the universalism-particularism pattern is important for concepts such as equality before the law. Lipset's use of these value patterns as continua rather than as polarities or ideal types allows him to examine trends and tendencies of a system which may exhibit a mixed pattern. Because of their generality the use of value patterns will not permit one to explain or predict individual events, but they appear to be relevant to a better understanding of a long-term historical process.

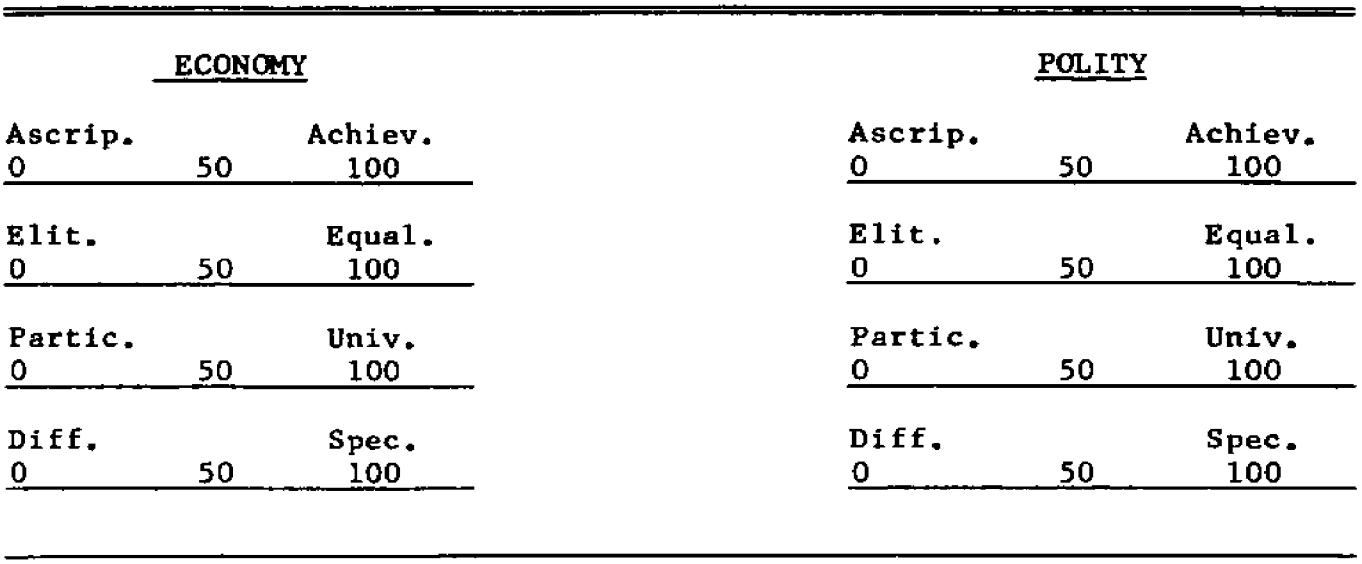
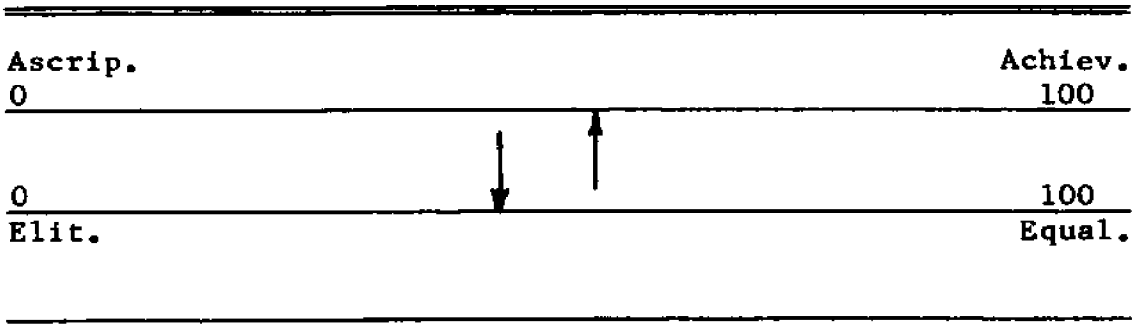



Figure 1.--Value Pattern Variable Scales




The pointers may vary to either extreme,
but cannot pass one another.

Figure 2.--Value Variability Limitation

The amount of variability between the four scales of value patterns is limited by at least three propositions which Lipset advances. Figure 2 illustrates the relationships which he posits between the achievement-ascription continum and the equalitarianism-elitism continuum. It can be noted that two conditions govern their

relationship. The first is that if equalitarianism is high achievement will be high, and second, if ascription is high elitism will be high.[4] A third restraint on variability is that if the achievement-ascription and universalism-particularism levels are at either extreme, the equalitarianism-elitism and specificity-diffuseness levels cannot be at the opposite extreme. There is a positive correlation between the two sets of value levels.[5] The precise correlation level, however, is not given.

Lipset analyzes only a few of the possible combinations of economic and political value levels. An analysis of all the possible levels of values and of combinations of values will likewise not be attempted here because of the large number of patterns that could be arranged. For example, even if only three levels /̄high (90), Med. (50), Low (10)_/̄ are assigned to each of the four values in both the economy and polity, there would be 48 possible patterns of values for each sub-system (given the restraints on variability noted above). Combining these with only three levels of economic development (discussed below) there would be 48x48x3 or 6918 possible patterns of initial conditions to be analyzed. To reduce the analysis to manageable proportions while engaging in an examination of a broader spectrum of initial conditions then that which Lipset considers, therefore, it will be necessary to limit both the number of levels and the degree of intra-system variability. To do

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[4] Ibid., pp. 2, 211.

[5] Ibid., footnote, p. 211.

this we will utilize only three levels for the values (90, 50, 10) which will represent most of the spectrum of possible levels. In addition, where necessary (as noted in discussions related to various branch points below), the values of the economy (or polity) will be treated as varying in a manner such that a mean of the four would equal the three levels noted above. In this manner the number of initial condition patterns to be analyzed (when combined with three levels of economic development) is reduced to 3x3x3 or 27.

The other initial condition that must be established is the speed or rate of economic development which the society is undergoing. Lipset makes several references to the relationship between economic growth and the stability and legitimacy of the system, and these will be noted as we move from branch point to branch point. At this point, however, it can be noted that the rate of economic growth can also be initialized on a 100 point scale. This level can then be related to the prevailing value patterns in the propositions which govern the branch points of the model.

These initial conditions specified for economic values, political values, and economic development, will form an essential part of the framework within which the groups must operate as they are brought into contact with the political system. The values of tolerance, effectiveness, and legitimacy will be initialized on a 100 unit scale. At each point in the model that requires a change in level the change shall be one unit in size unless otherwise noted. Each of the five groups plus elements of the political system,

therefore, will have its own scale for ranking the variables relevant to it. The five groups will be scaled on the tolerance variable while the political system will be scaled on the probability of effectiveness and legitimacy (plus system tolerance as noted below).

We now come to the first branch point of the model which is that of the effectiveness level. It should be noted again that the effectiveness and legitimacy probability levels are system attributes which affect group action in the system, while tolerance levels are group attributes. All three may change as the model operates, and their cumulative change will shape the pattern of development that is reflected in the model output.

The crucial variables affecting effectiveness levels of the system are perceptions of opportunities in the economic system and perceptions of the importance of government to those opportunities. If achievement value are high, then awareness of the importance of government to those opportunities will tend to be high.[6] Also, the greater the achievement orientation, the greater the need for opportunities in the economic and social spheres.[7] In other words, a rapidly expanding economy would provide many opportunities for rising groups, and provide the level of effectiveness necessary to maintain stability when achievement values are high. On the other hand, the more rapid the economic development while ascriptive values are high, the greater the difficulty in achieving or maintaining

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[6] Ibid., p. 245.

[7] Ibid., p. 246.

effectiveness.[8] This assumes that people holding achievement values are more open to the changes brought about by rapid economic development.

To operationalize the above propositions concerning effectiveness the following scheme is utilized. The economic system achievement value is initialized on a 100 point scale (at 90, 50, or 10) and is modified by the rate of growth in the economy to arrive at an initial level of system effectiveness. The modification can be derived as follows. The rate of per capita GNP growth is determined on a 100 point scale to reflect high, medium, and low growth rates (again specified as 90, 50, 10). Although we are modeling the theory which Lipset develops, he does not specify the growth rates he has in mind when speaking of a rapidly expanding economy. Empirically growth rates appear usually to vary from 0 - 9 per cent annually.[9] It would not appear unrealistic, therefore, to note that the scaled levels of 90, 50, and 10 for per capita annual growth parallel the

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[8] Ibid., p. 246.

[9] Although there are no obvious demarcations between low, medium, and high rates of growth, these percentage variations in growth rates do appear in the empirical world. It does not appear unjustified, therefore, to use this range of variation to operationalize the propositions stated. See, for example, Irma Adelman, Theories of Economic Growth and Development (Stanford University Press, 1961), p. 4; and Henry H. Villard, Economic Development (New York: Holt, Rinehart and Winston, Inc., 1963), pp. 197, 198. The absolute levels of growth do not appear to be as important, however, as the fact that the scale gives us a range of variability that indicates the relative importance of different rates of growth when related to achievement levels to form the initial effectiveness level.

empirical pattern of 9, 5, and 1 per cent. We arrive at an effectiveness level for the system by assuming that if the differentiation between the achievement level and the growth rate level exceed 10 points of difference (to allow some margin for error in calculating the effect such a deviation has) then for every point of disparity over 10 whether higher or lower, one shall subtract that amount as a percentage from the achievement level to arrive at the initial effectiveness level.[10] For example, if the achievement level is 75 and the growth rate level is 50, there would be a 15 point disparity beyond the 10 point leeway allowed. Subtracting 15% of the 75 from 75 leaves a total of 66 which would be the initial level of effectiveness. This initial level, once derived from initial conditions, remains constant for the series of computer runs for which it is used. As different initial conditions are posited for different simulation runs, then a new initial effectiveness level is also derived using the same formula for determining that level.

Given the initial effectiveness level, the tolerance level of each group will modify it as the group proceeds to interact within the model. It is assumed that the tolerance level of each group will have an independent effect upon its perceptions of how effective

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[10]This application is guided by the propositions noted previously that if achievement levels are high growth rates should also be high and, conversely, if achievement levels are low then growth rates should also be low so as not to be disruptive. It also attempts to account for the assumption that low achievement levels and low growth rates are not conducive to the maintenance or improvement of legitimacy of a newly democratic political system.

the system may be in providing opportunities to satisfy demands. If there is low tolerance, for example, then however high the objective level of effectiveness or opportunity may be it will still be perceived to be lower. The formula for arriving at the effectiveness level for each group, therefore, is proposed as follows. For each point of disparity between the tolerance level and the mid-point of the 100 point tolerance scale, that amount in percentage terms shall be either added or subtracted from the initial effectiveness level. If the tolerance level is below the mid-point the amount is subtracted, and if it is above that amount shall be added. For example, if the initial effectiveness level is 66 and the group tolerance level is 40, then 10% of the 66 (6.6) is subtracted from 66 leaving a remainder (rounded off) of 59. This level of 59 could then be called the perceived system effectiveness level.

It should be noted that the levels determined at each branch point, whether for effectiveness, legitimacy, elite tolerance, or some other variable of the model, provide a measurement point against which is compared a randomly chosen number which may assume any integer value between 0 and 100. Hence, the option as to which branch point exit is selected is not completely determinative but has a random element which is modified by the changes which develop in tolerance levels and other factors as the model is operated. To illustrate by continuing the above example, if the random number is larger than 59, the effectiveness level is deemed to be not satisfactory and the "no" exit from the effectiveness branch point will be taken. Conversely, if the random number is less than 59 the "yes"

option from the effectiveness branch point is selected. As each group passes through the effectiveness branch point there will be a different group effectiveness level and a different random number for comparative purposes. A different possibility exists each time, therefore, as to which exit from the branch point is selected. A similar process occurs at the other branch points of the model.[11]

As was noted in a previous chapter, if effectiveness is sufficient it will tend to increase the legitimacy of the system. It should be noted, however, that it is tenuous to depend upon effectiveness alone to develop legitimacy for the system, because this requires a rapid change toward a high level of economic achievement orientation if they are not already at a high level, a most difficult process.[12] Because of the necessity of having a high

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[11]Random numbers are used at each branch point because the complexity of the modeled theory is such that with present levels of knowledge it is not possible to design an optimum mode of operation for the model within defined and unvarying conditions. Such a model would be deterministic. As McMillan and Gonzalez note, "More typically, systems are characterized by attributes that take values which are the result of factors whose interaction is at best poorly understood. These attributes or variables are 'produced' by successive trials of stochastic processes. Such processes are described as repetitions of 'experiments' whose results are probabilistic--i.e., determined by chance." Claude McMillan and Richard F. Gonzalez, Systems Analysis: A Computer Approach to Decision Models (Homewood, Ill.: Richard D. Irwin, Inc., 1968), pp. 13, 14. The random number comparison procedure used in the Lipset and Moore models is the stochastic process which makes them probabilistic models rather than deterministic.

[12]Lipset, The First New Nation, pp. 245, 246, 314.

economic achievement orientation level to permit system effectiveness to increase system legitimacy, it was assumed in arriving at the initial effectiveness level that low achievement levels would not result in the type of system effectiveness that would tend to increase system legitimacy. In other words, it is necessary to have high achievement levels to result in high effectiveness levels which can produce a payoff of increasing system legitimacy.

As we move to a consideration now of the legitimacy branch point (no. 2) it should be noted that Lipset was dealing with the problem of establishing legitimacy in a new nation; that is, one that has overthrown its traditional pattern of legitimacy and is now attempting to operate within some sort of rational constitutional framework. Consequently, the new regime must prove itself effective in order to maintain itself in the long run as the legitimate government. Lipset advances several propositions concerning the probability of a regime developing long term legitimacy. One is that if the nation has a high achievement level and a high equalitarianism level, together with a third factor which may be either strong religion, adequate social mobility, or opportunities for satisfaction through political involvement, then the regime has a high probability of attaining and/or maintaining adequate and long term legitimacy.[13] He also theorizes that if there are adequate access opportunities for rising groups in the social and economic system that this will also tend to increase legitimacy.[14] Finally, as was indicated in a

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[13] Ibid., pp. 271-273.

[14] Ibid., pp. 239, 242.

previous chapter he proposes that continued effectiveness will increase the legitimacy of the political system.[15]

With these propositions in mind we may now attempt to develop a formula for determining the initial probability of legitimacy for the system. The second and third propositions, it should be noted, are accounted for in the establishment of the initial effectiveness level and in the relationship of system effectiveness to system legitimacy. The first proposition appears insufficient as a basis for establishing initial system legitimacy for our model because it attempts to explain a long term process rather than establish initial conditions, plus the fact that other combinations of values with other factors could also aid legitimacy. This leaves us with the consideration that most new nations generally begin their course of development with rather high legitimacy as a residue of earlier efforts to establish the new regime. We might, therefore, initialize the legitimacy level at an arbitrary level of 75 and permit the operation of the model to determine whether or not the system is capable of maintaining that level or improve upon it. As in the previous branch point, a random number is selected to compare with the legitimacy level to determine which exit is taken as the model operates.

At branch point number 3 there appear to be three key factors involved in determining the tolerance level of the political elite for the threatening group. The first is stated in the proposition

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[15] Ibid., pp. 45, 46, 60.

that the stronger the four political values of achievement, equalitarianism, universalism, and specificity, the stronger the tolerance for access demands.[16] The second proposition is that the more the levels of value acceptance are the same in both the economy and the polity the greater the tolerance for access demands.[17] The third is that since tolerance is a relationship between political elite and challenging group it would be plausible to assume that the tolerance of the group for the system would also affect the relationship. From these propositions we may derive the probability level of tolerance for the threatening group by the following procedure. Since political values appear to be the crucial factor in determining tolerance for political demands in a developing democracy, the primary factor in determining tolerance levels will be the mean level of the polity values. This initial level will be modified by the degree of discrepancy between that level and the mean of economic system values. The absolute difference between means will be used as a percentage figure to subtract that amount from the polity value level to find a net probability of tolerance level. Then, as each group interacts in the system, its tolerance level will further modify the net level of system tolerance. If group tolerance is above the mid-point (50) the net tolerance level will be increased by a percentage equal to the difference between 50 and the group tolerance level. If group tolerance is below the midpoint, the

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[16] Ibid., p. 214.

[17] Ibid., p. 210. This is especially true, Lipset notes, of universalism and achievement values, p. 268.

difference is subtracted by the same procedure. Again as in the previous branch points, a random number will be matched against this level to determine which alternative of the branch point will be selected.

At branch point number 4, the size of the threat, there are three key propositions involved in determining this level. The first is that the size of the threatened change will tend to be small if the three economic values of equalitarianism, universalism, specificity are strong.[18] The second proposition is that the better the economic opportunities of the system the less there will tend to be a serious threat to the established elite.[19] The third proposition is that the greater the frustration of the threatening group, as might be determined by a history of access-rejections, the greater the likelihood of threatening demands.[20] An initial threat index is the mean of the economic growth rate combined with the mean of the three values of equalitarianism, universalism, and specificity (see Appendix C). This initial threat level is modified as a result of the history of interaction each group develops as it operates in the model. Each time the group works outside the institution and each time access is denied the demands of the group tend to become larger. For each such experience two points are subtracted from the threat index. Conversely, for each favorable experience two points are added to the threat index (see Appendix C).

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[18] Ibid., p. 214.

[19] Ibid., pp. 234, 289. See also Political Man, p. 79.

[20] Lipset, Political Man, pp. 74, 79.

The larger the index number, therefore, the greater likelihood that the threat would be small. Once again a random number is selected to compare with this index number as each group passes through the branch point, and if the number is smaller than the index number the access demand is granted. And if the number is larger than the index number the access demand is denied.

The variables we have examined in the preceding four branch points are all related to the question of the stability of the system. The variables we will consider in the remainder of this chapter are concerned with development towards democratic government. In terms of the operation of the model, this last segment does not come into operation until all five groups have completed five passes through the first part of the model. Thereafter following each sequence of five passes by the five groups through the first four branch points, one pass is made through the remaining elements of the model.

Branch point number 5 enables us to deal with Lipset's concern for the development of a clear distinction between the source of sovereignty and the agents of authority. The following figure (no. 3) attempts to detail the variables which will determine whether there will be an increase or a decrease in the identity of the source and agents of authority or whether there will be no change. This formulation makes allowance for the two relevant factors of level of tolerance among all groups and the number of groups that are operating in and outside of the established institution (see Appendix C).

If 2 gps are outside the institution & total of tol. levels is .LT.180
" 3 " " " " " " " " " " " .LT.270
" 4 " " " " " " " " " " " .LT.360
" 5 " " " " " " " " " " " .LT.450
Then increase identity of agents and sources of authority by one point.

If 3 gps are within the institution & total of tol. level is .GT.400
" 4 " " " " " " " " " " " .GT.325
" 5 " " " " " " " " " " " .GT.250
Then reduce identity of agents and source of authority by one point.

The scale for the degree of identity is initialized at zero. The possibilities that are not covered in the above figure result in no change.

Figure 3.--Identity of Agents and Source of Authority Formula.

The factors which are important for the change in identity of source and agents of authority, appear also to be important for the next branch point (no. 6) concerning the conditions for democratic principles. It is assumed that if there is a sufficient level of tolerance among all the groups participating and a sufficient number of groups are operating within the established institutions, that this will provide the necessary condition for possible increase in the acceptance of democratic principles (or rules of the game). The figure below (no. 4) again illustrates the relationship of group number and tolerance levels. After this initial determination is made in branch point number 6 the related branch point (no. 7) concerns a challenge for power by a new political coalition or elite. This branch point involves, again, a random number feature which determines which exit of the branch point is taken. It is assumed

If 3 gps are within the institution & total tol. levels is .GT.400
" 4 " " " " " " " " " " .GT.325
" 5 " " " " " " " " " " .GT.250
Then a greater probability exists for an increase in the acceptance of democratic principles.

