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An analysis of North Sea oil development and Scottish island youth: Postmaterialism as an identifiable and measurable dimension

John Alan Anderson
University of New Hampshire, Durham

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An analysis of North Sea oil development and Scottish island youth:  
Postmaterialism as an identifiable and measurable dimension

Abstract
This study examines opinions and attitudes of high school age youth living in the Shetland and Orkney islands and explores aspects of rapid growth associated with North Sea oil development. Only a minimal amount of research regarding post-impacts and rapid growth appears in the literature. Studies that do exist lack in theory and methodological consistency. This study draws ideas from mainstream sociology, Social Impact Assessment (SIA), Quality of Life (QoL) and Inglehart's materialism/postmaterialism to develop a working theory of social values and rapid growth. This study further reviews and applies six methodological considerations useable in future SIA, QoL, or boomtown research.

The results of this study are consistent with the notion that materialism/postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. This study also investigates the complex ways postmaterialism varies. Results further indicate that historical, planning, and policy differences played an important role with island youths regarding their social values and manifestations of social solidarity and anomie.

Keywords
Sociology, Social Structure and Development

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An analysis of North Sea oil development and Scottish island youth: Postmaterialism as an identifiable and measurable dimension

Anderson, John Alan, Ph.D.

University of New Hampshire, 1993
AN ANALYSIS OF NORTH SEA OIL DEVELOPMENT
AND SCOTTISH ISLAND YOUTH:
POSTMATERIALISM AS AN IDENTIFIABLE AND MEASURABLE DIMENSION

BY

JOHN A. ANDERSON
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DISSERTATION

Submitted to the University of New Hampshire
in Partial Fulfillment of
the Requirements for the Degree of

Doctor of Philosophy

in

Sociology

December, 1993
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Date 9/17/93
DEDICATION

This dissertation is dedicated to my father and my grandfather, Alan H. Anderson and Roy H. Anderson. Thank you for teaching me the value of an education and determination.
ACKNOWLEDGEMENTS

I thank Dr. Lawrence Hamilton and Dr. Sally Ward for their help, guidance, and support throughout this study. I also thank the other members of my dissertation committee, Dr. Cynthia Duncan, Dr. Charles Goodspeed, and Dr. John Halstead, for their thoughtful suggestions and assistance. I extend particular thanks to Dr. Carol Seyfrit for her willingness to share the data and resources she collected from the Shetland and Orkney islands.

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TABLE OF CONTENTS

DEDICATION........................................... iii
ACKNOWLEDGEMENTS..................................... iv
LIST OF TABLES...................................... vii
LIST OF ILLUSTRATIONS............................... ix
ABSTRACT............................................. x

CHAPTER PAGE
I. SPECIFIC AIMS, SIGNIFICANCE, AND METHOD......... 1
   Introduction....................................... 1
   Specific Aims of This Study................ 3
   Significance of This Study................... 6
   Overview of the Research Plan.............. 13
II. THEORETICAL AND CONCEPTUAL FRAMEWORK........... 21
   Introduction....................................... 21
   Relevant Theoretical Perspectives.......... 22
   Underlying Conceptualization............... 41
   Chapter Summary.................................. 52
III. HISTORICAL REVIEW.............................. 55
   Introduction....................................... 55
   Historical Beginning........................... 55
   Early Influences................................ 57
   Later Influences................................ 60
   Planning for Oil............................... 64
IV. SHETLAND AND ORKNEY YOUTH SURVEY AND ANALYSIS.... 73
   Introduction....................................... 73
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Design and Administration</td>
<td>81</td>
</tr>
<tr>
<td>Survey Analysis</td>
<td>83</td>
</tr>
<tr>
<td>Chapter Summary</td>
<td>126</td>
</tr>
<tr>
<td>V. FACTORS, DEMOGRAPHICS, AND ATTITUDES</td>
<td>129</td>
</tr>
<tr>
<td>Introduction</td>
<td>129</td>
</tr>
<tr>
<td>Relations Between Factors and Demographic Variables</td>
<td>135</td>
</tr>
<tr>
<td>Relations Between Factors and Attitudinal Variables</td>
<td>165</td>
</tr>
<tr>
<td>VI. DISCUSSION OF RESULTS</td>
<td>174</td>
</tr>
<tr>
<td>Introduction</td>
<td>174</td>
</tr>
<tr>
<td>First and Second-Order Factors</td>
<td>175</td>
</tr>
<tr>
<td>Differences Between Shetland and Orkney</td>
<td>177</td>
</tr>
<tr>
<td>Differences Between Males and Females</td>
<td>185</td>
</tr>
<tr>
<td>VII. SUMMARY AND CONCLUSION</td>
<td>188</td>
</tr>
<tr>
<td>Introduction</td>
<td>188</td>
</tr>
<tr>
<td>Methodological and Theoretical Considerations</td>
<td>190</td>
</tr>
<tr>
<td>First-Order and Second-Order Factors</td>
<td>194</td>
</tr>
<tr>
<td>Demographic and Attitudinal Variables</td>
<td>197</td>
</tr>
<tr>
<td>History and Geography</td>
<td>201</td>
</tr>
<tr>
<td>Conclusions</td>
<td>203</td>
</tr>
<tr>
<td>LIST OF REFERENCES</td>
<td>218</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>230</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Inglehart’s Twelve Items and their Association with Motivational Needs</td>
</tr>
<tr>
<td>4.2</td>
<td>Description of Respondents’ Ages</td>
</tr>
<tr>
<td>4.3</td>
<td>Percent of Male and Female Respondents</td>
</tr>
<tr>
<td>4.4</td>
<td>Principal Components for 32 Variables</td>
</tr>
<tr>
<td>4.5</td>
<td>Factor Loadings After Promax Rotation (First Five Components)</td>
</tr>
<tr>
<td>4.6</td>
<td>Factor Loadings After Promax Rotation (Last Four Components and Uniqueness)</td>
</tr>
<tr>
<td>4.7</td>
<td>Principal Components for Six Variables (Results Following a Multi-Stage Analysis of Factor Six, Alienation)</td>
</tr>
<tr>
<td>4.8</td>
<td>Factor Loadings for the First Two Principal Components (Results Following a Multi-Stage Analysis of Factor Six, Alienation)</td>
</tr>
<tr>
<td>4.9</td>
<td>Factor Score Coefficients (First Five Components)</td>
</tr>
<tr>
<td>4.10</td>
<td>Factor Score Coefficients (Last Four Components)</td>
</tr>
<tr>
<td>4.11</td>
<td>Anticipated Clustering of First-Order Factors on Potential Second-Order Factors</td>
</tr>
<tr>
<td>4.12</td>
<td>Principal Components From Second-Order Analysis</td>
</tr>
<tr>
<td>4.13</td>
<td>Factor Loadings From Second-Order Analysis</td>
</tr>
<tr>
<td>4.14</td>
<td>The Association of Primary Factors with Motivational Needs</td>
</tr>
<tr>
<td>5.1</td>
<td>Demographic Variables From Shetland and Orkney Island Youth Survey</td>
</tr>
<tr>
<td>5.2</td>
<td>Regression Coefficients for Factors 1-5 Regressed on Survey Demographic Variables</td>
</tr>
</tbody>
</table>
5.3 Regression Coefficients for Factors 6-9 Regressed on Survey Demographic Variables........ 139

5.4 A Comparison of Regression Results and Factors... 163

5.5 Point Biserial Correlation Coefficients for Attitudinal Variables and First-Order Factors 1-5............................................................... 169

5.6 Point Biserial Correlation Coefficients for Attitudinal Variables and First-Order Factors 6-9............................................................... 170

5.7 Expected and Unexpected Results of Point Biserial Correlations for Postmaterialism and Conflictuality................................. 171

7.1 First-Order Factors Loading on Second-Order Factors................................................................. 196
**LIST OF ILLUSTRATIONS**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Conceptual Model of Materialism/Postmaterialism Associated with Historical and Social Change in Society</td>
<td>12</td>
</tr>
<tr>
<td>2.1</td>
<td>Moving From Pre-Modern to Modern Society: A Conceptual and Historical Distinction</td>
<td>24</td>
</tr>
<tr>
<td>3.1</td>
<td>Geographical Location of the Shetland and Orkney Islands</td>
<td>56</td>
</tr>
<tr>
<td>4.1</td>
<td>Measurement Model of Materialism/Postmaterialism</td>
<td>75</td>
</tr>
<tr>
<td>4.2</td>
<td>Shetland Islands Population</td>
<td>77</td>
</tr>
<tr>
<td>4.3</td>
<td>Orkney Islands Population</td>
<td>77</td>
</tr>
<tr>
<td>4.4</td>
<td>Scree Graph to Determine Retained Factors</td>
<td>92</td>
</tr>
<tr>
<td>4.5</td>
<td>Hierarchical Structure of Opinion Items, First-Order Factors, and Anticipated Second-Order Factors</td>
<td>117</td>
</tr>
<tr>
<td>4.6</td>
<td>Scree Graph for Second-Order Analysis</td>
<td>118</td>
</tr>
<tr>
<td>4.7</td>
<td>Hierarchical Structure of Opinion Items, First-Order Factors, and Second-Order Factors</td>
<td>122</td>
</tr>
<tr>
<td>5.1</td>
<td>Measurement Model Depicting Background Variables and Their Relationship to Value Orientation</td>
<td>130</td>
</tr>
<tr>
<td>5.2</td>
<td>Measurement Model Depicting Second-Order Factors (Value Orientations) and Their Relationship to Attitudinal Variables (Ai)</td>
<td>132</td>
</tr>
<tr>
<td>5.3</td>
<td>Home Knitters in Shetland from 1971 to 1989</td>
<td>145</td>
</tr>
<tr>
<td>5.4</td>
<td>Shetlanders Employed Catching Fish</td>
<td>153</td>
</tr>
<tr>
<td>5.5</td>
<td>Shetlanders Employed in Fishing Industry</td>
<td>153</td>
</tr>
<tr>
<td>5.6</td>
<td>Tonnes of Fish Caught by Shetlanders</td>
<td>154</td>
</tr>
<tr>
<td>6.1</td>
<td>A Sociohistorical Account of the Shetland and Orkney Islands</td>
<td>184</td>
</tr>
</tbody>
</table>
ABSTRACT

AN ANALYSIS OF NORTH SEA OIL DEVELOPMENT
AND SCOTTISH ISLAND YOUTH:
POSTMATERIALISM AS AN IDENTIFIABLE AND MEASURABLE DIMENSION

by

John A. Anderson
University of New Hampshire, December, 1993

This study examines opinions and attitudes of high school age youth living in the Shetland and Orkney islands and explores aspects of rapid growth associated with North Sea oil development. Only a minimal amount of research regarding post-impacts and rapid growth appears in the literature. Studies that do exist lack in theory and methodological consistency. This study draws ideas from mainstream sociology, Social Impact Assessment (SIA), Quality of Life (QoL) and Inglehart's materialism/post-materialism to develop a working theory of social values and rapid growth. This study further reviews and applies six methodological considerations useable in future SIA, QoL, or boomtown research.

The results of this study are consistent with the notion that materialism/postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. This study also investigates the complex ways postmaterialism varies. Results further indicate that historical, planning, and policy differences played an
important role with island youths regarding their social values and manifestations of social solidarity and anomie.
INTRODUCTION

This study examines opinions and attitudes of high school age youth living in the Shetland and Orkney islands. These islands are located in the North Sea off the coast of Scotland.Traditionally, residents in the Shetland and Orkney islands have supported themselves through fishing, agriculture, and knitwear industries. In 1971 Shell/Esso discovered the largest North Sea oil field, The Brent Field, and the islands entered into an oil era that had dramatic economic and social effects (Burgess, 1981). Oil development brought about rapid growth and island society swiftly shifted from a traditional society to a more modern one. This shift in the islands' social organization has offered researchers an opportunity to study aspects of rapid growth and islanders' values.

Inglehart (1977, 1990) has introduced the notion that cultural values change over time as a function of the satisfaction of needs. He believes this change occurs in youth and he refers to it as a culture shift from materialist values to postmaterialist values. The Shetland and Orkney islands offer a unique opportunity to identify the existence of a culture shift and measure it.

Before 1971 one might have described the Shetland and
Orkney islands as traditional rural areas (Linklater, 1965). Referring to a time prior to 1971, Storey (1977) wrote that the islands:

...have retained distinctive modes of thought and behavior. Though less strong than once, kinship and religion remain important. Status still tends to be ascriptive, and personal rather than contractual accord is seen to bind relationships (Storey, 1977 p. 146).

Except for some of the merchant sailors, islanders seldom traveled out of their communities. They remained neighborly, helpful, and sociable. A few of the newer residents, particularly in Shetland, had moved there to "get away from it all" and become a part of the "Shetland way of life" (Wills, 1991).

Traditional island life shifted with the development of oil and the ensuing rapid population and economic growth. Many debates over the effects of oil on traditional island values and practices quickly took place among islanders "...with a force probably lacking since the eighteenth century" (Storey, 1977, p. 165). Rapid growth had taken its foothold by 1972. Between 1971 and 1981 the banking industry reported increases in accounts, deposits, and loan advances of up to 870 percent (Burgess, 1981). For the first time in 130 years the islands' populations increased (Storey, 1977). Similarly, compared with the Scottish mainland and the UK, the islands experienced an increase in personal income and a decrease in unemployment.

This study involves the examination of the islands nearly twenty years after the Shell/Esso North Sea oil
discovery. I analyze 1988 youth survey data and use other data obtained from Shetland and Orkney Island Council publications. This chapter outlines the specific aims and significance of this study and presents an overview of the research methods used.

SPECIFIC AIMS OF THIS STUDY

This study explores the influence of boomtown developments on Shetland and Orkney island youths. My specific aim is to identify the existence of post-materialism, to investigate complexities associated with postmaterialism, and to examine the relationship between postmaterialist values and young people's attitudes concerning acquaintances, education, and the community. I intend to accomplish these aims by employing pertinent theoretical ideas, exploring the history of the islands, examining planning activities, and analyzing survey responses from Shetland and Orkney high school age youths.

A review of previous boomtown research reveals conflicting results (Wilkinson et al., 1982; Freudenburg, 1986; England and Albrecht, 1984). Some research findings indicate that social disruption may be a consequence of rapid growth while other findings indicate that it is not. Freudenburg (1984, 1986), along with Krannich and Geider (1984), have suggested that targeting subpopulations within impacted areas could reduce conflicting results. Although some researchers have thought that boomtown youths fare better than adults (Summers et al., 1976; Dixon, 1978),
others (Cortese and Jones, 1979; Fernandez and Dillman, 1979; Freudenburg, 1984) suggest that the opposite may in fact be the case. In this study I further investigate boomtown development and youths. I also look at gender differences concerning social disruption in the islands; youths' sense of conflict; the desire of youths to stay or leave the impacted areas; and youths' perceptions regarding the quality of life in the islands.

The Shetland and Orkney islands have experienced rapid growth and strong economic security since the early 1970s. Recent high school age youths are some of the first individuals that have experienced economic prosperity and modern social relations while growing up. These circumstances foster the potential for a shift in social values.

In this study, I review the literature behind Inglehart's (1977, 1990) notions concerning values and his understanding of culture shift. Specifically, I explore Inglehart's conceptual base and use his ideas to analyze rapid growth regarding Shetland and Orkney youths. Inglehart introduces the idea of a materialist value orientation, which he defines as values oriented towards survival needs such as sustenance and safety. He views a materialist value orientation as complementing capital accumulation. Overall, Inglehart typifies materialists as somewhat parochial or provincial versus cosmopolitan in their orientation to society.
Inglehart also introduces the idea of postmaterialism. He describes a postmaterialist value orientation from a social-psychological understanding following Maslow's (1954) hierarchy of needs. According to Inglehart, the postmaterialist concerns him/herself with higher-order needs such as belongingness and self-actualization. He/she is geared toward "ultimate ends" involving increased moral sensitivity and striving to discover ultimate values. The materialist value orientation, more than the postmaterialist orientation, aligns with immediate gratification and capital accumulation. In this study I use these ideas to explore values in the Shetland and Orkney islands.

Specific data for this study came from publications of descriptive statistics and plans produced by the Shetland and Orkney island councils between 1972 and 1990. The data also came from a 1988 survey of Shetland and Orkney island youth. Opinions, attitudes, and demographics collected with the survey included the following: parents' occupations; current, past, and future educational or work aspirations; perceptions concerning the family and community; opinions concerning oil development; opinions about policy making institutions, and attitudes about school, island culture, acquaintanceship, and island scenery.

I analyzed the survey responses regarding ideas from boomtown, Social Impact Assessment (SIA), Quality of Life (QoL), and materialist/postmaterialist related literature. It is the aim of this study to add to this literature base
but, more specifically, to provide information concerning boomtown developments on youth, and identify the existence of postmaterialism.

In my analysis of the Shetland and Orkney island youth, I expect to find that materialism/postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. I hypothesize that the greater a youth's propensity toward postmaterialism the less will be his/her subjective dependence upon resource extraction related development and the less she/he will feel a loss of social control. I hope that taking materialism/postmaterialism into consideration will help to shed light on how boomtown youths fare in the long run. Youths residing in areas where postmaterialist orientations are more prevalent may fare better than youths residing in areas where materialist orientations are more prevalent. I suspect a better understanding of materialism/postmaterialism will provide information regarding respondents' perceptions of their quality of life, their attachment to the islands, and their responses to conflict. Furthermore, by exploring possible male and female differences I expect this study to provide insights concerning gender differences among boomtown youth.

SIGNIFICANCE OF THIS STUDY

This study has theoretical and practical significance. I begin by reviewing traditional mainstream sociological theories and comparing and contrasting them with more
contemporary ideas. I also pull from Inglehart's (1977, 1990) constructs explaining the notion of a culture shift taking place in today's industrialized nations. I draw specific ideas from these theoretical areas and review them regarding sociohistorical shifts in social relationships. I then use aspects of the theories to assist in defining and explaining specific variables and empirical results. In addition, I explore literature regarding the sociology of boomtowns, rapid growth, Social Impact Analysis (SIA), and Quality of Life (QoL). I use ideas from this literature to develop a conceptual base for understanding rapid growth areas and to arrive at a methodology for studying the islands.

Seyfrit (1988) has suggested that there is a need for post-impact studies to better understand actual versus predicted impacts. Freudenburg (1984) has similarly encouraged researchers to specifically investigate impact experiences on youth in rapid growth areas to determine whether youth's apparent negative experiences are more transitory or long-term. According to Inglehart (1977, 1990), youths become materialistically more content than their parents. This contentment is a prerequisite for acquiring enduring postmaterialist values. It is within youth cohorts that Inglehart suggests a culture shift is taking place. This study includes an examination of boomtown youth using a survey conducted nearly 20 years after initial rapid growth. A twenty year post-impact study
will allow for investigation and insight of oil impact in the islands, youth experiences, and the potential onset of a culture shift as measured in terms of postmaterialism.

I expect that my analyses will show that different modern social structures (i.e., different forms of modernity as typified by materialism/postmaterialism) may develop in different boomtown areas. I further expect that different forms of modernity will reveal different results. For example, although the literature suggests that rapid growth due to industrial development does not slow the rate at which young people leave rural areas (Gates, 1981; Fernandez and Dillman, 1979; and Andrews and Bauder, 1968; cited in Freudenburg, 1984), leaving may vary predictably from one boom area to another in accordance with the youths’ value orientation. Likewise, people’s perceptions of whether oil development is able to improve one’s quality of life or whether it leads to social disruption and disorganization may also vary in accordance with value orientation.

The youth population used in this study is of particular interest from a postmaterialist standpoint. Inglehart’s theory argues that the industrialized world is undergoing a culture shift. This shift involves postmaterialist values. He associates these values with an increasing emphasis on needs for belonging, esteem and self-realization. Inglehart sees materialism/postmaterialism as a linear dimension. He often talks, however, of the polar extremes of this dimension, and he treats materialism/post-
materialism as a dichotomy -- even though it runs along a continuum. Inglehart ascribes to two basic hypotheses in the formulation of his theory. The first one is "scarcity" and the second is "socialization."

1. A scarcity hypothesis. An individual's priorities reflect the socioeconomic environment: One places the greatest subjective value on those things that are in relatively short supply.

2. A socialization hypothesis. The relationship between socioeconomic environment and value priorities is not one of immediate adjustment: A substantial time lag is involved because, to a large extent, one's basic values reflect the conditions that prevailed during one's preadult years (Inglehart, 1990, p. 68).

Taken together, these two hypotheses generate a coherent set of predictions concerning value change. First, while the scarcity hypothesis implies that prosperity is conducive to the spread of postmaterialist values, the socialization hypothesis implies that neither an individual's values nor those of a society as a whole are likely to change overnight. Instead, fundamental value change takes place gradually, almost invisibly; in large part, it occurs as a younger generation replaces an older one in the adult population of a society (Inglehart, 1990, p. 69).

From a scarcity perspective survey responses relating to feelings of basic need satisfaction and responses relating to values concerning things in "short supply" belong to individuals who are more materialist oriented. From a socialization point of view I think the use of island youths' responses, rather than responses from adults, will provide the necessary data for identifying the existence of postmaterialism. This notion parallels one of Inglehart's main understandings of culture shift.

Cultural change does occur when changes of sufficient magnitude take place in the economic, technological, or sociopolitical environment. But
such changes take place slowly, generally through the socialization of new generations; and the transition tends to be painful. There is a built-in tendency for cultural change to lag behind the environmental changes that give rise to it. (Inglehart, 1990, p. 13)

Because fundamental value change takes place during preadult years a more permanent shift to postmaterialism takes place slowly as the younger generation replaces the older (Inglehart, 1990). From 1970 to 1988 "intergenerational population replacement" was taking place and postmaterialists replaced materialists increasing the proportion of postmaterialists in the population (Inglehart, 1990).

As noted earlier, Freudenburg (1984) has stated that literature reviews turned up equal support for positive and negative effects of energy booms. He suggests that studying closely defined groups may help researchers understand some of the discrepancy. This study represents a response to this suggestion (i.e., the data stem only from island youth). However, there may be other things going on in boomtown areas that previous researchers have not considered. These "other things" may also lead to discrepancies in boomtown research. One of these "things" may be a culture shift — a move from materialist values to postmaterialist values. In keeping with the socialization hypothesis: to identify and measure postmaterialism in a boomtown requires data collected 10 to 20 years from the onset of the boom. The Shetland and Orkney island youth survey provides an excellent opportunity for investigating
these matters.

Boomtown areas, particularly when located in the industrialized world, are worth studying because they are a concentrated area of alteration. They accentuate change. Inglehart argues,

...that in many ways, the industrialized world is actually undergoing change which is more rapid and more genuinely new than what is occurring in the New Nations. But change in the industrialized world is far harder to grasp, harder to conceptualize. One tends to use familiar images because we have no model of the future. The notion that the Third World countries would come to resemble the contemporary West may have been an illusion, but it at least provided a concrete picture of where they were headed. Change in highly industrialized nations is even more of a leap into the unknown. In a confused way, one senses change in all directions -- in sex roles, morals, life-styles, fashions, in the ecology, the economy, and politics. Among the many forces for change are economic development, expansion of secondary and higher education, the growing size and diversity of the mass media, and discontinuities in the life experiences of large numbers of people (Inglehart, 1977, pp. 6-7).

The outcome of a boom is change in all directions and these pockets of alteration provide an ideal setting for studying shifts in the industrialized world.

According to Inglehart (1977, 1990), shifts within the industrialized world include three things: (1) the onset of widespread economic security; (2) the emergence of discontinuity; and (3) the potential for a culture shift as materialist values evolve into postmaterialist values. I expect to see these three things reflected, at least indirectly, in a survey of 20 year post-boomtown youth. Specifically, I hypothesize that a boom that leads to
economic security will increase the chance of a shift in cultural values. Where economic security exists there is a high potential for postmaterialist values to exist. I further hypothesize that postmaterialism is identifiable and measurable. I also hypothesize that postmaterialist values affect attitudes. Hence, postmaterialist values should predictably correlate with individuals’ attitudes.

Figure 1.1 represents a conceptual model of postmaterialism as portrayed in this study. In this model social change, thought to be chiefly brought about in the islands by oil development, separates traditional society from modern society. Traditional society refers to pre-oil

Figure 1.1: Conceptual Model of Materialism/Post-materialism Associated with Historical and Social Change in Society
or pre-industrial society and holds to traditional social relations. Modern society refers to industrial society and adheres to modern social relations involving complex organizational structures. Whereas traditional social relations yield a traditional value orientation, modern social relations yield a materialist value orientation. However, depending upon how sufficiently one's primary needs (i.e., physical and security needs) are met, a post-materialist value orientation may arise. The figure further shows that an individual's value orientation correlates with his/her attitudes toward the community, education, employment, culture, acquaintances, and the environment.

This study will provide evidence consistent with the idea that postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. I further hope that this study will shed additional light on why conflicting results exist in the literature concerning rapid growth (e.g., there are two camps: one sees rapid growth as detrimental and the other views it as beneficial).

OVERVIEW OF THE RESEARCH PLAN

This study includes five basic parts: (1) the discussion of theoretical and methodological constructs regarding rapid growth, social structure, and post-materialism; (2) an historical review of the islands and island councils responsible for planning and policy development; (3) The identification and measurement of indirectly observed concepts (i.e., postmaterialism, anomie,
and economic security) by using principal component factors to create a parsimonious and manageable model; (4) the regression of identified factors on demographic variables; and (5) the correlation of factor scores with individuals' attitudes. Below I describe each of these parts and its relation to this study.

Theoretical and Methodological Constructs

The first part of the study involves reviewing existing literature and fashioning a theoretical and conceptual foundation for discussions and analyses concerning the data. I begin by briefly reviewing sociohistorical ideas concerning a shift from traditional to modern society. This sets forth an emergent notion that I use as a conceptual base for understanding the sociohistorical relationship between modernism and postmodernism (where modernism reflects the social processes underlying modern society, and postmodernism reflects the social processes underlying postmodern society). I then relate the idea of a modern-postmodern movement to Inglehart's theoretical notion of a materialist/postmaterialist dimension.

A principal argument of this study is that oil development correlates with a social and historical shift in the Shetland and Orkney islands. This shift is reflected in respondents' value orientations. I further hypothesize that different forms of modernism exist and that they are socially and historically based. I use Inglehart's theory of materialism/postmaterialism to help explain differences
between these forms.

In this section of the study I also explore a conceptual base for understanding social impact and for exploring methodological considerations. I use the Social Impact Assessment (SIA) literature because it presents a good survey of studies tied to energy development areas. Although revealing a fair amount of conflicting empirical results, this body of literature provides some important methodological insights. Along with SIA studies, I review the Quality of Life (QoL) literature. Although the two bodies of literature relate somewhat to each other, they also have important distinctions. Initially, SIA has primarily emphasized economic factors. QoL, however, places more emphasis on social factors. Similarly, SIAs are typically more objectively based while QoL studies are typically more subjectively based.

Traditionally, SIAs have been employed for the purpose of examining and determining potential impacts due to the development or operation of a specific activity (Gramling and Freudenburg, 1992). Seldom were SIAs used to investigate pre-development or post-development impacts. However, researchers have recently conducted SIAs for the purpose of mitigation and litigation (Gramling and Freudenburg, 1992). This new use for SIA has expanded time frames in which SIAs are now being conducted. It is not unusual to have SIAs directed toward pre-, current, and post-development impacts. Using SIAs in this manner has
implied the need for a framework to assist researchers in determining areas to emphasize when conducting SIA studies. Gramling and Freudenburg (1992), for example, have proposed six such areas: (1) biophysical and health systems; (2) cultural systems; (3) social systems; (4) political/legal systems; (5) economic systems; and (6) psychological systems. These areas highlight various concerns and dictate specific research guidelines depending upon the time frame of the investigated impact. This study, however, is not concerned with researching the intricacies of specific impacts that a community might use at a later time for planning, mitigation, or litigation purposes. Rather, this study addresses a broader scope and provides an analysis of value orientations that shifted following the onset of oil development.

The significance of the approach used in this study rests in the ability of this investigation to provide a broad understanding that researchers may apply at a later time to future SIAs concerned with oil development. Specifically, this study helps contribute to a further understanding of how to deal with the "addictive" nature of extraction related rapid growth. Freudenburg (1992) has suggested that resource extraction activities often lead to "economic addiction" rather than economic development. The addictive model suggests that "just as in the case of the individual-level addictive substances," it is difficult for extraction dependent communities to recognize signs of
economic problems and eventual demise (Freudenburg, 1992, p. 329). Although one solution may be for communities to "just say no" to the extraction industries, this is not often a practical or realistic approach. By exploring value orientations in conjunction with rapid growth, this investigation will provide insights into better ways for communities to increase QoL and decrease "addiction" when faced with extraction related impacts. In this study, therefore, I highlight specific points and use ideas from both SIA and QoL literature.

**Historical Review**

In this section of the study I explore historical similarities and differences between the Shetland and Orkney islands. I relate historical and geographical differences to the planning activities undertaken by both Shetland and Orkney. I discuss these island characteristics along with the results of the principal components factors, regression, and correlational analyses. I look closely at differences found between Shetlanders and Orcadians and between male and female respondents.

These islands pose an opportunity to study the emergence of postmaterialism. Historical acts have lead to some of the complexities associated with studying value orientations. I argue that the islands' histories and economic impacts influenced their approaches to planning and relate to present day differences found between the Shetland and Orkney islands.
Principal Component Factors Analysis

This portion of the study involves an analysis based upon survey data collected from 781 Shetland and Orkney island youth. I first present a summary of survey respondent characteristics and then present the results of a principal component factors analysis, the construction of composite variables, and specific suppositions for further investigation.

I believe that the survey variables will load on underlying components or factors in a manner that supports the theoretical constructs outlined by Inglehart (1977, 1990). Although factor interpretations will involve other theoretical notions, Inglehart's postmaterialism plays a central role. Specifically, I expect the results of the principal component factors analyses to show that opinion questions have underlying structure consistent with the idea that postmaterialism constitutes an identifiable, internally consistent, and continuous dimension.

Demographic Variables Regression Analysis

In this portion of the study I regress factor scores on 11 demographic variables including age, gender, birth place, and parents' occupation. I anticipate that the demographic variables will affect the value orientations and experiences of the respondents. Essentially, I expect the regression analyses to have results that will help validate uncovered factors. I expect the results of the regression analyses will help substantiate the idea that a postmaterialist
factor exists.

In order to better understand the complexities behind postmaterialism I use the regression analyses to explore gender differences and differences between the Shetland and Orkney islands. Value orientation is a complex multifaceted phenomenon. Materialism and postmaterialism, like traditionalism and modernism, simultaneously exist in society. Further exploring the differences between the islands will help shed light on some of the more subtle complexities associated with postmaterialism.

Judd and Kenny (1981) assert that there is a greater chance for a Type II error when researchers engage in impact studies to observe differences between groups. They argue that researchers should consider increasing the alpha level to compensate for this type of error. I consider this suggestion when interpreting the regression results.

Attitudinal Analysis

Following the regression analyses I analyze specific attitudinal variables regarding the principal component factors. During the survey, students listed their five most liked and five least liked characteristics or features of their home community. I categorized the responses topically and tallied them. I used 13 of these attitudinal variables in this analysis and correlated them with sets of factor scores uncovered by the principal component factors analyses.

I hypothesized that postmaterialism exists and that
postmaterialist values affect attitudes. I expect results to be consistent with my hypothesis and therefore add confidence to the principal component factors and regression analyses. Specifically, I expect the results to be consistent with the idea that postmaterialism exists, is measurable, and predictably correlates with attitudes.
CHAPTER II
THEORETICAL AND CONCEPTUAL FRAMEWORK

INTRODUCTION

In this chapter I present the theoretical and conceptual ideas used to formulate hypotheses and to shape the methodology for exploring the Shetland and Orkney survey data. I provide arguments supporting the four hypotheses outlined in the previous chapter and listed here.

(1) The greater a youth's propensity toward postmaterialism the less will be his/her subjective dependence upon resource extraction related development and the less she/he will feel a loss of social control.

(2) A boom that leads to economic security will increase the chance of a shift in cultural values such that the greater the amount of economic security the greater the potential for postmaterialist values to exist.

(3) Postmaterialism is identifiable and measurable such that materialism/postmaterialism constitutes an internally consistent and continuous dimension.

(4) Postmaterialist values affect attitudes and hence predictably correlate with individual attitudes.

Arguments related to these hypotheses are tied directly to theoretical concerns presented in this chapter. I highlight these arguments following specific theoretical discussions. In addition, I arrive at two more hypotheses (listed as numbers 5 and 6 below). These hypotheses are more specific cases of ones previously stated.

(5) Specifically, there are less anomic experiences among Shetlanders than Orcadians.

