

THE UNIVERSITY OF CALGARY

A CRITICAL ANALYSIS OF THE CITY OF CALGARY'S
LONG-TERM GROWTH MANAGEMENT STRATEGY

A MASTER'S DEGREE PROJECT
SUBMITTED TO THE FACULTY OF ENVIRONMENTAL DESIGN
IN CANDIDACY FOR THE DEGREE OF
MASTER OF ENVIRONMENTAL DESIGN

BY
KENT MCQUEEN

CALGARY, ALBERTA

DECEMBER, 1990

THE UNIVERSITY OF CALGARY

FACULTY OF ENVIRONMENTAL DESIGN

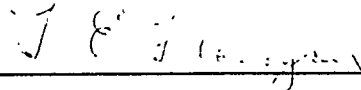
The undersigned certify that they have read, and recommend
to the Faculty of Environmental Design for acceptance,
a Masters Degree Project entitled:

**A CRITICAL ANALYSIS OF THE CITY OF CALGARY'S
LONG TERM GROWTH MANAGEMENT STRATEGY**

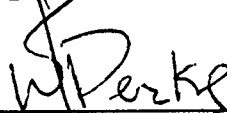
submitted by Kent D. McQueen
in partial fulfilment of the requirements for the degree of
Master in Environmental Design.



Prof. T. L. Harper
Faculty of Environmental Design



Dr. T. E. Flanagan
Department of Political Science
Faculty of Social Sciences



Prof. W. T. Perks
Faculty of Environmental Design

Date: December 10, 1990

ABSTRACT

A Critical Analysis of the City of Calgary's Long-Term Growth Management Strategy

Kent McQueen

December, 1990

Prepared in partial fulfilment of the requirements of the
M.E.Des. degree in the Faculty of Environmental Design,
The University of Calgary

Supervisor: Professor Tom Harper

Long-range urban planning is commonly used by municipalities to act as a guideline for future long-term development. The various advantages and strengths of long-range planning in this context are discussed, along with various criticisms that have been levelled at the field. It is argued that the only form of long-range urban planning that survives these criticisms is a form of contingency planning that is based on the exploration of alternative futures (or scenarios).

The analytic techniques used in the field of policy analysis are integral to the formats of current long-range plans. Several of these techniques are reviewed, while their strengths and weaknesses in the context of long-range urban planning are illustrated. It is concluded that the techniques most valuable and/or necessary for contemporary long-range urban planning include scenarios and normative policy analysis.

Based on the above research, a review of the City of Calgary's Long-Term Growth Management Strategy is undertaken. The strategy is criticized on several levels, particularly with respect to weaknesses regarding procedural matters, analytic methods, and practical results. It is recommended that a new type of long-range planning is needed both in the City of Calgary and in the long-range urban planning field in general. A scenario-based contingency planning process is suggested as the means by which the weaknesses in current long-range planning practice can be effectively addressed. Additional recommendations are made for enhancing the effectiveness of public participation in long-range planning.

Key Words: Long-Range Planning, Policy Analysis, Growth Management, Contingency Planning

ACKNOWLEDGMENTS

I would like to thank Professors T.L. Harper and T.E. Flanagan for their support and encouragement during the writing of this Master's Degree Project. Special thanks to Dr. D. Detomasi for providing much needed assistance. I would also like to thank the Government of Alberta, whose financial support played an integral role in the completion of this work.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
LIST OF ILLUSTRATIONS	iv
Chapter	
1. INTRODUCTION	1
2. LONG-RANGE PLANNING AND POLICY ANALYSIS	6
LONG-RANGE PLANNING	6
ADVANTAGES OF LONG-RANGE PLANNING	8
A CRITIQUE OF LONG-RANGE PLANNING	14
SUMMARY	22
ANALYTIC TOOLS FOR POLICY ANALYSIS	26
BENEFIT-COST ANALYSIS	27
FORECASTING	34
MATHEMATICAL MODELS	41
DECISION ANALYSIS	45
THE DELPHI TECHNIQUE	50
SCENARIOS	53
NORMATIVE POLICY ANALYSIS	61
SUMMARY	73
3. A REVIEW OF CALGARY'S LONG-TERM GROWTH MANAGEMENT STRATEGY	76
LONG-TERM GROWTH MANAGEMENT STRATEGIES	76
A BRIEF REVIEW OF GROWTH MANAGEMENT TECHNIQUES	78
SUMMARY	86
THE CITY OF CALGARY'S LONG-TERM GROWTH MANAGEMENT STRATEGY	88
HISTORY	88
THE DESIRED FUTURE STATE	95
ANALYSIS OF THE CITY'S NEEDS	98
GROWTH MANAGEMENT POLICIES	105
IMPLICATIONS FOR ANNEXATION POLICY	110
4. A CRITIQUE OF THE STRATEGY	112
THE PROCESS	112
THE ANALYSES	116
THE RESULTS	123
SUMMARY	128
5. RECOMMENDATIONS	129
SUMMARY	150
APPENDIX	155
REFERENCES	160

LIST OF ILLUSTRATIONS

Figure	Page
1. Annexation History - City of Calgary	91
2. The City of Calgary Annexation Proposal - 1989	93
3. Employment, Population, and Housing Demand Projections	100
4. Population Growth Scenarios for the City of Calgary	117
5. Existing Long-Range Planning Process	151
6. Proposed Long-Range Planning Process	152

To Brenda

We do not say that those who are not interested in the future
have no business here. We say they have no business at all.

Pericles

CHAPTER ONE

INTRODUCTION

In July of 1986, Calgary City Council approved the Long-Term Growth Management Strategy (City of Calgary, 1986). The purpose of the policies developed in this document was to provide a framework for managing the growth of the city in the "foreseeable future". The very use of long-term plans is controversial within the planning field. Many authors feel that anticipating problems and planning to deal with them is imperative in societies that experience a great deal of rapid change (e.g., Schwarz, 1977; Shani, 1974). However, there is an increasing recognition that as human beings we will always be constrained by the limits of technical knowledge (Appelbaum, 1977; Habermas, 1970). These limits, it is believed, make the possibility of finding "technical" solutions to problems that may or may not occur in the future almost negligible. Indeed, the very search for future conditions (or problems) that must be dealt with may be fruitless due to the planner's inability to gather "perfect information". Thus, the rational nature of long-range planning can be called into question.

Even if one accepts that the use of long-range plans is valuable, there still remains the issue of the scope of such plans. Many questions relating to this issue must be explored. Is a comprehensive plan more effective than one that focuses on a narrower topic? For how far into the future can one effectively plan? What issues and tools of analysis are appropriate in long-range planning?

These larger issues must be considered when examining the City of Calgary's Long-Term Growth Management Strategy. Any appraisal of the process and content of such a plan would be incomplete without relating the plan to this higher level of analysis. This analysis will not only shed light on the strengths and weaknesses of the current plan, but will also provide direction for future strategies dealing with urban growth in Calgary.

This Master's Degree Project begins by asking the question, "Is long-range planning valuable?" Several forms of long-range planning are examined, with the advantages and disadvantages of each being surveyed. Included in this review is the author's particular notion of long-range planning - one that is based on the exploration of alternative futures based on scenarios (or contingency planning). It is concluded that there is indeed a value in the development of long-range plans, particularly because of their ability to act as a guidance mechanism for short- and medium-term decisions. Contingency planning is argued to withstand the criticisms levelled at other forms of long-

range planning, and is thus held forth as the preferred form of planning in this context.

The value of long-range planning having been established, the various analytic techniques used by policy analysts and planners to develop these plans are examined in order to determine their appropriateness for use in the field of long-range urban planning. Although traditional techniques such as benefit-cost analysis and decision analysis are argued to be of minor utility, they are not completely discarded as tools for the policy analyst. It is recommended that policy analysts incorporate some less traditional techniques such as scenarios and normative policy analysis into their work, particularly in the long-range urban planning context. Further, the weaknesses in attempting to predict the future are outlined, and a rejection of standard forecasting and prediction techniques is recommended.

Based on this research, the City of Calgary's Long Term Growth Management Strategy is used as a case study to examine the effects of a flawed planning process and flawed analytic techniques on a particular long-range urban plan. An undemocratic planning process and too much reliance on technical analyses are seen to be the key problems in the development of this plan. Several recommendations are provided, the key ones being as follows:

1. All forms of knowledge (not just scientific knowledge) should be included in the policy planning process.

2. The long-range planning process must change to include much more public participation.
3. Long-range plans should take the shape of contingency plans that are developed through a scenario-writing process.

In short, an evolution, rather than a revolution is recommended for the long-range urban planning and policy analysis fields. By changing in the recommended ways, a better account will be taken of both theoretical and empirical research. This may be the only way that both fields can maintain their legitimacy.

Chapter Two of this Master's Degree Project contains an overview of the advantages and disadvantages of long-range planning, as well as a review of the predominant techniques used by policy analysts and urban planners in the development of long-range urban plans.

Chapter Three provides a brief summary of the City of Calgary's Long-Term Growth Management Strategy. It begins with a review of growth management techniques used in North American cities, and concludes with an overview of the City of Calgary's current plan for managing growth in the long term.

Chapter Four contains a critique of Calgary's growth management strategy. This critique looks at the process used to create the plan, the analytic techniques used to arrive at the policies contained within the plan, and the practical results of those policies.

Lastly, Chapter Five contains recommendations based on the previous research. These recommendations are primarily aimed at changing the planning process so that long-range plans can be more effective in helping to change the fabric of the city in desirable ways.

CHAPTER TWO

LONG-RANGE PLANNING AND POLICY ANALYSIS

LONG-RANGE PLANNING

There are essentially three main approaches to long-range planning (United Nations Economic Commission for Europe, 1971). First, one can forecast the main features of technological and scientific progress in order to measure its impact on economic, social, and political development. Decisions are then made to either bring about the desired development or to help society adjust to the predicted future condition. This type of planning assumes that an optimum course for society can be scientifically determined. Proponents of this form of long-range planning claim that it not only assists in determining the optimum course for a society, but that it also can help the society achieve those goals and objectives that are determined to be important.

The second form of long-range planning is that which is concerned with all aspects of society, but in which the aim is to outline the future rather than to forecast it. This method assumes a multitude of possible futures, each coherent in its own way. The purpose of long-range planning from this perspective is to extend this coherence to decision-making structures beyond

purely economic objectives. There is no single path to a desired future, but rather a collection of alternative futures, each one acting as a framework for decision-making given a certain set of circumstances. This form of long-range planning is perhaps the one that is least commonly used by municipal planning agencies. However, it will be shown that one variation of this method (the use of a scenario-writing process to plan for alternative futures - or "contingency planning") is the only form of long-range planning that can stand up to the criticisms that have been levelled at both urban planning and the policy analytic techniques that are used within the field (see Chapter Five for a more detailed description of scenario-based contingency planning).

The third perspective regarding long-range planning consists of the view that comprehensive long-range planning is completely ineffective. Only limited sectoral studies are feasible and effective at influencing current decisions. In essence, long-range planning from this perspective serves solely as a guide for short-term decision-making within limited fields of study. One could argue whether or not this is in fact "long-range planning", or simply short-term planning in which some long-term implications are considered.

Whatever the form that long-range planning takes, it is essentially concerned with aiding decision-makers in such a way that decisions can be based on detailed examinations of their future consequences (Schwarz, 1977). Such analyses, which have

an important impact on the future forms of urban areas, are performed for the most part by urban planners and policy analysts. However, the final decisions in this regard are made by politicians, who must consider both the advice of these "experts" and the political feasibility of any particular decision. The political nature of urban planning has been explored elsewhere in detail (e.g., Forester, 1989; Lindblom, 1959, 1965), and will not be discussed in this Master's Degree Project. Suffice it to say that one must come to an understanding of the relationship between politics and planning in order to truly appreciate the complex nature of decision-making and policy-making in a democratic society.

ADVANTAGES OF LONG-RANGE PLANNING

To understand the issues surrounding long-range planning, as well as the policy analysis that tends to go hand-in-hand with it, it is first necessary to ask why long-range plans are needed in the first place. If one accepts the necessity of making "plans", then one must acknowledge that there is a need to obtain some sort of knowledge or grasp of the future in order to plan for it (UNECE, 1971). While this is true for all types of plans, whether long-range or short-range, the difficulty in predicting the future becomes particularly acute as the plan-maker goes further and further into the future. This is where the field of policy analysis purports to hold sway - promising the ability not only to predict the future, but also to help make decisions that

will either fit harmoniously with that future or help to bring that future into existence (Friedmann, 1987). It is therefore argued that long-range planning helps decision-makers perceive the foreseeable implications and impacts of long-term decisions, and aids in the understanding of developments (or forces) that will play important roles in the future (more so than when using short- or medium-term perspectives) (UNECE, 1971). The decision-maker becomes more informed, and will therefore be able to make better decisions.

Indeed, some argue that long-term planning becomes "more necessary, but also more problematic" (May, 1982, p. 314) during times of rapid change (see also Schwarz, 1977). The logic of this argument is that it is unnecessary to plan for the future if there is little or no change, and that the need for planning is therefore more prevalent during periods in which rapid change is the norm. Notwithstanding this need for planning, one's ability to plan is constrained by the fact that times of rapid change are inherently difficult to project into the future. Roberts (1979) argues that there is a correlation between turbulent conditions (periods of rapid change) and the demand for those who purport to predict the future. This contrast between the necessity of knowing the future in order to plan for it, and the difficulty in actually predicting the future will be discussed later in this chapter.

If a city can be compared with a corporation (as is often done in strategic planning), then long-term planning may "reduce

costs and win new markets ahead of the competition" (Michman, 1990, p. 30). The "market" in this case would be private enterprises that can be lured to the city and thus increase economic growth. Michman suggests the linkage of environmental scanning and forecasting to strategic planning so that undesirable surprises can be avoided and new opportunities uncovered. Many long-range plans recommend initiatives to increase economic growth, but seldom incorporate these initiatives into the planning process itself. Strategic planning and contingency planning are well suited to exploring new economic opportunities for urban areas within the context of the long-range planning process.

Long-term planning also provides a useful framework for decision-making (May, 1982), and therefore aids in short- and medium-term planning (UNECE, 1971, 1973). By outlining a desired future or a series of alternative futures, a long-range plan can help to confirm the complexity of decision-making situations, and thus provides a structure around which compatible decisions can be made. Without such a framework, decisions made in shorter time frames may be inconsistent, and decision-makers may lack the knowledge of inter-relationships and long-term implications that is necessary to enable urban areas to develop in coherent and desirable ways. This type of planning is often cited as being an important factor in Japan's economic success (e.g., Fowles, 1978; May, 1982).

Long-range planning is often argued to provide a broader, more comprehensive perspective than do plans that only consider the short term. It is said to provide freedom from the constraints which limit the possibilities of change over short periods (UNECE, 1971). These constraints may be technical, political, social, or economic in nature. Resources and relationships may seem fixed and unchangeable in the short term, but not in the long term. Therefore, various real alternative policies may be studied and presented that otherwise would not seem feasible if a shorter time frame was being considered.

In addition, the investigation itself can become broader; touching on more issues that are difficult to analyse and to change over the short term (e.g., sociological and psychological phenomena) (UNECE, 1971). Related to this is the assertion that long-range planning is better suited for considering national and international implications and relationships. While this may not be important at a smaller scale of urban planning, it must be recognized that there now exists a global economy, and any particular city's relationship to that economy will have a profound impact on all the variables of interest in that city.

Needless to say, this capability of long-range plans to be broad in nature is even stronger in the case of contingency planning. By abandoning a single pathway to the future, many more alternatives can be considered, each one appropriate to different circumstances in which the city might find itself. Thus, contingency plans are not limiting in nature. Rather, they

open the door to various possibilities that would not be available if the city were to commit itself to one particular future.

Another strength of long-range planning is that it can serve to help identify dangers and opportunities that may occur in the future. This in turn can sensitize decision-makers to early warnings that indicate particular problems (May, 1982). This can be of particular help if alternative choices to current trends are identified that, if followed, may lead to disastrous consequences (i.e., if we do not forecast the future then there is no freedom to choose a desired future or to avoid an undesirable one). Although this can be a strength of all forms of long-range planning, it is an integral aspect of contingency planning. The very act of developing alternative future scenarios makes those involved much more aware of the ways in which key forces can impact upon the city. This awareness acts to sensitize participants such that the warning signs of particular developments in the external environment can be more readily perceived. This, in turn, can lead to a more rapid response to changing conditions.

What is often considered to be one of the secondary goals of long-range planning may one day turn out to be its saving grace. That is, long-range planning can be used to serve an explanatory and/or educational function (Friedmann, 1987; Hawkesworth, 1988; UNECE, 1971). It can help to explain the major issues and problems to the general public. Alternative

choices, limitations, and a general discussion of the issues will not only open debate but will also serve to enlighten the public. However, to do so, the form of long-range plans would have to change drastically from what is the norm today. They could no longer be static documents, rigidly proclaiming the path to a better future. Rather, they would have to be flexible, evolving entities that can be easily adapted as the city and its citizens move on into an uncertain future (e.g., contingency plans). In this form, regardless of their effectiveness in planning the future form of the city, long-range plans can have a large impact by helping to produce an informed, enlightened public. A well-educated public is an important step on the path towards "good city form" (Lynch, 1981).

The above discussion has illustrated many of the strengths of long-range planning. To sum up, these strengths include the following:

1. Provides decision-makers with information about the long-term implications of current decisions.
2. Helps deal with periods of rapid change.
3. Provides a framework for short-term decisions.
4. Can be more broad and comprehensive than short-term plans.
5. Can sensitize decision-makers to dangers and opportunities.
6. Performs an educational function.
7. May help to increase economic growth.

Given all of these advantages, long-range planning would appear to be an important and valuable tool for the successful future development of urban areas. However, long-range planning is not without its critics. The following section will discuss some of the criticisms that have been presented.

A CRITIQUE OF LONG-RANGE PLANNING

One important factor involved in long-range planning is the time horizon. In other words, how far into the future can one effectively plan for? "Long-Term" is usually considered to range from 20 to 50 years. However, as the time frame increases, the appropriateness of quantitative techniques lessens, while the difficulty of predicting the future increases (UNECE, 1971). Five years is too short a period in which to see large scale (profound) changes that may be sought after, and does not provide a large enough time frame to plan for stable change. Many changes that are sought in the urban planning context take longer than five or ten years to take place. In addition, if planners only use five year plans they may ignore the long-term implications of their decisions (Brada, King, & Schlagenhauf, 1983).

However, one must also recognize that, as mentioned earlier, the further one goes into the future, the more difficult it is to make accurate predictions. In order to make long-range plans, one must make some attempt to peer into the future. This usually takes the form of some type of straight-line forecast,

although less frequently the use of scenarios (or contingency planning) is seen. There is at the current time a great deal of uncertainty regarding prognostic forecasts (which usually assume a continuance of existing relationships) (Beck, 1982; Friedmann, 1987; Miles, 1975; UNECE, 1971). It is especially difficult to make predictions at the present time due to rapid technological, social, and political changes. To cite just one example, would anyone have predicted the fall of communism in Eastern Europe even two years ago?

Indeed, some authors (e.g., Miles, 1975; Moyer, 1984) contend that any attempt at predicting the future is futile at best (see the section below on Forecasts for a further discussion of this issue). Khakee (1984) states that "...it is impossible for municipalities to formulate long-term plans which are binding for municipal decisions" (p. 92) when markets are not completely centralized. This has led countries such as Sweden to adopt municipal plans with a shorter time horizon of between three and five years.

This difficulty in predicting the future is avoided when one uses alternative future scenarios in the development of contingency plans. This type of planning recognizes that the future cannot be predicted, and instead attempts to outline various valid alternative forms that the future might take. Responses to these possible developments can be explored, and contingency plans developed. The time horizon in this form of planning is not really an issue. It can be whatever is necessary

for the problem being examined. However, it must be recognized that the further one goes into the future, the higher will be the number of alternative futures that appear to be valid. Therefore, it is usually recommended that scenarios not be projected further than twenty-five to thirty years into the future.

Thus, the issue of proper time horizons has yet to be resolved. It is apparent that many urban planning matters have long-term implications, and that these implications should be considered when making current decisions. In order to do so, some form of long-range plan must be in existence so that a framework exists within which decisions can be made. However, it is both legislatively and practically difficult for municipalities to produce long-range plans that are effective.

Politicians are generally concerned with the political climate either right now or in the immediate future so that their re-election is more than just a possibility. In addition, we have noted the difficulty in accurately predicting the future, thus making many long-range plans inapplicable as soon as current trends change. Although there are means by which a municipality can deal with an uncertain future (e.g., through the use of scenarios to explore alternative futures), the political difficulties with long-range plans require either political reform or some degree of enlightenment among politicians. Otherwise, even the best long-range plans will be ineffective.