Figure 4.--Acceptance of Democratic Principles Formula.

here that there is a greater chance of a challenge being made if the effectiveness level is low than if it is high. Hence, if a random number is smaller than the initial effectiveness level, as modified by the mean of the five tolerance levels (as for branch point no. 1), then a challenge will not be made. Conversely, if the random number is larger than that level then a challenge for power will be made. The result will be either an increment or a decrement in the scale of acceptance of democratic principles, starting at the mid-point (50) of the scale. If conditions favoring an increase in acceptance of democratic principles are unfavorable, the challenge will result in a decrease of acceptance by 4 points. If conditions are favorable the challenge will increase acceptance by 4 points. If no challenge is made under either condition it will increase acceptance by 2 points under the assumption that continued operation of the system with no challenges for power will to a lesser degree tend toward increased acceptance of the rules of the system (see Appendix C).

Branch point number 8 concerns the probability of political conflict leading to a democratic socialization of conflict. This

probability level is determined by giving equal weight to acceptance of Democratic principles, system tolerance, and the mean of the five group tolerance levels. The mean of these three factors is used as a random number comparison point. If the random number is larger, the democratic socialization of conflict scale (starting at zero) will decrease by one, identification of source and agents of authority will increase by one, and system legitimacy will decrease by five (see Appendix C). If the random number is smaller the three variables will change in the opposite direction.

After this portion of the flow chart is completed a new series of group interaction in the first part of the model is initiated. This sequence continues until ten cycles have been completed, the simulation terminated, and the results are calculated and printed. Ten cycles appeared to be sufficient to establish a definite pattern of development for a given set of initial conditions.

## CHAPTER V

## A MODEL OF MOORE'S THEORY

This chapter shall present a general overview of Moore's conception of the variables, propositions, and initial conditions which are important for development towards a democratically governed society. The model here presented is developed from a series of statements and propositions which Moore advances to explain the historical emergence of democratic government in at least three major nations of the world, in Britain, France, and the United States.[1] He also advances proposition relating to the origins of reactionary and communist regimes, but we shall not directly concern ourselves with the patterns he draws for these developments. Our analysis of his book shall be restricted to the examination of the conditions relevant to the development of democratic government.

In contrast to Lipset, it is the opinion of Moore that a useful sociological explanation of broad social and political changes cannot be undertaken by examining cultural or value patterns. Moore notes that

> To explain behavior in terms of cultural values is to engage in circular reasoning. . . . The problem is to

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[1]Barrington Moore, Jr., Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World (Boston: Beacon Press, 1966).

> determine out of what past and present experiences such an outlook arises and contains itself. If culture has an empirical meaning, it is as a tendency implanted in the human mind to behave in certain specific ways 'acquired by man as a member of society'. . . .[2]

To explain social inertia as well as social change, Moore examines what he feels are the crucial experiences which shape the traditions and values of the society. In his historical analysis of the three major nations noted above, although certain values seem to be useful for future development, the decisive factor was not cultural. The crucial factor appeared to be the process by which the transition to commercial agriculture was made. As he states specifically, "the ways in which the landed upper classes and the peasants reacted to the challenge of commercial agriculture were decisive factors in determining political outcome."[3] The eventual outcome of this process would determine which values would become dominant and which ones would remain from a previous period. New political outcomes, then, emerge from the clash of interests which result when opportunities for social and economic change arise regardless of whether the current or prevailing value patterns would tend to discourage the pursuit of these new opportunities.[4] The transition to commercial

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[2] Ibid., p. 486.

[3] Ibid., p. xvii. He also notes that the book ". . . is an attempt to discover the range of historical conditions under which either or both of these rural groups have become important forces behind the emergence of Western parliamentary versions of democracy, and dictatorships of the right and the left, that is fascist and communist regimes," p. xi.

[4] Ibid., pp. 421, 422.

agriculture, he admits, is not the only factor involved in determining political outcome. But it is a major one and the one Moore has chosen to focus upon in this explanatory analysis. Moore restricts his study to the major states of the world. It is restricted in an attempt to control the external influences which shape so much of the domestic, social and political developments of smaller states. If the smaller states were to be included in this analysis it would, he feels, tend to make the generalizations developed too broad to be useful.[5] He notes that the various historical routes toward modernization which culminate in democracy, fascism, or communism may constitute alternative routes and choices, but he thinks that they are much more clearly successive historical stages.[6] In other words, the emergence of democracy in industrializing England shaped the reactionary development in Germany and Japan, both of which, in turn, influenced the communist revolutions of a later period. He does note, however, that although historical preconditions change over time, countries must face certain common problems as they develop towards a commercial and industrialized economy. If the particular conditions of a society are carefully delineated, therefore, it would seem possible to apply the generalizations developed here to other nations which are now

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[5] Ibid., pp. xii, xiii.

[6] Ibid., p. 414. Also see p. 427. This conclusion might be questioned, however, since communist movements emerged before explicit fascist movements, although reactionary tendencies in response to democratic revolutions were in evidence before Marxist communism became a political force in world history.

attempting to make the transition to a commercialized and/or industrialized society as Moore does using the case of India. Moore notes that there is no simple way to generalize from the empirical data to broader conclusions because each specific case of development displays several tendencies. He attempts to discern, however, the dominant configuration which emerges and makes this the basis for the generalization and proposition building.[7] So far as conditions are capable of specification, therefore, it would appear that the generalizations which Moore advances and the model developed from them here would have broader application to help explain more adequately the processes of development which many contemporary nations are now undergoing.

Moore warns against attempting to explain social realities through simple quantification techniques. He claims that an adequate description of social life which relies on quantitative measures cannot reflect the qualitative changes in the relations of men nor the changes themselves. He then quotes a statement by Whitehead saying that apart from a presupposed pattern, quantity determines nothing.[8] In our simulation model, however, there is a presupposed pattern of qualitative relationships which Moore presents in his analysis and it would appear, therefore, that the quantification necessary for computer simulation would have some relevance to a more specific understanding of the implications of Moore's theory.

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[7] Ibid., p. xvii.

[8] Ibid., pp. 519, 520.

The central concern of Moore's analysis is the taming of the agrarian sector in such a way that the political hegemony of the landed upper class is broken or transformed. He notes that

> The peasant had to be turned into a farmer producing for the market instead of for his own consumption and that of the overlord. In this process the landed upper classes either became an important part of the capitalist and democratic tide, as in England, or, if they came to oppose it, they were swept aside in the convulsion of revolution or civil war. In a word, the landed upper classes either helped to make the bourgeois revolution or were destroyed by it.[9]

The theory which Moore develops, then, would apply only to those nations which are in the process of developing a commercial agricultural system out of a previous system of subsistence production. It also implies that there is some commercialization going on in the urban areas of the state providing, thereby, market areas and financial opportunities for the agricultural transformation.

Moore notes that there are three main historical routes from the pre-commercial world to the modern world. These are through the route of bourgeois revolutions led by commercial classes as in the United States, Britain, and France, the capitalist reactionary revolution from above (which has a weak bourgeois impulse) as in Germany and Japan, and the communist revolution which combines a weak bourgeois impulse with peasant revolt.[10] He goes on to note that India, which is almost unique in its combination of social and colonial conditions, does not fall into any of the three categories. The political outcome in which we are interested for our simulation

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[9] Ibid., pp. 429, 430.

[10] Ibid., pp. xv, xvi.

model is that which results from a strong bourgeois impulse that leads to a liberal and democratic government. This process is seen as

> . . . a long and certainly incomplete struggle to do three closely related things: (1) to check arbitrary rulers, (2) to replace arbitrary rules with just and rational ones, and (3) to obtain a share for the underlying population in the making of rules.[11]

The central development in this process is the development of strong and independent commercial interests by an urban bourgeoisie and a strong land owning commercial class which operates its own rural enterprises. It also implies a reduction in the strength of the traditional landed aristocracy and the elimination of a large class of peasants in the countryside.[12] Other political outcomes result, as noted above, if the landed aristocracy maintains or increases its position of strength or if the peasant population is not reduced in

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[11] Ibid., p. 414. In addition, democracy implies the right to vote, a representative legislature, an objective system of law, religious toleration, freedom of speech, and the right to peaceful assembly (p. 429).

[12] A crucial independent variable (discussed below and in Chapter VI) is the balance of political power between the central government and the landed aristocracy. If there is equality between these two elements there is (in regard to this variable) an optimum chance for the development of conditions favorable for democracy such as the emergence of a strong land owning and operating commercial class and an urban commercial class. Bruce M. Russett in "Inequality and Instability: The Relation of Land Tenure to Politics," World Politics, XVI (April, 1964), pp. 442-454, found a positive relationship between equality of land distribution and stable democracy, based upon comparison between nations at a recent point in time. Moore's conception of owner-operator in agriculture assumes a reduction in ownership inequality, but this is a dependent variable for him. He attempts to explain why the inequality persists or diminishes over time within individual countries. In doing so he moves one step deeper into the empirical explanation process and uses an analytic approach (longitudinal rather than cross-sectional) that is more directly relevant to developmental analysis.

numbers and (apparently) shifted over time to employment in an urban setting. This general framework of development is outlined in the flow chart presented in Appendix B.

As was done in explicating Lipset's theory, the remainder of this chapter will present an overview of Moore's generalizations to indicate the assumptions and propositions underlying the flow chart pattern of the model. The next chapter will present the details relevant to each branch point and posit the initial conditions.

As was noted above, the central focus in Moore's conception of economic and political modernization stems from the challenges raised by the move towards a commercialized society in both the urban and rural settings. It is assumed that in order for rural commercialization to occur there must first be some commercialization in the urban areas of the country so that there is some profit to be gained by selling rural products for a cash return. This basic starting point is illustrated by branch point number 1 which indicates the result of either the absence or the beginning of urban commercial development. As the urban market develops it will tend to increase the potential for commercializing agriculture and also increase the need for cash by the traditional landed elite. An absence of commercial development will decrease the potential for commercial agricultural production.[13]

Branch point number 2 indicates an important development within the urban business community which is necessary if a liberal or democratic system is to emerge. If the business community

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[13] Ibid., pp. 51, 419, 422.

developing the commercialized economy is able to maintain its independence (in terms of access to capital and making their own economic decisions), it will decrease the probability of a coalition forming between the traditional aristocratic elite and the urban bourgeoisie against the peasants and labor.[14] Such a coalition, if it were to form, would tend to develop repressive techniques of rural and urban commercialization rather than allowing independent entrepreneuers the opportunity to operate free from overwhelming governmental interference or control. If the bourgeoisie can develop a strong economic footing they will tend to develop interests in opposition to the traditional landed elites and develop the potential for peaceful competition in political matters.

Although Moore recognizes the importance of violent activity or revolution at some point in most political development processes, this struggle could be minimized if there were other conditions in the cultural heritage of the country which tended to make allowance for the emergence of new interests and recognized a legitimate place for them in the society. Helpful in this process (but not dominant), for example, are values or cultural beliefs in the immunity of certain groups and persons from the power of the ruler, a conception of the right of resistance to unjust authority, and a belief in the importance of contracts made by free agreement among free persons.[15]

The next point of interest in the developmental process (noted in branch point number 3) is whether or not there is a move to

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[14] Ibid., pp. 424, 425, 431.

[15] Ibid., p. 415.

commercialize agricultural production. If there is no move to commercialize then the thrust toward possible democratization of the society is not possible. If commercialization of agriculture does take place the crucial question is what form this development takes. Of first importance is whether or not a labor-repressive agricultural system is utilized, as noted in branch point number 4. If a labor-repressive system is used it will tend to operate with the aid of the central government, and thereby tend to increase the strength of that central government as well as increasing the potential for a reactionary "revolution from above" as happened in Germany and Japan.[16] Such a development also tends to reduce the potential for the development of an independent bourgeoisie because of the tendency for the landed elite to maintain its position of commanding strength in political affairs and to use its power to make or direct economic development for its own use.[17] This tendency also increases potential for an aristocratic-bourgeois coalition against the peasants.

If labor-repressive agriculture is not used then the question becomes (as noted by branch point number 5) whether or not the commercialization of agriculture results in the elimination of the peasant class. If it is eliminated this increases the potential for a democratic political system by increasing the potential for development of an independent bourgeoisie and rural commercial class, and by reducing both the strength of the aristocracy, who depend

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[16] Ibid., pp. 434, 435.

[17] Ibid., p. 436.

upon peasant agriculture for much of their strength, and the potential for an aristocratic-bourgeois coalition.[18] If the process of commercialization does not eliminate the peasant class it will tend to reduce the potential for urban development and increase the potential for peasant revolt as the effects and strains of commercialization are imposed upon the existing structure rather than developing a new social structure which eliminates a class of potential dissidents.[19] This will also tend to change the balance of power between the landed aristocracy and the central government by increasing the power of the former and decreasing that of the latter (see Appendix D).

As branch point number 6 indicates, if there is an attempt to derive more cash from the peasant without any effort to commercialize, this also increases the potential for peasant revolt. If there is no need for additional cash and no move toward commercialization, there will be no potential change in this variable.

As the new commercial class develops in the urban and rural areas, the development of its independence is enhanced if the older landed aristocracy is enabled to maintain a relatively satisfactory economic position. As noted at branch point number 7, if their economic position remains satisfactory this will increase the potential for the development of independent urban businessmen.[20] This assumes that if the traditional elites are too strongly challenged in their economic security, they will be tempted to take

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[18] Ibid., pp. 419, 420, 422, 429, 459, 460.

[19] Ibid., pp. 395, 406, 430, 473.

[20] Ibid., p.425.

repressive political action to curb the influence and potential independence of the commercial classes. This would also seem to imply that a tolerant view of the rising classes by the traditional elite would appear to be more likely if the economy itself was growing rapidly enough to ensure that there were resources to satisfy the traditional elite enough to prevent them from taking any drastic measures to suppress the independent commercial activities which are challenging them.

As the move towards commercialization proceeds and a period of time lapses it is assumed by Moore that if the bourgeoisie is gaining strength, the attitudes and values which are important to them will also tend to gain ascendency within the society. This development is illustrated in Branch point number 8 which indicates that after a period of time, as indicated by the five passes through the preceding part of the model, there may be a tendency for the values of the culture to develop a stronger belief in certain bourgeois values.[21] The values affected appear to be those which were cited above as being crucial to the successful development of a liberal bourgeois society, and for the emergence of a democratic government. These values are the belief in immunity of certain groups and persons from the power of the ruler, the conception of the right of resistance to unjust political authority, and the conception of contract by free agreement between free persons.

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[21] Ibid., p. 425.

As the bourgeoisie gains in strength and as their values gain more widespread acceptance, it would seem that there is also a rising potential for what Moore calls the liberal or bourgeois revolution. This would place bourgeois values and the related commercial and industrial activities at the center of the society, and the conflicts and interests emerging from this ascendence would be the primary moving force in the political realm, even though some of the traditional elite may still remain active in political affairs. At least, however, there will be a peaceful competition between the two elites for the support of broader segments of the population through the traditional democratic mechanisms of free speech and election which Moore notes are part of the democratic process.[22] Concommitant changes would occur in the potential for the development of an independent urban business class and in central government power, the former increasing and the latter decreasing.

Moore does stress at various points in the book the importance of revolution in shaping the ultimate political outcome of various societies, and he notes that even in the transition to democracy there are definite limitations on the possibility of peaceful transition.[23] There are few clear indications given by Moore, however, which specify the significant contributions which such a revolution may bring other than a continued development of those patterns which had been emerging for some time prior to the violent outbreak. The actual prediction of the outcome of specific

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[22] Ibid., p. 429.

[23] Ibid., pp. 426, 427, 431, passim.

revolutions is beyond the scope of this model and also, apparently, beyond the scope of the theoretical propositions or generalizations presented by Moore. Too many uncontrolled factors enter in such as the role of available leadership, the role of external forces, and the various patterns of social relationships which Moore examines primarily in terms of the reactionary revolutions as they occurred in Germany and Japan and the communist peasant revolutions of Russia and China. The examples and propositions derived, therefore, offer little of relevance to the results of a liberal bourgeois revolution. This type of outcome, however, receives some consideration in the model through the accumulation of revolutionary potential and the increase in strength of bourgeois values. The key outcome of the model, then, is not the occurrence of a bourgeois revolution, but an indication of increasing strength by an independent bourgeoisie and the rural commercial class together with their value system. Concurrently there should be a tendency for the strength of the landed aristocracy to be reduced and a low potential for an aristocratic-bourgeois coalition. Alternatively, if the potential for a liberal bourgeois revolution is low then either an increase in the strength of central government and the potential for reactionary revolution will be high, or there will be a high potential for peasant revolt.

# CHAPTER VI

## BRANCH POINT VARIABLES AND ASSUMPTIONS

As in Chapter IV, this chapter will attempt to specify the formulas for determining which exit will be taken at each branch point of the model, and detail the initial conditions and assumptions underlying the sequences of model operation.

This model does not operate in terms of group activity as does the Lipset model. Rather it interrelates a sequence of activity which results in increases or decreases in the strength of specified social groups and their values, thereby indicating a potential for democracy. As with the Lipset model, however, we will use 100 point scales to enable us to determine magnitude and direction of movement as the model operates. Several variables will receive an initial ranking on the scales, and they will be modified as a result of model operation. For each simulation run the two variables used as independent variables (or factors) will be initialized with systematic variation in an attempt to determine their relative impact on the outcome.

There are three primary sets of elements which are relevant for establishing initial conditions. The first relates to the opportunity for commercial and industrial development in urban and rural areas,

the second relates to the strength of belief in various values such as corporate and personal immunities, rights of resistance, and freedom of contract, and the third comprises the power levels of the two crucial pre-development political groups, the central government and the landed aristocracy. With regard to the first set, it is assumed that the opportunity for urban development will be sufficient for an initial move in that direction to be made since Moore's generalizations hinge on the fact that the development he describes is a result of the impact of urban commercialization and the potential which it opens for agricultural commercialization.[1] The level of opportunity for agricultural development will be initialized at the mid-point on the scale in each simulation run. In terms of the theory it can never be at an initial level higher than that for urban commercialization.

Each of the cultural values will be initialized on a 100 point scale and varied with each simulation run. The assumption is made that the initial strength of these values will equally become higher as the power of the central government and that of the landed aristocracy approaches a balance.[2] The third set of elements has one essential variation. This is the relative strength of the central government as opposed to the strength of the landed aristocracy.

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[1]Barrington Moore, Jr., Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World (Boston: Beacon Press, 1966), p. 422.

[2]Ibid., pp. 415, 416.

It is assumed that they are inversely related and that if they approach a balance, as noted above, they will approach the medieval feudal ideal of the Western European system.[3] Because they are inversely related the power level of one, the central government, will be varied systematically as an initial condition and as one of two independent variables. Five levels will be used (90, 75, 50, 25, 10) to represent the 100 point scale range of high to low levels. This variation will control the initial levels of aristocratic power (as noted above) and also the initial levels of the three cultural levels. The initial level of the values varies positively with the balance between central government and aristocratic power. Consequently only three value levels are needed to correspond with the five power levels listed above (100 for the 50 level, 50 for the 75 and 25 levels, and 20 for the 90 and 10 levels) based on the formula $A = 100-|X-Y|$ where A = value levels, X = central government and Y = aristocracy power levels.

The other independent variable for this model is the rate of growth of per capita GNP, also initialized on a 100 point scale. As with the Lipset model, 90 = high, 50 = medium and 10 = low rate of growth.