(6) Specifically, Shetland is more postmaterialist oriented than Orkney.
Throughout this study I maintain that the Shetland and Orkney islands have shifted, following the onset of oil development, from a traditional social structure to a more modern social structure. This shift makes these islands appropriate for studying social values and social relations. Following this, I highlight various sociological perspectives and discuss them regarding social structure and values. For explanatory purposes I broke the theories into two groups: (1) traditional-discourse; and (2) contemporary-empirical. I compare and contrast the theories and then integrate them regarding sociohistorical shifts in value orientation. I set forth and discuss the idea of one form of modernity emerging into another in terms of Inglehart's postmaterialism. I then lay out the conceptual framework used in this study.

RELEVANT THEORETICAL PERSPECTIVES

From the onset of industrialization, numerous explanations of rapid growth and its relationship to economic, social, psychological, and biological factors have emerged. Economists have used mathematically based analyses to understand socioeconomic characteristics of growth, political scientists have centered on the nation state, anthropologists have viewed growth from a community development standpoint, and psychologists have stressed personality and psychic adjustment (Inkeles, et al., 1983). Within broad based sociological theory much discussion has included ideas of development and growth regarding the
maintenance of social order and a sociohistorical shift from pre-modern (traditional) society to modern society. One can find clear examples of this dialogue in Durkheim's (1984/1933) discussions relating to mechanical and organic solidarity; in Tönnies (1957/1887) Gemeinschaft and Gesellschaft; and in Weber's (1968/1922) ideas of rational action. I review aspects of these and other theories below and relate specific notions to the development and discussion of hypotheses.

Conflicting Explanations Behind Rapid Growth

I have found it helpful to divide sociological theory pertinent to rapid growth into two types. First, there are the more traditional oriented ideas that theoreticians derived through logic and discourse. Theoretical writings of this type primarily support explanations that describe rapid growth in terms of social impacts based on changes in social relations. These theories often emphasize the more negative aspects of rapid growth. Second, there has recently been an emergence of ideas spurred on by theory more deeply rooted in empirical study. These more contemporary empirically based theories tend to support the notion that rapid growth has a positive social impact.

Despite this demarcation in theory, both modern and traditional approaches make important contributions to understanding rapid growth and the effects of socioeconomic impacts. I will therefore use theoretical ideas from both camps, the traditional and the more modern.
In the presentation to follow it will become evident that basic theoretical constructs are essential for understanding rapid growth and social development.

**Weber's rational action.** Weber simultaneously conceived of a rational and historical demarcation in society. This differentiation occurred as society crossed the threshold from pre-modern (traditional society) to modern (rational) society (see Figure 2.1). Essentially, Weber saw increasing rationalization as a sociohistorical development.

**Figure 2.1: Moving From Pre-Modern to Modern Society: A Conceptual and Historical Distinction**

<table>
<thead>
<tr>
<th>Rational Distinction</th>
<th>Historical Distinction</th>
<th>Ideas Associated with Distinctions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Traditional</td>
<td>Pre-Modern</td>
<td>Gemeinschaft Mechanical Solidarity</td>
</tr>
<tr>
<td></td>
<td>Threshold</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Modern</td>
<td>Gesellschaft Organic Solidarity</td>
</tr>
</tbody>
</table>

Note: The threshold in this figure is at the heart of broad based sociological theory -- this specific diagram represents the idea of a rational and historical distinction simultaneously occurring.

Weber saw formal structures of rational action as institutionalized, or occidentalized, in history. It is precisely this outlook that leads to Weber's notion of rational legal authority. In turn, this authority ultimately reveals that a conflict between law and morality exists. In this context, law is no longer based upon morality but rather decision according to correct procedures
validates law (i.e., due process of law). Hence, Weber's modern society emerges from the age of the family and becomes the age of organization (Fuchs, 1990).

Organization brings about bureaucratization. The result is a loss of social behavior governed by traditional morality and the onset of governing social behavior by the "iron cage" of modernity. Staying within this socio-historical framework, I see the introduction of modern oil development in the Shetland and Orkney islands as a historical impact demarcating the threshold between traditional island life (a pre-oil or rural way of life) and a new modern way of life (a post-oil or industrial way of life).

One consequence of jumping to a new rationalization is the emergence of new organizational structures. A reduced reliance on traditional morality is another consequence. Weber saw these changes as somewhat depressive. Hence, following Weberian ideas, changing from a rural pre-oil society to a more modern industrialized society arouses dispassion, reduced personal commitments, and generates a struggle for meaning. I argue that islanders may experience a detachment from the islands and a skepticism toward new social programs and structures. Such consequences may be observed in terms of a decline in family commitment and values, a reduction in church attendance, or the emergence of controlling organizations designed to set policy and assert authority.
Habermas' communicative action. A major problem with Weber's rational framework, however, is that it places too much emphasis on instrumental rationality manifested in an ideal bureaucracy. There is however, another rationality in modern society. This rationality manifests itself through communicative action, which holds to a "rational potential" for arriving at agreement concerning validity claims.

Thus inherent in communicative action, Habermas argues, is the possibility of rational discussion that will resolve consensually disputes over contested claims. This possibility of openness to reasons and argument comprises the "rational potential" of communicative action (Baxter, 1987, p. 45).

Habermas's theoretical construct supports the notion that society is grounded upon normative consensus. As discussed by Habermas,

In coming to an understanding with one another about their situation, participants in communication stand in a cultural tradition which they use and at the same time renew; in coordinating their actions via intersubjective recognition of criticizable validity claims, they rely upon their membership in groupings and at the same time reinforce their integration; through participating in interaction with competent persons, growing children internalize value orientations and acquire generalized capacities for action (cited in Turner, 1986, p.206).

Habermas associates instrumental rationality with the "system" and he associates communicative action with the "life world." He suggests that the validation process revealed in Weber's notion of legitimate authority is consuming the "life world" in that instrumental rationalization is consuming communicative action; or as the quantitative consumes the qualitative; or as matter consumes
the spirit. When the "life world" falls prey to the "system" a type of estrangement similar to Marx's alienation develops. As society becomes more differentiated "the mechanisms of systemic and social integration also get separated from each other (Seidman, 1989, p. 198). It is this process that creates problems with Weber's validation through instrumental rationality (Seidman, 1989) and allows the "life world" to be over taken by the "system." This would suggest that rapid growth areas may tend to move away from communicative action and move toward instrumental rationalization. From this, a form of alienation arises.

The dualism of system/life-world is a modern day theoretical description of a shift from Gemeinschaft to Gesellschaft (Baxter, 1987). This general picture appears to support and emphasize the potential onset of alienation as an outcome to industrialization. However, it differs from the harsher more pessimistic Weberian outcome in that Habermas appears to indirectly acknowledge the potential of a balancing rationalization within his supposition of communicative action. That is through communicative action science and values are both molded into policy. The implication of this action is that varying "types" of modernism (where modernism reflects the social processes underlying modern society) can exist and run along a continuum from highly "life-world" to highly system oriented. Hence, the potential for varying degrees of communicative action from one community to another implies
that differences between communities could exist. These potential differences may be due, at least in part, to policy processes.

In this study I will explore potential differences between Shetland and Orkney youths. I briefly look at the islands' policy processes regarding levels of communicative action. Given that the islands appear to employ different amounts of communicative action, I expect to find differences between the two islands consistent with the notion that a policy process high in communicative action corresponds to a different form of modernism than one lower in communicative action.

Tönnies' Gemeinschaft and Gesellschaft. Tönnies (1957/1887) has offered one of the clearer descriptions contrasting traditional communities alongside developing modern urban centers. He observed that individuals moving from smaller villages to the less personal fragmented industrialized areas experienced personal and social disruption. This lead to his typology centering on Gemeinschaft (traditional social organization) and Gesellschaft (modern social organization). The two types are diametrical. Gemeinschaft is private and living together, whereas Gesellschaft is public and living in the world. "Gemeinschaft is old; Gesellschaft is new... In contrast to Gemeinschaft, Gesellschaft is transitory and superficial" (Tönnies, 1957/1887, pp. 34-35). Tönnies would see a negative impact stemming from rapid growth. In
particular, Tönnies ideas imply that social and personal disruption are a consequence of rapid growth.

Tönnies presents a strong statement concerning the differences between rural and urban communities. Notions alluded to by Weber and somewhat reiterated within Habermas' system/life-world struggle coincide with Tönnies' ideas. Likewise, I will later show that Durkheim expanded upon Tönnies' analysis.

Uniquely, Tönnies points out the transitory nature of Gesellschaft. This is an essential idea for understanding rapid growth in a boomtown community. Gesellschaft as transitory suggests that "boom" eventually turns to "bust." Given that the "boom" and "bust" phenomenon are often associated with high energy development areas, I suspect that at least some degree of "fear of bust" will be evident in this study. I will look for the existence of this phenomenon in the youth survey responses.

Durkheim's mechanical and organic solidarity. Influenced by Tönnies, Durkheim arrived at a typology based on social solidarity (Turner and Beeghley, 1981). He used the notion of mechanical solidarity to refer to a more traditional social orientation and he used organic solidarity to refer to a more modern social orientation. Durkheim sees a social change from mechanical to organic solidarity as generating social disorganization that is akin to normative chaos.

A primary cause of disorganization is rapid social
change (Pfohl, 1985). Disorganizational theory was popular during rapid development in the United States and then declined as the rate of uncontrolled industrialization, urbanization, and immigration also decreased. Pfohl (1985) notes, however, that disorganizational theory is still popular in sociological studies concerning developing countries. He suggests that this may be due to a not yet experienced reduction in uncontrolled industrialization, urbanization, and immigration.

Durkheim sees the result of the shift from mechanical to organic solidarity as risking a state of normlessness termed anomie.

The primary difference between Durkheim's theory of anomie and that of disorganization is that anomie occurs when there is a specific sociohistorical change from mechanical to organic solidarity. This change requires a total reorganization of the societal structure. Disorganization, on the other hand, is less dramatic in scope and Durkheim sees it as searching for ways to "patch" or restore specific social areas versus a complete reorganization of society.

Durkheim (1951/1897) suggests that rapid economic growth can result in anomie. Given the tremendous economic increases experienced in the Shetland and Orkney islands, I
suspect that anomic conditions exist in the islands and that these conditions are related to a change from mechanical to organic solidarity.

The shift to organic society is relevant to understanding rapid growth in the islands. Such a shift requires a reorganization of social relations. This implies that the "smoother" the transition the less the potential for anomie. In this study I will look for evidence of anomie and explore potential anomic differences between groups of survey respondents.

Inkeles' individual modernity: an empirical viewpoint. Inkeles and Smith (1974) and Inkeles, et al. (1983), have used both theoretical and empirical analyses to understand growth concerning a shift from the traditional to the modern. They describe this shift as a transformation and they spend time defining it, measuring it, and explaining its causes (Inkeles and Smith, 1974).

Having conducted much of their research in developing countries, Inkeles and Smith (1974) strongly argue that their conclusions equally suit developing countries, advanced industrial, and postindustrial nations alike. Other investigators who have studied varying aspects of growth in developing countries also argue that it is possible to safely make generalizations from developing nations to industrialized nations regarding the effects of rapid growth and modernization (Harris and Vijaya, 1984; Cockcroft, Frank, and Johnson, 1972).
In discussing their findings concerning modernization, Inkeles and Smith (1974) specifically argue that societal modernization is always a matter of degree.... Even the most highly developed nations have more modern and less modern portions of their populations... (pp. 311-312).

As rapid growth generates a shift from rural farming and fishing to industrial work it also imposes a socially modernizing environment on the population.

In many respects Inkeles and Smith have arrived at conclusions that appear to conflict with other theorists such as Tönnies and Durkheim. These more traditional theorists view modern industrialization as risking social and cultural disorganization. Durkheim, in particular, views modernization as a potential source of deviance. Although Inkeles and Smith acknowledge that this may be the case with "isolated tribal peoples" it is their contention that a direct relationship exists between disorganization and the size of the population. Likewise, there is a relationship between disorganization and social structure within an established nation state. Larger populations organized within an established nation state experience less disorganization. With this in mind Inkeles and Smith rejected the "negative" conclusions of Durkheim, Tönnies, Weber, and others. Rather, they speculated that modernization was a positive or beneficial process and that modern infrastructure and activity did not induce any more stress or personal disorientation than found in traditional settings (Smith, 1974; Inkeles, et al., 1983). Empirical
findings have lead Inkeles and his colleagues to the conclusion that there is

...no basis for asserting that individuals more exposed to modernizing experiences, or who were more modern in attitudes, values, and behavior, were less well-adjusted than those whose modernizing was less advanced, [in fact,] the more modern the individual, the better his[her] psychic adjustment... (Inkeles, et al., 1983, p.274).

In explaining this outcome they refer directly to Tönnies' Gemeinschaft and suggest that it is a fundamental error to assume that "the ideal gemeinschaft type of organization" is the same as an individual's actual situation. The ingredients for personal adjustment are not so much where we imagine them to be as they are where they are -- equally dispersed in modernized areas and traditional rural areas alike (Inkeles, et al., 1983).

Following Inkeles' and Smith's lead, one might suspect that North Sea oil development has positively affected the Shetland and Orkney islands. Such development has increased immediate economic security, made more services available to the island population, and decreased out-migration. In this study I will explore survey responses to begin to understand if there is a positive experience in the islands that might support Inkeles' findings. I argue that if one island group differs from the other concerning the positive or negative effects of oil development, that this would support the notion that both positive and negative impacts can be associated rapid growth. Whereas Inkeles' findings seem to explain the former, the latter requires an explanation.
incorporating a mix between the more "traditional"
theoretical constructs and ideas presented by Inkeles.

**Emergent shifts and modernism.** Freudenburg (1984)
summarizes the relationship between various notions of rapid
growth and development in two basic hypotheses.

The first is the hypothesis that rapid growth
leads to disruption in established community
social structures, bringing negative consequences
for local residents.... The second hypothesis, by
contrast, is that growth is beneficial because it
expands economic and other opportunities (p. 699).

Although framing theoretical perspectives on growth in
rudimentary hypotheses has the advantage of parsimony, there
is also a tendency to lose some of the subtle similarities
that exist among the various theoretical perspectives.
Possibly by reviewing these perspectives from a parallel
vantage point, conflicting results and conclusions can be
better understood. Each theoretical perspective previously
discussed holds to a sociohistorical shift directed toward
an increasingly differentiated society. However, this does
not mean that modern society completely displaces
traditional society. On the contrary, pockets of
traditionalism exist next to and within modernism.
Similarly, traditionalism takes on new content through new
collective values. To study the loss of "old" values
without studying the existence of new replacement values
will no doubt reveal the appearance of a sterile alienated
environment.

To acknowledge that there is a shift from traditional
society to modern society suggests the potential of a future
shift from modern society to some other societal type. Durkheim's (1897/1951) brief discussion of solutions to social causes of suicide and his general insistence that society substitute a new secular moral order for a dissipating religious based moral order indirectly endorses the idea of sociohistorical change from one form of modernity to another (Turner and Beeghley, 1981). Durkheim believed that modern organic society needs to find a substitute for the religious moral order found in traditional mechanical society (Pfohl, 1985). He further felt that a rapid transition from one form of social solidarity to another, as found in an energy boom, could generate "deregulation (anomie) and detachment (egoism) of the individual from society" (Turner and Beeghley, 1981, p.357). Durkheim suggests that occupational associations could help in this area, and more specifically, he sees education playing a major role in "moral reconstruction" (Pfohl, 1985). The simple fact that Durkheim indicates that there are solutions to the lack of collective moral conscience in organic society suggests that a new form and content of social organization can emerge.

Inkeles et al. (1983) refers to a social shift more specifically than Durkheim when he speculates:

...there is the possibility that individual modernity, as we have conceived and measured it, may itself become tomorrow's traditionalism, a historical anachronism no longer appropriate to the structural features of some as yet unimagined future society radically different in form and content from any we have yet known (p.321).
It is Inkeles' contention that once society shifts to modernity there is no retreat but rather only a choice between one form of modernism and another -- or possibly between modernism and some new social form. As written by Inkeles et al, 1983:

The real choice is no longer between modernism and traditionalism. It is, rather, between one combination of modernism or another -- either a modernism linked to a passion for power and to a bottomless greed, resting on torture and erecting monuments to tyranny, or a modernism restrained by humility and tempered by humanism (p. 322).

This notion is not far off Habermas' observation that there is a need for more communicative action to avoid an overpowering of the "life-world" by the "system." To give full power to the system that rationalizes morality under the guides of due process of law is to take Weber's instrumental rationalization to the extreme. The acute negative result of such an action would be reflective of the ruthless oppression that existed in Nazi Germany.

The conflicting conclusions reached by studies of rapid growth may be a function of differences between forms of modernism. Following this thinking, I will search for differences in modernism between the Shetland and Orkney islands. I will use both demographic variables and survey opinion items for this purpose. In addition, I will use survey data to uncover the potential of a shift in values.

From Materialism to Postmaterialism

Inglehart (1977) has introduced one theoretical perspective that lends itself nicely to perceiving a shift
from one form of modernism to another. He begins to move away from the more rudimentary traditional/modern dichotomy not by simply adopting a new interpretation of the traditionalism - modernism shift but by opening the doors to a new position. He does this through the introduction of a materialist - postmaterialist construct.

...the post-materialist or "post-hardship" mentality remains rational. [Yet] it emphasizes a different aspect of rationality from what has been most prominent in industrial [modern] society.... Half a century ago, Weber argued that there is a basic social tension between "substantive rationality," involving judgments about ultimate values, and "functional rationality," dealing with the means to attain a given goal. Both forms of rationality are essential (Inglehart, 1977, p. 369).

Ideally, people must remain instrumentally rational to obtain desired ends through specific means, however, society cannot obtain achievement without customarily accepted values and beliefs (Lipset, 1975). Hence, there is a constant friction between the two rationalities that plays itself out in a materialist/postmaterialist dimension. In this light...

The post-materialist outlook is more attuned to ultimate ends, which may produce not only a heightened moral sensitivity but also a more intense need to find ultimate values or to believe they have been found (Inglehart, 1977, p. 371).

Comprehending the differences between materialists and postmaterialists rests in perceiving a hierarchy of needs from a social psychological outlook. Individuals' needs become satisfied through engagements with everyday life, which unearth a religious quality similar to a Neo-
Durkheimien understanding. As technological advances (much of which increase economic security) impact modern society, basic human physical and safety needs become increasingly satisfied. Following Maslow's (1954) hierarchy of needs, the satisfaction of lower level needs enables motivation for the attainment of higher level needs. After satisfying our need for a job we begin to deal with the bigger questions of life and to satisfy higher order needs (Inglehart, 1990).

The impact of technological modernization is reinforced by parallel cultural developments that take place in advanced industrial society. As we have seen, economic development and the emergence of social welfare institutions give rise to a sense of economic security, which in turn leads to a gradual shift from Materialist to Postmaterialist values among both elites and the general public (Inglehart, 1990, p. 429).

The sociological significance rests in the idea that technological development is a function of current organizational structure. The current structure itself develops new organizational structures, which in turn propagate new cultural developments. These new social structures shape our cognitive perceptions thereby propelling or motivating us to realize and attain higher order needs. As sustenance and safety needs become satisfied, belongingness needs enter into focus. On an organizational or societal level belongingness and self-actualization needs begin to take higher priority than the imperatives of economic growth [and] ...demands for social equality ...become more salient than demands for sheer economic equality (Inglehart, 1977, p. 69).

On an individual level, belongingness entails a need
for affectionate relationships and an association with desirable groups, where "desirable" is defined by social acceptance. With the onset of a broader societal perspective, however, social acceptance becomes more abstract. An element of belongingness must be associated with societal needs. An appropriate societal affiliation is one that attains broad social identification through widespread communications and global concerns. Examples of such groups are those that have evolved out of environmentalist movements.

In a materialist modern world associated with capital accumulation and rapid industrialization one finds that the more traditional and emotional rationality aligned with a religious orientation to social norms becomes increasingly scarce. However, as people meet their lower order needs and new belongingness needs come into play, we begin to see the emergence of activities supporting the Neo-Durkheimian presumption that everyday life encapsulates a profound religious quality.

In advanced industrial society, and particularly in Western Europe, the appeal of the traditional churches seems to be fading among the younger generation -- but it is precisely here that a postmaterialist world view is emerging that shows a relatively great concern for the meaning of life, and that places a renewed emphasis on the sacred -- though it tends to see the sacred in nature rather than in churches (Inglehart, 1990, p. 433).

Need fulfillment, therefore, is the motivating force behind postmaterialist behavior.

Materialist and postmaterialist behaviors exist in
conflict. However, it is not a loud revolutionary conflict as proposed by Marx and numerous other conflict oriented theorists. Rather, it is more subtle, tied to everyday preferences, cultural activities, and motivational needs. Below I simplistically portray a basic scenario depicting the emergence of postmaterialist oriented behaviors.

At the outset of this scenario there exists a Western undeveloped energy rich rural area where values are essentially materialistic. These materialist oriented individuals primarily gear themselves toward satisfying basic survival needs by placing a great deal of emphasis on primary needs such as jobs and physical security. They place tremendous importance on the essentials of food, water, clothing, shelter, and the like. There is also a great deal of importance placed on factors such as maintaining order, discouraging crime, maintaining or acquiring a stable economy, increasing economic growth, and fighting rising prices (Inglehart, 1990, 1977). Then, following the discovery of energy resources, in response to global economic demands, rapid development progresses. Over time there begins to be an increased satisfaction of lower order needs.

A potential response to this new environment is an increase in activities geared toward obtaining goals that embody a postmaterialist value orientation (i.e., there is more emphasis on belongingness and self-actualization needs). Consequently there is a greater striving for such
things as freedom of speech, more say in the government, insistence that ideas count, creating a less impersonal society, and developing more say on the job (Inglehart, 1990, 1977).

Within this study I will use theoretical notions underlying Inglehart's materialism and postmaterialism to attempt to uncover the existence of a new form of modernism as addressed by Inkeles. This will involve a principal components factors analysis of the youth survey data. I will consider the existence of a materialist/postmaterialist dimension as consistent with the possible existence of a new form of modernism emergent within the islands.

UNDERLYING CONCEPTUALIZATION

Below I have laid out a conceptual framework for use in this study. It draws ideas from two essential areas: (1) Social Impact Assessment; and (2) Quality of Life. I believe that the literature falling into these categories provides the necessary base for exploring effects of oil development on Shetland and Orkney island youth. In particular, the Social Impact Assessment (SIA) literature presents a good survey of studies tied to energy development areas. Although obtaining conflicting empirical results, this literature provides some important methodological insights. I will highlight specific points and relate them to this study.

Quality of Life (QoL) is a significant area of interest, related to SIA. Initially, SIA placed a strong
emphasis on economic factors. QoL, however, has placed its emphasis more on social factors. Similarly, where SIA has typically been more objective, QoL has typically been more subjective. I will use ideas from the QoL literature in this study. Specifically, I will incorporate the use of QoL methods, the relationship of QoL to SIA, and Sirgy's (1986) association of QoL with Maslow's theory of needs.

Conflicting Empirical Results

The literature from boomtown studies and SIAs reveals little empirical evidence for distinguishing between confident claims of social disruption and confident claims of non-disruption (Wilkinson, et al., 1982; Freudenburg 1986). At least four possible reasons for the presence of conflicting results exist: (1) a lack of theoretical guidance; (2) a lack of studies dealing with smaller homogeneous populations; (3) difficulty in detecting policy impacts; and (4) a lack of post-impact studies. Below I discuss each of these points and their relationship to this study.

Theoretical guidance. There is essentially no theoretical guidance behind SIA studies (Dietz 1987). This appears to be a result of earlier SIA reports that were strong on economic and demographic variables and extremely weak on sociological variables. Freudenburg (1986) reports that there was a tendency, that still continues, for EISs (Environmental Impact Statements) to include large amounts of information concerning services and facilities but
providing very little in the way of human needs and behavior. Although this seems to be changing, the incorporation of middle range type theories is a fairly recent development and the incorporation of more broad based theories remains scarce. As discussed by many social researchers, theory is desirable and pertinent to generalization, operationalization of variables, and determining relationships among independent measures (Babbie, 1992; Miller, 1983; Smith, 1981; Wallace, 1971). In Weber's (1903-17/1949) account of theory and probability Weber profoundly elaborates on the notion of the empirical versus the theoretical.

...the process which is claimed to be typical is shown to be both adequately grasped on the level of meaning and at the same time the interpretation is to some degree causally adequate. If adequacy in respect to meaning is lacking, then no matter how high the degree of uniformity and how precisely its probability can be numerically determined, it is still an incomprehensible statistical probability, whether dealing with overt or subjective processes. On the other hand, even the most perfect adequacy on the level of meaning has causal significance from a sociological point of view only in so far as there is some kind of proof for the existence of a probability that action in fact normally takes the course which has been held to be meaningful (p. 100).

Weber arrived at basic conclusions about the use of principles of probability and subjective theoretical interpretation. He reached an understanding of sociology that simultaneously maintains a qualitative and quantitative orientation. There is a lack of this type of strong theoretical base in SIA and boomtown research, which has
likely added to the conflicting results now found throughout the literature.

In this study I draw upon numerous theories to assist in guiding the development of hypotheses. I will further use these theoretical ideas for interpreting results. The constructs previously laid out will assist in guiding possible generalizations or identifying and discussing specific limitations.

Use of small homogeneous populations. A second possible reason for the existence of conflicting results in the SIA and boomtown literature is that researchers have had a tendency to treat all populations within an area as one aggregate population. Some researchers have attempted, however, to look more specifically at smaller homogeneous populations or sub-aggregates within an impacted area. These smaller groups may be women (Moen 1981; Freudenburg 1981), youth (Freudenburg, 1984; Seyfrit, 1986), "newcomers" (Massey and Lewis, 1979), mobile versus conventional home owners (Krannich and Greider, 1984), the family household (Boulding, 1983), and so on. The possible difficulty created by not disaggregating a population under study is that unequal effects within various population groups can cancel each other out. When researchers ask general questions concerning a specific impact's positive or negative effect on a population a potential exists for the enhancement or watering down of such effects. This problem of accurately detecting effects is dependent upon the
population's diversity and the social impact. Hence, Freudenburg (1984) has suggested that more specific questions relating to sub-populations be addressed.

In this study I use data collected from a homogeneous population comprised of Shetland and Orkney high school age youths.

**Detecting policy impacts.** A third possible reason for the existence of conflicting results in the SIA and boomtown literature is that impacts are often small and difficult to detect. Judd and Kenny (1981) have suggested that researchers may wish to consider increasing the alpha level (e.g., increase $\alpha=.05$ to $\alpha=.10$) to observe effects of social policy. They contend that decreasing the probability of a Type II error is often beneficial in applied settings. Although this practice will increase the probability of finding a policy effect when no effect exists, it has the advantage of decreasing the chance of not finding a policy effect when in fact it does exist.

To the extent that variation due to sources other than the construct of interest is substantial and uncontrolled, nonsignificant treatment effects will be reported. In other words, as irrelevant sources of variation in the outcome measure get large, so treatment effects look relatively small. Hence we may conclude that they do not reliably exist (Judd and Kenny 1981, p. 30).

Since SIA and "boomtown" studies have a natural potential for the exclusion of intervening variables, conflicting results across studies may, at times, be due to conclusion errors.

I have decided in this study, however, to set an alpha
level of .05 as my probability of a Type I error. Although setting the alpha level at .05 does not directly follow Judd and Kenny's suggestion, it does follow the more conservative standard convention. The main reason I chose to use the 95 percent confidence level is because of the sample size (N=781). When samples are large, one may more easily detect significant relationships. That is small differences may turn out to be statistically significant when N is large, whereas larger differences may not prove to be statistically significant when N is small. Primarily for this reason I chose to follow the more conservative convention and use .05 for the alpha level. However, following Judd and Kenny's rationale I feel that in large sample populations a conventional alpha level of .05 inherently runs the risk of producing a Type I error. Had I decided not to follow Judd and Kenny's recommendation, I would have considered using a .01 alpha level.

**Post-impact studies.** A fourth possible reason for the existence of conflicting results in the SIA and boomtown literature is that only a small number of studies are post-impact oriented. Whereas evaluations primarily involve retroactive measurement of policies already in place, SIAs are planning oriented and focus more on the avoidance of negative impacts (Freudenburg, 1986). The result is often a policy determined *a priori* as appropriate, but over time, the policy may not remain empirically successful (Seyfrit, 1988). Dietz (1987) suggests that researchers conducting
cautious *ex post facto* assessments of impact areas need to gain knowledge of the important consequences of policies. Only through continued post-impact studies can we begin to uncover the knowledge necessary to better design and structure future SIAs.

This study is post-impact oriented. Such an orientation allows for the potential detection of a materialist/postmaterialist dimension thereby adding to the currently scarce theory pool associated with SIAs. As noted earlier, SIAs are particularly lacking in theory. This lack of theory is accentuated because post-impact analyses are even more scarce. This study will attempt to provide new and additional insights into the use of sociological theory for post-impact assessments.

**Quality of Life**

Quality of life (QoL) is an essential concept for comprehending the difficult mission assigned to SIA. Through the study of life satisfactions and how they "are distributed throughout a society" it is possible "for the improvement of social understanding and policy-making" (Solomon et al., 1983, p. 228).

The purpose of social impact studies is to answer the following question: Will there be a measurable difference in the quality of life in the community as a result of what the proposed project is doing or might do in the future (Burdge, 1983, p. 193).

QoL is an important factor in SIA development, monitoring, and post-assessment of social impacts (Freudenburg, 1986; Carley, 1983; Burdge, 1983; Olsen et al., 1985; Cochran,
1979). Freudenburg (1986) goes so far as to report that a consensus now exists that holds QoL as a key dependent variable.

Surprisingly, however, there is very little research that incorporates the two concepts -- SIA and QoL. I ran a computer search (SilverPlatter, 1992) on 1,600 sociology related journals between 1974 and April 1992 cross referencing 1,234 QoL articles with 413 social impact articles and found only one article that met the criteria. Similarly after reviewing a compilation of SIA literature covering 1,025 articles and books (Leistritz et al., 1986), I found only eight references that included mention of QoL.

Two possible reasons that may account for this apparent deficiency of SIA and QoL integration are (1) a lack of theory and definition behind SIA and QoL; and (2) a difference in the data and tasks of SIA and QoL research.

There is no clear definition for QoL (Solomon et al., 1983). According to Mukherjee (1983), the literature defines QoL in terms of social development where QoL's goal is modernization. The literature also defines QoL in more multidisciplinary terms relating to its application and purpose. Solomon et al. (1983) suggest that QoL needs to be oriented to the past, present, and future.

As with SIA, a major problem within the QoL literature is the lack of a theoretical foundation. Along with varying definitions, this exclusion has generated numerous indicators including such things as feelings of present

Solomon et al. (1983) have reported a lack of theory behind QoL ideas. Due to this void, Sirgy (1986) suggests that some currently proposed QoL indicators may be suspect from a construct validity standpoint. Sirgy (1986) has therefore proposed a theoretical frame, based on Maslow's (1954) work, to ground QoL research and set forth the following definition:

QoL is defined as the hierarchical level of need satisfaction of the aggregate members of a society. The greater the need satisfaction (from lower-order to higher-order needs), the greater the QoL of that society (Sirgy, 1986, p. 341).

A notion of this sort suggests that when individuals from identifiably different groups provide positive responses to general life satisfaction questions they may or may not be experiencing the same QoL level. Each individual may have experienced need satisfaction, yet one experiences satisfaction of hunger and the other of belongingness. Given Sirgy's definition, the person experiencing belongingness has a higher QoL. The sociological
implication inferred within this explanation is that QoL is socially oriented. It is a function of need satisfaction in direct association with societal structures: where societal structures are institutions. Sirgy (1986) refers to these institutions as subsystems of the society that play important roles in the maintenance and enhancement of a society. This line of thought rings closely to the need satisfaction component set forth under Inglehart's materialist/postmaterialist construct.

A second reason for an apparent deficiency with the integration of SIA and QoL relates to the differences in the data and tasks of SIA and QoL research. Although SIA and QoL research are similar in nature (Olsen et al., 1985) there are some basic differences between the two. SIA has initially emphasized more economic and less social factors while QoL has traditionally been more social oriented. Whereas SIA is sensitive to detecting policies' social impact or effect on life quality, QoL is sensitive to detecting fluctuations and shifts in cultural norms as represented in the shift from concern with individual progress to a concern with social progress (Etzioni, 1978). SIA is primarily a "pre-policy" activity; although at times it does involve policy monitoring. QoL research, on the other hand, is predominately used for comparing satisfactions between groups after an initiated policy or possibly irrespective of any policy. Furthermore, due to SIAs frequent "pre-policy" orientation, SIAs usually rely on
objective factors like total income, employment ratios, number of public services, number of service facilities, and other measures of the infrastructure, for analysis. Assessors typically only surmise subjective data concerning individuals' life satisfactions. Subjective data would include how people feel about their community and other private areas of their lives. Alternatively, some researchers recommend that QoL data include both objective and subjective factors (Spano, 1989; Olsen et al., 1985; Carley, 1983; Schneider, 1975).

