DETERMINANTS OF THE SCOPE AND STRENGTH OF STATE ENVIRONMENTAL POLICY

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Bachelor of Science

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Stillwater, Oklahoma

1982

Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
MASTER OF ARTS
May, 1985

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OF STATE ENVIRONMENTAL POLICY

Thesis Approved:

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PREFACE

Using bivariate crosstabulation and multivariate regression analysis this study attempted to measure the effects of political factors on the scope and strength of state environmental policy. Political variables included state political culture, interest group strength, partisanship, gubernatorial strength, legislative professionalism, and state innovativeness. Scope and strength of state environmental policy was measured by four dependent variables. The dependent variables measured state initiated policy, federally intitiated policy, per capita spending, and toxic substance control efforts.

The dependent variables measuring state initiated and federally initiated policies are new attempts in measuring state environmental policy. They are indices that combine measured characteristics of states' environmental policies in different areas of environmental concern. Overall, the four dependent variables represent a comprehensive attempt to measure environmental policy in the fifty states.

This effort is dedicated to increasing our understanding of the public policy process. However, without the contributions of many individuals this research would not have been possible. First, I would like to thank my wife, Lacy, for her emotional, as well as financial, support. Her dedication towards my education was the inspiration that enabled me to complete this thesis.

In addition, my parents, Kenneth and Evelyn Reisdorph, provided financial support in both my undergraduate and graduate work making this

all possible. I will never be able to repay them in full. Although their financial support was important, it was their faith in my capabilities, along with my sister's guidance, which gave me the incentive to pursue my education.

Finally, I would like to thank my thesis adviser, Dr. Joseph Westphal, and my committee members, Dr. James Lawler and Dr. Barrie Blunt. Without their devotion to education and expertise there would be no thesis. Their time and advice was invaluable in the preparation of this thesis. Furthermore, I thank the Oklahoma State University Political Science Department for providing the funds for computer time to complete this research.

I extend my fullest appreciation to my wife and family for their support and devotion.

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CHAPTER I

INTRODUCTION

Our technological advances have led to massive utilization of the earth's resources resulting in disruption of natural systems and degradation of resources to the detriment of our well being (Turk, Turk, and Wittes; 1972). Our ability to damage the environment reached the point where in the 1960's, we could no longer ignore nor accept the consequences (Davies, 1970). Either we changed our activities and dealt with the problems of a technologically advanced world or we would watch thousands suffer to the brink of an ecological catastrophe when the earth will no longer sustain any of us. This paper deals with understanding what determines the changes in state environmental policy we have made in response to the quality of our environment during the 1970's.

During the decade of the 1970's our federal, state, and local governments adopted an unprecedented number of public policies to reverse the decline in environmental quality. Laws to clean our air, water, and land were strengthened and increased. Many of these new policies placed the state at the center of our efforts to protect the environment. Virtually, every piece of federal environmental legislation passed in the 1970's placed the authority for implementation in the hands of willing states. Plus, states increased their role in protecting the environment as they realized local efforts were inadequate and environmental problems did not respect local government boundaries.

What determined the type of environmental policies a state selected? Which states chose to participate in federal environmental programs? Do political characteristics help determine the type of environmental policy a state will select? These are the questions this paper will try to understand. Specifically, this thesis will identify some of the determinants of state environmental policy.

Since the "environmental decade" of the 1970's, environmental issues have enjoyed a prominent position in our national, state, and local public policy agendas. Environmental policies deal with courses of action taken by government institutions that effect the utilization and allocation of land, air, and water. With growing signs of environmental strain it appears likely environmental issues will remain high on our public policy agenda.

The study of environmental policies are important because of the unique characteristics of the formation and implementation of environmental policy. Paul Sabatier sums up the importance of this aspect of environmental policy in the following statement:

> State and local environmental policy is of interest to the political scientist for at least two reasons: 1) It provides a testing ground for the study of federalism, and more generally, of policy formation and implementation . . . In addition, the very multiplicity of state and local governments makes them instruments for comparative studies of either the implementation of federally-initiated programs or of programs initiated within some states and localities but no others (Sabatier, 1973, pp. 217-218).

It is the understanding of the policy process as it determines state environmental policies that will be the focus of this research. In order to accomplish this understanding, we need an explanation of how policy is created. R. H. Salisbury (1968) created such an explanation in his model of the policy process shown on the following page.

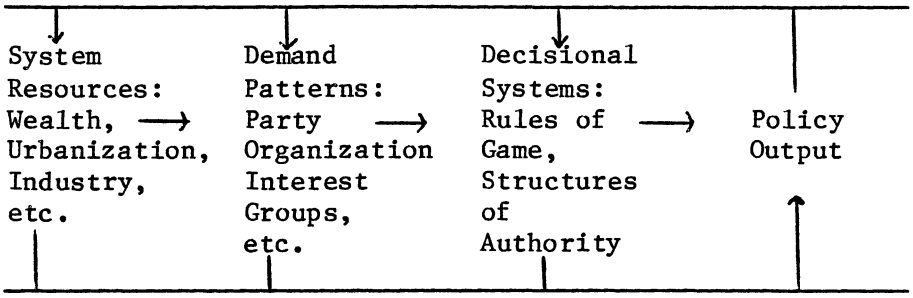

Figure 1. Salisbury's Policy Process Model

Salisbury (1968, p. 165) divides the policy process into four components: system resources, demand patterns, decisional system, and policy outputs. System resources are the socioeconomic conditions we all face that create wants. For example, pollution creates a want for a clean environment. Demand patterns are the ways groups and individuals present wants to the decisional system. The decisional system is the government with its numerous divisions and structural units. From this presentation of the policy process we can see each component is a determinant of policy output; in addition, each component effects the other.

From numerous studies of public policy we know system resources are important determinants of policy output as measured in dollars (Salisbury, 1968; and Dye, 1979). However, little research is available that measures the determinants of public policy when policy output is measured in terms of extent of change, winners or losers, method of implementation, and so forth. Since we are fairly certain system resources will be an accurate predictor of policy output measured in dollars, the emphasis of this research design will be on the demand pattern and

decisional system effects on state environmental policy as measured by its scope and strength.

The policy process model shows demand patterns and decisional system characteristics as having an influence on policy output. From this we can conceptualize how certain types of demand patterns and decisional systems would lead to certain types of environmental policy. For example, a state with many different industries and environmental groups may have a weak environmental policy since there would not be a consensus demand among the different groups for the decisional system to act upon. A state characterized by a dominant industry, in which many people owe their livelihoods to, will probably adopt a policy which satisfies the dominant industry. Therefore, one prediction from the model might be states with fragmented demands will lead to weak policies that tries not to offend any faction, and states with a single demand will have a strong policy to achieve the particular want requiring a public policy.

These are the types of predictions that will be tested in this analysis of state environmental policy. Does the decisional and demand patterns of states in part determine the scope and strength of state environmental policy? Because of the importance of state environmental policy, a better understanding of the determinants of environmental policy may allow decision-makers and researchers to produce better policy. In the preceding chapters the relevant literature will be reviewed, the research design introduced, and the results and conclusions will be presented.

CHAPTER II

ENVIRONMENTAL POLICY: WHAT IT IS AND WHAT DO WE KNOW?

Literature Review of Environmental Policy

Before proceeding further from our model of the policy process, we need to examine the research and observations that have been made concerning the policy process and environmental policy. Have other researchers analyzed the same or similar questions? Does the literature suggest some characteristics of demand patterns and decisional systems are more influential in the policy process than others? The answer is yes to both of these questions.

This review of the literature will cover the policy process and the various factors that are considered important in determining policy output. The role of system resources, demand patterns, and decisional system factors will be examined emphasizing their effects on environmental policy. Discussion of demand pattern characteristics will be broken into three parts: 1) ideology, 2) partisanship, and 3) interest groups. From this information base and the model of the policy process we can develop an explanation of the determinants of state environmental policy.

System Resources

System resources or socioeconomic variables create the wants for public policy. For example, one might expect in a pristine environment with clean air, water, and land, no desire to do something about the cleanliness of the environment. And one might expect support for a clean environment might be low if the alternative policies available to the people meant the loss of employment they depended on for their livelihoods. Furthermore, one might predict individuals who lived in poverty and suffered from the short-term effects of hunger, lack of education, unemployment, and unhealthy housing, probably, would show little concern for policies creating primarily long-term and often unknown outcomes that compete for scarce resources available to ameliorate poverty. Finally, one might expect studies measuring environmental concern would likely confirm the above expectations.

The empirical analysis has not damaged the image we have of our predictive faculties. First, as Davies (1970) notes in a description of the development of environmental policy, the appearance of environmental degradation in colonial America resulted in localities issuing regulations on how to dispose of sewage, and so it went throughout the development of the United States, environmental regulation followed environmental pollution. Socioeconomic conditions create the wants which lead to demands for policies to protect the environment. Exactly what are the conditions that create wants for environmental policies? Do different groups of people respond differently to pollution? I have already suggested poor people may be less likely to demand environmental policies than rich. Does this difference really exist between poor and

rich, and what other socioeconomic factors may account for differences in state environmental policy?

High concern for the environment has been found to be related to the more highly educated, professionals, middle to higher incomes, and urban living (Buttel and Flinn, 1974; Calvert, 1979; Tognacci et al, 1972; and Van Liere and Dunlap, 1980). It should be noted that Van Liere and Dunlap's 1980 study of national opinion polls supported the above relationships, but overall the relationships were found to be only moderately strong. Of the above socioeconomic indicators residence (urban versus rural) received the most concurrence as a predictor of environmental support (Hays, 1981; and Lowe and Pinhey, 1982). It seems likely urbanization, industrialization, education, and income will be reliable and valid predictors of environmental policy adoption differences among the states; given the logic of the policy process model and the empirical evidence.

Demand Patterns

Partisanship. Differences in support of environmental legislation between Democrats and Republicans has been subject to a fair number of quantitative analyses. If differences do exist between numbers of the two dominant parties, states characterized by domination of one of the two major political parties may well have an environmental policy reflecting the dominant party's position. By knowing the nature of a state's political party control one could predict with accuracy the type of environmental policy the state has.

In the 1960's and early 1970's as environmental issues received a great deal of public concern, many political scientists and political

elites considered environmental issues to be free from partisan divisions. It was postulated that neither party would take a stand of being for pollution. The strength and broadness of public concern for environmental quality, as demonstrated by Earth Day demonstrations throughout the nation in 1970, was thought to be a deterrent to partisan cleavages in the support of environmental protection (McConnell, 1970). This position was supported by several scientific surveys of public opinion, in which no significant partisan divisions were found in environmental support (Munton and Brady, 1970; Dillman and Christenson, 1972; and Buttel and Flinn, 1978).

Although it is reasonable to expect few to be for pollution, is is also plausible to predict partisan differences in support for different types of environmental policy. Environmental policy alternatives for the most part are characterized by extensive regulation on business and industry and changing basic free market institutions such as the rights of property owners (Andrews, 1980). These alternatives are often contrary to positions taken by the Republican Party. Riley Dunlap and Richard Gale summarize these characteristics as following:

> There are a number of characteristics of current policies and proposals aimed at halting environmental degradation which provide a basis for predicting that they will elicit differential levels of support from Republicans and Democrats. In particular, the following seem especially relevant: 1) the opposition of business and industry to such proposals; 2) the expansion of governmental regulation inherent in such proposals; and 3) the necessarily innovative nature of such proposals . . . (Dunlap and Gale, 1974, p. 672)

Several studies of environmental policy conclude partisan differences do exist in the degree of support for environmental policies. Researchers have found partisan differences to be strongest among political elites. Studies of state legislators and Congressional members indicate partisan

differences occur with respect to environmental concern and actual policy adoption (Wandesforde-Smith, 1973). Even before environmental issues became a prominent agenda item, partisanship has been found to be an important source of environmental policy dispute (Jennings, 1969; Ripley, 1969; and Cleavland, 1969). In state legislative case studies of California and Oregon clear differences in roll-call voting can be seen between Republican and Democratic members (McCloskey and Zierold, 1971; and Dunlap and Gale, 1974). Congressional role-call analysis provide additional evidence of partisanship divergence on environmental legislation (Caldwell, 1971; Kenski and Kenski, 1980; and Ritt and Ostheimer, 1974). Overall, the studies indicate Democrats are more likely to be supportive of strong environmental policies.

In addition, public opinion surveys support partisan differences in environmental concern. A survey of Boulder, Colorado residents indicated Democrats were much more concerned about the environment (Tognacci et al, 1972). Similar results were obtained from a survey of Lake Tahoe decision makers (Costantini and Hanf, 1972). Among college students, those who identify themselves as Democrats support environmental policies more strongly than Republican identifiers (Dunlap and Gale, 1972; and Dunlap, 1975). Finally, more broad based national surveys support the hypothesis that Democrats are more environmentally concerned than Republicans (Calvert, 1979).

One reason that there is conflicting survey results concerning partisan differences in environmental concern may be caused by methodological differences. Dunlap states that several surveys did not control for socioeconomic variables which may distort the measure of partisanship differences (Dunlap, 1975). However, it now seems partisan

differences among political elites who directly determine environmental policy are very real. Those studies which find strong evidence of partisan differences on environmental policy are focused on the opinions or voting records of elected public officials.

Ideology. In our policy process model ideology sits at the crossroads between the creation of wants and demand articulation. Socioeconomic conditions create wants such as cleaner water, less noise, or more open space. However, what determines what course of action a group of people will pursue to articulate their wants, and what determines the policy alternative a group will demand its decisional system to implement are basic questions that need to be addressed?

Several factors play a key role in determining how groups press demands on the decisional system. Resources available to the group to present their demands, resources available to the government to enact alternative solutions, other factors in the policy process pursuing competing or conflicting objectives, and the nature of the problem are some of the factors determining a group's actions. However, paramount to all these factors is ideology. Ideology is defined below.