With these considerations about initial conditions and independent variables in mind we may turn to the first branch point (see Appendix B) which determines whether or not commercial development is occurring in urban areas. As an initial condition we may

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[3] Ibid., pp. 422, 459.

use an arbitrary level of 75 on the 100 point scale on the assumption that the model as a whole is relevant only if there is some initial impetus for commercialization of the urban areas. Subsequent operation of the model can modify this initial potential in either direction. As with the Lipset model a random number is chosen and compared to this initial potential level of commercialization. If it is more than that level it will decrease by one point the potential for commercializing agriculture. If it is less than or equal to that level the opposite exit is taken resulting in an increase in that potential on the assumption that urban markets will be developed and a start made on the transportation necessary for transporting goods for the urban market. The development of urban commercial interests will also increase by one point the need for cash by the landed elite who will be tempted to purchase items made available to them by growing urban commercial market activity. It is further assumed that once an initial need for cash by the landed elite has been established (initialized at 10) it will tend to remain, even though urban commercialization may stagnate.

At branch point number 2 the potential for development of an independent business class will tend to be higher if the complex of the three bourgeois values are higher. As noted above, it is assumed that these three values will become stronger as a balance is approached between the strength of the landed elite and the central government. It is also assumed that the three values of immunity, right of resistance, and freedom of contract are all

equally important and shall, therefore, receive an equally proportionate weight in determining the initial index number of this branch point. The mean of the three values (up to a maximum of 90) shall be used as the initial potential for development of an independent business class. As the model operates this initial level will change to indicate varying levels of potential. If the yes exit is taken it will increase by one the independent power of the bourgeoisie, and as noted before this will also tend to decrease by one the potential of an aristocratic-bourgeois coalition under the assumption that a growing and strong bourgeois element will be better able to assert its independence from other sources of social and economic strength. If the no exit is taken there will be a decrease in strength of the bourgeoisie and there will be an increased potential of an aristocratic-bourgeois coalition formed against the peasant and worker classes (see Appendix D). The bourgeois power level starts from zero.

The preceding elements of the model help to structure the potential for development of commercial agriculture as indicated in branch point number 3. The initial level of opportunity for development of commercial agriculture will be set at 50 to give an even chance for commercial development because the model is designed to illustrate a potential social and political impact of rural commercialization. Nevertheless, the continued operation of the model will affect the potential for development of commercial agriculture, and therefore affect the direction of change for the

system. If the random number is lower than or equal to the potential level the model immediately goes on to determine the type of commercial agriculture that is developed. If the random number is higher a determination is then made concerning the potential for change in extracting more surplus from the peasants even though actual commercialization is not attempted.

Branch point number 4 raises the first of two questions on the type of agricultural commercialization that is developed. At this point the question is whether or not labor-repressive agriculture is used, a system which utilizes the power and authority of the central government to extract more surplus from the peasant class. It is assumed that the potential for using labor-repressive agriculture will be higher if the strength of the central government is higher.[4] It is also assumed that this potential will be modified downward if the values of corporate and personal immunities and right of resistance are higher. The random number comparison point of this potential is determined by the formula: Potential = (100-A+2B)/3, where A = the mean of the values and B = central government power level. If the random number is smaller than or equal to this potential central government power, the potential for reactionary revolution, and the potential for aristocratic-bourgeois coalition are increased by one while the potential for development of an independent bourgeoisie is reduced

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[4] Ibid., pp. 422, 434, 435.

by one (see Appendix D). If the random number is higher another relevant question is posed at the next branch point.

Branch point number 5 determines whether the commercial development of agriculture removes the peasants as a class and replaces them with a class of independent small landowners who have entered the commercial market system. It is assumed that the potential for elimination of the peasant class will be higher if the value of free contract among free persons is higher in that society and the strength of the aristocracy is low. The formula for determining this potential is (100-A+B)/2 where A = strength of aristocracy and B = level of the free contract value (see Appendix D). If the random number is lower than or equal to this number the yes exit is taken, and the potential for urban commercialization will be increased by one on the assumption that it will increase the availability of cash for capital investment. It will also improve the independent position of the bourgeoisie (by one point) because of the increased availability of capital not under the direct control of either the state or the landed aristocracy. And, of course, it will increase by one point the strength of the rural commercial class and reduce by the same amount both the strength of the landed aristocracy and the potential for an aristocratic-bourgeois coalition. If the number is higher and the no exit is taken, it will reduce by one the potential for urban development.[5] This development would also increase the potential

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[5] Ibid., pp. 395, 406, 430.

for peasant revolt by one point, and change the balance of power between the landed aristocracy and the central government by increasing the former by one point and decreasing the latter by the same amount (see Appendix D).

This leads to consideration of branch point number 6 which also has an option for increasing the potential for peasant revolt based on the level of need for cash by the landed elite even though they are not attempting to commercialize agriculture. The initial level of this need shall be set at an arbitrary low figure of ten. This level will be affected by the development of urban commercialization as noted above in connection with branch point number 1. An increased need for cash by the landed elite will increase the potential for peasant revolt by one point whereas an absence of such a need brings no change.

As the system develops and the strength of the commercial classes develops it will have an effect on the economic position of the landed aristocracy. At branch point number 7 it is assumed that the economic position of the landed aristocracy will remain sufficient if the strength of the immunities and free contract values are high, and if there is a rapid development of the economy as defined by rate of GNP growth. The index for branch point number 7 will be the mean of the three factors mentioned; the rate of economic growth (weighted to be 3 times more important than the values) and the immunities and freedom of contract value levels. If the random number is smaller than or equal to this number the yes exit is taken and the potential for development of independent

businessmen is increased by 3 points. If the number is larger the no exit is taken and the contrary adjustment made (see Appendix D).

After ten passes through the above flow chart, indicating a passage of time, branch point number 8 will determine whether the ascendancy of the commercial classes is sufficient. The potential level will be determined by summing the strengths of the rural commercial interests and the strengths of the bourgeoisie, both of which have started from a zero level of a 100 point scale. Again a random number is chosen to compare to this level and if the number is equal to or smaller than the sum the yes exit is taken and it would indicate that the commercial classes had gained sufficient strength to have an effect on the general acceptance of these values. Each of the three values are increased, therefore, by 10 points. The potential for urban development by independent businessmen increases by 5 points, the power of the central government is reduced by 5, and the potential for a bourgeois revolution is increased by 1 point (see Appendix D). If the number is larger and the no exit is taken, no change is recorded. After this determination is made the simulation returns to the first part of the flow chart and continues the entire sequence for a total of ten cycles.

# CHAPTER VII

## ANALYSIS OF MOORE MODEL DATA

The data generated by the Moore model[1] were the result of 50 simulation runs for each of 15 patterns combining different levels of two factors (or independent variables) as measured by five dependent variables (or measures). Factor A (rate of per capita GNP growth) was tested on three levels and Factor B (central government power) was tested on five levels. The purpose of the analysis was to determine the effect, if any, of the two factors upon the dependent measures. Tests were needed that could indicate significance of effect, and also enable one to gain greater insight into the pattern of relationships which could assist in detailing more precisely the implications of the modeled theory.

Main effects. The initial statistical test most appropriate for these purposes appeared to be a 3x5 analysis of variance (ANOVA) testing the null hypothesis of no treatment effects. If this test indicated significance by rejection of the null hypothesis for several measures, other tests could indicate more precisely the pattern of effects.

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[1]The Moore model data are analyzed first because this model is the less complex of the two, and it will enable the reader unfamiliar with this form of analysis to comprehend more easily the concepts and tests employed in the evaluation.

Univariate ANOVA could not be relied upon exclusively, however, because the dependent measures were not entirely independent measures of effects, as indicated in Table 1. Of ten possible relationships, five indicate negative or positive correlations above the 0.5 level.

TABLE 1

CORRELATIONS BETWEEN DEPENDENT MEASURES*

| Variable | Bour Power | Rural Com. | Peasant Rev. | Coali-tion | Bour Rev. |
|---|---|---|---|---|---|
| Bour Power | -- | | | | |
| Rural Com. | 0.298 | -- | | | |
| Peasant Rev. | 0.031 | -0.282 | -- | | |
| Coalition | -0.914 | -0.581 | -0.083 | -- | |
| Bour Rev. | 0.534 | 0.605 | -0.075 | -0.661 | -- |

*Values exceeding .273 are significant at the .05 level of confidence.

The pattern of correlations displayed tends to confirm predicted results and gives some confidence that the model generates outputs which correspond to general theory patterns and requirements. Correlation between bourgeois power, rural commercialization, and bourgeois revolution, for example, indicate that bourgeois power can develop without extensive rural commercialization, but that if this line of development is followed there is less chance of

bourgeois revolution or democratic development occurring. The latter point is indicated by the higher correlation between bourgeois revolution and rural commercialization (0.605) than between bourgeois revolution and bourgeois power (0.534). These correlations were expected, but because of the dependency problem involved it was useful to perform a multivariate ANOVA (MANOVA) to give an indication of the reliability of the univariate ANOVA. If only a few or no linear combinations of the MANOVA were significant, then little or no importance could be attached to an indication of univariate ANOVA significance of main effects or interaction effects.

With these factors and caveats in mind we may turn to an analysis of the simulation data. In general, the statistical analysis revealed that the greatest overall impact on the dependent measures was a result of B effects, the relative power of the central government. Changes in this factor had a more uniform effect on all the measures than did factor A, the rate of economic growth, and this relationship is demonstrated by several displays of statistical analysis results examined below.

The MANOVA analysis for factor B as compared to factor A (Table 2) indicates the stronger effect of the former.[2] Four of

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[2]The MANOVA and ANOVA data are derived from a computer programmed analysis designed by the Biometric Laboratory of the University of Miami (Florida) and applied by the Behavioral Sciences Laboratory of The Ohio State University.

For reference on univariate ANOVA see William L. Hays, Statistics (New York: Holt, Rinehart and Winston, 1963); and George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, Inc., 1966). For reference on multivariate ANOVA see Donald F. Morrison, Multivariate Statistical Methods (New York: McGraw-Hill, 1967), pp. 173-180.

The MANOVA computes linear combinations of the existing

four linear combinations (or roots) of factor B are significant at the .001 level of confidence, whereas only one of two combinations achieves this level for factor A. Where all linear combinations are significant one can interpret the univariate ANOVA and other tests with confidence. Where one of two combinations is significant more caution is required, but some conclusions may be at least tentatively drawn.

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dependent variables in such a way that the linear combinations are independent. It then proceeds to treat these linear combinations as new variables and since they are independent (orthogonal) they can be analyzed in separate univariate analyses. A good example of how this can be done is in the univariate normal case. Suppose $X_1$ is distributed normally with mean $\mu_1$ and variance $\sigma_1^2$ and $X_2$ is distributed similarly with mean $\mu_2$ and variance $\sigma_2^2$ and the correlation between $X_1$ and $X_2$ is $\frac{\sigma_{12}}{\sigma_1 \sigma_2}$ where $\sigma_{12}$ denotes the covariance. Assume $\sigma_{12} \neq 0$. Then $X_1$ & $X_2$ are not independent. However they cannot be treated in separate univariate ANOVA's without abusing the reported significance level. But if we let $Y_1 = X_1 = \frac{\sigma_{12}}{\sigma_{22}} X_2$ and $Y_2 = X_2$ then the correlation between $Y_1$ and $Y_2$ is zero since $E\ (X_1 - \frac{\sigma_{12}}{\sigma_{22}} X_2)\ X_2 = \sigma_{12} - \frac{\sigma_{12}\ \sigma_{22}}{\sigma_{22}} = 0$. Hence we could perform a univariate analysis on $Y_1$ & $Y_2$. Unfortunately, this analysis offers little insight into the effects on the original $X_1$ & $X_2$ hence we follow by a series of univariate analyses.

TABLE 2

MANOVA TESTS OF SIGNIFICANCE USING
WILKS LAMBDA CRITERION

| | Root | F | DFHYP | DFERR | P Less Than |
|---|---|---|---|---|---|
| Factor A (GNP) | 1 | 277.901 | 10.000 | 1462.000 | 0.001 |
| | 2 | 0.561 | 4.000 | 731.500 | 0.691 |
| Factor B (Central Gov.) | 1 | 553.215 | 20.000 | 2425.403 | 0.001 |
| | 2 | 303.542 | 12.000 | 2019.870 | 0.001 |
| | 3 | 18.771 | 6.000 | 1464.000 | 0.001 |
| | 4 | 11.776 | 2.000 | 732.500 | 0.001 |

Two tests based upon the MANOVA (Standardized Discriminant Function Coefficients, and Correlations Between Dependent Variables and Maximum Variance Linear Combinations) and the univariate ANOVA F tests give insight into which variable or measures were most affected by factor variation. The F tests of Table 3, interpreted in the light of MANOVA significance, display the broad B effect on all measures. The relative power position of the central government had a significant effect on all variables. The display for factor A indicates at least some significant A effects on all variables except the potential for peasant revolt. The rate of economic growth appears to have little relevance to this potential, a finding reinforced by the Scheffé test results discussed below.

TABLE 3

UNIVARIATE ANOVA F TESTS

| | Factor A (GNP) d.f. 2,735 P Less Than* | Factor B (Central Gov.) d.f. 4,735 P Less Than* |
|---|---|---|
| Bour Power | 0.01 | 0.01 |
| Rural Com. | 0.01 | 0.01 |
| Peasant Rev. | 0.71 | 0.01 |
| Coalition | 0.01 | 0.01 |
| Bour Rev. | 0.01 | 0.01 |

*Results were significant at the .001 level of confidence, but are listed at .01 level because of dependency.

The MANOVA related tests (Table 4) again indicate the dependency problem for factor A. Only one linear combination was significant. The correlations of variables to that combination, however, indicate that A effects were greater upon bourgeois power and the potential for an aristocratic-bourgeois coalition, the first positively and the second negatively correlated. This is a finding not inconsistent with the verbal theory, tending to confirm the importance of economic growth for development of an independent business class.

Tests for B effects indicate that four linear combinations were significant, demonstrating a broad effect on the dependent measures. The most significant linear combination for this factor is highly correlated with rural commercialization (positively) and aristocratic-bourgeois coalition potential (negatively). This

TABLE 4

MANOVA RELATED TESTS

| | Standardized Discriminant Function Coefficients* | | | | Correlations Between Dependent Variables and Maximum Variance Linear Combinations | | | |
|---|---|---|---|---|---|---|---|---|
| **Factor A** | | | | | | | | |
| | 1 | | | | 1 | | | |
| Bour Power | 1.067 | | | | 0.955 | | | |
| Rural Com. | -0.147 | | | | 0.084 | | | |
| Peasant Rev. | -0.092 | | | | 0.010 | | | |
| Coalition | -0.087 | | | | -0.790 | | | |
| Bour Rev. | -0.271 | | | | 0.274 | | | |
| **Factor B** | | | | | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Bour Power | -1.227 | 1.403 | -1.073 | -1.923 | 0.445 | 0.371 | -0.757 | 0.299 |
| Rural Com. | 0.197 | 0.797 | 0.050 | -1.386 | 0.650 | 0.532 | 0.341 | 0.184 |
| Peasant Rev. | 0.188 | -0.580 | -0.339 | -0.554 | 0.311 | -0.852 | -0.310 | -0.120 |
| Coalition | -2.085 | 1.255 | -1.292 | -2.238 | -0.724 | -0.312 | 0.472 | -0.383 |
| Bour Rev. | -0.559 | -0.196 | 0.057 | 1.139 | 0.271 | 0.248 | -0.085 | 0.797 |

*These are the linear combinations tested by the MANOVA by column in order of significance. Less than two columns indicates the failure of the second linear combination of the treatments to be significant. The values listed are the coefficients of the linear combination being tested. Hence if $Y_1$ and $Y_2$ are tested in the MANOVA (using Factor B as an example), then $Y_1$ = -1.227 x (Bour Power) x $\sigma$ Bour Power + 0.197 x (Rural Com.) x $\sigma$ Rural Com. . . . -0.559 x (Bour Rev.) x $\sigma$ Bour Rev. $Y_2$ = 1.403 x (Bour Power x $\sigma$ Bour Power . . . -0.196 x (Bour Rev.) x $\sigma$ Bour Rev.

The correlations are those between the dependent measures and $Y_1$ or $Y_2$, i.e., $Y_1$, $Y_2$ are treated as new variables which are independent.

pattern is maintained in the second combination where the expected negative correlation with peasant revolt potential appears. These correlations should not be burdened, however, with too much dependence for establishing firm relationships between factor and measure. They are useful primarily for illustrating patterns which other statistical displays and tests can confirm or deny with more confidence and reliability. An examination of the marginal means along with the Scheffé test of individual mean differences, discussed below, will bear the bulk of this burden, although it should be noted that the Scheffé test examines univariate linear contrasts for significance and therefore contains the same weaknesses as the univariate F tests.

Interaction. Table 5 indicates that only two of five linear combinations were significantly affected by AB interaction. This demonstrates that although interaction effects were present they were very weak, even though the univariate F tests show interaction effects for four of five variables (Table 6).[3] The weakness of AB effects was demonstrated further when graphic displays (see Appendix E) of AB interactions indicated that for three measures there was a very uniform direction of impact with only the slightest indication of interaction effects. For two variables closely associated with democratic development, bourgeois power and bourgeois revolution potential, the graphic display indicated a slight interaction effect. The most apparent theoretical explanation for this is that at the

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[3]The absence of a strong AB interaction effect increases the interpretability of the main effects. A signfficant interaction tends to restrict the main effect.

TABLE 5

MANOVA TEST OF SIGNIFICANCE USING
WILKS LAMBDA CRITERION
FOR AB INTERACTION

| Root | F | DFHYP | DFERR | P Less Than |
|---|---|---|---|---|
| 1 | 25.773 | 40.000 | 3189.150 | 0.001 |
| 2 | 8.721 | 28.000 | 3080.969 | 0.001 |
| 3 | 1.237 | 18.000 | 2932.000 | 0.221 |
| 4 | 0.619 | 10.000 | 2724.546 | 0.799 |
| 5 | 0.181 | 4.000 | 2433.403 | 0.948 |

TABLE 6

UNIVARIATE ANOVA F TESTS OF
AB INTERACTION EFFECTS

| Variable | P Less Than* | d.f. 8,735 |
|---|---|---|
| Bour Power | 0.01 | |
| Rural Com. | 0.01 | |
| Peasant Rev. | 0.139 | |
| Coalition | 0.01 | |
| Bour Rev. | 0.01 | |

*The 0.01 results were significant at the 0.001 level of confidence, but are listed at 0.01 level because of dependency.

highest level of economic growth there is a favorable climate for the development of conditions conducive to democratic politics above what would normally be expected given the more adverse balance of power ($B_3$ is optimal) between the central government and the landed aristocracy. This is a finding not clarified by the original verbal theory. The interaction also appears to indicate that at an optimal B level an intermediate economic growth rate can produce results favorable for democratic development usually attained only at higher rates of growth.

Mean and Mean Differences. Because the MANOVA and ANOVA tests indicated significant A and B effects there was justification for using the Scheffé post-hoc test of individual mean differences.[4] This test together with an evaluation of marginal means gives some insight into model results useful for theory elaboration.

Examination of Tables 7 and 8 reveals that there were significant differences between the levels (or treatments) of factor A in their effect upon three of five measures, bourgeois power, aristocratic-bourgeois coalition potential, and bourgeois revolution potential. This pattern reflects the importance, in a very specific way, of the rate of economic growth for the development of an independent business class which is not repressed nor induced to form a restrictive coalition with the landed aristocracy. The result was a higher potential for a successful bourgeois revolution and the

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[4]For a brief discussion of this post-hoc test see George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, Inc., 1966, 2nd ed.), pp. 296, 297; and William L. Hays, Statistics (New York: Holt, Rinehart and Winston, 1963), pp. 483-85.