Only as their relationship to subjective indicators is understood do objective measures begin to take on human meaning and provide reliable guidance for public policy (Ladewig and McCann, 1980, p. 110).

This is not to say that SIAs cannot incorporate subjective factors but rather that the nature of most SIAs precludes such inclusion. A major deficiency in the SIA literature is its lack of *ex post facto* studies providing for a clearer understanding of SIA supported policy outcomes and an allowance for the integration of subjective QoL factors into the analyses (i.e., community satisfaction).

Within this particular study I employ methodological concepts derived from the SIA and QoL literature and use both objective and subjective data. I anticipate that the use of subjective data (survey opinion items and attitudinal variables also derived from youth survey responses) and objective data (demographic variables) will complement and strengthen the results and discussions.
CHAPTER SUMMARY

This study provides new insights into the use of sociological theory for post-impact assessments of rapid growth. In this chapter I presented theoretical ideas that lead to the advancement of various expectations concerning the island survey data. One principal idea reflected in this chapter is that a sociohistorical shift has taken place in the Shetland and Orkney islands. I identify this shift with the onset of oil development and suggest that it is similar to a shift from a more traditional to a more modern society. I further argue that different forms of modernism exist and they are socially and historically based. Inglehart's theory of postmaterialism may helps explain the difference between types of modernism. In following chapters, I will investigate the existence of postmaterialism within the islands and make various comparisons among groups of survey respondents. I will also look briefly at variations in island development plans and policy making institutions. I expect to find differences between the two islands consistent with Habermas' theory suggesting that policy processes higher in communicative action exist within a form of modernism more concerned with QoL. Specifically I hypothesize that Shetland is more postmaterialist oriented than Orkney.

Durkheim has suggested that rapid economic growth may result in anomie. I suspect that the rapid growth in the islands has generated anomic experiences for the islanders.
I expect to see feelings of island detachment among the islanders and a skepticism toward economic benefits, new social programs, and new social structures. In following chapters, I will investigate the existence of anomie within the islands and make various comparisons among groups of respondents. In particular, because of the association of postmaterialism with Shetland and QoL, I hypothesize that there are less anomic experiences among Shetlanders than Orcadians.

In this chapter I have highlighted some conflicting results concerning SIAs and the effects of rapid growth on gender. I will compare male and female survey responses and discuss them regarding Moen's (1981) and Freudenburg's (1981) findings. The reader should note, however, that in this specific study I am dealing with male and female youths whereas the above studies involved adults. Certainly gender differences in an adult population are much different from those in a youth population. Hence, I will make all comparisons between this study and the others with extreme caution.

Overall, I will use the theories presented in this chapter to better understand the results of analyses concerning the youth survey. Both SIA and QoL studies lack in the use of sociological theory. There has been a tendency to use large heterogeneous populations in studies and there has been a shortage of post-impact studies. This study is theoretically based, it deals with a homogeneous
population, it includes both objective and subjective data, and it is post-impact oriented. These conditions strengthen this study. Such an orientation allows for the potential detection of a materialist/postmaterialist dimension thereby adding to the currently scarce theory pool associated with SIAs. I expect results to be consistent with the notion that postmaterialism exists, is measurable, and can be used to better understand aspects of rapid growth.
CHAPTER III
HISTORICAL REVIEW

INTRODUCTION

In this chapter I provide an historical review of the Shetland and Orkney islands beginning with prehistoric and viking times. I outline specific occurrences that may have had a direct bearing on the islanders' responses to North Sea oil development. In particular, I relate historical and geographical differences to the planning activities undertaken by both Shetland and Orkney island councils. I then compare and contrast the Shetland and Orkney development plans pointing out basic economic and social differences (Figure 3.1 shows a map of the islands).

HISTORICAL BEGINNING

To fully appreciate and understand this study it is necessary to examine the history of the Shetland and Orkney islands. These islands have a rich heritage and a long history.

Orkney is the site of the most active archaeological studies in all of Europe (Renfrew, 1985). The Orkney islands were inhabited over 5,500 years ago. Ancient Orcadians practiced various types of farming, fished the sea, "and created a self-sufficient economy that remained the basis of Orcadian life down to recent times" (Ritchie, 1985).
Figure 3.1: Geographical Location of the Shetland and Orkney Islands
Archaeologists have also found Stone Age ruins in the Shetlands (Linklater, 1965). Although farther from the Scottish mainland than Orkney, Shetlanders also farmed and fished in these early times. These industries, along with knitwear, are still prominent island industries today.

The history of the Shetland and Orkney islands provides us with a glimpse into the character of the native islanders. Their history begins around 800 A.D. when the Vikings took hold of the islands and brought them from prehistoric to historic times. This period of Scandinavian dominance lasted until the middle of the thirteenth century, and a strong Norse background remains in the islands today. The islanders have a strong tie to their Norse background that comes from the dominant role played by the Norse in the early development of the islands' way of life. They have no conflict with Scotland but they have no strong feelings of kinship either. History, as well as heredity, is responsible for this "state of mind," for no benefit of any sort occurred to the islands from their association with Scotland until long after Scotland became part of Great Britain (Linklater, 1965). The Norse dominance not only marked the departure from pre-history, it was also the origin for some of the differences seen today between Shetland and Orkney.

EARLY INFLUENCES

Shetlanders hold a much stronger tie to the Norse
relationship than do the Orcadians. This may be due in part to historical differences between the two islands, but it is also a result of geographical differences.

The Shetland and Orkney islands were important during early historic times because they had few trees and good soil for farming. The Scottish mainland was thick with forest and people had little in the way of good tools for land clearing. Orkney is much closer to the mainland and is also far more conducive to farming than Shetland, which has always been more oriented to fishing. It is legitimate to make the generalization that Orcadians have typically been farmers who, because of location, have come to use the sea, while Shetlanders "have been seafarers who took the sea for their livelihood and regarded their islands as convenient harbours" (Linklater, 1965, p. 160).

Shetland's ideal fishing brought many foreigners in and out of its islands — the Dutch alone could have had 2,000 ships around Shetland at any one time in the 1500s and 1600s and nearly 400 ships at any time throughout the late 1800s (Linklater, 1965). Orkney, on the other hand, seldom had visitors except a few occasional Scotsmen.

In 1540, under King James V, Sweden forfeited on a dowry and the Orkney and Shetland islands became part of Scotland. During the later 1500s, under the rule of Mary Queen of Scots, the Queen gave the islands to two Earls of Stewart. They brought destruction and destitution in their wake. At the time, Orkney had a far more stable economy and
was richer than Shetland. Hence, the Stewarts concentrated more of their efforts on Orkney destroying far more of Orkney than Shetland.

A great deal of Orkney required rebuilding and this resulted in a dying out of the Norse influence in Orkney by the eighteenth century. Shetland, which had much less need for rebuilding, was able to retain its Norse heritage. Even today, Linklater (1965) reports, many Shetland boats resemble the ancient Viking ships and the Shetlanders take part in a yearly festival known as Up-Helly-Aa,

...an old fire-festival refashioned, with great dramatic effect, as a viking ship-burial illumined by the flames of a burning galley (p. 161). This flaming declaration of viking ancestry and glorification of the Norse heroic spirit is... (p. 186) ...a living festival, and its overt romanticism flows naturally from a small and secret spring in the strange heart of Shetland (p. 188).

Two differences, one geographically based (i.e., farming/fishing) and one historically and politically based (i.e., the rule by the Stewarts), are important for understanding the Shetland and Orkney islanders. Linklater considers Orcadians more shy and he describes a quietness that characterizes these islands. The Orcadians are great readers and boast of their library, the first in Scotland. However, Linklater considers Shetlanders more talkative, easier, and somewhat more adventurous.

Despite the differences between the islands there are also many similarities. The religion in both places is Presbyterian. The religion is neither characteristically
too enthusiastic nor intolerant of others. There are many churches on the islands but islanders are not avid attendees. Islanders know their ministers better for the ministers' visits to the elderly and sick than for their sermons.

Both islands hosted large military bases during the first and second world wars. Both islands began to generate a stronger monetary based economy in the early 1900s. For the past 100+ years Shetland and Orkney experienced a large population decline attributed to a steady outmigration.

Before the onset of oil development many similarities existed between Shetland and Orkney. Often, the literature points to the Orkney and Shetland islands in a single reference as if they were one entity. Observed by Linklater (1965) the Orcadian lifestyle is characterizable as traditional and Shetlanders have also held on to their "traditional pattern of life." Moore (1980) has declared that newcomers arriving in 1970 would have observed a social system akin to colonial life.

LATER INFLUENCES

It wasn't until the early 1900s that Orkney began to become more prosperous with its farming. At just about the same time Shetland began to fish for its own profitable gains. Until the early 1900s the islands were monetarily poor and relied heavily on bartering. The establishment of modern military bases provided one of the first strong jolts to both the Shetland and Orkney economies. However, these
bases did not last much past World War II and the islands' economies felt the negative impacts from the closings.

A strong decline in population of about 40% occurred in both island areas. The decline began around 1900 and continued until the oil era started in 1971-1972.

Shetland's population in 1900 was close to 28,500 and Orkney's was near 30,000 (Thomas, 1983; Moira and Moira Architects and Planning Consultants, 1973). By 1971 Shetland's population decreased to 17,327 and Orkney's population dropped to 17,137 (Shetland Islands Council, 1980; Orkney Islands Council, 1980).

In 1965 British Petroleum discovered offshore natural gas, and soundings for North Sea oil were underway near Shetland (Manners, 1982; Seyfrit, 1988). Also in 1965, recognizing the serious outmigration and reduction in traditional industries (Gaskin, 1977), the British government established a specific agency under the Highlands and Islands Development Act. As cited by Grigor (1980) this agency's task was

for the purpose of assisting the people of the Highlands and Islands to improve their economic and social conditions and of enabling the Highlands and Islands to play a more effective part in the economic and social development of the nation (p. 71).

Oil and gas were coming in time to provide the economic stimulus needed for the rural Scottish areas and the UK. In 1971 Shell/Esso discovered the largest North Sea oil field and the islands entered into an oil era that had dramatic economic and social effects (Burgess, 1981). The oil
This welcoming response was partially a lack of information on the part of the native islanders, but also a response to a desire for progress (Davies, 1978). Islanders believed that private industry needed latitude to develop the natural oil resources that were desperately required to offset national payments for energy (Davies, 1978).

On the national level, oil became a priority. In 1971 over 50% of the UK energy requirements depended on fossil fuels and this number was increasing (Jennings, 1975). Not only did Britain's demand for oil increase but two important activities took place; one activity pushing up demand and the other activity pushing up price.

The US entered the world market in force in 1970 and abandoned its import quotas in 1972. This dramatically increased the world market demand for oil (Jennings, 1978). Then in the last quarter of 1973, OPEC (Organization of Petroleum Exporting Countries) raised the price of their product 300%.

Within a few weeks, estimates of the utility of North Sea fuels were revolutionized. The high cost of extracting them, which had once seemed daunting, was now diminished in relation to the multiplied price of OPEC oil. The assurance of their secure supply, which had once seemed merely attractive, now took in a pre-eminent significance in the light of Arab export restrictions and embargoes (Saeter and Smart, 1975, p. 9).

The pressure was on for the UK to discover oil and the timely discovery of North Sea reserves was a bonanza. It placed the UK in the top ten oil producing countries in the
world and it substantially reduced the UK's dependence on foreign oil (Atkinson and Hall, 1983). Not only did North Sea oil help the UK economically it has also helped her to remain a strong power in the world political system (Saeter and Smart, 1975).

Increases in world oil demand, UK oil demand, UK political power, and world oil prices along with a decrease in the UK's (particularly Scotland's) economy has placed a tremendous pressure on rural Scottish communities to bend to the oil developers. The first battle was essentially for property rights. Licenses gave so much power to the oil companies that sovereign rights were "turned into property rights for the oil companies" (Cameron, 1983, p. 3). In 1974 a provision of the Offshore Petroleum Development (Scotland) Bill stated that:

The Secretary of State may acquire by agreement or compulsorily any land in Scotland for any purpose relating to exploration of sites for platform construction and pipeline landfalls (cited by Hutcheson and Hogg, 1975, p. 117).

Hence, most of the initial county development plans emphasized land use and excluded important social and economic impacts (Nelson and Jessen, 1981). Moreover, the British government owns controlling interest in British Petroleum (Atkinson and Hall, 1983) and it is not surprising that Manners (1982) reports that most advantages stemming from oil development have occurred on the national level and "that Scottish communities have been forced to bear a disproportionate share of the costs" (p. 279). However,
specifically in Shetland, and somewhat less so in Orkney, planning and sovereign rights took a turn that seemed to reduce this inequity.

PLANNING FOR OIL

Orcadians and Shetlanders experienced rapid fluctuations in male population during the first and second world wars. From the start they were more aware than other rural Scottish areas of the need to control oil development (Hutcheson and Hogg, 1975). As stated in the Orkney Interim Development Plan of 1973:

"Care should be taken that a similar situation does not arise to that after the war, when very many services camp buildings were left behind, and were occupied as sub-standard dwellings (Moira and Moira Architects and Planning Consultants, 1973, p. 25)."

Furthermore, Shetland and Orkney islanders remained somewhat culturally independent of the Scottish mainland and tended to hold on to their Norse heritage. When they saw the oil era coming on them they needed to act quickly. The Zetland County Council (predecessor to the Shetland Islands Council) and the Orkney County Council (predecessor to the Orkney Islands Council) did not have County Development Plans, which the islands were to prepare under the 1947 Town and County Planning Act. In fact the island councils didn't even have a planning officer operating on their behalf. Manners (1982) suggests, however, that this may have been a strength more so than a weakness. The lack of a county development plan actually helped the islanders avoid
constraints of previously rigid development plan. Likewise, the lack of a planner or planning department freed the islands from the more conventional planning approaches associated with mainland planners (Manners, 1982). Nonetheless, to overcome potential planning weaknesses and to acquire the power necessary to successfully deal with the oil industry, the Zetland and Orkney County Councils made a rather bold move. In 1974, with Shetland blazing the trail, they acquired powers through an Act of Parliament. The Zetland County Council Act passed that April. Because Orkney and Shetland share a single member of Parliament (although Parliament recognizes them as separate entities), Orkney easily followed in Shetland's footsteps. Just a few months later, in July, the Orkney County Council Act passed. The Zetland County Council Act of 1974 gave the island council control over land development, harbor development, and harbor operations. It also gave the council power to collect fees for the general good of the community and the maintenance of the harbors (Hutcheson and Hogg, 1975). The contents of the Shetland and Orkney Acts were nearly identical, "including the power of eminent domain, wide reaching harbor and marine authority, and the ability to set up a reserve fund for the benefit of the islands" (Seyfrit, 1988b, p. 7). The first activity undertaken by each council was to produce an interim county development plan designed to set policy for future land use. The need was tremendous. In 1973 the Zetland County Council received about 100
planning applications, whereas in 1974 it received 100 per month (Manning, 1982). The major advantage gained by the councils under the new Acts was local control. The Act cut the two tiers of government required to meet Scottish mainland planning responsibilities to one tier in the Orkney and Shetland islands (Nelson and Jessen, 1981).

Other than purchasing the land used for constructing the oil terminals, the Shetland Islands Council (SIC) and the Orkney Islands Council (OIC) chose to use the powers they acquired very differently. As one might expect, these differences directly relate to early historical influences in the islands. As I noted earlier, people generally consider Orcadians as somewhat shy and there is a quietness that characterizes the islands. On the other hand, people generally consider Shetlanders as more talkative and more adventurous. Manners (1982) observes that, "it seems almost mandatory for authors to describe the Shetlanders as 'fiercely independent'" (p. 255).

The first notable difference in oil policy came in 1973 as the islands prepared for oil terminal sites. Orkney, dealing with the American based Occidental Petroleum Company, allowed Occidental to choose the terminal site and to commission and pay for the assessment report. Shetland, however, dealing with British controlled British Petroleum (BP), chose its own site and commissioned its own appraisal from independent sources. SIC intended all along for the Sullom Voe site to serve a wide range of users besides the
oil industry. Shetland acted much more independent and adventurous than Orkney. A major difference between the studies is that the OIC study did not include social or economic impact assessment, whereas the SIC study provided recommendations for guided development (Manners, 1982). Furthermore, Occidental chose an isolated island off the mainland of Orkney while SIC chose the Shetland mainland.

Another difference in policy involved SIC making capital investments in oil related construction while OIC's role was primarily one of licensing and agreements.

Shetland used the power granted by the parliamentary act to attempt to increase employment opportunities by investing tremendous amounts of money in the building and operation of the terminal and other structures and improvements, borrowing money to do so, thus incurring a large debt. Although much of the oil-related employment went to new residents, this economic expansion and population increase provided secondary and tertiary employment opportunities in the Islands (Seyfrit and Patterson, 1990a, p. 10).

Orkney's implementation of parliamentary power involved minimal investment. The Orkney Islands Council chose to control development mainly by licensing and agreements. Those areas in which Orkney chose to invest and maintain controlling interest were ones in which Orcadians have expertise. For instance, the Council is controlling partner of the towage company operating in Scapa Flow that provides tug boat and steerage service to the oil tankers arriving at Flotta Terminal. Such an investment required few new skills and therefore could employ local workers. This maintained the traditional employment in farming and fishing related industries but did not expand the secondary and tertiary employment opportunities to the same degree as in Shetland (Seyfrit and Patterson, 1990, p.6).

A further difference in policy involved social contact
between the islanders and the temporary work forces. SIC tried hard to keep native islanders from mixing too closely with the oil workers. SIC set up employment camps and discouraged Shetlanders from working for the oil companies. The feeling of being barred from partaking in the "oil money" outraged many of the Shetlanders. Although SIC later relaxed these policies, local workers continued to feel disadvantaged (Seyfrit, 1988b). Shetland policy contrasted with OIC's. OIC encouraged Orcadians to participate in oil jobs. Working with Occidental, OIC encouraged individuals who had left Orkney to return and take an oil related job. "Flotta's rate of Orcadian employment is currently between 80 and 90%, while Sullom Voe's is between 55 and 65%" (Seyfrit, 1988b, p. 8).

Finally, Shetland and Orkney also differed regarding the size of the oil terminals and the public relations activities. The Shetland Sullom Voe Terminal was three times the size of the Orkney development. Whereas SIC had to negotiate with 31 oil companies Orkney only had to deal with four. This is one possible reason why more conflict existed between the oil companies and SIC versus OIC. Some of the public displeasure with BP transferred to SIC. Relations between OIC and Occidental Petroleum were much less strained and public sentiment toward OIC remained fairly stable (Seyfrit, 1988b). However, in the case of SIC, public displeasure generated council interest in a public relations strategy. At the same time, the oil
companies were being very tight lipped about oil activities and they tried to avoid as much publicity as possible.

Davies (1978) reports:

In contrast to the oil companies, the Shetland Council was very concerned about its public image, and its need to put its case to the Shetland public. This was debated at a number of council meetings in 1973 and 1974, and a number of different tactics for overcoming this were tried (p. 51).

The council's concern about its image at this time may have been generated by antipathy following the passing of the Shetland Bill. People were now anxious about the power which the council would be able to wield, and so it was suggested that a supplement be published in the Shetland Times describing council meetings, on that the Shetland Times ought to publish fuller accounts of what went on (p. 55).

In 1975 the council was to start holding press conferences and staying in closer contact with the Shetland Times.

I have compared annual Shetland and Orkney island council publications in an attempt to better understand their concerns regarding communications with island constituents. This comparison revealed differences consistent with the notion that the SIC believes more strongly than the OIC in informing the public concerning council and oil development activities. Whereas the SIC released its first broad informational publication, Shetland in Statistics, in 1972, the OIC released its first broad informational publication, Orkney Economic Review, in 1980. Both of these publications include information concerning indigenous industry and oil development activity, economic trends, concerns and trends regarding island infrastructure,
social concerns, and meteorological and climatological activity. *Shetland in Statistics* also includes information about the SIC and SIC expenditures and revenues. I found the *Shetland in Statistics* included information under 12 major headings spanning 11 pages in 1972. This grew to 24 major headings spanning 40 pages in 1980, and by 1987 the *Shetland in Statistics* included information under 35 major headings spanning 72 pages. *Orkney Economic Review*, on the other hand, included information under 13 headings spanning 30 pages in 1980 and by 1987 included information under only 12 headings spanning just 18 pages. This comparison between SIC and OIC publications demonstrates a difference in the councils' perceived need for communicating with their island constituents.

Despite policy differences, there are many similarities between the two islands. Throughout the literature Shetland and Orkney are held up as successful examples of how small rural areas can go up against big industry and win (Nelson and Jessen, 1981, Seyfrit 1988c; Seyfrit et al., 1989). Both island areas were aware of the importance of their traditional "way of life" and aimed to preserve this special culture. Although Shetland stressed concerns about the social consequences of oil development more than Orkney, they both clearly planned to support traditional island industries primarily consisting of fishing, agriculture, and knitting. As reported in the islands' development plans:

> It is of considerable importance that everything possible is done to conserve and to develop the

70
existing industries in Orkney. Although developments associated with North Sea Oil may bring great activity, this activity can be only temporary and must not be allowed to hamper the development of more permanent industries (Moira and Moira Architects and Planning Consultants, 1973, p. 27).

[One of the ways to achieve Shetland's primary objectives is through] the diversification of the existing industrial base by the development of indigenous industries and the attraction of new industries from outwith Shetland (Zetland County Council, 1973, p. 3).

Not only did the councils plan to assist indigenous industries, they followed through on their intentions by providing large grants. The big difference between the two is that Shetland encouraged diversification and expansion into new island industries and Orkney attempted to keep new industries away.

I stated above that SIC and OIC were both concerned about traditional island life. Whereas Orkney dealt with this concern by blocking new industry and strengthening indigenous industries, Shetland took a more active role. The Shetland Interim County Development Plan clearly and directly addresses social impact. The plan even includes statements concerning the potential for "unneighbourliness" to occur. The Shetland plan clearly states a concern for social impact up front and carries this concern throughout. This concern is clearly shown in the following excerpts taken from the Zetland County Council (1973, p. i) Development Plan:

...as the elements involved in modern industry are so different from the nature hitherto of life in Shetland, the County Council feels it appropriate
to set forth the characteristics of present island society and that an attempt should be made to identify the qualities of Shetland life of which many Shetlanders are only intuitively aware. The County Council believes that in so doing it will help the assimilation and happy settlement of the relatively large influx of people who will have to make their homes in Shetland.

[Shetland is characterized as having:] Communities where the individual feels he matters, has a sense of belonging; Strong family ties; A tolerance through not having been exposed to or confronted by strong pressures; An absence of serious crime - little parental fear for the safety of young ones; Religious tolerance; [and] The realization that the continuance of a native dialect affords an enriched means of communication.

This Interim Development Plan is by nature a planning instrument, having to do with the physical and material. It is fit and proper that Zetland County Council should highlight the human background against which it proceeds to meet what is probably the greatest challenge and opportunity in its history.

The Orkney plan is much less proactive in the area of social impact than the Shetland plan. This is mostly because of Orkney's more conservative and somewhat subdued nature. Nonetheless, I find it fairly apparent that before the discovery of North Sea oil both the SIC and OIC believed that their social structure was more traditional and less modern (industrial) oriented. A concern existed with both councils about the effects of oil development and they acquired the necessary means to contend with the oil giants. Orkney emphasized the environment and support for traditional industries and exercised control through agreements and licensing. Shetland did these things but also emphasized social impact, encouraged new island industries, and made large capital investments.
CHAPTER IV

SHETLAND AND ORKNEY YOUTH SURVEY AND ANALYSIS

INTRODUCTION

This chapter briefly describes the administration and content of my main data source, the Shetland and Orkney youth survey. Specifically, I identify the existence of postmaterialism and develop a measure for conducting a further investigation. Presented first is a summary of survey respondent characteristics. The chapter concludes with the results of a principal components analysis and the construction of composite variables.

I believe that the theoretical constructs outlined by Inglehart (1977, 1990) help explain the way in which variables load on underlying components or factors. Factor interpretations involve other theoretical notions, but Inglehart's postmaterialism plays a central role.

Postmaterialism refers to a specific classification of cultural values. Inglehart theorizes that a culture shift is taking place. He describes this as a shift from a materialist value orientation to a postmaterialist value orientation. Inglehart describes materialism/postmaterialism as a multidimensional construct. He often simplifies his discussions, however, and refers to materialism/postmaterialism as a dichotomy referring to materialism/postmaterialism as the polar extremes of a
single underlying dimension.

**Figure 4.1** depicts a measurement model of materialism/postmaterialism as used in this study. Inglehart believes that economic security provides a platform for shifting to postmaterialism. He further believes that this shift occurs over time as a function of need satisfaction during individual's preadult years. When economic security prevails within a society physical and security needs are satisfied. As prosperity is prolonged, individuals strive to satisfy higher order needs (e.g., belongingness and self actualization) and the spread of postmaterialist values increases. Because fundamental value change takes place during preadult years a more permanent shift to postmaterialism takes place slowly as the younger generation replaces the older (Inglehart, 1990).

Specifically, **Figure 4.1** shows background variables affecting an individual's value orientation. These background variables include such things as age, gender, and parents occupation. Economic security, included as a background variable, is also believed to affect an individual islander's value orientation. In the case of Shetland and Orkney, economic security is assumed to be a direct function of oil development. Shetland, however, has experienced a higher level of economic development than Orkney.

I have determined that oil development has generated a more economically secure environment for the islanders based
Figure 4.1: Measurement Model of Materialism/Postmaterialism

* In this figure "I" represents survey opinion items, "Fi" represents first order factors, and "Ai" represents respondent's attitudes.
on information provided in Will's (1991) historical study of Shetland oil development. Wills accepts that North Sea oil development has economically changed the islands. The islands are financially better off and they have a social system that puts England's to shame. He states near the end of his book, "...prosperity seems to be here to stay, at last" (p. 139). Prior to oil development the islands had an unemployment rate 1 1/2 times the national average and a mean income six percent below the national average (Gaskin, 1977). Soon after the development of North Sea oil, the islands had better employment than the national average and increased income figures. Besides these accounts, population trends based on Shetland and Orkney Island Council publications suggest that the economy is more secure then it once was. The population in both Shetland and Orkney has increased since oil development began. Figures 4.2 and 4.3 show how the island populations steadily declined; increased rapidly in 1972 after the onset of oil development; declined slightly after completion of oil construction; and now remain somewhat steadier but at much higher levels than the years immediately before oil development.

Population, economic security, and other background variables (I refer back to Figure 4.1) affect value orientations. I define value orientations in terms of Inglehart's materialism/postmaterialism. Figure 4.1 shows the logical flow I used for measuring postmaterialism. A
Figure 4.2: Shetland Islands Population

Figure 4.3: Orkney Islands Population
principal components factor analysis is conducted on survey opinion items (I). The expected outcome of this analysis is an assortment of underlying factors ($F_i$). Some of the $F_i$ are expected to directly relate to a materialist/postmaterialist dimension. The identification and interpretation of the $F_i$ depends on how variables load on each factor. A second-order principal components factor analysis is then conducted to determine if there is a single or "general" materialist/postmaterialist dimension underlying the factors arrived at during the first analysis. Determining the existence of a second-order factor interpretable as postmaterialism will show consistency with the notion that postmaterialism is identifiable and measurable. The next chapter will validate the scales associated with the factors ($F_i$) by regressing background variables on computed factor scores. Under the assumption that materialist and postmaterialist values affect attitudes ($A_i$) I will also analyze correlation coefficients between factors and attitudes.

Inglehart (1990) aligned specific materialist and postmaterialist indicators with Maslow's (1954) hierarchy of needs. Essentially, Inglehart dichotomized Maslow's needs into (1) social and self actualization needs, and (2) physiological needs. He associated the former needs along with the satisfaction of aesthetic, intellectual, and belonging and esteem needs with postmaterialism. The latter needs he associated with materialism and related them to the satisfaction of physical security and economic security.
needs. In Inglehart's (1990) words:

Our theoretical framework implies that emphasis on economic security and on physical security will tend to go together -- and that those who feel insecure about these physiological needs have a fundamentally different outlook and political behavior from those who feel secure about them. The latter are likely to give top priority to nonmaterial goals, such as self-expression, belonging, and intellectual or aesthetic satisfaction (p. 134).

Inglehart used twelve items to tap specific needs. He theorized that social and self-actualization needs correspond with postmaterialism, and that physiological needs correspond to materialism. Table 4.1 shows Inglehart's (1990) twelve items and their relation to motivational needs. One goal of this chapter will be to align motivational needs with the $F_i$. I will accomplish

Table 4.1: Inglehart's Twelve Items and their Association with Motivational Needs

<table>
<thead>
<tr>
<th>Motivational Needs</th>
<th>Inglehart's Twelve Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social &amp; Self-Actualization</strong></td>
<td></td>
</tr>
<tr>
<td>Aesthetic</td>
<td>- Beautiful cities/Nature</td>
</tr>
<tr>
<td></td>
<td>- People's ideas count</td>
</tr>
<tr>
<td></td>
<td>- Free speech</td>
</tr>
<tr>
<td>Intellectual</td>
<td></td>
</tr>
<tr>
<td>Belonging &amp; Esteem</td>
<td>- Less impersonal society</td>
</tr>
<tr>
<td></td>
<td>- More say on the job and in the community</td>
</tr>
<tr>
<td></td>
<td>- More say in government</td>
</tr>
<tr>
<td><strong>Physiological</strong></td>
<td></td>
</tr>
<tr>
<td>Physical security</td>
<td>- Strong defense forces</td>
</tr>
<tr>
<td></td>
<td>- Fight crime</td>
</tr>
<tr>
<td></td>
<td>- Maintain order</td>
</tr>
<tr>
<td>Economic Security</td>
<td>- Stable economy</td>
</tr>
<tr>
<td></td>
<td>- Economic growth</td>
</tr>
<tr>
<td></td>
<td>- Fight rising prices</td>
</tr>
</tbody>
</table>

* The information for the above table was extracted from Inglehart (1990, p. 134).
this by interpreting factors based on what variables load on them, and consequently what higher or lower factor scores might represent.

I expect that opinion items will cluster along materialist/postmaterialist lines. Multiple factors are expected, including (1) respondents' economic and social outlook for the islands; (2) respondents' feelings about the planning process; (3) respondents' support for the oil industry versus the environment; (4) respondents' feelings about anti-oil sentiments; and (5) respondents' educational and work aspirations. Furthermore, I anticipate the presence of a sixth factor associated with feelings of alienation. A "boom" resulting in rapid growth often places native populations into situations that they have little control over and with which they have little prior experience. Also, the population of foreigners typically increases during a "boom." Both of these situations can lead to feelings of alienation (Durkheim, 1984/1933; Pfohl, 1985). In addition, I anticipate the presence of a seventh factor concerning a respondents' perception of his/her life in the islands. This would involve feelings of satisfaction with life in the community and as a whole.

Inglehart considers a cultural shift from materialism to postmaterialism to be a function of lasting economic security and generational change. I speculate, based on Inglehart's theory, that a 20 year post-boom study provides enough time lapse from the onset of the boom to allow for
the reasonable detection of postmaterialism. Likewise, I speculate that should postmaterialist values be present they will be detectable using island youth survey responses. The principal components factor analyses help identify any underlying dimensions relating to postmaterialism, and provide composite variables to measure them.

SURVEY DESIGN AND ADMINISTRATION

Survey Design, Population, and Data Collection

This study involves the secondary analysis of data obtained from a survey of Shetland and Orkney youth. The survey was constructed and administered by Seyfrit (1988a). The survey contained approximately 70 fixed-choice questions, plus open-ended questions for a total of 128 coded variables. I have provided a copy of the survey questionnaire in the Appendix of this report.

The survey questionnaire was used to collect data on socioeconomic status; current, past, and future education and work activities; the respondents' perception of socialization within the family; the respondents' perception of others' socialization in the community; opinions concerning oil development; and opinions concerning the political structures responsible for policy planning, development, and implementation.

Survey Administration

As outlined by Seyfrit (1989) and by Seyfrit and Patterson (1990, 1990a), the target population for this
survey consisted of all high school students on the mainland island of Orkney and the mainland island of Shetland in 1988. The survey classified students by their enrollment in forms S3, S4, S5, and S6. These forms are roughly comparable to high school grades ninth through twelfth in the United States. In Scotland, students may leave school at the age of sixteen -- approximately at the end of S4. This is considered a normal time to leave school. Those who leave are referred to as "school-leavers," which does not hold the connotation of the U.S. "dropout." Many of the students in Forms S5 and S6 wish to attend college.