> Such beliefs and hopes, when integrated into a more or less coherent picture of 1) how the present social, economic, and political order operates, 2) why this is so, and whether it is good or bad, and 3) what should be done about it, if anything, may be termed an 'ideology' (Dolbeare and Dolbeare, 1976, pp. 2-3).

Ideology will determine which policy alternatives and methods of articulation will be acceptable to the group or individual.

Political party affiliaton is considered to be representative of one's ideology and there is evidence that congruence exists between ideology and one's partisanship (Kirkpatrick and Jones, 1970). However,

partisanship especially in a nation characterized by only two major political parties, is at best a poor indicator of ideology. People do not hold only two different values or see issues as either black or white. Rather, there is a whole spectrum of values, feelings, and thoughts on what should be, what works best, what is moral, what should not be, etc. Although political parties try to be as close to as many ideologies as possible, the result is no real ideology at all. Therefore, the gap between party elites and general members can be quite large (McCloskey, Hoffman, and O'Hara, 1960).

As a result, many political scientists have examined the relationship between environmental concern and ideology. Analysis of popular national opinion polls finds ideology to be a stronger indicator of environmental concern than partisanship (Van Liere and Dunlap, 1980). Since many environmental policy alternatives call for extensive government involvement in business and industry, people with values of small government, laizze faire economy, and individual rights above society's rights might be expected to oppose most environmental policies and people who believe in public action to meet society's problems might be expected to favor environmental policies. This reasoning is supported by numerous studies which show those with liberal socio-political orientations are more environmentally concerned and supportive of stringent policies (Buttel and Flinn, 1978; Calvert, 1979; Dunlap, 1975; Kraft, 1973; Mazmanian and Sabatier, 1981; and Ritt and Ostheimer, 1974). Differences have been found between people with liberal ideologies; those who are economic liberals show less environmental awareness than "style issue liberals" (Ritt and Ostheimer, 1974). State legislators who view environmental issues as economic in nature are less supportive

of environmental policies than those who view them as a health and ecological issue (Maggiotto and Bowman, 1982). In fact, one researcher found conservatives to be very supportive of environmental policies if they believed that an ecological catastrophe was eminent (Dunlap, 1975). In summary, liberal/conservative orientation is related to environmental concern.

Interest Groups. Interest groups play a major role in linking public demand to the government. Interest groups influence the government by mobilizing the public through education and political activism, support of candidates, lobbying government institutions, providing information and technical expertise to government bodies, and using litigation to enforce and interpret the laws in new ways. Through these activities interest groups articulate public demand for policies.

In the environmental policy arena interest groups have been important in bringing the problems of environmental degradation to the attention of the public and the government. In 1970, Earth Day demonstrations across the country organized by the various environmental groups helped make environmental legislation one of Congress's top agenda items during the past decade. On the other hand, it would seem groups supporting environmental protection may be at a disadvantage when compared to business and industry groups who may oppose many environmental policies.

States having the front line responsibility for implementation and enforcement of both state and national environmental statutes face a difficult task. Unlike the national government state tax bases, employment, and growth can be very dependent on a few industries. This factor greatly magnifies business and industry interest group strength on state

and local governments (Davies, 1970). In addition, government officials both in legislative bodies and within administrative agencies rely on outside information and expertise to make their decisions on what policies should be adopted and how they should be enforced. With greater resources to perform research and employ experts, business and industry are able to establish intimate relationships with legislators and public administrators by providing them with the information they need (Zeigler and Huelshoff, 1980). It seems state administrators and legislators are more responsive to expert input from engineers and professional associations (Oregon Research Institute, 1975). Morehouse (1981) measured interest group strength in the states and found business groups far more influential than other types of pressure groups.

A Resources for the Future sponsored study of the four corner states (Arizona, Colorado, New Mexico, and Utah) finds state legislators from these states have very little expertise in environmental and natural resources issues and rely on outside information furnished by pressure groups for voting cues (Ingram, Laney, and McCain, 1980). Moreover, the study concludes industry interests are better funded and have more technical expertise than environmental groups; however, legislators, governors, and administrators were just as likely to meet with environmentalists as with development interests. Indeed Sharefkin and Page (1974) in an economists look of interest group influence on environmental issues even recommend limitations should be placed on industry groups' efforts to influence environmental policy. In conclusion, interest groups play a major role in influencing the environmental policy process.

Decisional System

Salisbury (1969) defines decisional systems as government institutions that convert policy demands into actual public policies and implement them. The decisional system consists of the legislative, executive, and judicial branches of our national, state, and local governments. Political scientists often refer to the effects of the decisional system on the policy process as institutional factors; in other words, the unique characteristics of our government institutions, such as structure, history-tradition, and leadership, that shape what, when, and how policies are to be adopted and implemented. The decisional system is much more than a tool to decide which policy to adopt based on what policy is analyzed as best or what the people want. The uniqueness of decisional system institutional factors have their own independent influence on policy decisions, so that, given the same public, same political elites, and same problem, a difference in the way in which legislators were compensated might result in two totally different policy choices.

Starting with large-scale differences between states in policy adoption it has been found that states rated as innovative in policy adoption (Walker, 1969) have more modernized governmental structure (structures characterized by professional legislatures, strong governors, professional agencies and boards) than those who were less innovative (Foster, 1978; Gray, 1973; Savage, 1978; and Walker, 1969). In separate case studies of state energy policy adoption it was found innovativeness (defined as a measure of decisional structure), was related to innovative energy policies adopted by the states (Fitzsimmons, 1983; and Regens, 1980). Comparisons by Lundqvist (1974)

of Canadian, Swedish, and American environmental policies indicate the structural differences in the government organizations accounts for a great deal of variance in their environmental policies.

Literature concerning legislative institutional factor influence on policy is quite extensive with a great deal of agreement that professionalism, apportionment, size, leadership, and executive-legislative relations all effect policy adoption and implementation (Hedlund, 1984). However, disagreement does exist over the degree of influence and mechanics of institutional factor influence in the policy process, but the important point is there is a consensus on the existence of legislative factor influence. Studies specific to environmental policy show bipartisan professional staffs can have a positive impact on environmental policy adoption (Sokolow, 1970). Also, in Congress seniority and committee structure have been found to be determinants in environmental policy decisions (Cooley and Wandesforde-Smith, 1972).

In administrative agencies and boards structure has been related to policy decisions. In a study of state water policies it was found membership on administrative boards that included representatives from business and industry was associated with weaker water quality standards, but enforcement effort was strengthened (Wenner, 1972). The heavily studied California Coastal Commissions which regulate coastal development by issuing permits show membership selected by the governor and legislative leaders are much more likely to deny development permits than local leaders who make up the balance of the commissions (Mazmanian and Sabatier, 1980). On utility regulation commissions, professionalism of the decision makers is associated with making decisions that are more agreeable to the public than the utilities (Berry, 1979). Clearly,

variables such as structure, membership, and so on effect the policy process in executive/administrative agencies.

The governor is becoming an increasingly powerful institution in the states (Sabato, 1983). The governor is able to play a larger role in agenda setting, budget making, and implementation due to recent reforms that have taken place in most states. In particular, planning agencies and budgeting agencies have given the governor the pinnacle position in setting the agenda for the state (i.e. legislature) (Beyle and Muchmore, 1983; and Sabato, 1983). Looking at environmental agenda setting, the governors quickly responded to the public outcry of the early 1970's with 65.2 percent of the governors mentioning environmental issues in their 1970 State of the State Address and 22.7 percent specifically mentioning hazardous wastes in their 1981 speeches (Beyle, 1983). With the governors increasing powers to set the agenda and budget, and effect implementation of policy, one might predict unique characteristics of individual governors' offices may effect policy formation, adoption, and implementation.

Summary

As we have seen, the policy process is not a simple phenomena moving from the identification of wants to the adoption of an appropriate policy response. Policies are not selected only for their ability to satisfy wants. Rather, demand patterns and decisional system variables intervene adding values of groups and individuals into the process. Each component of the policy process from the socioeconomic variables creation of wants, to the implementation of specific programs has its own effect on the selection of policy, outputs, and outcomes.

Socioeconomic conditions, partisanship, ideology, interest groups, and the decisional system all play a role in determining the policies we adopt and implement. In the next chapter the research design will be developed from the literature developed in this chapter and the model of the policy process.

CHAPTER III

DEVELOPMENT OF A POLICY PROCESS MODEL

Policy Process Model

From chapters one and two we learned the policy process moves through the development of wants, articulation of demands, selection of policies by decisional system, and policy outputs. The literature suggests partisanship, ideology, socioeconomic conditions, and decisional system characteristics determine the type of environmental policies our governmental units select. Our concept of the policy process and the information gathered suggests the following conceptualization of the determination of state environmental policy.

Concept

System resources, demand patterns, and decisional systems determine the type of environmental policies a state will have.

Hypotheses

State demand patterns characterized by Democratic party domination, ideology which sees government as a positive force, and weak interest group influence on the decisional system will result in strong state environmental policies.

State decisional systems characterized by strong governors, professional legislatures, consolidated state environmental agencies, and are policy innovators will have strong state environmental policies.

The research design for this analysis of state environmental policy will be based on the above conceptualization. In this chapter working hypotheses will be developed from the operationalization of the concepts into dependent and independent variables, and a discussion of the statistical analysis will be shown.

The Working Hypotheses

The last two statements of the operationalization provide the basis for developing our working hypotheses. Before proceeding into the working hypotheses we need to develop from the model indicators of the concepts that appear to be important in determining environmental policy. Partisanship, ideology, interest groups, environmental policy, and decisional system are complex ideas. They are not tangible items like a car or house. Because people differ even on the definition of these concepts, one cannot hope to measure ideas like ideology in total. Indicators are needed which are known or believed to be related to the particular characteristics we are trying to measure. When a person looks outside and notices all the water is frozen, then he knows it is cold outside. Frozen water, the indicator, is known to only occur in cold temperatures, the concept. In the following discussion, simple indicators for our working hypotheses will be identified.

Socioeconomic conditions is a broad category of environmental conditions that includes such factors as wealth, education, race, ethnicity, industrialization, residence, and all other factors describing the social and economic conditions of a particular area. Socioeconomic variables lie at the start of the policy process because these are the factors that simulate wants. For example, high urban noise from

airplanes and highways may lead to citizens wanting noise abatement. The socioeconomic condition of urbanization (specifically transportation noise associated with urbanization), created the desire for a quieter environment. It is from wants that demands for action are born. The literature suggests income, urbanization, and education are related to how people view environmental issues. The U.S. Census Bureau provides useful indicators to measure these concepts.

Demands are calls for a specific action to be performed by the government. Demand patterns are the ways in which demands are presented to the decisional system. Political parties, and interest groups are principle groups presenting demands to the decisional systems. Ideology is included in this section because it forms the basis of what policy alternatives (demands) will be supported and how. Only those alternative actions that fit into one's value system will be acceptable. For example, a staunch conservative probably dislikes smog as much as any liberal, but he would still not be likely to demand policies that heavily interfere with the free market. Ideology is one component which determines the way in which wants are converted into demands. In particular, this study will focus on one specific indicator of ideology; political culture. Political culture is defined as the aggregate of learned, socially transmitted behavior patterns characterizing government and politics within a society (Plano, Riggs, and Robin, 1982, p. 100).

Demands are presented in a wide variety of ways. Through the media, litigation in the judicial system, supporting candidates for public office, educating the public and the decision-makers, organizing public demonstrations, and the list goes on. Overall, the strategy is

to make the demand an issue and getting the issue on the decision-maker's agenda for consideration. This process is called agenda building; the process by which demands of various groups in the population are translated into items vying for the serious attention of public officials (Cobb, Ross, and Ross, 1976, p. 126).

Cobb, et al (1976) describes the conditions under which issues are placed on the public agenda:

> (issues) 1) are the subject of widespread attention or at least awareness, 2) require action, in the view of a sizeable proportion of the public; and 3) are the appropriate concern of some governmental unit, in the perception of community members (Cobb, Ross, and Ross, 1976, p. 127).

Government is the institutions and processes that make public policy. If a political party, interest group, or individual wishes to have its demand fulfilled, it must be placed on the government's agenda. The demand patterns created by demand articulators, such as interest groups, will determine what issues will make the government's agenda, and in part if and how the demands will be met.

Consisting of the executive, judicial, and the legislative branches, the decisional system, through study, negotiation, bargaining, public opinion gathering, and a myriad of other actions, turn demand for policy into actual policy. The important point of the decisional system in the model is the decisional system is not merely a conduit through which demand passes through and becomes policy. Rather, the characteristics of the decisional system's institutions impart their own influences on policy adoption, output, and outcomes. Kenneth Shepsle and Barry Weingast stated in a study of agenda setting institutions:

> The main point of our results is that institutions impose constraints on agenda formation and that these have systematic implications for outcomes under majority rule. Different sets of restrictions, because they imply different sets of feasible

> agendas, imply different sets of potential outcomes. Thus in our view the most fruitful way to proceed in the theory of majority voting (with an eye toward understanding legislative and committee institutions) is to study institutional restrictions on agenda formation and to show their resulting effects on outcomes (Sheplse and Weingast, 1984, p. 71).

Institutional characteristics of the decisional system such as organization structure and customs influences the types of policies that will be considered and approved. Therefore, institutional characteristics of the decisional system will indicate the types of environmental policies it will adopt.

From our discussion of the model we can develop a number of hypotheses to explain differences in policy adopted by different governments (decision systems). The model predicts that individually socioeconomic variables (wants), demand patterns, and the decisional system all have an influence on policy output. In addition the model predicts that the separate components affect each other resulting in an influence that is greater than sum components. Therefore, a researcher might expect to find relationships between policy variance and each component and the combined effect of the components interacting.

