

THE UNIVERSITY OF MANITOBA

COMMUNITY ASSESSMENT AND THE DECISION TO MIGRATE:
THE CASE OF THOMPSON, MANITOBA

by

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A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS

DEPARTMENT OF GEOGRAPHY

WINNIPEG, MANITOBA

OCTOBER, 1978

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ABSTRACT

The objective of this thesis is to investigate the role of the environment of a northern community as a factor in the decision to migrate from that community. The area selected for this study is Thompson, Manitoba. The specific objectives are: (i) to outline the basic factors people use in the assessment of a northern community; (ii) to determine which of these factors are related to the decision to migrate; (iii) to develop a generalized profile of the individual who tends to be relatively satisfied with his settlement.

Data are gathered on the respondents' demographic characteristics, past and intended migration behavior, and their assessment of Thompson according to thirty-five attributes. Principal components and multiple regression analyses are used to test the research hypothesis. The findings indicate that the way an individual assesses his community has some influence on the decision to migrate. The major influential factors appear to be: the physical and human environment of the community, certain negative aspects of life on the resource frontier, and feelings of physical, social, and economic constraint. Some implications for planning in northern Canada are suggested.

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ACKNOWLEDGEMENTS

The author wishes to thank Mr. Donald Pearson of the Municipal Planning Branch, Thompson, Manitoba, for his generous assistance and encouragement in conducting this research, and Dr. G.C. Smith for his criticisms during the writing of the work.

Thanks, also, to Mrs. W.K. Raths for the hours spent typing the thesis.

CHAPTER 1 INTRODUCTION

1.1 Objectives of the Thesis

The objective of this thesis is to study the problem of population turnover in a northern Canadian community. Turnover, the process whereby residents leave a community and are replaced by new immigrants,¹ is the cumulative effect of many individual decisions to migrate. This thesis will focus specifically on the "community environment" which is generally agreed to play a salient role in the decision to migrate (Riffel, 1975; Lajzerowicz et al., 1976; Bone, 1972). The problem to be studied may be stated as follows:

What factors do people consider important in assessing a northern community and how are these related to the decision to migrate?

The specific research objectives based on this problem are threefold:

1. To outline the basic factors people use in the assessment of a northern community.
2. To determine which of these factors are related to the decision to migrate.
3. To develop a generalized profile of the potential long term resident of a northern community.

1. The concept of turnover is usually applied to labor forces where it is the process whereby workers leave and are replaced by new recruits. The rate of turnover is then calculated as a ratio of the number of changes in the labor force to the total labor force (MacMillan, et al., 1974:6).

1.2 The Organization of the Thesis

The remainder of Chapter 1 will deal with the background to the study: the nature of the problem, its magnitude and its impacts. The contribution which this study will make towards an understanding of population turnover will then be discussed. The chapter will close with a brief description of the study area.

Chapter 2 will survey the related literature. The two major thrusts of geographic research into migration will be discussed. After an overview of the behavioral approach, the discussion will focus on the cognitive-evaluative aspects of behavioral models of migration.

Chapter 3 deals with the research design. The conceptual framework of the study will be explained, followed by a discussion of the methodology used, and the theoretical basis of the techniques used. The nature of the data will then be discussed, including the sources, the collection procedure, and the sample.

Chapter 4, the analysis of the data, will begin with a description of the sample. A descriptive presentation of the data will be followed by a multivariate analysis, which will elicit the "image" of the northern community. The final part of the analysis will determine which of the dimensions of this image are related to the decision to migrate from the community.

Chapter 5 summarizes the results of the analysis, and provides a discussion of some of their implications. Finally, some directions for possible future research will be suggested.

1.3 The Background to the Study

Population and labor turnover, while experienced to some

extent by all industries and communities, is particularly important with respect to northern settlements. While the absolute numbers of people moving to and from a northern town may not be large, these flows may represent high rates of turnover, on a small population base.