One real drawback of the use of long-range plans is that there is the danger of "over-committing" the future (UNECE, 1971). This involves the commitment to do things that will be very inappropriate should the situation deviate from that which is forecast in the plan. This danger is particularly acute in the case of rigid long-range plans that develop a single path for a city to take into the future. Such plans may be fine if conditions remain stable, but as soon as the external environment changes, the plan may be unable to offer solutions or to adapt to the new situation. Contingency plans need not be subject to this same difficulty. By outlining several alternative future scenarios, various future conditions can be considered, and appropriate responses examined. Of course, one cannot guarantee that all possible future conditions will be examined, but the possibility of error is reduced dramatically when plans that consider only one future are abandoned.

In addition, one must be careful to avoid a long-term reliance on contingency plans that are created at any particular point in time. Such plans should be revised on a regular basis so that the most up to date information can be included and so that the plans can retain a high degree of flexibility. The developers of contingency plans should also consider the use of incremental implementation for the same purpose. In the context of urban planning, there is always a danger of committing large amounts of capital for large-scale physical infrastructure projects. Facilities such as transportation networks and sewage

treatment plants cannot be converted easily to other uses once they have been developed. For this reason, it is not uncommon to overcommit to these projects by overestimating future needs. A programme of timely, incremental implementation of such infrastructure can help to alleviate this problem.

The final issue involving long-range planning to be discussed here involves the scientific belief among many planners and analysts that technical knowledge is the only tool that is necessary to solve virtually all of the problems faced by mankind. From this perspective, long-range plans are developed using sophisticated analytic techniques that provide us with a glimpse of the future as well as the (scientifically) correct means for avoiding this future (if it is thought to be negative), or for helping to bring this future into existence (if it is thought to be positive).

This viewpoint is strongly represented in the United Nations Economic Commission for Europe document entitled Long-Term Planning (UNECE, 1971). The commission puts forth the view that increasingly sophisticated mathematical models will solve the difficulties of forecasting and therefore of long-range planning in general. This view is expressed most strongly when it is stated that "...long-term thinking has attained a certain degree of maturity. Its value is no longer disputed by decision-making bodies..."(p. 5). Furthermore, "The ultimate objective [of long-range planning] is to achieve relatively broad control

over such changes which pave the way for the evolution of societies." (p. 13).

This belief that we can indeed predict and control the future through scientific methods is not an uncommon one. Several introductory urban planning and policy analysis texts support this view (e.g., Chapin & Kaiser, 1979; Howard, 1975; Stockey & Zeckhauser, 1978). Occasionally, the inherent difficulties of such an approach are mentioned, but the texts then continue as if there was nothing wrong with the general paradigm (as in MacRae & Wilde, 1979).

However, Appelbaum (1977), Friedmann (1987), Miles (1975), Wildavsky (1979), and others put forth cogent arguments denying this "myth" of scientism. Appelbaum (1977) writes that society (the general public) believes that policy-making and decision-making depend upon expertise, which in turn depends on technical knowledge. This technocratic view of politics has resulted in most major decisions being made by supposedly objective experts. However, this view is, in reality, an ideological distortion. This "mystification of knowledge" serves to produce public apathy while those in power make decisions that are in their interests, not ones that are objective and scientific. Appelbaum argues that public issues must be seen as political and not technical in order for ordinary citizens to take control of their own lives.

Both Appelbaum and Miles believe that the social sciences are in error in following the natural science model. No planning study can tell us what a city will look like in the future. This

is because of three reasons. First, there is a poverty of theory in the social sciences. There is a tendency to seek relationships between variables (correlations), and to substitute this for an understanding of the underlying phenomena. This lack of theory regarding underlying causes is usually covered up by using advanced mathematical techniques and then pretending that the answer is scientifically correct. Second, it is impossible to get all of the information needed to understand social systems. Indeed, it is impossible to integrate all political, social, psychological, and economic factors into one coherent model (UNECE, 1971). Knowledge is limited, and no plan can foresee all new "facts" that will arise and influence the situation. For this reason, many assumptions must be made that form the bases of these "objective and scientific" models. However, these assumptions are frequently omitted when discussing the model. These assumptions may even cover up important factors relating to the issue being studied. The third factor is that human beings are a requisite aspect of the social sciences, and human beings are inherently unpredictable. Social scientists have tended to deny this unpredictable nature of human beings, and therefore pretend that human behaviours and systems can indeed follow the natural science model.

Linstone (1984) suggests that we abandon the long held notion that technical (scientific) knowledge is the only valid form of knowledge in society. He discusses three perspectives that have an influence on planning and forecasting. The first is

the technical perspective, which is based on technical knowledge. This perspective is best suited for well structured, clearly defined, closed system problems. The second perspective is based on the organization. From this point of view, problems are analyzed on the basis of how they affect the organization. The third perspective is normative in nature (Linstone calls it the "personal perspective"). Problems can be examined from an individual point of view to shed further light on the issue. The physical results of future change are not as relevant here as are the individual's perception of, and reaction to that change. By analyzing a problem from these various perspectives, alternative futures can be developed that will assist both plan-makers and decision-makers. Linstone's ideas are not unlike Habermas' (1970, 1984) notions of technical, communicative, and emancipatory rationality. Such radical notions of planning and policy-making may some day lead us into a new era of urban planning, but are currently more popular in academic circles than in practice.

Once again, contingency planning is able to deal with this criticism of long-range planning as being scientific in nature. An integral aspect of this form of planning is the recognition that science does not have all of the answers, and that policies affecting urban development should be considered from various points of view. Contingency plans can include all types of knowledge, including technical and normative knowledge (i.e., knowledge based on a discourse involving ethical theories such as

utilitarianism). Thus, the future shape of the city will not be based on technical information alone, but can also include the established norms and values of the society at large. In addition, contingency plans can incorporate uncertainty into the process in a non-scientistic manner, recognizing that we truly cannot predict the future, but still providing a framework within which decisions can be made.

SUMMARY

The status of long-range planning has ranged up and down in the last two decades. From the United Nations Economic Commission for Europe (1971, 1973) we see a naive belief in the ability of long-range plans to determine scientifically the proper course for society to take. This viewpoint was most strongly developed in the Eastern European countries, which until recently had highly centralized economies (Khachaturov, 1976). In contrast to this, we have seen many authors point out that long-range plans (in the traditional sense) are extremely limited if not futile in nature.

Although I agree to a large extent with the arguments of the pessimists, I still see some value for long-range planning. Many advantages of long-range planning have been discussed, but the strongest argument in favour of such planning is that it provides a framework for decision-making that enables those in power to consider the long-term implications of actions made in the present day. One of the results of not considering long-

term implications has been the environmental degradation that is so prevalent in our society today. We may not be able to know all of the consequences of our actions, but a reasoned discussion and dialogue will certainly reduce the number of "bad" decisions that will have major impacts in the future.

However, it is my opinion that long-range plans must change drastically in form. If we cannot know the future, then plans cannot contain one single path that the municipality must take in order to arrive at a desirable future. Rather, they must be flexible, adaptive documents that can easily change as conditions warrant. Thus, the future is not a single vision that is taken to be fully understood and therefore accommodated. Instead, the future is at the same time a goal to be defined and striven for, and a realistic working out of probable (or possible) events. We can attempt to see what might occur in the future as well as what we can do to shape the future in desirable ways.

It has been argued that the only form of long-range planning that can stand up to the criticism levelled at the field is the use of contingency plans. If such a process is carefully developed, it can produce long-range plans that have the following strengths which do not exist in the types of plans that are commonly used in the present time:

1. They are adaptable to changing environmental conditions that may invalidate other forms of long-range plans.
2. They are in less danger of leading to the over-commitment to the future.

3. They can be even more broad in nature than existing long-range plans.
4. They effectively deal with the problem of predicting the future in a non-scientistic manner.
5. They can incorporate several analytic methods, not just quantitative ones (see the section on Scenarios below).
6. They can incorporate a variety of time horizons, depending on the problems being addressed.
7. They are more amenable to the frequent revision that is necessary in order to maintain the relevance of long-range plans.

In short, long-range contingency planning holds the promise of reducing the all too frequent occurrence of long-range plans collecting dust on planner's shelves because they are no longer relevant. The details of the process necessary to create effective long-range plans of this nature will be discussed in Chapter Five.

In addition to the above changes to long-range plans, the educative value of these plans must be emphasized. Many authors (e.g., Friedmann, 1973, 1987; Hawkesworth, 1988) have noted the valuable role that urban planning can play in educating the public. Friedmann, in particular, discusses the notion of planning as "social learning" in which all parties involved learn from each other in a broadly based and democratic process. Education, from this perspective, is not enough. There must be a change in the planning process so that ordinary citizens can gain

control of their own lives. Whatever the extent to which this education of the public is carried out, there can be little questioning of its value. For too long, planning has been left to the "experts". By educating the citizens, all interested parties can work together to ensure that the city evolves in a desirable manner.

ANALYTIC TOOLS FOR POLICY ANALYSIS

Given that long-range planning can indeed be a valuable tool for decision-makers and the general public alike, we must then examine the means by which such plans are developed. Long-range plans generally consist of a series of recommendations, policy statements, and/or guidelines that are intended to guide future city development for the long term. These plan components are developed through a process that, for the most part, can be subsumed under the heading of "Policy Analysis".

Policy analysis can be defined as "the use of reason and evidence to choose the best policy among a number of alternatives" (MacRae & Wilde, 1979. p. 4). This process involves a rational framework in which the context of the problem is established, alternatives are developed, the consequences of the various alternatives are determined, and the "best" alternative is chosen. In the development of a long-range plan, urban planners and policy analysts go through this process repeatedly in order to fully develop the components of the plan. As such, policy analysis is an integral aspect of the long-range planning process.

Given that the field of policy analysis is of such importance to urban planning, the tools and techniques used by analysts take on a new degree of significance. Indeed, the very content of urban plans (long-range and otherwise) depends to a large extent on the techniques used by policy analysts. In order to come to an understanding of the utility of long-range plans,

it is necessary to examine the techniques used in the development of such plans. By exploring the technical aspects of plan development, procedural weaknesses will be exposed and alternative techniques will come to light so that new methods of long-range planning can be developed.

The techniques used in policy analysis are many. They can be categorized according to several dimensions: quantitative vs. qualitative, normative vs. deterministic, empiricist vs. theoretical, and so on. The following section will discuss many of the more commonly used techniques, but will by no means touch on all of them. The intent is to explore the strengths and weaknesses of the standard methods used by policy analysts and urban planners in order to determine what, if anything, these methods can contribute to long-range urban planning.

BENEFIT-COST ANALYSIS

Perhaps the most commonly used technique in the field of policy analysis is that of benefit-cost analysis (MacRae and Wilde, 1979; Stone, 1988). With respect to urban planning, Schofield (1987) notes the use of this technique in such diverse areas as urban renewal, transportation, recreation, land-use planning, social services, and economic development. In the long-term planning process, benefit-cost analysis can be used in many ways. However, its essential value lies in the evaluation of alternatives based on the criterion of efficiency. The technique is most commonly used to evaluate alternative

components (projects or policies) that will eventually be a part of a plan. For example, alternative policies for future city growth may be evaluated in terms of their costs and benefits. Less frequently, alternative plans may be compared for their relative merits.

In fact, benefit-cost analysis is often seen as the most appropriate method for assessing projects that are long-term in nature:

A practical way of assessing the desirability of projects, where it is important to take a long view (in the sense of looking at repercussions in the...future) and a wide view (in the sense of allowing for side-effects of many kinds, on many persons, industries, regions, etc.), i.e., it implies the enumeration and evaluation of all the relevant costs and benefits. (Prest and Turvey, 1965, p. 683).

According to Gohagan (1980), the primary purpose of benefit-cost analysis is to help decide whether or not the net increase in public welfare that will be derived from a new project or programme will justify the expenditures necessary for that project or programme. The technique primarily involves the adding up of the positive aspects (benefits) and negative aspects (costs) of an action in order to determine if that action will result in an overall gain or loss to society. The rule of thumb for benefit-cost analysis is that an action should be carried out if the resulting net benefits are greater than zero. If one is comparing two or more actions, then the one with the greatest net benefit is the most preferred action. Thus, benefit-cost analysis is primarily concerned with the criterion of efficiency.

Despite an appearance of objectivity, MacIntyre (1985) has pointed out that benefit-cost analysis is far from being value-free, and is in fact based on the ethical theory of utilitarianism. Two key points should be noted regarding the methodology involved in benefit-cost analysis and its relationship to utilitarianism. First, the technique requires that all costs and benefits be valued in some common unit - usually dollars. Obviously, it would be impossible to sum up benefits and costs unless they were in some commensurable unit. This monetizing of costs and benefits has been highly criticized (e.g., Hoos, 1978; Schofield, 1987; Stone, 1988). Many of the potential applications of benefit-cost analysis within urban planning lie in areas in which such monetizing is extremely difficult (e.g., social services, health care, recreation). Despite the use of various techniques to monetize intangibles such as the value of a human life (e.g., Garbacz & Thayer, 1983; Jones-Lee, Hammerton, & Philips, 1985), inconsistent results make them questionable in value. Indeed, one might question the monetizing of what are essentially non-monetizable factors from a normative perspective. Those who do not subscribe to utilitarian ethical theory would find it objectionable that human lives are factored into an equation in much the same way as costs of construction and maintenance.

In order to avoid this difficulty, it is sometimes possible to use cost-effectiveness analysis (Stockey and Zeckhauser, 1978; Stone, 1988). This technique essentially defines benefits in

non-monetary terms (such as the number of lives saved) and then compares the cost per unit of effectiveness of several projects or programmes. In this case, the programme with the lowest cost per unit of effectiveness is preferred. Although this technique can help overcome the difficulties in dealing with non-monetizable benefits, it is only useful when goals are clearly defined and several alternatives are available. Clearly, this is not always the case, particularly when one considers the highly political nature of public policy decisions. Cost-effectiveness techniques are especially troublesome when alternatives for broad (i.e., non-specific) policies are being considered. In such a situation, the alternatives may in fact address different goals and try to meet them at different levels. To say an alternative is the most cost-effective may be misleading when the other alternatives may be trying to achieve other goals that are not commensurate with cost-effectiveness. Thus, there is the danger of using cost-effectiveness as the sole criterion for evaluation when other factors should also be considered.

The second point to note regarding the methodology of this technique is that benefits and costs are calculated for the life of a project or programme. This involves estimating these values far into the future, often as much as 50 or 100 years. With such long-term projects, the calculation of net benefits is extremely sensitive to the chosen discount rate (Ayres, 1969). The discount rate is basically the expected appreciation rate of alternative investments that are available at the present time.

This discount rate is used to determine the present value of the stream of net benefits that a project will produce in the future. There is much discussion about the proper value for the discount rate, with values ranging from approximately 3% to 13% (Gohagan, 1980; Musgrave & Musgrave, 1973). The lower the discount rate, the greater will be the present value of the net benefits of a project. Stockey and Zeckhauser (1978) point out that a difference in discount rates of as little as 1.5 percentage points can mean the difference between a benefit-cost analysis resulting in positive net benefits or one resulting in negative net benefits.

In addition to the difficulties in choosing an appropriate discount rate (as well as predicting how and if that rate will change over the life of the project), benefit-cost analysis also requires the use of many assumptions and/or estimates in order to calculate future costs and benefits. Thus, for extremely long-range projects, the analysis may involve assumptions regarding some important factors (e.g., the price of crude oil) that are projected perhaps 50 years into the future. Not only are such projections highly questionable, but may frequently be done with little or no analysis (see Stockey and Zeckhauser, 1978, p. 148).

What, then, does benefit-cost analysis and its derivatives (such as cost-effectiveness analysis, cost-benefit ratios, internal rates of return, portfolio analysis, sensitivity analysis, and break-even analysis) hold for long-range planning? This question is not easily answered. There are those who feel

that this technique is appropriate for virtually every policy question in any field of study using any time frame (e.g., Schofield, 1987). On the other hand, critics contend that benefit-cost analysis has not improved public decision-making (Hoos, 1978), is used to justify previously chosen courses of action, and is a technique that is unsuited for dealing with social problems (Zadeh, 1972, cited in Hoos, 1978).

I suspect that the real answer lies somewhere between these two extremes. While recognizing the difficulties with the technique, benefit-cost analysis can still be useful in some circumstances. It should be noted here that benefit-cost analysis is most frequently used to compare alternative projects that may become components of a particular plan. Although such comparisons are sometimes done at the policy or plan level, the inherent difficulties with using this approach mitigate its use for this purpose (e.g., different policies or plans may be trying to achieve goals other than efficiency and may therefore be very difficult to compare). For this reason, it is recommended that benefit-cost analysis be used only at the level of individual projects. Based on the above research, it would appear that the technique is most appropriate for projects with the following characteristics:

1. The project has well-defined, easily agreed upon goals.
2. The project is short-term in nature (due to the technique's reliance on the predictability of the future). However, long-term projects that are very straightforward and that are unlikely to be easily influenced by changing environmental factors may also lend themselves to this technique.
3. The project has little or no significant non-monetizable benefits and costs (qualitative impacts).
4. Efficiency is the sole criterion for project selection. Other bases for project selection such as equity or distribution are difficult to successfully incorporate into benefit-cost analysis.

In short, it would appear that benefit-cost analysis is useful for evaluating projects in the context of long-range planning when and if the environment is extremely stable, and few intangibles or non-monetary impacts are involved. Such projects are few and far between in the field of urban planning. However, benefit-cost analysis can also be very useful in the analysis of a range of possible futures and what their effects might be on the feasibility of specific projects. In addition, the technique can be used to explore the conditions that are necessary in order for major projects to become feasible. When used judiciously, and not as the sole criterion for decision-making, benefit-cost analysis can be a useful tool for long-range planners.

FORECASTING

Included under this heading are various techniques such as trend extrapolation, growth curves, cross-impact analysis, forecasts, predictions, and projections. As Martin Wachs (1987) states, "forecasts are part and parcel of policy making" (p. 45). Indeed, they have become such an important part of the policy process, and of long-range planning, that their use is seldom questioned (Moyer, 1984). Forecasts of population, economic growth, housing demand and so forth are a common component of many long-range urban plans. These forecasts then act as a basis for decision-making (e.g., given a certain population increase in the next twenty years, a commensurate amount of land must be made available for development). Many of the other techniques used by policy analysts that are discussed in this chapter rely to some extent on forecasts - either explicitly (e.g., benefit-cost analysis) or implicitly by means of assumptions about the future (e.g., decision analysis, Delphi technique).

The use of forecasting techniques is predicated on the notion that the future can be both predicted and controlled. Brown (1963) sums up this belief by stating that "the best estimates of the future will be based upon an analysis and projection of past results..." (p. 2). Thus, the essential nature of forecasting is to make a prediction about future conditions based on relevant data from either the past or the present. Although some rather sophisticated models have been

developed to assist the forecaster, this essential nature remains unchanged.

The pertinent issue for this investigation is the extent to which forecasts are accurate and/or useful in the context of long-range urban planning. There are weaknesses inherent in the very nature of forecasting that force one to question seriously their utility.

Wachs (1987) points out that most creators and users of forecasts believe them to be objective and scientific in nature. However, forecasts rely to a great extent on assumptions and judgements made by the forecaster. The forecaster who sees himself as a technical expert must recognize that it is possible to adjust forecasts simply by altering the underlying assumptions on which the forecasts are based. Indeed, forecasting would be impossible if it were not for the reduction in the range of future possibilities afforded through the use of assumptions. The apparent technical complexity of forecasting techniques disguises the importance of underlying assumptions. The scientific and technical nature of forecasting makes the results appear more plausible and reliable than they really are (Beck, 1982; Schwarz, Svedin, & Wittrock, 1982), while qualifications that may accompany a forecast frequently disappear as the forecast works its way through the organization (Encel, Marstrand, & Page, 1975). Appelbaum (1977) argues that these "scientific" predictions mystify ordinary citizens and divert their attention from more important issues.

In an in-depth study of over 150 forecasts, Ascher (1978) found that the "core assumptions" of the forecaster were the most important determinant of accuracy, while the precise methodology used was either secondary in importance or was blatantly obvious given the core assumptions. Incorrect core assumptions can lead to large errors (this is called "assumption drag" by Ascher). From this point of view, it is easier to predict a continuation of a trend than to predict future deviance from that trend (which may well be impossible to predict). This in turn leads to assumptions of stability that may or may not be valid.

Further, as Wachs (1987) notes, technical expertise enables one to do the calculations necessary for a forecast, but it does not enable one to form appropriate assumptions about the values that parameters in the forecasting model should assume. Methodological and technical skills cannot ensure a special perspective on the future. What is needed is some underlying theory that would explain the phenomenon that is being predicted, not merely have it fit into a mathematical expression. However, at the present time there is very little underlying theory in the social sciences that would enable one to arrive at appropriate core assumptions.