Total class enrollment was approximately 1,404 students during the time of the study. There were 796 questionnaires returned providing a response rate of 56.7 percent. This population returned 781 usable questionnaires (447 from Orkney and 334 from Shetland). The mean student age was 15.1 years, ranging from 13 to 18 with a median of 15 (see Table 4.2). The largest segment of the sample came from

Table 4.2: Description of Respondents' Age

<table>
<thead>
<tr>
<th>Island Location</th>
<th>Number of Respondents</th>
<th>Mean Age</th>
<th>Median Age</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shetland</td>
<td>330</td>
<td>14.670</td>
<td>14</td>
<td>1.032</td>
</tr>
<tr>
<td>Orkney</td>
<td>444</td>
<td>15.475</td>
<td>15</td>
<td>1.108</td>
</tr>
<tr>
<td>Total</td>
<td>774</td>
<td>15.132</td>
<td>15</td>
<td>1.148</td>
</tr>
</tbody>
</table>

Form S3 which accounted for 49.9 percent of all respondents. A total of 54.9 percent of the respondents were females and 45.1 percent were males (see Table 4.3). About 21 percent
of the students partaking in this survey were from more outlying communities and lived in hostels in Kirkwall, Orkney or in Lerwick, Shetland during school terms.

Table 4.3: Percent of Male and Female Respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>units</th>
<th>Shetland</th>
<th>Orkney</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Ss</td>
<td>158</td>
<td>192</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>Row%</td>
<td>45.14%</td>
<td>54.86%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Col.%</td>
<td>47.45%</td>
<td>43.15%</td>
<td>44.99%</td>
</tr>
<tr>
<td>Female</td>
<td>Ss</td>
<td>175</td>
<td>253</td>
<td>428</td>
</tr>
<tr>
<td></td>
<td>Row%</td>
<td>40.89%</td>
<td>59.11%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Col.%</td>
<td>52.55%</td>
<td>56.85%</td>
<td>55.01%</td>
</tr>
<tr>
<td>Total</td>
<td>Ss</td>
<td>333</td>
<td>445</td>
<td>778</td>
</tr>
<tr>
<td></td>
<td>Row%</td>
<td>42.80%</td>
<td>57.20%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Col.%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Classroom teachers administered the survey in the Spring of 1988. The teachers and the school administrators were very cooperative (Seyfrit and Patterson, 1990a). The sample, however, is more representative of the younger (S3) students. This is true for both Shetland and Orkney.

SURVEY ANALYSIS

Principal Components Factor Analysis

There are numerous factor analytic techniques for exploring this type of data set. Employing factor analytic techniques allows a researcher to determine "lower-level" variables and provide measurable evidence of relationships between the variables and some identified concept (Marradi, 1981). This study has two main reasons for using a factor
analytic technique: (1) to create a parsimonious and manageable model; and (2) to measure indirectly observed concepts by combining individual survey questions. The specific factor analytic technique used in this study is principal components factor analysis as described in Hamilton (1992).

Although it is typical to think first of social concepts and then to develop the appropriate indicators, factor analysis allows for the reversal of this process. The ability to first think of indicators and then of concepts is pertinent in this study which involves secondary analysis. As discussed by Marradi (1981), this is an appropriate methodology when a researcher conducting secondary analysis acquires cues from another researcher's data collection categories and uses variables from the other researcher as indicators of his/her own concepts formed out of the initial data collection categories. Specifically, in this study I expect to uncover factors that conceptually relate to postmaterialism, anomie, and economic security.

There were five basic steps involved in the principal components analysis:

1. identify variables for analysis,
2. extract principal components,
3. determine what factors to retain,
4. interpret factors theoretically,
5. calculate factor scores for additional analyses.

Step one. The first step consisted of determining what
variables to use in the principal components factor analysis. I chose to include 32 of the subjective fixed-choice items in the survey, leaving out only redundant or less subjective items (e.g., mother and father's type of work, respondent's age, gender, etc.). I use these more objective demographic variables in the next chapter for conducting various regression analyses treating the uncovered factors as dependent variables.

Below is a list of the 32 variables used in the principal components factor analysis and the survey questions that defined them.

1. **Variable: Community Satisfaction (comsat)**
   - **Question:** How satisfied are you living in this community?
   - **Coding Scheme:** Coding followed a 1-7 scale where 1=Completely Dissatisfied and 7=Completely Satisfied

2. **Variable: Life Satisfaction (lifesat)**
   - **Question:** How satisfied are you with life as a whole these days?
   - **Coding Scheme:** Coding followed a 1-7 scale where 1=Completely Dissatisfied and 7=Completely Satisfied

3. **Variable: Family Discussion (famdisc)**
   - **Question:** One ought to discuss important plans with his/her family.
   - **Coding Scheme:** Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

4. **Variable: Family Confiding (famconf)**
   - **Question:** One should confide more fully in members of his/her family.
   - **Coding Scheme:** Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

5. **Variable: Family Sacrifice (famsac)**
   - **Question:** A person should be willing to sacrifice everything for his/her family.
   - **Coding Scheme:** Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.
6. Variable: Happy Home (home)  
   Question: Home is the most pleasant place in the world.  
   Coding Scheme: Coding followed a 1-5 scale where 
   1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
   5=Strongly Disagree.

7. Variable: Friendships Hard (frndshrd)  
   Question: Real friends are hard to find in this 
   community.  
   Coding Scheme: Coding followed a 1-5 scale where 
   1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
   5=Strongly Disagree.

8. Variable: Polite and Courteous (polite)  
   Question: Almost everyone is polite and courteous to 
   you.  
   Coding Scheme: Coding followed a 1-5 scale where 
   1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
   5=Strongly Disagree.

9. Variable: Bad Name (badname)  
   Question: People here give you a bad name if you insist 
   on being different.  
   Coding Scheme: Coding followed a 1-5 scale where 
   1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
   5=Strongly Disagree.

10. Variable: Belonging (belong)  
    Question: I feel very much that I belong here.  
    Coding Scheme: Coding followed a 1-5 scale where 
    1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
    5=Strongly Disagree.

11. Variable: Critical Community (critical)  
    Question: People are generally critical of others in 
    this community.  
    Coding Scheme: Coding followed a 1-5 scale where 
    1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
    5=Strongly Disagree.

12. Variable: Peaceful Community (peaceful)  
    Question: The community is very peaceful and orderly.  
    Coding Scheme: Coding followed a 1-5 scale where 
    1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
    5=Strongly Disagree.

13. Variable: Different (different)  
    Question: You are out of luck here if you happen to be 
    different.  
    Coding Scheme: Coding followed a 1-5 scale where 
    1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 
    5=Strongly Disagree.

14. Variable: Happy in Islands (hapislds)
Question: These islands have just about everything that is needed for a happy life.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

15. Variable: Better With Oil (better)
Question: People in this area are better off than they would be without the oil industry.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

16. Variable: Way of Life is Worse (waylife)
Question: The oil industry has had a negative impact on our "way of life."
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

17. Variable: Employment is Better (joboil)
Question: My chances of employment in the islands are better off because of the oil industry.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

18. Variable: Run Out of Oil (runout)
Question: The oil will "run out" before people my age see any benefit from it.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

19. Variable: Agreements Favor Oil (agreement)
Question: The agreements between the local council and the oil industry have been more favorable for the oil industry than for the people here.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

20. Variable: Long Run Benefit (longrun)
Question: In the long run, I am sure that people in this area will be better off if our oil resources are developed.
Coding Scheme: Coding followed a 1-5 scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

21. Variable: Object to Oil (oilobj)
Question: People who object to oil development in this area should move someplace else.
Coding Scheme: Coding followed a 1-5 scale where
1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

22. Variable: Nation Need (natneed)
Question: No one has the right to interfere with the nation's need for oil.
Coding Scheme: Coding followed a 1-5 scale where
1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and
5=Strongly Disagree.

23. Variable: Shut Down (shutdown)
Question: Industries should be shut down if they fail to meet government pollution standards.
Coding Scheme: Coding followed a 1-5 scale where
1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and
5=Strongly Disagree.

24. Variable: Clean versus Jobs (clean)
Question: As badly as we need new industry and jobs, we can't afford to sacrifice our clean air, beautiful scenery, and agricultural land to obtain them.
Coding Scheme: Coding followed a 1-5 scale where
1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and
5=Strongly Disagree.

25. Variable: Right to Employment (employ)
Question: One person's right to a clean environment isn't as important as another's right to gainful employment.
Coding Scheme: Coding followed a 1-5 scale where
1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and
5=Strongly Disagree.

26. Variable: Expect Professional (exprof)
Question: Do you expect a professional or technical job?
Coding Scheme: The variable was coded as a dummy variable where 0=No and 1=Yes.

27. Variable: Want Professional (wantprof)
Question: Do you want a professional or technical job?
Coding Scheme: The variable was coded as a dummy variable where 0=No and 1=Yes.

28. Variable: Professional in Ten (ex10prof)
Question: Do you expect a professional or technical job in ten years?
Coding Scheme: The variable was coded as a dummy variable where 0=No and 1=Yes.

29. Variable: Plan on College (college)
Question: Do you plan to attend college or university?
Coding Scheme: The variable was coded as a dummy variable where 0=No and 1=Yes.
30. Variable: Work in Islands (exwork)
Question: Do you expect to work in the islands or elsewhere?
Coding Scheme: The variable was coded as a dummy variable where 0=Islands and 1=Elsewhere.

31. Variable: Want Island Work (wantwork)
Question: Do you want to work in the islands or elsewhere?
Coding Scheme: The variable was coded as a dummy variable where 0=Islands and 1=Elsewhere.

32. Variable: Likely to Leave (likely)
Question: Are you likely to leave the islands?
Coding Scheme: The variable was coded as a dummy variable where 0=Stay and 1=Leave.

Step two. The second step in the analysis involved extracting principal components to simplify the data and to detect any underlying dimensions that made theoretical sense. To accomplish this I used a PC based statistical software package (Computing Resource Center, 1992). Table 4.4 shows results from the principal components factor analysis using all 32 variables. The table gives the eigenvalue or variance for each factor. The "difference" column refers to the difference in eigenvalues between a factor and the factor immediately following it. The "proportion" is defined as the eigenvalue (\( \lambda \)) divided by \( K \) (where: \( K = \) number of variables) and represents the proportion of total variance explained by that factor. Similarly, the "cumulative" column represents the accumulation of explained variances defined as follows:

\[
\frac{\lambda_1+\lambda_2+...+\lambda_k}{K}
\]
Table 4.4: Principal Components for 32 Variables

<table>
<thead>
<tr>
<th>Factor</th>
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<th>Proportion</th>
<th>Cumulative</th>
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<td>0.0088</td>
<td>1.0000</td>
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</table>
In this case the proportion of explained variance is small for each factor. Marradi (1981) has noted that within the literature on principal components and factor analysis low proportions of explained variance contradict a successful principal components or factor analysis. Marradi has also noted that some of the literature has suggested that the cumulative explained variance be considered when retaining factors for further analysis. Both of these suggestions, according to Thurstone's 1947 book, *Multiple-Factor Analysis: A Development and Expansion of the Vectors of Mind*, (cited by Marradi, 1981), are unfounded regarding the true purpose behind the use of factor analysis. Factor analysis is used to identify underlying factors. Whether or not the uncovered factors account for all or only part of the variance associated with a set of items becomes a secondary scientific problem (Thurstone, cited by Marradi, 1981). A study may make a major contribution to science even if only one factor is clearly revealed and the other factors are indecipherable (Thurstone, cited by Marradi, 1981).

**Step three.** Step three of the principal components process involved determining which factors to retain. The method employed for this step was exploratory and followed Cattell's 1966 scree test approach (cited by Marradi, 1981). This approach suggests dropping factors with eigenvalues $<1$. Since standardized variables are used, "a component with $\lambda<1$ accounts for less than a single variable's variation -- and
hence is useless for data reduction" (Hamilton, 1992, p. 258). Monte Carlo studies have indicated that this method is superior to others when minor factors are involved (Kim and Mueller, 1978). Figure 4.4 shows a scree graph suggesting that nine factors be retained.

**Figure 4.4: Scree Graph to Determine Retained Factors**

These factors account for 55% of the total variance and are shown in Tables 4.5 and 4.6 along with their factor loadings after promax rotation. The idea behind rotating factors is to make them more interpretable (Hamilton, 1992). The promax rotation process is a type of oblique transformation resulting in factors that may correlate. Although this may be mathematically less ideal it does seem to generate factors that are somewhat more realistic. That is, in true situations social factors frequently correlate.
Table 4.5: Factor Loadings After Promax Rotation (First Five Components)

<table>
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<tr>
<th>Variable</th>
<th>F1</th>
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<th>F3</th>
<th>F4</th>
<th>F5</th>
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</tr>
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Table 4.6: Factor Loadings After Promax Rotation (Last Four Components and Uniqueness)

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</table>
with other factors. Although it may be "more convenient in statistical theory" to treat measures as uncorrelated linear combinations, the measure would, in reality, be awkward to understand (Thurstone, cited by Marradi, 1981). Following this argument, the use of promax rotation within this analysis has provided factors that are semantically interpretable.

**Step four.** The object of the fourth step in this principal components analysis is to label the retained factors for further sociological analysis. The principal components analysis has statistically laid the groundwork determining independent reliable measures. Step four involves the process of semantically understanding the statistically derived factors in terms of sociological theory. Assigning semantic understanding to factors involves associating abstract concepts with lower-level variables that are statistically related (Marradi, 1981). To accomplish this objective it is first necessary to examine, within each retained factor, the factor loadings that are both statistically and semantically descriptive of the factor in question. *Tables 4.5 and 4.6* reflect the results of this process. The highlighted cells show the variables with the largest loadings for a given factor. Each high-loading variable can be understood as an indicator for that specific concept. The detailed interpretation and use of the concept primarily depends upon available theory.

Four variables load highly, and negatively, on factor
one (F1). Since the variables' scales run from 1=strongly agree to 5=strongly disagree, a high value on F1 will occur when the respondent agrees with all four variables' statements. High factor scores on F1 reflect agreement that:

- Real friends are hard to find in the community.
- People here will give you a bad name if you insist on being different.
- People are generally critical of others in this community.
- You are out of luck here if you happen to be different.

A respondent's agreement or disagreement with the above statements either reflects his/her own personal experience or his/her personal observation of others in the community. Either way a high score on this factor seems to suggest that a respondent perceives a low acceptance of nonconformity in the community. That is, a higher score associates a respondent with (1) feeling more as an outsider and more criticized in his/her community; or a higher score associates a respondent with (2) perceiving others as less tolerant of nonconformists in the community.

Theorists such as Tönnies and Durkheim relate rapid growth to social disruption and disorganization. Tönnies has aligned the notions of Gemeinschaft and Gesellschaft with movement from a rural base to a more industrial one. He has suggested that such a move would yield experiences of personal and social disruption. Durkheim, influenced by Tönnies, might see signs of disorganization stemming from rapid growth as reflecting a shift from mechanical solidarity to organic solidarity. The expected result would
initially be signs of disorganization and then signs of anomie. The more one feels like an outsider or the less tolerant a community is of nonconformity the greater the chance for feelings of alienation. Using F1 as a measurement tool may help to evaluate this.

Low scores on F1 relate, at least indirectly, to Inglehart's (1990) postmaterialism. I suspect that the more a community is tolerant of nonconformity the greater the chance that people will feel as they belong. That is, they will feel that friends are easy to find, being different is OK, and people in the community are not unduly critical. This type of atmosphere is more conducive to fulfilling belongingness needs than an atmosphere less tolerant of nonconformity. A nonconformist tolerant community is more likely to nourish postmaterialist values.

Considering the four variables that load highly on F1, I will call this factor perceived intolerance. From a theoretical standpoint F1 measures a potential for alienation. Individuals scoring higher on this factor think the community is less tolerant of nonconformity.

Five variables load high on factor two (F2). Each of the positive loadings reflects a "yes" response to a particular survey question. High values on F2 would result from answering "yes" to the following questions:

- Do you expect a professional or technical job?
- Do you desire a professional or technical job?
- Do you expect a professional or technical job in ten years?
- Do you plan to attend college or university?
The variables that load highly on this factor seem to reference an association with some aspect of higher education. The variables also reference the notion that higher education is preferable and used to acquire a professional or technical job. An individual scoring higher on this factor may have higher educational expectations and may be more optimistic concerning professional career opportunities. The person scoring lower on this factor would be less oriented to higher education and view career opportunities as less attainable.

Postmaterialism correlates positively with advanced education (Inglehart, 1990). Higher education also correlates positively with more professional type jobs. One may suggest, however, that professional jobs are attractive because they pay well and hence fit materialism. On the surface this appears to be the case. Since postmaterialism is dependent upon economic and physical security during an individual's early life, postmaterialists would have a greater chance to live on a higher socioeconomic plain than materialists. The relationship between postmaterialism and education-professionalism-income is complex and appears paradoxical. In order to legitimately name this factor I found it important to better understand this relationship as proposed by Inglehart. Suggesting that "all things being equal" postmaterialists are underachievers when compared to materialists, Inglehart (1990) provides the following explanation:
...Postmaterialist values deemphasize economic achievement. For society as a whole, Postmaterialists give a lower priority to economic growth than to the quality of life; and in their personal lives, Postmaterialists give less emphasis to safe jobs and a high income than to interesting, meaningful work and working with congenial people. Since they are far better educated than Materialists, Postmaterialists tend to earn more. But Postmaterialists seek to maximize status rather than income. When we control for the fact that they are better educated and have better family connections, the Postmaterialists' income advantage narrows or even reverses itself. Indeed, most Postmaterialists actually earn less than Materialists from comparable family backgrounds (p. 162).

In other words, Postmaterialist values tend to make one an economic underachiever: A larger proportion of one's energies are directed to maximizing goods other than income, such as status and the quality of life (p. 162).

I will name F2 professional aspirations. Rooted in a respondent's desire and expectation for higher education and for a professional job, F2 measures a respondent's aspiration to obtain a lifestyle that is conducive to a postmaterialist value orientation.

Two variables have high positive loadings on factor three (F3). F3 is specifically understood as disagreement with the following statements:

- People who object to oil development in this area should move someplace else.
- No one has the right to interfere with the nation's need for oil.

Someone disagreeing with these statements may feel that those who object to oil development have a right to live in the islands. Likewise, some people have the right to interfere with the nation's need for oil. This would suggest that a person scoring higher on this factor condones
anti-oil sentiments more than someone with a lower factor score.

I identify toleration of anti-oil sentiments with a postmaterialist value orientation. Theoretically, a materialist would not condone anti-oil behavior because of the overwhelming economic importance of the oil. The postmaterialist, however, would consider such things as the environment, traditional industries, and island culture to equal, if not surpass, the importance of oil development. Priorities other than oil may diametrically oppose the oil industry. Therefore, I suspect that the greater the tolerance of anti-oil sentiments the greater the association with a postmaterialist orientation.

Although the value of traditional industries is also economically important and may initially appear associated with materialism, the economic importance of traditional industries is far less than the economic importance of oil. Before oil development traditional industries in the islands were unable to provide economic security for the islanders. Only with the development of oil have these industries been able to grow and become more stabilized. Furthermore, dismantling the traditional industries would reduce desirable cultural aspects of the islands and much of the islands' historic and aesthetic identity. Understanding the importance of the traditional island industries therefore aligns with postmaterialism.

I have named F3 anti-oil tolerance. Higher scores on
this factor I consider indicative of postmaterialism.

Four variables have high positive loadings on factor four (F4). This factor can be understood as disagreement with the following statements:

■ Home is the most pleasant place in the world.
■ One ought to discuss important plans with his/her family.
■ One should confide more fully in members of his/her family.
■ A person should be willing to sacrifice everything for his/her family.

The variables that load highly on F4 reference the family and the home. Disagreement with these statements suggests distrust toward one's family and a desire for independence from family and home responsibilities. An individual scoring higher on this factor feels more independent to his/her family and home than someone scoring lower on F4.

Traditional family values hold that one ought to be willing to make great commitments and sacrifices, when necessary, in order for the family to survive. A family member who disagrees with making commitments and sacrifices for the family represents a break from more traditionally oriented family values. From Weber's theoretical viewpoint a move from traditional rural island life (defined here as pre-oil times) to a new modern industrial way of life (defined as post-oil times) would reduce passion, reduce personal commitment, and generate a struggle for meaning. Following this line of thinking I would suspect that oil development can bring about a decline in family commitment and family values.
Inglehart's theory of postmaterialism associates directly with generational value change. The survey respondents in this study are the first "younger generation" since economic prosperity became a part of island life. This would also make them the first generation that is less "traditional" and more "modern" oriented.

Higher scores on F4 reflect less willingness to make commitments and sacrifices for the family. Although tempting, contemplating F4 as a measurement of a culture shift in values is highly speculative since the data do not include information on actual generational change. Furthermore, frequent problems between parents and teens generally exist. A natural striving for independence often becomes a power struggle as children reach their teens. Unhappy feelings in the home, reduced commitments to the family, reduced trust in family members, and reduced levels of communication are common place.

In interpreting this factor, I considered it necessary not to overlook normal adolescent desires for independence. Treating this factor as a measure of postmaterialism holds little stock. Rather, F4 measures a typical adolescent idiosyncrasy. In this study I have named F4 independence and consider it a measure of a respondent's feelings of independence concerning his/her family. I do not expect this factor to play a significant role in this study.

Three variables have high positive loadings on factor five (F5). The positive loadings reflect a "yes" or an
"elsewhere" response to a particular survey question. High scores on F5 result from answering "elsewhere" to the first two questions below and "yes" to the third question below:

- Do you expect to work in the islands or elsewhere?
- Do you want to work in the islands or elsewhere?
- Are you likely to leave the islands?

These three variables involve a desire or an expectation to leave the islands. Respondents with high scores on this factor may be more dissatisfied living in the islands than respondents with lower scores. Similarly, respondents with high scores may have a poor outlook on employment in the islands. Furthermore, a high score might reflect that the respondent is part of a "transient" family. Boomtowns often attract transient workers. From a theoretical standpoint, a high score on F5 might be a function of the transitory nature of Gesellschaft as suggested by Tönnies (1957/1887).

Whatever way one perceives a higher score on F5, it can be interpreted as a lack of island ties. Lacking in ties to the islands reflects a reduced or unfulfilled need to belong to the islands. As noted earlier, unfulfilled belongingness needs indicate a possible materialist value orientation. In this study I have named F5 island detachment. I perceive a higher score on this measure as more indicative of materialism than a lower score.

Factor six (F6) can be understood in terms of four variables that load highly and two variables that load moderately high. For purposes of discussion variables with high loadings will be termed "high" variables and those with
moderate loadings will be termed "moderate" variables.

Although the moderate variables load lower on F6, they load even lower on other factors. This is not a problem per se. "The threshold beyond which a loading is to be judged small should not be defined in advance..." (Marradi, 1981, p.20).

To better understand F6 I conducted a multi-stage analysis, following Marradi's (1981) direction. This essentially entailed dropping all indicators except comsat, lifesat, polite, belong, peaceful, and hapislds and running another principal components factor analysis. Tables 4.7 and 4.8 reflect the results of this multi-stage analysis. The results clearly indicate that there are two factors contained within F6. Table 4.8 shows lifesat and belong loading highly on the first component. Likewise, the signs of the factor loadings are consistent between the first- and second-stage analyses.

Table 4.7: Principal Components of Six Variables (Results Following a Multi-Stage Analysis of Factor Six, Alienation)

<table>
<thead>
<tr>
<th>Multi-Stage Factors</th>
<th>Eigenvalue</th>
<th>Difference</th>
<th>Proportion</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.63458</td>
<td>1.57514</td>
<td>0.4391</td>
<td>0.4391</td>
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<tr>
<td>2</td>
<td>1.05944</td>
<td>0.31108</td>
<td>0.1766</td>
<td>0.6157</td>
</tr>
<tr>
<td>3</td>
<td>0.74837</td>
<td>0.12275</td>
<td>0.1247</td>
<td>0.7404</td>
</tr>
<tr>
<td>4</td>
<td>0.62561</td>
<td>0.07498</td>
<td>0.1043</td>
<td>0.8447</td>
</tr>
<tr>
<td>5</td>
<td>0.55063</td>
<td>0.16926</td>
<td>0.0918</td>
<td>0.9364</td>
</tr>
<tr>
<td>6</td>
<td>0.38137</td>
<td>N/A</td>
<td>0.0636</td>
<td>1</td>
</tr>
</tbody>
</table>

* Factors with eigenvalues ≥1 were retained
(Factor loadings are shown in Table 4.8)
Table 4.8: Factor Loadings of the First Two Principal Components (Results Following a Multi-Stage Analysis of Factor Six, Alienation)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Multi-Stage Factor 1</th>
<th>Multi-Stage Factor 2</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>comsat</td>
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<td>0.31559</td>
<td>0.25484</td>
</tr>
<tr>
<td>lifesat</td>
<td>-0.63081</td>
<td>0.25472</td>
<td>0.53720</td>
</tr>
<tr>
<td>polite</td>
<td>0.56194</td>
<td>0.56688</td>
<td>0.36287</td>
</tr>
<tr>
<td>belong</td>
<td>0.71765</td>
<td>-0.23571</td>
<td>0.42941</td>
</tr>
<tr>
<td>peaceful</td>
<td>0.47091</td>
<td>0.71322</td>
<td>0.26956</td>
</tr>
<tr>
<td>hapislds</td>
<td>0.73385</td>
<td>-0.09677</td>
<td>0.45210</td>
</tr>
</tbody>
</table>

* Shading indicates variables loaded highly

The advantage of doing this multi-stage analysis is that it provides additional justification for including the *lifesat* and *belong* variables in the interpretation of F6.

The six variables that load highly on F6 essentially reference a dissatisfied island life. The variables *comsat* and *lifesat* load negatively on F6. These two variables reflect dissatisfaction based on a one-to-seven scale where 1=not satisfied and 7=satisfied. The other four variables load positively. These variables reflect agreement on a one-to-five scale where 1=Strongly Agree, 2=Agree, 3=Undecided, 4=Disagree, and 5=Strongly Disagree.

Specifically, F6 can be understood as responding "not satisfied" to the first two questions below and disagreement with the other four statements:

- How satisfied are you living in this community?
- How satisfied are you with life as a whole these days?
- Almost everyone is polite and courteous to you.
- I feel very much that I belong here.
- The community is very peaceful and orderly.
- These islands have just about everything that is needed for a happy life.
The questions defining the variables loading highly on F6 clearly relate to quality of life (QoL) issues. I perceive an individual with a high score on F6 as less satisfied with his/her QoL than someone with a lower score. Also, a higher score on F6 reflects an individual's perception that the community does not treat them courteously and that the community is chaotic.

F6 should not be considered a measure of a materialist or postmaterialist orientation. Certainly it is possible for either a materialist or a postmaterialist oriented person to be dissatisfied with his/her QoL. QoL, however, is a critical concept when trying to understand boomtown effects. QoL is a key concept for understanding social impact (Freudenburg, 1986).

Interpretively, F6 may be a measure of Habermas' view of the system overtaking the "life world" where system/life-world is similar to a move from Gemeinschaft to Gesellschaft. When the life-world falls prey to the system a type of alienation develops. That is, alienation is an outcome of industrialization and rapid growth can easily result in dissatisfaction with community and life. I consider higher scores on F6 as reflective of more dissatisfaction with life and community than lower scores on the same factor.

In further looking at the variables that load highly on F6 it is possible to see similarities with Durkheim's anomie. In particular I suspect that F6 reflects a form of
"normative chaos." Theoretically, a smoother transition from mechanical (pre-oil development) to organic solidarity (post-oil development) reduces the potential for anomie and life dissatisfaction.

Habermas' and Durkheim's theoretical notions make for a better interpretation of F6 than Inglehart's. Hence, I have named F6 alienation. The higher the score on F6 the greater the respondents' association with alienation and the lower the score the lesser would be his/her feelings of alienation.

Five variables load highly on factor seven (F7). Three of the variables negatively load while the other two positively load. Negative loadings correspond to agreement responses and positive loadings correspond to disagreement responses. Specifically, F7 can be understood as disagreement with statements one, three, and five below and agreement with statements two and four:

■ People in this area are better off than they would be without the oil industry.
■ The oil industry has had a negative impact on our "way of life."
■ My chances of employment in the islands are better off because of the oil industry.
■ The oil will "run out" before people of the same age see any benefit from it.
■ In the long run, I am sure that people in this area will be better off if our oil resources are developed.

Considering the variables that load highly, and considering their directional signs, I suggest high scores on F7 reflect an anti-oil undertone coupled with a skeptical outlook on the economic and social future of the islands. Inkeles and Smith's (1974) and Inkeles', et. al. (1983) research lead
them to suggest that people in boomtowns feel more socially and economically secure. Higher scores on F7, however, would be less in line with these ideas. Instead, higher scores on F7 reflect more negative feelings toward social and economic security. I have named this factor socio-economic skepticism.

I associate lower scores on F7 with postmaterialism. Lower scores would suggest more optimism and more positive feelings regarding island life. Inglehart's (1977, 1990) findings suggest that the onset of modernization, as a function of rapid growth, will often increase economic security. He further suggests that perceived stability and confidence in an area's socio-economic structure increases with such growth and that a shift to postmaterialism is dependent upon individuals' perception of stability. From Inglehart's perspective, to shift toward a postmaterialist value structure there must first be a perception of a strong enduring safe economic structure that positively affects one's way of life. "...in the long run postmaterialism is contingent on material security" (Inglehart, 1990, p. 271).

However, the relationship between economic security and value orientation is more complex than a simple one-to-one relationship. Postmaterialist values reflect a "subjective sense of security" established during preadult years and influenced by the cultural setting and the social welfare institutions available during the time one is raised (Inglehart, 1990). Only after a generation has had the
opportunity to experience a safe socioeconomic environment can values shift from materialist to postmaterialist. This would take ten to fifteen years for the first good signs of a value shift to appear. It would take nearly 20 years from the onset of the economic upturn before postmaterialists can begin to take on a greater role in setting public policy. These time elements correspond with the administration of this survey, about twenty years after the initial boom. Hence, one might expect postmaterialists to score lower than materialists on socioeconomic skepticism (F7). This implies that a low score on F7 indicates a potential for an individual to have a more postmaterialist value orientation.

Three variables load highly on Factor eight (F8). Two of them load positively and one loads negatively. F8 can be understood as disagreement with the first two statements below and agreement with the third statement below:

- Industries should be shut down if they fail to meet government pollution standards.
- As badly as we need new industry and jobs, we can't afford to sacrifice our clean air, beautiful scenery, and agricultural land to obtain them.
- One person's right to a clean environment isn't as important as another's right to gainful employment

Thus, F8 reflects a basic anti-environment sentiment, and a desire for economic need fulfillment. A respondent scoring high on this factor agrees that nothing should be allowed to negatively affect jobs or support for industry. A high score indicates a materialist value orientation and a lower score indicates a postmaterialist value orientation. I have named F8 industrial bias.
Two variables load highly and positively on factor nine (F9). Specifically, F9 can be understood as disagreeing with the following statements:

- The oil will "run out" before people my age see any benefit from it.
- The agreements between the local council and the oil industry have been more favorable for the oil industry than for the people here.

Disagreement with the first statement implies optimistic feelings about the future benefits of oil development. Concerning this variable, higher scores on F9 would be more in line with Inkeles' notions. Inkeles suggests that rapid growth generally has a positive effect on an individual's outlook. A lower score on F9 would reflect less optimism.

Disagreement with the second statement above suggests confidence in the islands' planning agencies (the Shetland and Orkney Island Councils). Individuals scoring high on F9 would be more apt to see island planning activities as favorable for the islanders.

Initially, this factor appears to be a potential measure of postmaterialism. Postmaterialism depends upon feelings of economic security. Likewise, Inglehart suggests that social policy planning activities often relate to a postmaterialist value orientation. However, a higher score on F9 simply suggests that a respondent believes his/her local planning council has made agreements favoring islanders (i.e., agreements between the local council and the oil industry have been more favorable for the islanders than for the oil industry). The respondent believes he/she
will benefit from oil development (i.e., oil will not run out in the near future).

Materialists and postmaterialists could both conceivably respond in this fashion. I suspect, however, that materialist oriented individuals may be more likely to score higher on F9. I base this notion primarily on the notion that a postmaterialist, being more politically directed and less industrially biased than a materialist (Inglehart, 1990), would view agreements between the council and the oil industry as favoring industry. As noted by Wills (1991), although the islands have certainly gained some financial stability they only received a small portion of what they could have potentially secured. During the early stages of oil development traditional islanders quickly sold property and rights for sums of money that seemed enormous to them. They were content, but they could have made better deals. According to Wills, the more politically astute people knew this. They also knew that many deals between the councils and the oil industry -- some made in deep secrecy -- favored the industrialists. Conceivably then, more politically aware persons may score lower on F9. Specifically, I suspect that lower scores on F9, assuming postmaterialists are more politically active than materialists, will relate to postmaterialism. I will name this factor council backing.