TABLE 7

MARGINAL MEANS

| Factor Level | Bour Power | Rural Com. | Peasant Rev. | Coalition | Bour Rev. |
|---|---|---|---|---|---|
| $A_1$ | 61.680 | 20.640 | 37.544 | -46.936 | 3.688 |
| $A_2$ | -16.786 | 18.756 | 37.472 | 35.884 | 2.120 |
| $A_3$ | -57.904 | 17.448 | 37.136 | 80.368 | 1.376 |
| $B_1$ | -51.200 | 2.207 | 20.093 | 122.067 | 0.640 |
| $B_2$ | -10.120 | 11.507 | 23.140 | 59.700 | 2.050 |
| $B_3$ | 72.986 | 53.860 | 22.960 | -107.480 | 5.880 |
| $B_4$ | 5.360 | 21.887 | 52.180 | - 7.920 | 2.387 |
| $B_5$ | -38.706 | 5.280 | 68.547 | 49.160 | 1.027 |

A sixth variable was used to measure potential for reactionary revolution. Analysis revealed, however, that this measure was functionally related to three other measures such that Bour Power + Rural Com. + Coalition = Reac. Rev., a plausible, but unexpected result. The Reac. Rev. measure could not, therefore, be incorporated in the statistical analysis, but the sums of the marginal means are listed below as a convenient reference.

| | Reac. Rev. |
|---|---|
| $A_1$ | 35.384 |
| $A_2$ | 37.854 |
| $A_3$ | 39.912 |

| | Reac. Rev. |
|---|---|
| $B_1$ | 73.074 |
| $B_2$ | 61.087 |
| $B_3$ | 19.366 |
| $B_4$ | 19.327 |
| $B_5$ | 15.734 |

TABLE 8

SCHEFFÉ TEST ON A*

$$F = \frac{\bar{X} - \bar{X}}{S_w^2(n_1 + n_2) / n_1 n_2}$$

$$F' = (J-1)\, F_{(.01)}$$

$$F' = 2(4.62) = 9.240$$

F scores (significant scores underlined)

| | Bour Power | Rural Com. | Peasant Rev. | Coalition | Bour Rev. |
|---|---|---|---|---|---|
| $A_1$&$A_2$ | 413.187 | 2.682 | 0.003 | 278.453 | 36.147 |
| $A_1$&$A_3$ | 959.689 | 7.700 | 0.124 | 657.910 | 78.602 |
| $A_2$&$A_3$ | 113.461 | 1.292 | 0.084 | 80.332 | 8.132 |

SCHEFFÉ TEST ON B*

$$F' = 4(3.34) = 13.360$$

F scores (significant scores underlined)

| | Bour Power | Rural Com. | Peasant Rev. | Coalition | Bour Rev. |
|---|---|---|---|---|---|
| $B_1$&$B_2$ | 113.251 | 65.374 | 6.964 | 157.903 | 28.823 |
| $B_1$&$B_3$ | 1034.974 | 2016.653 | 6.165 | 2139.074 | 403.779 |
| $B_1$&$B_4$ | 214.685 | 292.745 | 772.374 | 685.934 | 44.882 |
| $B_1$&$B_5$ | 10.475 | 7.137 | 1761.282 | 215.784 | 2.191 |
| $B_2$&$B_3$ | 463.499 | 1355.839 | 0.024 | 1134.622 | 216.838 |
| $B_2$&$B_4$ | 16.081 | 81.439 | 632.648 | 185.623 | 1.764 |
| $B_2$&$B_5$ | 54.839 | 29.308 | 1546.732 | 4.509 | 15.088 |
| $B_3$&$B_4$ | 306.910 | 772.692 | 640.516 | 402.394 | 179.426 |
| $B_3$&$B_5$ | 837.198 | 1783.836 | 1559.020 | 996.065 | 346.338 |
| $B_4$&$B_5$ | 130.314 | 208.459 | 200.958 | 132.266 | 27.191 |

*This post-hoc comparison indicates a significant difference if the F score equals or exceeds the F' score. The formulas, descriptions, and F table information were drawn from Statistical Analysis in Psychology and Education by George A. Ferguson (New York: McGraw-Hill, Inc., 1966, 2nd ed.), esp. pp. 296, 297, 411.

establishment of conditions for a democratic polity. This last potential, however, appears to be limited to the highest level of development, since only the $A_1$ treatment produced a positive level of bourgeois power and a negative coalition potential. The lower levels of economic growth were not sufficient and were not significantly different as the $A_2$ & $A_3$ contrast for bourgeois revolution indicates.

The theory posits factor B as having the major effect upon rural commercialization and potential for peasant revolt and this is confirmed by both the post-hoc test and the marginal mean pattern. It was not anticipated, however, that there would be no significant contrasts for factor A in reference to these two measures.[5] This is an important finding, indicating that the relative strength of the central government is the dominating or controling factor for these two variables.

Superficial examination of analysis data in Tables 7 and 8 for factor B does not reveal a meaningful pattern. A pattern does emerge, however, if two special features of this factor are recalled. First, that central government power is negatively correlated with the power of the landed aristocracy. Second, when the two reach a balance (at the $B_3$ level) there is theoretically the optimal

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[5]It appears unlikely that the rural commercialization measure could be significantly affected at the 0.01 level, as indicated by the univariate F test, and not have at least one significant difference displayed by the Scheffé post-hoc comparison test. But the Scheffé test was rechecked and confirmed for this measure. It could be noted, however, that the $A_1$ & $A_3$ comparison comes very close to achieving a significant score, especially when compared to the scores for peasant revolution which obtained a non-significant univariate F test result of 0.71.

propensity for bourgeois revolution. Consequently (as is most clearly displayed in Table 7) the $B_3$ level is the peak of a somewhat normal curve for the variables most closely associated with bourgeois revolution (Bour. Power and Rural Com. positively and Coalition negatively) as well as for the bourgeois revolution measure itself. This corresponds with theory propositions. It also helps to explain the absence of significant contrasts at several points in the table for these measures. The non-significant contrasts occur in each case where comparisons were made between factor levels occupying similar but opposite "tail" positions of the normal curve pattern centered on $B_3$. In three cases the comparison was between $B_1$ and $B_5$, and one case each comparing $B_2$ & $B_5$ and $B_2$ & $B_4$. This pattern is compatible with theory propositions and demonstrates the importance of the $B_3$ level for bourgeois revolution potential and the emergence of a democratic polity.

Despite the approximation of a normal curve the other B levels are not equally important for the variables contributing toward democratic development, a finding not clarified by the theory. Table 8 data indicate that comparing $B_2$ & $B_4$ and $B_1$ & $B_5$, the lower levels of government power ($B_4$ and $B_5$) offer greater potential for such development than higher levels ($B_1$ and $B_2$). This is true for all four relevant variables, although it must be noted that the $B_2$ & $B_4$ contrast is not significant for bourgeois revolution potential.

The contrasts are significant for the other three measures, however, tending to confirm this general proposition.[6]

The importance of the $B_3$ level for democratic development is also illustrated (Table 8) by the effects upon peasant and reactionary revolution potential, the former increasing sharply when central government power is low and the latter increasing in the converse situation. The former trend is also confirmed by the F score pattern which is shaped by this sharp difference in effect.

A comparison of the two effect patterns also gives tentative support to the previous general conclusion concerning the relatively greater importance of lower levels of factor B for democratic development. The potential for reactionary revolution increases more sharply than does the potential for peasant revolution as B moves from the $B_3$ level. Assuming no necessary mutual exclusiveness of developing potentials, the latter development appears to be more compatible with democratic development.

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[6]Perhaps a more powerful post-hoc test, such as the Duncan Multiple Range Test could have been used to discriminate factor effects. But the Scheffé test was chosen because it has the same power as the univariate F test, and was considered sufficient for present purposes.

# CHAPTER VIII

## ANALYSIS OF LIPSET MODEL DATA

The data generated by the Lipset model were the result of 50 simulation runs of 27 patterns combining different levels of three factors (or independent variables) as measured by six dependent variables (or measures). Factor A (rate of per capita GNP growth), Factor B (economic values pattern), and Factor C (political values pattern) were each tested on three levels. The analysis was designed to indicate the effect, if any, of the three factors upon the dependent measures using, among other things, tests of significance that would give insight into several possible interaction effects as well as main effects.

Main effects. As with the Moore model, the dependent measures were not independent as indicated by the correlations of Table 9. Of fifteen possible relationships, twelve indicate negative or positive correlations above the 0.5 level. The pattern of correlations displayed was expected for the most part. The high correlations with legitimacy (negative and positive) in column one, the negative correlations with identification of source and agents of authority, and the positive correlations between acceptance of democratic principles, number of groups within, and group tolerance

correspond in general to the broad outline of theory expectations, giving an additional basis for confidence in the validity of the model as an accurate representation of the theory. A higher positive correlation was expected, however, between democratic socialization of conflict and the last named three variables above. This could be an indication of a weakness in the model, or it could point toward the difficulty of achieving this democratic goal. The high correlation with legitimacy and identification (positive and negative respectively) is an indication that the latter conclusion is more accurate, since these correlations do agree with the pattern of expected results. If all five correlations with socialization would have been unexpected the former conclusion would have been the one more obviously correct, and additional sensitivity testing would have been in order.

TABLE 9

CORRELATIONS BETWEEN DEPENDENT VARIABLES*

| | Legit. | Ident. | Accept. | Social | No. Groups | Tolerance |
|---|---|---|---|---|---|---|
| Legit. | -- | | | | | |
| Ident. | -0.832 | -- | | | | |
| Accept. | 0.675 | -0.702 | -- | | | |
| Social | 0.608 | -0.805 | 0.322 | -- | | |
| No. Gps. | 0.544 | -0.560 | 0.549 | 0.265 | -- | |
| Tolerance | 0.835 | -0.702 | 0.738 | 0.327 | 0.608 | -- |

*Values exceeding .273 are significant at the .05 level of confidence.

In any case, high correlations between dependent measures do exist. To attach any importance to a 3x3x3 univariate analysis of variance (ANOVA) significance test of treatment effects, therefore, a multivariate analysis of variance (MANOVA) would also have to indicate significance for the effects tested.

The MANOVA analysis (Table 10) indicates that factors A and B had a stronger effect on the dependent measures than did factor C.[1] Two of two linear combinations (or roots) are significant at the .001 level of confidence for factors A and B, whereas only one of two combinations achieves this level for factor C. These results demonstrate the need for caution in interpreting C effects in univariate ANOVA.

The univariate ANOVA F tests (Table 11) indicate significance of effects for all factors on all measures. Rate of per capita GNP growth, economic values, and political values appear to have had an equally broad impact upon these variables. This means that both political stability and democratic potential were affected independently by the levels of these independent variables indicating that, apart from the modifications produced by interaction effects noted below, higher levels of these factors will each contribute

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[1]The MANOVA and ANOVA data are derived from a computer programmed analysis designed by the Biometric Laboratory of the University of Miami (Florida) and applied by the Behavioral Sciences Laboratory of The Ohio State University.

For reference on univariate ANOVA see William L. Hays, Statistics (New York: Holt, Rinehart and Winston, 1963); and George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, Inc., 1966). For reference on multivariate ANOVA see Donald F. Morrison, Multivariate Statistical Methods (New York: McGraw-Hill, 1967), pp. 173-180.

TABLE 10

MANOVA TESTS OF SIGNIFICANCE USING
WILKS LAMBDA CRITERION

| Factor | Root | F | DFHYP | DFERR | P Less Than |
|---|---|---|---|---|---|
| A (GNP) | 1 | 290.660 | 12.000 | 2636.000 | 0.001 |
| | 2 | 28.512 | 5.000 | 1318.500 | 0.001 |
| B (Econ. Values) | 1 | 973.475 | 12.000 | 2636.000 | 0.001 |
| | 2 | 174.133 | 5.000 | 1318.500 | 0.001 |
| C (Pol. Values) | 1 | 106.658 | 12.000 | 2636.000 | 0.001 |
| | 2 | 0.751 | 5.000 | 1318.000 | 0.586 |

TABLE 11

UNIVARIATE ANOVA F TESTS

| | d.f. = 2,1323 | | |
|---|---|---|---|
| Variable | Factor A (GNP) P Less Than* | Factor B (Econ. Values) P Less Than* | Factor C (Pol.Values) P Less Than* |
| Legit. | 0.01 | 0.01 | 0.01 |
| Ident. | 0.01 | 0.01 | 0.01 |
| Accept. | 0.01 | 0.01 | 0.01 |
| Social | 0.01 | 0.01 | 0.01 |
| No. Groups | 0.01 | 0.01 | 0.01 |
| Tolerance | 0.01 | 0.01 | 0.01 |

*Results were significant at the .001 level of confidence, but are listed at .01 because of dependency.

to greater stability and democracy. The significance of the C effects, however, must be qualified because of the failure of the second best linear combination to be significant. But post-hoc analysis based on these indications of significance appear to be justified, thereby permitting a greater discrimination to be made relating factor effect to individual measure.

Before proceeding to post-hoc analysis, the MANOVA-related tests can give some preliminary insights into univariate effects. Table 4 again indicates the dependency problem for factor C. Only one linear combination was significant. The correlations of dependent variables with the maximum variance linear combination that was tested, however, indicate that the single linear combination that was significant depended more highly upon tolerance and democratic socialization of conflict (social) than upon the other measures. This relationship of factor C to socialization was expected in terms of the theory, but conclusions about its importance relative to factors A and B must be qualified in the light of the post-hoc test examined below. The relationship of tolerance to factor C displayed in Table 12 was not expected, although it is not inconsistent with the theory.

The MANOVA related tests for A and B effects indicates that the greatest impact for both was upon legitimacy, and secondarily upon the number of groups operating within the system. The legitimacy measure displays a .670 correlation with the most significant linear combination for factor A, and a .717 correlation for factor B.

TABLE 12

MANOVA RELATED TESTS

| | | Standardized Discriminant Function Coefficients* | | Correlations Between Dependent Variables & Maximum Variance Linear Combinations | |
|---|---|---|---|---|---|
| | Variable | 1 | 2 | 1 | 2 |
| A (GNP) | Legit. | 2.109 | 0.879 | 0.670 | 0.064 |
| | Ident. | 0.904 | 0.179 | -0.264 | 0.148 |
| | Accept. | -0.026 | 0.121 | 0.242 | -0.127 |
| | Social | -0.183 | -0.122 | 0.170 | -0.017 |
| | No. Groups | 0.469 | -1.176 | 0.455 | -0.788 |
| | Tolerance | -0.974 | -0.041 | 0.359 | -0.098 |
| B (Econ. Values) | Legit. | 2.130 | -0.902 | 0.717 | 0.110 |
| | Ident. | 0.598 | -0.887 | -0.328 | -0.365 |
| | Accept. | -0.063 | -0.307 | 0.281 | 0.251 |
| | Social | -0.332 | -0.224 | 0.220 | 0.138 |
| | No. Groups | 0.383 | 11023 | 0.444 | 0.845 |
| | Tolerance | -1.053 | 0.073 | 0.385 | 0.265 |
| C (Pol. Values) | Legit. | -0.865 | | 0.525 | |
| | Ident. | 0.635 | | -0.524 | |
| | Accept. | -0.323 | | 0.279 | |
| | Social | 1.121 | | 0.538 | |
| | No. Groups | -0.185 | | 0.240 | |
| | Tolerance | 1.861 | | 0.708 | |

*These are the linear combinations tested by the MANOVA by column in order of significance. Less than two columns indicates the failure of the second linear combination of the treatments to be significant. (See Table 4 of Chapter VII for further discussion of these MANOVA tests.)

The second highest correlation in both cases is the number of groups within, correlated .455 with factor A combination and .444 with factor B. These correlation patterns were predicted in terms of the theory. The additional expectation that the greatest impact would be upon legitimacy is also tentatively confirmed. The more tentative expectation that B effects would be more important for the number of groups within, however, is not confirmed by this test, and this finding is reinforced by the post-hoc test discussed below. The examination of marginal means and mean differences will give greater insight into specific relationships and provide firmer confirmation of findings.

Interactions. The data displayed in Tables 13 and 14 indicate that several interaction effects were significant. This is especially true of the AB and BC interactions, both of which obtained significance for three of four MANOVA linear combinations as compared to two of four for AC interaction.

Graphing of the AB interactions (see Appendix F) indicated that effects were uniform over the six dependent measures. For all six measures $A_2$ exceeded $A_1$ at intersection $B_2$, and $A_3$ neared the $A_1$ level. This is a strong indication of the disruptive effect of rapid economic growth if economic values are too traditional and ascriptive. More moderate rates of economic growth tend to produce near equal or better results for both stability and democracy

TABLE 13

MANOVA TESTS OF SIGNIFICANCE FOR INTERACTION
USING WILKS LAMBDA CRITERION

| | Root | F | DFHYP | DFERR | P Less Than |
|---|---|---|---|---|---|
| | 1 | 174.110 | 24.000 | 4599.163 | 0.001 |
| AB | 2 | 8.634 | 15.000 | 3729.852 | 0.001 |
| | 3 | 3.118 | 8.000 | 2638.000 | 0.002 |
| | 4 | 0.461 | 3.000 | 1319.500 | 0.709 |
| | 1 | 10.190 | 24.000 | 4599.163 | 0.001 |
| AC | 2 | 3.073 | 15.000 | 3729.852 | 0.001 |
| | 3 | 0.939 | 8.000 | 2638.000 | 0.483 |
| | 4 | 0.805 | 3.000 | 1319.500 | 0.491 |
| | 1 | 39.715 | 24.000 | 4599.163 | 0.001 |
| BC | 2 | 6.607 | 15.000 | 3729.852 | 0.001 |
| | 3 | 3.238 | 8.000 | 2638.000 | 0.001 |
| | 4 | 1.193 | 3.000 | 1319.500 | 0.311 |
| | 1 | 6.022 | 48.000 | 6489.175 | 0.001 |
| | 2 | 2.762 | 35.000 | 6188.920 | 0.001 |
| ABC | 3 | 2.216 | 24.000 | 5796.504 | 0.001 |
| | 4 | 0.985 | 15.000 | 5281.500 | 0.468 |
| | 5 | 0.845 | 8.000 | 4607.163 | 0.563 |
| | 6 | 0.719 | 3.000 | 3735.852 | 0.540 |

if there is a mixed commitment to modernizing economic values. This both confirms expectations and gives greater specificity to the theory.

TABLE 14

UNIVARIATE ANOVA F TESTS FOR INTERACTION

| | P Less Than* | | | |
|---|---|---|---|---|
| | AB d.f. 4,1323 | AC d.f. 4,1323 | BC d.f. 4,1323 | ABC d.f. 8,1323 |
| Legit. | 0.01 | 0.01 | 0.01 | 0.01 |
| Ident. | 0.01 | 0.288 | 0.01 | 0.133 |
| Accept. | 0.01 | 0.024 | 0.01 | 0.253 |
| Social | 0.01 | 0.833 | 0.01 | 0.541 |
| No. Groups | 0.01 | 0.01 | 0.01 | 0.01 |
| Tolerance | 0.01 | 0.01 | 0.01 | 0.01 |

*The 0.01 results were significant at the 0.001 level of confidence, but are listed at 0.01 level because of dependency.

The table and graph data for AC interaction effects indicate that they are very moderate. Effects are significant for those measures which are primarily related to political stability. Graphic analysis reveals that the greatest interaction impact is upon the number of groups operating within the political institutional framework. For all levels of factor C (commitment to modern political values) $A_2$ exceeds $A_1$. This pattern was unexpected and the reason for it is not

clear. There is no apparent reason, in terms of the theory or otherwise, why moderate economic growth induces more groups to operate within the political institutions than higher growth rates, given any of the three levels of commitment to modern political values. It indicates that rapid economic growth has a destabilizing effect regardless of the political value pattern. It should be remembered, however, that the AC interaction graph has averaged B effects, and given the interaction between A and B it might explain why on the average, in relation to factor C, moderate economic growth is a more stabilizing factor. This interpretation conforms to theory propositions and indicates the powerful effect of the AB interaction.