The false belief in the objectivity of forecasting is not the only problem with this set of techniques. The greater the time horizon of the forecast, the greater the error (Moyer, 1984). Population forecasts (a seemingly obligatory component of long-range urban plans) seem to be particularly unreliable.

Simon (1981) reports predictions made in 1930 that the population of the United States would decline to one hundred million by the year 2000. In addition, Simon discusses a 1970 United Nations report that predicted a world population of 7.5 billion by the year 2000. This was revised to 5.6 billion only five years later.

Why do such large errors occur? Moyer (1984) posits five reasons. First, he suggests that forecasters have a tendency to analyse and measure only superficial factors and ignore underlying forces. Second, substitution effects are often ignored in long-range forecasts. Thus, for example, the impacts of material shortages are often overestimated because the substitution of other materials is not foreseen. Third, time lags for technological changes are often underestimated. Just because a technology exists does not necessarily mean that it will be used. Political, social, or economic forces may prevent such developments from being applied in everyday life. Fourth, components of a forecast may be in error (e.g., fertility rates in a population projection). Fifth, bias - particularly for political gains - is often the culprit in public policy making. Wachs (1987) notes that frequently there is political pressure for forecasters to adjust their predictions. When cost projections are eventually shown to be far underestimated, it is usually the technique or the data that is blamed, not the fact that the forecast was deliberately construed to make the project appear feasible. This is particularly acute in benefit-cost

analysis, where costs are frequently underestimated and benefits overestimated. For example, San Francisco's Bay Area Rapid Transit System (BART) had a total cost that was forecast to be \$994 million in 1962, but the final cost turned out to be approximately \$2.4 billion (Wachs & Ortner, 1979).

A final problem with forecasting was noted by Beck (1982). He found that when "independent" forecasts of the same variable are called for, all of the forecasters frequently use the same assumptions, data, and even other forecasts on which the new forecast was to be based. Thus, each forecaster arrives at a similar answer and therefore reinforces the "scientific" appearance of the results.

Despite all of these problems, forecasting continues to be a popular area within the fields of policy analysis and urban planning. Proponents of the various techniques in this area continue to call for improved methodologies that will eventually lead to the accurate prediction of future events (Ayres, 1969; Hahn & Gordon, 1970; Khan, 1989; Makridakis, 1975). Others, using a more pragmatic approach, recommend caution on behalf of the users of forecasts. Moyer (1984) suggests that we must recognize the potential for bias and consider the source of the forecast. In addition, underlying assumptions must be checked for consistency and validity. Ascher (1978) recommends the elimination of plausibility checks, as the events that really shape the future tend to seem implausible before they occur. Ascher also suggests the elimination of consensus forecasts -

they tend to be simple averages of high and low forecasts. Lastly, Beck (1982) recommends that plans be based on scenarios rather than on forecasts - a suggestion that will be examined later in more detail.

All of the above recommendations are still predicated on the belief that the prediction and control of future events is possible. Briefly touched on earlier, there is a large body of literature suggesting that this view is both naive and mistaken. Friedmann (1987) points out that the belief that science can pierce the "veil of time" is based on the misunderstanding that science is a methodology that progresses by making predictions and then testing them. Not only is this view of science a mistaken one, but policy analysis as a science does not in any way operate in such a manner. Miles (1975) points out that those who believe in the predictability of the future make the mistake of historicism (the notion that historical prediction is the foremost aim of the social sciences - criticized by Popper, 1957). Friedmann also notes that the foundation of forecasts consists of a long series of assumptions, giving forecasting a peculiarly circular nature. Thus, forecasts can rarely be verified due to this inherent circularity (Wachs, 1987). Forecasts may bring about the action that then causes the forecast to be true, or we may take action to avoid a predicted future - in either case we cannot know if the prediction was accurate.

Rittel and Webber (1973) hold that the issues involved in policy analysis are so complex that rational analysis is impossible and undesirable. They feel that most policy problems are "wicked" and therefore not appropriate for rigorous scientific analysis. A "wicked problem" occurs in a context in which there are no decision rules, no right or wrong answers, and no final solution. Boshoff (1989) states that a reliance on improving forecasting methodologies cannot cope with rapid environmental change. We must accept that the future is unpredictable. Stubbart (1985) supports this view by asserting that standard forecasting techniques require levels of knowledge, understanding, prognostication, and control that simply are not possible.

A final critique of forecasting is provided by Miles (1975). He feels that forecasting and prediction (as they are usually performed) essentially stop any debate about alternative futures that may be quite different (radical) from those derived by projecting from present trends. This critique of forecasting as being conservative is also supported by Appelbaum (1977) and Friedmann (1987).

Despite these scathing attacks on forecasting, there may still be some utility for its use in the urban planning field. First of all, there may indeed be some areas of analysis that are highly resistant to all but a few environmental factors. The forecasting of such areas is likely to be more successful than that of more complex, inter-related areas. Second, it is

apparent that short-term forecasts are more likely to be accurate than long-term forecasts. Third, analysts must place more effort in studying the underlying assumptions involved in any area of study. By understanding these assumptions, and by avoiding political pressure to alter judgements, the analyst will be able to use sound judgement in making forecasts. Thus, it would appear that forecasting may indeed have some limited value within the planning field. However, its weaknesses and limitations must be recognized, particularly with respect to long-range planning.

MATHEMATICAL MODELS

This heading subsumes several techniques such as difference equations, queuing models, simulations (computer and otherwise), Markov models, and linear programming. While benefit-cost analysis and forecasting can be considered to involve mathematical models, the intent in this section is to examine those types of models that go beyond simple extrapolation or summation. These models seek to explain complex relationships among variables in a mathematical way. These "explanations" may serve to predict future values of various parameters, or may serve an educational function, assisting the analyst or decision-maker in understanding important issues. Within urban planning, mathematical modelling is most commonly used in the development of transportation networks, although it is also used in the planning of refuse collection, service delivery, and fire and police station distributions.

Martino (1970) states that mathematical models are desirable when it is necessary to know the future impact of changes in certain variables on current trends. These future impacts are expressed in the form of mathematical equations. One model may consist of one equation that expresses the relationship between two variables, another may be a myriad of thousands of inter-related equations, attempting to explain a series of complex relationships that are relevant for some policy problem.

Many of the same criticisms levelled at forecasting techniques can also be applied here. Mathematical models are aimed at "solving" or describing particular policy problems (Howard, 1975). This implies that there is either one solution or an optimal solution to the problem. Because of the nature of mathematical models, that solution must be numerical in form. Not only does this narrow down the range of policy alternatives (by attempting to determine the "optimal" strategy), but it also gives the illusion of providing technical, scientific answers to problems that may be very complex in nature. Because the makers of the model must predict the future values of variables and parameters in the model, as well as the future relationships among these factors, mathematical models run into the same criticism that is so devastating to forecasts. That is, the models are reliant to a large degree on assumptions and predictions that frequently are not explicitly stated. As Miles and Irvine (1979) note, forecasts and models essentially involve the working out of inescapable conclusions (given the assumptions

on which the models are based). However, the assumptions are merely the judgements of the model-creators, and are not subject to rigorous scientific analysis. Thus, the increased sophistication represented by various mathematical techniques is no more "scientific and objective" than highly criticized attempts to predict the future. As was noted earlier, an increase in the sophistication of methodological techniques is not the answer in the search for the most effective means of assistance for decision-makers (Cole, 1976; Friedmann, 1987; Miles, 1975; Wachs, 1987).

According to Schwarz, Svedin, and Wittrock (1982), the belief that mathematical models are the best approach is based on the mistaken belief that there is a direct analogy between the use of mathematical models in the natural sciences, and their use in the social sciences. Mathematical equations can be fit to a data series in order to obtain a descriptive model of that data. However, if that model does not reflect an understanding of the underlying processes involved, then it is not likely to serve as a satisfactory device for analysis. Nevertheless, the model may still have some usefulness in the short-term if the external environment changes little. If on the other hand (according to Schwarz, Svedin, and Wittrock), the model is based on some understanding of the underlying phenomena involved in the problem, then it will be much more useful as a policy-analytic tool (see also Hermeren, 1977). However, Kaplan (1964) has demonstrated that such an understanding is no guarantee of

accurate analysis (i.e., prediction of future values). Such is the nature of studies involving the future in any way. Of course, it has been argued (e.g., Appelbaum, 1977; Friedmann, 1987) that one can never come to an understanding of complex human systems through technical knowledge alone.

Is there a use for complex mathematical models in long-range urban planning? They are used relatively frequently, particularly in the areas of land-use planning and transportation planning (Chapin & Kaiser, 1979). However, Khan (1985, 1989) questions the use of complex models in transportation planning. He notes that long-range transportation plans are often dismal failures, but that the plans are frequently believed to have all of the answers despite their inaccuracy. Khan feels that although methodological improvements may help the situation, the real answer does not lie in this direction. A more flexible short-term plan with little or no forecasting (in the traditional sense) is called for.

The increased complexity represented in such models elevates their susceptibility to changes in environmental factors that may influence the model. As more factors are included in the model, inter-relationships multiply at an astonishing rate, and the ability to understand these inter-relationships decreases in a similarly rapid manner. With such complex relationships involved, it would appear that very intricate mathematical models are least susceptible to error if they are used for short-term analysis only. By attempting to deal with complex issues dealing

with many variables, such models face a paradox. In order to understand a complex phenomenon, it is necessary to take into account many inter-related factors. However, it is this very complexity that makes these models more susceptible to changes in the external environment that can lead to error. A simpler model would be less susceptible to such errors, but would also be less likely to capture the essence of the problem. It is for this reason that Schwarz, Svedin, and Wittrock (1982) state "we cannot really hope to develop explanatory models for complex social systems which can serve at the same time as long-term forecasting models" (p. 33).

DECISION ANALYSIS

Decision analysis is utilized as a framework for organizing problems when there is a large degree of uncertainty regarding the outcomes of particular actions and when decisions consist of easily separable components (Keeny and Raffia, 1976; Stockey & Zeckhauser, 1978; Stone, 1988). It uses both subjective and objective estimates of values and probabilities. These probabilities act not only as estimates of the likelihood of alternative outcomes, but also help to determine the values given to those outcomes. In addition, decision analysis provides a graphical representation of the decision process, usually in the form of "decision trees" or "decision matrices". As it is used within urban planning, decision analysis has been applied most frequently to areas involving some form of resource distribution.

The process essentially involves a mapping out of the sequence of decisions and chance events that are involved in the particular problem that is being studied. Decision nodes indicate points at which a decision must be made as well as all possible courses of action. Chance nodes indicate uncertain events and all of their possible outcomes. Probabilities for each possible outcome must be determined, and the payoff (or consequences) of each combination of decisions and chance events calculated. The result is a decision tree or decision matrix, in which the decision-maker can see the likely outcomes of any combination of decisions and chance events. In this way, the decision-maker is able to sort out what would otherwise be a confusing jumble of uncertain outcomes.

However, working out the probabilities of various outcomes of alternative decisions does not usually give the decision-maker an answer. He or she must examine the outcomes and decide on a course of action that takes into account their own risk-taking strategies. Thus, the decision-maker may decide based on one of several rules (Gohagan, 1980). These include the maximin rule (choose the alternative whose worst outcome is better than the worst outcomes of other alternatives - a "play it safe" decision), the minimax rule (choose the alternative whose maximum possible loss is less than the maximum possible losses of other alternatives - another conservative strategy), the maximax rule (choose the alternative with the greatest possible gain - a "go for broke" strategy), the most likely outcome rule (choose the

alternative with the greatest benefit assuming the most likely outcome does occur), and the maximum expected value rule (a weighted value is given that takes into account the probability of all possible outcomes for a given alternative - compute this for all alternatives and choose the ones whose expected value is greatest).

While the techniques involved in formal decision analysis have been refined to a great degree, the basic model mentioned above has remained the same. Stone (1988) has provided a cogent criticism of the utilitarian foundations of this decision model. First, she feels that the probabilities of outcomes are used in such a way that their imprecise, often ambiguous nature is masked. In reality, these probabilities are often based on the values and preferences of the analyst or decision-maker. Second, the outcomes of particular decisions are evaluated based on their consequences, not on other grounds such as principles of right and wrong. Third, as with benefit-cost analysis, the preferred action is based on the reduction of all outcomes to one common denomination, usually (although not always) in monetary terms. Finally, the model used in decision analysis is based on a rational decision model with an individual decision-maker at its core. Thus, it portrays decisions as being the result of a solitary, cognitive, rational mind and assumes that this person has the overall power to make a decision. While this may or may not be accurate in a corporate setting, it is rarely the case in the public sector. Authority is often spread out among several

individuals, open to negotiation, or even openly disputed. Indeed, according to Stone, if one follows the logic of the basic model, then decision-analysis promises an end to politics altogether, with rational decision-making taking its place. This view of policy analysis is also strongly criticized by Friedmann (1987).

Another problem with decision analysis is that it requires the decision-maker to "play the odds" - in other words, to select alternatives based on probabilities that estimate their likelihood of occurrence. This is fine for decisions that are frequent in nature and occur on a regular basis (as is common in the private sector). However, the technique is not very helpful for the types of unique decisions that are commonplace in long-range urban planning. There is very little data from past decisions that would permit one to use historical relative frequencies in the estimation of the likelihood of various outcomes. In addition, in the urban planning context, there will not be gains in the future that can help to cancel out bad decisions if the decision to be made is "one-of-a-kind" in nature. For these reasons, many of the problems faced in long-range urban planning are simply inappropriate for the decision analysis model.

Such a critique does not bode well for the use of decision analysis in long-range planning. It is likely to be most useful when used as a means for visually displaying a problem so that the various outcomes and consequences are clear to the decision-

maker. In addition, it may be useful for problems in which decision-making authority is clear, the likelihood of various outcomes is easy to determine, and intangibles (such as human lives) are not involved. However, such cases are uncommon in the public sector and are even less likely to occur in the area of long-range planning. It has been mentioned several times that it is very difficult (if not impossible) to truly predict the future outcomes of current actions. Thus, the selection of probabilities in such a process may be nothing more than arbitrary.

The most important weakness in decision analysis, however, is its failure to recognize the political nature of decisions made in a governmental setting. There is no single decision-maker with the authority to make decisions in such a manner. Theoretically, power is distributed among the electorate, and practically it is distributed among competing interests. Even if a politician were to come on the scene who had such massive support from all sectors that power was in effect concentrated in one hand, there is no way for that individual to predict how future decision-makers will operate. This is particularly so when sequential decisions relating to long-range plans may range over a period of 25 to 50 years. The next politician may make decisions that are completely inconsistent with those made by the current politician. There is no way to ensure that future decisions will be carried out in the way that is indicated by the analysis. In short, it appears that the general paradigm for

decision analysis has little to offer long-range urban planning, other than as a tool for laying out a problem in a graphic manner.

THE DELPHI TECHNIQUE

The Delphi technique was first developed by the RAND Corporation as a means to "obtain the most reliable consensus of opinion of a group of experts...by a series of intensive questionnaires interspersed with controlled opinion feedback" (Dalkey & Helmer, 1963, p. 458). Thus, the Delphi technique is used as a problem-solving device that utilizes structured, anonymous group communication in order to deal with complex issues. Although most frequently used for technological forecasting, this technique can be used in any situation in which group consensus and "expert opinion" are needed.

The key elements of the Delphi technique are the structuring of information flow, feedback to the participants, and anonymous participation on behalf of the participants. Linstone (1978) describes the technique in terms of the following ten steps:

1. Formation of a study team.
2. Selection of panellists that are "experts" in the area of study.
3. Development of the first round questionnaire.
4. Testing the questionnaire for proper wording.

5. Distribution of the first questionnaires to the panellists.
6. Analysis of the first round responses.
7. Preparation of the second round questionnaire.
8. Distribution of the second round questionnaire.
9. Analysis of the second round responses (steps 7 to 9 are repeated until stable results are achieved).
10. Report preparation.

Linstone (1978) states that the Delphi technique is most useful when the problem being analyzed is not appropriate for precise analytic methods, but is better suited to subjective group judgements. Martino (1970) further adds that Delphi is best suited for problems that are poorly structured, are too new to have historical data useful in other techniques, in which social and economic factors play vital roles, and in which ethical or moral considerations are important factors.

The main advantages of this technique (in addition to dealing with problems that are not amenable to more precise analytic techniques) include the elimination of group interaction effects, the cancellation of individual biases, and the capability to arrive at some sort of consensus regarding the issue in question (Ayres, 1969).

However, there are some distinct disadvantages to this technique. Martino (1970) points out that panel members may acquire a personal interest in a particular position, and may work harder at convincing other panel members of his or her

correctness than at developing an appropriate solution to the problem. Panel members may also be hesitant to change positions for fear that they may "lose face" in front of peers (despite the fact that individual positions are anonymous). In addition, the technique may induce members to feel that a consensus must be arrived at, regardless of the fact that more than one solution may be valid. Linstone (1978) states that the Delphi technique may lead to the over-simplification of complex issues. In addition, he criticizes the technique for relying on "experts" (whose opinions about the future may be no more valid than anyone else's), and for being open to bias on behalf of those running the exercise.

Despite its frequent use as a forecasting tool, the Delphi technique does not run into all of the problems associated with the more technical analytic methods mentioned earlier. Since it is an intuitive method of analysis, it cannot be accused of relying on questionable scientific and objective methods in order to probe that which cannot be known (the future). However, in addition to the criticisms noted above, it must be recognized that the consensual problem-solving model on which this technique is based implies that there is one solution to the problem or one possible future that will develop. It is naive to think that such unitary notions of the future and of solutions to problems will be useful for long-range planning. If we cannot predict the future, then we cannot know that one particular solution will solve a future problem or indeed that the problem will even

occur. This is not to say that the technique holds nothing for long-range urban planning. It could be used to explore alternative futures and thus narrow down the wide range of possible futures. In addition, by eliminating the elite notion of "experts", and allowing a wide range of citizens to participate, a much broader perspective on the issues being examined could be achieved. In so doing, the Delphi technique could serve as a useful planning exercise in order to determine where the citizens would like the city to be in the future, as well as possible alternatives that help to narrow down the future.

SCENARIOS

Scenarios have been utilized in both strategic planning and futures studies for several years (Mandel, 1982; Morrison, Renfro, & Boucher, 1983). However, their use in the fields of policy analysis and (long-range) urban planning has been limited (Perks, 1989). According to Kahn and Wiener (1967), a scenario is a hypothetical sequence of events produced for the purpose of focusing attention on important decision nodes and causal processes. It is essentially a decision-focused analysis of the future that posits a particular chain of events and possible reactions on behalf of the organization (corporation, city, etc.) in response to these events. There is a focus on "key driving forces" that underlie those factors that are of strategic importance to the organization, as well as on important turning

points in the future - points at which these key driving forces compel the organization to react in some way.

Perks (1989) and Mandel (1982) discuss those characteristics that are essential in order for scenarios to be an effective aspect of the planning process. These characteristics are as follows:

1. Scenarios should contain a mix of quantitative and qualitative information. This information should relate to aspects of the environment that will help the organization make meaningful decisions. Scenarios should also be broad and comprehensive. This provides a context for specific decision-making.
2. There should be a full explanation of the logic behind each scenario. At the core of a scenario is a set of assumptions regarding key driving forces that both describe the future and show how such a future might develop. It is necessary that these assumptions be fully explicated with sound reasoning.
3. Scenarios must connect key driving forces with the relevant organization through statements of consequence. In other words, there should not only be a description of key forces and their impacts on the organization, but also an analysis of how the organization would respond at key inflexion points.
4. Scenarios are most effective when written in the future-present tense.

5. An even number of scenarios should be used in order to avoid the development of a "most likely" scenario. Mandel suggests that two to four scenarios will usually be adequate to span the range of plausible futures.
6. Precise, quantitative statements regarding the probability of occurrence of future events should be avoided. Subjective estimates are more appropriate.

The important thing to note is that scenarios are not forecasts. Rather, they are the logical working out of alternative futures given various sets of assumptions. Although scenarios can be highly intuitive in nature, they can also be quite rigorous, disciplined examinations of possible futures, forcing the analyst to consider a wide range of variables and to come to an understanding of underlying assumptions in the analysis. Since the future is unknowable, no one scenario can hope to serve as a useful tool. Instead, multiple scenarios (or alternative futures) enable one to explore several possible, valid futures. These scenarios may not predict the future, but they help to narrow down the range of possible futures. Thus, plans can be prepared to deal with problems in various ways, depending on how the future unfolds. No single solution is offered, but rather a package of solutions, each one suited to a particular sequence of developments. A specific advantage that the use of scenarios has over other techniques is the ability to incorporate "wild card" or highly unpredictable events into the

analysis. Thus, for example, the ramifications of an increase in the price of crude oil to over seventy-five dollars per barrel could be explored, even if it is felt to be an unlikely event.