Step five. The last step of the principal components factor analysis was to compute factor scores for each of the
<table>
<thead>
<tr>
<th>Variable</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
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<td>employ</td>
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<td>0.02679</td>
<td>0.09391</td>
<td>0.03485</td>
<td>-0.01581</td>
</tr>
<tr>
<td>exprof</td>
<td>-0.02181</td>
<td>0.33807</td>
<td>-0.03615</td>
<td>-0.00969</td>
<td>0.00145</td>
</tr>
<tr>
<td>wantprof</td>
<td>0.02626</td>
<td>0.31990</td>
<td>0.00965</td>
<td>0.02847</td>
<td>0.00039</td>
</tr>
<tr>
<td>ex10prof</td>
<td>-0.01989</td>
<td>0.33380</td>
<td>-0.02502</td>
<td>0.00242</td>
<td>-0.01805</td>
</tr>
<tr>
<td>college</td>
<td>0.05215</td>
<td>0.22219</td>
<td>0.14893</td>
<td>-0.05197</td>
<td>0.01622</td>
</tr>
<tr>
<td>exwork</td>
<td>-0.02018</td>
<td>0.01887</td>
<td>-0.00314</td>
<td>-0.02416</td>
<td>0.36752</td>
</tr>
<tr>
<td>wantwork</td>
<td>-0.03828</td>
<td>0.00411</td>
<td>-0.03857</td>
<td>0.01198</td>
<td>0.35859</td>
</tr>
<tr>
<td>likely</td>
<td>0.04180</td>
<td>-0.03075</td>
<td>0.03330</td>
<td>0.01127</td>
<td>0.35374</td>
</tr>
</tbody>
</table>
Table 4.10: Factor Score Coefficients (Last Four Components)

<table>
<thead>
<tr>
<th>Variable</th>
<th>F6</th>
<th>F7</th>
<th>F8</th>
<th>F9</th>
</tr>
</thead>
<tbody>
<tr>
<td>comsat</td>
<td>-0.18737</td>
<td>-0.01596</td>
<td>-0.14951</td>
<td>0.19447</td>
</tr>
<tr>
<td>lifesat</td>
<td>-0.14250</td>
<td>-0.04343</td>
<td>-0.09891</td>
<td>0.18192</td>
</tr>
<tr>
<td>home</td>
<td>0.11128</td>
<td>-0.04399</td>
<td>-0.02943</td>
<td>0.06440</td>
</tr>
<tr>
<td>famdisc</td>
<td>-0.06140</td>
<td>0.03451</td>
<td>0.00541</td>
<td>-0.09067</td>
</tr>
<tr>
<td>famconf</td>
<td>-0.04516</td>
<td>0.02517</td>
<td>-0.02570</td>
<td>-0.00819</td>
</tr>
<tr>
<td>famsac</td>
<td>0.07821</td>
<td>-0.09274</td>
<td>0.09761</td>
<td>0.15741</td>
</tr>
<tr>
<td>frndshrd</td>
<td>-0.08637</td>
<td>0.02419</td>
<td>0.01422</td>
<td>0.26005</td>
</tr>
<tr>
<td>polite</td>
<td>0.33849</td>
<td>-0.02116</td>
<td>-0.07240</td>
<td>0.05071</td>
</tr>
<tr>
<td>badname</td>
<td>0.06023</td>
<td>0.03058</td>
<td>0.00939</td>
<td>-0.05650</td>
</tr>
<tr>
<td>belong</td>
<td>0.17059</td>
<td>-0.01217</td>
<td>0.12504</td>
<td>-0.19609</td>
</tr>
<tr>
<td>critical</td>
<td>-0.03777</td>
<td>0.03190</td>
<td>0.06375</td>
<td>-0.08087</td>
</tr>
<tr>
<td>peaceful</td>
<td>0.35458</td>
<td>0.02427</td>
<td>-0.05602</td>
<td>0.09961</td>
</tr>
<tr>
<td>differ</td>
<td>0.04979</td>
<td>-0.04866</td>
<td>0.00569</td>
<td>-0.02333</td>
</tr>
<tr>
<td>hapislds</td>
<td>0.21955</td>
<td>-0.01184</td>
<td>0.11449</td>
<td>-0.07296</td>
</tr>
<tr>
<td>better</td>
<td>-0.04773</td>
<td>0.25740</td>
<td>-0.03622</td>
<td>-0.01881</td>
</tr>
<tr>
<td>waylife</td>
<td>-0.00155</td>
<td>-0.35257</td>
<td>-0.02186</td>
<td>0.01875</td>
</tr>
<tr>
<td>joboil</td>
<td>-0.00638</td>
<td>0.36363</td>
<td>-0.00263</td>
<td>0.11264</td>
</tr>
<tr>
<td>runout</td>
<td>-0.01552</td>
<td>-0.24248</td>
<td>-0.11809</td>
<td>0.35784</td>
</tr>
<tr>
<td>agreemnt</td>
<td>0.04681</td>
<td>0.07618</td>
<td>0.07428</td>
<td>0.52327</td>
</tr>
<tr>
<td>longrun</td>
<td>0.01903</td>
<td>0.33298</td>
<td>-0.03424</td>
<td>0.03559</td>
</tr>
<tr>
<td>oilobj</td>
<td>-0.01162</td>
<td>-0.07123</td>
<td>-0.07839</td>
<td>-0.00134</td>
</tr>
<tr>
<td>natneed</td>
<td>0.00592</td>
<td>0.03630</td>
<td>0.07429</td>
<td>-0.00984</td>
</tr>
<tr>
<td>shutdown</td>
<td>-0.01563</td>
<td>0.08455</td>
<td>0.42923</td>
<td>0.06612</td>
</tr>
<tr>
<td>clean</td>
<td>0.00614</td>
<td>-0.03378</td>
<td>0.49302</td>
<td>0.01868</td>
</tr>
<tr>
<td>employ</td>
<td>-0.00401</td>
<td>0.07907</td>
<td>-0.33744</td>
<td>0.25891</td>
</tr>
<tr>
<td>expprof</td>
<td>0.00894</td>
<td>0.01028</td>
<td>-0.01712</td>
<td>0.00954</td>
</tr>
<tr>
<td>wantprof</td>
<td>-0.01500</td>
<td>0.02498</td>
<td>0.01657</td>
<td>0.06222</td>
</tr>
<tr>
<td>ex10prof</td>
<td>0.00622</td>
<td>-0.02120</td>
<td>-0.01247</td>
<td>-0.05879</td>
</tr>
<tr>
<td>college</td>
<td>-0.00652</td>
<td>-0.02567</td>
<td>0.04894</td>
<td>-0.02700</td>
</tr>
<tr>
<td>exwork</td>
<td>-0.01567</td>
<td>-0.01017</td>
<td>-0.03710</td>
<td>0.02257</td>
</tr>
<tr>
<td>wantwork</td>
<td>0.00882</td>
<td>0.00565</td>
<td>-0.05866</td>
<td>0.04325</td>
</tr>
<tr>
<td>likely</td>
<td>-0.02242</td>
<td>0.00659</td>
<td>0.07864</td>
<td>-0.04456</td>
</tr>
</tbody>
</table>
nine retained factors. Factor scores are determined from the factor score coefficients. These coefficients resemble regressions of factors on the variables. Tables 4.9 and 4.10 display the coefficients used in this study.

Factor scores are "...estimates of the unknown true values of the factors \(F_j\)" (Hamilton, 1992, p. 263). Once computed, a researcher can treat factor scores like other variables. Technically, factor scores constitute ideal variables for conducting additional data analyses (Marradi, 1981). One can use factor scores "...in graphs, regression, ANOVA, and so forth" (Hamilton, 1992, p.265).

In the following chapter, I will use the factor scores to explore relationships between the factors and 11 background variables. I will also investigate the factors by correlating the factor scores with attitudinal responses collected with the island youth survey.

Multidimensional Aspects of Materialism/Postmaterialism

The principal components factor analysis revealed nine factors. Given these results, I expect that materialism/postmaterialism may abide within a multidimensional domain. Each of the nine retained factors is essentially an independent unidimensional concept. Researchers have used factor analytic techniques to break down a multidimensional construct into a set of concepts that are fundamentally unidimensional in nature (Smith, 1981). In this investigation I suspect the materialist/postmaterialist construct comprises multiple concepts or factors.
Multiple factors, as used here, are similar to Thurstone and Thurstone's application of multiple factor theory employed while investigating Spearman's general intelligence (Matarazzo, 1972). The Thurstones first extracted "primary group factors" that were themselves factor analyzed. Similarly, in this study each of the nine retained factors is a primary or first-order factor. Subjecting these primary factors to further analysis will produce general or secondary factors.

Table 4.11 shows five factors that I have theoretically linked to a materialist/postmaterialist conceptual domain: professional aspirations (F2), anti-oil tolerance (F3), island detachment (F5), socioeconomic skepticism (F7), and industrial bias (F8). This domain may be understood as a

Table 4.11: Anticipated Clustering of First-Order Factors on Potential Second-Order Factors

<table>
<thead>
<tr>
<th>First-Order Factors</th>
<th>SF1 Anomie</th>
<th>SF2 Postmaterialism</th>
<th>SF3 Independence</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>F5</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>F6</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F7</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F8</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>F9</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
second-order dimension. I represented this second-order dimension as a large circle in Figure 4.1. As I previously noted, the circle refers to cultural values that run along a materialist/postmaterialist dimension. This dimension underlies the separate factors which, in turn, underlie the survey opinion items.

Table 4.11 also lists four other factors. I have used this table to show how these factors align with other second-order dimensions. I believe perceived intolerance (F1) and alienation (F6) form a second-order dimension Anomie (SF1). I have interpreted independence (F4) as a measure of an adolescent idiosyncrasy and believe that it remains within its own unique dimension Independence (SF3). It is more difficult to speculate exactly how the final factor, council backing (F9), will load. It may load either with a materialist/postmaterialist dimension or with perceived intolerance (F1) and Alienation (F6). I suspect, however, that it is more likely to load highly on the second order factor, Anomie.

The multiple factor concept employed here conceptually resembles a hierarchical view introduced by Cronbach (1970). At the bottom of the hierarchy are the survey opinion items. The nine first-order factors are above these items and the two anticipated second-order factors are on top. Figure 4.5 provides a more complex picture of how I anticipate first-order and second-order factors fitting into a hierarchical structure.
Second-order principal components factor analysis. The second-order principal components factor analysis used the factor scores calculated from the nine first-order factors. These factor scores, treated as observed variables, were regressed on underlying components or second-order factors. I used a PC based statistical software package (Computing Resource Center, 1992) for this purpose. Table 4.12 shows results from this principal components analysis and gives the eigenvalue or variance for each first-order factor. Figure 4.6 shows a scree graph suggesting that four second-order factors may be retained. These second-order factors account for 64% of the total variance associated with the nine first-order factors and are shown in Table 4.13 along
Table 4.12: Principal Components From Second-Order Analysis

<table>
<thead>
<tr>
<th>Second-Order Factors</th>
<th>Eigenvalue</th>
<th>Difference</th>
<th>Proportion</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.22363</td>
<td>0.92329</td>
<td>0.2471</td>
<td>0.2471</td>
</tr>
<tr>
<td>2</td>
<td>1.30033</td>
<td>0.07924</td>
<td>0.1445</td>
<td>0.3916</td>
</tr>
<tr>
<td>3</td>
<td>1.22109</td>
<td>0.19316</td>
<td>0.1357</td>
<td>0.5272</td>
</tr>
<tr>
<td>4</td>
<td>1.02793</td>
<td>0.19723</td>
<td>0.1142</td>
<td>0.6414</td>
</tr>
<tr>
<td>5</td>
<td>0.83071</td>
<td>0.14345</td>
<td>0.0923</td>
<td>0.7337</td>
</tr>
<tr>
<td>6</td>
<td>0.68725</td>
<td>0.02215</td>
<td>0.0764</td>
<td>0.8101</td>
</tr>
<tr>
<td>7</td>
<td>0.66511</td>
<td>0.10483</td>
<td>0.0739</td>
<td>0.8840</td>
</tr>
<tr>
<td>8</td>
<td>0.56028</td>
<td>0.07661</td>
<td>0.0623</td>
<td>0.9463</td>
</tr>
<tr>
<td>9</td>
<td>0.48367</td>
<td>N/A</td>
<td>0.0537</td>
<td>1</td>
</tr>
</tbody>
</table>

* Factors with eigenvalues >1 were retained
Factor loadings are shown in Table 4.13

Figure 4.6: Scree Graph for Second-Order Factors
with their factor loadings. The highlighted cells in Table 4.13 emphasize the variables that load highly on a given second-order factor. Each highlighted variable is an indicator of a second-order factor. Each second-order factor represents a latent independent dimension.

**Table 4.13: Factor Loadings From Second-Order Analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>SF1</th>
<th>SF2</th>
<th>SF3</th>
<th>SF4</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI</td>
<td>0.70819</td>
<td>-0.15706</td>
<td>-0.01318</td>
<td>-0.28098</td>
<td>0.39467</td>
</tr>
<tr>
<td>F2</td>
<td>0.35823</td>
<td>0.59128</td>
<td>-0.37697</td>
<td>-0.11698</td>
<td>0.36626</td>
</tr>
<tr>
<td>F3</td>
<td>0.35775</td>
<td>0.63543</td>
<td>0.33650</td>
<td>0.03679</td>
<td>0.35365</td>
</tr>
<tr>
<td>F4</td>
<td>0.38019</td>
<td>0.04729</td>
<td>0.34476</td>
<td>0.72677</td>
<td>0.20616</td>
</tr>
<tr>
<td>F5</td>
<td>0.64146</td>
<td>0.22474</td>
<td>-0.22262</td>
<td>-0.02306</td>
<td>0.48793</td>
</tr>
<tr>
<td>F6</td>
<td>0.72583</td>
<td>-0.16735</td>
<td>0.21408</td>
<td>0.08667</td>
<td>0.39182</td>
</tr>
<tr>
<td>F7</td>
<td>-0.09099</td>
<td>-0.07331</td>
<td>0.78838</td>
<td>-0.18715</td>
<td>0.32978</td>
</tr>
<tr>
<td>F8</td>
<td>0.31700</td>
<td>-0.52785</td>
<td>-0.34136</td>
<td>0.39382</td>
<td>0.34958</td>
</tr>
<tr>
<td>F9</td>
<td>-0.52361</td>
<td>0.39730</td>
<td>-0.11513</td>
<td>0.45561</td>
<td>0.34715</td>
</tr>
</tbody>
</table>

* Shading indicates variables loaded highly

**Perceived intolerance** (F1), **island detachment** (F5), **alienation** (F6), and **council backing** (F9) load highly on the first second-order factor (SF1). I did not expect this exact clustering. In particular, I expected island detachment (F5) to load highly on a materialist/post-materialist dimension. These results, however, can be rationally explained. A young islander experiencing alienation and dissatisfaction with his/her quality of life (QoL) would presumably desire to live elsewhere. Likewise, such an individual would presumably feel disappointed with the activities of the islands' primary governing body -- the
island council. Considering how perceived intolerance (F1), island detachment (F5), alienation (F6), and council backing (F9) load on SF1, and considering the interpretations of these first-order factors, I refer to SF1 as Anomie. SF1 appears consistent with the notion that Anomie exists as an independent underlying dimension.

Professional aspirations (F2), anti-oil tolerance (F3), and industrial bias (F8) load highly on the second-order factor, SF2. F2, F3, and F8 represent three out of the five variables I had expected would load highly on a materialist/postmaterialist dimension. These three first-order factors, however, form the three most theoretically clear-cut materialist/postmaterialist measurement scales. Considering how professional aspirations (F2), anti-oil tolerance (F3), and industrial bias (F8) load on this factor I refer to SF2 as Postmaterialism. SF2 appears consistent with the notion that Postmaterialism exists as an independent underlying dimension.

Island detachment (F5) and socioeconomic skepticism (F7) were the other two factors originally expected to load highly on a materialist/postmaterialist dimension. Island detachment (F5) loads highly on Anomie (SF1) as discussed above. Socioeconomic skepticism (F7) singularly loads highly on SF3. Thus, I interpret SF3 the same as F7, Socioeconomic Skepticism.

I interpret low scores on F7 to indicate that there is a greater potential for an individual to have a more
postmaterialist value orientation. This does not mean, however, that "a greater potential" precludes the existence of a postmaterialist value orientation. Thus, although I originally expected socioeconomic skepticism (F7) to load negatively and highly on Postmaterialism (SF2), it is conceivable that it singularly loads highly on its own second-order factor, Socioeconomic Skepticism (SF3).

Theoretically, postmaterialism can not exist without economic security. Feelings of economic security alone, however, do not ensure the existence of a postmaterialist value orientation. Rather, economic security can only suggest a greater potential for the onset of postmaterialist values. This notion, however, is quite speculative. Understanding the relationship between economic security and the onset of postmaterialist values remains theoretical and is beyond the scope of this current analysis. However, it suggests a need for further investigation.

As expected, independence (F4) singularly loads highly on SF4. Thus SF4 and F4 have identical interpretations. This result is consistent with my expectations. I interpreted independence (F4) in association with an adolescent idiosyncrasy and I presumed F4 would singularly load on its own factor, Independence (SF4).

Conducting a second-order principal components factor analysis has assisted in providing a clearer understanding of the structure underlying the first-order factors. Figure 4.7 provides a picture depicting a hierarchical structure of
factors extracted from island youth opinion items.

**Figure 4.7: Hierarchical Structure of Opinion Items, First-Order Factors, and Second-Order Factors**

Due to the similarities between F7 and SF3, and between F4 and SF4 I have treated *Socioeconomic Skepticism* and *Independence* as first-order factors. *Anomie* (SF1) and *Postmaterialism* (SF2), however, are definite second-order factors. The results shown in the hierarchical structure are consistent with the idea that postmaterialism exists. The results are also consistent with the idea that anomie exists. Likewise, two other "lesser" dimensions are also present, *Socioeconomic Skepticism* and *Independence*.

Although the second-order factors have assisted in better understanding the underlying structure behind the
youth survey opinion items, further analyses will involve factor scores from the first-order factors. This follows the same line of thinking used in psychometry. While multiple factor theory uncovers notions about second-order "general" factors, actual measurement scales involve the first-order "primary" factors (Matarazzo, 1970). Interpretations of additional analyses, however, will consider the results of the second-order principal components factor analysis.

Primary factors and motivational needs. Inglehart has theorized that Maslow's hierarchy of needs helps in understanding materialist and postmaterialist value orientations. I suspect that individuals that have higher scores on professional aspirations (F2) and anti-oil tolerance (F3), and lower scores on industrial bias (F8) -- factors loading highly on Postmaterialism (SF2) -- will have higher factor scores on perceived intolerance (F1), island detachment (F5), and alienation (F6), and lower scores on council backing (F9) -- factors loading highly on Anomie (SF1) -- and lower scores on socioeconomic skepticism (F7). The rationality behind this notion comes from pairing primary factors with motivational needs. Table 4.14 shows the nine first-order factors paired with motivational needs. The alignment of the factors with motivational needs was based on the assumption that an individual with a high factor score was more motivated to satisfy certain needs than an individual with a low score on the same factor.
Table 4.14: The Association of Primary Factors with Motivational Needs

<table>
<thead>
<tr>
<th>Factor</th>
<th>Primary Factor Name</th>
<th>Second-Order Factor</th>
<th>Second-Order Factor Loading</th>
<th>Knowledgebase (theory)</th>
<th>Motivational Needs Satisfaction Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Perceived Intolerance</td>
<td>SF1 -- Anomie</td>
<td>0.708</td>
<td>Tönnies Durkheim Inglehart</td>
<td>-Security &amp; Safety</td>
</tr>
<tr>
<td>F2</td>
<td>Professional Aspirations</td>
<td>SF2 -- Post-materialism</td>
<td>0.591</td>
<td>Inglehart</td>
<td>-Intellectual -Love &amp; Belongingness -Esteem</td>
</tr>
<tr>
<td>F3</td>
<td>Anti-Oil Tolerance</td>
<td>SF2 -- Post-materialism</td>
<td>0.635</td>
<td>Inglehart</td>
<td>-Self Actualization -Intellectual -Need for Knowing &amp; Understanding -Aesthetic</td>
</tr>
<tr>
<td>F4</td>
<td>Independence</td>
<td>SF4 -- same as F4</td>
<td>0.727</td>
<td>Developmental Theories</td>
<td>-Not Applicable***</td>
</tr>
<tr>
<td>F5</td>
<td>Island Detachment</td>
<td>SF1 -- Anomie</td>
<td>0.641</td>
<td>Tönnies Durkheim Inglehart</td>
<td>-Safety</td>
</tr>
<tr>
<td>F6</td>
<td>Alienation</td>
<td>SF1 -- Anomie</td>
<td>0.726</td>
<td>Habermas Durkheim</td>
<td>-Safety</td>
</tr>
<tr>
<td>F7</td>
<td>Socioeconomic Skepticism</td>
<td>SF3 -- same as F7</td>
<td>0.788</td>
<td>Inkeles Durkheim</td>
<td>-Economic Security</td>
</tr>
<tr>
<td>F8</td>
<td>Industrial Bias</td>
<td>SF2 -- Post-materialism</td>
<td>-0.528</td>
<td>Inglehart</td>
<td>-Safety -Physical Needs</td>
</tr>
<tr>
<td>F9</td>
<td>Council Backing</td>
<td>SF1 -- Anomie</td>
<td>-0.524</td>
<td>Inkeles Durkheim</td>
<td>-Economic Security -Physical Needs</td>
</tr>
</tbody>
</table>

* Specific theorists' names represent a basic knowledgebase one can draw on to interpret the factors. The text highlights these theoretical notions with respect to rapid growth. Note that factors may be interpreted using alternative or even competitive theories.

** Motivational needs were paired with factors using a need substitution approach as discussed in the text.

*** Because F4 distinctly falls into a developmental category I chose not to pair it with a motivational need.
I used two approaches to align needs with factors. First, I reviewed Inglehart's (1977, 1990) connection between materialist and postmaterialist indicators and Maslow's (1954) hierarchy of needs (see Table 4.1). Essentially, Inglehart dichotomized Maslow's needs into (1) social and self actualization needs, and (2) physiological needs. Inglehart associated social and self actualization needs with postmaterialism. This included motivation to satisfy aesthetic, intellectual, belonging and esteem needs. Inglehart associated physiological needs with materialism. This included motivation to satisfy physical security and economic security needs.

The second approach involved direct alignment of factors and motivational needs after going back to Maslow's original descriptions. Although some overlap between the two approaches persisted, I felt that Inglehart's descriptions of needs somewhat blurred Maslow's original discriminations. Drawing associations directly from Maslow allowed me to assign better descriptors. In other words, I was able to accurately assign a lower-order need to a factor when a higher-order need was lacking in satisfaction. This process, known as need substitution, appropriately applies Maslow's theory of motivation. Maslow provides for the possibility of substituting a lower-order need for a higher one when satisfaction of the higher-order need cannot occur (Chaplin and Krawiec, 1974).

Keeping Inglehart's dichotomy in mind, and after
assigning needs to factors, I reviewed the factor/need associations. Inglehart suggests that materialism aligns with lower-order needs -- safety and physiological needs. Likewise, postmaterialism aligns with higher-order needs -- love and belongingness, esteem, and self-actualization. Inglehart also associates postmaterialism with Maslow's later categories of needs -- knowing and understanding and aesthetic needs.

Table 4.14 lists all nine primary factors. The table includes the second-order factor each $F_i$ loaded highly on, the direction of these loadings (positive or negative), the theoretical knowledge base used to interpret each $F_i$, and the motivational needs paired with each $F_i$. Considering the pairing of needs with primary factors and based on Inglehart's Maslowian scheme, I arrived at the hypothesis that an individual with higher scores on the $F_i$ loading highly on Postmaterialism (SF2) would have lower scores on the $F_i$ loading highly on Anomie (SF1) and Socioeconomic Skepticism (SF3).

CHAPTER SUMMARY

The results of the principal components factor analyses reviewed in this chapter are consistent with expectations that postmaterialism, anomie, and economic security exist in the islands and are measurable. In order to uncover these findings I first retained nine factors and computed factor scores after using principal components factor analysis on 32 youth survey opinion items. These factor scores were
subsequently subjected to a second principal components factor analysis. I retained four second-order factors from this analysis. Two of these factors, *Socioeconomic Skepticism* (SF3) and *Independence* (SF4) had interpretations identical to their first-order counterparts. I conceptually treated SF3 and SF4 as primary or first-order factors. Two other second-order factors *Anomie* (SF1) and *Postmaterialism* (SF2) consisted of three or more primary factors. I then generated a hierarchical depiction of all first- and second-order factors (see Figure 4.7).

The results of the two main principal components factor analyses has shown that opinion questions have underlying structure consistent with the idea that postmaterialism exists. The results also show consistency with the idea that anomie exists. Although a single all encompassing factor interpretable as postmaterialism was not uncovered, I am not apprehensive of the results. My purpose here was not to necessarily show materialism/postmaterialism as a totally subsuming or single primary dimension. Rather, I merely suggested that such a dimension does exist and that it is measurable. This explanation follows closely to Inglehart's (1990) assertion that the materialist/postmaterialist dimension is not the only dimension along which change can occur but it is a dimension that exists. The results of the second-order principal components factor analysis closely emulate my expectations and Inglehart's assertion.

Following the principal components analyses, I
proceeded to pair the nine primary factors with needs from Maslow's hierarchy. I then used this pairing to arrive at the hypothesis that individuals who would score higher on Postmaterialism (SF2) would score lower on Anomie (SF1) and Socioeconomic Skepticism (SF3).
CHAPTER V

FACTORS, DEMOGRAPHICS, AND ATTITUDES

INTRODUCTION

In this chapter I investigate relationships between demographic variables and factors to verify the legitimacy of the factors. Although my results are consistent with the notion that postmaterialism exists, I believe that postmaterialism varies in complex ways. I explore these complexities by investigating the differences between the Orkney and Shetland islands.

I have divided this chapter into two basic parts. First, I analyze specific demographic variables with respect to the nine first-order principal components factors (F_1). The analysis involves regressing each first-order factor on 11 survey variables using ordinary least squares regression. I then use the results of this analysis to verify the legitimacy of the factors.

Each of the 11 survey variables has a demographic aspect so I refer to them as demographic variables. These demographic variables correspond directly to the more conceptual "background variables" shown in Figure 5.1.

I anticipate that the demographic variables will affect respondents' value orientations and experiences as reflected in the second-order factors (SF_1). That is, demographic variables will affect respondents' potential scores on
Figure 5.1: Measurement Model Depicting Background Variables and Their Relationship to Value Orientation

* In this figure "Fi" represents first-order factors and "SFi" represents second-order factors.
Anomie (SF1) and Postmaterialism (SF2). Specifically I expect regression analysis will confirm that individuals who score higher on Postmaterialism (SF2) tend to score lower on Anomie (SF1) and Socioeconomic Skepticism (SF3).

In the second portion of the chapter I analyze specific attitudinal variables with respect to the nine first-order principal components factors. I determined the attitudinal variables from survey responses. The measurement model shown in Figure 5.2 includes survey opinion items (I) used to uncover first-order factors (F1). These first-order factors are then used to uncover second-order factors (SF1). I suspect that respondents' value orientations and experiences affect their attitudes (A1). Specifically I expect principal component factor scores will correlate predictably with the attitudinal variables.

To explore this idea I use Inglehart's theoretical arguments to classify attitudinal variables into materialist and postmaterialist categories of attitudes. I then correlate the first-order factor scores with each attitudinal variable. After testing the correlation coefficients for significance, I review the positive and negative relationships. I hypothesize that individuals who score higher on Postmaterialism (SF2) will have factor scores that correlate positively with the postmaterialist attitudes and negatively with the materialist attitudes. The opposite is expected for individuals that score higher on Anomie (SF1).
Figure 5.2: Measurement Model Depicting Second-Order Factors (Value Orientations) and Their Relationship to Attitudinal Variables ($A_i$)

* In this figure "$F_i$" represents first-order factors and "$A_i$" represents respondent's attitudes.
In addition to the central analyses involving regression and correlation, this chapter will highlight differences found between the Shetland and Orkney islands. Following Inglehart's theory of postmaterialism I suspect Shetland island youths are more postmaterialist oriented than Orkney island youths. I base this on the understanding that Shetland has experienced more socioeconomic gain than Orkney. I assert that both the planning process adopted by Shetland and the economic security achieved by the island play some role in the differences I expect to find between Shetland and Orkney. In this chapter I will show that such differences do exist independent of the effects of other variables.

I will look closely at any results that may help explain island differences. In particular, I will give specific attention to how Anomie (SF1) and socioeconomic skepticism (F7) relate to Postmaterialism (SF2).

I believe that it is important to note here that Socioeconomic Skepticism (SF3) and Independence (SF4) are each comprised of a single first-order factor. Therefore I have interpreted SF3 identically to F7 and SF4 identically to F4. Throughout this study I have indicated all second-order factor names by placing them in italics and capitalizing first letters. First-order factors are also italicized but not capitalized.

Anomic experience often creates feelings of alienation or detachment (Turner and Beeghley, 1981). I expect to find
that a positive relationship exists between anomie and an unfulfillment of belongingness needs. Sirgy (1983) suggests that lower order needs correspond to dissatisfaction with quality of life. Therefore I expect a positive relationship also exists between anomie and dissatisfaction with quality of life. This thinking is relevant to postmaterialism since Inglehart (1990) has aligned postmaterialism with levels of need satisfaction.

Although Inglehart (1990) links a lack of belongingness to materialism, he has also found that postmaterialists may feel dissatisfied with their quality of life. Inglehart characterizes postmaterialists' dissatisfaction, however, as dissatisfaction directed more toward political entities than life in general. According to Marsh's 1975 study (cited by Inglehart, 1990, p. 160), postmaterialists are "above all" dissatisfied with the "political institutions under which they live."

I expect to see both the Shetland and Orkney youths experiencing some sort of anomie as measured by Anomie (SF1). Shetland respondents, theoretically, should differ from Orkney respondents by being more dissatisfied with the main political body (i.e., the island councils) than with other aspects of life.

I also expect to find a difference between Shetland and Orkney respondents concerning socioeconomic skepticism (F7). According to Inglehart, the presence of economic security is required prior to an onset of postmaterialism. Therefore, I
expect to find Shetland respondents scoring significantly lower on *socioeconomic skepticism* (F7) than Orkney respondents.

Essentially, this chapter will provide results to help validate the factors uncovered in the previous chapter. I expect the results of the OLS regression analyses and the correlations will help substantiate the idea that SF1 and SF2 exist and can act respectively as measures of *Anomie* and *Postmaterialism*. I further expect the results to provide insights into the complex way that postmaterialism may vary.

### RELATIONS BETWEEN FACTORS AND DEMOGRAPHIC VARIABLES

**Description of Demographic Variables**

This portion of the study involves 11 demographic variables. Table 5.1 lists these variables and provides a description for each. I treated ten of the variables as dummy variables and I treated one variable, *age*, as a continuous variable.

The variable *age* ranges from 13 to 18 years. Because the survey was administered to high school students, *age* correlates very highly with the students' educational level.

I coded the dummy variables using zero and one. The coding scheme, 0=female and 1=male, defines the dummy variable *gender*. Likewise, the variable *shetork* was coded 0=resident of Orkney and 1=resident of Shetland.

The variable *birthpl* refers to the first home that the respondent lived in versus the hospital place of birth. It
Table 5.1: Demographic Variables From Shetland and Orkney Island Youth Survey

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description of Demographic Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>Age of survey respondent</td>
</tr>
<tr>
<td>gender</td>
<td>Gender of survey respondent</td>
</tr>
<tr>
<td>birthpl</td>
<td>Respondent was born in the islands or elsewhere</td>
</tr>
<tr>
<td>islndres</td>
<td>Respondent resides in island mainland or on the outskirts</td>
</tr>
<tr>
<td>shetork</td>
<td>Respondent lives in Shetland or Orkney</td>
</tr>
<tr>
<td>mfprof</td>
<td>Respondent's mother or father has a professional job</td>
</tr>
<tr>
<td>mfwkic</td>
<td>Respondent's mother or father work for the island council</td>
</tr>
<tr>
<td>mfwktra</td>
<td>Respondent's mother or father has traditional island jobs</td>
</tr>
<tr>
<td>mfself</td>
<td>Respondent's mother or father is self-employed</td>
</tr>
<tr>
<td>mfnongov</td>
<td>Respondent's mother or father has a non-government service job (i.e., banker)</td>
</tr>
<tr>
<td>housew</td>
<td>Respondent's mother is a housewife</td>
</tr>
</tbody>
</table>

was first coded as 0=Orkney, 1=Shetland, and 2=elsewhere. Less than one percent (0.94%) of those now living in Shetland were born in Orkney and less than two percent (1.61%) of those now living in Orkney were born in Shetland. 34.38% of the Shetland respondents were born elsewhere and 38.02% of the Orcadians were born elsewhere. Given these observations, I deemed it appropriate to code birthpl as a dummy variable where 0=born in the islands, and 1=born elsewhere.