Accurate figures on turnover rates for communities are unavailable. However, MacMillan (1974) estimated the average turnover rate for mining companies (often the principal employer in northern towns) to be approximately 80 per cent. More recently, in 1976, the turnover rate at International Nickel Co. (INCO) in Thompson, Manitoba, was 104 per cent (INCO, 1977). Calculated by dividing the number of "quits" by the average size of the labor force, this figure means that to maintain 100 persons in their labor force, during the year INCO had to hire and train 104 new recruits.

High rates of turnover have serious economic consequences for the company and social consequences for the community and the individual. The economic consequences are the costs incurred with the separation of employees, the recruitment and training of replacements, and the production lost while training new workers. MacMillan estimated the cost of turnover to the Canadian mining industry at \$36 million for the year 1972. The Mining Association of Canada estimated the combined cost of labor shortages and turnover to be as high as \$350 million per year (Lajzerowicz et al., 1976).

Social costs, though not easily quantifiable, are nevertheless significant. At the community level, short term residents may be apathetic towards local problems and politics, and make planning for education and social services difficult. At the individual level, high turnover makes

it impossible to maintain a circle of friends or build up inter-personal relationships. It may also contribute to mental health problems, alcoholism, loneliness, feeling of insecurity or "cabin fever" (Siemens, 1973:23).

From this brief discussion, it should be apparent that population and labor turnover is a problem of considerable magnitude and with considerable consequences in northern resource communities.

1.4 The Contributions of the Study

Of all of the factors which may influence the decision to migrate, the community is part of the man-made environment and hence more subject to man's change and control. Thus, an understanding of the role the community plays in the decision to migrate will open avenues through which northern communities may be improved. This study will contribute to this end in three areas. By examining the causes of the decision to migrate, it will yield a greater understanding of the process of population turnover. In linking personal characteristics to intended migration behavior, it will give some insight into the type of individual who tends to be most satisfied with northern living. Finally, in pointing out those aspects of northern communities which influence the decisions to migrate, the study will point to possible ways in which satisfaction with northern communities may be improved through more responsive community planning.

1.5 The Study Area

The study area is Thompson, Manitoba. Thompson is situated in the boreal forest region of the Pre-Cambrian shield, 750 kilometres north

of Winnipeg (see Figure 1). It is a young city, founded in 1957 but constructed largely in the 1960's. With a current population of approximately 18,000, Thompson is one of the largest, most modern mining communities in Canada. The city has a wide range of commercial, medical and social services, and good access to the rest of the province, a paved highway to the south and daily one-hour jet flights to Winnipeg.

Thus, Thompson would appear to be a modern, accessible, frontier community with all the necessary amenities. However, in spite of its apparent benefits, the city is plagued by an abnormally high rate of population turnover. INCO Metals, the main employer, reports a 1976 turnover rate of a staggering 104 per cent. This represents a continuation of the historical pattern (Rogge, 1969) for Thompson to experience generally higher rates of turnover than the other smaller mining centres of northern Manitoba. This suggests an apparent contradiction between Thompson's relatively high quality of life and the inability of the city to achieve a population stability as great as that of the other mining centres of the region. It is this apparent contradiction which forms the basis for the selection of Thompson as the sample location for this study.

1.6 Summary

The purpose of this thesis is to examine the problem of population turnover in northern communities. The three specific objectives of this research are:

1. To outline the basic factors people use in the assessment of a northern community.

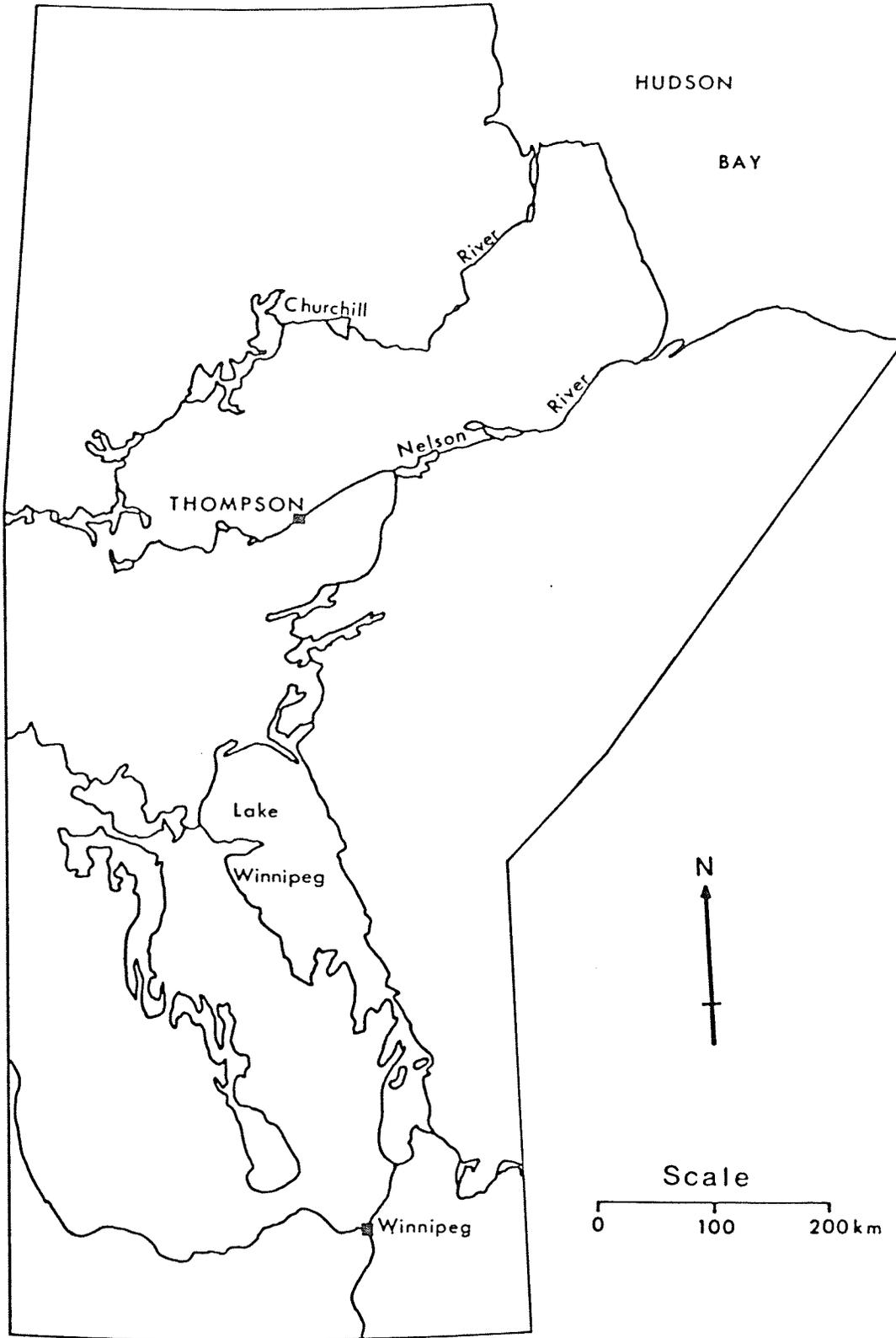


Figure 1: LOCATION OF THE STUDY AREA

2. To determine which of these factors are related to the decision to migrate.

3. To develop a generalized profile of the individual who tends to be relatively satisfied with his northern community.

To provide a background for the study, the nature and the magnitude of the problem of turnover in northern communities are discussed. The contributions which the study offers to this problem are then outlined. The chapter closes with a description of the study area.

CHAPTER 2: REVIEW OF RELATED LITERATURE

Population migration as a form of spatial interaction has long been of interest to geographers (Olsson, 1965a). As traditional descriptive-predictive models of migration become increasingly inadequate, geographers are turning to a behavioral approach to the study of migration. These two approaches are each reviewed in turn and their relation to the research problem is explored.