Given the above, it must be recognized that scenarios do have some weaknesses. First, since the elucidation of key driving forces is an integral part of the scenario-writing process, there is the difficulty of deciding which forces are to be included. It is impossible to incorporate all of the myriad of inter-related forces that have impacts on a city. Therefore, the number of these forces that are included in the analysis must be narrowed down to a manageable number (usually two or three - according to Perks, 1989). The possibility that there might be a factor other than those selected for analysis that could have a large impact on the future development of the city always exists.

A second weakness with scenarios is that it is unlikely that the future will unfold precisely in the manner described in any of the scenarios. Indeed, it is the nature of the future that despite our best efforts, some entirely different future will develop - one that has little in common with the carefully constructed scenarios. This does not entirely negate the usefulness of scenarios. After all, chances are that many of the events described in the set of scenarios as a whole will come true, and the means for dealing with them will therefore already have been explored. However, this limitation of scenarios should be recognized and dealt with. The most important thing to remember is that scenarios are not predictions of the future, but

rather descriptions of possible futures and ways of dealing with them.

The final weakness of scenarios to be discussed is the question of how long the time horizon should be. The longer the time frame involved, the farther removed from credibility scenarios become - due to the unpredictability of the future (Mandel, 1982). This would indicate that scenarios are best used for shorter time horizons of five to ten years. However, scenarios involving longer time frames can still be useful, as long as it is recognized that revisions will be necessary in order to take into consideration any new information that is available as we move into the future. This would suggest a continuous process for long-range scenarios, rather than a single exercise that produces a set of scenarios that will guide decision-making for the next twenty to fifty years.

It would appear that scenarios have the capability to be quite useful in the construction of long-range plans in an urban context. However, scenarios are not plans. Rather, they provide a context for planning. They point the direction to the future, but do not tell us the precise way to get there. The assumptions incorporated into the scenarios can serve as a background for the construction of plans.

Heydinger and Zentner (1983) provide several reasons for the use of scenarios. First, they enable a wider set of values to be considered when planning. Alternative perspectives based on other value sets can be explored. Second, scenarios help

planners recognize that changes often occur centred around discrete events, not just as the result of the continuation of trend lines. This in turn helps planners prepare for events that may have important consequences. Third, the methodology involved in scenario-writing is not limiting in nature. It can be quantitative or qualitative in form, and thus recognizes the complex nature of the world in which we live. Finally, scenarios provide a common frame of reference for those who would like to discuss the future of the city. As an educative force, scenarios can serve to aid in the communication about the future development of our cities.

Van Doorn (1986) provides a useful typology of scenarios that not only illustrates the different uses of scenarios, but that also assists in the selection of appropriate methods for this analytic tool. Van Doorn places scenarios on four dimensions. First, he distinguishes between projective and prospective scenarios. Projective scenarios look to the future based on the present and the past. Prospective scenarios begin with an image of the future and then try to "work back" to the present. The second dimension consists of normative versus descriptive scenarios. Normative scenarios are based on the normative principles of the scenario-writers, while descriptive scenarios are based solely on available empirical facts. Prospective scenarios are necessarily normative, but projective scenarios can be either normative or descriptive. The third dimension discussed by van Doorn is that of dominant versus

limits-identifying scenarios. Dominant scenarios deviate very little from those events that are considered to be highly probable. Limits-identifying scenarios tend to look at the boundaries of probability and examine developments that seem improbable at the current time. Both dominant and limits-identifying scenarios are always projective in nature. Finally, van Doorn distinguishes between preferential and aprioristic scenarios. This dimension applies only to normative scenarios, and describes the extent to which the scenarios represent the preferences of the majority of the population (preferential) or the opinions of minorities (aprioristic).

Standard forecasting and long-range planning techniques (as described previously) can be described as projective-descriptive-dominant in nature according to van Doorn's typology. In other words, they project the future from the past or the present and use only empirical "facts". In addition, there is every attempt to look solely at highly probable developments and base planning on them. My conception of scenarios within a contingency planning process (as described in Chapter Five) would not fit well into van Doorn's typology. However, if one considers his dimensions as continua rather than as strict archetypes, then I would argue for scenarios that are primarily projective, but that always keep an image of the desired future in mind; scenarios that would have a healthy mix of normative and descriptive information; scenarios that look at both dominant trends and at the limits of probability; and lastly, scenarios that consider

both the wishes of the majority as well as the needs of minorities. In short, I would call for a form of scenario that attempts to integrate all of the relevant aspects in van Doorn's typology.

We have seen that scenarios offer us a valuable tool for long-range urban planning. Through the non-scientistic incorporation of uncertainty into the planning process, this technique avoids many of the problems inherent in other policy analytic techniques. Most important of all, scenarios can be used to not only help us react to events in the future, but to help shape the future in a way that is desirable to those who reside in the city.

Related to scenarios is the process that is frequently described as "visioning". Visioning also attempts to look at the future, but in a very different way than does scenario-writing. Visions tend to be highly normative statements about where we want to be in the future, rather than an examination of probable (or improbable) events and their impacts on the organization. The result is often a highly utopian and idealistic vision of a preferred future, with little connection between it and the present. Although intended to act as a guide for future development, this lack of grounding in reality severely constrains the vision's ability to perform this function.

It should be noted that the Province of Alberta's Department of Municipal Affairs has been encouraging the use of visioning since 1988. The City of Calgary responded with a task

force that resulted in the Calgary 2020 document (City of Calgary, 1989c). This vision of Calgary in the year 2020 is intended to be the first step in an action planning process for the City. This form of developing a "vision of the future" will be discussed in Chapters Four and Five.

NORMATIVE POLICY ANALYSIS

"Objective". "Rational". "Scientific". These are words that are frequently used by policy analysts and their proponents to describe the area known as policy analysis. This notion of value-free analysis has pervaded the policy sciences for many decades (Friedmann, 1987). Another view of policy analysis has recently gained prominence and takes a much more critical perspective (Hawkesworth, 1988). From this viewpoint, policy analysis as it is commonly practised is strongly related to scientism. Scientism is an ideology that maintains the belief that the only valid knowledge is that which is validated through empirical research. All other types of knowledge (e.g., political, ethical, intuitive, etc.) are value-laden and therefore cannot be examined on the same level as scientific knowledge. Thus, many critics of policy analysis take issue with the notions of objectivity, rationality, neutrality, and value-free analysis. A thin veneer coats analyses, giving them the appearance of authority, while at the same time masking the truly political nature of decisions and the value-laden aspects of the analysis. The end result is to remove citizens from the process

of decision-making, and replace them with a falsely authoritative "science" known as policy analysis (see Appelbaum, 1977; Friedmann, 1987; MacIntyre, 1981, 1985; Stone, 1988).

Alasdair MacIntyre (1981) points out that the scientific nature of policy analysis is partially due to social scientists' adherence to the ethical theory known as "emotivism". Emotivism relies on the notion that facts and values are ontologically separate, and that any judgements involving emotions, feelings, and so on are not questions of knowledge and rationality, but rather are subjective in nature. Thus, moral and political questions are merely matters of preference or non-rational processes. This of course means that reasoned debate about such issues is not possible.

Despite the rejection of emotivism by moral philosophers (according to MacIntyre), it would appear that social scientists and the public at large continue to subscribe to this view. The belief within the policy sciences that values are not subject to rational debate and can be equated with preferences has a further depoliticizing effect. Since there can be no reasoned debate about such issues, it is best for citizens to stay out of the policy-making picture and allow the "experts" to scientifically and objectively determine the best course of action for the community or society to take.

This dichotomy between facts and values is related to another difficulty with the standard manner in which policy analysis is practised. This is the separation of means and ends

in the analysis. Since the ends (goals, objectives) are usually given to the analyst by someone higher up in the bureaucracy or by a political decision-maker, the analyst rarely questions them. It is felt that these are valuative matters, and that such judgements will be made through the political process. Since the analyst sees himself as being involved solely in the empirical sphere, he has no means with which to examine the ends that have been provided for him.

However, the means (policy alternatives) to achieve the end are in themselves not value-free. It is a fallacy to think that valuative questions can be determined in the political arena and that the policy analyst will then determine the best (value-free) means to achieve the objectives. Normative principles are embedded within the various policy alternatives that can act as means to any particular end. Thus, despite rhetoric to the contrary, policy analysts cannot escape normative issues.

The relationship of policy analysis to positivism has been pointed out by Hawkesworth (1988). Positivism is based on the idea that the only valid knowledge is that which is derived from empirical investigation. From this viewpoint, any proposition that could not be verified empirically has no meaning. This means that there are only two realms in the world: science and non-science. Thus, any knowledge that is based on religion, ethics, philosophy, or any other non-empirically verifiable set of ideas is simply nonsense.

The influence of positivism on policy analysis is obvious from the previous discussion. The belief in objective, scientific analysis as the only sphere in which policy analysis can operate, and the rejection of all other forms of discourse can be seen to stem directly from the positivist tradition.

Positivism has been strongly criticized as a theory of science. Another group of theories that attempt to explain science are termed "presupposition theories of science" (e.g., Bernstein, 1983; Gunnell, 1986; Kuhn, 1970). These theories take the position that all observation is theory-laden. Indeed, all knowledge is based on theories that already exist. Thus, the notion of theory developing out of observed fact that is central to positivism is rejected, and replaced with the idea that theoretical presuppositions must exist before observation takes place. These presuppositions shape what will be perceived and this in turn will help to establish what will be considered to be a "fact".

From this perspective, there can always be alternative theoretical explanations for any particular event. There can, however, be reasoned debate about these alternative explanations. This debate does not only involve empirical observation, but can also include other types of knowledge as well (I will call these other types of knowledge "values" for ease of discussion). Thus, the belief that facts are the only realm for reasoned debate is rejected, and values are now included as a valid area for policy analysis.

Another important positivist principle that is rejected is the notion that instrumental (goal-directed) rationality is the only valid form of rationality. If we can have a reasoned debate about values as well as facts, then we must accept the idea that there can be rational discourse about values. Anderson (1985) states that rationality can be defined as acting for a "good reason" and that what counts as a good reason will vary depending on the situational context. Hawkesworth (1988) suggests that "practical reason" is a valid alternative to the notion of instrumental rationality. Friedmann (1987) cites Lewis Mumford (1938) as stating that there is a great danger in relying solely on instrumental rationality. Mumford saw much constructive value in what he called "irrational", and felt that the only good scholarship was that which was value-committed and critical.

While the above discussion suggests that there is a false nature to the fact/value distinction, it is not necessary to blur these two concepts. Anderson (1985) and MacIntyre (1985) have both demonstrated that values are an integral part of policy analysis as it is currently practised, despite the rhetoric about objectivity, rationality, and value-free analysis. However, these authors still maintain the notion that facts and values are indeed separate concepts.

Anderson states that although there is the standard view in policy analysis that values cannot be justified by reference to objective criteria (they are irrational preferences), in practice policies are evaluated on many bases that are not "scientific" in

nature. Thus, policies are frequently criticized for being unfair, unjust, or unethical. In addition, policy analysts frequently use standards relating to justice, individual rights, the public interest, and so on when evaluating policies. Such normative standards are not arbitrary and there can indeed be reasoned debate about them. In a similar vein, MacIntyre (1985) demonstrates that cost-benefit analysis is not value-neutral at all, and is in fact based on the ethical theory of utilitarianism. These discussions further illustrate that policy analysts are operating under the illusion that their analyses are value-free. It must be recognized that the means, the ends, and the tools themselves of policy analysis are all based on normative principles.

It is apparent from the above discussion that it is not necessary (in theory or in practice) to restrict the fields of policy analysis and urban planning to the sphere of empirical observation. Whether one rejects the separation of facts and values altogether, or simply rejects the notion that there can be no reasoned debate about values, it must be recognized that policy analysis can indeed be expanded to include other areas of discourse. While it is possible to discuss many possible areas that could be included in the realm of policy analysis (e.g., theology, politics, metaphysics), the remainder of this section will focus on the inclusion of normative principles in policy analysis.

Once it has been recognized that normative principles are a valid area in which policy analysis can participate, there are several different ways in which to incorporate this understanding into policy analytic work (Hawkesworth, 1988). These include:

- (1) value identification prior to empirical analysis,
- (2) normative policy analysis, (3) applied ethics as advisor to policy analysts, (4) analysis of theoretical presuppositions, and
- (5) policy analysis as an educative and emancipatory tool.

Value identification is simply the explicit stating of the values (i.e., normative presuppositions) of the policy analyst before the analysis takes place. This is based on the recognition that policy analysis is not value-free, and that analysts may have a normative perspective that influences their analyses and subsequent recommendations. This explication of the analyst's values is believed to allow decision-makers and the public a greater ability to understand the analysis and to evaluate both the ends and the means contained in the analysis. While this situation is an improvement over a strictly empirical analysis, value identification is still based on the premise that facts are appropriate for rational discourse, while values are irrational and have no place in the arena of reasoned debate. Normative principles that may be an extremely important aspect of the analysis in question are given only brief attention. Once the presuppositions of the analyst are stated, then we can go on with the "objective" and "accurate" aspects of the analysis. Should not the normative presuppositions themselves be subject to

reasoned debate? It would appear that the use of value identification simply encourages the status quo.

In contrast to the above approach, normative policy analysis advocates the inclusion of value questions in the analysis. There is an attempt to integrate both normative and empirical evaluations in the process. It is recognized that reasoned debate is possible in both realms, and that it is therefore possible to seek valid reasons for adopting policies through rational discourse that includes normative principles and empirical observations. Once the normative implications of policies are known, then it is possible to estimate the concordance of the policy with the established political system, and to debate the very values that make up that system. In essence, there would be a type of "wide reflective equilibrium" in which the normative principles supporting policy alternatives are debated in order to aid ethical decision-making. It is argued that efficiency is not the only criteria on which to base policy decisions. There are several normative principles (such as justice, equality, and fairness) that can also serve as criteria (see Anderson, 1985). Policies can be rationally justified by reference to these normative principles as well as to the criterion of efficiency (which is itself based on normative principles).

A related but somewhat different approach to the inclusion of normative principles in policy analysis is the use of an applied ethicist as an advisor to the analyst. This position

supports many of the same ideas as does normative policy analysis (the recognition that reasoned debate is possible in both the empirical and the normative realm, and the belief that empirical analysis is not value-free). However, from this perspective the applied ethicist serves as an advisor to the policy analyst, assisting in the clarification of ethical implications, the identification of normative presuppositions, and the suggestion of ethical principles to guide policy evaluation. Since there are several different ethical theories, one might ask how decisions can be made without arriving at intractable ethical dilemmas. There are essentially two different approaches taken to avoid this. The first is to use different ethical theories in different situations. This is based on the belief that different forms of ethical analysis are appropriate for different problems. Thus, for example, consequentialist ethical theories (such as utilitarianism) can assist in the analysis of the consequences of various policy alternatives - particularly in terms of efficiency. In contrast, rights-based theories can assist in analysing the effects of policy alternatives on individual rights. The judicious use of various ethical theories in different situations will enable the analyst to produce recommendations that are more ethical in nature. The second way of dealing with the issue of ethical dilemmas is to advocate the use of one ethical theory in all situations. Thus, whether one is using a utilitarian, rights-based, or communitarian framework (to name a few), the analyst would consistently apply the

principles of the framework in all situations. Once again, strict adherence to these principles would ensure "ethical" decisions, but the issue of ethical dilemmas is simply avoided, not really dealt with in any satisfactory way.

A fourth way of introducing normative issues into policy analysis is that advocated by Hawkesworth (1988). Hawkesworth rejects the notion that facts and values are different in any demonstrable manner, and therefore believes that all policy analysis involves reasoned debate on valuative issues (what he means by "valuative" is not clear if there is no difference between values and facts). He also supports the view that all knowledge is based on theoretical presuppositions, and is therefore open to alternative theoretical explanations. Based on these principles, Hawkesworth feels that policy analysis should be altered to incorporate the analysis of theoretical presuppositions which constitute various policy alternatives. This analysis would enable all aspects of the problem (empirical, normative, theological, etc.) to be examined. Such a diverse analysis will show any weaknesses in positions, and illuminate the reasoning behind contending viewpoints. The task of policy analysis will no longer be to identify scientifically valid policy alternatives, but rather to identify the various dimensions of the debate that are relevant to particular policy questions. This will then aid in the ultimate policy choice which will be an informed, political decision. If one can find weaknesses in the theoretical presuppositions of particular

policy alternatives, then the alternative itself is less likely to be selected by an informed political decision-maker.

The final use of normative principles in policy analysis that will be discussed involves the transformation of policy analysis into an educative and emancipatory tool. From this perspective, it is imperative that policy analysis expand its basis of scientism to recognize the value of all types of knowledge. The policy analyst is no longer a social technician (as in the rational/comprehensive model) or a political manager (as in the incrementalist model), but rather he is an educator attempting to provide all citizens with information that will assist them in understanding the complexities and dimensions of political problems. This information is intended to aid in the emancipation of the individual by the unmasking of the truth that has been hidden by ideological distortions. There is a commitment to the notion of participatory democracy, in which the public is restored its rightful role in the policy process. Although the ideas expressed in such a position are somewhat utopian in nature, it does provide us with an ideal situation that is not only a desirable goal, but that can also act as a means to achieve a truly informed, participative citizenry.

This section has demonstrated the relationship of policy analysis to empiricism, positivism, and scientism. It has clearly indicated that it is no longer acceptable to keep empirical analysis and normative principles separate. The two must be integrated in some way or else the legitimacy of the

field can be questioned in many ways (logically, ethically, and politically).

Five different methods for integrating these aspects of policy analysis were discussed. While there are difficulties with each method, there is also value to be found. It is my opinion that although the educative/emancipatory model for policy analysis is an admirable goal, it is simply unrealistic to expect it to develop in the near future. This does not mean that aspects of this model cannot be implemented in other ways.

I believe that the normative policy analysis route is the best approach to take. It enables the analyst/planner to incorporate empirical analyses as well as normative principles into his recommendations. In addition, it recognizes that there can be a rational discourse involving normative principles, and that these principles are not simply arbitrary preferences. By including these normative principles in the analysis, the political decision-makers will be much more informed about the implications of each policy alternative, and will therefore be able to make better decisions involving the long-term future of the city.

In addition, this model can also be used in an educative way to inform all the members of society about the implications of planning decisions that are under consideration or that have already been made. This will help to balance the false authority of empirical analyses and thus enable the citizens to make more informed political decisions. Whatever the final form that

policy analysis takes, it is imperative that normative principles become an integral part of the profession. To deny this is to deny the true nature of policy analysis.

SUMMARY

In the above sections, various policy analytic techniques have been examined. These techniques have ranged from the highly quantitative (benefit-cost analysis, mathematical models) to the highly intuitive and value-laden (Delphi technique, normative policy analysis). It has been demonstrated that these techniques have varying degrees of usefulness in the context of long-range urban planning.

To sum up the findings of the above research, several techniques used in policy analysis appear to have little to offer the field of long-range urban planning. Quantitative forecasting techniques and mathematical models fall into the scientific trap by maintaining that science can predict the future. This fundamental flaw makes the techniques questionable at best - particularly for long-term analysis. Decision analysis is also of little use to the long-range urban planner. While solving some of the problems of the previous two methods, it fails to take into account the political nature of decision-making in a governmental setting. In addition, a sequence of decisions that range over a period of 25 or 50 years cannot be predicted in advance. We simply cannot know on what basis future decision-makers will make their decisions.

Benefit-cost analysis, despite sharing some of the fundamental flaws of the above methods, still has some value in the long-range urban planning context. Specifically, it is most useful for problems in which goals are well-defined, environmental factors are unlikely to cause large changes in the future, there is a focus on monetary factors, and efficiency is the sole criteria on which solutions to the problem are to be judged. While such problems may not occur frequently, the concept of determining if a project produces more (monetary) benefits than costs could still be incorporated into a more comprehensive analysis that considers other factors. Efficiency, after all, is a goal to be strived for. However, it is not the only principle on which decisions should be based.

The Delphi technique, despite its association with forecasting, can still be utilized as an effective policy analytic tool. Its greatest problem is that it seeks single solutions to problems when the future is unknowable and thus the appropriateness of particular solutions is also unknowable. It is suggested here that the greatest potential for the Delphi technique lies in its use in conjunction with scenarios. It was shown that scenarios have the potential to be extremely useful for exploring alternative futures of city development. The incorporation of uncertainty into scenarios makes them suitable for dealing with long-range plans. In addition, scenarios have the potential to serve as an educative tool and as a means of increasing citizen participation in the planning process.