Significant BC interactions were obtained on all six measures. The pattern which emerges is again related to the question of congruence between factors, this time between economic values and political values. The propensities for stability and democracy are enhanced if commitment to modern values is approximately at the same level in both the economic and political sub-systems. Again, this is an expected pattern, and the demonstration that effects were significant for all measures produced additional insight into theory implications.

Significant ABC interactions were obtained on three of six linear combinations (Table 13) and on three of six measures (Table 14). The dependency of measures again requires that conclusions be tentative. Graphic analysis of ABC interactions revealed a pattern of effects which is best exemplified by the tolerance measure (see Appendix F). For this measure there appear to be interaction effects resulting

from a congruence of level for all three factors. In general higher levels of tolerance were obtained when economic growth and economic and political value commitment were at similar levels on the high, medium, and low scale. This pattern was obtained to some degree--for the other five measures (with Ident. displaying the expected inverse relationship) and it supplements the findings noted above concerning the importance of factor level congruence for two factor interaction effects.

Marginal Means and Mean Differences. The indications of significant A, B, and C effects noted previously warrants the use of the Scheffé post-hoc test for individual mean differences.[2] An examination of both the marginal means (Table 15) and the post-hoc tests (Table 16) makes apparent the generally broader impact of factor B on the dependent measures. The highest and lowest mean values on all measures (except Ident.) and the greatest number of significant mean differences (16 of 18) are associated with factor B. Using the same criteria, factor A appears to be next in general impact and factor C the weakest. This conforms to the findings on C effects noted above. There were no theoretical propositions or expectations regarding this hierarchy of impact. This finding represents, therefore, an elaboration of theory implications. Given the previously noted relationships between economic values (factor B)

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[2]For a brief discussion of this post-hoc test see George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, Inc., 1966, 2nd ed.), pp. 296, 297; and William L. Hays, Statistics (New York: Holt, Rinehart and Winston, 1963), pp. 483-85.

TABLE 15

MARGINAL MEANS* - LIPSET MODEL

| Factor Level | Legit. | Ident. | Accept. | Social | No. Groups | Tolerance |
|---|---|---|---|---|---|---|
| $A_1$ | 20.084 | 2.075 | 40.888 | -1.977 | 2.624 | 25.382 |
| $A_2$ | 21.275 | 1.302 | 42.737 | -1.875 | 3.222 | 28.117 |
| $A_3$ | -91.866 | 7.313 | 27.591 | -4.040 | 1.288 | - 6.775 |
| $B_1$ | 116.413 | 3.353 | 53.422 | 0.186 | 3.706 | 52.255 |
| $B_2$ | 4.924 | 0.473 | 43.302 | -1.800 | 3.428 | 27.106 |
| $B_3$ | -171.080 | 13.571 | 14.493 | -6.280 | 0.000 | -32.635 |
| $C_1$ | 9.271 | 0.286 | 41.862 | -0.662 | 2.628 | 35.697 |
| $C_2$ | -14.062 | 3.133 | 37.728 | -2.391 | 2.417 | 16.664 |
| $C_3$ | -45.715 | 7.271 | 31.626 | -4.840 | 2.088 | - 5.635 |

*Higher positive values are favorable for democracy or stability except for Ident. For the latter, high values are detrimental for democracy.

TABLE 16

Scheffe Test on A*

$$F = \frac{(\bar{X}_1 - \bar{X}_2)^2}{S_w^2 (n_1+n_2)/n_1n_2}$$

$F' = (J - 1) F_{(.01)}$

$F' = 2(4.60) = 9.200$

F scores(significant scores underlined)

| | Legit. | Ident. | Accept. | Social | No.Groups | Tolerance |
|---|---|---|---|---|---|---|
| $A_1$ & $A_2$ | 0.021 | 0.557 | 0.421 | 0.027 | 11.900 | 0.365 |
| $A_1$ & $A_3$ | 189.357 | 25.641 | 21.806 | 11.721 | 59.466 | 50.499 |
| $A_2$ & $A_3$ | 193.407 | 33.768 | 28.293 | 12.911 | 124.666 | 59.454 |

Scheffe Test on B*

$F' = 2 (4.60) = 9.200$

F scores(significant scores underlined)

| | Legit. | Ident. | Accept. | Social | No.Groups | Tolerance |
|---|---|---|---|---|---|---|
| $B_1$ & $B_2$ | 187.801 | 7.751 | 12.631 | 10.865 | 2.566 | 30.886 |
| $B_1$ & $B_3$ | 1248.787 | 97.576 | 186.910 | 115.176 | 457.800 | 351.922 |
| $B_2$ & $B_3$ | 468.035 | 160.333 | 102.362 | 55.289 | 391.700 | 174.292 |

Scheffe Test on C*

$F' = 2 (4.60) = 9.200$

F scores (significant scores underlined)

| | Legit. | Ident. | Accept. | Social | No.Groups | Tolerance |
|---|---|---|---|---|---|---|
| $C_1$ & $C_2$ | 8.225 | 7.574 | 2.107 | 8.234 | 1.466 | 17.690 |
| C1 & $C_3$ | 45.681 | 45.598 | 12.922 | 48.085 | 9.700 | 83.426 |
| $C_2$ & $C_3$ | 15.137 | 16.002 | 4.592 | 16.520 | 3.600 | 24.283 |

*This post-hoc comparison indicates a significant difference if the F score equals or exceeds the F' score. The formulas, descriptions, and F table information were drawn from Statistical Analysis in Psychology and Education by George A. Ferguson (New York: McGraw-Hill, Inc., 1966, second ed.), esp. pp. 296, 297, 411.

and economic growth (factor A) in regard to their impact upon democratic development, it might be stated as a general proposition that of the factors considered, the degree of acceptance of modern economic values is the dominant factor in determining whether or not moderate to rapid economic growth will lead to a payoff of stable democratic government, given at least a moderate acceptance of modern political values. In other words, if one of the three factors is low compared to the other two, it is best for democratic stability if the low factor is not factor B.

Examining factors individually we note that there is but one significant difference between $A_1$ & $A_2$ among the six measures. This indicates the very similar impact on outcome of high and moderate levels of economic growth.[3] This might best be explained by recalling the AB interaction that was prominent in the preceding section. Since the marginal means average the other two factors, the lack of significance between $A_1$ & $A_2$ indicates that on the average for all levels of B and C a moderate level of economic growth produces outcomes similar to high levels of growth because of the detrimental effects of discrepancies between growth rate and value patterns, especially economic values. This again clarifies for the theory the importance of moderate rates of economic growth for the "average"

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[3]It is interesting to note in Table 15 that $A_2$, the moderate rate of growth, produced values for all six measures which indicated a higher propensity for political stability and democracy than did $A_1$, the highest rate of growth, although the Scheffé test indicates that the difference is not signfficant.

case of political development, which might be presumed not to have a high acceptance of modern economic values.

In the results obtained for factor B, except for one measure of democracy (Ident.) and one measure of stability (No. Groups), there was a significantly greater level of development achieved by level $B_1$ than at level $B_2$. This again indicates the theoretical importance of economic values for the development of democratic stability. The two cases of non-significance were not expected, but their occurrence indicates that even though a factor had a strong impact upon the dependent measures, the model was discriminating in registering effects. This gives some additional confidence that the model is useful for specifying theory implications.

The implication of the absence of significance between $B_1$ & $B_2$ for the number of groups operating within the established institutions appears to be that (especially in the light of Table 15 data) even at a moderate level of acceptance of modern economic values there is, on the average, a basis for keeping groups satisfied with the system, a satisfaction which is not significantly improved by a higher level of acceptance. Consequently there is little to be gained for stability in terms of the theory by encouraging a higher level of acceptance of modern economic values. A similar pattern obtains for $B_1$ and $B_2$ in relation to the other exception, the identity of source and agents of authority. Little would be gained in the level of this measure of democracy by a shift to the top level of factor B.

Factor C data indicate that political value patterns are not more closely associated with measures of democracy than with those of stability, which is contrary to expectations, especially in regard to democratic socialization of conflict. The expectation was that factor C would be especially important in shaping the outcome of this measure. It appears, however, that it is no more important than factor A and less important than factor B for this variable.

The greater impact of factor C than factor A upon tolerance was also unexpected. This would suggest in terms of the theory that high tolerance of the system and of other groups and their demands requires much more than material payoffs from economic growth. It requires adequate acceptance levels of the more modern values such as achievement and universalism in both the economy and political sub-systems which would encourage the recognition of the legitimacy of the demands of other groups and of the need for compromise in settling differences. This conclusion must be tentative, however, because the factor effects for the two other measures of stability, legitimacy and number of groups within the institutions, do not uniformly support this general tendency. This is especially true of the number of groups, where material payoffs appear to have a slightly greater importance than value patterns.

In regard to the three measures most directly associated with democratic development (Identification, Acceptance, Socialization) Tables 15 and 16 indicate that factor C has an effect similar to that of factors A and B on the first and last measures and the weakest effect of the three factors on Acceptance. The theoretical

expectations were that factor C would have the greatest impact of the three factors on socialization of conflict, and that factors A and B would be more important for shaping the other two measures. These expectations appear to be confirmed only in the case of acceptance of democratic principles where most apparently factor C had the least effect as compared to the other factors. In the case of identification of source and agents of authority the results appear to be too ambiguous to confirm or disconfirm the hypothesized outcome. And in the case of socialization of conflict the results appear to disconfirm expectations, at least in part. Factor B appears to have had a greater impact on this measure, but it is clear that A effects were not greater than C effects. Despite the tentativeness of these conclusions it is important in terms of the theory to have a clear indication that factor C is not the controling factor for this measure as originally anticipated.

# CHAPTER IX

## SUMMARY AND IMPLICATIONS

The preceding analyses have accomplished three things of immediate relevance. First, they have tended to confirm the validity of the models by confirming the broad scale expectations of independent variable (factor) effects upon the dependent variables (measures). Second, they have specified in greater detail than the verbal theory several ambiguous relationships between factor and measure (and between measures) and third, they have discovered some non-obvious or unexpected relationships which appear to be important elaborations of the modeled theories. These findings will be summarized and some implications will be drawn from them concerning the two theories as well as for research methodology and future research possibilities.

Moore Model Summary. The following propositions of the Moore theory were supported by the simulation data analysis:

1. In general, the balance of political power between the central government and the landed aristocracy (the degree to which one can dominate the other) is more important for democratic development than economic growth rates.

2. A balance of political power produces low levels of aristocratic-bourgeois coalition potential and peasant revolt

potential, and high levels of bourgeois power, rural commercialization by independent producers, and bourgeois revolution potential, all of which increase the propensity for democracy.

3. Increases in economic development rates produce increases in the power of the bourgeoisie and the potential for bourgeois revolution, and produce decreases in the potential for the formation of an aristocratic-bourgeois coalition.

The following propositions were clarified or specified in greater detail by the simulation data analysis:

1. There is no correlation between bourgeois revolution potential and peasant revolution potential.

2. The economic development rate (at any level) has no significant effect upon peasant revolt potential.

3. The economic development rate (in general over all levels) has a greater effect upon bourgeois power development and upon the potential for an aristocratic-bourgeois coalition than upon the other three measures.

4. The balance of political power has a greater significant effect upon rural commercialization, potential for peasant revolt, and the aristocratic-bourgeois coalition potential than upon independent bourgeois power development or bourgeois revolution potential.

5. On the average over all rates of economic development, levels of central government power which are below the optimum balance with the landed aristocracy are more favorable for the development of independent bourgeois power, rural commercialization by

independent producers, and low aristocratic-bourgeois coalition potential than levels of central government power above the optimum balance.

The following propositions were non-obvious and discovered by the simulation data analysis:

1. In general, the economic development rate has no significant effect upon rural commercialization by independent producers.

2. The highest economic development rate produces conditions favorable for development of independent bourgeois power and bourgeois revolution potential even if the political balance of power is not optimal (but is not at either extreme).

3. A moderate rate of economic development produces conditions favorable for development of independent bourgeois power and bourgeois revolution potential if the political balance of power is optimal.

4. On the average over all levels of political power balance, the highest rate of economic development produces a positive level of independent bourgeois power and a negative potential for aristocratic-bourgeois coalition.

5. On the average, there is no significant difference between moderate and low rates of economic growth for bourgeois revolution potential.

Lipset Model Summary. The following propositions of the Lipset theory were supported by the simulation data analysis:

1. In general, economic value patterns and the economic development rate are more important than political value patterns for stable democracy.

2. If there is a similarity of levels for all three factors, higher levels for the factors produce higher values for all six measures of democratic stability.

3. Increases in the level of modern economic value commitment and the economic development rate produce increases in legitimacy and the number of groups operating within the system. These factors are the dominant influence on the outcome of these two measures.

4. There is a significant high positive correlation between legitimacy and democratic socialization of conflict.

5. There is a significant high negative correlation between identification of source and agents of authority and democratic socialization of conflict.

6. Similarity of level between economic development rate and economic value pattern and between economic value pattern and political value pattern are more important for measures of democratic stability than similarity of level between economic development rate and political value pattern.

7. The economic development rate and economic value pattern are more important for acceptance of democratic principles than the political value pattern.

The following propositions were clarified or specified in greater detail by the simulation data analysis:

1. There is a low positive correlation between democratic socialization of conflict and acceptance of democratic principles, number of groups operating within the system, and average group tolerance levels.

2. Higher levels of commitment to modern political values produce greater democratic socialization of conflict, but economic values have a greater impact on variation of this measure.

3. The rate of economic development has an impact similar to that of political values upon democratic socialization of conflict.

4. The three factors have a very similar impact on identification of source and agents of authority.

5. On the average over levels of the other two factors, there is no significant difference for measures of stability (except number of groups operating within the system) and measures of democracy between high and moderate rates of economic development.

6. Of the three factors, the economic value pattern is the most important for shaping outcome of all measures, followed by economic development rate and the political value pattern, in that order.

7. On the average over levels of the other two factors, there is no significant difference for the number of groups operating within the system and for the degree of identity of source and agents of authority between moderate and high commitment to modern economic values.

The following propositions were non-obvious and discovered by the simulation data analysis:

1. In general, the effect of variation in modern political value commitment was no greater for measures of democracy than for measures of stability.

2. The political value pattern is not the dominant factor in shaping the degree of democratic socialization of conflict.

3. The economic value pattern is the dominant factor in shaping the degree of democratic socialization of conflict.

4. The political value pattern is more important for variation in group tolerance than the rate of economic development.

Implications. This summary of propositions indicates that a higher level of specification was obtained through analysis of the simulation data, thereby achieving the primary goal of discovering in greater detail the implications of the verbal theory. The original theories each advanced propositions at a level of generality which parallels that of the propositions supported by the analyses. The second category of propositions were ambiguously dealt with by the theories or were not examined at all as possibilities, although they are not inconsistent with the major theoretical propositions. The third category of propositions are those which the theories might imply not to be the case, and so are non-obvious or unexpected findings.

In each case the simulation data analysis has been useful.[1] First, of the several propositions that comprise the theory some were general and explicit in nature, and others were either tentatively advanced or implied on the basis of other statements. In the case of the former the simulation data supported these general statements, thereby extending confidence in previous sensitivity testing efforts to achieve a theoretically valid model.

Second, it has provided a basis for confirming, disconfirming, or withholding judgment on propositions implied by the theory under consideration. The analysis provided a basis for judging whether the tentative statements should be given serious consideration within the context of the major general propositions, and also indicated whether the implications drawn concerning subsidiary relationships were supportable or proper in terms of the major theory propositions.

Third, although the verbal theories dealt with some relationships and variables not included in the models, within the context of

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[1]E. W. Kelley notes that "computer simulation, then, can not be used to generate or confirm hypotheses. It can tell us what will happen for various possible initial conditions if the hypotheses employed are true and no variables other than those programmed are relevant." (From E. W. Kelley, "Techniques of Studying Coalition Formation," Midwest Journal of Political Science, XII (Feb., 1968), p. 74). The present project does not contradict these statements by Kelley since the propositions (or hypotheses) generated were implications derivable from the modeled theory, and the support given to propositions is not empirical confirmation but additional confirmation that the model conforms to the theory. Whether or not the hypotheses derived from the theories are empirically confirmed is a separate research problem, discussed briefly below.

the patterns specifically examined by the models there are relationship possibilities not covered by the theorists or only touched upon lightly. Since model operation requires these relationship to be specified, the data generated by the simulation fills in occasional gaps in the theoretical relationship pattern of variables in a manner which relates them in a specific and coherent way to other variables and their relationships. This, together with the propositions specifying implied relationships, permits more elements of the theories to be tested. A more favorable opportunity is presented thereby for empirical validation, and this also constitutes an advance toward a better scientific explanation of democratic political development.[2]

Empirical validation efforts will require that each variable or relationship to be examined be given a specific referent, whether using one indicator or several to form an index, and that the proposition to be tested be stated in a hypothetical form capable of being refuted. A further effort will be needed and additional judgments will be necessary to choose referents which are reliable and themselves valid. The present effort does not include this

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[2]As Clifford Geertz notes, ". . . scientific explanation does not consist, as we have been led to imagine, in the reduction of the complex to the simple. Rather it consists in a substitution of a more intelligible complexity for one which is less so. One may go even further and argue that explanation often consists of the substitution of complex pictures for simple ones, while striving somehow to retain persuasive clarity." Clifford Geertz, "The Impact of the Concept of Culture on the Concept of Man," Bulletin of the Atomic Scientists (April, 1966), p. 2 as quoted by John R. Raser in "Discussions and Reviews," Journal of Conflict Resolution, X (Sept., 1966), p. 376.

step, but it is designed to facilitate such empirical validation efforts by giving greater specificity to theory related concepts, such as stability or democracy, and by providing additional specific propositions which should enable the researcher to have greater choice in selecting hypotheses to be tested so that the most relevant data available can be utilized.[3] The type of validity criteria to use is not at issue here, but the elaborated propositions would appear to lend themselves to several levels of analysis. The criteria selected, therefore, will depend upon the purpose of the research, as noted by Hermann in his discussion of validation problems.[4]

It should not be expected that one or both modeled theories will be empirically confirmed in large part or in their entirety,

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[3]"For a simulation to be computerizable, there must somewhere exist a complex structure of propositions and/or data values. But note that we have had to use the expression and/or. It is not true that both must exist. Thus, it is not necessarily true that a simulation is no more useful than its data." Ithid de Sola Pool, "Computer Simulations of Total Societies," in Samuel Z. Klausner (ed.), The Study of Total Societies (Garden City, N.Y.: Doubleday & Company, Inc., 1967), p. 57.

[4]Charles F. Hermann, "Validation Problems in Games and Simulations With Special Reference to Models of International Politics," Behavioral Science, XII (1967), pp. 216-231.

Other useful comments on validation can be found in "Simulation, Reality, and Theory in International Relations" by Sidney Verba, World Politics, XVI (April, 1964), pp. 490-519; and in "Verification of Computer Simulation Models" by Thomas H. Naylor and J. M. Finger, Management Science, XIV (Oct., 1967), pp. 92-101.

even though it is conceivable that both might be confirmed.[5] Rather it is to be expected that many of the propositions generated will be refuted.[6] But at least the exercise undertaken here has developed two series of propositions which are stated with a degree of explicitness that makes their refutation a more simple, yet still difficult, task than would have been the case had the simulation analyses not been performed. Hence a useful function will have been served in the process of scientific explanation even if many derived hypotheses are not empirically confirmed.

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[5]Pool notes that more than one model of a system under study may be valid. "Indeed it is conceivable that two models would each predict the same dependent variable equally well." Pool, op. cit., p. 49. It is unlikely that empirical tests will be able to confirm or disconfirm either theory in its entirety because the concepts or symbols employed (as in any theory) are not unambiguously precise, although some concepts may be more explicit than others and one theory less ambiguous than the other. In reference to theory evaluation Meehan notes that "the observable referrents of the symbols are imprecise. The symbol is 'more general' than the observables it implies in a theory. This is the reason why theories are powerful explanatory tools. The looseness of fit, in other words, is an asset, not a liability." Hence, "there is always some element of judgment involved in the evaluation of a theory, in the decision to accept or reject it." Eugene J. Meehan, The Theory and Method of Political Analysis (Homewood, Illinois: The Dorsey Press, 1965), p. 132.