From the discussion several working hypotheses can be generated. Since it is fairly certain system resource variables produce demand for environmental policies, this research will focus on demand patterns and the decisional system while controlling for socioeconomic conditions' influences. Below are the working hypotheses for this research.

H_1-The type of political culture a state has is directly related to the scope and strength of a state's environmental policy.

H_1a-The scope and strength of a state's environmental policy will be greater in states with a political culture which considers government as a positive force in solving problems.

H_2-State partisanship is directly related to state environmental policy.

H_{2a}-The scope and strength of a state's environmental policy will be greater in states characterized by Democratic party dominance.

H_3-Interest group strength is directly related to state environmental policy.

H_{3a}-The scope and strength of a state's environmental policy will be greater in states characterized by weak interest group influence.

H_4-The type of governmental structure, operation, and tradition a state has is directly related to state environmental policy.

H_{4a}-The scope and strength of a state's environmental policy will be greater in states which give more formal powers to the governor.

H_{4b}-The scope and strength of a state's environmental policy will be greater in states with more professional legislatures.

H_{4c}-The scope and strength of a state's environmental policy will be greater in states with more modernized environmental agencies.

H_{4d}-The scope and strength of a state's environmental policy will be greater in states characterized as policy innovators.

With the working hypotheses stated, it is now time to discuss the operationalization of the variables.

Dependent Variables

This study will utilize indicators of policy that measure the scope, purpose, and degree of change in the status quo. In addition, rather than relying on one indicator of a state's environmental policy, four separate indicators of state environmental policy will be used. The four dependent variables are: 1) Environmental Policy Index,

2) Federal Environmental Policy Adoption Index, 3) National Wildlife Federation's Toxic Substance Score, and 4) per capita spending by state on environmental protection. The Environmental Policy Index measures state initiated policies (i.e. not suggested by federal legislation), and the Federal Environmental Policy Adoption Index measures state policies adopted in response to federal environmental legislation. The third dependent variable is a rating of toxic substance policy effort of the states done by the National Wildlife Federation. Per capita spending measures the amount of dollars each state spent per person on environmental protection. The unit of measure is the fifty United States of America's states, and all measurements are made during the years 1970-1980.

The first index of state environmental policy is made up of state policy scores in five policy areas under environmental policy. The five policy areas are: 1) land use control, 2) protection of critical natural resources, 3) solid waste policy, 4) hazardous waste policy, and 5) environmental impact statement requirements. Selection of the five policy areas was based on the availability of data. Readers may note the omission of several environmental policy areas, especially water and air pollution areas. However, the author actually generated three versions of the index before settling on this particular version. The two versions that were not used measured state environmental policies in radioactive materials management and automobile inspection and maintenance programs (air pollution) in place of the environmental impact statement requirements. Results from all three versions were similar with the top twenty and bottom twenty states remaining the same. Therefore, the version with the most easily verifiable data was included.

Criteria and indicators for each area vary due to difficulty in obtaining similar data for each policy area. Below is the formula used to calculate the Environmental Policy Index:

$$EPI = \frac{\text{Environmental Policy Score case}}{\text{Environmental Policy Score maximum}} \qquad \text{Equation (3.1)}$$

Where,

EPI = Environmental Policy Index
Environmental Policy Score maximum = highest summation of observed values in the sample.
Environmental Policy Score case = summation of observed values per unit of measure.

Environmental Policy Scores are derived from scoring of a case's policy in each of the five policy areas. Appendix B lists data per state, and describes the criteria used to score each policy area.

Data for state environmental policies was obtained from The Book of the States 1982-83, Council on Environmental Quality 1980, Annual Report, and from state statutes. The criteria used to measure policy differences for protection of critical resources, hazardous waste facility siting, and environmental impact statement legislation was the scope of the states' policies. Scope is defined as the number of specific resources protected by state legislation in each policy area.

In the area of protection of critical resources, a score of one was assigned to a state for each policy protecting nontidal wetlands, floodplains, agricultural lands, and endangered species. So a state with policies in each of the above areas could receive a score of four. It should be noted, all scores for the five policy areas all are adjusted to equal five so the scores from each policy area is weighted the same. Adjustments are made by converting the highest state score received to five and adding the same value to all other scores.

The scope of the state environmental impact statement legislation is measured by the extent of requirements for writing environmental impact statements. States with special or limited requirements received a score of one half. States with comprehensive executive or administrative order powers for environmental impact statements received a score of three quarters, and states with comprehensive statutory requirements for environmental impact statements received a one. As with all of the five policy area indicators, the maximum observed score is adjusted to equal five.

Two criteria were used to measure policy differences in the land use planning area. First, stringency, defined as the distance or degree a statute changes the status quo, is measured by adoption of statewide land use planning laws (Rosenbaum, 1980). Statewide land use planning is defined as the development of a comprehensive plan detailing the appropriate use of all land in the state and is enforced by local government, state government, or jointly. All states have some form of state planning, but only states which regulate all state land is measured here (Morehouse, 1980). Second, the statement of purpose of state land use legislation is used to determine the degree of importance environmental protection is given in such legislation. Data for the stated purpose of individual states' land use legislation was obtained from a survey of professional planners' evaluation of state land use laws performed in 1975 (Mann and Miles, 1979). States with comprehensive state land used planning statutes received a score of two and a half with states with no statewide land use planning receiving a score of zero. Plus, using the scale of zero to five used by the planners' survey where five represents environmental protection as the most

important aspect of state land use laws, a score of one half was awarded for each point on the planners' scale. So a state that received a five on the planners' scale received a score of 2.5. Scores from the survey and adoption of statewide land use planning were added together with the maximum possible score being five.

Solid waste management efforts were measured by state adoption of a beverage container legislation. Generally state beverage container laws, popularly referred to as "bottle bills," prohibit the sale of non-deposit beverage containers and/or consumers are required to pay a deposit for containers to be returned upon delivery of used beverage containers to stores or recycling centers (Scott and Moore, 1984). This type of legislation represents a drastic change from the status quo, and an aggressive approach to reducing waste. Therefore, "bottle bills" make a good indicator of state willingness to establish tough environmental policies. States with beverage container legislation receive a score of five with states lacking beverage container legislation receiving a score of zero.

Hazardous waste facility siting legislation is the indicator of state hazardous waste policy efforts. Hazardous waste facility siting legislation restricts the areas in which hazardous waste disposal and generating facilities can operate. Area restriction is based on the impact such a facility would have on the surrounding environment. State hazardous waste facility siting legislation is characterized by the number of natural resources that must be taken into consideration when evaluating the impact of siting a facility. A score of one is given for each different consideration a state's legislation requires. Also, a score of one is given to states requiring formal physical/chemical

studies of an area and the facility before siting is approved. Three natural resource considerations plus the formal physical/chemical studies adds up to a maximum possible score of four, which is adjusted to the weighted score of five.

The second dependent variable measures the extent to which states implement federal programs encouraged by federal environmental legislation. This is an important component of a state's environmental policy because the bulk of our national environmental policies are designed to be implemented by the states (Stubbs and Cole, 1982). Through partnership the national legislation expects the Environmental Protection Agency to establish national pollution standards, provide oversight, and provide technical assistance to the states. States are expected to issue permits to pollutors, inspect facilities, and monitor polluting activities (Alm, 1983). However, states must show they have the administrative, financial, and statutory capability to run the programs before the Environmental Protection Agency will allow the states to administer their share of the partnership. In other words, in the absence of state ability, responsibility falls back on the federal government for enforcement.

The Resource Conservation and Recovery Act of 1976 (Public Law 94-580) provides a good example of the federal/state partnership involved in the major national environmental legislation. The Resource Conservation and Recovery Act authorizes states to establish both solid waste and hazardous waste management programs. The programs are created to enforce standards on the disposal of our solid and hazardous wastes. Through the use of grant money and desire to manage their own affairs, states are given considerable incentive to fulfill their share of the

federal/state partnership. Interim authorization is given to states wanting to establish their own solid and hazardous waste programs. During the interim authorization, the Environmental Protection Agency monitors the state activities, and at the end of the interim period the Environmental Protection Agency will grant full authorization, extend the interim authorization or take over the responsibility for the programs.

The federal legislation and the resulting partnerships for environmental protection play an enormous role in determining the direction of state environmental policy. The second dependent variable, called the Federal Environmental Policy Adoption Index consists of scores given for primacy (full authorization given by the federal government), and adoption of pollution control programs designed to assist states in meeting national environmental goals. For the index, primacy was measured in the following areas: 1) prevention of significant deterioration regulations of the 1977 Clean Air Act Amendments, 2) National Pollution Discharge Elimination System of the Federal Water Pollution Control Act of 1972, 3) drinking water programs under the Safe Drinking Water Act of 1977, 4) state emissions trading programs of the Clean Air Act Amendments of 1977, and 5) state generic bubble programs of the Clean Air Act Amendments. See Appendix A for an explanation of the construction of the Federal Environmental Policy Adoption Index.

In 1979 the National Wildlife Federation performed a survey of all fifty states and four territories toxic substance control programs. The answers from the survey were converted into scores ranking the states in their efforts to protect the environment from toxic substances. The survey measured state efforts in comprehensive toxic control programs,

procedures for handling toxic emergencies, public participation in toxic substance control, state assumption of the National Pollution Discharge Elimination System, controlling disposal of unused pesticides, recycling of waste oil, prevention of toxic water pollution, monitoring of surface and ground water, ground water protection, hazardous waste management, identification of toxic content of hazardous wastes, and controls on abandoned dump sites (Segal et al, 1980). The results of the National Wildlife Federation's survey represents a more comprehensive evaluation of state environmental policy than this author had either the resources or expertise to perform. Although it measures state policy only in controlling toxic substance pollution, its quality of results makes it a valuable measure of state environmental policy for this analysis. See Appendix B for individual state scores.

The last dependent variable utilized in this analysis of the determinants of state environmental policy is state per capita spending on environmental protection. Data on state environmental protection expenditures is compiled by the United States Census Bureau. Already the weakness of expenditure data as a measure of policy has been discussed, but environmental policy implementation is not exempt from the need for money. In part, the ability to enforce regulations and monitor pollution is dependent on dollars to acquire the staff and tools needed. In addition, the ability to win Environmental Protection Agency approval to implement federal programs is heavily dependent on the states' willingness to finance the programs. Therefore, combined with the other dependent variables, per capita spending increases the potential for reliability and validity to measure environmental policy.

Independent Variables

Seven independent variables will be used to measure characteristics of the demand pattern and decisional system in our model. Three variables measure characteristics of the demand patterns present in each state. They are Daniel Elazar's (1972) state classification of political culture, A. Ranney's (1971) partisanship scale, and Sarah M. Morehouse's (1981) classification of interest group strength. Indicators of decisional system characteristics are Nelson Dometrius's (1979) index of gubernatorial strength, my own index of legislative professionalism, the structural organization of states' primary environmental protection agency(ies), and Jack Walker's (1969) state innovation. The selection of these independent variables are based on the timeliness of the indicators, availability of alternative measures, and quality.

The measures of interest group strength and political culture were selected because they represented the only quantitative attempts to measure those concepts. Ranney's measure of the degree of Democratic party control in the states is a popularly used indicator of partisanship, and represents one of the most thorough measures with its consideration of five partisanship factors. Dometrius's measure of governor's strength is similar to Schlesienger's landmark attempt at measuring governors' strength; however, it measures strength during the decade under consideration. Measures of legislative professionalism tend to be dated which led to the creation of my own index of legislative professionalism (LPI). The Legislative Professionalism Index is based on previous measures of legislative professionalism with one exception, the addition of measuring the uses of electronic data processing in the state legislatures. Finally, the use of Walker's measure of state

innovation and the classification of state environmental agencies structures was based on the lack of other appropriate measures.

Political culture should have the effect of determining the types of policies that are acceptable to the mass public and the political elite. States with varying cultures will have different sets of acceptable policies to choose from. For this reason measuring culture should give us a good indicator of the type of environmental policies a state will adopt. Elazar (1972) measuring differences in the types of policies states adopt developed a classification system of state political culture. He identified eight distinctive types of political culture; they are

1. Moralistic, society sees government as a positive force in solving societies problems.

2. Individualistic, society believes individuals should solve their own problems.

3. Traditionalistic, believes in a limited government role in society based on essentially maintaining the status quo.

4. Moralistic-individualistic, emphasis is on moralism.

5. Individualistic-Traditionalistic, emphasis is on individualistic culture.

6. Individualistic-Moralistic, emphasis is on individualism.

7. Traditionalistic-Individualistic, emphasis is on traditionalism.

8. Traditionalistic-Moralistic, emphasis on traditionalism.

See Table I for classification of the states' political culture in Chapter 3.

Partisanship is measured by the Ranney index which is composed of

1. The average percentage of the popular vote won by the Democratic gubernatorial candidate.

2. The average percentage of the seats in the state senate held by the Democrats.

3. The average percentage of the seats in the state house of representatives held by the Democrats.

4. The percentage of all terms for governor, senate, and house in which Democrats had control (Ranney, 1971).

The index is measured from 1972-1979. In essence Ranney constructed an index of party competitiveness where an average of the four components equal to one would represent a perfect Democratic state. An average of one half represents a highly competitive party state.

Interest group strength is the last measure of state demand patterns. Through extensive review of state literature, Sarah M. Morehouse (1981) rated states' interest group strength as either strong, moderate, or weak. Although Morehouse admits this attempt to rate interest group strength is tentative, it still represents one of the only fifty state measure of interest group strength. Table VIII in Appendix B gives the individual state scores for the three demand pattern variables.