Lastly, the use of normative policy analysis was considered. This is a controversial topic, and is more frequently supported by critics of policy analysis than by policy analysts themselves. There is strong evidence to suggest that the traditional scientific nature of policy analysis is fundamentally flawed, and that there must be a paradigm shift within the field. Thus, one cannot speak of normative policy analysis as being "useful" or "not useful" for long-range urban planning. Rather, the research suggests that the incorporation of values into the policy analytic framework is a necessary action. Unless this is done, the entire field will lose its legitimacy (political, ethical, and methodological). By broadening the perspectives considered within the framework of policy analysis, normative policy analysis will not only aid decision-making (through the increase of information), but will help to transform our society into a truly democratic one, where decision-making is not based on the interests of a few elite groups. Thus, policy analysts can change their role from that of advisor to that of educator and communicator. In this way, our society can better achieve the goals and objectives of those who live within it.

CHAPTER THREE

A REVIEW OF CALGARY'S LONG-TERM GROWTH MANAGEMENT STRATEGY

LONG-TERM GROWTH MANAGEMENT STRATEGIES

We have seen that long-range urban planning can be demonstrated to have some utility, and that the various policy analytic techniques used in the formation of long-range plans have differing levels of effectiveness. One commonly used form of long-range planning is the "growth management strategy". In many communities, this may be the only long-range plan in existence. Prior to an examination of Calgary's long-term growth management strategy, this section will briefly review some of the more common growth management techniques that are used in North America.

Before the early 1970's, there was little questioning of urban growth and development (Dowall, 1981). Until that time, most planners not only accepted growth, but also actively encouraged it. It was customarily acknowledged that urban growth was linked to general economic growth and development (Lithwick, 1970). Perceived benefits of growth included increases in the tax base, greater monetary benefits than costs, development of more varied range of goods and services, greater job opportunities, and improved community facilities (Scott, 1975).

However, there gradually developed a recognition that along with urban growth comes a series of related problems: congestion, pollution, noise, changing lifestyles, crime, environmental damage, and societal complexity (Boon, 1977; Burrows, 1978; Scott, 1975). As a result, the use of growth controls in North American cities grew dramatically between 1975 and 1980. Indeed, some communities opted for "no-growth" policies (Dowall, 1981). The implementation of such policies often resulted in new problems, such as high inflation and reduced or negative economic growth. By eliminating one set of problems associated with urban growth, municipalities were developing new problems related to economic stagnation. Obviously, a simplistic approach to growth controls is not the answer.

It is evident now that the zero growth option is not tenable (at least in the near future). It would take approximately 60 years (until 2050) before the overall population of the United States levels off (Scott, 1975). Although figures are not available for Canada, one can assume a comparable situation (the precise time frames may differ due to variation in the fertility rate between the two countries). The unalterable fact is that it will be many years (perhaps decades) before the overall population in Canada ceases to grow (perhaps even longer - the figures mentioned above for the United States assume zero international in-migration).

Growth, therefore, is inevitable. This does not mean, however, that unrestrained urban growth is the only option. In order to address the problems associated with urban growth, some form of growth management or growth control must be implemented. It is hoped that such techniques will enable cities to benefit from growth while at the same time ameliorating to some extent the difficulties associated with rapid, unrestrained urban growth.

Attempts to manage growth have ranged from wholesale accommodation of growth through the development of sub-centres as in Tokyo (Tokyo Metropolitan Government, 1987), to an outright moratoria on any further development as in Ramapo, New York (Burrows, 1978). Several control systems have been developed that utilize various growth management tools. The following section discusses the primary tools that are utilized in growth management systems, and examines their appropriateness for long-range planning.

A BRIEF REVIEW OF GROWTH MANAGEMENT TECHNIQUES

The purpose of this section is not to debate the relative merits of growth, controlled growth, and zero growth within an urban context. Rather, it is to examine the relative merits of various tools and techniques of growth management with respect to their use in the long term. In order to do so, I will use Gosselin's (1978) classification of growth management techniques. Gosselin places these techniques into the following categories:

Public Acquisition, Environmental Controls, Zoning Techniques, Development Agreements, Subdivision Regulations, Restrictive Covenants, Annexation, Building Code Restrictions, Exactions, Tax and Fee Systems, and Planning and Management Techniques. Not all of the techniques in these categories will be discussed, but those that are most commonly used in North American municipalities will be examined.

Public Acquisition

There are three forms of public acquisition that will be discussed here: Fee Simple Acquisition, Land Banking, and Less Than Fee Simple Acquisition (Easements). Fee simple acquisition is when a municipality acquires full title of a property for a specific public use. It is most commonly used for the development of parks, open spaces, and public buildings. Although this tool is quite flexible, and can indeed influence the direction and timing of urban growth, it is only useful in the short-term, as the long-term holding of such lands is both expensive and restricted to land within the political boundaries of the municipality. Other problems with this tool include its expense to the municipality, its tendency to artificially inflate land values, and the possibility that various municipal departments may compete for the use of such land, thus making the "planned use" of the land difficult.

Land banking is similar to fee simple acquisition except that it involves the public acquisition of relatively large

tracts of land where urban growth is expected. This land is then held for future, timely use (this use can be either public or private - in the latter case, the land is sold at market value to private interests). Land banking can be used to minimize urban sprawl, encourage more intensive development of already urbanized areas, reduce the cost of raw land (and therefore lower or moderate housing costs), and restrain land speculation. However, this tool is also very expensive (due to high holding costs), and may in fact lead to artificially inflated land values - just the opposite of the intended effect (Burrows, 1978). On the plus side, land banking is very suitable for long-term planning, as it provides the municipality with direct control over the timing and direction of future urban growth. It enables the municipality more easily to implement comprehensive land-use plans and thus can have a large impact on peripheral development. If used well, land banking can be a very effective tool for managing urban growth, particularly in the short-term.

The third form of public acquisition - easements - consists of the purchase of development rights from a property owner in order to preserve its (non-urban) use. As an example, the municipality could pay agricultural land owners the potential urban value of their land in order to maintain its agricultural use. Such a technique is less expensive than fee simple acquisition, but is also less flexible. In addition, it is not successful if land development pressures exist already. In such cases, easements can become as expensive as fee simple

acquisition. These easements must be purchased in periods of slow development. Otherwise, their ability to control growth is substantially weakened.

Environmental Controls

Environmental controls are the second type of growth management technique mentioned by Gosselin. Although, these controls come in many forms, their intent is to protect environmentally sensitive areas or natural resource areas from damage by restricting development. This can have a significant impact on the direction of future urban growth, as entire tracts of land can become off-limits for development. Such controls are both useful and desirable, but cannot be considered to be effective growth management tools in and of themselves. They can tell us where development should not go, but are of little assistance in determining the shape of development at a more detailed level. Thus, given effective legislation, environmental controls can indeed prevent future urban growth in certain areas.

Zoning

Land-use zoning is the most commonly used technique for controlling urban growth. This is most likely due to its being a legal requirement in most jurisdictions. Essentially, conventional zoning consists of dividing land into zones within which various development requirements are regulated. This technique is useful for controlling the use of land, but is very

ineffective for controlling the timing and development of urban growth. This is because it addresses itself to land that already exists within the political boundaries of the municipality. Land outside of the city limits cannot have its use regulated by the municipality in this manner (although the province could conceivably do so).

In response to the problems with conventional zoning, several variations on this standard have been developed (e.g., conditional zoning, contract zoning, flexible zoning, incentive zoning). These can be more effective as growth management tools due to their greater flexibility (as an example, peripheral land can be designated for special zoning that prevents or slows down urban use). However, these techniques also only apply to land within the political boundaries of the municipality, and are therefore equally ineffective for long-term growth management. In addition, they have been shown to contribute to urban sprawl and only slightly slow down growth (Burrows, 1978).

Development Agreements

The use of development agreements addresses the same concerns dealt with by zoning. An agreement is negotiated between the municipality and developers, and details of the development are worked out in the negotiating sessions. This technique can be very effective at controlling growth within the political boundaries of the municipality. It is very flexible but relies on a plan that provides guidelines for the future

desired state of the municipality. By using development agreements in conjunction with a well-thought out development plan, there can be a great deal of influence on both the direction and timing of future growth (within the political boundaries of the municipality). However, if development pressure is great, it may be quite difficult to stick to the development plan.

Subdivision Regulations

Subdivision regulations are the second most commonly used growth management devices after zoning. They regulate the conversion of raw land to building lots. However, this technique has little influence on the general direction of urban growth. The land to be subdivided has already been zoned for a specific use, and the only way that subdivision regulations can be used to effect the timing of urban growth is if they are used to delay the process. All-in-all, this technique cannot be considered an effective growth management tool.

Annexation

Annexation is an important means of urban expansion, and can obviously have a significant influence on the future direction of urban growth. Since annexation consists of the extension of municipal boundaries, future urban growth will only occur in those areas that have been annexed (although rural municipalities surrounding a major centre can allow urban growth

in those areas as well). As a growth management tool, however, annexation is ineffective when very large tracts of lands are incorporated into the city's corporate boundaries. In order to be effective, annexation would have to be incremental in nature, with the municipality only annexing small parcels of land just ahead of the need for such land. Otherwise, the annexation of large parcels of land will have little effect on the direction and timing of future growth other than by determining future growth corridors in a gross manner (i.e., little in the way of "fine-tuning" of growth can be done). Incremental annexation would require both a streamlined process (so that municipalities could rapidly incorporate the needed land) and a great deal of insight into future land requirements. Both of these requirements are unlikely to be achieved, as the controversy that frequently surrounds annexation proposals mitigates against a streamlined process, and the necessary insight regarding future land needs is likely to be unattainable.

Tax Concessions

Tax concessions are sometimes used as a means of controlling growth. The rationale is that by reducing the property tax on undeveloped land, there will be less of an incentive to convert this land to urban use (Burrows, 1978). Despite the common-sense logic involved in such schemes, there have been several implementation problems when they have been used (not the least of which have been legal challenges - see

Brower, Owens, Rosenberg, Botvinick, & Mandel, 1976). The theoretical effectiveness of such taxation policies has not been borne out in practice.

Planning and Management Techniques

The final type of growth management to be discussed is the use of so-called "planning and management" techniques. Although there are several such techniques that can have small impacts on urban growth (e.g., capital programming, official mapping), the primary tool that fits in this category is the General Municipal Plan or any other planning document that has a similar impact on the physical development of the municipality (such as a long-term plan or a growth management strategy). These plans are official documents that are adopted by bylaw as a policy guide for future physical development of the municipality. As such, they cannot be considered a growth management tool in and of themselves. These plans can outline the directions for future growth, but this must be implemented through the use of other tools (such as those discussed above). If the entire package of growth management tools is well-thought out, then these plans can be an integral part of future urban growth. Without them, growth management may be ad hoc with little in the way of guiding principles. Thus, in order for the primary tools of growth management to be effective, there must be a well-designed plan that oversees the use of these tools.

SUMMARY

To conclude, we have seen that the tools for urban growth management are many and varied. Each of these tools has various strengths and weaknesses with respect to long-range planning. However, it is apparent that some are much more effective than others. For example, development control and land banking appear to be quite effective in certain situations, while subdivision regulations have little impact on urban growth.

The most important thing to note is that most of these techniques have little impact on the timing of future growth, although they can influence its direction to a certain extent. In my opinion, this is where the general municipal plan or long-term growth management strategy can indeed have a major impact. These policy documents, if followed, can be designed to not only outline the future desirable state(s) of the municipality, but to be flexible in the event of unforeseen changes. In this way, the timing of urban growth can be controlled so that the municipality can have new developments both where and when it is felt to be desirable.

There are two key stumbling blocks to the effective use of plans in this manner. First, there is the highly political nature of many (if not most) planning decisions. Even the best of plans can be sabotaged by politicians who succumb to pressure from development interests. Thus, plans must not only have the legislative teeth to be enforced, but the politicians must also

have the will to not bow to the pressure that they will inevitably experience.

The second stumbling block is the tendency for plans to outline a single rigid path to the future. This path quickly becomes irrelevant as conditions change, and the plan may be of little use soon after it is printed. For example, if all a plan focuses on is controlling (i.e., restricting) growth, what will be done during a severe recession when growth may need to be encouraged as much as possible? Plans must be flexible in nature, adapting to the changing conditions in which the municipality finds itself. Cities can grow quite rapidly due to forces that are beyond anyone's control. Any growth management plan must be flexible enough to respond to these forces. This is not to say that effective plans are the sole issue in achieving effective growth management. However, they are an integral factor in the overall success of any growth management strategy.

THE CITY OF CALGARY'S LONG-TERM GROWTH MANAGEMENT STRATEGY

On 22 July 1986, Calgary City Council approved the Long-Term Growth Management Strategy (City of Calgary, 1986). This strategy consists of a set of eighteen policy statements. These policies are intended to guide the future growth of the City of Calgary for the next thirty years. This section will briefly review the pertinent aspects of the strategy, including its history, development, and present format.

HISTORY

Prior to the current long-term growth management strategy, the City of Calgary had in place a set of policies that were intended to manage urban growth. These policies can be found in "The Strategy" chapter of the city's General Municipal Plan (City of Calgary, 1979). Despite the use of a goals achievement matrix and scenarios to arrive at a growth management strategy, City Council adopted a "free-market approach" (see Boon, 1977). It was considered to be a vital concern that the strategy deal with the rapid economic growth that the city had experienced during the 1970s. In addition, there was seen to be a need to alleviate the rising cost of housing due to this rapid expansion.

The adopted policy attempted to achieve these goals by encouraging suburban growth in all directions simultaneously (in reaction to market demand). Services were extended as needed according to the requests of the developers, in anticipation of short-term market demands. This meant that large investments

were made by the City and by utility companies in order to provide the infrastructure for this anticipated growth. It was expected that the City would recover costs as the city continued to grow. Although described as a "Balanced Growth Strategy" (City of Calgary, 1979), the result was little or no control of growth. Unrestrained suburban expansion characterized Calgary during this period.

The rapid growth of the late 1970s and early 1980s significantly changed in 1983. In both 1983 and 1984, the city's population actually declined in absolute numbers, compared with a 5.5 percent growth rate in 1982 (City of Calgary, 1989a). The city was left with high front-end expenditures on infrastructure with little hope of cost-recovery in the near future. These factors, in addition to several physical barriers (infrastructure thresholds in the South and East, major sour gas reserves in the East, and development of country-residential uses in the West and North-West) led City Council to realize that the previous approach was no longer a suitable strategy for managing growth.

In 1983, City Council ordered that a fundamental review be undertaken of the existing growth strategy. It was felt that in order for long-term needs to be met, the new growth strategy had to incorporate an annexation policy in order to "maintain a sufficient supply of developable land within the city for the long-term..." (City of Calgary, 1986, p. 2).

The use of annexation as a means to accommodate growth has occurred frequently since Calgary's incorporation in 1884. As

illustrated in Figure 1 (following page), these historical annexations can be described as being comprehensive (as opposed to piecemeal) in nature. The result of this periodic annexation has been the incremental increase in the overall area of the city.

After 1945, urban development began to increase in several communities that were at the fringes of the City. These included Forest Lawn, Montgomery, and Bowness. This development raised questions of equity of taxation, municipal service standards, health conditions, and orderly development. In response, the Provincial Government established the Royal Commission on the Metropolitan Development of Calgary and Edmonton. The resulting report, commonly known as the "McNally Report" (Province of Alberta, 1956), provided the greatest impetus for annexation as a growth management strategy.

This report recommended annexation and the "Uni-City" concept as the most efficient means for accommodating urban growth in Calgary. Although the McNally Report recommended a fifteen year land supply to allow for planned urban expansion, in 1978 the City of Calgary adopted a policy of maintaining a thirty year land supply. This policy was based on a report by a Joint Committee of the Housing and Urban Development Association and the Department of Housing and Public Works (Province of Alberta, 1978). This report recommended the thirty year land supply as a means to counter increases in the cost of housing.

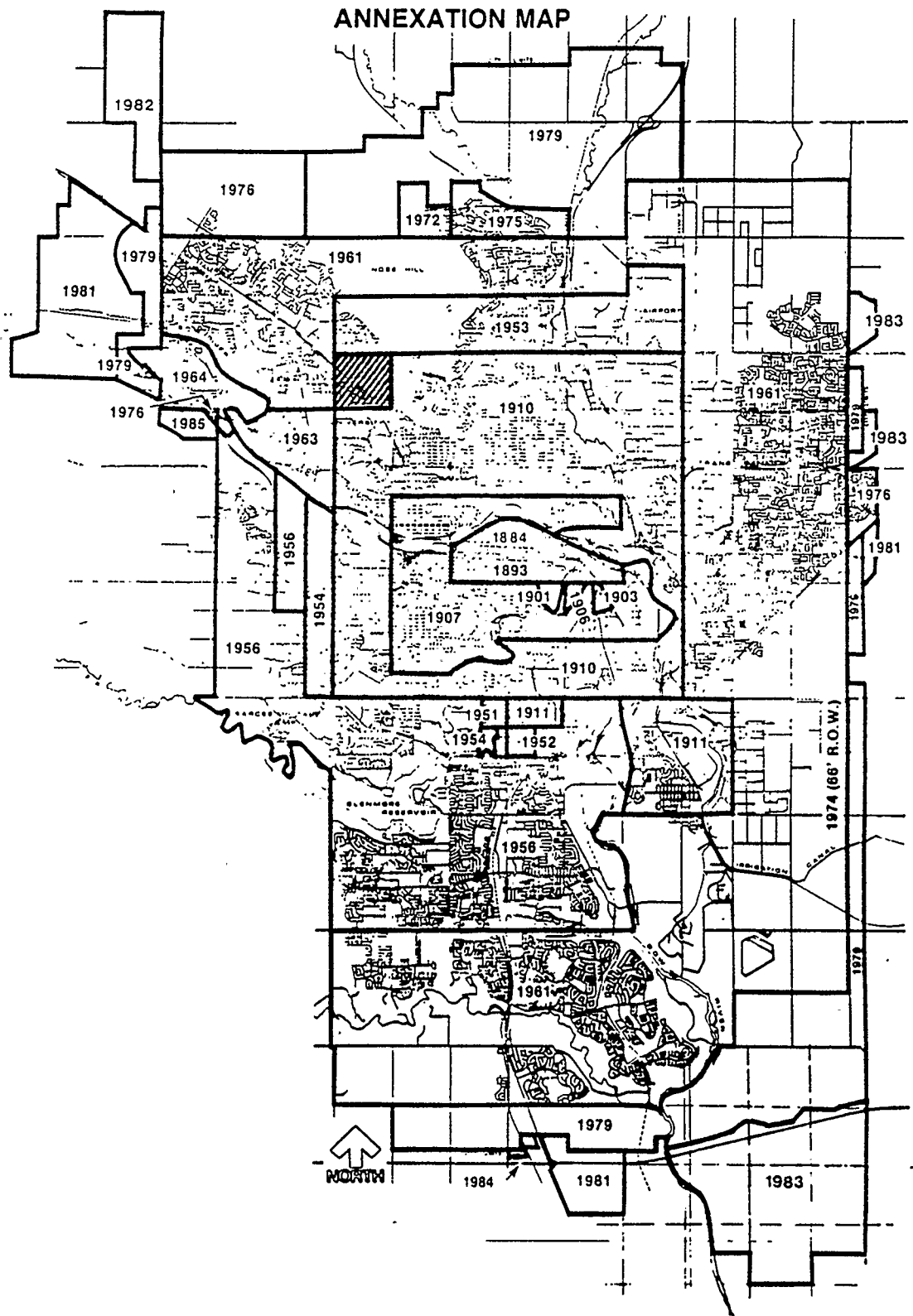


Figure 1. Annexation history - City of Calgary (1884-1988).
 Source: City of Calgary Planning and Building Department.

This policy of a thirty year land supply through annexation has continued to the current day. The City Planning Department endorsed this policy in its City of Calgary Annexation Study (City of Calgary, 1983), and is demonstrated in the statement that "Annexation is necessary to effectively manage medium and long term growth" (p. 5). In 1989, the City applied for yet another large-scale annexation of approximately 270 square kilometres (see Figure 2).

The above review demonstrates that the primary tool to be used for the new long-term growth management strategy in 1986 (i.e., annexation) was decided upon (and indeed has been a historical fact in Calgary) before any new analyses had been performed. There is, in effect, a form of "historical momentum" in which the past practice of annexation is continued with little analysis regarding the appropriateness of such a procedure.

Despite this reliance on annexation, there has been little recognition of the consequences of such an approach. The resulting urban form consists mainly of suburban low density development in which single family homes are the predominant dwelling units. Because of this, the formation of coherent, modestly scaled communities has become a virtual impossibility. In addition, continued annexation has maintained a reliance on the automobile as the predominant mode of transportation within the City.