[6]Pool writes a comment relevant to this study when in reference to a mass media effects study he is undertaking he notes that "to be more accurate we should concede that our simulation estimate is bound to be wrong. Like all measurements it has a standard error. Hypothetically, we may someday find out how big its standard error is. A statement of social science that is wrong but definite is better than the usual type whose main defense is a vagueness sufficient so that it cannot be proved wrong." Pool, op. cit., p. 63. Emphasis in original.

The analysis undertaken here should also aid an examination of the relationship of the two theories to determine the extent to which they are complementary, even though using (other than economic growth rate) different independent variables. As was mentioned in the first chapter, Moore focuses primarily upon changes which produce conditions favorable to the emergence of a democratic system, while Lipset is concerned with the question of conditions favorable for increasing institutionalization of a democratic system once established. One point of complementarity that appears worthy of examination on the basis of the propositions developed here is that between the development of a class of independent owners and producers in urban and rural commercialization (important for Moore in the establishment of democracy) and the economic value pattern which is crucial for the institutionalizing of democracy (in Lipset's terms). Is the balance of political power between central government and landed elite the dominant factor which produces the economic values which help sustain a democracy? In a similar manner the balance of power pattern between central government and landed aristocracy, and between landed aristocracy and the commercial elements, could be related to the political value pattern which facilitates democratic stability.

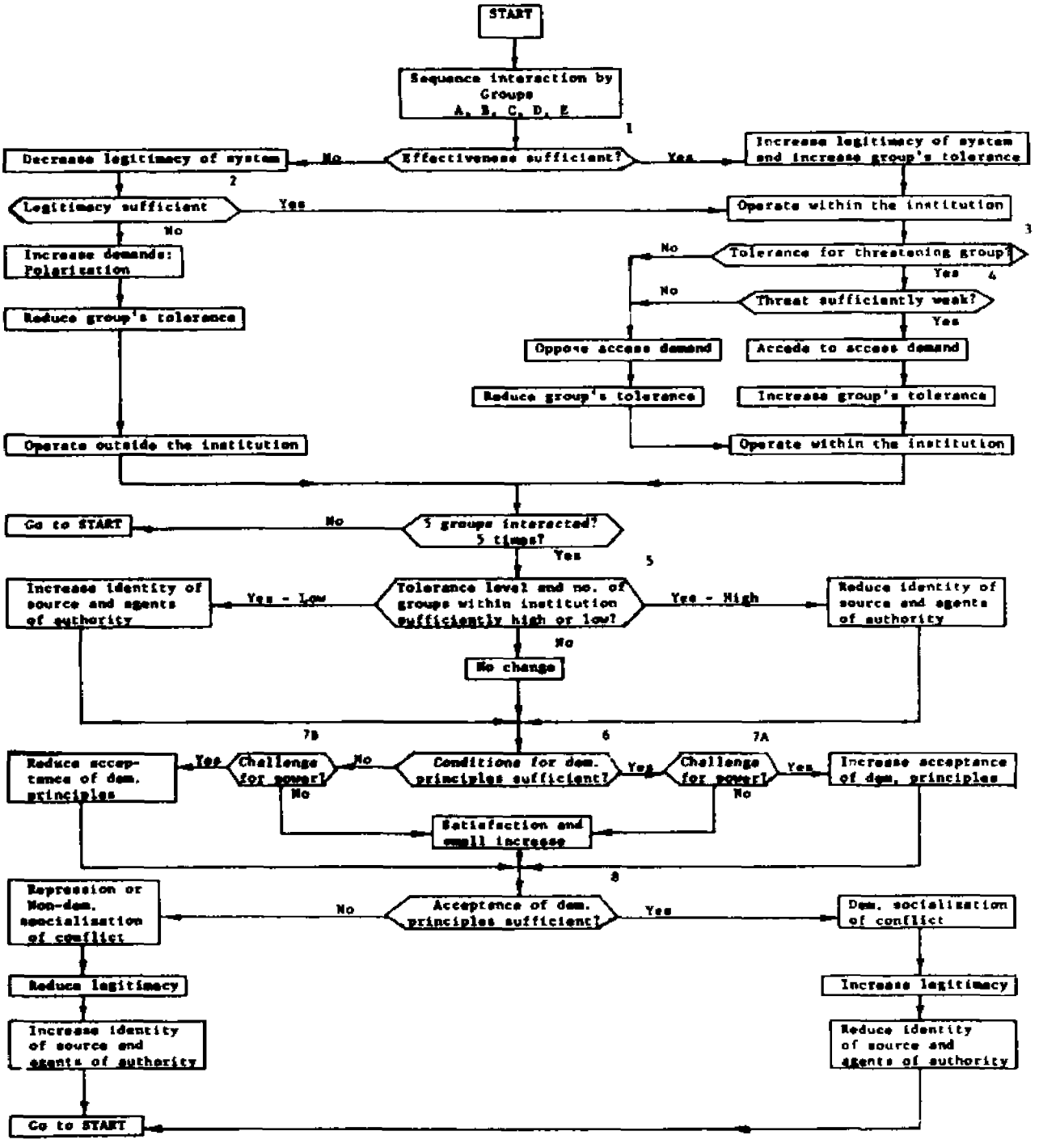
Insofar as these two are competing theories the present analysis should aid in demonstrating the greater validity and explanatory power of one over the other. Both studies use a similar sample of democratic systems, though Moore's historical focus is the earlier

of the two. But if the economic and social relationships which Moore discovers to be crucial for democracies can be presumed to persist for some time after the establishment of formal democratic procedures, they would be an explanation of democratic stability alternative to that of Lipset. The problem then would be to determine which one best explains democratic stability in a broader sample of countries?

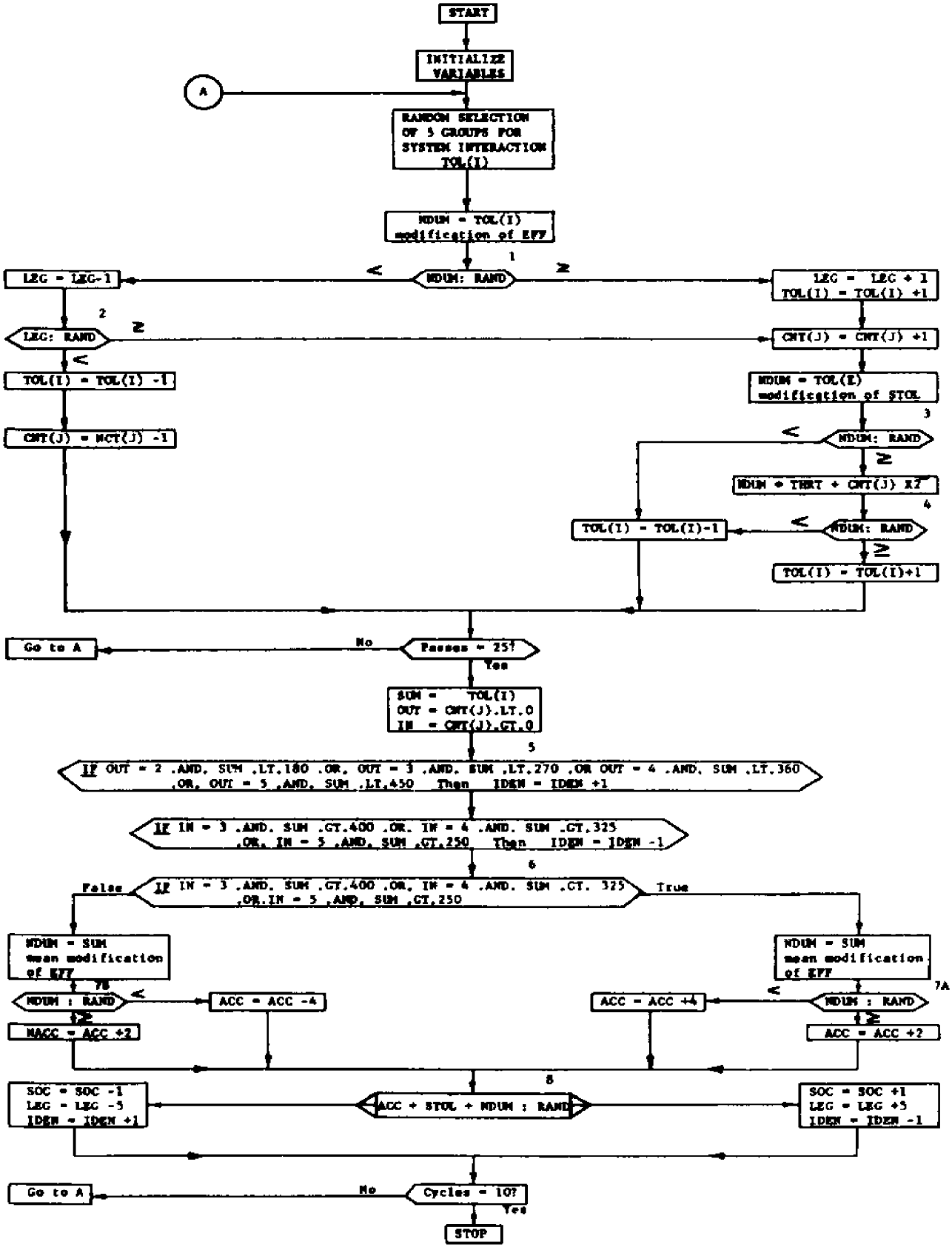
The range of propositions presented here should facilitate such comparative tests of the theories (as alternatives or as complementary) by permitting a greater number of theory related hypotheses to be tested. This would be beneficial in two ways. First, the greater the number of hypotheses confirmed or refuted, the greater the confidence that an accurate evaluation of the theory has been made. Second, the greater the number of hypotheses to be tested, the greater the probability that data will be available to test at least some of them. Although all the propositions explicated here are not equally important, the fact that they are all theory related makes a test of any of them important for theory comparison and evaluation.

APPENDIX A

A FLOW CHART INTERPRETATION OF LIPSET'S THEORY OF DEMOCRATIC POLITICAL DEVELOPMENT



SYMBOLIC FLOW CHART MODEL OF
LIPSET THEORY



## LIPSET MODEL FLOW CHART
## SYMBOL DEFINITIONS

ACC = Acceptance of democratic principles

CNT(J) = Counts each group's operation within or without institutional framework

EFF = System effectiveness

GT = Greater than

IDEN = Identity of source and agent of authority

IN = Number of groups operating within institutional framework

LEG = System legitimacy

LT = Less than

NDUM = Dummy variable

OUT = Number of groups operating without institutional framework

RAND = Random number used for comparison

SOC = Socialization of conflict

STOL = System tolerance

SUM = Sum of group tolerance levels

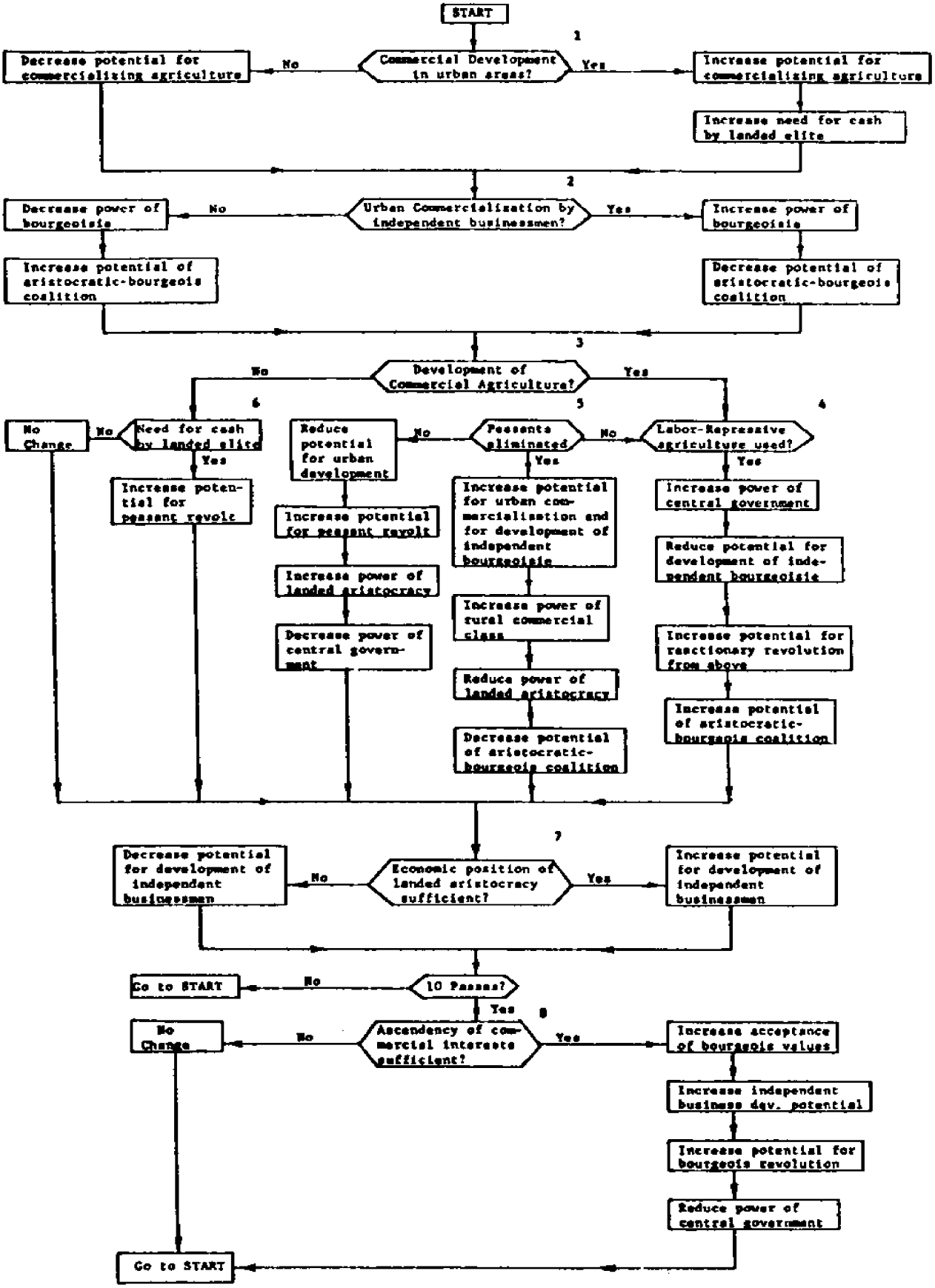
THRT = Threat level of group demand

TOL(I) = Tolerance level of each group

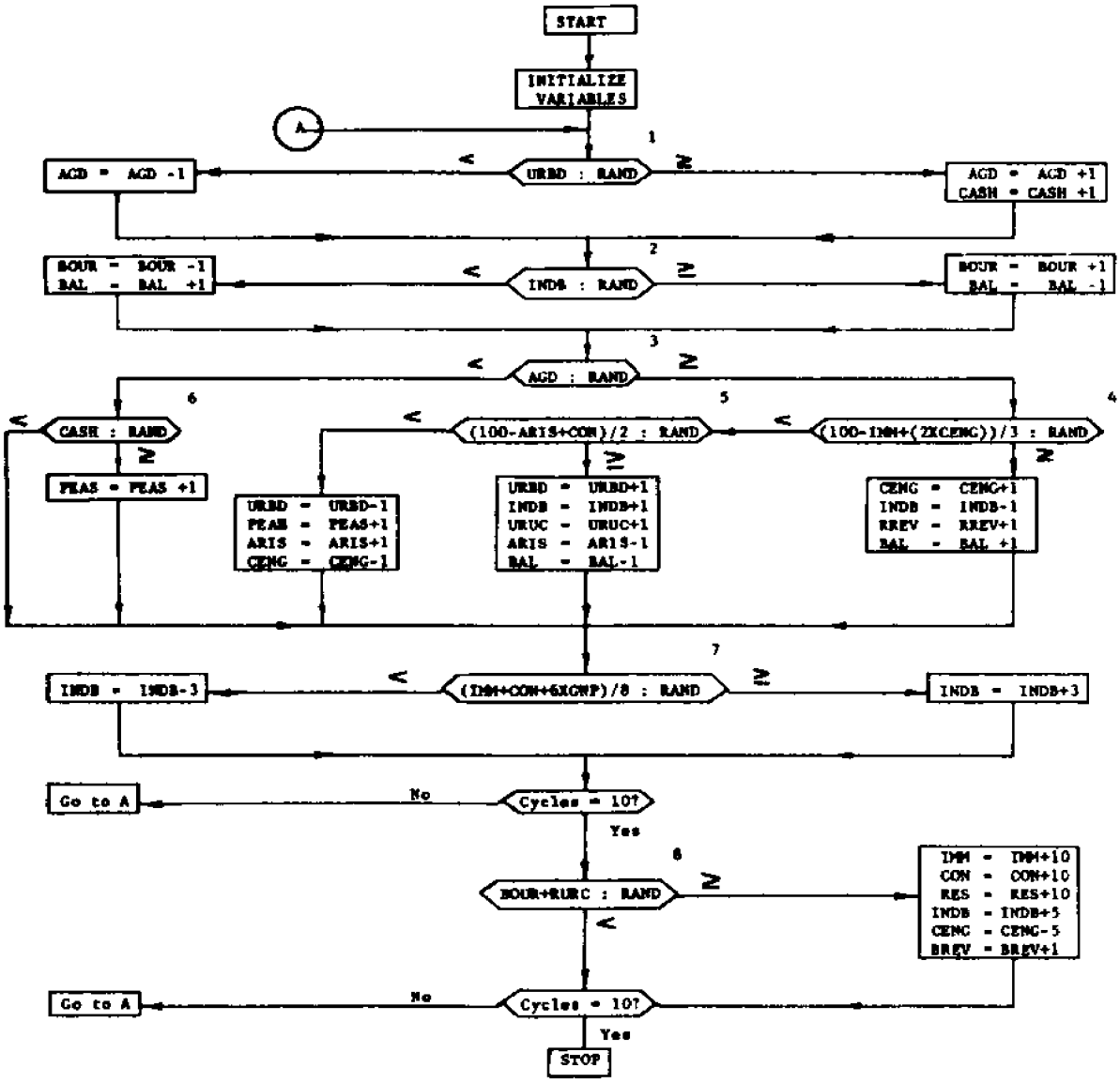
At branch points the values derived to which the random numbers were compared were limited, for comparison purposes only, to values from 5 to 95 to prevent model operation from becoming deterministic.

APPENDIX B

A FLOW CHART INTERPRETATION OF MOORE'S THEORY
OF DEMOCRATIC POLITICAL DEVELOPMENT



SYMBOLIC FLOW CHART MODEL OF
MOORE THEORY



MOORE MODEL FLOW CHART
SYMBOL DEFINITIONS

AGD = Commercial agriculture potential

ARIS = Power of landed aristocracy

BAL = Aristocratic-bourgeois coalition potential

BOUR = Power of bourgeoisie

BREV = Bourgeois revolution potential

CASH = Need for cash by landed elite

CENG = Power of central government

CON = Value of free contract

GNP = Rate of growth of per capita GNP

IMM = Value of immunity from government interference

INDB = Potential for urban commercialization by independent businessmen

PEAS = Potential for peasant revolt

RAND = Random number used for comparison

RES = Value of right of resistance to government authority

RREV = Potential for reactionary revolution

RURC = Power of rural commercial class

URBD = Potential for urban commercial development

At branch points the values derived to which the random numbers were compared were limited, for comparison purposes only, to values from 5 to 95 to prevent model operation from becoming deterministic.