The Orkney and Shetland islands are each made up of a group of smaller islands. The largest island in each group, referred to as the island mainland, has the greatest population and has become the site for most of the oil complexes. I coded the variable islndres such that 0=resides in the island mainland, and 1=resides in the
The type of job held by a respondent's mother and/or father makes up the variable \textit{mfprof}. An occupation was determined professional based on the socioeconomic index for occupations listed by the bureau of the census. When a respondent's mother or father was a professional I coded \(mfprof=1\), otherwise \(mfprof=0\).

The variables \textit{mfwkic}, \textit{mfwktra}, \textit{mfself}, \textit{mfnongov}, and \textit{housew} each refer to whom the respondent's mother or father worked for. I coded the variable \textit{mfwkic} such that 0=mother or father did not work for the island councils, and 1=mother or father did work for the island councils. The coding for \textit{mfwktra} is 0=mother or father did not work in a traditional island industry, and 1=mother or father did work in a traditional island industry. Traditional industries included the military, fishing, farming/crofting, fish processing, and knitwear industries. I coded the variable \textit{mfself} such that 0=mother or father did not work for themselves, and 1=mother or father did work for themselves. Similarly, I coded \textit{mfnongov} such that 0=mother or father did not work for a non-government service organization, and 1=mother or father did work for a non-government service organization. A non-government service organization refers to industries such as banking. Finally, the coding scheme for the variable \textit{housew} is 0=mother was not a housewife, and 1=mother was a housewife.

In the event that a respondent did not know whom their
mother and father worked for I treated it as missing data. The variables mfprof, mfwkic, mfwktra, mfself, mfnongov, and housew altogether include 74% of respondents' fathers and 63% of respondents' mothers.

Regression of Factors on Demographic Variables

I regressed each of the nine first-order principal components factors on the 11 demographic variables. Tables 5.2 and 5.3 show the coefficients and $R^2$ values for all nine regressions. Coefficients with $t$-ratios significant at the $\alpha=.01$ level and $\alpha=.05$ level are indicated in both tables.

Table 5.2: Regression Coefficients for Factors 1-5 Regressed on Survey Demographic Variables

<table>
<thead>
<tr>
<th>Indep. Variables</th>
<th>Factor 1 Perceived Intolerance</th>
<th>Factor 2 Prof. Aspiration</th>
<th>Factor 3 Anti-Oil Tolerance</th>
<th>Factor 4 Independence</th>
<th>Factor 5 Island Detachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>** 0.13678</td>
<td>** 0.21474</td>
<td>** 0.15631</td>
<td>0.04579</td>
<td>** 0.10040</td>
</tr>
<tr>
<td>gender</td>
<td>0.07279</td>
<td>0.00068</td>
<td>* 0.17788</td>
<td>-0.11566</td>
<td>-0.00369</td>
</tr>
<tr>
<td>birthpl</td>
<td>** 0.41067</td>
<td>** 0.27014</td>
<td>** 0.27142</td>
<td>0.01443</td>
<td>** 0.50760</td>
</tr>
<tr>
<td>islnndres</td>
<td>0.15607</td>
<td>0.01221</td>
<td>-0.05411</td>
<td>-0.11279</td>
<td>0.07269</td>
</tr>
<tr>
<td>shetork</td>
<td>0.01686</td>
<td>** 0.37367</td>
<td>** 0.27040</td>
<td>-0.06062</td>
<td>**-0.27674</td>
</tr>
<tr>
<td>mfprof</td>
<td>0.08191</td>
<td>** 0.22987</td>
<td>0.15787</td>
<td>0.02509</td>
<td>* 0.21392</td>
</tr>
<tr>
<td>mfwkic</td>
<td>-0.08421</td>
<td>0.12611</td>
<td>0.06405</td>
<td>0.06501</td>
<td>-0.08954</td>
</tr>
<tr>
<td>mfwktra</td>
<td>-0.05915</td>
<td>-0.16102</td>
<td>0.19002</td>
<td>0.21669</td>
<td>-0.18277</td>
</tr>
<tr>
<td>mfself</td>
<td>0.02385</td>
<td>-0.13848</td>
<td>-0.09097</td>
<td>0.11276</td>
<td>-0.17905</td>
</tr>
<tr>
<td>mfnongov</td>
<td>0.07425</td>
<td>-0.00828</td>
<td>**-0.23658</td>
<td>0.03080</td>
<td>0.07401</td>
</tr>
<tr>
<td>housew</td>
<td>0.02043</td>
<td>0.07322</td>
<td>-0.07376</td>
<td>0.12416</td>
<td>-0.06214</td>
</tr>
<tr>
<td>constant</td>
<td>-2.35858</td>
<td>-3.56581</td>
<td>-2.67264</td>
<td>-0.69299</td>
<td>-1.59013</td>
</tr>
<tr>
<td>R-square</td>
<td>0.07720</td>
<td>0.11890</td>
<td>0.08990</td>
<td>0.01900</td>
<td>0.14220</td>
</tr>
</tbody>
</table>

Note: Due to missing data associated with the demographic variables

| * | Indicates statistical significance at the $\alpha = .05$ level |
| ** | Indicates statistical significance at the $\alpha = .01$ level |
### Table 5.3: Regression Coefficients for Factors 6-9 Regressed on Survey Demographic Variables

<table>
<thead>
<tr>
<th>Indep. Variables</th>
<th>Factor 6 Alienation</th>
<th>Factor 7 Socioecon. Skepticism</th>
<th>Factor 8 Industrial Bias</th>
<th>Factor 9 Council Backing</th>
</tr>
</thead>
<tbody>
<tr>
<td>age</td>
<td>0.01745</td>
<td>**-0.13611</td>
<td>0.02183</td>
<td>-0.02807</td>
</tr>
<tr>
<td>gender</td>
<td>-0.01361</td>
<td>** 0.34667</td>
<td>-0.13107</td>
<td>0.03571</td>
</tr>
<tr>
<td>birthpl</td>
<td>** 0.29755</td>
<td>-0.14289</td>
<td>* 0.20093</td>
<td>-0.15791</td>
</tr>
<tr>
<td>isindres</td>
<td>-0.02203</td>
<td>0.08702</td>
<td>0.11372</td>
<td>*-0.22742</td>
</tr>
<tr>
<td>shetork</td>
<td>-0.05621</td>
<td>**-0.42269</td>
<td>0.08032</td>
<td>**-0.26384</td>
</tr>
<tr>
<td>mfprof</td>
<td>0.07296</td>
<td>-0.01144</td>
<td>-0.02198</td>
<td>0.01434</td>
</tr>
<tr>
<td>mfwkic</td>
<td>-0.10645</td>
<td>0.07459</td>
<td>-0.20648</td>
<td>-0.03465</td>
</tr>
<tr>
<td>mfwktra</td>
<td>-0.02433</td>
<td>* 0.29594</td>
<td>-0.10846</td>
<td>* 0.24716</td>
</tr>
<tr>
<td>mfsel</td>
<td>0.04202</td>
<td>0.10457</td>
<td>0.05978</td>
<td>0.06728</td>
</tr>
<tr>
<td>mfnongov</td>
<td>-0.06452</td>
<td>0.01960</td>
<td>* 0.23982</td>
<td>-0.19032</td>
</tr>
<tr>
<td>housew</td>
<td>-0.10965</td>
<td>0.00266</td>
<td>0.03967</td>
<td>*-0.19573</td>
</tr>
<tr>
<td>constant</td>
<td>-0.30199</td>
<td>2.01046</td>
<td>-0.39168</td>
<td>0.68244</td>
</tr>
<tr>
<td>R-square</td>
<td>0.02870</td>
<td>0.09650</td>
<td>0.03360</td>
<td>0.04580</td>
</tr>
</tbody>
</table>

Note: Due to missing data associated with the demographic variables N=597 for each regression

* Indicates statistical significance at the $a = .05$ level

** Indicates statistical significance at the $a = .01$ level

Each coefficient shown in Tables 5.2 and 5.3 is a tenth-order partial coefficient. Below I provide an interpretation for the significant coefficients. In all cases I consider the effects of one variable while the effects of the other ten variables are controlled.

**Factor one.** After regressing perceived intolerance (F1) on the 11 demographic variables, I found age and birthpl were significant at the $a=.01$ level and had a positive relationship with F1. As a respondent increases in age he/she has a tendency to score higher on perceived...
intolerance (F1). Likewise, individuals born elsewhere (birthpl=1) have significantly higher scores on perceived intolerance (F1) than individuals born in the islands.

In the previous chapter I associated a higher score on perceived intolerance (F1) with a respondent perceiving his/her community has a lower tolerance for nonconformity. I also suggested higher F1 scores may imply that a respondent feels more like an outsider in his/her community.

A respondent's age directly relates to his/her academic level. Most of the older students are those that would expect to continue school. The lower ages would include more of the school leavers. Inglehart suggests that postmaterialists typically have more formal education than materialists. The more educated the person the more they are aware both socially and politically (Inglehart, 1990). I suggest, therefore, that older respondents may have a greater awareness of discrimination practices taking place in a community. This notion is consistent with the work of Hyman and Wright (1975, 1979) who found that education enhances an individual's respect for civil liberties. I therefore presume that older respondents should score higher on perceived intolerance (F1) than younger respondents.

Although my data includes a rather small "window" of ages the school leavers are not in the older groups. I therefore suspect that the older respondents are more educationally oriented and receptive than the younger group. The results are consistent with this idea. The older the respondent the
greater the perception that nonconformity intolerance exists in the community.

Results show respondents born elsewhere see their community as less tolerant of nonconformity and may feel more like outsiders. This finding is in agreement with Durkheim's theory. The more one feels as an outsider or the more one perceives his/her community as less tolerant of nonconformity, the greater the chance that feelings of alienation exist within that community.

Theorists such as Tönnies and Durkheim relate rapid growth to social disruption and disorganization. The relationship between perceived intolerance (F1) and birthpl apparently stems from the large influx of individuals who are not native to the growth area. I would expect to see perceptions of intolerance and signs of anomie associated with individuals not born in the islands. In looking at the results of birthpl it appears that perceived intolerance is greater among those that moved to the islands from elsewhere than those that were island born. Although these findings do not rule out the possibility that native islanders also perceive an intolerance of nonconformity, they do indicate that perceived intolerance is higher among those born elsewhere. These results are consistent with theoretical arguments.

**Factor two.** Regressing F2, professional aspirations, on 11 demographic variables finds four significant predictors. Each of these four coefficients has a positive t-ratio
The significant relationship between \textit{age} and \textit{professional aspirations} (F2) indicates that individuals born elsewhere have higher professional aspirations than those born in the islands. Similarly, the relationship
between shetork and professional aspirations (F2) implies that Shetland respondents have more professional aspirations than Orkney respondents. These results imply that Shetlanders and individuals born elsewhere are more apt to aspire to a lifestyle contributing to a postmaterialist value orientation.

**Factor three.** The results of regressing F3, anti-oil tolerance, on 11 demographic variables have revealed three coefficients (age, gender, and birthpl) significant at the $\alpha=.01$ level, and two coefficients (shetork and mfnongov) significant at the $\alpha=.05$ level. The coefficients for age, gender, birthpl, and shetork are positive whereas the coefficient for mfnongov is negative.

I previously associated higher scores on anti-oil tolerance (F3) with a greater tolerance of anti-oil sentiments. I also associated high F3 scores with a postmaterialist value orientation. Hence, a materialist would not condone anti-oil behavior because of oil's economic importance. A postmaterialist, however, would consider the environment, traditional industries, and island culture of equal or greater importance than oil development. The higher one scores on anti-oil tolerance (F3) the greater his or her tolerance of anti-oil sentiments and the stronger his or her postmaterialist orientation.

The relationship between age and anti-oil tolerance (F3) suggests that as a respondent gets older s/he becomes more tolerant of anti-oil sentiments. Given the higher
educational aspirations of these students and Inglehart's theoretical tie between postmaterialism and higher education, this result was expected.

The relationship between gender and anti-oil tolerance (F3) suggests that males are more tolerant of anti-oil sentiments than females. Should oil development be halted or delayed, I suspect that females might perceive themselves as having more to lose than males. Prior to oil becoming a part of island economics females had fewer employment opportunities than males. Island women were primarily involved in such industries as knitwear where they could work at home and still perform "traditional female duties." Home knitters in Shetland, for example, comprised about 87% of all Shetland knitters in 1971 and about 92% in 1989 (Shetland Islands Council, 1990). As oil development increased, employment in the knitwear industry sharply decreased. In 1980, the Orkney Island Council reported, "In the case of knitwear there was a shortage of knitters last year that held back sales..." (Orkney Islands Council, 1980, p. 6). The shortage was so severe in some areas that plants were shutdown. Cumulative figures from Shetland (see Figure 5.3) show the tremendous decline in this industry. From 1971 to 1989 home knitters declined 38% while plant employed knitters declined 66%. All this suggests that traditional female oriented industries suffered a work force shortage, as oil development brought alternative opportunities for women.

144
These results and this explanation fit with the idea that pre-oil island culture was more traditionally oriented and that post-oil island culture is more modern oriented. In Durkheimian terms, I suspect that there has been a move in the islands from mechanical solidarity (indicated here as "pre-oil") to organic solidarity ("post-oil").

According to Moen (1981) women in energy boomtowns do not realize as many benefits as men. They may in fact be disadvantaged. Freudenburg (1981), however, has suggested that women may adapt better to a boom than men. The results found after regressing anti-oil tolerance (F3) on the demographic variables are more consistent with Freudenburg's findings than Moen's. Females are less anti-oil tolerant
than males. When considering the state of women's job opportunities before and after oil development I suspect that women now feel that they have more to lose from anti-oil tolerance than men.

In making this statement I should note that this study deals with a student population, whereas the other studies dealt with adult populations. Also, just because females appear to have gained some opportunities and may feel they have "more to lose," does not mean that women have more opportunities than men. In fact, they probably do not. Rather, I only suggest that women have more opportunities than they had during pre-oil development.

The relationship between birthpl and anti-oil tolerance (F3) implies that respondents born elsewhere are more tolerant of anti-oil sentiments than those born in the islands. This result is consistent with Wills' (1991) observations. Wills has indicated that most of those who immigrated to the islands were more concerned about preserving the traditional cultural flavor than the natives. Because preservation of traditional island culture may periodically conflict with the oil industry's objectives, this result appears reasonable.

The relationship between shetork and anti-oil tolerance (F3) implies that respondents now living in Shetland are more anti-oil tolerant than those living in Orkney. There is a difference between the oil developments in the two islands. Although Orkney experienced rapid growth and a
major influx of money from oil development, Shetland experienced a much larger amount. While Orkney experienced the development of a good size oil terminal, Shetland experienced the development of the largest terminal previously built in the world. The amount of money that poured into Shetland was tremendous.

Following Inglehart's economic security hypothesis, I expected Shetland respondents would tend to have higher scores on anti-oil tolerance (F3) than Orkney respondents. That is, due to the larger sums of money that entered Shetland, I suspected that Shetlanders felt more economically secure than Orcadians. I determined that anti-oil tolerance (F3) loads highly on Postmaterialism (SF2) and I hypothesized that Shetland respondents were more postmaterialist oriented than Orcadians. These results are consistent with this hypothesis and with results of the second-order principal components factor analysis.

The coefficient on mfnongov is negative. This indicates that respondents with at least one parent employed in a non-government service job are less likely to be tolerant of anti-oil sentiments than respondents without a parent in a non-government service job. Given that non-government service jobs are defined as those in the banking business and given that oil development has become the main economic resource of the islands, anti-oil sentiments directly threaten those parents in non-government service jobs. When a student's parents experience threats to their economic
security the student, dependent upon his/her parent for such security, also experiences such threats. Inglehart has associated a materialist orientation with striving for a stable economy and strong economic growth. I have assumed that many financial specialists, such as bankers, share these materialist value orientations. The result for mfnongov is consistent with these ideas and provides some validity for interpreting anti-oil tolerance (F3) as a measure of postmaterialism.

Factor four. Regressing F4, independence, on the 11 demographic variables did not uncover any significant relationships. As noted in the previous chapter, this factor involves concepts concerning the willingness to confide in the family and make commitments and sacrifices for the family. A natural striving for independence often occurs in teens. Unhappy feelings in the home, reduced commitments to the family, reduced trust in family members, and reduced levels of communication are commonplace. For this reason I expected to find little to no predictable variation among the respondents regarding independence (F4). The results of this regression support this expectation.

Factor five. Regressing F5, island detachment, on 11 demographic variables has revealed three coefficients (age, birthpl, and shetork) significant at the $\alpha=.01$ level and one coefficient (mfprof) significant at the $\alpha=.05$ level. The coefficients for age, birthpl, and mfprof are positive and the coefficient for shetork is negative.
I initially suspected that a higher score on island detachment (F5) reflected a more materialist value orientation and a lower score reflected a more postmaterialist orientation. However, after conducting the second-order principal components factors analysis, I found island detachment (F5) loading highly on Anomie (SF1).

From a materialist/postmaterialist viewpoint I did not expect these results. That is, I initially thought island detachment (F5) was a measure of materialism and expected to see negative coefficients for age and mfprof. As it is, when age and mfprof increase island detachment also increases.

The results of this regression, however, do seem plausible when viewing island detachment (F5) relative to Anomie (SF1). Those born elsewhere scored higher on island detachment than those born in the islands. It seems reasonable that individuals with parents who have lived a long time in the islands would be less likely to leave.

One explanation for the positive age and mfprof coefficients follows the argument that a "bust" is underway. When a community turns toward "bust," those who can get out will do so quickly. Although there was some decline in island population figures after the completion of the main oil terminals, there is no real evidence that islanders suspect a bust is on the immediate horizon. Island council population figures remain strong and oil estimates remain high (Wills, 1991).
Common sense may offer a better explanation. The young people just don't find the islands to be very fun and exciting. In spite of continual growth and development, Shetland and Orkney still remain remote areas in a harsh climate. Furthermore, professional employment opportunities are still somewhat scarce. This is true in spite of an increase of professional and technical jobs (Wills, 1991). A lack of professional jobs is even more pronounced in Orkney than in Shetland (Seyfrit and Hamilton, 1991). Following this explanation, I find it reasonable that island detachment (F5) is positively related to age and mfprof.

Regarding shetork, individuals in Shetland feel more attachment to the islands than individuals in Orkney. Given the professional job situation in Orkney this result seems plausible. Whereas Orkney's development strategy stressed the preservation of traditional island industries, Shetland encouraged more entrepreneurial and professional opportunities (Seyfrit and Patterson cited by Seyfrit and Hamilton, 1991). This seems to explain some of the difference between the two islands.

Factor six. Regression of F6, alienation, on 11 demographic variables revealed one significant relationship. The variable birthpl has a positive coefficient that is significant at the \( \alpha = .01 \) level.

I previously associated high scores on this factor with a respondent feeling more alienated and dissatisfied with his/her life than a respondent with lower scores. In
keeping with the theoretical ideas of Durkheim, I anticipated this result. Individuals born outside of the islands feel more alienated than island born individuals. These results are consistent with the idea of F6 as a measure of alienation.

**Factor seven.** Regressing F7, socioeconomic skepticism, on the 11 demographic variables has revealed three coefficients (age, gender, and shetork) significant at the \( \alpha=.01 \) level and one coefficient (\( mfwktra \)) significant at the \( \alpha=.05 \) level. Coefficients associated with age and shetork are negative while those for gender and \( mfwktra \) are positive.

Higher scores on socioeconomic skepticism (F7) represent more negative feelings toward social and economic security. I have associated lower scores on socioeconomic skepticism (F7) more with postmaterialism than higher scores. I have also suggested a parallel exists between lower scores on socioeconomic skepticism (F7) and Inkeles' findings — people in boomtowns feel more socially and economically secure. Lower socioeconomic skepticism (F7) scores indicate a respondent is more positive or optimistic regarding life in the islands.

The negative relationship between age and socioeconomic skepticism (F7) is consistent with interpreting socioeconomic skepticism (F7) as a measure of materialism — as age decreases socioeconomic skepticism increases. Likewise, the positive relationship between \( mfwktra \) and
socioeconomic skepticism (F7) is consistent with this interpretation. Respondents from traditional island families do not feel as economically secure as those more closely tied to the oil industry. I suspect traditional industry workers feel more threatened by an oil industry that can harm their traditional industries. The fishing industry, for example, has had to compete directly with the oil industry for sea beds and harbor space. Fishing in particular has become vulnerable (House, 1986). There is a constant problem of debris in the water and a constant threat of a devastating oil spill. Although there has been an increase in the overall catch, there has been a decline in the number of fishing boats on the water. Fewer but larger fishing vessels have replaced the many smaller ones insinuating that what was once a more traditional family business is now more commercial. In 1980 the Orkney Island Council (OIC) reported an increase in catching capacity due to a larger number of boats. Then in 1984 the OIC further reported:

There has been a continuing gradual decline in the number of smaller boats under 60' length and a corresponding gradual increase in the larger boats (especially the 70-80' category), reflecting the restructuring of the Orkney fleet (Orkney Islands Council, 1984, p. 11).

Figures 5.4, 5.5, and 5.6 show employment figures and tonnes of fish suggesting a similar trend occurred in Shetland. Respondents with parents working in traditional industries, such as fishing, predictably scored higher on socioeconomic skepticism (F7).
Figure 5.4: Shetlanders Employed Catching Fish

Figure 5.5: Shetlanders Employed in Fishing Industry
The variable *shetork* has a negative relationship with *socioeconomic skepticism* (F7). This indicates that individuals in Orkney are more skeptical concerning the social and economic effects of oil development than individuals in Shetland. From Inglehart's perspective, prior to shifting toward postmaterialism there must exist a strong enduring safe economic structure that positively affects one's way of life. Hence, the Shetland environment is more conducive to postmaterialism than the Orkney environment.

The results also show male respondents are more socioeconomically skeptical than females. Concerning *anti-oil tolerance* (F3), we observed female respondents were less
tolerant of anti-oil sentiments. I previously explained that females may perceive themselves as having "more to lose" should oil development stop. Here we see females as more optimistic about the social and economic effects of oil. I suggest that oil development has created greater opportunities for women, and this is at least one reason why female respondents see oil development as having positive social effects. The relationships observed between gender and anti-oil tolerance (F3) and gender and socioeconomic skepticism (F7) are consistent with each other.

**Factor eight.** Regressing F8, industrial bias, on the 11 demographic variables has revealed two positive coefficients (birthpl and mfnongov) significant at the α=.05 level.

People working for non-government service industries (e.g., banking industry) appear partial to the oil industry. These individuals seem less tolerant of policy decisions that favor environmental actions over oil development. I suspect that parent's situations and ideas have some influence on their children's ideas. Therefore, I would expect respondents with parents in non-government service jobs to score higher on industrial bias (F8).

Favoring industry over the environment is clearly in concert with a materialist value orientation. The relationship between mfnongov and industrial bias (F8) is consistent with the interpretation that higher scores on industrial bias (F8) are more indicative of materialism.

The variable birthpl also has a positive relationship
with *industrial bias* (F8). Many of the individuals who came to the islands over the past 20 years did so because of oil. This fact is illustrated in population figures. In both island areas there was an abrupt population increase after oil development began, which has now lasted over 20 years. Presumably individuals born elsewhere have moved to the islands for economic security. Respondents born outside of the islands are more favorably biased toward industry than are island born respondents.

**Factor nine.** Regressing F9, *council backing*, on 11 demographic variables has revealed that one coefficient (shetork) is significant at the α=.01 level and three coefficients (islndres, mfwktra, and housew) are significant at the α=.05 level. Only the coefficient for mfwktra is positive.

Results show respondents with parents working in traditional industries (mfwktra) believe that the councils have done a good job. A great deal of out-migration occurred in the islands before oil development and I believe that the pre-oil economic base supported by these traditional industries could not maintain the island population.

Within the British economy Scotland is one of a number of "lagging," or "problem," regions. It is identified as such by the usual criteria. It has a rate of unemployment consistently higher than the national average: in late 1974, at four percent, it was one and a half times the national level and this has been a long-lived situation. The average income per head of its population, so far as this may be estimated with any confidence, is about ninety-four percent of the national
average. It has had an unbroken record of net outward migration as far back as regular demographic statistics go. It should be said that all these indicators have improved markedly over the last decade (Gaskin, 1977, pp. 107-108).

The first island population increase in 130 years occurred in 1971 and at the same time unemployment became less than that of Scotland at large (Storey, 1977).

Individuals who have survived working in traditional industries are reaping some benefits from the island councils (Storey, 1977; Mackay, 1986). The Shetland and Orkney councils are the champions of these industries. According to Wills (1991) and supported by Cohen (1980), traditional islanders perceive (rightly or not) the island councils as having saved them from worse fates at the hands of the oil companies. The regression results are consistent with these observations.

There is a negative relationship between housew and council backing (F9). This shows that respondents with mothers who are not housewives have higher scores on council backing (F9). Higher scores imply that respondents are more optimistic about the future of oil benefits and more confident in the island planning agencies. Respondents with housewives for mothers do not share this level of optimism and agreement. Quite possibly, women who have been able to take advantage of opportunities created by oil development are primarily those who have gained improved employment chances.

The variable isindres also has a negative relationship
with council backing (F9). Individuals living in more remote areas of the islands score lower on council backing (F9). Most of the problems facing the islands were first noticed in the mainland areas. Islanders residing in the outskirts were not as severely affected (Cohen, 1980). Most of the island council decisions initially concerned island mainland issues. As a result, it took longer before island council decisions benefited individuals residing in the island outskirts (Shetland Islands Council, 1978a). I find it reasonable that individuals living in the outskirts feel less favorable to the actions taken by the councils. The significant negative relationship found between islandres and council backing (F9) is consistent with this notion.

The coefficient for shetork is negative. Orcadians are more likely to score higher on council backing (F9) than Shetlanders. This result is consistent with the result found for council backing (F9) and mfwktra. Orkney has smaller oil developments than Shetland and Orkney remains somewhat more traditionally oriented than Shetland (Hutcheson and Hogg, 1975).

Postmaterialism, as defined by Inglehart, is dependent upon feelings of economic security. Inglehart (1990) also suggests that planning is a postmaterialist type of activity. I originally suspected that council backing (F9) might act as a measure of the planning aspect of postmaterialism and I suspected that more traditional islanders would score lower on council backing (F9). The
specific results found for *mfwktra* and *shetork* were not consistent with this original expectation. On the other hand, the results found for *islndres* and *housew* were more in line with my original expectations.

The better explanation for these results comes from Inglehart's consideration of postmaterialists as more rooted and more actively involved with political activities than materialists. Individuals that are more in tune with the consequences of political influence and policy making would potentially be more demanding of their government. This notion ties nicely to Inglehart's (1990) citing of Marsh's 1975 findings that "postmaterialists are relatively dissatisfied... [with the] political institutions under which they live" (p. 160). In the case of the islands, I suspect postmaterialists are more apt to agree with Wills (1991) that the island councils did as well as one could expect but that oil companies did in fact win out on many issues. Wills suggests that had the island councils been more experienced they would have acquired a great deal more. As it is, many islanders perceive the council as doing a mediocre job in its battle against the oil industry.

Arriving at a more thorough understanding of how planning may or may not relate to materialism and postmaterialism requires additional investigation. Furthermore, the regression results do not provide legitimate arguments for accepting the second-order principal components factors analysis showing *council backing* (F9) loading negatively and
highly on Anomie (SF1).

Anomie is primarily thought of as a state of normlessness or according to Merton's (1968) citing of MacIver and Riesman,

[Anomie] is a state of mind in which the individual's sense of social cohesion—the mainspring of his morale—is broken or fatally weakened (p. 216).

Those who back the council less, experience more anomie. Yet, postmaterialists should not be prone to anomie. They have norms, they are willing to act for the greater good of the community, and they have strong political views. Although they may express dissatisfaction with political bodies, and they may even feel detached from governmental actions, this does not mean they experience anomie.

The regression results suggest that I initially interpreted SF1 incorrectly. Certainly it is not a measure of anomie in the classic sense. A better interpretation of SF1 is to view it as a measure of conflictuality. This does not mean that SF1 measures outright conflict but rather an underlying embodiment of conflict. Conflictuality is more characteristic of two positions related by structural dissimilarity (Donnelly, 1993).

Specifically in this study, Orcadians have adopted the island councils as the only legitimate means for "taking on" the oil industry. The Orcadians have essentially "given up" and delegated policy responsibility to the councils. When people perceive the presence of conflict as a means for dissolving a relationship they usually avoid the conflict by
repressing or displacing hostile feelings (Coser, 1956). I suspect that Orcadians are more concerned than Shetlanders of losing their "champion for the cause" -- the island councils. Hence, as shown by the regression results involving island detachment (F5) and socioeconomic skepticism (F7), Orcadians feel more detached from the islands and less socioeconomically secure than Shetlanders. These types of feelings can induce a sense of anomie.

Shetlanders, on the other hand, directly perceive their situation conflictually. Coser (1956) suggests that involvement makes for more conflict. Postmaterialists are characterized as more politically involved, and I believe that among postmaterialists this has produced some sense of solidarity. As noted by Coser (1956), conflict can strengthen group consciousness and establish group identity in a social system. Furthermore, people are generally more apt to engage in conflict if they perceive their situation as more secure. The more participants are aware of the stability of a group and the more they feel secure, the tendency to express hostile feelings freely will increase (Coser, 1956). The regression results involving socioeconomic skepticism (F7) suggest that Shetlanders are more socioeconomically secure and therefore they may be more likely to express dissatisfaction with the island councils than Orcadians.

Although Shetlanders are more postmaterialist, more likely to express dissatisfaction with the councils, and
experience more solidarity; they are not necessarily centrally organized. That is, no central controlling agent exists to unify the peoples' actions. Their solidarity comes solely from a commonly shared value orientation which conflicts with outside agendas established through the island council. As noted by Coser (1956), centralized control is not always necessary for strong group cohesion.

A strong group cohesiveness without centralized control might be expected of people living in the Scottish islands. The primary religious base in the islands, and in Scotland overall, is Protestantism, or more specifically, Presbyterian. This religious sect has historically exhibited less centralized control than the church it broke away from (Coser, 1956). I suggest that a lack of a centralized controlling point helps explain why no formal postmaterialist based organization has emerged in the islands and why group conflict remains at a minimum.

SF1 is best understood as a measure of conflictuality where conflict induces a sense of solidarity and lack of conflict induces a sense of anomie. The regression results are consistent with this notion and therefore I have renamed SF1 Conflictuality.

Comparison of Regression Results

Comparing results from all regression analyses with respect to the second-order factors provides a clearer picture of the consistency between the regression results and the principal components factors analyses. Table 5.4
lays out this comparison. The upper portion of the table highlights regression coefficients significant at the $\alpha = .05$ level. The signs ("-" or "+") in the upper level of the table represent a relationship's direction.

**Table 5.4: A Comparison of Regression Results and Factors**

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
<th>F8</th>
<th>F9</th>
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<tbody>
<tr>
<td>age</td>
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<td>+</td>
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<td>+</td>
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<td>gender</td>
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<td>+</td>
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<tr>
<td>birthpl</td>
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<tr>
<td>islndres</td>
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<tr>
<td>shetork</td>
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<td>+</td>
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<td>-</td>
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<td>+</td>
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<tr>
<td>mfwkic</td>
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<tr>
<td>mfwktra</td>
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<td></td>
<td>+</td>
<td>+</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td>+</td>
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<tr>
<td>mfnongov</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>housew</td>
<td></td>
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</tbody>
</table>

**Second-Order Factors Most Consistent with Results**

| SF1 Conflictuality | +  |    |    | +  |    |    |    |    | -  |
| SF2 Postmaterialism|    | +  | +  |    |    |    |    |    |    |
| SF3 Socioeconomic Skepticism | +  |    |    |    |    |    |    |    |
| SF4 Independence   |    |    |    |    |    | +  |    |    |    |

The bottom portion of the table indicates which second-order factor(s) appear most consistent with the results. Here the "+" or "-" sign represents whether the $F_i$ load negatively or positively on the $SF_i$. The interpretations that I have
presented furnish the rationale used to associate a specific 
F_i with a specific SF_i.