2.1 Descriptive-Predictive Approaches

The problem of migration has traditionally been approached using what may be called descriptive-predictive models. These models, which seek to describe and predict migration flows, are of two major types: economic models and gravity type models.

Economic models of migration are the type most frequently employed. They are based on the notion that migrants move to improve their economic well-being. Implicit is the assumption that individuals behave in an economically rational manner. Migration flows are explained in terms of the "push and pull" factors associated with the places of in- and out-migration, with little attempt to incorporate the characteristics of the migrant (Wolpert, 1965). A recent example of this approach in a Canadian setting may be found in Grant and Vanderkamp (1976).

The social gravity model (Zipf, 1946) and its variant, the intervening opportunity model (Stouffer, 1940), add a spatial component by explicitly considering the effect of distance. Basically, the inten-

sity of a migration flow is thought to be some function of the population of the places involved and the intervening distance.

Both these models, which are thoroughly reviewed in Olsson (1965a), have weaknesses. Economic models first assume rational behavior, which is unrealistic, and secondly, they can only account for net migration flows and not gross flows. Gravity type models are weakened when disaggregated to small areas and short distances, and are not applicable to individuals. Furthermore, both these models have been losing their explanatory power over the years (Wolpert, 1965).

Olsson (1965b) improved over purely economic models in his study of migration distances in Sweden. He considered some characteristics of the migrants as well as those of the places of out- and in-migration. Migration distance was found to vary according to variation in both the characteristics of the places and those of the migrants. The existence of non-rational behavior led Olsson to test two migration models with behavioristic assumptions derived from central place theory. The test results supported these assumptions, indicating that individual behavior plays a role in producing the actual pattern of migration. Economic and social gravity type models are becoming increasingly inadequate in explaining migration patterns. Human behavior has been shown to be a significant variable intervening into the migration process. These two developments seem to support Wolpert's (1965) proposal of a behavioral approach to the study of migration.

2.2 The Behavioral Approach

Wolpert formulated his behavioral model of migration around

three central concepts: the notion of place utility, the field theory approach to search behavior, and the life cycle approach to threshold formation (Wolpert, 1965:192). Geographers, among others, have adopted this approach to the study of migration. Although there has been research into the role of the search process in migration at the intra-urban level (Brown and Holmes, 1971; Barrett, 1976), much attention has focussed on the notion of place utility. Place utility is defined as "the net composite of utilities which are derived from the individuals' integration at some position in space" (Wolpert, 1965:193). If individuals recognize differences between the expected utility of spatial alternatives, then migration is a reflection of the individual's subjective assessments of those place utilities. This model placed migration in essentially a "stimulus-response" framework: the stimulus being the set of subjective place utility assessments, and the response being the decision to migrate or not to migrate.

Place utility has been approached in two ways; first, through attempts to specify individuals' place utility functions (how individuals trade off between the various objective attributes of spatial alternatives) and secondly, through a cognitive-behavioral approach which recognizes the subjective nature of place perception. The first approach was taken by Brown and Longbrake (1970) who attempted to construct and evaluate the place utility functions of intra-urban migrants in Cedar Rapids, Iowa. However, the subjectiveness of the individual functions proved to be a stumbling block. As the authors concluded, "a migrant's judgement of utility is subjective and often based upon anticipation and optimism rather than fact" (Brown and Longbrake, 1970:372).

The subjective nature of individuals' perception of place utility and the resultant preferences requires a more psychologically and individualistically oriented approach such as the cognitive-behavioral approach. The cognitive-behavioral approach is concerned with the information which individuals hold about the elements of their environment, and the relationship of this information to preferences, decision making and spatial behavior.