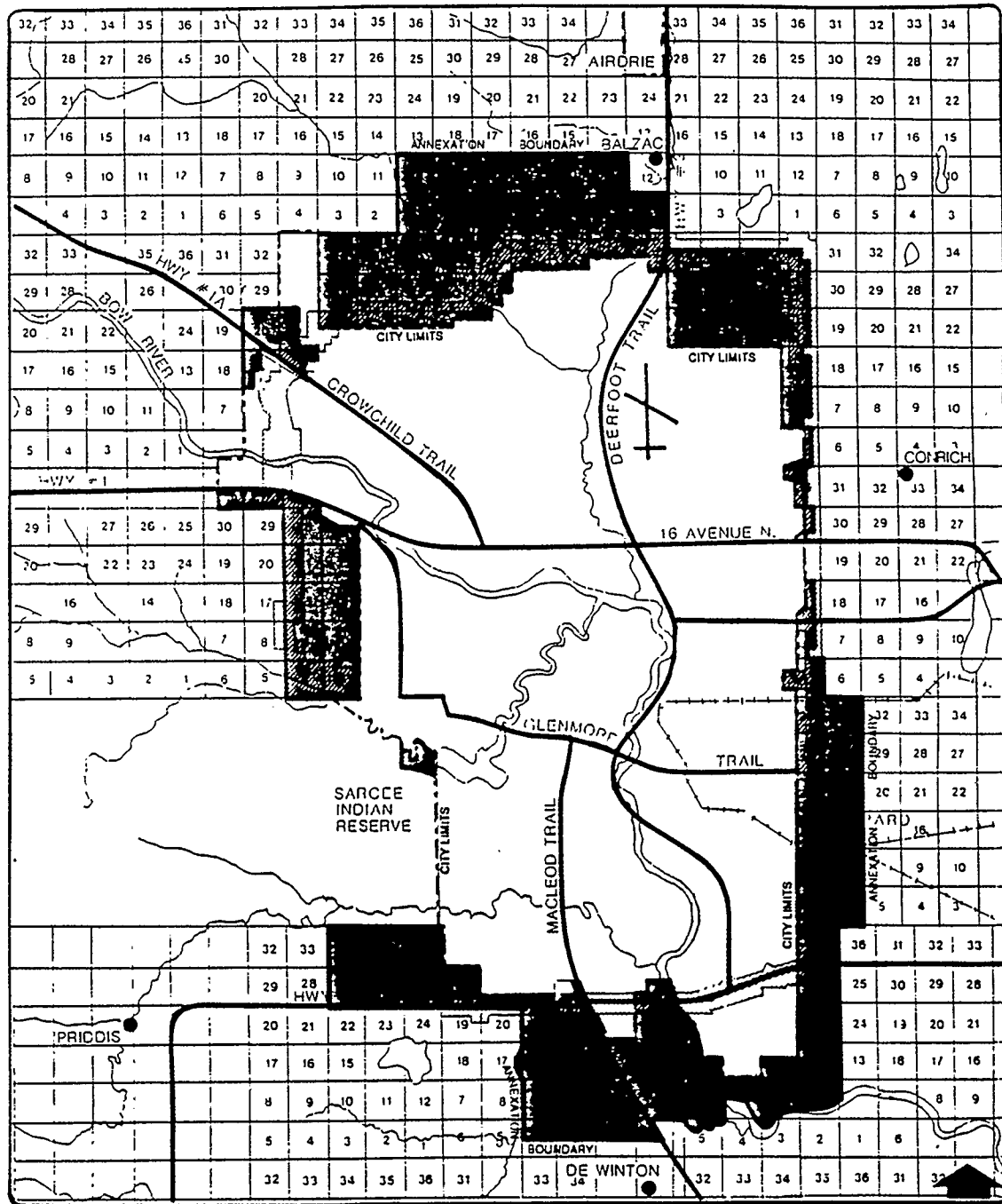


Figure 2. The City of Calgary's annexation proposal - 1989.
Source: City of Calgary Planning and Building Department.

While one can argue for or against these consequences of the use of annexation for growth management from several perspectives (e.g., urban design theories, efficiency, the "free market"), it is important that the ultimate impacts of these developments be considered. As an example, the combination of continued urban expansion as well as the encouragement of the Downtown as the focus of economic activity has resulted in tremendous transportation pressures in inner-city communities. Such impacts should be contemplated prior to the selection of any growth management strategy.

Another consideration to be made when espousing annexation is that the effectiveness of annexation at ameliorating the cost of housing is dependent on a truly competitive market for the raw land that is made available through annexation. In Calgary, this has not been the case historically, with the lands being annexed usually owned by a relatively small number of development companies. This lack of competition has contributed to a new housing market that continues to be unaffordable to many of the residents of the city. Once again, the City should take such factors into account when considering options for growth management. If one of the overall goals is to make housing more affordable, it is apparent that this cannot be achieved through annexation when land ownership is concentrated in so few hands.

In February of 1985, City Council adopted the Short-Term Growth Management Strategy (City of Calgary, 1985). The intent

of this strategy was to provide a framework for effective short-term growth decisions (up to five years in the future). The primary goal was "...to provide for an efficient utilization of the existing city infrastructure and to allow capital budget decisions relating to the extension of this infrastructure to be made..." (City of Calgary, 1989b, p. 17).

Following the adoption of the short-term strategy, two committees were created to look into the matter of a long-term growth management strategy. The Internal Liaison Committee consisted of civic departments and school boards, while the External Liaison Committee consisted of representatives from both the development industry and city communities. Out of this structure came the current long-term growth management strategy. This strategy was incorporated into the Calgary General Municipal Plan in 1986, and consists of eighteen policies dealing with a wide range of issues pertaining to urban growth.

THE DESIRED FUTURE STATE

The initial sections of the Long-Term Growth Management Strategy contain what are called "Visions of the Future". There is an attempt here to develop, from a normative perspective, the collective goals of those residing in the municipality. These goals do not relate solely to physical variables, but also to "...how the city feels and what it offers..." (City of Calgary, 1986, p. 2). Thus, the offered vision of a "better" Calgary is

intended to provide a foundation for the policy directions contained in the document.

The first normative goal combines the recognition that the residents of the city are different in many ways, and that variety, choice, and uniqueness should be encouraged. People choose to live in many different ways, ranging from quiet suburbs to vibrant inner-city neighbourhoods. Some residents like to see a variety of housing types in one area, while others prefer a more consistent application of one form. Based on this recognition, it is stated that the city should encourage variety and choice as much as possible. This can be done by strengthening the distinctive character of various areas throughout the city, and by providing various housing choices in different locations (mainly through a free market).

This goal of variety is also encouraged in the economic sphere of the city. It is stated that economic diversity should be sought after, and an environment created that would attract new industries and those who work for them.

The second normative statement in the strategy recognizes that the environment in which we live is constantly changing. The future is uncertain, and therefore we must be flexible and be ready to adapt to new conditions as they develop. This adaptability is to be done in such a way as to be least disruptive to existing communities. Thus, the long-term strategy must recognize the inherent uncertainty of the future, and must be able to deal with change on a continuing basis.

The final normative goal in this "Vision of the Future" is that since we are faced with limited resources, as a community we must look for "efficiency, clear priorities, patience, and determination" (City of Calgary, 1986, p. 4). Valuable resources such as river valleys, vibrant neighbourhoods, and a healthy downtown must be protected. The environment in existing neighbourhoods should be improved, despite the fact that this will take time and require a great deal of patience. In addition, the report states that efficiency is a goal to be strived for, but may often be at odds with other goals that have been mentioned. Therefore, clear priorities must be set such that each of these goals can be taken into consideration when decisions affecting communities are made.

Out of the above vague principles, four more specific goals were developed towards which the city should strive. First, there should be an encouragement of greater efficiency when growth is accommodated. This involves a greater utilization of existing infrastructure, an examination of the means by which capital expenditures for infrastructure can be decreased, and the protection of economical long-term growth corridors.

Second, the quality of life in residential neighbourhoods should be enhanced. In new suburban communities this can be done by ensuring that a variety of housing choices are available to the consumer and by encouraging the development of large suburban communities that can support the early provision of infrastructure. In existing communities, quality of life can be

enhanced by encouraging distinctive community character, encouraging community stability, minimizing the "downstream" impacts of suburban development, and encouraging the revitalization of inner-city communities.

Third, the quality of commercial and industrial areas is to be enhanced. Through the creation of "diverse and viable" shopping districts throughout the city, opportunities for various activities (working, shopping, and recreation) can be provided. In addition, the improvement of existing shopping areas (in terms of environment and accessibility) such as the Downtown should be undertaken.

Lastly, the Downtown's role as a primary employment, residential, commercial, and amenity base should be enhanced. This can be done through the broadening of economic activity in the area, improvements in the area's overall environment (image, quality, accessibility), encouragement of cultural and leisure activities, improvements in public areas and amenities, and encouragement of the development of significant residential areas inside the Downtown.

ANALYSIS OF THE CITY'S NEEDS

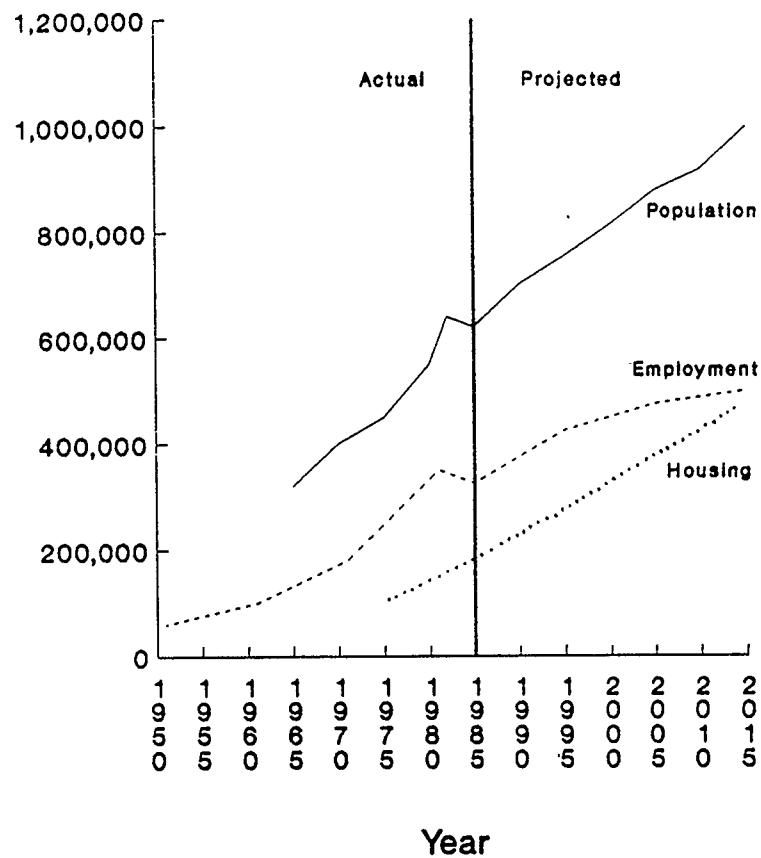
Prior to a discussion of the policies that will lead the city to the above desired future, a section entitled "Emerging Conditions" provides an examination of trends and forecasts in those areas that are deemed to be relevant to long-term growth management in the City of Calgary. This analysis provides the

"facts" upon which the policies contained in the document are based. Figure 3 (following page) illustrates the employment, population (most likely scenario), and housing demand forecasts contained in the Long-Term Growth Management Strategy.

It is projected that the local economy will grow at a steady but moderate pace for the foreseeable future. Although there is a recognition that the city's economy is dominated by the oil and gas industry, an increase in economic diversification is predicted. There is a recognition that the local economy tends to run in "boom/bust" cycles, but there is no attempt to incorporate this into the analysis.

Population forecasts until the year 2015 are included in this section. Although these are the most important forecasts in the document, there is little recognition of this. These forecasts are the basis for most of the other projections in the analysis. In fact, it could be said that these population projections are the cornerstone of the growth management strategy. Three "scenarios" are provided, representing high growth, low growth, and "most likely" situations. The "most likely" scenario predicts an increase in population of over 377 thousand people over the next thirty years. Once again there is a recognition of the possibility of growth spurts and declines, but the projection assumes steady growth.

Employment, Population, and Housing Projections - Calgary



Source: City of Calgary

Figure 3. Employment, population, and housing demand projections for the City of Calgary. Source: City of Calgary Planning and Building Department.

Housing demand is forecast by providing household projections for the next thirty years. These projections are based on the population projections, but interestingly, rely on the high growth scenario. These projections suggest a demand for between 6,500 and 9,350 dwelling units each year. Approximately fifty percent of these would be single-family units. This development will create a demand for between 800 and 1,300 acres of residential land each year. Over the next thirty years, this will result in the development of 35,000 to 45,000 acres for residential use.

The next emerging condition that is discussed is the "life cycle" or natural aging of communities. Existing communities in Calgary tend to show a consistent pattern of population change. Once the initial population of a community has peaked, there is a gradual population decline as children grow up and leave home. Eventually, new families move in but not in numbers sufficient to offset the above decline (due to lower fertility rates in younger generations). Redevelopment or multi-unit projects may also add population, but usually not in enough numbers to reverse the overall decline. The population eventually stabilizes at a significantly lower size than its previous peak due to smaller family size. Thus, a revitalized community usually does not reach population levels comparable to its original peak population. The intent of this analysis is to show that attempts at "revitalization" or densification of inner-city neighbourhoods

will not be sufficient to adequately handle the expected increases in population in future years.

The need for and location of future office employment, shopping centres, and industrial areas is also projected. Despite a gradual decline in the proportion of total office space that is in the Downtown, this area is expected to continue to be the focal point for employment in Calgary. However, it is recognized that major concentrations of office space have developed outside of the Downtown area and may continue to increase their share of total office space in the city. The possibility of developing employment nodes in suburban areas is discussed as a means of increasing efficiency in the transportation system.

Regional shopping centres have gradually eroded the importance of the Downtown as a retail area (the percentage of total retail activity downtown having declined from 50% to 25% over the period of 1971 to 1986). However, several retail developments have recently come on stream that may have an impact on these figures (e.g., Eaton's Centre and Banker's Hall). It is suggested that few new regional shopping centres will be developed until locations for future subdivisions are decided upon. Therefore, it is recommended in the document that the viability and expansion of the Downtown as a retail centre should be ensured.

With respect to industrial land, it is pointed out that enough subdivided vacant land exists to satisfy demand for the

next seven to eight years. In addition, future industrial land that is not yet developable exists in sufficient quantity to last over the next forty to fifty years (however, substantial costs are required to service this land). Despite this large amount of available land, it is recommended that additional lands be annexed so that extremely large parcels will be available to attract new industries to the city.

Related to all of the above analyses is a section in which the need for annexation is assessed. It is the City's policy to maintain a thirty year supply of developable land for both residential and industrial purposes. It is felt that this policy ensures that a competitive housing market will continue to exist and that there will be no problems in meeting real demand. Based on this policy, and on the population, household, and land-use projections, an annexation of between forty-one and forty-six square miles (114 to 128 square kilometres) is recommended.

The final set of analyses that are performed are estimates of residential servicing requirements and the financial implications of this servicing as the city expands. Although cost estimates are given for future sanitary, storm sewer, water, and electric system expansion and upgrading, by far the greatest capital costs are estimated to occur in the transportation system. Construction of major roadways, interchanges, and L.R.T. facilities are projected to be in excess of \$1.3 billion over the next thirty years. Based on the cost of development, existing lands that are suitable for residential (suburban) development

are categorized according to servicing costs (Group 1 areas will require the least cost to develop; Group 4 areas will require the highest cost). The total cost to the City of developing these areas over the next thirty years is estimated to be in excess of \$1.5 billion.

The City normally pays for servicing prior to development. These costs are then recovered through acreage assessments and utility rates. However, if development occurs at a slower rate than is expected, the city may not be able to fully recover the carrying costs of this debt. Therefore, these capital costs for servicing must be closely monitored and adjusted as demand warrants. The greatest concern lies in the large expenditure requirements for transportation that are projected to occur five to ten years in the future (1991 to 1996). Current levels of provincial funding will be inadequate to cover these costs. It is therefore recommended in the document that the City either attempt to increase the funding provided by the Province, or decrease costs by delaying construction, developing those areas with less transportation requirements, or passing on more costs to developers.

The above analyses constitute the set of data used to arrive at the policies set forth in the Long-Term Growth Management Strategy. In terms of the policy analytic techniques discussed in Chapter Two, there is a great deal of reliance on traditional forecasting techniques. The only deviation from this trend is the use of a form of cost-minimization analysis in order

to determine future growth corridors. The weaknesses of forecasting (in the traditional sense) were extensively documented in Chapter Two, and will not be repeated here. However, it should be noted that this reliance on techniques that have been strongly criticized may lead one to question the policies that were developed on the basis of the analyses. The following section discusses these policies in greater detail.

GROWTH MANAGEMENT POLICIES

As mentioned previously, the Long-Term Growth Management Strategy consists of a set of eighteen policies that are intended to manage growth over the next thirty years. It is important to note that eight of these policies already existed in Calgary's General Municipal Plan. While this fact may or may not be important, it must be recognized that several of these policies are merely the continuation of older, already established policies. For a detailed description of all eighteen policies, see the Appendix.

Existing Communities

The first set of policies pertain to existing communities. It is suggested that the City has no influence over family size and the gentrification of populations - the two forces that most affect declining populations in existing neighbourhoods. The City can attempt to influence the development of desired land uses and dwelling units, but this may have little effect for

various reasons. These include the fact that there is no guarantee that the market will demand particular uses, existing uses that are incompatible with long-term goals may continue to exist, and a policy of revitalization may take many years to take effect. Based on the above, it is suggested that (1) policies must set clear expectations for the long-term, thus providing a framework for short-term decisions, (2) a commitment be made to enhance existing communities through capital improvements, and (3) protective measures be undertaken to ensure that negative impacts of suburban development are minimized.

Three policies were developed that are intended to help achieve these goals. First, the City will attempt to maximize its use of existing infrastructure. Population increases in existing neighbourhoods are to be done in ways that are sensitive to the existing physical and social fabric. Second, a programme of capital improvements is to be used to enhance the physical environment in these areas. Third, a variety of housing types is to be encouraged in existing communities. The types that are suitable for each community will be determined through the local planning process (Area Redevelopment Plans).

New Suburban Communities

The second set of policies are aimed at new suburban communities. Contained within these policies is the assumption that continued expansion at the edges of the city is necessary to accommodate projected population growth. These policies are also

intended to work in conjunction with the Area Structure Plan process and with the Short-Term Growth Management Strategy.

Four policies were developed in this context. First, a mix of housing types is to be provided in new suburban areas. This will build flexibility and variation into the housing inventory. The precise configuration for each development will be arrived at through the Area Structure Plan process. Second, new communities are to be developed in close contact with existing communities (i.e., in a contiguous manner). This will ensure a more efficient use of municipal services. Third, a large inventory of developable lands is to be maintained in order to ensure a competitive housing market. Fourth, the minimization of municipal costs will be a major determining factor when deciding upon areas for future residential use.

Major Employment Centres

A third set of policies were developed that pertain to major employment centres. These policies attempt to take into account both the primacy of the Downtown as an employment centre within the City, and the increasing trend towards the decentralization of office functions to other parts of the city. Three policies apply to this area. First, the Downtown is to continue to grow with respect to office-related development. Second, an "environmental improvements programme" will be maintained so that the Downtown area will become more attractive for both existing and new businesses. Third, alternative nodes

of employment will be supported as long as they are viable in terms of accessibility, do not worsen traffic conditions in the inner-city, and are capable of supporting a relatively large concentration of office buildings.

Regional Retail Facilities

With respect to regional retail facilities, three policies were developed. First, the Downtown's role as a retail centre is to be encouraged and enhanced, further supporting this area as the business, cultural, tourism, and shopping focus of the city. Second, future regional shopping centres are to be evaluated on the basis of their ability to generate sufficient financing, the centres' impacts on surrounding areas, the quality of site development, compatibility with previous policy briefs, and forecasted demand based on population projections. Third, the creation of distinctive shopping areas throughout the city is to be encouraged.

Industrial Growth

Industrial growth is seen as a key factor in the general economic viability of the city. In order to attract new industries to the city, three policies were presented (in reality they all existed in the General Municipal Plan already). First, the City will provide an inventory of land ready for industrial development in order to meet demand. Second, the City will maintain a variety of land parcel sizes to attract as large a

variety of new industries as is possible. Third, the City will endeavour to increase accessibility in existing and new industrial areas in order to further add to the attractiveness of the areas.

Long-Term Land Supply

The final set of policies relates to long-term land supply. The City already is committed to providing a developable supply of land for all types of uses that will accommodate growth. Based on this policy, two further policies were developed. First, the City will attempt always to have a thirty year supply of land for future use. This will allow for the comprehensive planning of these new areas, and ensure a competitive marketplace. Second, the "Urban Fringe" is to provide land for future expansion in the very long-term (thirty to sixty years). Essentially, the use of this land is to remain open to various alternatives until requirements are determined.