Developing measures to accurately reflect institutional characteristics of our political institutions is not an easy task. At the center of the problem is a lack of information concerning the operation of state and local governments, and the myriad of rules, interactions, traditions, structures, and procedures that make up decisional characteristics. Even with quality information on such factors, determining the institutional characteristics to measure is filled with uncertainty.

However, these barriers have not stopped political scientists from developing indicators of decisional system characteristics. In addition, several applications of various measures have given moderate support to the reliability and validity of such measures (Hedlund, 1984).

The index developed by Dometrius (1979) combined appointive powers, budget making powers, and line item veto power into an index of gubernatorial strength. Using data from 1970-1980, the index weights the three factors the same. Dometrius felt such factors as tenure potential used by other researchers did not have a significant relationship to actual studies of governors (Dometrius, 1979). This index measures only formal powers of the governor.

Past efforts of measuring legislative professionalism have proved to be of limited success in predicting policy variance. Legislative professionalism is defined below.

> By professional we mean that in some legislatures the members are well-paid and tend to think of their jobs as full-time ones; members and committees are well staffed and have good informational services available to them; and a variety of legislative services, such as bill drafting and statutory revision, are well supported and maintained. In other legislatures, members are poorly paid and regard their legislative work as part time; there is little in the way of staff for legislators or committees; and little or nothing provided in the way of legislative assistance and services (Dye, 1977, p. 136).

In particular, John Grumm's (1970) index which measured salary, length of session, number of bills introduced, and staff services has been successful with several updates and minor changes to the index's structure having been made. Unfortunately, most indices of legislative professionalism are dated. Therefore, using the basic assumptions of past modelers of legislative professionalism I have created an index

with data from 1970-1980. Measuring the average salary of state legislators, average turnover percentage, average number of permanent staff services provided, and average number of electronic data processing applications (measured only from 1976 to 1980) the index combines these factors into a single index of legislative professionalism. See Appendix A for the construction of the Legislative Professionalism Index.

Agency modernization is measured by classifying agency organizational structure. With the emphasis on environmental policy, growing states are finding that the old public health, agriculture, resource development, and wildlife and parks agencies are not designed to implement the environmental protection policies being demanded. Although strong arguments can be made for professionalism of state staffs, staff size, and so on as more influential on policy, little data exists to measure these factors. Classifications of state environmental agencies do exist. Using the Book of the States 1982-83, state environmental agencies are classified into

1. Health department connected.

2. Natural resources superagencies (includes both development and protection functions).

3. Little environmental protection agencies (modeled from the U.S. Environmental Protection Agency).

4. Various unconsolidated agency structures. From these we are able to develop a nominal level independent variable for agency modernization.

Finally, state innovation is the last independent variable. State innovation as measured by Ronald Savage (1978) is used as an independent variable because of its success in predicting policy variance. In general, innovative states have been found to have more liberal welfare

policies and higher socioeconomic levels (Walker, 1969). Savage updates Jack L. Walker's (1969) measure of state innovation by including more policy subject areas and looking at state adoptions up to 1977 (Savage, 1978). Innovation is defined as " . . . a program or a policy that is new to the states adopting it, no matter how old the program may be or how many states have adopted it (Walker, 1969, p. 881)". Table II in Appendix B provides state by state scores for each decisional system independent variable.

Socioeconomic Variables

The measure of state innovation provides a good measure of the system resources within a state. As previously mentioned, the measure of state innovativeness is strongly associated with higher socioeconomic levels including high urbanization, income, education, and industrialization (Savage, 1978). For this reason our measure of state innovation will be used to indicate the effects of system resources on the determination of state environmental policy. In this analysis system resources refers to urbanization, industrialization, income, and education.

Statistical Analysis

Two types of analysis will be used in measuring the relationship between the dependent and independent variables: bivariate crosstabulation analysis and multivariate regression analysis. In both cases measures of association will be used to determine the direction and strength of relationships and tests of significance will be utilized to determine the probability of the observed relationships occurring by

chance. Each dependent variable is measured at the interval level and the independent variables political culture and agency modernization are measured at the nominal level. Therefore, the measure of association to be used in the analysis between the dependent variables and the nominal independent variables is eta coefficient, which is the appropriate measure of association between interval level dependent variables and nominal level independent variables (Andrews, et al, 1981; and Norusis, 1983). All other independent variables are measured at the interval level, and will be analyzed with multivariate regression analysis. Tests of significance for the crosstabulation analysis will be chi square and F for the regression analysis. For all cases alpha will be set at .05.

There will be two equations for each of the four dependent variables resulting in eight regression models. The purpose of dividing the regression analysis into two equations for each model is to ensure an adequate case-to-variable ratio of approximately sixteen cases for each independent variable (Tabachnick and Fidell, 1983). The two equations for each dependent variable are divided by two components of the policy process model; demand pattern variables and decisional system variables. The state innovativeness measure will be included in each equation as a control for system resources. Below are the regression models we want to fit:

$$Ys = a + .xi + .xp + .xh \qquad \text{Equation (3.2)}$$

$$Ys = a + .xi + .xp + .xh \qquad \text{Equation (3.3)}$$

$$Ys = a + .xg + .xl + .xh \qquad \text{Equation (3.4)}$$

$$Yf = a + .xg + .xl + .xh \qquad \text{Equation (3.5)}$$

$$Yd = a + .xi + .xp + .xh \qquad \text{Equation (3.6)}$$

$$Yd = a + .xg + .xl + .xh \qquad \text{Equation (3.7)}$$

$$Yn = a + .xi + .xp + .xh \qquad \text{Equation (3.8)}$$

$$Yn + a + .xg + .xl + .xh \qquad \text{Equation (3.9)}$$

Where, Ys = dependent variable, Environmental Policy Index
Yf = dependent variable, Federal Environmental Policy Adoption Index
Yd = dependent variable, per capita spending
Yn = dependent variable, National Wildlife Federation's Toxic Substance Score
xi = interest group strength indicator
xp = partisanship indicator
xg = gubernatorial strength indicator
xl = legislative professionalism indicator
xh = state innovativeness indicator
a = intercept
b = slope, regression correlation coefficient

Examination of residuals will determine if the minimum assumptions for use of regression analysis are met by the data. The assumptions are

1. The relationships between the dependent and independent variables is linear.

2. The data is normally distributed.

3. The independent variables are not highly correlated to each other (Tabachnick and Fidell, 1983).

Summary

Using a model of the policy process, four hypotheses are developed to predict differences in state environmental policy which can be explained by the characteristics of state demand patterns, system resources, and decisional systems. The indicator of system resources is state innovation scores. Measures of partisanship, interest group strength, and political culture are used to indicate demand pattern characteristics. Legislative professionalism, gubernatorial strength, and state innovation measures provide indicators of decisional system factors. Four

dependent variables are used to measure the scope and strength of state environmental policy for the years 1970-1980. They are the Environmental Policy Index, the Federal Environmental Policy Adoption Index, state per capita spending on environmental protection, and the National Wildlife Federation's Toxic Substance Control Score. The unit of analysis is the fifty states. Bivariate crosstabulation analysis will be used to measure the association between the interval level dependent variables and the nominal level independent variables, while multivariate regression analysis will be used to measure association between the dependent variables and the rest of the independent variables. The null hypothesis will be rejected at alpha level .05.

CHAPTER IV

FINDINGS

The central hypothesis predicts socioeconomic, demand pattern, and decisional system variables determine state environmental policy outputs. Due to the nature of the measures, both bivariate crosstabulation and multiple regression analysis is used to measure the association between the dependent variables and independent variables. The results will be presented in three parts: 1) results of the bivariate analysis, 2) evaluation of the residuals for the dependent and independent variables, and 3) results of the multivariate regression analysis.

Bivariate Analysis

In this analysis a bivariate crosstabulation analysis of eta was performed on the dependent variables Environmental Policy Index, Federal Environmental Adoption Index, per capita spending on environmental protection, and the National Wildlife Federation's Toxic Substance Control Score to the independent variables of political culture and agency consolidation. Eta squared, known as the correlation ratio, is the amount of variance in the dependent variable explained by the independent variable (Nie et al, 1975). The results from the analysis are presented in Table I.

TABLE I

BIVARIATE ANALYSIS OF STATE ENVIRONMENTAL POLICY

Variables	Eta^2	Chi square sig.
Environmental Policy Index with political culture	.1708	.283
Environmental Policy Index with agency consolidation	.1213	.511
Fed. Env. Policy Adoption Index with political culture	.2581	.190
Fed. Env. Policy Adoption Index with agency consolidation	.0483	.363
Per capita spending with political culture	.2939	.414
Per capita spending with agency consolidation	.0833	.349
Nat'l Wildlife Federation's Toxic Substance Score with political culture	.1052	.593
Nat'l Wildlife Federation's Toxic Substance Score with agency consolidation	.0421	.3132

N = 50

The correlation ratios indicate the independent variables, political culture and agency consolidation, explain very little variance in the dependent variables. The strongest relationships were found between political culture and the dependent variables Federal Environmental Policy Adoption Index and per capita spending, at .26 and .29 ratios respectfully. The correlation ratios for the other variables were all weak falling below .20 level of association. The null hypothesis that

political culture and agency consolidation are not directly related to the scope and strength of state environmental policy must be accepted at alpha level .05. The probability of the above relationships occurring in the population is not significantly greater than chance.

Examination of Residuals

The purpose of this section is to ensure the relationships between the dependent variables and independent variables meet the assumptions of multiple regression analysis. The assumptions, as stated in Chapter III, are

1. The relationship between the dependent and independent variables is linear.
2. The data is normally distributed.
3. The independent variables are not highly correlated.

Examination of residuals, the difference between the observed values and the predicted values, for the independent variables plotted against the residuals for the dependent variables determines if assumptions one and two are met. Pearson product-moment correlation coefficients for the independent variables will be used to indicate the statistical independence of the independent variables.

Scattergrams of the residuals for each of the regression models can be found in Appendix C. The assumption that the relationship between the dependent and independent variables is linear appears to be confirmed by the scattergrams, since the plots of the residuals show negligible curvature. In addition, the distribution of the data seems normal with the exception of a few outliers. Overall, the scattergraphs indicate no significant deviations from assumptions one and two.

In Table II Pearson correlation coefficients suggests the independent variables meet assumption three. The strongest correlation occurs between interest group strength and state innovation with a coefficient of .37. It is not sufficiently large enough to damage the regression equation since it is not highly correlated (near singular correlation) (Tabachnick and Fidell, 1983). As can be seen, the rest of the coefficients are sufficiently small to meet assumption three.

TABLE II

CORRELATION COEFFICIENTS BETWEEN INDEPENDENT VARIABLES

Interest group strength	-.30			
Gubernatorial strength	-.18	.21		
Legislative professionalism	.03	.26	.19	
State innovation	-.26	.37	.02	.23
	Partisanship	Interest Group Strength	Gubernatorial Strength	Legislative Professionalism

Multivariate Analysis

The results from the multivariate regression analysis is presented in Table III and IV. In Table III we can see a moderate fit between the regression line and the data points, as indicated by the multiple correlation coefficient (R) for each regression model with the exception of Equation 3.5. Equation 3.5 measures the association between the dependent variable, Federal Environmental Policy Adoption Index, and the independent variables state innovation, gubernatorial strength, and legislative professionalism. The coefficient of determination (R squared) explains the amount of variance determined by the independent variables. With coefficients of determination ranging from .22 for Equation 3.8 down to .05 for Equation 3.5, the models explain only a moderate proportion of the variance occurring in the dependent variables.

TABLE III

SELECTED STATISTICS FROM MULTIPLE REGRESSION

Equation	R	R^2	Significance F
2.2	.45	.20	.02
2.3	.42	.18	.04
2.4	.43	.18	.03
2.5	.22	.05	.54
2.6	.41	.17	.04
2.7	.39	.15	.07

TABLE III

(Continued)

Equation	R	R^2	Significance F
2.8	.47	.22	.01
2.9	.39	.15	.07

N = 50

The null hypothesis for Equations 3.2, 3.3, 3.4, 3.6, and 3.8 is rejected at alpha level .05. The null hypotheses that the decisional system characteristics, gubernatorial strength and legislative professionalism, is not directly associated with state environmental policy, as measured by the Federal Environmental Policy Adoption Index, per capita spending, and the National Wildlife Federation's Toxic Substance Score, must be accepted at alpha level .05. The measures of association between the dependent variables and the demand pattern variables can be accepted as not occurring by chance.

Table IV lists the standardized partial regression coefficients (Beta) for the eight regression models. The standardized partial regression coefficient indicates the amount of influence of individual independent variables on the dependent variable controlling for the effects of the other independent variables. The results indicate state innovation and partisanship are most strongly associated with state environmental policy. The Betas for the other independent variables suggests they are only weakly associated with the dependent variables.

Partisanship is found to be moderately associated with the Federal Environmental Policy Adoption Index and the National Wildlife Federation's Toxic Substance Control Score having coefficients of .46 and .37. State innovation is moderately associated with the Environmental Policy Index, per capita spending, and the National Wildlife Federation's Toxic Substance Control Score.