It was Gould's (1965) work, "On Mental Maps", which first stimulated studies on spatial preferences. Gould examined the patterns of residential desirability expressed by residents of the United States, Europe and Africa. In stating their residential preferences respondents were required to discriminate between places on the basis of their perceived desirability. If we accept Simmons (1968) simpler definition of place utility as "a measure of the attractiveness or unattractiveness of an area relative to alternative locations, as perceived by the individual decision maker", it becomes clear that Gould's measure of residential desirability is very similar to the notion of place utility. By obtaining these preferences, the reasons for the observed pattern and the environmental attributes used by individuals to produce the preferences may be inferred.

One reason for an observed preference is the degree of familiarity and amount of information possessed regarding a place. Gould and White (1968) in their study of the residential preferences of school leavers in 23 locations in Britain, found a high degree of consensus regarding the residential desirability of the British counties. The

pattern of consensus was broken by what they called the "local dome effect", the tendency for people to favor locations in the immediate area. This effect was found to increase in a northward direction with increasing deviation from the national or consensus preference surface.

The role of familiarity and information in residential preferences prompted Adams (1969) to postulate a sectoral bias in intra-urban migration, due to sectoral mental maps arising from daily travel patterns. Donaldson and Johnston (1973) pursued this idea in their study of intra-city migrants in Christchurch, New Zealand. Respondents rated the city's suburbs according to their degree of familiarity. The matrix of familiarity rankings was factor analyzed. Mapping of the factor loadings of the suburbs indicated a distinct sectoral pattern, thus supporting Adams' hypothesis.

Johnston (1973) continued on the question of the bases of residential preferences in his study of people's evaluations of the suburbs of Christchurch. Semantic differential scales were used to represent the five hypothesized dimensions of residents' evaluations. Principal components analysis yielded three dimensions on which the suburbs are evaluated. These were labelled the impersonal environment, knowledge, and the interpersonal environment.

At the inter-urban scale, Desbarats (1976) examined the attributes of the perceived environment used in the ordering of peoples' preferences among the ten major cities of California. She improved over previous semantic differential studies by using a free association technique which releases respondents from "the arbitrary framework of pre-selected dimensions having varying degrees of relevance" (Desbarats, 1976: 455). Subjects simply responded to the names of the ten cities with

three adjectives or nouns which came to mind. This qualitative data was converted to numerical data and reduced to two proximity matrices measuring within subject and between subject cognition, and a profile matrix of similarities between cities. She found the urban areas to be differentiated largely on the basis of size and location, and that "similar preference scores tend to be verbalized with similar sets of descriptive terms" (p.463). Furthermore, physical factors such as climate or location, were more relevant to spatial images than were functional (economic) factors, such as agricultural versus industrialized.

Demko (1974) studied individuals' cognitions of cities in southern Ontario, specifically in the context of migration. Rankings of eight cities according to their degree of similarity were obtained. Respondents were then grouped on the basis of a factor analysis of the rankings. The similarity rankings of each group were analyzed through multidimensional scaling. The two dimensional solutions obtained indicated that migration decisions are based on at least two composite factors. Further analysis indicated that economic variables, the income potential and cost of living in the cities considered, operated together with socio-environmental variables, the quality of life, to produce the preferential rankings. Demko concluded that "if economic factors were not constraining choice, migration patterns might be significantly altered" (Demko, 1974:31).

At the national level, Lloyd (1976) used student samples from Pennsylvania and South Carolina to study the cognitions of, and the preferences for the American states. Multidimensional scaling was used to derive the cognitive spaces and the preference spaces for each sample.

Canonical correlation analysis showed that the cognitive and preference spaces were closely linked. A behavior space derived from United States census data was found to be very similar to both the cognitive and preference spaces. Lloyd concluded that there are strong linkages between cognitions, preferences and actual behavior.

2.3 Summary and the Place of the Study in the Literature.

Researchers have traditionally employed descriptive-predictive models in the study of migration. Economic and social gravity models seek to explain and predict migration flows in terms of the characteristics of the origins and destinations. The decreasing power of these models and the impact of individual behavior on migration patterns has given rise to a behavioral approach to migration.