## APPENDIX C

## SENSITIVITY TESTING OF THE LIPSET MODEL

Sensitivity testing involves the systematic altering of a variable or parameter, while others are held constant, to determine how sensitive the output is to the changes made. It is designed to determine which parameter settings or formulas and which variable change dimensions produce results which are acceptable in terms of the appropriate criterion, such as corresponding to empirical outcomes of the modeled phenomenon or producing the general outcomes predicted by the modeled theory. In the present case the latter criterion was applied.

As noted in Chapter II, the only relevant check on congruence between model and theory in this case is that of face validity. That is, the model is deemed valid if for given initial conditions it produces outputs which give an impression of realism in terms of the theory. This is not an error-free technique, but it appears to be the most appropriate for this type of validity check.

For the Lipset model the primary testing of variables and parameters was done using three of the 27 patterns of initial conditions, the two extreme and the middle possibilities involving changes of all three independent variables. Secondary tests were

made using three aditional patterns involving change in one independent variable at a time, but using settings not identical with those used in the actual simulation runs. In this way model operation was modified to approximate the broadly outlined predictions of the verbal theory, at least for the extreme outcomes.

The following summary lists the modification made in model operation to approximate the more obvious outcomes posited by the theory.

Branch point 4. Sensitivity testing of the model suggested this formula of using the mean of the three values. The original formula gave three times the weight to the value pattern, but model operation indicated that this did not conform to Lipset's theoretical predictions.

Branch point 4. Sensitivity testing indicated that adding (or subtracting) one point to the threat index, as originally structured, did not have sufficient effect. Adding ten points caused an over-reaction. Plus or minus two appeared to achieve adequate results.

Branch point 5. Sensitivity testing indicated that the higher settings of tolerance levels originally used as threshhold levels (200, 300, 400, 500, and 450, 375, 300) biased the model too strongly in favor of identification increase. The altered levels used appeared to correct this propensity.

Branch point 7. Sensitivity testing suggested the desirability of using $\pm 4$ and $\pm 2$ rather than $\pm 1$ to allow changes in acceptance levels to have more impact on the following branch point where this level is one of three factors used.

Branch point 8. The original plan for branch point 8 made the occurrence of an insoluble problem a matter of probability related to group tolerance levels. Sensitivity testing indicated that this procedure allowed little change to occur in either direction for socialization of conflict. Consequently, branch point 8 was consolidated with its sub-branch points on the assumption that the occurrence of insoluble problems will tend to be a prevalent condition and, therefore, only a formula to determine probable outcomes is needed. This was done by giving equal weight to acceptance of democratic principles, the mean of group tolerance, and system tolerance. Sensitivity testing also indicated the need for a larger impart on legitimacy, hence the change of $\pm 5$ rather than $\pm 1$. For each occasion that branch point 8 can affect legitimacy there is the possibility for the first part of the model to affect legitimacy by $\pm 25$, and this change at branch point 8 appeared to result in a more theoretically consistant impact on model operation output.

## APPENDIX D

## SENSITIVITY TESTING OF THE MOORE MODEL

As with the Lipset model only face validity testing of congruence between model and theory was possible. Of the 15 possible patterns of initial conditions, four were used to compare model outcome with theory prediction. These patterns included the two extreme and the intermediate possibilities involving changes of both independent variables, plus one pattern involving change in one independent variable. These patterns appeared to be the most relevant for test purposes since the theory predicts outcomes most precisely only for the extreme conditions with some indication of the impact of single variable change.

The following summary lists the changes made in model operation to approximate the more obvious outcomes posited by the theory.

Branch point 2. The possibility of a decrease in strength of the bourgeoisie was added to the original formulation to permit greater impact of varying levels of economic growth rate on this variable, which in turn affects variability of other elements of the model. This change appeared to make the effect of growth rate more consonant with the impact required by the theory.

Branch points 4 and 5. Provision was made to allow for an increase and a decrease, respectively, in the potential for an

aristocratic-bourgeois coalition, thereby allowing a direct impact on this potential instead of indirect (through changes in potential for development of an independent bourgeoisie) as originally planned. This direct effect is acceptable in terms of Moore's theory and also permits this output variable to indicate outcomes that are not mere reciprocals of the strength of the bourgeoisie.

Branch point 5. Modification was made to give consideration to two other factors. First of all, in the initial formula for determining potential for peasant elimination no provision was made for the strength of the landed aristocracy. Testing of the model indicated a need for the potential to be modified by variations in this factor, a modification justified, I think, by Moore's emphasis on the importance of interests over value. This consideration is also reflected in the second factor, the addition of the possibility of relative power change between landed aristocracy and the central government. The impetus for commercialization will result in change, and if the aristocracy is already strong it will tend to increase its position of strength, hence a +1 increase possibility for the landed aristocracy was added. (See following paragraph for further comment on the balance of power.)

Branch point 7. Two changes were made during the testing phase. First, greater emphasis was given to GNP growth rates. Instead of treating this element as equal in importance to both values separately, it was weighted to equal three times the impact of both values combined. This change helped approximate predicted outcomes more closely as well as being justified by Moore's greater concern

for material interests over values. Second, the outcome possibilities of this branch point were changed to allow still greater impact by these material considerations on potential for development of an independent business class by increasing variation levels from ±1 to ±3. A change level of ±2 did not produce satisfactory results, whereas the higher level did appear to do so for the patterns tested. Another outcome possibility was eliminated, a ±1 change in power of the central government. This possibility at branch point 7 was originally inserted only very tentatively, and when the test runs indicated an overreaction between GNP and central government strength not justified by Moore's theory, the outcome possibility was eliminated from this branch point. Instead the -1 possibility for central government was added to the balance of power change possibility at branch point 5 which originally allowed for change only in strength of the aristocracy.

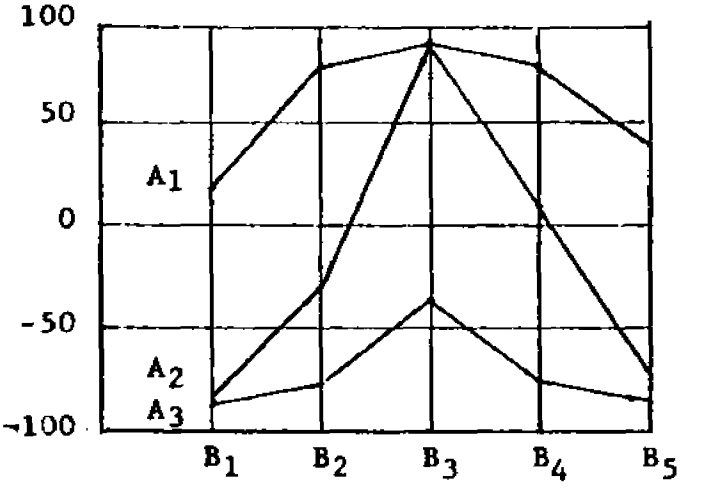
Branch point 8. Testing indicated a need for a self-reinforcing possibility for rural commercialization without labor repressive features. Hence an outcome possibility from this branch point was added which would reduce central government power by 5 points if the ascendency of the commercial interests was sufficient. A similar self-reinforcement for urban interests was also included by adding the option for a 5 point increase in potential for development of an independent business class. The five point size of change, and the ten point increase possibility (originally one point) in the three values were needed to offset the fact that this

branch point is reached only once in ten passes through the rest of the model. The potential for bourgeois revolution increase was left at +1 because this output measure, unlike the others, is not a system variable and, therefore, has no effect on the rest of the model during the simulation run.

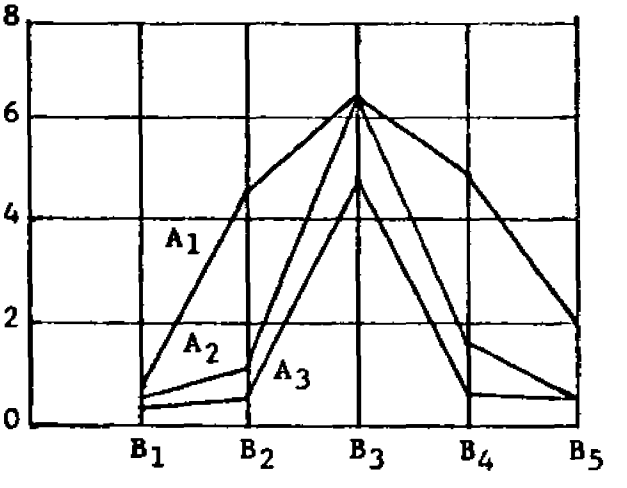
## APPENDIX E

## MOORE MODEL INTERACTION GRAPHS

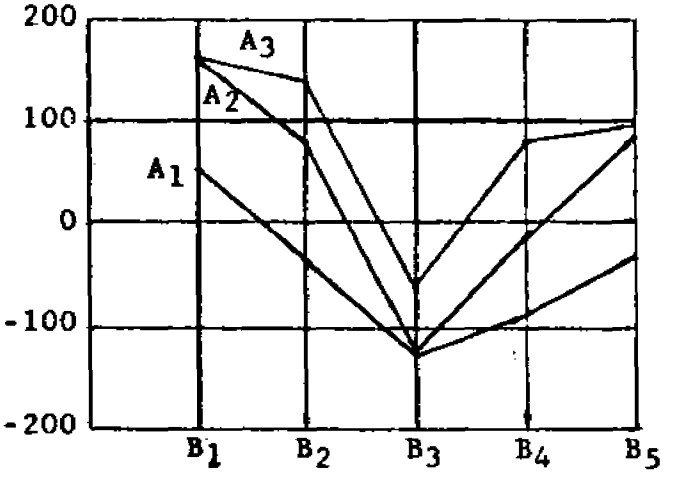
Bourgeois Power




Bourgeois Revolution



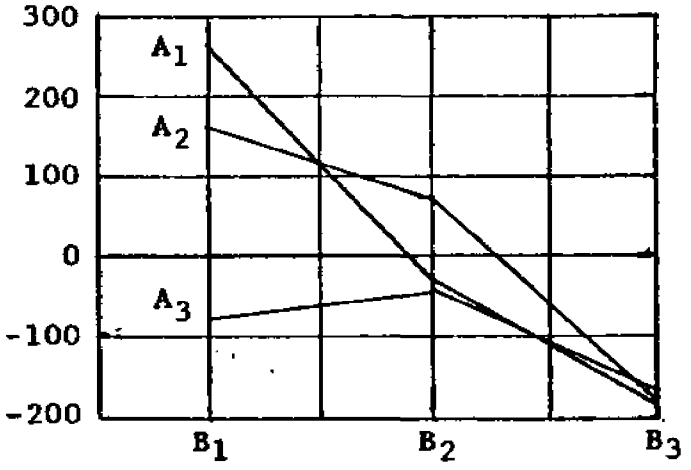

Coalition Potential



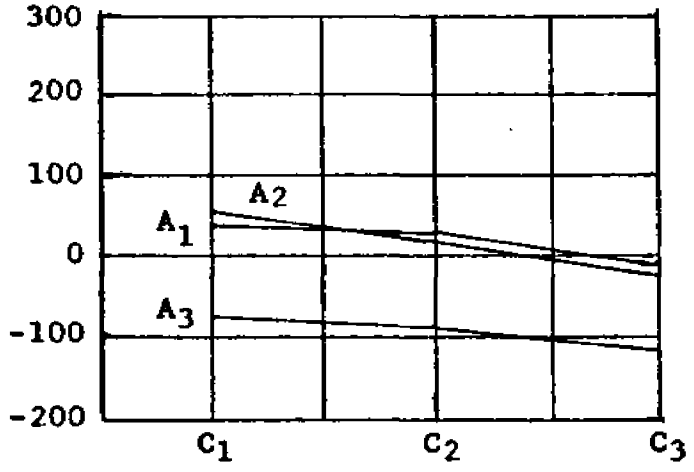
APPENDIX F

LIPSET MODEL INTERACTION GRAPHS

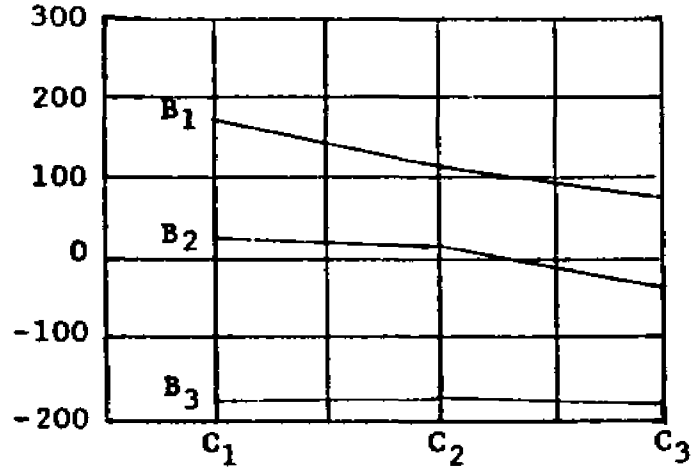
AB Interaction for Legitimacy (C meaned)




AC Interaction for Legitimacy (B meaned)

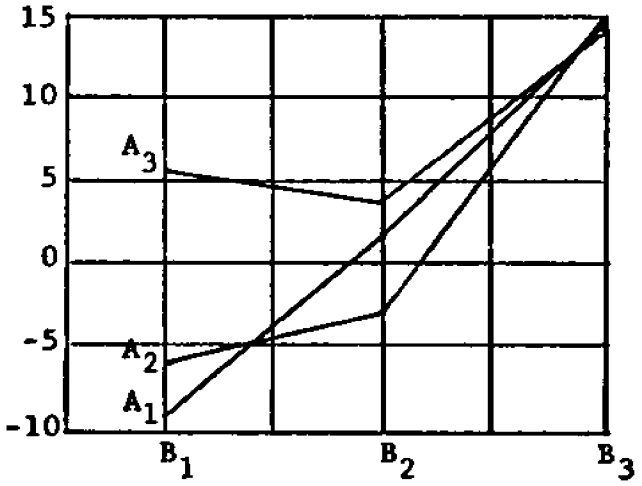



BC Interaction for Legitimacy (A meaned)



LIPSET MODEL INTERACTION GRAPHS

AB Interaction for Ident. (C meaned)

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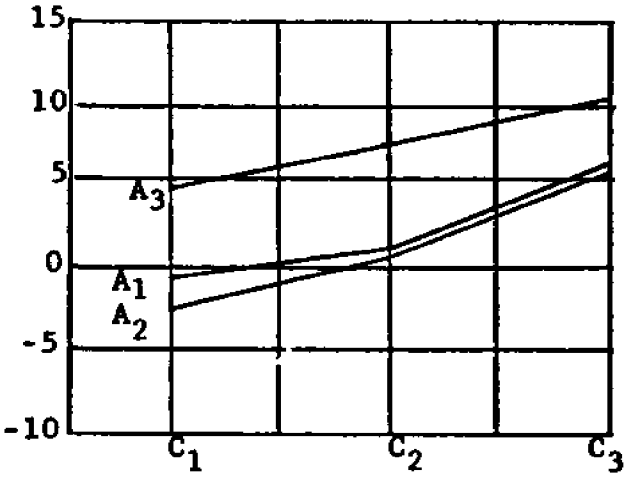


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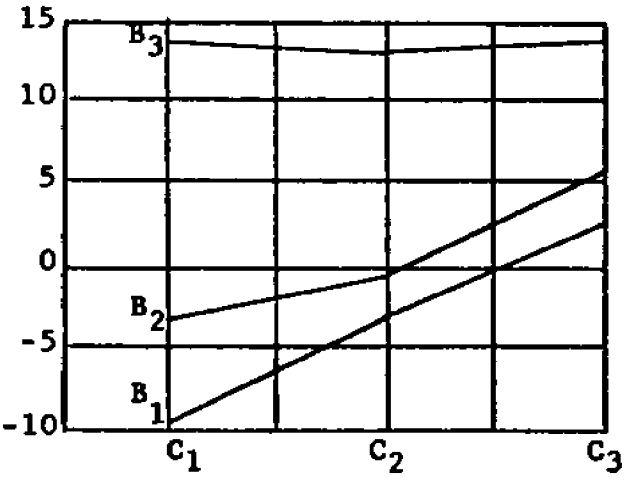
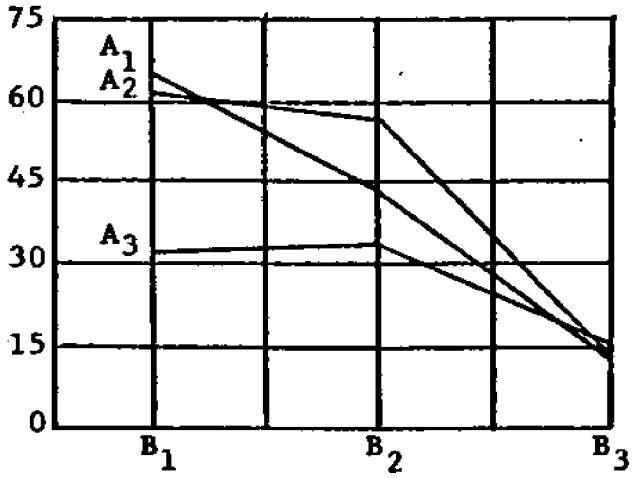
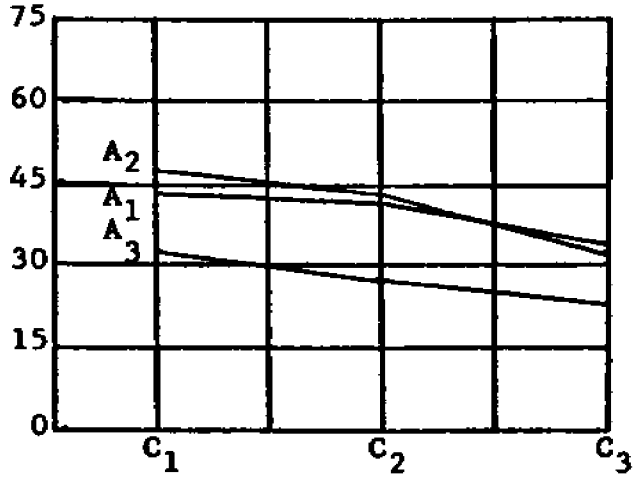


# LIPSET MODEL INTERACTION GRAPHS

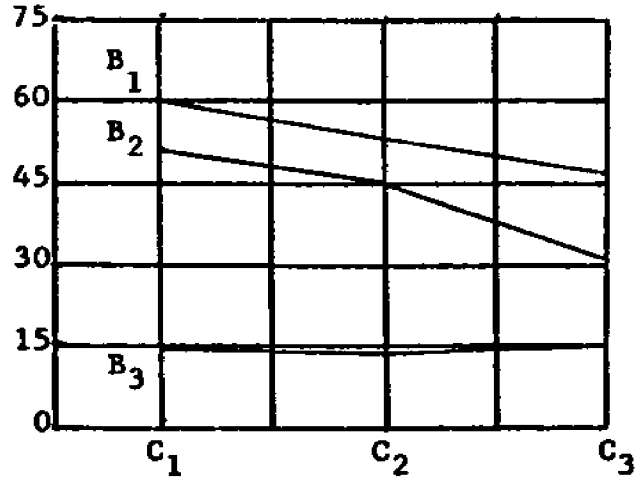
AB Interaction
for Accept.
(C meaned)




AC Interaction
for Accept.
(B meaned)