TABLE IV

STANDARDIZED PARTIAL CORRELATION COEFFICIENT

Dependent Variable (equation): Independent Variables	Beta	Significance T
Environmental Policy Index (3.2)		
Partisanship	.17	.26
Interest group strength	.23	.12
State innovation	.36	.02
Environmental Policy Index (3.3)		
Gubernatorial strength	.02	.88
Legislative professionalism	.18	.21
State innovation	.32	.03
Federal Environmental Policy Index (3.4)		
Partisanship	.46	.004
Interest group strength	.13	.37
State innovation	.06	.70
Federal Environmental Policy Index (3.5)		
Gubernatorial strength	.04	.81
Legislative professionalism	.22	.17
State innovation	-.11	.49
Per capita spending (3.6)		
Partisanship	-.07	.66
Interest group strength	.15	.33
State innovation	.31	.05
Per capita spending (3.7)		
Gubernatorial strength	-.04	.76

TABLE IV

(Continued)

Dependent Variable (equation): Independent Variables	Beta	Significance T
Legislative professionalism	-.09	.54
State innovation	.41	.008
National Wildlife Federation's Toxic Substance Control Score (3.8)		
Partisanship	.37	.01
Interest group strength	-.06	.68
State innovation	.42	.005
National Wildlife Federation's Toxic Substance Control Score (3.9)		
Gubernatorial strength	-.07	.64
Legislative professionalism	.26	.08
State innovation	.23	.13

N = 50

The null hypothesis that state environmental policy is not directly related to state innovation is rejected by regression models 3.2, 3.3, 3.6, 3.7, and 3.8 at alpha level .05. In addition, the null hypothesis that state environmental policy is not directly related to partisanship is rejected by Equations 3.4 and 3.8. For all other hypotheses the null hypothesis is accepted.

Summary

With the exception of state innovation and partisanship all the independent variables were only weakly associated with the dependent variables. Plus, state innovation and partisanship were the only

individual variables which were significantly related enough to reject the null hypothesis. Overall, the central hypothesis receives only one weak support from the bivariate and multivariate analysis.

CHAPTER V

CONCLUSIONS

The findings provide only mixed support for the hypotheses we were testing. Only state innovation and partisanship appeared to have any important influence on the scope and strength of state environmental policy. Only one of the decisional system variables showed a moderate association with the dependent variables. This chapter will examine the findings, and try to determine why the predictions we made concerning the determinants of state environmental policy were not all supported by the analysis. In particular, we will examine the results for each of the three components of the policy model: 1) system resources, 2) demand patterns, and 3) decisional system.

System Resources

The measure of state innovation provided our indicator of the system resources; education, income, industrialization, and urbanization. From the model we predicted system resources or socioeconomic conditions created the wants which lead to demand for public policies. In other words, a problem needs to exist before people will feel a need to address the problem. The literature suggested increasing education, income, industrialization, and urbanization all result in more concern for the environment. Environmentally concerned people presumably would want strong action taken to alleviate environmental degradation.

The findings confirm our prediction that state innovation is directly related to the scope and strength of state environmental policy. However, one exception does exist. The Federal Environmental Policy Adoption Index was not highly related to state innovation. This would indicate the processes involved in states adopting federal environmental programs is different from the adoption of other types of state environmental policies. Perhaps the Federal Environmental Policy Adoption Index incorrectly measures state adoption of federal programs. Examination of the data reveals a different explanation. Comparing the values for the states' Federal Environmental Policy Adoption Index values and state innovation values we see southern states tend to score very highly on the federal adoption index, while receiving low values on the state innovation index. Further analysis, which removes the southern states from the cases, may suggest that Federal Environmental Policy Adoption Index is influenced by state system resources. There may be an intervening variable, which enables southern states to achieve Environmental Protection Agency approval to implement federal programs. For example, The EPA Region IV, which encompasses the southern states, may be exceptionally good at providing the technical advice in winning EPA approval or exceptionally lax in overseeing and evaluating state efforts to receive approval. In all, the results definitely lead us to accept state innovation as a determinant of state environmental policy.

Demand Patterns

Partisanship proved to be the only demand pattern variable that is a determinant of state environmental policy in this analysis. Both political culture and interest group strength showed only weak measures

of association with the four dependent variables. One reason for these results might be the nature of the indicators used in the analysis. The Ranney index measuring the degree of Democratic party control in the states is based on five factors that are relatively easy to define and measure. The measures of political culture and interest group strength are based on hard to define concepts that employ subjective measure. Although the creators of both these measures did excellent work, the concepts political culture and interest group strength are simply difficult to define and measure. One reason for the low measure of association may have been from the indicators' inability to measure the concepts we desired. Also, political culture may be overridden by other factors such as fear of ecocatastrophe. For example, a conservative public may be ideologically opposed to environmental regulation, but, nevertheless, support stringent regulation if they forsee an eminent threat to their lives or livelihoods.

Although the results suggest partisanship is a determinant of federal environmental policy adoption and toxic substance control efforts by the states, partisanship failed to be highly associated with either the Environmental Policy Index or per capita spending on environmental protection. Once again observations from the southern states may be uncharacteristic, which results in the lack of association between partisanship and state initiated policies and per capita spending. Examining the data in Appendix B we can see the southern states, Florida, Georgia, Alabama, Mississippi, Louisiana, South Carolina, North Carolina, Tennessee, and Kentucky are one-party Democratic states. However, these states are traditionally more conservative (Lester, 1980). This conservative tradition can be seen in the types of political

cultures the southern states exhibit. The southern states do not adopt many of the policies and positions supported by the Democratic party, even though, the Democratic party is the most dominant in the southern states. Removing these units from the data set may lead to stronger associations between partisanship and out dependent variables.

The Decisional System

The analysis did not support the prediction that decisional system variables would be important determinants of state environmental policy. No relationships were found between the decisional system variables and the four dependent variables with the exception of state innovation. Could it be the decisional system is not an important determinant of policy outputs? Certainly, this analysis, as well as other research, supports this conclusion (Dye, 1979). One explanation, however, is worth considering. Simply, our attempts to measure the institutional characteristics of the decisional system is crude and incomplete. The measure of gubernatorial strength indicates only the formal powers the governor possesses. Informal powers may be more important than formal powers. The legislative professionalism index measures only the concept of professionalism when tradition, rules, or leadership may be important determinants of the types of policy state legislatures adopt. In short, better measures should provide us with more valid results that may indicate a stronger correlation between decisional system variables and environmental policy output.

State innovation, as already reported, was found to be a determinant of state environmental policy. State innovation not only served as an indicator of system resources characteristics, but also, served as

an indicator of state decisional systems characteristics to adopt new policies. The analysis is clear innovative states are innovative in adopting environmental policies. Since moderate associations have been found between legislative professionalism and gubernatorial strength by other researchers, we can conclude there may be some relationship between the decisional system and state environmental policy.

Furthermore, the policy process is one characterized by interaction between system resources, demand patterns, the decisional system, and policy outputs. The interplay between the various policy process components would appear to be an important determinant of policy outputs. This interaction in the policy process is not considered in this analysis, rather, each component is treated as a separate independently acting determinant. A more sophisticated analysis, considering the interactions between variables, may be required to find any substantial influences produced by the decisional system.

Summary

Each component of the policy process model utilized in this analysis showed measurable association with one or more of the four dependent variables. This supports our central hypothesis that system resources, demand patterns, and decisional system characteristics have a direct relationship with the scope and strength of state environmental policy. However, the Federal Environmental Policy Adoption Index dependent variable produced results that were not predicted due to high scores received for the Federal Environmental Policy Index. The southern states scores may reflect an intervening variable characteristic only in the southern states. In addition, several variables measuring demand

pattern and decisional system factors did not exhibit any substantial relationship with the dependent variables. Specifically, political culture, interest group strength, legislative professionalism, and gubernatorial strength were found to have only very weak measures of association with the dependent variables.

State environmental policy adoption provides us with a unique laboratory to test our public policy theories. This analysis has been an effort to expand our knowledge of the policy process. Further research is needed before any definite conclusions can be made concerning the state environmental policy process. However, it is hoped this analysis will be a contribution towards the understanding of the policy process.

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APPENDIX A

CONSTRUCTION OF INDICES

Federal Environmental Policy Adoption Index

1) The Federal Environmental Policy Adoption Index (FEPAI) consists of five components: 1) responsibility for administering the Prevention of Significant Deterioration program (PSD); 2) responsibility for administering the National Pollution Discharge Elimination System (NPDES); 3) responsibility for administering safe drinking water programs; 4) establishment of state air emissions trading programs; and 5) establishment of state generic bubble programs.

2. Each component is scored by state and measures achievement for each component to the year 1981. The score for each component is three; however, the criteria for assigning scores varies for each component. Below are the scoring systems for each component.

PSD: States received scores for the following characteristics:
- Full responsibility-3
- Partial responsibility-2.5
- Responsibility pending-2
- Working towards assuming responsibility-1.5
- No responsibility-1

NPDES: States received scores for the following characteristics:
- Full responsibility-3
- Pending responsibility-2
- No responsibility-1

Drinking water programs: States received scores for the following characteristics:
- Full responsibility-3
- Returned responsibility to EPA-2
- No responsibility-1

State air emissions trading programs: States received scores for the following characteristics:
- EPA approved program-3
- Under review of EPA-2
- Under consideration by state-1

State generic bubble programs: States received scores for the following characteristics:
- EPA approved program-3
- Proposed for approval-2.5
- Under review by EPA-2
- Under development-1

3. Score for each component are summed together to arrive at the FEPAI. See Equation 3.3 below.

$$\text{FEPAI} = \text{PSD score} + \text{NPDES score} + \text{Drinking water score} + \text{Emissions trading score} + \text{Bubble program score}$$

Legislative Professionalism Index

1. The Legislative Professionalism Index (LPI) consists of four components: 1) average yearly compensation received by legislators between 1970-80 by state; 2) average percentage of turnover in legislative membership in house and senate by state for the years 1970-80; 3) average number of permanent legislative services provided to the legislature by state for the years 1970-80; and 4) average number of electronic data processing applications used by state legislatures for the years 1976-80. Each component carries the same value of one.

2. Each states' average for each component is divided by the maximum average received in the sample cases and the quotients are added together to form the LPI. Below is the equation for the LPI.

$$EPI = \frac{Cxi + Txi + Sxi + Exi}{Cyi + Tyi + Syi + Eyi}$$

Where:
- Cxi = Average yearly compensation of case i.
- Txi = Average yearly turnover of case i.
- Sxi = Average number of legislative services of case i.
- Exi = Average number of electronic data processing applications in case i.
- Cyi = Maximum average compensation received.
- Tyi = Maximum average turnover received.
- Syi = Maximum average number of services. received.
- Eyi = Maximum average number of electronic data processing applications received.

Table VI in Appendix B lists the individual state EPI's and scores for each component.

APPENDIX B

TABLES

TABLE V

MEASURES OF STATE ENVIRONMENTAL POLICY

State	EPI	Per Capita	FEPAI	NWFTS
AL	0.281	1.27	10.0	22.0
AK	0.575	22.81	5.5	17.0
AZ	0.624	2.45	6.5	5.5
AR	0.560	1.51	7.0	21.5
CA	0.917	4.55	8.0	34.0
CO	0.428	4.01	8.0	15.5
CT	0.917	9.34	10.0	26.5
DE	1.00	11.34	9.0	28.5
FL	0.526	2.12	6.5	25.5
GA	0.611	2.04	11.0	11.0
HI	0.599	8.92	7.0	17.0
ID	0.306	4.35	5.0	12.0
IL	0.403	5.82	11.0	23.0
IN	0.482	2.71	9.0	20.0
IA	0.844	2.61	7.0	17.5
KS	0.428	1.53	7.0	17.5
KY	0.452	2.67	11.5	15.5
LA	0.550	1.13	8.5	23.0
ME	0.892	8.37	7.0	13.0
MD	0.770	8.96	9.0	32.0
MA	0.746	7.69	8.0	18.5
MI	0.929	5.29	10.0	19.0
MN	0.780	4.89	9.0	18.0
MS	0.281	2.06	9.0	13.0
MO	0.355	2.82	9.0	16.0
MT	0.428	4.63	8.5	19.0
NE	0.672	3.60	7.0	16.0
NV	0.428	4.15	7.0	10.0
NH	0.355	14.79	5.0	10.5
NJ	0.513	5.77	8.0	24.5
NM	0.330	3.38	6.5	18.0
NY	0.731	7.87	7.0	23.5
NC	0.403	2.94	11.5	24.0
ND	0.306	1.55	11.0	18.0
OH	0.609	17.73	9.0	25.5
OK	0.379	1.59	7.5	22.0
OR	0.976	5.90	12.0	27.0
PA	0.658	4.08	9.5	23.5
RI	0.902	7.96	11.0	20.0
SC	0.428	2.32	12.0	29.5
SD	0.452	2.01	3.0	9.0
TN	0.609	2.77	10.0	30.5
TX	0.367	1.65	6.5	24.5
UT	0.342	1.59	6.5	17.5

TABLE V

(Continued)

State	EPI	Per Capita	FEPAI	NWFTS
VT	0.844	11.51	9.0	25.5
VA	0.452	2.98	10.0	21.0
WA	0.758	5.44	11.0	29.0
WV	0.379	2.73	7.5	14.0
WI	0.550	1.28	9.5	18.5
WY	0.378	3.02	7.0	20.5

EPI = Environmental Policy Index, 1970-80.
Per capita spending = average amount spent on environmental protection from 1970 to 1980.
FEPAI = Federal Environmental Policy Adoption Index
NWFTS= National Wildlife Federation Toxic Substance score, 1979.