It is through a behavioral approach to migration that geographers are able to explore the role of place, and the perception of place utility in the migration decision process. Attempts to specify individuals' place utility functions have not been entirely successful. The closely related notion of residential preferences has been studied using a cognitive-behavioral approach. This approach has been used to examine both the patterns of residential preferences and some of the factors which have produced the observed patterns. These factors include familiarity and information, physical and locational factors, and socio-economic factors. Cognitions and preferences have been demonstrated to be closely related to actual migration behavior. This present work will contribute to the field by examining the assessment of an urban area in a new context, that of northern Canada. It will contribute to the study of migration by

examining the role of this community assessment in the decision to migrate from a northern resource community.

CHAPTER 3: THE HYPOTHESIS AND DATA SOURCES

In this chapter, the hypothesis of the study is formulated. The technique used to test the hypothesis is then discussed in detail. The chapter will close with a description of the sources and the method of collection of the data.

3.1 The Hypothesis

There is considerable agreement that the environment of a community must play a role in the decision to migrate to or from that community. Riffel acknowledged this role stating "Individuals will search for and move to communities providing the largest achievable set of quality of life factors" (Riffel, 1975:5). "Quality of life" was regarded as having two major components, environmental and individual; the environmental component being based almost entirely on the characteristics of the community, and the individual component including income, education, physical and mental well being, etc. Lajzerowicz et al. came to the conclusion that workers in mining communities left because of a combination of job, company and community factors (Lajzerowicz et al., 1976:9). Bone likewise noted the impact that the environment may have on the decision-making process. "Urbanite newcomers to the subarctic are often described as southern transplants, whose willingness to remain in the north is frequently overtaxed by environment" (Bone, 1972:96). Thus the community environment is generally held to play a role in the decision to leave a northern community. The following hypothesis is formulated to test the validity of this assumption:

H: A resident's intention to leave or stay in a northern community is related to that person's assessment of the environment of that community.¹

3.2 Measuring Resident's Community Perception

Previous work on the perception and evaluation of environmental elements (Downs, 1970; Johnston, 1973) have allowed subjects to respond to bipolar adjectival scales representing the hypothesized relevant dimensions of those elements. However, by providing the bipolar adjectives, the researcher offers verbal stimuli which may or may not be meaningful to the subject. Personal Construct Theory, as formulated by George Kelly, offers a solution to this problem by providing a model of the mental organization an individual imposes on his perceptions of the world, and also providing a tool to measure and evaluate these organizations.

Kelly put forth his theory in the form of a basic postulate and eleven corollaries. The basic thrust of the theory is that individuals discriminate among elements of their environment on the basis of the attributes they attach to them. These attributes, or constructs, are operationally considered to be bipolar, that is, to consist of a pair of opposites. Because the individual himself imposes them on the real world, they are called personal constructs. Kelly defined a construct simply as "a way in which two things are alike and by the same token different from a third" (Bannister, 1962).

1. The environment of the community is here considered to consist of the universe of physical, social, economic and biological attributes which may be assigned to that community.

Kelly also provides a technique for eliciting and evaluating personal constructs. The method for eliciting constructs is through "triad sorting". Three objects or elements are presented to the respondent, and he or she is asked to name some way in which two of the elements are similar and different from the third. This differentiation forms the personal construct.

The technique for evaluating personal constructs is called the "Repertory Grid Test". The grid test as originally used by Kelly requires the respondent to decide whether elements possess the attribute in question, or not. In effect, the elements are rated on a dichotomous, or two point scale (Bannister, 1962:112). Dichotomous scales are not always adequate since a given element may possess an intermediate amount of the characteristic in question. Thus three, five, and up to eleven point scales are more often used since they are more sensitive to the varying intensity of the subjects responses to the elements. This technique produces "a matrix that describes quantitatively and individual's repertory of feelings about a set of elements" (Harrison and Sarre, 1971:369). This is the real usefulness of personal construct theory, that it permits the researcher to measure a respondent's assessment of a place on the characteristics he himself considers to be relevant. As Silzer puts it "the essential feature of the theory is that it seeks explanations of behavior in terms of the person's own description of what attributes of environmental elements he is responding to" (Silzer, 1972:5). Personal construct theory thus appears to present a solution to the problem of pre-selected scales forcing respondents to rate objects on the attributes the researcher, rather than the respondent, feel to be relevant.