The reader should give special notice to *socioeconomic skepticism* (F7) in Table 5.4. I believe that Post-
materialism (SF2) and *Socioeconomic Skepticism* (SF3) are 
dependent upon each other such that SF2 cannot exist without 
SF3. Although *socioeconomic skepticism* (F7) did not load 
highly on Postmaterialism (SF2) I have indicated its 
theoretical dependency by placing a check by SF2 under F7.

I mostly used the demographic variables to verify the 
legitimacy of the first-order factors. I primarily included 
the variable *shetork*, however, to explore differences 
between groups of respondents. The results are somewhat 
consistent with my hypothesis that respondents scoring 
higher on Postmaterialism (SF2) will score lower on 
Conflictuality (SF1) and *Socioeconomic Skepticism* (SF3). 
That is, survey respondents from Shetland scored higher than 
Orcadians on *professional aspirations* (F2) and *anti-oil 
tolerance* (F3) and scored lower on *island detachment* (F5) 
and *socioeconomic skepticism* (F7). The regression analysis 
involving *council backing* (F9), however, is not consistent 
with this hypothesis. Rather, these results indicate that 
Shetlanders score significantly higher than Orcadians on one 
aspect of Conflictuality (SF1). It appears that Shetland 
respondents are more dissatisfied than Orkney respondents 
regarding island council agreements. This relationship 
alone associates Shetland with SF1 and implies that post-
materialists are prone to conflictuality.

Inglehart sees the onset of postmaterialism as requiring more than just economic security. The results of the regression analyses, however, portray the importance of such security. Independence (SF4) does not vary significantly between the islands, while Conflictuality (SF1) varies such that one aspect of SF1 associates Conflictuality with Orkney and another aspect of SF1 associates Conflictuality with Shetland. Postmaterialism (SF2) and Socioeconomic Skepticism (SF3), however, vary such that Shetlanders are clearly more postmaterialist oriented and more socio-economically positive than Orcadians. These results are consistent with the notion that postmaterialism has a greater probability of occurring under conditions of economic security.

RELATIONS BETWEEN FACTORS AND ATTITUDINAL VARIABLES

Description of Attitudinal Variables

In this section I analyze specific attitudinal variables regarding the nine first-order principal components factors. I derived all 13 attitudinal variables from survey responses and treated them as dummy variables. During the survey students were asked to list their five most liked and five least liked characteristics or features of their home community. The responses were categorized topically and tallied. The measurement model referred to previously in Figure 5.2, includes survey opinion items (I) used to
uncover first-order factors ($F_1$). These first-order factors were then used to uncover second-order factors ($SF_1$). I suspect that respondents' value orientations and experiences affect their attitudes. Specifically I expect principal component factor scores will correlate predictably with the attitudinal dummy variables.

I coded each attitudinal variable such that 1=mentioned and 0=not mentioned. The following list provides a name and description for each variable used:

1. Variable: comfacil
   Description: includes mention of liking community services or community facilities

2. Variable: scool
   Description: includes mention of liking school related things

3. Variable: cultural
   Description: includes mention of liking cultural things

4. Variable: scenery
   Description: includes mention of liking the scenery

5. Variable: peopcom
   Description: includes mention of liking people in the community

6. Variable: freedom
   Description: includes mention of liking freedom

7. Variable: acquain
   Description: includes mention of disliking the density of acquaintanceship (i.e., the perceived potential for acquiring acquaintances)

8. Variable: crim
   Description: includes mention of disliking crime

9. Variable: empleco
   Description: includes mention of disliking island employment or economic types of things

10. Variable: comfacl
    Description: includes mention of disliking
community services or community facilities

11. Variable: culture
   Description: includes mention of disliking cultural things

12. Variable: noshops
   Description: includes mention of disliking the number of shops in the community (i.e., the community is lacking in shops)

13. Variable: incomers
   Description: includes mention of disliking incomers to the community

Using Inglehart's (1990) 12 item battery as a guide, I broke the above list of variables into two groups. Inglehart sees concerns about economic growth, defense, social order, rising prices, economic stability, and fighting crime as materialistic. He sees concerns about striving for a more humane society, putting an emphasis on ideas versus money, making the cities and countryside more beautiful, freedom, getting people involved in their work, involvement in one's community, and involvement in government decisions as postmaterialistic. Following Inglehart's conceptual framework, and before any analysis involving the attitudinal variables, I classified each attitudinal variable as either postmaterialist or materialist. I associated the first six attitudinal variables with postmaterialism and the last seven with materialism.

I suspect that respondents' value orientations and experiences affect their attitudes. Specifically I expect first-order factor scores to correlate predictably with attitudinal dummy variables. I hypothesize that individuals
who score higher on Postmaterialism (SF2) have factor scores that correlate differently with the attitudinal variables than individuals who score lower on Conflictuality (SF1).

Correlation of Variables with Factors

I correlated each set of first-order factor scores with each attitudinal variable. I chose point biserial correlation for this purpose. Point biserial correlation is the preferred statistical procedure for measuring the relationship between a continuous variable and a dichotomous variable (Ferguson, 1976). The equation for point biserial correlation is as follows:

\[ r_{pbi} = \frac{\bar{X}_p - \bar{X}}{S_x \sqrt{pq}} \]

In this formula, \( S_x \) is the standard deviation of a set of factor scores; \( \bar{X}_p \) is the mean of a set of factor scores corresponding to dummy variable = 1 (i.e., mentioned); \( \bar{X} \) is the mean of all factor scores for a specific factor; \( p \) is the proportion of the dummy variable equal to one; and \( q \) is the proportion of the dummy variable equal to zero. Because point biserial correlations are true product moment correlations, \( r_{pbi} \) is interpreted identically to Pearson's \( r \) (Ferguson, 1976).

I calculated a total of 117 correlation coefficients. I then tested each \( r_{pbi} \) for its significance by calculating a \( t \)-ratio using the formula that follows:
In this formula \( N \) is the total number of observations. The degrees of freedom (d.f.) used for a two-tailed test are \( d.f. = N - 2 \). **Tables 5.5 and 5.6** show the \( r_{phi} \) for each correlation. These tables also indicate whether the \( r_{phi} \) are significant at the \( \alpha = .05 \) or \( \alpha = .01 \) level.

**Table 5.5: Point Biserial Correlation Coefficients for Attitudinal Variables and First-Order Factors 1-5**

<table>
<thead>
<tr>
<th>Attitudinal Variables</th>
<th>Factor 1 Prof. Aspirations + SF1</th>
<th>Factor 2 Anti-Oil Tolerance + SF2</th>
<th>Factor 3 Independence + SF4</th>
<th>Factor 5 Island Detachment + SF1</th>
</tr>
</thead>
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<tr>
<td>comfacil</td>
<td>-0.0209</td>
<td>-0.0413</td>
<td>-0.0367</td>
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<td>scool</td>
<td>0.0570</td>
<td>0.0844</td>
<td>** 0.1260</td>
<td>0.0401</td>
</tr>
<tr>
<td>cultural</td>
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<td>0.0409</td>
<td>0.0337</td>
<td>**-0.0977</td>
</tr>
<tr>
<td>scenery</td>
<td>-0.0009</td>
<td>** 0.1011</td>
<td>0.1057</td>
<td>**-0.1010</td>
</tr>
<tr>
<td>peopcom</td>
<td>**-0.1655</td>
<td>* 0.0831</td>
<td>0.0482</td>
<td>-0.0760</td>
</tr>
<tr>
<td>freedom</td>
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<td>-0.0010</td>
<td>0.0277</td>
<td>-0.0284</td>
</tr>
<tr>
<td>acquain</td>
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<td>crim</td>
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<td>-0.0079</td>
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</tr>
<tr>
<td>empleco</td>
<td>* 0.0982</td>
<td>* 0.0930</td>
<td>0.0607</td>
<td>-0.0462</td>
</tr>
<tr>
<td>comfacil</td>
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</tr>
<tr>
<td>culture</td>
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<td>0.0265</td>
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<tr>
<td>noshops</td>
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<td>** 0.1094</td>
<td>0.0242</td>
<td>-0.0672</td>
</tr>
<tr>
<td>incomers</td>
<td>* -0.0938</td>
<td>*-0.0809</td>
<td>**-0.1084</td>
<td>0.0460</td>
</tr>
</tbody>
</table>

Note: Shown below each factor name is the second-order principal components factor (SF1) that the \( F_i \) loaded highly on. The sign indicates if the \( F_i \) loaded positively or negatively on the SF1.

* Indicates statistical significance at the \( \alpha = .05 \) level
** Indicates statistical significance at the \( \alpha = .01 \) level
Table 5.6: Point Biserial Correlation Coefficients for Attitudinal Variables and First-Order Factors 6-9

<table>
<thead>
<tr>
<th>Attitudinal Variables</th>
<th>Factor 6 Alienation + SF1</th>
<th>Factor 7 Socioecon. Skepticism + SF3</th>
<th>Factor 8 Industrial Bias - SF2</th>
<th>Factor 9 Council Backing - SF1</th>
</tr>
</thead>
<tbody>
<tr>
<td>comfacil</td>
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<td>-0.0196</td>
<td>* 0.0819</td>
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<tr>
<td>scool</td>
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<td>-0.0138</td>
<td>-0.0311</td>
<td>0.0235</td>
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<tr>
<td>cultural</td>
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<td>0.0307</td>
<td>-0.0135</td>
<td>0.0702</td>
</tr>
<tr>
<td>scenery</td>
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<td>*-0.0959</td>
<td>-0.0171</td>
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<tr>
<td>peopcom</td>
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<td>-0.0056</td>
<td>-0.0624</td>
<td>* 0.0852</td>
</tr>
<tr>
<td>freedom</td>
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<td>-0.0352</td>
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<td>acquain</td>
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<td>incomers</td>
<td>*-0.0975</td>
<td>0.0389</td>
<td>-0.0527</td>
<td>0.0282</td>
</tr>
</tbody>
</table>

Note: Shown below each factor name is the second-order principal components factor (SFj) that the Fj loaded highly on. The sign indicates if the Fj loaded positively or negatively on the SFj.

* Indicates statistical significance at the $\alpha = .05$ level
** Indicates statistical significance at the $\alpha = .01$ level

I looked closely at significant point biserial correlation coefficients in order to explore the following hypotheses: (1) Postmaterialism (SF2) has a positive relationship with the first six attitudinal variables and a negative relationship with the remaining seven variables; and (2) Conflictuality (SF1) has a negative relationship with the first six variables and a positive relationship with the remaining seven. These hypotheses imply that significant relationships found among the first six
attitudinal variables and professional aspirations (F2), anti-oil tolerance (F3), and council backing (F9) will be positive; and significant relationships found among the first six attitudinal variables and perceived intolerance (F1), island detachment (F5), alienation (F6), and industrial bias (F8) will be negative. I expect to find correlations with the seven remaining variables to have an opposite pattern. The reader should note that my expectations for industrial bias (F8) and council backing (F9) took into consideration that these factors loaded negatively on Postmaterialism (SF2) and Conflictuality (SF1) respectively.

Table 5.7 shows the total number of expected results in contrast to unexpected results. 80% of the significant correlations involving attitudinal variables and factor scores associated with Postmaterialism reflected the expected outcome. 79% of the significant correlations involving attitudinal variables and factor scores associated with Conflictuality reflected the expected outcome.

Table 5.7: Expected and Unexpected Results of Point Biserial Correlations for Postmaterialism and Conflictuality

<table>
<thead>
<tr>
<th>Results</th>
<th>Postmaterialism</th>
<th>Conflictuality</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
<td>Frequency</td>
</tr>
<tr>
<td>Expected</td>
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<td>80</td>
<td>15</td>
</tr>
<tr>
<td>Unexpected</td>
<td>2</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Totals*</td>
<td>10</td>
<td>100</td>
<td>19</td>
</tr>
</tbody>
</table>

*26% of all Postmaterialism correlations were significant and 36% of all Conflictuality correlations were significant.
These percentages demonstrate that the results from correlating attitudinal variables with factors are consistent with my hypotheses.

Although certain correlations shown in Tables 5.5 and 5.6 may indicate a need for further investigation, the overall picture is most important for this analysis. As often occurs in secondary analyses, the survey data used in this study does not truly lend itself to more detailed investigation. This does not downplay the need for future study, but it does acknowledge the limitation of the current data set. Nonetheless, the overall results are consistent with my hypotheses and therefore add confidence to the principal components factors and regression analyses. That is, the results are consistent with the idea that Conflictuality and Postmaterialism exist and are measurable.

Post-impact studies may need to include theoretical perspectives that incorporate an understanding of conflictuality and an understanding of postmaterialism. I mention conflictuality and postmaterialism specifically because of the results found after correlating socioeconomic skepticism (F7) with the attitudinal variables. In particular, I did not observe any significant correlations. I suspect, therefore, that socioeconomic measures, when not controlling for other variables, have little relevance concerning attitudes. Yet, socioeconomic variables do have a bearing on understanding value orientations such as postmaterialism. Unfortunately, these data do not lend
themselves to more intricate analyses. I believe that future studies designed to specifically investigate attitudinal relationships will uncover positive associations between postmaterialist based attitudes and socioeconomic optimism. Specifically, I suspect that controlling for Conflictuality (SF1), Postmaterialism (SF2), and Independence (SF4) will allow investigators to uncover significant positive relationships between Socioeconomic Skepticism (SF3) and postmaterialist based attitudes.

This is certainly an area that needs more extensive research before becoming better understood. Similarly, there is a need to conduct further research to better understand how conflictuality and postmaterialism function together. Exactly what kind of relationship exists between these two constructs? What causes them? How might different degrees of conflictuality and postmaterialism affect attitudes? These are questions that reach beyond the scope of this particular study, but deserve mention because they directly relate to post-impact analysis.
CHAPTER VI
DISCUSSION OF RESULTS

INTRODUCTION

I have thus far introduced a theoretical and methodological approach for understanding and investigating the effects of North Sea oil development on Shetland and Orkney island youth. I have presented results consistent with the hypothesis that postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. I have also presented results consistent with the following hypotheses: (a) the greater one's post-materialist orientation the less one feels a loss of social control; (b) the greater the amount of economic security the greater the chance for postmaterialism to evolve; and (c) postmaterialist values correlate with individual attitudes. Specifically, my results support the hypothesis that Shetland island youths are more post-materialist oriented than Orkney island youths.

In this chapter I review these results and discuss them concerning the islands' histories, geographical characteristics, and planning approaches. I highlight and discuss specific events that may have had a direct bearing on islanders' responses to North Sea Oil and I illustrate the complexities associated with postmaterialism and boomtown youths. The chapter begins with discussions
concerning the principal components factors analyses and supportive regression and correlational analyses. I then look more specifically at statistically significant differences found between Shetlanders and Orcadians and between male and female respondents.

FIRST AND SECOND-ORDER FACTORS

I used principal components factors analysis to uncover first-order factors (F1). I then repeated this procedure on the F1 to uncover second-order factors (SF1). The results of the second-order analysis revealed four factors consistent with my theoretical assumptions. I then proceeded by using regression and correlational analyses to assist in verifying the factors. Overall, the regression results and correlations were consistent with my interpretations of the first and second-order factors.

There was inconsistency, however, with the analyses concerning council backing (F9). My expectations regarding this factor and my interpretation of SF1 as Anomie did not agree with the regression results.

I initially interpreted SF1 as Anomie but following the regression results I found it necessary to reinterpret this factor as Conflictuality. My reinterpretation does not relate to outright conflict but rather an underlying embodiment of conflict. Conflictuality is more characteristic of two positions related by structural dissimilarity (Donnelly, 1993). More overt expressions of conflictuality can induce a sense of solidarity and more
subdued expressions of conflictuality can induce a sense of anomie.

The history connected with the islands' planning activities may help to better understand the unforeseen results associated with council backing (F9). The SIC and OIC provided a great deal of money and support for the growth and maintenance of traditional island industries. There was a fair amount of animosity toward the SIC after it set a policy to keep islanders away from oil related jobs. Most oil jobs taken by Shetland and Orkney islanders involved men. These jobs required workers to remain away from home for extended periods creating additional hardships on housewives. Moreover, the SIC and OIC initially paid less attention to individuals away from the island mainlands. Given these accounts I find it reasonable that youths with parents not working in traditional industries, Shetland youths, youths with mothers who are housewives, and youths living off the island mainlands would all tend to score lower on council backing (F9) and higher on Conflictuality (SF1).

The early history of the islands also helps explain the interpretation of SF1 as Conflictuality. The literature has depicted Orcadians as more quiet and conservative and Shetlanders as more adventurous and spirited. This accounts for some of the differences between OIC and SIC oil company relationships. SIC oil relations are more sought with overt conflict than OIC relations. Survey results also show
Orkney respondents as more detached from the island (higher F5 scores) but more attached to the OIC (higher F9 scores), while the opposite is true for Shetland respondents. These observations are consistent with interpreting SF1 as Conflictuality. They also suggest that Conflictuality is, at least partially, a function of the island's historical background.

DIFFERENCES BETWEEN SHETLAND AND ORKNEY

Results show the Shetland and Orkney islands differ regarding Conflictuality (SF1), Postmaterialism (SF2), and Socioeconomic Skepticism (SF3). Specifically, while controlling for ten other demographic variables (see Figure 5.1), I found significant differences between Shetlanders and Orcadians on professional aspirations (F2), anti-oil tolerance (F3), island detachment (F5), socioeconomic skepticism (F7), and council backing (F9). The islands' histories, geography, and planning practices account for some of the observed differences. Similarly, these elements also provide insight into understanding why these differences exist.

Professional aspirations (F2) relates to a respondent's desires and expectations to attend college and to acquire a professional job. I had thought that parents' occupations might contribute to youths' ambitions and so I controlled for occupation in all regression analyses. Shetland youths scored significantly higher on this factor than Orcadian youths. I suspect that this is partly due to Shetland's
policy encouraging the diversification of traditional island industries and attraction of new industries. Wills (1991) has observed that many more professionals are moving to Shetland and that they find the islands conducive to their work. I also suspect that the large amount of money that Shetland was able to use for capital investments has also contributed toward this result. Orkney, however, did not make capital investments and discouraged any new industries that did not directly relate to traditional Orkney island industries. For example, fish farming is one of the few new industries that the OIC has let into the islands.

With little in the way of new professional and technical jobs I maintain that Orkney youths have less professional opportunities in the islands than Shetland youths. I further suspect that because the OIC did not encourage new businesses there may also be less encouragement for Orcadian youth to acquire a professional or technical job.

*Anti-oil tolerance* (F3) relates to two basic statements: (1) No one has the right to interfere with the nation's need for oil; and (2) People who object to oil development in this area should move someplace else. Shetlanders disagreed with these statements significantly more than Orcadians.

Initially both the Orkney and Shetland islanders welcomed the prospect of oil money and jobs. Neither of the islands, however, cared as much about national interests as
they did about their own interests. Shetland and Orkney people felt very much detached from Scotland. Shetlanders -- who have held more tightly to their Norse background than Orcadians -- felt even less about the "nation's need for oil" than the Orcadians. This may account for some of the difference I observed between Shetland and Orkney regarding anti-oil tolerance (F3).

Island detachment (F5) directly addresses a respondent's desire to acquire work outside the islands and to leave the islands. Orkney respondents scored significantly higher on island detachment (F5) than Shetland respondents. I suspect that this is partly due to a difference in the islands' development plans. Orkney youths may desire to leave and acquire outside work because their industrial base gears itself more toward preserving traditional industries versus actively expanding into new industries. Yet, I also note that Orkney is much closer to the Scottish mainland than Shetland. The closer proximity of Orkney may also have some effect on willingness to leave. When an individual perceives moving as uncomplicated and non-stressful, he or she will find it easier to move. A long distance move usually requires more consideration than a shorter move.

Socioeconomic skepticism (F7) addresses the following statements: (1) People in this area are better off than they would be without the oil industry; (2) The oil industry has had a negative impact on our "way of life"; (3) My chances
of employment in the islands are better off because of the oil industry; (4) The oil will "run out" before people my age see any benefit from it; and (5) In the long run, I am sure that people in this area will be better off if our oil resources are developed. Orcadians scored significantly higher on *socioeconomic skepticism* (F7) indicating that they agreed more with statements two and four, and disagreed more with statements one, three, and five. These results directly relate to different aspects of the island's development plans and the economic influx of dollars into the area.

First, as I have previously mentioned, Orkney did not support the attraction of new industry into the island. I maintain that this has limited the availability of jobs for Orkney youth. Second, Orkney did not emphasize social impact assessment in the island's development plan to the same degree as Shetland. This may have had some effect on the respondents' feelings concerning improvement in their "way of life." Third, Orkney has not seen the same amount of oil money as Shetland. This may be partly because the capital investments made by Shetland are beginning to pay off, but mostly I believe it is because the oil terminal in Shetland is three times bigger than the one in Orkney.

I discussed *council backing* (F9) and *Conflictuality* (SF1) above regarding possible explanations based on historical and planning influences. There is a fair amount of information relating differences in *Conflictuality* with
historical and geographical differences. Although little conflict existed in the islands shortly before North Sea oil discoveries, the island histories provide a good base for understanding why Conflictuality takes on different forms in the two islands.

Shetland and Orkney also differ on Postmaterialism (SF2) such that Shetland is more postmaterialist oriented than Orkney. Shetlanders scored significantly higher than Orcadians on professional aspirations (F2) and anti-oil tolerance (F3). There was no predictable difference on industrial bias (F8). I explain professional aspirations (F2) and anti-oil tolerance (F3) differences, at least in part, by the islands' planning practices. Following Inglehart's notion that planning affects the emergence of postmaterialism, I argue that Shetland's planning approach lent itself to postmaterialism more so than Orkney's. I feel it important to note, however, that historical influences also contributed to these differences.

One of the foremost influences on the islands is the size of the Shetland oil terminal. This resulted in an influx of larger sums of money into Shetland than Orkney. The island differences regarding Socioeconomic Skepticism (SF3) clearly reflect differences in the size of the economic forces impacting upon the islands. Orkney is consequently more socioeconomically skeptical than Shetland.

The Shetland and Orkney islands' early histories and geographical characteristics influenced their different
planning approaches. The notion of Shetlanders as "fishermen that farm" and Orcadians as "farmers that fish" has its roots in the geographical differences of the islands. Simply put, Orkney has better farming because of its soil and location. Likewise, Shetland is geographically better suited for fishing. Over the years these differences have affected the islands' population. Orkney became a quieter, less frequented area while Shetland came in contact with the many nationalities that fished her waters.

Furthermore, the Stewart Earls had a profound effect on the islands such that Orkney's Norse heritage became less pronounced than Shetland's. The result was a spirited Shetland community with a strong sense of Norse heritage, and a quiet steady conservative Orkney community with weaker ties to their Norse heritage. None of the islands, however, acquired a strong attachment to Scotland. These community characteristics indirectly affected the planning approaches adopted by each island council. Had Orkney adopted the exact same plans as Shetland, they could not have implemented them in the same successful way. In Manners' (1982) words,

Whether... the Shetlanders' firm approach to oil development could have been replicated in other less independent or culturally homogeneous communities is uncertain (p. 276).

Although Orkney had a more homogeneous community, it was much less independent and aggressive than Shetland's.

The differences observed between the islands originate in the islands' histories, but large economic impacts and
planning approaches also contributed to these differences. Theoretical constructs defined within Inglehart's postmaterialism provide a good framework for describing island differences as measured by the youth survey. Postmaterialism also provides a theoretical base for predicting respondents' attitudes and it may help to better understand future responses to other changes occurring on the islands. A postmaterialist theory does not, however, help to discern the underlying causal relationships regarding island differences.

Figure 6.1 provides some insight into the complexities that surround the Shetland and Orkney islands. The double lined arrows represent time and the single lined arrows represent causal relationships. I assume in the diagram that the relationships are serial and cumulative. That is, each effect is dependent upon all previous effects and its manifestation is dependent upon a specific historical demarcation. The dotted line represents the move from traditional society to modern society as well as a change from population decline to rapid population growth. I have depicted modern Orkney as more materialist, and modern Shetland as more postmaterialist. Similarly, I have shown modern Orkney exhibiting conflictuality differently than Shetland. Conflictuality refers to an underlying embodiment of conflict characteristic of two positions related by structural dissimilarity (Donnelly, 1993). Orkney's manifestation resembles a sense of anomie whereas Shetland's
resembles a sense of solidarity. Finally, I have shown modern Orkney as less socioeconomically secure than modern Shetland. Postmaterialism and Conflictuality further affect islander's attitudes.

Figure 6.1: A Sociohistorical Account of the Shetland and Orkney Islands

<table>
<thead>
<tr>
<th>Effects in Shetland</th>
<th>Historical Demarcation</th>
<th>Effects in Orkney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing Becomes Prominent</td>
<td>Prehistory</td>
<td>Farming Becomes Prominent</td>
</tr>
<tr>
<td>Norse Heritage Spirited Population Flux</td>
<td>Early History: Kings/Earls World War I&amp;II</td>
<td>Reduced Heritage Conservative Population Flux</td>
</tr>
<tr>
<td>SIC Aggressive SIA In Plans $$$ Invested</td>
<td>North Sea Oil: Planning Action</td>
<td>OIC Nonaggressive No SIA In Plans $ Not Invested</td>
</tr>
<tr>
<td>Shetlander's Attitudes</td>
<td></td>
<td>Orcadian's Attitudes</td>
</tr>
</tbody>
</table>

Note: The dotted line represents a move from traditional to modern society. It also marks the point of rapid population growth.

The islands' histories and economic impacts influenced their approaches to planning. The specific attention paid by SIC to social impact analysis, combined with the large sums of oil money coming into Shetland provided an atmosphere of social and economic security. Without having
a similar social character, another community faced with energy related rapid growth would have a more difficult time successfully constructing and implementing a planning approach similar to the one found in Shetland. Socio-historical and socioeconomic factors played an immensely important role in the Shetland experience.

DIFFERENCES BETWEEN MALES AND FEMALES

Besides exploring differences between the islands I also compared male and female respondents. The regression analyses revealed significant differences between males and females on anti-oil tolerance (F3) and socioeconomic skepticism (F7).

Higher scores on F3 indicate above average tolerance toward anti-oil sentiments. Regarding gender, the results show male youths are significantly more anti-oil tolerant than female youths. I suspect that these results reflect the magnitude of the impact that North Sea oil development may have had on Shetland and Orkney women. Although oil brought in new jobs for males, the traditional island industries also remained available to the male segment of the population (i.e., fishing remains primarily a male dominated industry).

Before North Sea oil, island women lived in a nearly subsistence economy, which was an oppressive environment and "...endowed with an unmoving patriarchal style" (Marchak, 1986, p. 179). Females have now realized many new opportunities in both economic and social spheres. New job
opportunities opened up for women as oil money poured into
the islands. Moreover, new men and new social opportunities
also came to island women. Marchak (1986) remarks,

[Women] now have new opportunities to marry out
and up: the influx of male professionals from
elsewhere must surely affect the marital patterns
and this would affect village life even more
profoundly than the diminishing supplies of fish
(p. 181).

I therefore contend that female islanders have "more to
lose" from a decline in oil development than males. I
suspect that anti-oil sentiments are more of a threat to an
individual who has benefitted from oil development and who
has "more to lose." Females fall into this category.

Higher scores on F7 indicate that a respondent is more
socioeconomically skeptical than a respondent with lower
scores. Regarding gender, the results show male youths are
significantly more skeptical than females. I suspect that
these results reflect island women's optimism concerning
economic and social impacts. These results are consistent
with those found for anti-oil tolerance (F3). As an
individual's economic and social opportunities increase,
her/his socioeconomic optimism also increases. Not only
have oil economics offered new opportunities to island
women, but social services benefiting women have also
increased. This has freed "...women from pre-determined
lifestyles, work, marital patterns, and family obligations
(Marchak, 1986, p. 182). I maintain that the female
islanders have acquired more new choices and more new
opportunities due to North Sea oil development than males.
Although the female population in this study involved teens, the results remain consistent with Freudenburg's findings (1981). He has suggested that women may adapt better than men in energy related rapid growth areas. I contend that female youths also tend to benefit from rapid growth. However, just because females appear to gain some opportunities does not mean that island females have more opportunities than men. Rather, I suspect that they do not. Nonetheless, my results are consistent with the idea that female opportunities and benefits have increased as a direct result of North Sea oil development.
CHAPTER VII
SUMMARY AND CONCLUSION

INTRODUCTION

In this study I have examined the opinions and attitudes of high school age youth living in the Shetland and Orkney islands and explored the boomtown developments regarding the islands' youth population. My specific aim was to identify postmaterialism, to investigate the complexities associated with postmaterialism, and to examine the relationship between postmaterialist values and young peoples' attitudes. I accomplished these aims through an assimilation of pertinent theoretical ideas, by exploring historical events that affected island culture, by examining policy and planning activities that took place in response to oil development, and by analyzing survey responses from Shetland and Orkney high school age youths.

The Shetland and Orkney islands provided an ideal setting for this study. Traditionally, residents in these islands have supported themselves through fishing, agriculture, and knitwear industries. In 1971 the largest North Sea oil field was discovered. This discovery brought about rapid growth and was a source of dramatic economic and social effects for the islands. Island society swiftly shifted from a traditional society to a more modern one. This shift in social organization has offered researchers an
opportunity to study social shifts in islanders' values and attitudes.

In this study, I reviewed the literature behind Inglehart's (1977, 1990) notions concerning value change. Inglehart introduces the idea of a materialist value orientation, which he defines as values oriented towards survival needs such as sustenance and safety. He views a materialist value orientation as complementing capital accumulation and he typifies materialists as somewhat parochial or provincial in their approach to society. Inglehart, however, also introduces the idea of a post-materialist value orientation. He describes postmaterialists as more cosmopolitan in their approach to society. Using Maslow's (1954) hierarchy of needs, Inglehart suggests that postmaterialists concern themselves with higher order needs such as belongingness and self-actualization. The materialist, on the other hand, aligns him/herself more with immediate gratification and capital accumulation.

I have also reviewed the literature regarding the sociology of boomtowns, rapid growth, Social Impact Assessment (SIA), and Quality of Life (QoL). I used ideas from this literature to develop a conceptual base for understanding rapid growth areas and to arrive at a methodology for studying the islands. My intention was to add to this literature base and shed further light on conflicting results existing within the literature. I have argued that measuring and controlling for postmaterialism
may decrease future conflicts among studies centering on rapid growth. Theoretical notions concerning materialism/postmaterialism can help fill the theoretical gap currently found within the SIA and QoL literature base.

In this chapter I highlight the main points of this study. I begin by summarizing the underlying methodological and theoretical concepts used to explore youths' values in the Shetland and Orkney islands. I review and compare my initial expectations to results I uncovered from the first and second-order principal components factors analyses and I recapitulate the outcomes of the regression and correlational analyses. After summarizing this information I present an overview of important historical, geographical, and planning considerations. Finally, I offer conclusions and ideas for future research indicating that this study has theoretical and practical significance.

METHODOLOGICAL AND THEORETICAL CONSIDERATIONS

Methodological Considerations

A review of boomtown and SIA literature has shown that many different studies have conflicting results (Wilkinson, et al., 1982; Freudenburg, 1986). Similarly, indicators associated with QoL studies are suspect concerning construct validity (Sirgy, 1986). Nonetheless, these bodies of research provide insights into why various conflicting results exist and they offer some guidance for countering possible methodological complications.
In this study I considered four components that may lead to conflicting results. First, there is little to no theory associated with SIA and QoL studies. Hence, I have attempted to develop a theoretical base that I could draw from for interpreting results and making possible generalizations. Second, most studies do not confine themselves to small homogeneous populations. Researchers often treat all populations within an impact area as one aggregate population. The problem with large aggregate populations is that competing effects of various sub-groups can cancel each other out. In this study I use data collected from a homogeneous population composed of Shetland and Orkney high school age youths. Third, it is often difficult to detect policy impacts when in fact they may exist. In this study I reduce the possibility of a Type II error by considering the sample size and selectively choosing an appropriate alpha level. Fourth, very few studies examine the long term effects of rapid growth. The result is often a policy determined a priori as appropriate but, over time, the policy is not empirically successful (Seyfrit, 1988). This study is nearly 20 years after the impact of North Sea oil development. Moreover, as I noted earlier, most studies are deficient in theory. This lack of theory becomes accentuated in post-impact analyses because these types of studies are even more scarce. By integrating various theoretical constructs, this study provides new and additional insights into the use of sociological theory for
Besides these four methodological considerations I have taken the more objective aspects of SIA research and the more subjective aspects of QoL research and integrated them. This has resulted in a qualitative-quantitative approach to my research. This study is theoretically based, it deals with a homogeneous population, it includes both objective and subjective data, and it examines the long term effects of rapid growth. These characteristics add to the significance and validity of this study.