TABLE VI

FEDERAL ENVIRONMENTAL POLICY ADOPTION INDEX

State	PSD	NPDES	Drinking Water	Emissions Trading	Bubble Program
AL	3.0	3.0	3.0	0.0	1.0
AK	1.5	1.0	3.0	0.0	0.0
AZ	2.5	1.0	3.0	0.0	0.0
AR	3.0	1.0	3.0	0.0	0.0
CA	1.0	3.0	3.0	0.0	1.0
CO	1.0	3.0	3.0	1.0	0.0
CT	1.0	3.0	3.0	0.0	3.0
DE	3.0	3.0	3.0	0.0	0.0
FL	2.5	1.0	3.0	0.0	0.0
GA	3.0	3.0	3.0	0.0	2.0
HI	1.0	3.0	3.0	0.0	0.0
ID	1.0	1.0	3.0	0.0	0.0
IL	3.0	3.0	3.0	0.0	2.0
IN	3.0	3.0	1.0	0.0	2.0
IA	2.0	3.0	2.0	0.0	0.0
KS	1.0	3.0	3.0	0.0	0.0
KY	3.0	1.0	3.0	2.0	2.5
LA	2.5	1.0	3.0	0.0	2.0
ME	3.0	1.0	3.0	0.0	0.0
MS	2.0	3.0	3.0	0.0	1.0
MA	1.0	1.0	3.0	0.0	3.0
MI	3.0	3.0	3.0	1.0	1.0
MN	3.0	3.0	3.0	0.0	0.0
MA	3.0	3.0	3.0	0.0	0.0
MO	3.0	3.0	3.0	0.0	0.0
MT	2.5	3.0	3.0	0.0	0.0
NE	1.0	3.0	3.0	0.0	0.0
NV	1.0	3.0	3.0	0.0	0.0
NH	1.0	1.0	3.0	0.0	0.0
NJ	1.0	1.0	3.0	0.0	3.0
NM	2.5	1.0	3.0	0.0	0.0
NY	1.0	3.0	3.0	0.0	0.
NC	2.5	3.0	3.0	0.0	0.0
ND	3.0	3.0	3.0	1.0	1.0
OH	3.0	3.0	3.0	0.0	0.0
OK	2.5	1.0	3.0	0.0	1.0
OR	2.0	3.0	1.0	3.0	3.0
PA	2.5	3.0	1.0	0.0	3.0
RI	1.0	1.0	3.0	3.0	3.0
SC	3.0	3.0	3.0	0.0	3.0
SD	1.0	1.0	1.0	0.0	0.0
TN	3.0	3.0	3.0	0.0	1.0
TX	2.5	1.0	3.0	0.0	0.0

TABLE VI

(Continued)

State	PSD	NPDES	Drinking Water	Emissions Trading	Bubble Program
UT	2.5	1.0	3.0	0.0	0.0
VT	3.0	3.0	3.0	0.0	0.0
VA	3.0	3.0	3.0	0.0	1.0
WA	1.0	3.0	3.0	2.0	2.0
WV	2.5	2.0	3.0	0.0	0.0
WI	2.5	3.0	3.0	0.0	1.0
WY	3.0	3.0	1.0	0.0	0.0

Source for PSD, NPDES, and Drinking Water programs: Stubbs, Anne and Leslie Cole. "Environment Management." Book of the States 1982-83. Lexington, KY: Council of State Governments, 1981; 587-614.

Source for Emissions Trading and Bubble Programs: Council on Environmental Quality. Environmental Quality Annual Report 1983. Washington D.C., 1983; 190.

TABLE VII

LEGISLATIVE PROFESSIONALISM INDEX

State	Compen-sation	Membership Turnover %	Number of Services	Electronic Data Processing
AL	13227	63	18	3
AK	33187	49	19	8
AZ	15737	28	29	2
AR	7055	21	14	0
CA	57044	28	30	7
CO	16000	37	18	8
CT	10750	39	22	9
DE	16537	32	9	2
FL	29050	36	27	14
GA	15971	26	17	8
HI	27450	36	31	2
ID	8598	31	10	4
IL	40006	26	41	11
IN	19292	32	18	8
IA	18041	38	20	16
KS	14060	32	18	8
KY	13412	31	13	7
LA	20875	43	25	6
ME	5014	41	16	3
MD	20075	41	17	11
MA	29889	41	38	4
MI	38625	23	28	7
MN	20850	33	42	11
MS	19537	39	25	6
MO	17287	28	18	2
MT	6799	41	19	8
NE	9800	30	16	8
NV	7230	39	15	6
NH	200	42	16	3
NJ	20000	41	20	6
NM	3060	25	14	4
NY	45350	26	48	9
NC	14048	35	36	7
ND	5997	33	14	7
OH	30875	22	22	12
OK	20214	25	15	5
OR	17568	34	21	9
PA	30960	24	45	12
RI	600	31	22	8
SC	13075	35	23	3
SD	6087	35	18	11
TN	17755	29	25	2
TX	14530	32	26	10

TABLE VII

(Continued)

State	Compen-sation	Membership Turnover %	Number of Services	Electronic Data Processing
UT	3200	39	14	9
VT	6952	32	12	1
VA	16560	23	23	7
WA	14930	43	27	14
WV	8257	43	18	4
WI	27098	25	34	10
WY	2903	38	12	11

Source: Council of State Governments. The Book of the States. 70-71, 72-73, 74-75, 76-77, 78-79, and 80-81 editions. Lexington, KY.

TABLE VIII

MEASURES OF STATE DEMAND PATTERNS

State	Political Culture	Partisanship	Interest Group Strength
AL	7	.9438	1
AK	4	.5571	1
AZ	8	.4482	2
AR	7	.8630	1
CA	2	.7081	2
CO	1	.4429	3
CT	3	.7336	3
DE	4	.5490	2
FL	6	.7524	1
GA	7	.8849	1
HI	5	.7547	1
ID	2	.3898	2
IL	4	.5384	2
IN	4	.4145	2
IA	2	.4539	1
KS	2	.4671	2
KY	3	.7907	1
LA	7	.8762	1
ME	1	.5164	2
MD	4	.8509	2
MA	3	.7916	3
MI	1	.6125	3
MN	1	.6680	3
MS	7	.8673	1
MO	5	.6932	2
MT	2	.6259	1
NE	3	.5166	1
NV	4	.7593	2
NH	2	.3916	1
NJ	4	.7330	3
NM	6	.7113	1
NY	3	.5390	3
NC	8	.8555	1
ND	1	.3374	3
OH	4	.5916	2
OK	6	.7841	1
OR	1	.6954	1
PA	4	.5574	2
RI	3	.8506	3
SC	7	.8034	1
SD	2	.3512	2
TN	7	.6648	1
TX	6	.7993	1
UT	1	.4653	2

TABLE VIII

(Continued)

State	Political Culture	Partisanship	Interest Group Strength
VT	1	.3612	2
VA	7	.7162	2
WA	2	.5806	1
WV	3	.8032	1
WI	1	.6634	3
WY	3	.3879	2

Political culture scores from: Elazar, Daniel J. American Federalism: A View from the States, 2nd edition. New York: Thomas Y. Crowell, 1972.

Partisanship scores from: Patterson, Samuel. "Legislators and Legislatures in the American States." Politics in the American States 4th edition. Eds. Virginia Gray, Herbert Jacob, and Kenneth Vines. Boston: Little, Brown, and Co., 1984.

Interest group scores from: Morehouse, Sarah M. State Politics, Parties, and Policy. New York: Holt, Rinehart, and Winston, Inc., 1981.

Scales

Political Culture:

1-Moralistic 2-Moralistic-Individualistic 3-Individualistic-Moralistic 4-Individualistic 5-Individualistic-Traditionalistic 6-Traditionalisti-Individualistic 7-Traditionalistic 8-Traditionalistic-Moralistic

Partisanship:

1.00-Complete Democratic party control
0.50-Party control split evenly between Republicans and Democrats
0.00-Complete Republican control

Interest Group Strength:

1-Strong
2-Moderate
3-Weak

TABLE IX

MEASURES OF DECISIONAL SYSTEM CHARACTERISTICS

State	IV1	IV2	IV3	IV4
AL	2.503	1.13	3	.67
AK	2.431	1.91	3	0.00
AZ	2.295	1.75	1	.77
AR	1.819	1.42	2	1.02
CA	2.524	2.81	4	1.41
CO	2.425	1.72	1	1.29
CT	2.494	1.75	3	1.27
DE	2.458	2.81	4	.73
FL	1.296	2.53	3	1.13
GA	2.367	1.94	3	.62
HI	2.698	1.84	1	0.00
ID	1.437	1.29	1	1.51
IL	2.568	3.05	2	1.29
IN	1.610	1.87	1	1.32
IA	2.222	2.29	2	1.07
KS	2.354	1.76	1	.84
KY	2.535	1.62	3	.97
LA	2.418	1.75	3	.91
ME	1.440	1.12	2	1.33
MD	1.527	1.91	1	1.27
MA	1.610	2.08	3	1.21
MI	2.411	2.61	3	1.29
MN	2.523	2.56	2	1.36
MS	1.201	1.78	3	.60
MO	2.406	1.55	3	1.09
MT	1.484	1.53	1	1.06
NE	2.508	1.71	2	1.09
NV	1.392	1.35	2	.51
NH	1.572	1.02	2	.94
NJ	2.641	1.65	3	1.26
NM	1.392	1.44	1	1.28
NY	2.688	3.17	3	1.35
NC	1.383	2.03	3	.80
ND	2.340	1.47	1	.95
OH	2.523	2.70	2	1.52
OK	2.266	1.82	1	1.20
OR	1.446	1.93	2	1.40
PA	2.699	3.12	3	1.04
RI	1.492	1.65	3	1.23
SC	1.254	1.50	1	.58
SD	2.123	1.77	3	.98
TN	2.715	1.68	1	1.30
TX	0.341	2.08	4	.69
UT	2.448	1.45	1	1.43

TABLE IX

(Continued)

State	IV1	IV2	IV3	IV4
VT	1.501	1.09	3	1.23
VA	1.626	2.12	4	.81
WA	1.583	2.19	3	1.56
WV	2.460	1.26	4	.88
WI	1.350	2.65	3	.93
WY	2.530	1.54	2	.89

IV1 = Gubernatorial strength index by Nelson Dometrius (1979)
IV2 = Legislative professionalism index
IV3 = Agency modernization
IV4 = State innovative score

Scales:

IV1- 0 to 3, 3 represents maximum strength
IV2- 0 to 4, 4 most professional legislature
IV3- 1 = health department control
2 = environmental superagency
3 = little "EPA"
4 = unconsolidated agencies
IV4- innovativeness increases with score

APPENDIX C

SCATTERGRAMS OF RESIDUALS

TABLE OF SCATTERGRAMS

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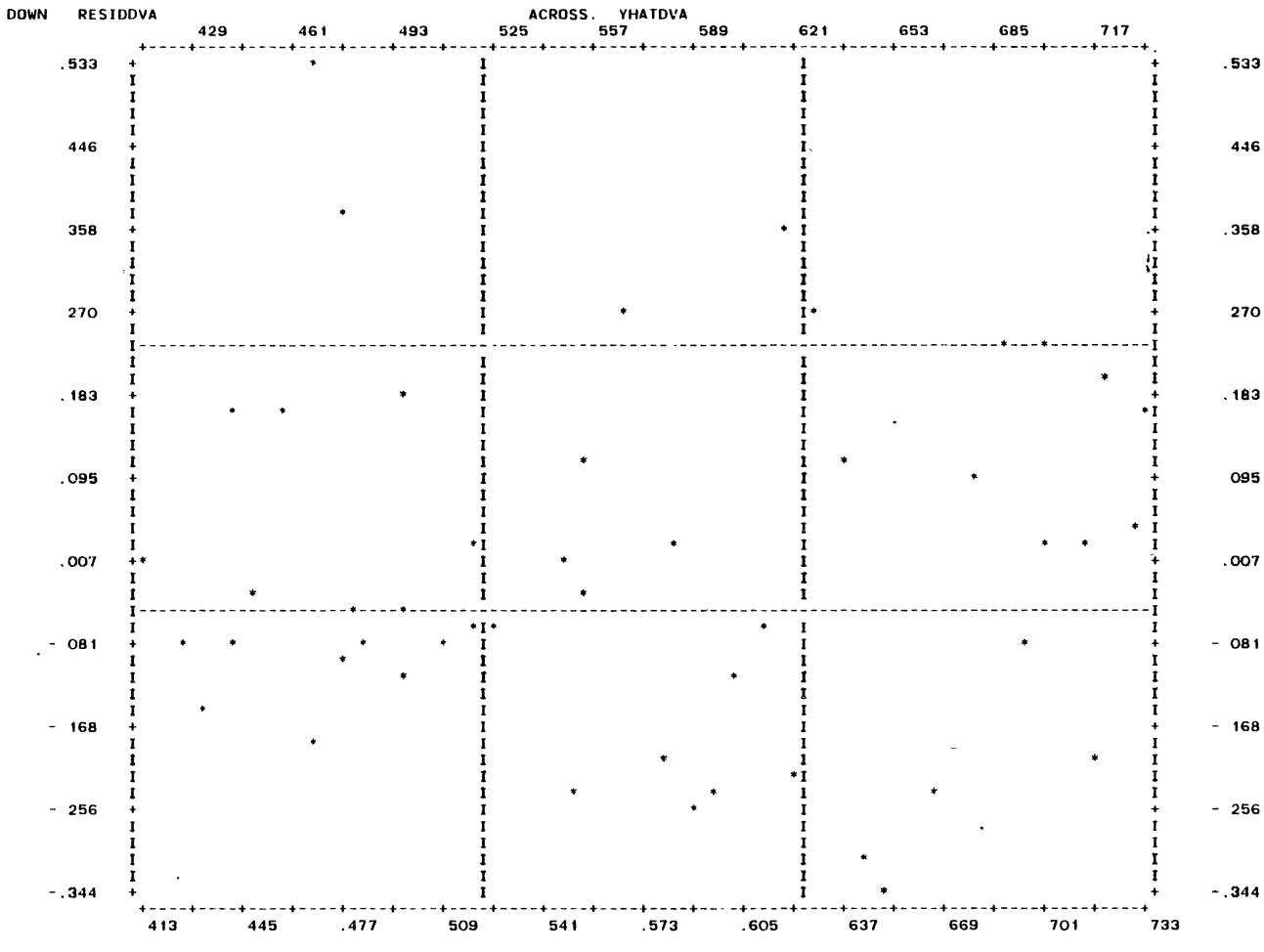
14:58:11 OKLAHOMA STATE UNIVERSITY IBM 3081D MVS/SP 1 3