3.3 Research Design

The use of Personal Construct Theory and the repertory grid methodology is a fairly recent innovation in geographical research. Harrison and Sarre (1971) explored the potential of the theory and the associated methodology for the study of environmental images. In their subsequent research, they used the theory, first, to study the image of an urban area held by a group of residents, and secondly, to examine shopkeepers' images of the retail environment in search of variation attributable to certain characteristics (Harrison and Sarre, 1975). They concluded that Personal Construct Theory and the repertory grid test could be used to obtain data "both on the elements of an image to which respondents attach significance and the way in which respondents evaluate these elements" (Harrison and Sarre, 1975:55). Hudson used the repertory grid methodology to study individuals' images of shops. By having respondents rank constructs in order of importance, and through a principal components analysis of individual grids, Hudson concluded that "not only do people evaluate shops on the basis of a multidimensional set of personal cognitive dimensions, but they weight these axes differently in terms of their importance in choice" (Hudson, 1974:487).

Lloyd used the idea of personal constructs in his conceptual model of spatial behavior. He conceived of the subjective environment (organized using constructs) as being related to preferences and thence to spatial behavior. Using samples of students in Pennsylvania and South Carolina, Lloyd employed the repertory grid test to locate the American states in cognitive space, and compared this to preference space. Finding

the structures to be similar and concluded that there are linkages between cognition, preferences and actual behavior (Lloyd,1976:251).

Personal Construct Theory and the repertory grid methodology have been demonstrated as useful in the study of environmental images. The present study applies the technique in a new context: the study of the assessment of a northern community. In this study the number of elements under consideration is one, the city of Thompson. To ensure comparability it is necessary that respondents be provided with both a standard set of elements and a standard set of constructs. The constructs provided are those elicited from a pre-test sample. These are assumed to be a representative sample of the universe of relevant constructs. While the provision of constructs reduces sensitivity of the technique to individuals it assures the comparability of responses, and greatly facilitates analysis. The supplying of constructs has one other advantage over eliciting constructs from each respondent. Since construct elicitation is a very time-consuming procedure, use of a standard set of constructs enables the researcher to greatly increase the size of the sample.

3.4 The Data

The data are primary data obtained in a questionnaire survey, conducted in the city of Thompson during the period of August 8-16, 1977. The questionnaire was made up of three parts: 1) personal characteristics, 2) a set of personal construct scales, and 3) questions regarding resident's concerns about the city (see Appendix A). The first part of the questionnaire was designed to obtain information about the respondent's personal characteristics, including previous migration behavior and migration intentions. The second part, the set of construct scales, was obtained from the set of personal constructs elicited from a pre-test sample. This pre-test was conducted on a total of 34 persons, 22 residents of Thompson and 12 residents of Winnipeg. The Winnipeg sample was intended to represent the population of potential migrants to Thompson.

Constructs are usually elicited through a process called "triad sorting" in which subjects are asked to name a way in which an element is differentiated from out of a set of three elements. In the present study, since it was concerned with only a single element, the city of Thompson, this procedure was modified. Respondents were asked to express how Thompson was different from each of sixteen other Canadian cities.¹

The pre-test resulted in a total of fifty-three different²

-
1. The cities included in the pre-test were: Flin Flon, Brandon, Winnipeg, Gillam, Churchill, Thunder Bay, Kenora, Moose Jaw, Regina, Prince Albert, Ft. MacMurray, Medicine Hat, Whitehorse, Yellowknife, Kelowna, and Prince George. They were selected to provide a variety in terms of size, economics, function and geographical location.
 2. Many constructs were obtained in several versions which though phased differently, were similar in meaning. Thus they were not considered to be separate constructs.