The Long-Term Growth Management Strategy consists of the above eighteen policies. However, this is not the final set of recommendations contained in the strategy. Given City Council's directive to relate this strategy to annexation policy, there is a final segment discussing the ramifications of the above strategy on such policy. The following section will discuss these ramifications.

IMPLICATIONS FOR ANNEXATION POLICY

Given City Council's policy to maintain a thirty year supply of developable land within the political boundaries of the city, the strategy recommends the annexation of between forty one and forty six square miles (114 to 128 square kilometres) of land. Three annexation scenarios are discussed. The first is a "least-cost" proposal that would entail annexation of lands to the North and South of current boundaries. The second scenario is similar to the first with a few more parcels of land included that would increase choice in the marketplace. The third scenario consists of a much larger annexation proposal to ensure control over developable land for the very long term.

After a brief discussion of the relative merits of each proposal, the second scenario was recommended on the basis of relatively low cost and the ability to support a variety of housing types. The third scenario was recommended as a fall-back position should the second scenario prove unsatisfactory in protecting very long term growth corridors.

On July 22, 1986, City Council approved the policies contained in the Long-Term Growth Management Strategy. Further, annexation scenario 'B' was approved by Council, and City Administration was directed to begin the process by which this annexation proposal could be initiated. In short, City Council adopted a policy of large-scale annexation in order to provide sufficient developable land for the next thirty years. This

annexation was to serve as the primary long-term growth management tool, with short-term growth management occurring primarily through the use of facilities planning. A free market approach is still the primary characteristic of the City's long-term growth management policies.

CHAPTER FOUR

A CRITIQUE OF THE STRATEGY

The City of Calgary's Long-Term Growth Management Strategy can be criticized on several levels. There are difficulties with this strategy from normative, methodological, and practical perspectives. This chapter will discuss the relevant issues pertaining to the strategy in three different areas: the process involved in developing the strategy, the analyses included in the strategy, and the practical results of adopting the strategy.

THE PROCESS

As was mentioned in the previous chapter, the Long-Term Growth Management Strategy was developed through the work of two committees. Given a directive by City Council to re-examine the City's policies toward growth management and to integrate these policies with annexation policy, these committees set about determining the future direction for growth in the city. Although at some point in time there is a need to rely on the knowledge and expertise of the "experts" in this area (i.e., urban planners), it should also be recognized that there is a need to involve the residents of the city in such an important exercise.

Long-term plans such as these help to define the future shape that our city will take. They provide guidance for future decisions that will have major impacts on the physical, social, and economic profile of the city. With such important goals at stake, it would seem to be imperative that the very people who will live in the future city should have a say in this guidance mechanism. Perhaps, if given the chance, the public at large would prefer something other than a city that is characterized by low-density development and urban sprawl. However, this will never be known, because they were never asked.

The main question here is whether or not the City has the moral right to make this decision for hundreds of thousands of citizens (undoubtedly the City has the legal right to do so). This, of course, represents a real moral dilemma. From a rights-based moral perspective, intervention by the City would be morally wrong, unless the externalities from citizen-based decision-making resulted in violations of individual rights. On the other hand, from a utilitarian moral perspective, the City could make such decisions if they maximized the "public good". A discussion of the resolution of such ethical dilemmas will not be included here. Suffice it to say that a dialogue must develop so that this question can at least be openly examined. There is an assumption that it is the "experts" at City Hall who can best decide the long-range future of the city. This assumption must be questioned, as those who are impacted the most by these decisions (the public at large) have little say in the matter.

Aside from the use of committees to develop the overall structure of the strategy, there is an inherent weakness in the use of these committees to create a so-called "Vision of the Future" for the city. Whose vision is this? Those involved in developing it were primarily business interests and city departments (although some community representatives were involved). If the residents of the city are not to be involved in the ultimate policy-making, should they not at least have a say in what this vision of the future is to be?

It is my opinion that the City should receive guidance from its residents before embarking on long-range policy-making. After all, it is their city, and they have many concerns that may or may not concur with those developed by the committees. Perhaps an exercise such as the Calgary ...2020 project (City of Calgary, 1989c) would enable more citizens to participate. However, the exercise would have to develop visions of the future that involve fewer "motherhood" statements than does Calgary ...2020. The vision contained in this document is so utopian and idealistic that it is unreasonable to expect it to develop in the future. In order to act as a guidance mechanism, this vision should contain realistic goals and objectives. Whatever the means used, it would seem to be the correct thing to do to involve the public at large in the definition of the desired future state of the city.

The final procedural weakness of the strategy to be discussed involves the development of a short-term growth

management strategy prior to the development of the long-term strategy. One can understand the City's need for a short-term strategy in 1983. There was a drastic decline in growth, and the available strategy was no longer appropriate. Something was needed to guide residential development in the short term.

However, as the research in Chapter Two demonstrates, one of the most valuable aspects of long-range plans is that they can serve as frameworks for short- and medium-term decision-making. By developing the short-term strategy first, the City had essentially negated this function of the long-term strategy. Instead, the long-term strategy had to be designed so that it fit in with the short-term strategy. Rather than being creative with respect to long-term growth management, the City chose to accept as given the policies of growth management through facilities planning that are contained in the short-term strategy.

Not only does this weaken the ability of the long-range plan to have an impact on suburban development, it also severely curtails the creators of the plan from examining a large range of growth management options. Given the short-term strategy, there was little room for innovation with the long-term strategy. It is apparent that the two plans should have been developed in conjunction with one another. This would ensure that the guidance mechanism function of the long-term strategy would be maintained, as well as open the door for a variety of alternative growth management strategies.

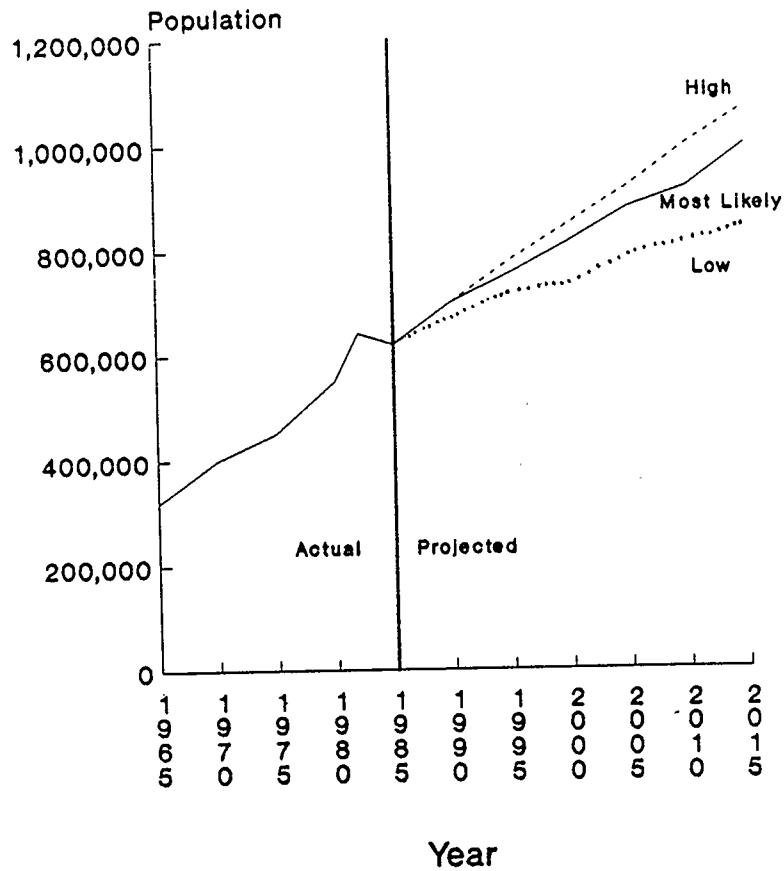
THE ANALYSES

Several analyses were used in the Long-Term Growth Management Strategy prior to the development of the policy statements. Numerous aspects of these analyses will be discussed below. Although the intent is not to criticize the various technical aspects involved in the analyses, relevant criticisms pertaining to this will be brought in when it is deemed important.

Perhaps the single most important analysis in the entire document is the set of population projections (see Figure 4). These projections can be criticized on several levels. First, although it is not clearly stated, these projections are the basis for virtually every other projection and estimate in the document. This includes employment projections, housing demand, servicing cost estimates, and annexation need estimates. If the population projections are incorrect, then many of the other analyses immediately become irrelevant.

This dependence on a projection of a single variable for virtually all analyses is not stated clearly in the document. No contingency plans in case the population projections are incorrect are included, nor are there alternative analyses that are independent of the population figures. Thus, the analytic base on which the strategy is based is extremely susceptible to changes in the external environment. Indeed, it would quickly become irrelevant should conditions change sufficiently.

Population Growth Scenarios Calgary (1965-2015)



Source: City of Calgary

Figure 4. Population growth scenarios for the City of Calgary.
Source: City of Calgary Planning and Building Department.

Another problem with the population projections is the supposed use of alternative "growth scenarios" to provide three possible population growth patterns. These alternatives consist of the ubiquitous "high", "low", and "most likely" scenarios. Of course, the City has chosen the "most likely" alternative, which appears to be a neat average of the other two options. Although there is no proof of duplicitous action on behalf of the analysts, it is somewhat suspicious to note that not only does the "most likely" scenario lie neatly between the high and low alternatives, but it also is virtually a straight line projection of the City's population growth since 1965 (ignoring the large growth increases in the late 1970s).

One can only ask if these are really three valid alternative projections or if the high and low scenarios are used to make the "most likely" alternative appear to be a reasonable selection. In addition, the assumption of steady, straight-line growth in all three of these alternatives must be questioned. This ignores the boom and bust cycle that is so prevalent in the city's economy. Perhaps alternatives could have been developed that considered likely variations in growth rates (both positive and negative). In this way, the possible impact of recession and economic growth could be explored, thus providing the City with the potential to more appropriately deal with these situations.

Similar to the difficulties experienced with the population projections, the economic growth projections ignore the boom and bust cycle that exists in Calgary due to its dependence on the

oil and gas industry. This is not to say that accurate predictions could be made of economic recessions and upturns. However, there could be some recognition of the relevance of these cycles, especially given the recent recession in the early 1980s. The assumption of gradual, steady growth does not adequately prepare the City to take appropriate actions should this projection turn out to be inaccurate.

Perhaps the most damaging critique of the analyses is that they are all clearly predicated on assumptions of annexation and urban growth through suburban expansion. There is a curious circularity to the whole analysis. One assumes that the purpose of the analysis is to guide the policy-makers and help them develop policy based on the analysis. However, what happened in this case is that the policy was clearly decided on prior to the analysis. The use of annexation as the primary tool of long-term growth management was dictated by City Council prior to the development of the strategy, and is primarily based on the McNally Report that is now over thirty years old. Thus, most of the forecasts (particularly housing demand, location of land uses, and servicing costs) all assume that large-scale annexation is a given. The only question still open to debate is the precise location in which that annexation is to take place.

We can see that with the prior directive by City Council to utilize annexation as a growth management tool, the analyses could only be used in a post hoc manner to support this decision. No real alternatives to annexation are explored. The whole

process consists of the directive from City Council to utilize annexation as a growth management tool (or rather to continue its policy of a thirty year land supply), the analysis by planners that is both based on and supports annexation, and a final recommendation based on the analysis stating that annexation should be the primary tool for long-term growth management.

The assumption of annexation comes out most clearly in the cost estimates for future servicing of suburban expansion. All of these figures assume a large degree of suburban growth with only a small amount of intensified development in already urbanized areas. It is true that alternative annexation possibilities are explored. However, no other options are even given a cursory examination. How can one determine the most cost-effective (or any other evaluative criteria) policy when one is restricted to only those policies that involve annexation of large tracts of land. Perhaps there are other alternatives (such as densification of already urbanized areas, or the development of satellite cities) that would be more cost-effective than any of the annexation options. Indeed, in its City of Calgary Annexation Application: Board Order and Report (Province of Alberta, 1989), the Local Authorities Board noted that "...many aspects to which the 1956 McNally principles were addressed have changed and to attempt to apply them regardless of these changes is inappropriate" (p. 55). Needless to say, one cannot know the feasibility of various alternatives until one examines all of the possibilities.

We can now see that the analysis involved in the development of the strategy was not really an analysis at all. Rather, it was a set of continuations of current trend lines that support the use of large-scale annexation in order to "manage" ("accommodate" would be a more appropriate term) urban growth. Since it was already known that annexation was the primary growth management tool to be used, there was no point in examining alternatives that would involve other strategies. Despite the atmosphere of objectiveness and the scientific nature involved in the analyses, it is quite clear that the ultimate choice of a growth management strategy was political in nature (i.e., it was decided upon by City Council, not by "rational and scientific" analysis). This is not bad in and of itself. However, the pretense of objective and scientific analysis should be dropped if decisions are to be made in this manner. Of course, some would argue that all such decisions are ultimately political in nature, and that any scientific analysis only serves to mask this from the general public (e.g., Appelbaum, 1977). One need not accept this extreme position, however, in order to recognize the conflicting nature of the policy-making situation described above.

The final critique of the analysis involved in the Long-Term Growth Management Strategy that will be discussed here involves the lack of debate regarding issues other than those dealing with the physical state of the municipality. In short, there is a complete lack of normative policy analysis (in any

form) other than the statement of a few vague goals prior to the more quantitative analyses.

The process of deciding upon a future course for a community is inherently normative in nature. It involves expressions of what the city should be like in the future, and the collective goals of its residents. The issues involved in such a debate can be rationally discussed. Indeed, they must be debated by those who have a stake in the future development of the city. No set of scientific analyses can tell us the manner in which the city should develop. This is not to denigrate the importance of such analyses. They can tell us the ramifications of various actions and help us to make more informed decisions. However, the scientific perspective cannot generate the normative perspective.

Because of these reasons, a dialogue must be developed that enables normative issues to be debated. This debate should not only focus on the physical development of the city, but also on social, political, environmental, and other issues that are relevant to the way of life of those residing in the city. Otherwise, any long-term strategy runs the danger of not only being irrelevant, but of being unacceptable to those upon whom it impacts the most. Such a debate is not easy; nor can the planners and analysts expect answers from this debate in the same way that computers produce population projections. A great deal of time and discussion will be involved. The results may not be easily summarized in a planning document. However, the ultimate

consequence can be a strategy that encompasses many aspects of life, and that will truly represent the citizens' views regarding the future of the city. Any long-term plan could and should incorporate this type of debate into the process.

THE RESULTS

Not only are there weaknesses in the Long-Term Growth Management Strategy with respect to procedure and analysis, but there are also difficulties with the end results of the entire strategy. There are those who believe that the ends justify the means, and if this is true, the above weaknesses could be forgiven if the end result was desirable. However, the strategy fails in this regard as well.

The first hint of a problem occurs when one realizes that eight of the eighteen policies contained in the strategy already existed in the General Municipal Plan. It may well be that a large proportion of the previous strategy was quite adequate in dealing with urban growth, and that therefore the new set of policies did not need to be a radical departure from the old policies. However, we already know that City Council considered the old strategy to be inappropriate in dealing with urban growth that was not rapid in nature. Why, therefore, are so many of the policies from this strategy retained? Perhaps the answer lies in the overall results of the new strategy.

It takes little examination before one realizes that there is little "management" in the new long-term growth management

strategy. Overall, the timing and direction of urban growth are affected very little by this plan, except in the sense that growth will only occur in those areas that are recommended to be annexed by the City. The sole strategy appears to be one of consolidating enough land to ensure that a competitive market appears, and then controlling that market through a short-term growth management strategy - mainly through facilities planning. Over and over we read that the city must accommodate growth. Accommodation of growth is not the same as management. Thus, we see a slight modification of the previous free-market approach in the short-term, but virtually no change to this approach in the long-term.

It would appear that the low density urban sprawl that characterizes the city is preferred by the planners (or by City Council) simply because there is a high demand for this type of housing. The City has not taken a proactive role in growth management, but rather is responding to market demand, thus ensuring the continuation of current trends in the physical form of the municipality. In short, the plan does not stand on its own as a growth management strategy, but rather it serves as a rationalization for a previously decided upon annexation policy.

Not only does the strategy fail to deal adequately with the long-term implications of urban growth, but there is little or no discussion of how the city would deal with changing conditions in the external environment. There is an assumption of steady, gradual growth that underlies all of the policies in the

strategy. There is a recognition that boom and bust cycles occur in Calgary, but there is no discussion of how to deal with them. This despite the fact that the primary impetus for the development of this strategy was the economic downturn of the early 1980s.

We can ask several questions in this regard. Can the short-term strategy deal with rapid growth similar to that experienced in the late 1970s? Can the overall approach to growth management withstand pressures for development should such an economic upswing occur? Will the city be left with vast tracts of unneeded land should a recession occur? Can the City really expect inner-city redevelopment to occur when cheap suburban land is readily available? There are no means in the current strategy for dealing with these issues. The City should consider the fact that there are several alternative futures to those projected in the strategy, and that it could be caught in a precarious position should conditions vary from those that are predicted. For example, the cost of housing could rise dramatically should extremely rapid growth occur (due to the short-term strategy's apparent lack of flexibility in dealing with rapid growth). There are no provisions for such growth, and we may see a demise in affordable housing simply because the City is not prepared.

A third problem with the strategy is that there is very little recognition of the problems of urban growth. The only item that is mentioned is transportation difficulties that may

occur downstream from suburban development. However, given the policy of suburban expansion, there will continue to be major problems in this sphere. No means are suggested to deal with this possibility. Other than this brief mention of possible transportation difficulties, there is no discussion of other problems that are related to urban growth (such as crime and pollution). Could it be that Calgary does not experience such problems? This is unlikely, but there has been no research or discussion into any of these issues. With little acknowledgment of the problems of urban growth, there is little impetus to seek new approaches to managing growth. The status quo is supported, and there is little or no encouragement of innovation.

This is most evident in the housing market. After four years of this strategy, the only housing mix that is evident is a sprinkling of multi-unit complexes in areas dominated by single-family homes. While this is not bad in and of itself, it defeats the City's professed goal of maximizing use of existing infrastructure. Incentives could be given for alternative housing configurations, but instead we see the continuation of the same suburban development that has characterized the city for decades. Perhaps nothing will be done until the problems caused by urban growth are chronic. But by that time solutions are costly and often ineffective. The time to deal with these issues is now, before they grow beyond our control.

Another problem with the strategy is its means for assessing the suitability of land for urban expansion. While

there is a vision of the future provided in the strategy that includes some normative goals, and while some of the policies speak of contributing to the quality of life of city residents, the primary means of determining future growth corridors is the criteria of cost-minimization. This demonstrates a belief that the "scientific" analysis included in the strategy will show the "best" direction for future city growth. Other criteria should be involved in this assessment, in addition to overall costs. If the residents of the city were questioned regarding their goals for the future of the city, there would likely be many objectives in addition to cost-minimization. This is particularly the case when we consider the public's concern regarding environmental issues that is so prevalent today. The policies that pertain to urban growth should be related to the desired future state of the city, and to current conditions within the city. In such a way, efficiency will not be the only consideration for urban expansion.

The above difficulty is caused by the lack of a clear vision of the future. Vague statements on behalf of committee members will not capture the essence of the desires of the city residents. Since this vision is not clear, the strategy cannot act as a suitable guidance mechanism for decision-making. It is the vision of the future that will enable us to strive to achieve goals other than mere efficiency. Otherwise, the city will merely stumble along, with no clear signpost to guide its future

development in ways that will be both appropriate and adequate for its residents.

SUMMARY

Clearly, the current long-term growth management strategy is inadequate to deal with all of the issues involved with urban growth. Not only is it unsuitable as a framework for short-term decisions, but it also supports the mainly "hands-off" free-market approach of the previous strategy. In addition, it undoubtedly serves as a rationalization of the City's policy of large-scale annexation. A new strategy is needed. One that considers all relevant issues, not just costs and efficiency. One that truly examines alternatives to suburban expansion and annexation as a means of "managing" growth. There are many impacts of growth, and these are not solely physical in nature. Social, political, and environmental effects can also be seen from urban growth. Any growth management strategy should address these issues in a more than cursory manner. In short, the entire long-range planning process needs to be overhauled. The following chapter will discuss means by which this can be achieved.

CHAPTER FIVE

RECOMMENDATIONS

The proponents of long-range planning hold that it promises to help guide us towards a better future. We have seen that there are many strengths and weaknesses in attempting to plan for the long term. In addition, several techniques that policy analysts use have been examined for their appropriateness in long-range urban planning. These techniques have been shown to have varying levels of strengths and weaknesses as well.

Using the City of Calgary's Long-Term Growth Management Strategy as a case study has demonstrated how susceptible a long-range plan can be to both the weaknesses in the techniques used, and to external pressures. This final chapter will provide several recommendations regarding the use of long-range plans in general, as well as the use of such plans in the context of a long-term growth management strategy in Calgary. These recommendations will reflect upon the process involved in long-range urban planning, and are not intended to provide specific suggestions regarding particular strategies for growth management in the City of Calgary.