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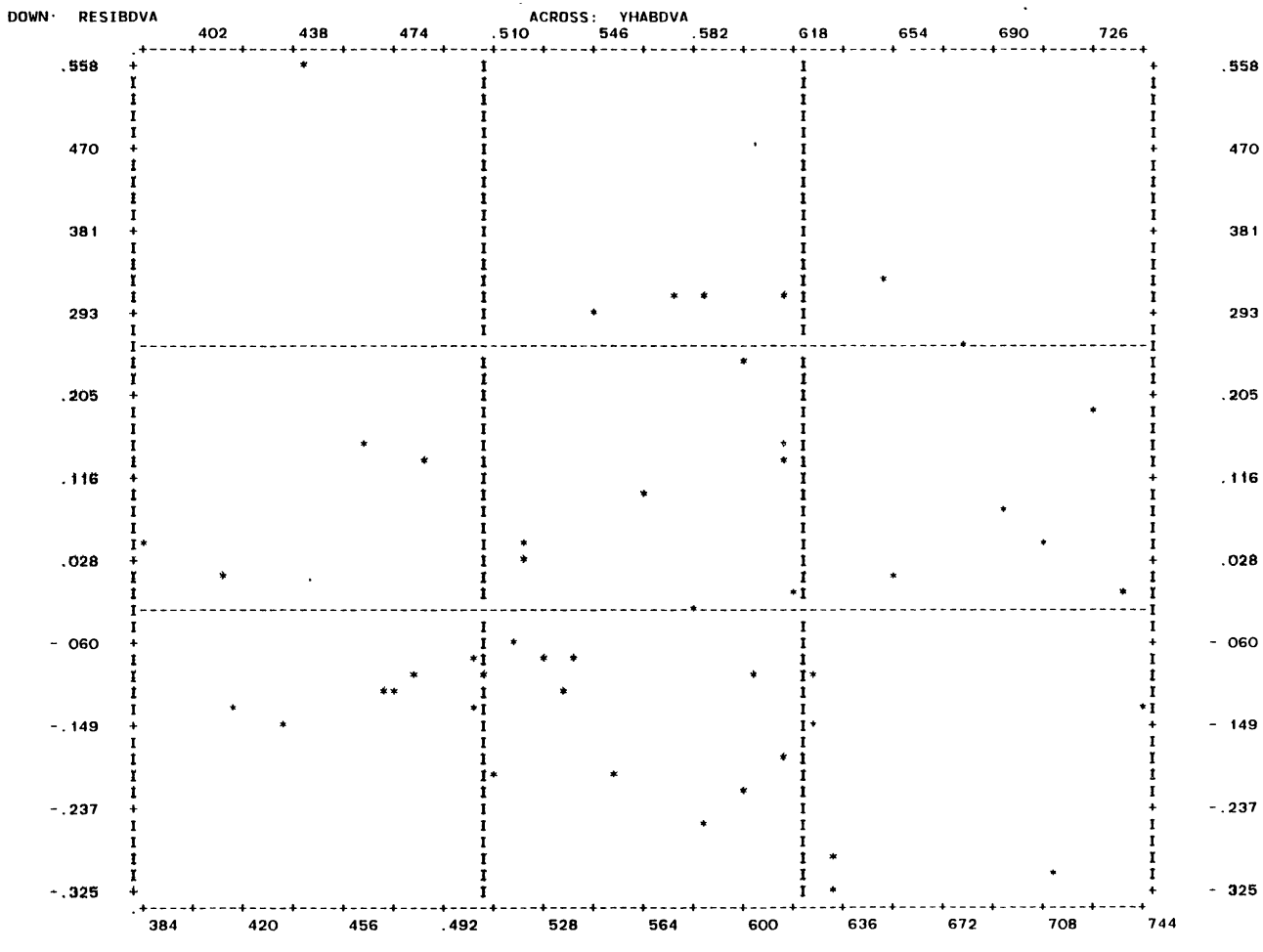

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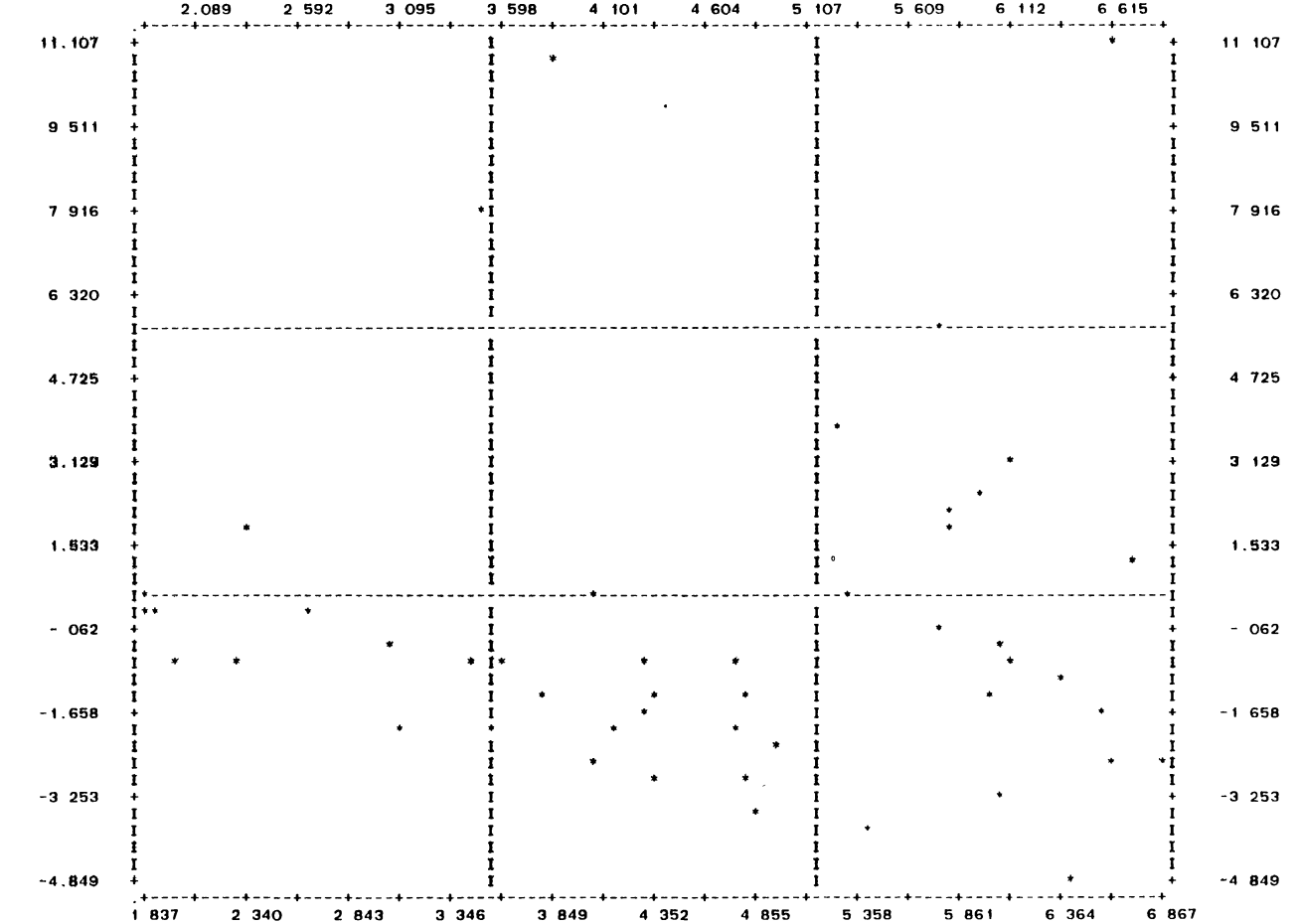

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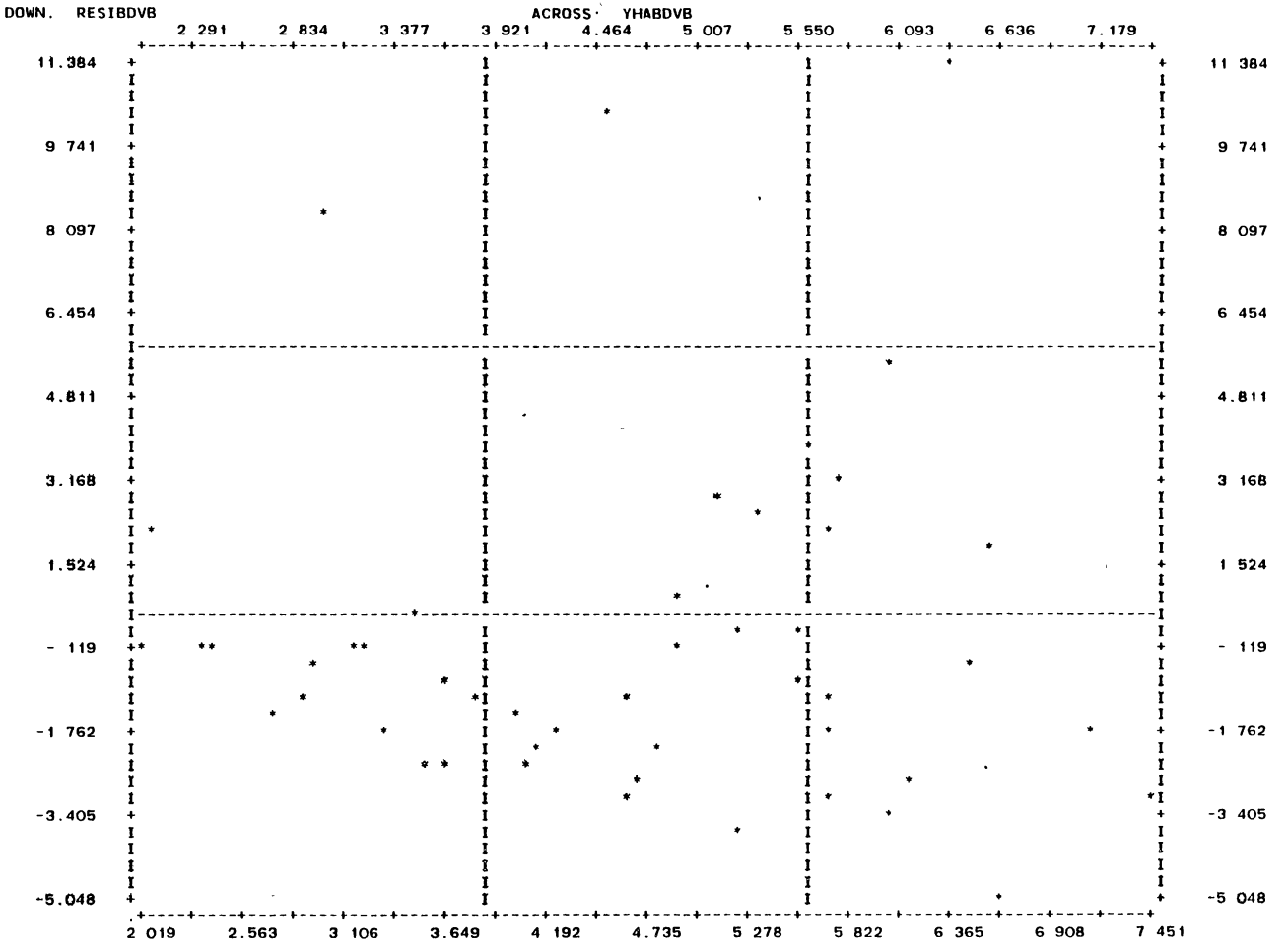