Theoretical Considerations

Theoretically, drawing from Weber, Tönnies, Durkheim and Habermas, I briefly review sociohistorical ideas concerning a shift from traditional to modern society. This shift portrays a notion of social change that I used for conceptualizing the relationship between modernism and post-modernism. To acknowledge that there is shift from traditionalism to modernism suggests the potential of a future shift from one form of modernism to another. It is Inkeles' et al. (1983) contention that once society moves to modernity there is no retreat but rather only a choice between one form of modernity and another -- or possibly between modernity and some new social form. Inglehart's (1977, 1990) materialist/postmaterialist dimension provides a theoretical perspective that lends itself nicely to perceiving a change from one form of modernity to another. I anticipated that this study would show different kinds of
modernism can develop in different boomtown areas and these
different forms of modernism would involve different social
values.

A principal idea behind this study is that a socio-
historical shift has taken place in the Shetland and Orkney
islands. I have identified this shift with the onset of oil
development, which I have further associated with the start
of rapid growth in the islands. I have suggested that this
initial shift, identified around 1972 soon following the
discovery of North Sea oil, had since branched out into two
distinguishable forms of modernism -- one associated with
materialism and one with postmaterialism.

Postmaterialism refers to a specific classification of
cultural values. Inglehart theorized that a culture shift
is taking place as individuals shift from a materialist
value orientation to a postmaterialist value orientation and
that economic security has incited this change. He aligns
these value orientations with Maslow's (1954) hierarchy of
needs. He associates the satisfaction of aesthetic,
intellectual, and belonging and esteem needs with post­
materialism and physiological and safety needs with
materialism. Need fulfillment is the motivating force
behind these two value orientations. People tend to need or
desire what is scarce -- first satisfying primary needs and
later satisfying higher level needs. When times are "hard"
need satisfaction is physical and safety oriented. When
economic security exists, however, these needs become more
intellectual and social oriented.

Inglehart has also suggested that value orientations do not change quickly. Rather, they change over generations. Given that this study takes place nearly twenty years after the "boom," and using Inglehart's idea of generational change, I expected to find evidence of postmaterialism in the Shetland and Orkney youth survey data. Specifically, I expected the results of this study to be consistent with the idea that materialism/postmaterialism constitutes an identifiable, internally consistent, and continuous dimension. I further suspected that the greater the propensity toward postmaterialism the less the subjective dependence upon resource extraction related development and the less the general notion of a loss of social control.

**FIRST-ORDER AND SECOND-ORDER FACTORS**

**Principal Components Factors Analysis**

In arriving at a measurement model I argued that demographic variables (e.g., age, education, parents' occupation, etc.) affect individuals' value orientations, which in turn affect individuals' attitudes. I determined value orientations by analyzing survey opinion items using principal components factors analysis. The outcome of this analysis was nine underlying first-order factors \((F_1)\). Although factor interpretations involved various theoretical notions, Inglehart's postmaterialism played a central role. Each of the nine retained factors is essentially an
independent unidimensional concept. Some of these factors seemed to relate to a materialist/postmaterialist dimension whereas others did not. Given these results I expected that materialism/postmaterialism existed within a multi-dimensional domain. Following Thurstone and Thurstone's application of multiple factor theory I conducted a second-order principal components factors analysis and uncovered four second-order factors (SF_i).

I initially referred to SF1 as Anomie. After studying the regression analyses, I reinterpreted SF1 as Conflictuality (Note: further review concerning SF1 interpretations exists in the following section in this chapter. For purposes of this immediate discussion, specific reasons for the reinterpretation of SF1 are not necessary). Professional aspirations (F2), anti-oil tolerance (F3), and industrial bias (F8) loaded highly on Postmaterialism (SF2). Only one F_i loaded highly on Socioeconomic Skepticism (SF3) and likewise with Independence (SF4) suggesting these factors be interpreted identically to their respective F_i (F7 and F4). Table 7.1 displays how F_i load on SF_i.

The results of the second-order principal components factors analysis show that opinion questions have underlying structure consistent with the idea that postmaterialism exists. The results are also consistent with the notion that conflictuality, socioeconomic skepticism, and independence also exist.
Table 7.1: First-Order Factors Loading on Second-Order Factors

<table>
<thead>
<tr>
<th>First-Order Factors</th>
<th>Second-Order Factors</th>
<th>SF1</th>
<th>SF2</th>
<th>SF3</th>
<th>SF4</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(F1) Perceived intolerance</em></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(F2) Professional Aspirations</em></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(F3) Anti-Oil Tolerance</em></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>(F4) Independence</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td><em>(F5) Island Detachment</em></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(F6) Alienation</em></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(F7) Socioeconomic Skepticism</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td><em>(F8) Industrial Bias</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td><em>(F9) Council Backing</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

Note: "+" indicates a high positive loading and "-" indicates a high negative loading.

Although second-order factors assisted in comprehending the underlying structure behind youth survey opinion items, I conducted all additional analyses using factor scores from the first-order factors. This follows the same convention used in psychometry. While multiple factor theory uncovers notions about second-order "general" factors, actual measurement scales involve the first-order "primary" factors (Matarazzo, 1970). I considered the results of the second-order principal components factors analysis, however, when interpreting other analyses conducted in this study.

Based on Inglehart's theory I aligned all first-order factors with Maslow's hierarchy of needs. I based the alignment of the factors with motivational needs on the assumption that an individual with a high factor score was more motivated to satisfy certain needs than an individual...
with a low score on the same factor. After pairing first-order factors with motivational needs, I hypothesized that individuals who would score higher on Postmaterialism (SF2) would score lower on Conflictuality (SF1) and Socioeconomic Skepticism (SF3).

DEMOGRAPHIC AND ATTITUINAL VARIABLES

Demographic Variables

As I noted previously, I suspected that demographic variables affect the value orientations and experiences of respondents. That is, demographic variables affect respondents' potential scores on Conflictuality (SF1), Postmaterialism (SF2), Socioeconomic Skepticism (SF3), and Independence (SF4). To further understand the relationships between demographic variables and factors I regressed each first-order factor on 11 variables using ordinary least squares regression. I used the results of these regressions to assist in verifying the legitimacy of the factors. I also used the regression results to look more closely at possible gender and island differences.

A comparison of the results from the regression analyses regarding the SF1 demonstrated that there was a consistency between the regression results and the principal components factors analyses (refer back to Table 5.4). The regression results provided verification for the legitimacy of the first-order factors. The regression results were somewhat consistent with my hypothesis that respondents who
would score higher on Postmaterialism (SF2) would score lower on Conflictuality (SF1) and Socioeconomic Skepticism (SF3). That is, survey respondents from Shetland, compared to Orkney, scored higher on professional aspirations (F2) and anti-oil tolerance (F3) and scored lower on island detachment (F5) and socioeconomic skepticism (F7). The regression results involving council backing (F9), however, were not consistent with this hypothesis. After further investigation I reinterpreted SF1 from Anomie to Conflictuality. I consider conflictuality as characteristic of two positions related by structural dissimilarity such that overt conflict induces a sense of solidarity and lack of overt conflict induces a sense of anomie (Donnelly, 1993). The regression results are consistent with this notion.

Following Inglehart's theory of postmaterialism I suspected that Shetland island youths are more postmaterialist oriented than Orkney island youth, primarily because Shetland has experienced more socioeconomic gain than Orkney. Regression results were consistent with this hypothesis. From a theoretical standpoint, results are consistent with my suspicion that different forms of modernism can develop in different boomtown areas. Furthermore, the regression results are consistent with the idea that the greater the propensity toward postmaterialism the less the subjective dependence upon resource extraction related development and the less the general notion of a
loss of social control. Specifically, Shetlanders are more tolerant of anti-oil sentiments and are more likely to overtly conflict with pro-oil actions. Orcadians, however, are less tolerant of anti-oil sentiments and are more likely to submit control over oil activity to a governmental body such as the island council.

Attitudinal Variables

I suspected that respondents' value orientations and expectations affect their attitudes. In the survey, students were asked to list their five most liked and five least liked characteristics or features of their home community. Using these responses I identified 13 attitudinal variables. Then, using Inglehart's (1990) 12 item battery as a guide, I categorized the attitudinal variables as either related to materialism or post-materialism. Specifically, I expected principal component factor scores to correlate predictably with the attitudinal variables. I hypothesized that individuals who score higher on Postmaterialism (SF2) will have factor scores that correlate positively with the postmaterialist attitudes and negatively with the materialist attitudes. I expected the opposite for individuals that score higher on Conflictuality (SF1). Eighty percent of the significant correlations involving attitudinal variables and factor scores associated with Postmaterialism reflected the expected outcome. Seventy-nine percent of the significant correlations involving attitudinal variables and factor scores associated
with Conflictuality reflected the expected outcome. These results are consistent with my hypotheses and with the theoretical notion that different forms of modernism (in this case, materialism and postmaterialism) involve different social values and have different social effects. Furthermore, these results add confidence to the principal components factors and regression analyses. The results are consistent with the notion that Conflictuality and Postmaterialism exist and are measurable.

Gender Differences

Besides using regression for exploring island differences I also used it to investigate potential gender differences. The results show that males are more socioeconomically skeptical than females and that female respondents are less tolerant of anti-oil sentiments than males. After reviewing North Sea oil literature, I suggested that females have "more to lose" than males should oil development stop. I likewise suggest that oil development has created greater opportunities for women, and this is at least one reason why female respondents see oil development as having positive social effects. The relationships observed between gender and anti-oil tolerance (F3) and gender and socioeconomic skepticism (F7) are consistent with each other. The results are also consistent with Freudenburg's findings (1981). He has suggested that women may adapt better than men in energy related rapid growth areas. However, just because females appear to gain
some opportunities, this does not mean that island females have more opportunities than men.

I have noted that the gender studies of Freudenburg and Moen involved a population of older more established women. Although my results were more consistent with Freudenburg's findings than Moen's, little can be safely concluded. The population used for this study consists of high school age females versus the older more established females used in the other studies. Thus, extreme caution must be taken before making any generalizations to women in general based solely on this younger female population. When interpreting the results, therefore, I used Marchak's (1986) work to lend support to my explanations. Her population included older more established women residing in the islands. Marchak's work adds some validity to my interpretations. More specifically, my results are consistent with the idea that female opportunities and benefits have increased as a direct result of North Sea oil development.

HISTORY AND GEOGRAPHY

Historically and geographically, the Shetland and Orkney islands differ from each other. Geographically, Orkney is more suited for farming and Shetland is more suited for fishing, although both islands do support fishing and farming industries. This geographical difference, however, has subjected Shetland to more foreign influences than Orkney and according to Linklater (1965) this has led to adventurism in Shetlanders and conservatism in Orcadians.
Historically, the rule by the Stewarts had destroyed much of Orkney's Norse heritage. Yet Shetlander's continue to celebrate traditional Norse festivals each year. Although both islands have managed to remain somewhat independent of the Scottish mainland, by holding onto its Norse heritage Shetland is far more independent than Orkney.

Nonetheless, before the development of North Sea oil, many similarities existed between Shetland and Orkney. The literature often refers to Orkney and Shetland as if they were one entity. Both islands had held on to a fairly traditional way of life. Until the 1900s the islands were monetarily poor and relied heavily on bartering. It wasn't until the 1900s that Orkney became more prosperous with its farming and Shetland began fishing for its own profitable gains. Yet the islands remained poor and a strong decline in population of about 40% occurred in both island areas. This decline ended abruptly after the discovery of North Sea oil.

The Shetland Island Council (SIC) and Orkney Island Council (OIC) both acquired new powers from parliament for setting policy concerning oil development in the islands. However, the two island councils chose to use these powers very differently. Both the SIC and OIC believed that their island's social structure was more traditional and less modern (industrial) oriented before the discovery of North Sea oil. A concern existed with both councils about the effects of oil development and they acquired the necessary
means to contend with the oil giants. Orkney emphasized the environment and support for traditional industries and exercised control through agreements and licensing. Shetland did these things but also emphasized social impact, encouraged new island industries, and made large capital investments. Policy and planning differences between Shetland and Orkney partially relate to historical differences between these islands. These policy and planning differences also relate to the existence of materialism/post-materialism in the islands.

CONCLUSIONS

In this study I introduced and investigated four basic hypotheses. The first of these hypotheses states that post-materialism exists and is measurable such that materialism/postmaterialism constitutes an internally consistent and continuous dimension. Results from the principal components factors analyses are consistent with this notion. Results of the regression and correlational analyses lend additional support for accepting this hypothesis.

The second hypothesis suggests a boom that leads to economic security will increase the probability of change in cultural values such that the greater the amount of economic security the greater the potential for postmaterialist values to exist. Following the results of the principal components factors analyses I refined this hypothesis such that individuals scoring higher on Postmaterialism (SF2)
will score lower on Socioeconomic Skepticism (SF3). Furthermore, based on historical data suggesting that Shetland became more economically secure than Orkney, I hypothesized that Shetlanders would score higher than Orcadians on Postmaterialism (SF2) and lower on Socioeconomic Skepticism (SF3). My results were consistent with these hypotheses.

The third hypothesis introduced in this study stated that the greater a youth's propensity toward postmaterialism the lesser will be his/her subjective dependence upon resource extraction related development and the lesser she/he will feel a loss of social control. I further refined this hypothesis such that Shetland youths, who were more postmaterialist than Orkney youths, would experience more solidarity and less anomie. My results indicated that Shetlanders were conflictual in a way that inspired solidarity and Orcadians were conflictual in a way that advocated feelings of anomie.

The fourth hypothesis states that values affect attitudes such that materialist/postmaterialist values predictably correlate with individual attitudes. The results were consistent with this hypothesis. Eighty percent of the predicted correlations between attitudes and materialists and postmaterialists were significant at the greater than $\alpha=.05$ level.

Economic, Historical, and Geographical Influence

Theoretical constructs defined within Inglehart's
postmaterialism provide a good framework for describing island differences regarding the above hypotheses. A postmaterialist theory does not, however, definitively discern the underlying causal relationships regarding island differences.

Varying degrees of economic impacts and dissimilarities in development plans account for some of the observed differences between the islands. One of the foremost influences on the islands is the size of the Shetland oil terminal. This resulted in an influx of larger sums of money into Shetland than Orkney. Ultimately Shetland has become more economically secure and independent.

Historical and geographical influences also provide additional insights into existing island differences. Had Orcadians adopted the same plans as Shetlanders, they might not have implemented them in the same successful way. Without having a similar social character, another community faced with energy related rapid growth could not easily construct and implement a successful planning approach similar to the one found in Shetland. Sociohistorical and socioeconomic factors played an immensely important role in the Shetland experience.

In attempting to understand current differences between the Shetland and Orkney islands, I found it necessary to view effects as dependent upon one of four historical demarcations: (1) Prehistory; (2) Early History; (3) North Sea Oil Development; and (4) 20 Years Post-Impact. Each of

205
these demarcations relates to different effects between the two island areas. The effects from one historical demarcation further influence the effects associated with the next successive historical demarcation (refer to Figure 6.1). Following this process the results from this study suggest that materialism/postmaterialism offers a good descriptive framework for post-impact differences between the islands. Similarly, socioeconomic skepticism/optimism furnishes a good description of post-impact differences between the islands. The results also suggest that conflictuality provides another descriptive framework for understanding both pre- and post-impact differences. That is manifestations of post-impact conflictuality relate directly to the effects of Prehistory and Early History.

Inglehart's theory suggests that social and economic security are necessary for the onset of postmaterialism. This does not mean that such security guarantees a move toward postmaterialism but rather it is only one precursor. The results of this study are consistent with this notion. The results further suggest that conflictuality may also play a part in a move from materialism to postmaterialism. I maintain that when conflictuality heightens solidarity there is a greater chance of postmaterialism and when conflictuality heightens anomie there is a reduced chance of postmaterialism.

Future Research Needs

The specific relationship between conflictuality and
postmaterialism requires further research. Does conflictuality increase the potentiality of postmaterialism as economic security appears to do or does conflictuality exist separate and independent of postmaterialism? This study suggests that conflictuality relates to historical activity that has taken place in the islands. Yet it is not totally clear if conflictuality also relates to the policy and planning process. Although historical influences play an important role in one's proclivity toward conflictuality, policy and planning activity may also affect the manner in which conflictuality manifests itself. Understanding this relationship is essential for predicting and guiding the success of social policy and planning in areas experiencing rapid growth. That is, depending upon the historical tendency toward anomic manifestations of conflictuality planners and policy makers would need to adjust their strategies accordingly.

Another question may concern how different degrees of conflictuality and postmaterialism affect individuals' attitudes? Are the two phenomena independent, do they correlate, or do they interact in some fashion. Similarly, controlling for Conflictuality (SF1), Postmaterialism (SF2) and Independence (SF4) may allow investigators to uncover significant positive relationships between Socioeconomic Skepticism (SF3) and individuals' attitudes. All of these questions relate directly to post-impact analyses and require more extensive research before better understanding
the role of conflictuality and value change.

Theoretical and Methodological Significance

The strength of this particular study is in its methodological and theoretical approach to post-impact analysis. This study is strongly grounded in theory, it deals with a homogeneous population, and it includes both objective and subjective data. These characteristics add to the significance and validity of the results.

Theory. By combining mainstream sociological theory with ideas from modern theorists like Inkeles et al. (1983), I have arrived at a foundation for building a theoretical approach applicable to Social Impact Analysis (SIA) and Quality of Life (QoL) studies.

Mainstream theorists (Weber, 1968/1922; Durkheim, 1984/1933; Tönnies, 1957/1887) have conceptualized a shift from traditional to modern society as a sociohistorical process. Inkeles et al. (1983) has similarly suggested that modernity is subject to social shifts. Inkeles et al. (1983) argue that different forms of modernism may emerge resembling a modernism tied to power and material greed or a more restrained modernism tied to humility and humanism.

This concept of a sociohistorical shift sets the stage for understanding Inglehart's (1977, 1990) materialism/postmaterialism. Materialism is one form of modernism and postmaterialism is another. Values, linked to the satisfaction of needs, set the two apart from each other. Whereas materialism is linked to security needs and
associated with capital accumulation and concerns for power, postmaterialism is linked to belongingness and self-actualization and associated with community necessity and humanistic concerns.

This deep association between materialism/postmaterialism and need satisfaction creates a natural link to Sirgy's (1986) definition of QoL. Sirgy (1986) defines QoL regarding a hierarchical level of need satisfaction. He purports that when need satisfaction increases from lower-order needs to higher-order needs QoL increases. Inglehart (1990) asserts that as one satisfies lower-order needs during his/her preadult years, he/she has a greater chance of acquiring an enduring postmaterialist value orientation. The results of this study have further indicated that postmaterialist values affect attitudes concerning acquaintances, education, and community. Hence, as postmaterialism influences attitudes it affects an individual's perception of QoL. More specifically, given the association between higher-order needs and postmaterialism and between higher-order needs and QoL, postmaterialism associates directly with higher QoL and materialism associates with lower QoL.

QoL is an important factor in SIA development, monitoring, and post-assessment of social impacts. Freudenburg (1986) reported that a consensus now exists holding QoL as a key dependent variable in SIAs. Therefore the theoretical constructs tied to sociohistorical change,
materialism/postmaterialism, and QoL are directly applicable to SIAs. Modernity defines the social organizational framework for conducting SIAs. The social structures used for influencing need satisfaction in an impact area are planning institutions, policy making institutions, and other social institutions. SIA studies must explore the roles of these types of institutions and assess their ability to address the long term satisfaction of needs in an impacted area. By studying need satisfactions and how these satisfactions distribute throughout society makes it possible to improve policy making (Solomon et al., 1983). Generating policies that can promote postmaterialism will also promote increased QoL. According to Burdige (1983), this is the main purpose of SIA -- to determine if there "will be a measurable difference in the quality of life in the community as a result of what the proposed project is doing or might do in the future" (p. 193).

Methodology. I highlight two methodological approaches in this study. The first deals with methods in planning and policy making institutions responsible for maintaining or increasing QoL. The second deals with methods for researchers conducting studies of impact areas.

There was a difference in how the SIC and OIC communicated their policy and planning activities with their constituents. SIC made a deliberate effort to report council and oil industry activities to islanders. This was an effort in public relations that fostered an environment
conducive to a communicative interchange between islanders and the SIC. The OIC, however, remained more allusive and less concerned with public relations (e.g., OIC publications were far less extensive, especially concerning OIC activities, than SIC publications).

Habermas' theory of communicative action suggests that policy processes higher in communicative action are aptly more suited to QoL issues. Communicative action, in this sense, is a methodology. It prescribes a process for plan implementation and development that is conducive to QoL concerns. Communicative action holds that there is a "rational potential" for arriving at agreement concerning validity claims. A planning process geared to foster rational discussion will better result in resolving policy disputes. Hence, communicative action is a method whereby science and values are both molded into policy. This type of process must be considered by planners, policy-makers, and researchers concerned with studying impact areas.

In this study I considered six basic methodological precepts for assessing impact: (1) establish a working theory; (2) conduct an historical analysis of the impact area; (3) deal with homogeneous populations; (4) include subjective and objective data, (5) set the alpha level to decrease the probability of a Type II error; and (6) conduct post-impact studies or establish a policy and planning management process. Future researchers may wish to consider each of these before engaging in studies regarding SIA, QoL,
or rapid growth.

Practical Application

Characteristically, SIAs are strong on economic and demographic variables and extremely weak on sociological variables. They often include large amounts of information concerning services and facilities but provide very little in the way of human needs (Freudenburg, 1986). However, due primarily to its theoretical and methodological approach, this study demonstrates the importance of sociological and historical influences. Specifically I have presented results consistent with the idea that plans and policies geared toward promoting postmaterialism will also promote increased QoL. This further suggests that plans and policies designed to satisfy long term safety and security needs will subsequently address long term economic, demographic, and infrastructure needs. Thus my results support the importance of attending to social factors.

This study demonstrates consistency with the idea that the Shetland islands are more postmaterialist oriented, have avoided prospects of anomie, and have therefore increased QoL in comparison to the Orkney islands. Although I have shown that many of the differences between the islands relate to historical activity, this study has practical implications for other energy development areas interested in maintaining or increasing QoL.

Both Shetland and Orkney -- although Shetland led the way -- initially acted in beneficial ways that may help
other boomtown areas. Their first triumph was to gain local control by acquiring planning autonomy and reducing one level of bureaucracy. They legally acquired the authority that gave them control over the development and operations of land and waterways. Likewise they gained authority to collect fees for the general good of the community and to set up a reserve fund for the benefit of the islands. These essential elements of power gave the islands their initial economic security and a foundation for developing future plans and policies.

Other than these similarities the actions of Shetland and Orkney differed on four important matters: (1) location and impact assessment; (2) conflict; (3) communication; and (4) economic investment and encouragement. I highlight each of these below and then suggest how others might benefit from the islands' experiences.

**Location and impact assessment.** Shetland took control over terminal location by choosing a site that would benefit more than just the oil industry. Furthermore, Shetland commissioned its own site appraisal through an independent source. This involved the inclusion of both economic and social impact assessment. Orkney, however, allowed the oil industry to choose its site excluding other industry needs. Orkney also allowed the oil industry to conduct its own appraisal, which did not include economic or social impacts. The Shetland and Orkney development plans eventually reflected these different activities. The Shetland Interim
County Development Plan clearly and directly addresses economic and social impact including statements concerning the potential for "unneighbourliness," a sense of belonging, strong family ties, tolerance, little parental fear for the safety of young ones, religious tolerance, the happy settlement of people, and continuing a rich means of communication through native dialect. The Orkney plan is much less proactive concerning social impact. All of this resulted in more economic and social planning in Shetland than in Orkney.

Conflict. Interestingly, SIC generated conflict between the islanders and the council by introducing a policy to exclude Shetlanders from working on oil construction sites. SIC's intention was to help preserve industries indigenous to Shetland by avoiding a labor shortage. SIC also intended to preserve island culture by keeping island workers separate from the temporary oil workers. Although SIC later rescinded this policy, the clear result was to create conflict and animosities toward SIC. As SIC cut some unfavorable deals with the oil industry Shetlanders began to turn their animosities into suspicions. This set the stage for Shetlanders to openly object to council activities and to demand more accountability. Over time a degree of solidarity took hold among the Shetlanders and unconditional support of SIC actions became scarce.

The OIC deliberately encouraged Orcadians to take oil...
jobs and the OIC dealings with the oil industry were much less fraught with tension. Orcadians had no reason to suspect OIC activities might be unfavorable for the islanders. Over time, therefore, Orcadians resigned themselves to allow OIC to become their sole champion in a battle against oil giants.

**Communication.** Primarily because of the animosities and suspicions directed toward the SIC, council members chose to engage in a form of communicative action. They set up a public relations strategy, they opened many more SIC activities to independent news organizations, and they distributed highly informative publications to the public. Once informed the Shetlanders had more opportunity to voice their opinions. All of this fostered an atmosphere of communicative action in Shetland. The OIC, not being affected by nearly as much conflict, did little to foster a similar atmosphere in Orkney.

**Economic investment and encouragement.** Shetland invested tremendous amounts of money into building the new infrastructure required to handle the oil development demands. This action resulted in generating secondary and tertiary employment opportunities for Shetlanders and in generating additional island revenue. Furthermore, SIC encouraged the diversification and expansion into new industries (Seyfrit and Patterson, 1990a). All of this has added to the long term economic security of Shetland.

Orkney, in contrast to Shetland, did not invest in the
infrastructure or encourage new and diversified industries. OIC opted to control development through licensing and agreements. Their actions maintained industries indigenous to the islands but did not generate secondary and tertiary employment (Seyfrit and Patterson, 1990).

**Benefits for others.** In summary, a concern existed with both councils about the effects of oil development and they acquired the necessary means to contend with the oil giants. Orkney emphasized the environment and support for traditional industries and exercised control through agreements and licensing. Shetland did these things but also emphasized social impact, encouraged new island industries, and made large capital investments. Others might benefit by following the activities undertaken in the Shetland islands.

The specific attention paid by SIC to social impact analysis, combined with the large sums of oil money coming into Shetland and simultaneously invested in the infrastructure provided an atmosphere of social and economic security. Without having a similar social character, however, another community faced with energy related rapid growth may have a more difficult time successfully constructing and implementing a planning approach similar to the one found in Shetland. As previously noted, sociohistorical and socioeconomic factors played an immensely important role in the Shetland experience.

In a sense, Shetlanders pushed and demanded a forum for
communicative action and for policies geared toward long term economic and social security. The historical background that penetrated the Shetland culture lead to planning and policy activities that prompted the onset of postmaterialism. It is essential that planners and policymakers interested in learning from the Shetland experience understand the importance of this relationship. Understanding becomes essential when faced with a location where a cultural background similar to Shetland's does not exist. When this occurs the onus to create an atmosphere conducive to the onset of postmaterialism -- and therefore a long standing increase in QoL -- falls directly on planners and policy makers. These individuals will need to generate communicative action, encourage an environment where conflictuality promotes solidarity, and encourage and maintain social and economic security.
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226
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APPENDIX
APPENDIX

SHETLAND AND ORKNEY ISLAND YOUTH SURVEY QUESTIONS

1. What school are you attending now?
2. What class are you in now?  _S3  _S4  _S5  _S6
3. During the school term do you stay at the school hostel (or elsewhere away from home)?  __Yes  __No
4. In what community do you now live?  If away from home, list your home community ________.
5. How many years have your parents (or guardians) lived in your home community?
   Father__________.  Mother__________.
   Number or Years
6. How many years have you lived in your home community ________.  (Including time at school)
7. For each of the next two items, circle the number that best describes your feelings, from Completely Dissatisfied (1) to Completely Satisfied (7)
   a. How satisfied are you with living in this community?
      Completely Dissatisfied 1 2 3 4 5 6 7  Completely Satisfied
   b. How satisfied are you with your life as a whole these days?
      Completely Dissatisfied 1 2 3 4 5 6 7  Completely Satisfied
8. Where do you think you are most likely to live most of the remainder of your life?  Please give complete information if possible (town, district, region, country, etc., but do not include street address).
   ____________________________________________.
9. If you had a choice, where do you think you would most want to live most of the remainder of your life? Again, please include complete information _________.

231
10. Here are statements about how people may feel about their families. Beside each of the statements listed below, please indicate whether you strongly agree (SA), agree (A), are undecided (U), disagree (D), or strongly disagree (SD) with the statement with respect to your own family.

a. One ought to discuss important plans with his/her family  __SA __A __U __D __SD
b. One should confide more fully in members of his/her family __SA __A __U __D __SD
c. Home is the most pleasant place in the world __SA __A __U __D __SD
d. A person should be willing to sacrifice everything for his/her family __SA __A __U __D __SD

11. Here are statements that describe how people may feel about their communities. Please indicate the extent of your agreement or disagreement with each statement regarding your own community. If away from home during school term, please answer in regard to your "home" community.

a. Real friends are hard to find in this community __SA __A __U __D __SD
b. Almost everyone is polite and courteous to you __SA __A __U __D __SD
c. People here give you a bad name if you insist on being different __SA __A __U __D __SD
d. I feel very much that I belong here __SA __A __U __D __SD
e. People are generally critical of others in this community __SA __A __U __D __SD
f. The community is very peaceful and orderly __SA __A __U __D __SD
g. You are out of luck here if you happen to be different __SA __A __U __D __SD
h. These Islands have just about everything that is needed for a happy life. __SA __A __U __D __SD

12. List up to five characteristics or features of your (home) community that you like most and five that you dislike most in order of importance, starting with the most important.

<table>
<thead>
<tr>
<th>Five like most:</th>
<th>Five dislike most:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
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<tr>
<td>4.</td>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
<td>5.</td>
</tr>
</tbody>
</table>
13. What kind of job do you think you will have after finishing school? Please be specific in describing the work you would do___________________________. 
   Where do you think this work will be?__________________________. 
   For whom (what company or industry)?__________________________.

14. What kind of job do you want to have after finishing school? Please be specific in describing the work you want to do___________________________. 
   Where would you want this work to be?__________________________. 
   For whom (what company or industry)?__________________________.

15. What kind of job do you think you will have ten years from now? Please be specific in describing the work you would do___________________________. 
   Where do you think this work will be?__________________________. 
   For whom (what company or industry)?__________________________.

16. What is your father's job? Be specific in describing the work that he does (or did, if retired or deceased)___________________________. 
   For whom does (did) he work (what company or industry)?___________________________.

17. What is your mother's job? Be specific in describing the work that she does (or did, if retired or deceased)___________________________. 
   For whom does (did) she work (what company or industry)?___________________________.

18. When do you expect to leave school? _______/_______.  Month/Year 
   What age will you be then?_______ _______/_______. 

19. What is your sex?  ___Male  ___Female

20. Which of the following do you plan to do after leaving school? Please mark the option(s) that apply and answer the questions for that option.
   ___a. Join YTS. Where?___________ For what kind of training?___________________________. 
   ___b. Join other Training program. Where? __________ For what training?___________________________. 
   ___c. Take Further Education courses in the Islands. What courses?___________________________.  
   ___a. Attend Further Education College. Which college? _________To study what?______________
   ___e. Attend University or Higher Education College. Which one?___________ To study what?___________
   What is the highest degree you plan to obtain?___________________________.
f. Get a job, but not a training scheme. Where?_________ What kind of job?_________

_g. Be unemployed. For how long?_________ What will you do while unemployed?_________

_h. Become a homemaker. What other activities will you be involved in?_________

_i. Enter Military Service. What branch?_________ For how long?_________

_j. Other option not listed. Please describe_________

21. What month and year were you born? /_________

22. Where were you born? Please give complete information (town, district, region, country, etc., but for your first home not the location of hospital)_________.

23. Where was your father born? Complete information, please_________.

24. Where was your mother born? Complete information, please_________.

25. How many different places have you lived? Do not include moves within the same town. Number of places_________.

26. How many years have you lived in the Islands?_________.

27. The following statements refer to oil-related developments in and around the islands. Beside each of the statements listed below, please indicate whether you strongly agree (SA), agree (A), are undecided (U), disagree (D), or strongly disagree (SD).

a. People who object to oil development in this area should move someplace else _______ SA ___ A ___ U ___ D ___ SD

b. No one has the right to interfere with the nation's need for oil _______ SA ___ A ___ U ___ D ___ SD

c. Industries should be shut down if they fail to meet governmental pollution standards _______ SA ___ A ___ U ___ D ___ SD

234
d. As badly as we need new industry and jobs, we can't afford to sacrifice our clean air, beautiful scenery, and agricultural land to obtain them.

e. One person's right to a clean environment isn't as important as another's right to gainful employment.

f. People in this area are better off than they would be without the oil industry life.

h. My chances of employment in the oil industry are better because of the oil industry.

i. The oil will "run out" before people my age see any benefit from it.

j. The agreements between the local council and the oil industry have been more favorable for the oil industry than for the people here.

k. In the long run, I am sure that people in this area will be better off if our oil resources are developed.

28. Please write any additional comments or clarifying information here. If you want to answer any of the questions in more detail, please use this space and identify the question number. Thank you for your cooperation in this study.