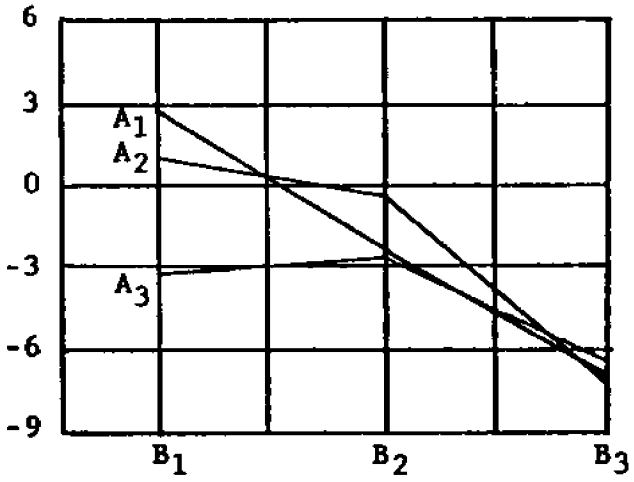



BC Interaction
for Accept.
(A meaned)

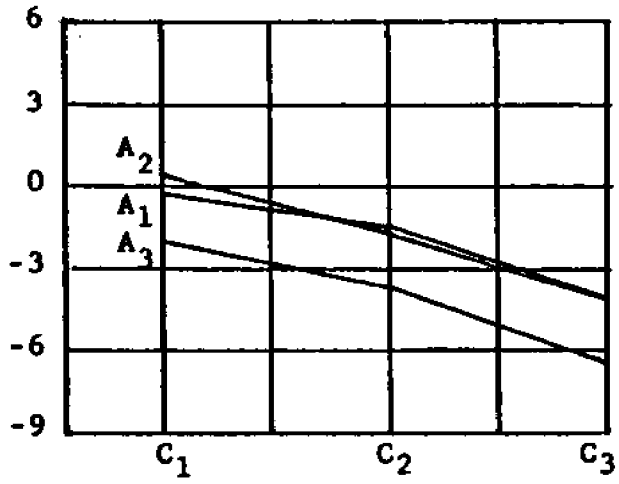


# LIPSET MODEL INTERACTION GRAPHS

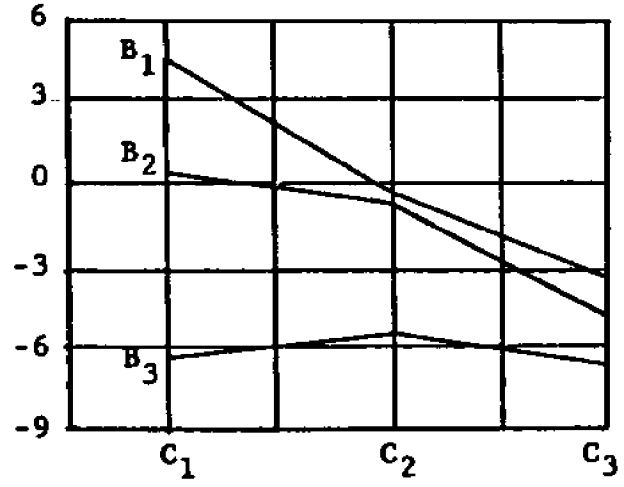
AB Interaction
for Social
(C meaned)




AC Interaction
for Social
(B meaned)

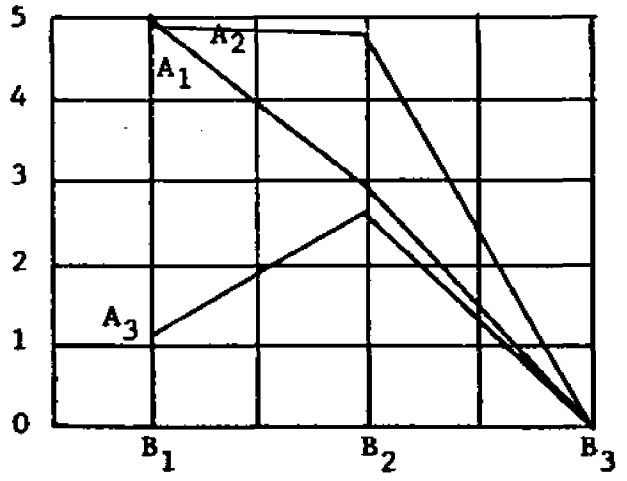



BC Interaction
for Social
(A meaned)

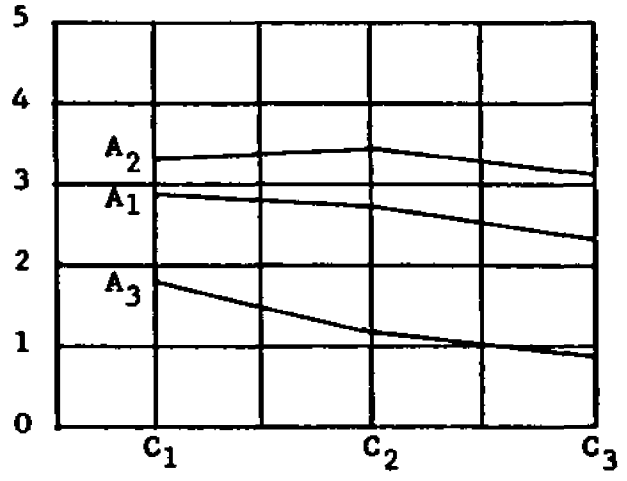


# LIPSET MODEL INTERACTION GRAPHS

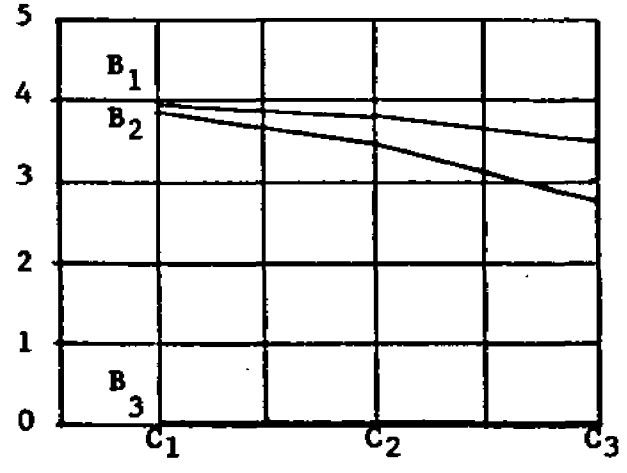
AB Interaction for No. Groups (C meaned)




AC Interaction for No. Groups (B meaned)

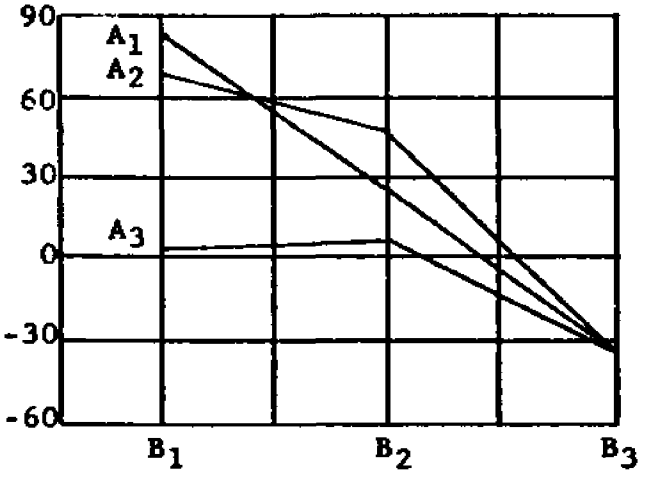



BC Interaction for No. Groups (A meaned)



# LIPSET MODEL INTERACTION GRAPHS

AB Interaction for Tolerance (C meaned)

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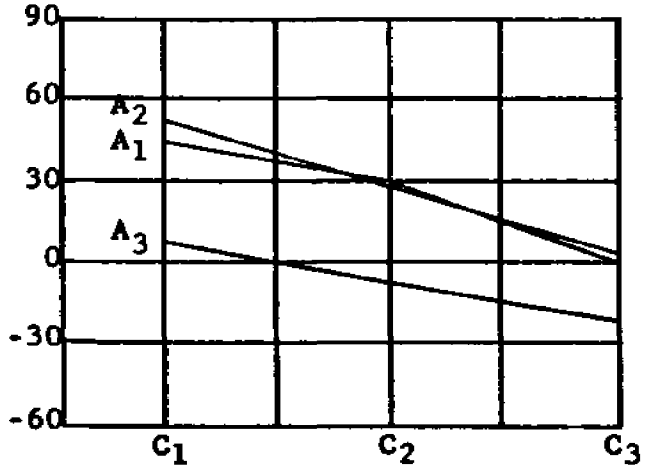


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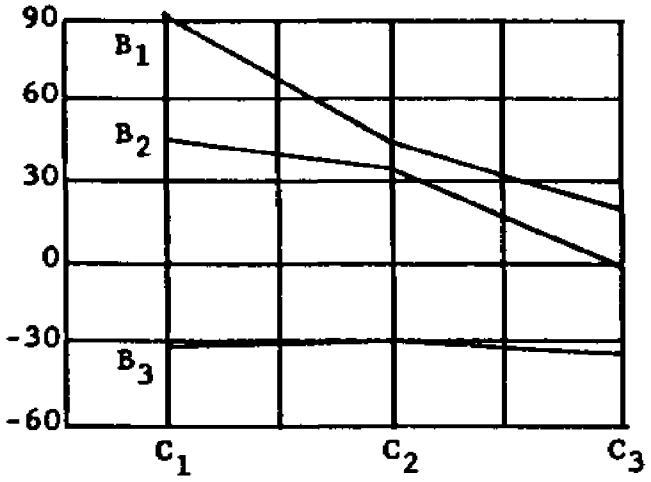
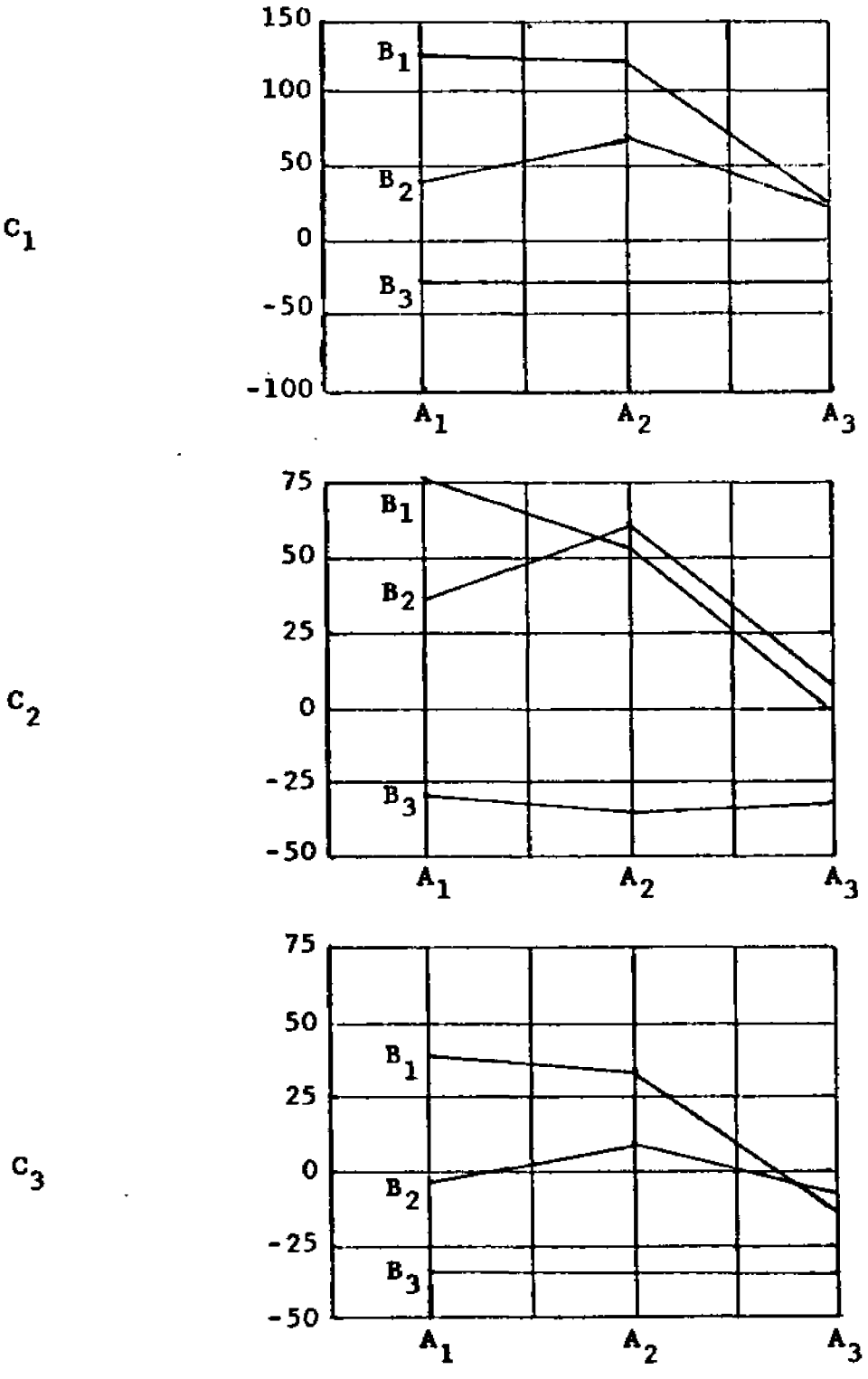
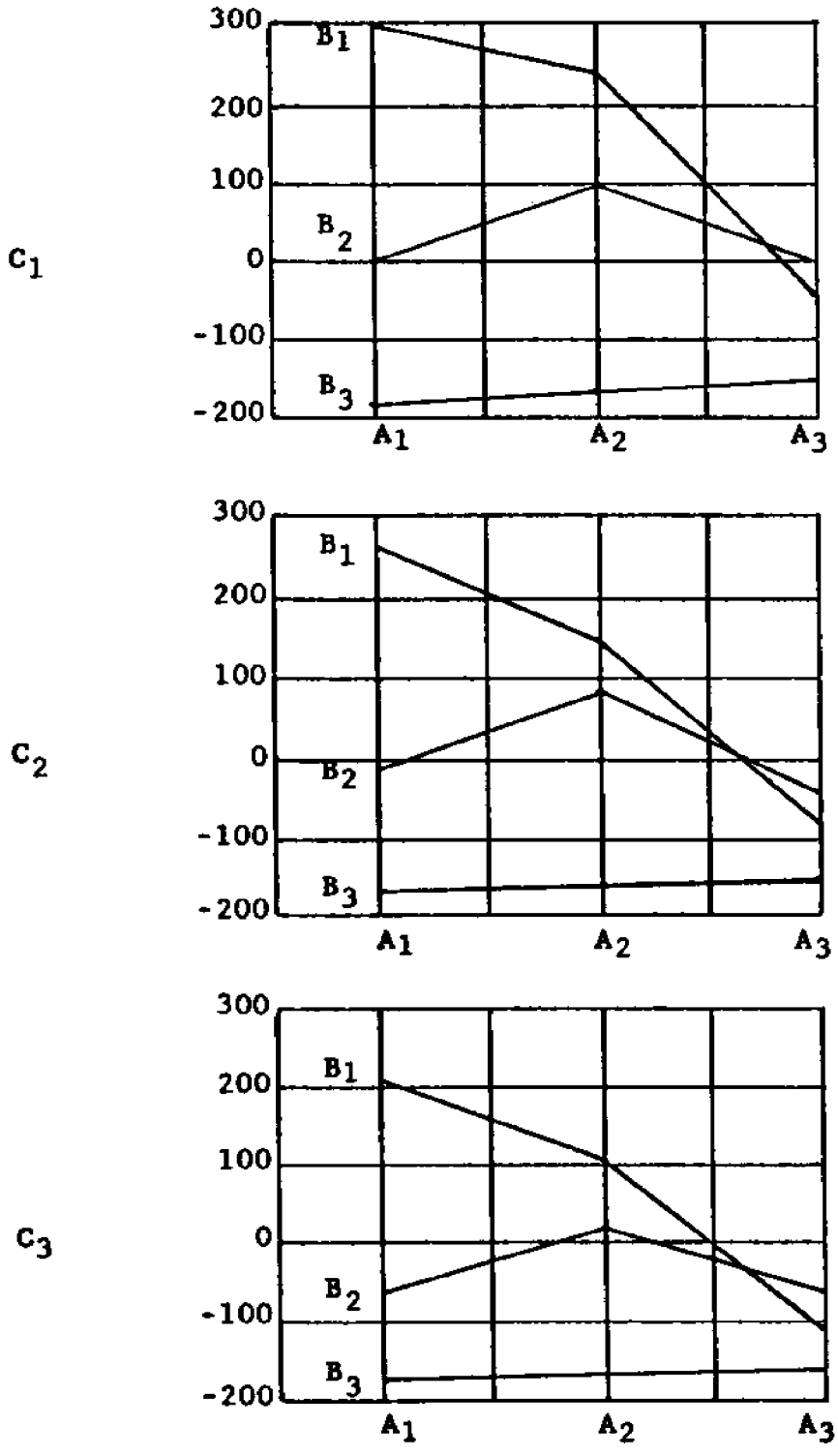


ABC INTERACTION FOR TOLERANCE

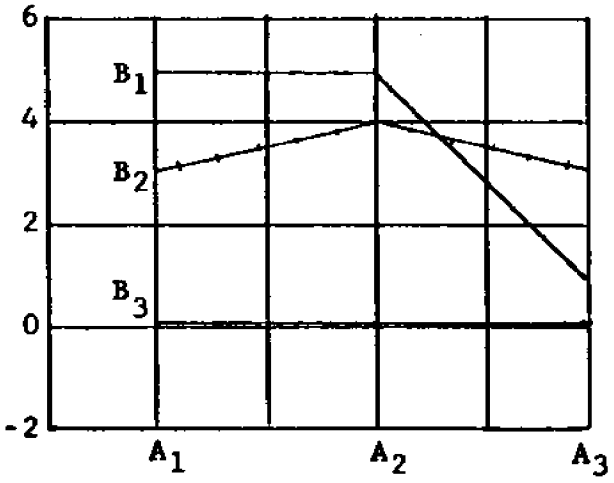


ABC INTERACTION FOR LEGITIMACY

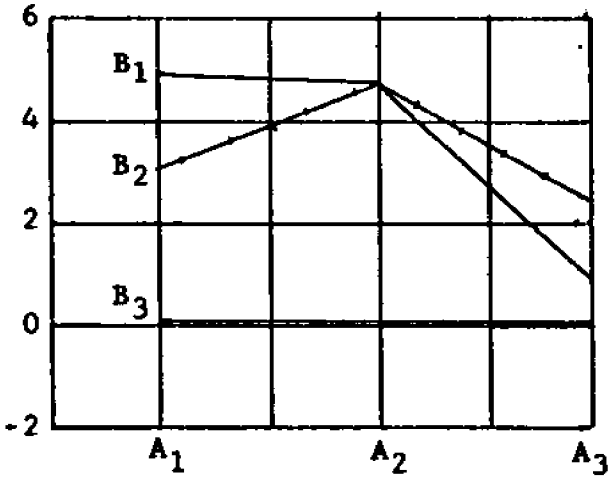


ABC INTERACTION FOR NO. GROUPS

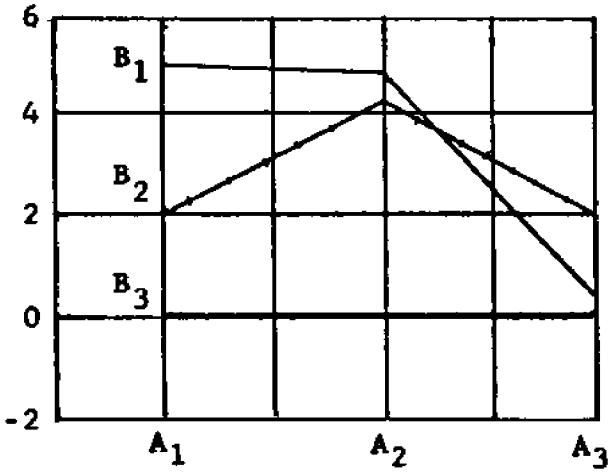
$C_1$




$C_2$




$C_3$



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