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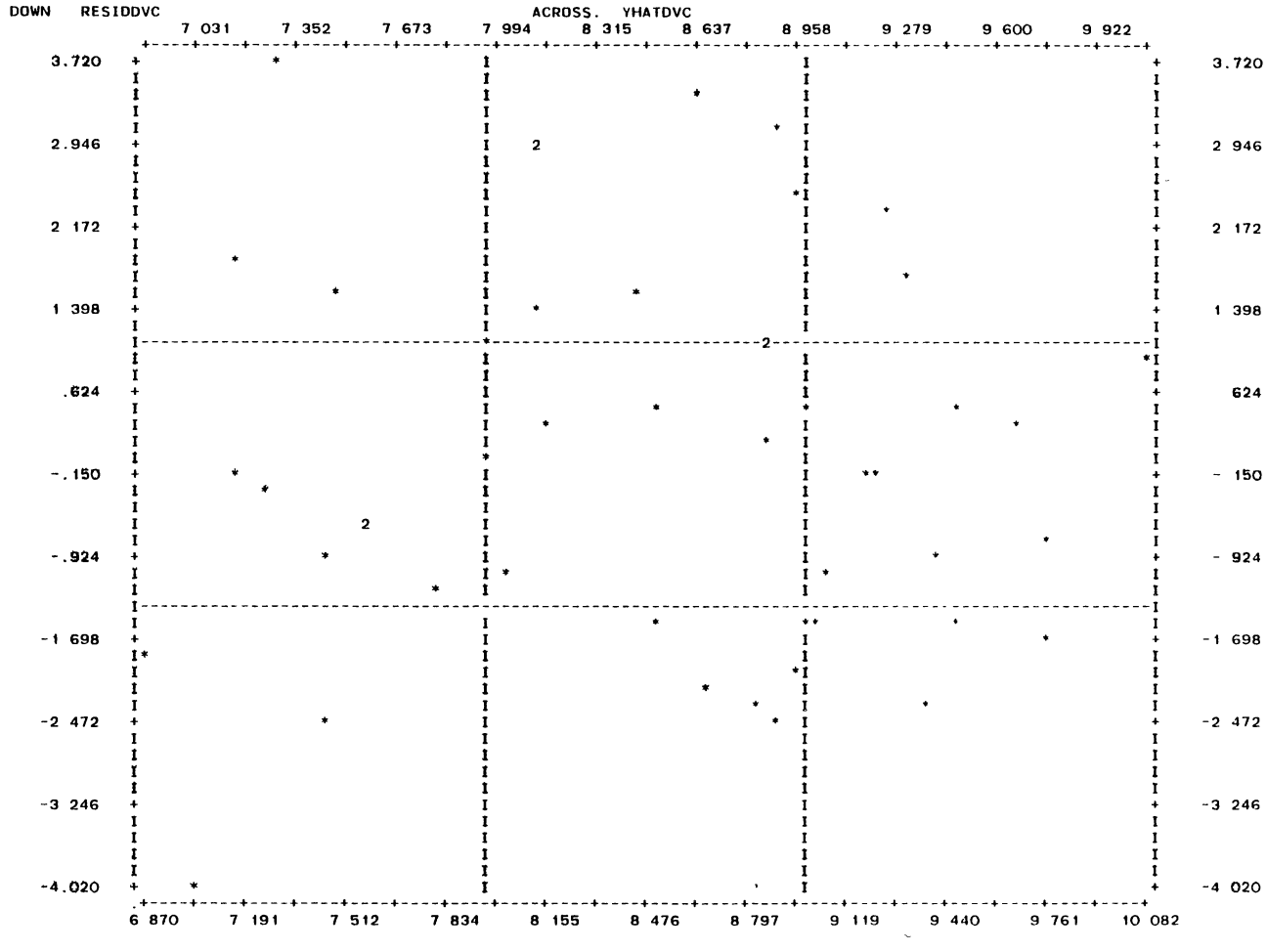

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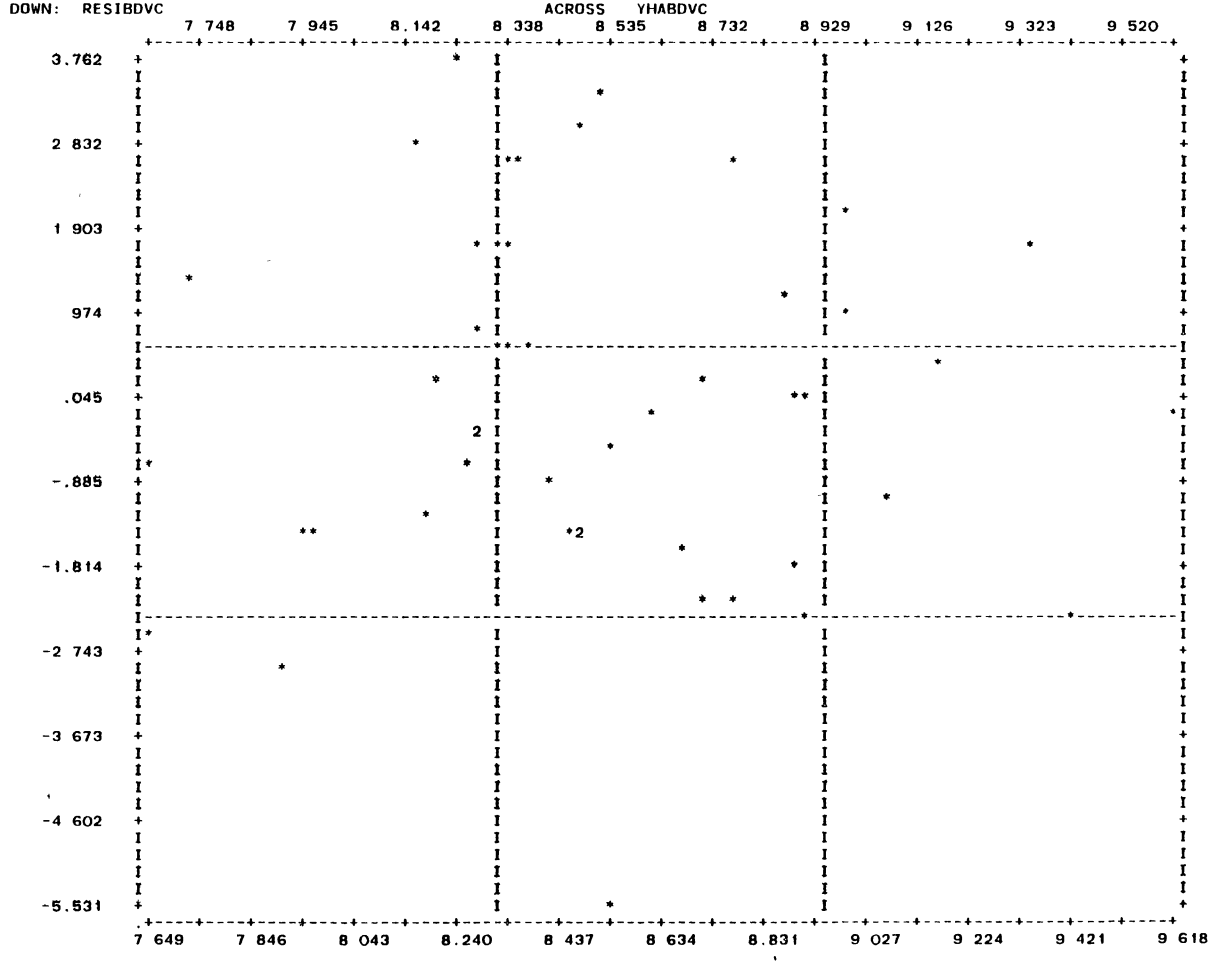

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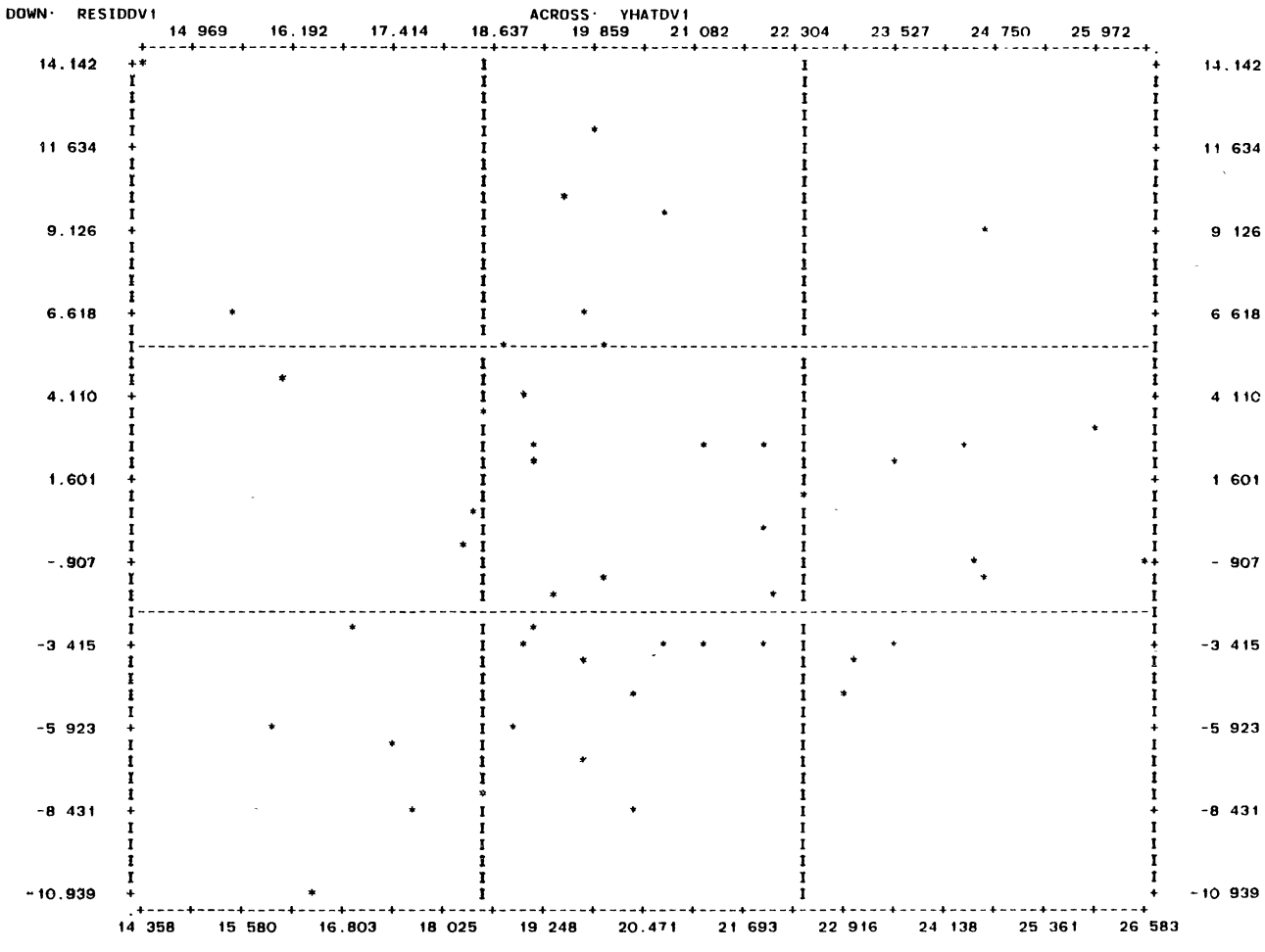

19 DEC 84 DEPENDENT AND INDEPENDENT VARIABLES
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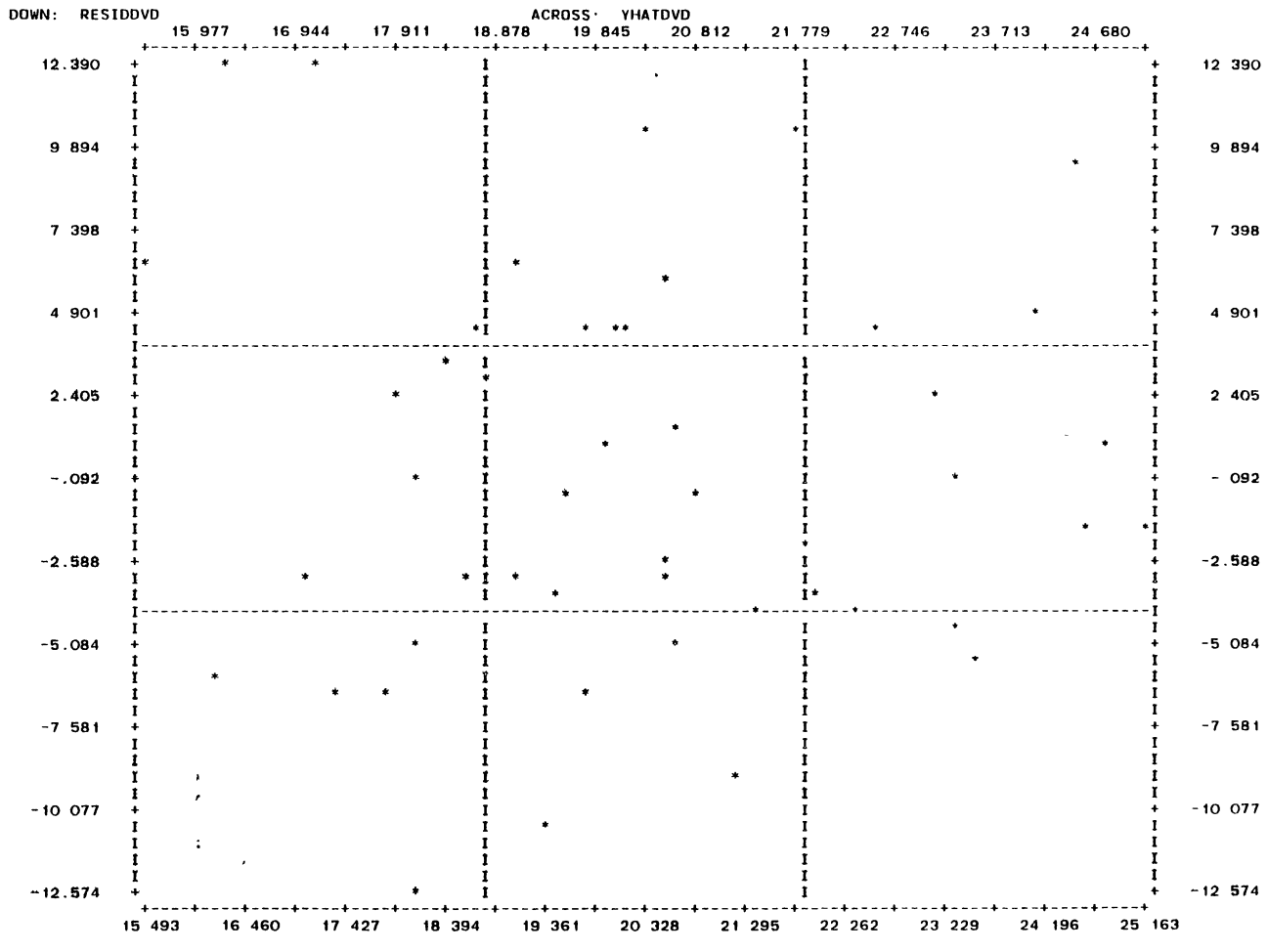

VITA 2

David Harold Reisdorph

Candidate for the Degree of

Master of Arts

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Biographical:

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Professional Experience: Graduate Teaching Assistant, Oklahoma State University, Department of Political Science, 1983-84.