Before discussing the recommendations, one point should be noted regarding the addressing of urban problems in long-range plans. It is very important that an ongoing study of prevalent "urban problems" be initiated in conjunction with the overall planning process. We cannot know what to fix if we do not know what the problems are (or even what the perceived problems are). Perhaps there are very few problems in the City that can be addressed in long-range plans. Perhaps transportation is the single burning issue on everyone's mind. The point is that it is difficult to chart where the city should go in the future if we do not know where it is right now. This ongoing study could be linked to the "visioning" process, providing participants with information about the present state of the city. The following recommendations assume that such a study will be an integral part of any future planning process.

RECOMMENDATION #1: There must be a recognition of the
limitations of scientific analysis.

Since long-range planning relies to a great extent on the explication of future states, most long-range plans include some form of prediction regarding the particular shape that the future will take. However, it has been demonstrated that it is a fallacy to believe that we can in any way predict or control the important and relevant dimensions of the future. In reality, long range plans (and the analyses on which they are established)

are based upon certain assumptions that essentially are subjective predictions of the future.

We must abandon the notion that policy analysis and long-range planning are completely objective and scientific in nature. The long-range planning of urban areas can no longer be seen as a technical exercise to be left to the experts. To do so merely perpetuates the scientistic myth that the future is scientifically predictable.

This is not to say that all technical analysis is of no use in this field. Rather, the inherent limitations of policy analytic techniques must be recognized and dealt with in an effective manner. Certain techniques still have their uses in particular contexts. However, the pretense of objectivity must be dropped, and the core assumptions of the analyses openly discussed. In this way, the legitimacy of the field of policy analysis can be restored, and the use of policy analytic techniques can be properly placed within the context of public policy inquiry.

RECOMMENDATION #2: Normative policy analysis should become an integral part of the long-range planning process.

The recognition that policy analysis (and therefore long-range planning) is not objective in nature allows one to consider the inclusion of normative principles within its domain. By denying scientism, we confirm that forms of knowledge other than

those validated through empirical research are both valid and open to rational debate. With respect to normative principles, this means that "values" can and should be included as an important aspect of policy analysis. Indeed, it is argued that values already are a part of policy analysis, but that the belief in objective and scientific analysis masks this essential truth (see Anderson, 1985; MacIntyre, 1985).

The predominant view in the field of policy analysis is that values are simply "preferences" and are therefore not rational. It follows that values cannot be justified in terms of objective criteria. Given this, values must be stipulated in advance of any "real" analysis by a decision-maker or by the political process. However, we have seen that values are indeed open to rational debate and can be a part of any rational discussion involving public issues. Policies can be criticized for being unethical or unjust (to cite just two examples), as well as for being inefficient.

There must be some attempt to integrate both normative and empirical evaluations into the policy analytic process. Since rational discourse is possible in both areas, it is also possible to examine reasons for adopting various policies through a reasoned debate that includes both of these important factors. Such a process would be radically different from the policy analysis that is carried out by the majority of policy analysts today. The notion of a technocratic analyst is gone, replaced by a broader concept. This concept embraces the notion of a

broadly-based debate regarding policy alternatives. Normative implications of policies can be discussed, as can the agreement of policies with the prevailing political system. Indeed, the very nature of the political system and the values on which it is based can be debated.

Such a broadly-based debate would assist greatly in the development of ethical decision-making. Those in authority would be more aware of the normative implications of their decisions, and if this debate is properly done, they would also be assured that the public is fully educated regarding the various policy alternatives. As mentioned earlier, such a process is not an easy one. It involves a great deal of open debate regarding issues that have usually been considered to be off-limits for the analysts. In addition, it necessitates a high degree of public participation. The results are not easily predicted (nor should they be), and may take a great deal of time to develop (depending on the context).

Such a process cannot guarantee ethical decision-making. Rather, it does two important things. First, it lessens the power of the analysts to "scientifically" determine the long-term course that a city is to follow, and distributes that power to some extent back to the public. Second, it increases the flow of information to the decision-makers, providing them with analyses that are virtually unheard of at the present time. Anything that increases the "normative" information that is

available to the decision-maker will help them to make better (more ethical) decisions.

It has been noted that it has been the tendency in policy analysis to make decisions based on the criterion of efficiency. Despite rhetoric to the contrary, Calgary's Long-Term Growth Management Strategy also uses efficiency as its primary criterion. However, it has been demonstrated that this state of affairs need not remain. Policy analysis can change so that policies are examined from several perspectives (e.g., ethics, theology, justice, equity) in addition to efficiency. As an example, in Calgary the possible violation of rights of inner-city residents due to suburban growth (e.g., expropriation of land for road expansion) could be investigated and incorporated into the policy analytic framework. Subsequent development might be approved only on the condition that no individual rights of existing residents be violated (or that they be compensated in some manner).

The transformation of policy analysis to include normative debate has been discussed as a viable exercise. This transformation can, and should, take place in the context of long-range planning in Calgary. Once again, the proposed planning process (see Recommendation #7) can do just this. By involving citizens and opening a debate into all aspects of long-term development, there is an inclusion of normative issues into the policy analytic sphere. If this is not done, the entire long-range planning process risks the loss of its legitimacy in

the face of an informed public. Indeed, a more extensive examination of the public issues surrounding long-range planning can only serve to help both citizens and politicians make better, more-informed decisions.

RECOMMENDATION #3: The political nature of decision-making must be recognized.

Policy analysis is based on the rational decision model. It posits a single decision maker who has the power to make ultimate decisions that affect thousands or millions of people. Assisting the decision-maker is the policy analyst, who provides various rational decision models that will purportedly offer solutions to public policy questions. Using the criterion of efficiency, these models promise to provide simple decision rules that help the decision-maker cut through the masses of information that are involved.

However, this notion of an omnipotent, rational decision-maker does not match reality. In a governmental setting, power is often distributed in such a way that no one individual can truly be said to have the ultimate decision-making power. Even if one assumes such an authority, the rational decision model ignores the political nature of all policy analysis. Stone (1988) points out that the rational model can be seen as a strategy for controlling a decision rather than as a simple objective tool. From this perspective, each step involved in making a decision, from elucidation of goals to the ultimate

decision is integrally intertwined in the process of political agenda-making. Thus, for example, Stone points out that long before the time a "decision" is made, a lot of alternatives and options have already been ruled out. The way in which the decision is framed is therefore political in nature.

From the above point of view, analysis and politics cannot be separated. As Stone (1988) states:

Reasoned analysis is necessarily political. It always involves choices to include some things and exclude others and to view the world in a particular way when other visions are possible. Policy analysis is political argument, and vice versa. (p. 306)

Once again, the myth of an objective and scientific policy analysis is denied. A closer examination of the rational decision model shows that, if followed to its logical conclusion, it promises an end to politics altogether (it would be replaced with rational decision making). However, politics is not "dirty". Indeed, it is the proper arena in which decision-making should take place in a democratic society. Complex urban issues will not be solved with complicated models (although it is true that quantitative analysis can serve to add information to the political debate). These issues must be discussed, debated, and argued in the political domain. It is within this context that policy analysis must find its proper place.

This recommendation is not earth-shattering in nature, but it can provide planners and analysts (as well as politicians) with a new perspective from which to view public policy issues.

From this viewpoint, public issues cannot be solved through a technical process that is intended to scientifically provide the best solution. Rather, there is a recognition that such issues are inherently complex in nature, and that their true causes may never be fully understood. Such issues must be dealt with in the political arena because they are political in nature. Policy decisions always involve competing interests and goals, and are properly situated in the political realm. In Calgary, planning issues (such as annexation) should become part of the general political debate and be accepted as such. Rather than the planners producing merely technical studies that promote annexation, there would be a true public debate regarding the competing interests involved in this issue. There is no technically correct answer to such public issues, and they must be debated publicly in the political arena.

This recommendation assumes that the existing municipal political structure will remain. Therefore, the notion of the complete "recapturing" of political power (Friedmann, 1987) is considered here to be an idealistic vision. It is my contention that an entirely new political structure is required before political power can be completely returned to the citizens. For an alternative view, see Forester (1989). However, some power can be redistributed to the residents of the city and the planning process described in Recommendation #7 does so. The first step in this redistribution is the recognition that policy analysis is not objective and is at least partly political in

nature. This realization necessarily leads one to the conclusion that planners and analysts must relinquish some of their power in this domain. However, these same people can work with the general public to help guide the city towards a future that is desirable to the majority of its residents.

RECOMMENDATION #4: Public participation should become an integral aspect of the long-range planning process.

The rejection of policy analysis and decision-making as being apolitical and objective in nature inevitably leads to the conclusion that the general public should be involved in decisions that will effect the long-term future of their cities. After all, it is the residents of the city who are the true stakeholders in any urban planning process. For too long, these important decisions have been determined by technical means. This has denied both power and knowledge to the citizens who are most affected by these decisions.

The ultimate effect of technical policy analysis, however, has been to develop a citizenry who to a large extent believe in the scientistic myth that technical means are able determine the best future path for society. Because of this, there is little hope to expect needed change on the basis of standard planning studies. As Appelbaum (1977) points out, we are "captives" of the predictions contained in these studies. We cannot change our world if we rely on analyses that simply reproduce the past in

the future. The decisions that are based on these analyses are made by the powerful in society, and yet these decisions shape the future of all of us. However, the "scientific" basis of these decisions fools the public into thinking that the "best" decisions are being made and that they should not be involved in the process.

The decision-making and plan-making process must be changed so that the average citizen can become involved in those decisions that will have a major impact on his or her life for many years to come. In order to do so, we must demystify and deprofessionalize (to some extent) planning for the general public. By involving the public more and giving them the information needed to make good decisions, we can both distribute power more broadly and fully appreciate the political nature of most public issues. As Cole (1976) notes, such a process involves a "collective social theory" originating from diverse sources within society. There is a broader public discussion of the future, as well as a deliberate quest for various alternative courses. Although this approach is considered to be unscientific by some, in fact it is better able to take into account the theoretical and empirical reality involved in long-range planning and policy analysis.

In order to plan for the long-term future, there must be some sense of a desired future state towards which the city can strive. In the City of Calgary's current strategy, this vision

was developed by a committee structure, and was rather vague in nature. An alternative vision of the future was developed in the Calgary ...2020 project. However, this vision is utopian in nature (it does offer a vision of the future, but this vision is so wonderful that it is unreasonable to expect its fruition in the next few decades) and may be unrealistic to serve as a feasible basis for achievable goals. The city does need a vision to strive towards, but it also needs realistic goals that one can reasonably expect to achieve.

It is recommended that a project similar to the Calgary ...2020 project be administered. Such a project would involve as many citizen groups and individuals as is possible. These citizens would work towards producing a vision of the city in the future that is both idealistic and realistic in nature. Specific goals should be included so that future long-range plans can be compared with the "vision" in order to determine if these goals can be met.

In addition, this visioning process should be a continuous one. By holding workshops every two or three years, the vision can be updated, progress can be evaluated, and further recommendations made. Thus, the desired future state will not be a static vision that is created at one point in time and that is intended to serve for the next thirty years. Rather, it will change and evolve as the conditions in the city change as well.

A second aspect of this vision of the future is that there should be a continuing dialogue within the community regarding

the values and goals that are predominant in the city. Such a dialogue is intended to make citizens aware of the implications of their belief and value systems. This dialogue can be linked to the vision of the future. The shape of the desired future state of the city is intertwined with the dominant values of the society. Through such a discussion, citizens can be made aware of how values that may be unquestioned in the present time may have important consequences in the future. Various general policy directions can also be discussed in this dialogue, thus providing the citizens with a means for learning about policy implications and for influencing the political process to develop policies that are consistent with the values of the community.

The above procedures (a citizen-based vision of the future and a broadly-based normative and political debate) would constitute a large part of the public participation that is being recommended. The final aspect of this participation consists of the continued involvement by the general public in the proposed contingency planning process (see Recommendation #7). By proceeding in this way, public participation (and empowerment) is maximized at virtually all levels of the planning process. This would differ dramatically from the form of participation used by the City in the development of the current strategy, which consisted solely of community representatives taking part in the committee structure through which the strategy was developed.

RECOMMENDATION #5: Long-range planning should serve an educative function.

In order to achieve the above goals, in which both planning and policy analysis become more political and normative in nature, there must be a commitment to educate the general public about the planning and decision-making processes in general, as well as about individual public issues.

If we are to expect the public to become involved in the decision-making process, we must recognize the necessity of the public being educated and enlightened regarding important issues. The long-range planning process is one way in which this educative goal can be achieved. By incorporating into the process a means for public participation and education, the public can learn about the long-term implications of decisions made in the current time frame. In addition, such a process would help citizens become involved in the decision-making process by providing them with the information necessary to make "good" decisions.

Although the very process of long-range planning can be educative in nature, there is a necessity to have a formal programme that would inform citizens of the pertinent aspects of the long-range planning process. Information regarding past decisions, current issues, policy alternatives, and policy

implications can be provided and discussed. Possible foci for such a programme in Calgary include the following:

1. In conjunction with planning studies, inform the public about the impacts of urban growth.
2. Provide information about the various means by which the public can participate in the planning process.
3. Provide "long-range planning workshops" so that the public can start thinking about the long-term implications of various planning issues.

As mentioned above, a well-informed citizen is more likely to make decisions that are appropriate for the conditions in which the decision is made. Once citizens are more informed, they are more likely to participate to a fuller extent in the overall process. Thus, such a programme would both enlighten and empower the general public.

RECOMMENDATION #6: Explore policy alternatives.

There are two main aspects of this recommendation. The first is that in the case of technical analyses (and these will still be included in the planning process), there should be less of a reliance on single projections and a greater use of alternative, independent analyses. We have seen how the current Long-Term Growth Management Strategy depends heavily on a single set of population projections. This dependence narrows down the range of alternative futures that the city can consider. Alternative analyses can provide fresh perspectives and can be

used in different scenarios in the planning process.. As an example, a scenario in which there is an economic boom followed by a recession (resulting in a rapid increase in population followed by a less rapid decrease) would enable the City to develop contingency plans for dealing with such an eventuality (which may have a relatively high probability of occurring but a low probability of predicting). The City would then be prepared whether or not this scenario comes to pass in the future.

The final aspect of this recommendation is that various policy alternatives for growth management (and other aspects of long-range planning) should be explored before plans are made. We have seen that the current long-term strategy assumed the use of annexation and suburban expansion as the major "tools" of long-term growth management. This is like putting the cart before the horse. It makes a sham of any analysis that is used to support the selection of annexation as a policy. This is not to say that these policies are bad. Indeed, they may be appropriate and/or desirable in certain circumstances. However, we cannot know this if alternative policies have not been thoroughly examined. The previously described planning process must be allowed to explore as many alternatives as possible as well as to examine their potential long-range implications. Otherwise, we might as well abandon the entire exercise.

RECOMMENDATION #7: Long-range plans should be based on alternative future scenarios.

Even with all of the above recommendations, there is still room for rigorous analysis in long-range planning. The general critique of the area does not invalidate the usefulness of certain "technical" tools in specific circumstances. Within long-range planning, I believe there is a need for some sort of guidance mechanism that will act as a framework for decision-making (this framework would include the goals and desires of the public). Thus, I still see a need for some type of "long-range plan".

The approach that I feel would be best suited to the situation (given the theoretical difficulties involved in predicting the future) is one that incorporates alternative future scenarios as a basis for long-range planning. Since the future is unknowable, scenarios provide a means for exploring several possible futures as well as the responses with which to deal with these futures. Scenarios are based on the belief that the future cannot be measured and controlled, and yet they incorporate this uncertainty successfully into the process.

Everyone involved in the process (planners, analysts, citizens, politicians) must work to identify the key elements (or forces) that are relevant to the long-range future of the city being planned for. These key elements can be political, economic, social, or technical in nature. These elements can then be integrated into several scenarios that script out

alternative futures for the city. These scenarios must be logically based on the key elements in such a way that they are internally consistent as well as feasible and valid in nature (utopian visions are not appropriate here).

Once several possible futures have been developed, appropriate responses and means for dealing with the possible developments can be examined. Existing and prospective plans can be perused in order to determine how they would cope under the various circumstances represented in the scenarios. A set of contingency plans can then be developed that would enable the City to respond should various aspects of the scenarios develop in the future.

Of course, there is always the possibility that circumstances will develop that were not considered when the scenarios were originally scripted. There are two ways of dealing with this. First, those involved with the process will have developed an understanding of the key forces that are having an impact on the city. This understanding will better enable them to deal with unforeseen developments. Second, the development of scenarios should be done on an ongoing basis. Scenarios should be revised on a regular basis, as should the contingency plans that are based on them. In this way, the scenarios will always be up to date, and will contain all of the information that is relevant to the long-term planning of the city.

Obviously, in order for the above process to take place, the structure of long-range plans must drastically change from the norms of today. Plans can no longer be static documents that are created at one point in time, and that inflexibly proclaim the chosen path to the future. Instead, the plans must be flexible in nature, adapting to changing circumstances. They should be considered to be evolving entities - providing a framework for decision-making and yet changing to suit the prevailing conditions. The contingency planning process becomes a tool to aid in the understanding of key forces affecting the city, and a guiding mechanism for the decision-making process.

Another advantage of the use of alternative scenarios is that this technique is very well suited to the use of public participation in the planning process. Working groups that involve interested citizens can be an integral part of the scenario-writing process. The public will not only play a role in developing the future shape of the city, but the process will also serve an educative function. The very act of scenario-writing helps those involved to understand those factors that are important to the future development of the city. Such a form of planning is therefore not only democratic in nature, but also a force of enlightenment and empowerment.

In addition, by incorporating scenarios into the planning process, it is possible to include a wide range of issues that go beyond those that are related solely to physical or land-use issues. This recommendation follows logically from the inclusion

of normative issues in the long-range planning debate. There is a tendency in urban planning, particularly in long-range urban planning, to focus solely on issues that are related to land use and the physical make-up of the city. However, this is simply one aspect of urban life. Social, political, economic, and environmental issues impact on our lives on a daily basis. Even decisions involving land use issues can have impacts on such diverse areas as environmental quality and provision of needs for low-income residents.

In order to be relevant, long-range plans must incorporate this broader debate into their overall process. The planning process can expand beyond mere quantitative analysis to examine the wide range of issues that are important to those residing in the city. Scenarios offer one way of incorporating these various dimensions into the long-term planning process.

To sum up, scenarios seem to be the best tool for dealing with an uncertain future. The very process recognizes the weakness in attempts to predict the future and yet can provide a framework for decision-making. In addition, by using scenarios, all of the above recommendations can be incorporated into a process that is most appropriate in a democratic society. Scenarios can include normative policy analysis (indeed, they can include any form of quantitative or qualitative analysis), public participation, public education, and they can take into account the political nature of public policy making. While all of the details of such a process would have to be worked out, it does

hold the promise of solving many of the difficulties of the contemporary decision-making and long-range planning models.

As mentioned earlier, standard means of policy analysis and urban planning are inadequate to deal with the difficulties of planning for the long term. The problems of relying on technical knowledge and predicting the future have been discussed. In order to best deal with the uncertainties that are inherent in planning for the long-term future, it is recommended that such planning be based on scenarios of alternative futures. The skeleton of how this process would work in Calgary is outlined below.

First, a citizen-based vision of the future and a normative dialogue must be initiated. In conjunction with these, a process of scenario-development is to be generated that also involves a broad spectrum of citizens. The key forces that impact on the city can be elucidated, as well as the likely future directions of these forces. Possible key driving forces in Calgary include the oil and gas industry (and related economic cycles), levels of community or individual activism, and technological advances in public transportation. Alternative scenarios can then be written that take into account these key forces as well as possible responses by the City to future events that may develop. Policy alternatives can be explored, and their possible future implications (as well as their correspondence with the vision of the future) examined. In the end, there will be a set of

feasible scenarios, each representing a realistic unfolding of future events within the city.

Contingency plans for each scenario can be outlined for future refinement by City Planners. As with the visioning process, this procedure is to be a continuing one, with feedback loops and constant revisions as conditions change.

Such a process can achieve many things. First, it enables the residents of the city to define for themselves the future direction of the city. It returns political power to the general public. Second, it is educative in nature. By maintaining a dialogue in several areas, the citizens gather information and learn many things that would previously have been kept from them. This in turn helps the citizens to make better decisions. Lastly, the process incorporates uncertainty into it without being scientific in nature. Both qualitative and quantitative analyses can be included, and normative debate is encouraged. There is a recognition that there is value in planning for the future but that the future cannot be measured and controlled.

SUMMARY

Essentially, the above recommendations boil down to the development of an entirely new process for long-range planning within the City. Figures 5 and 6 on the following pages illustrate the existing process as well as the proposed process.

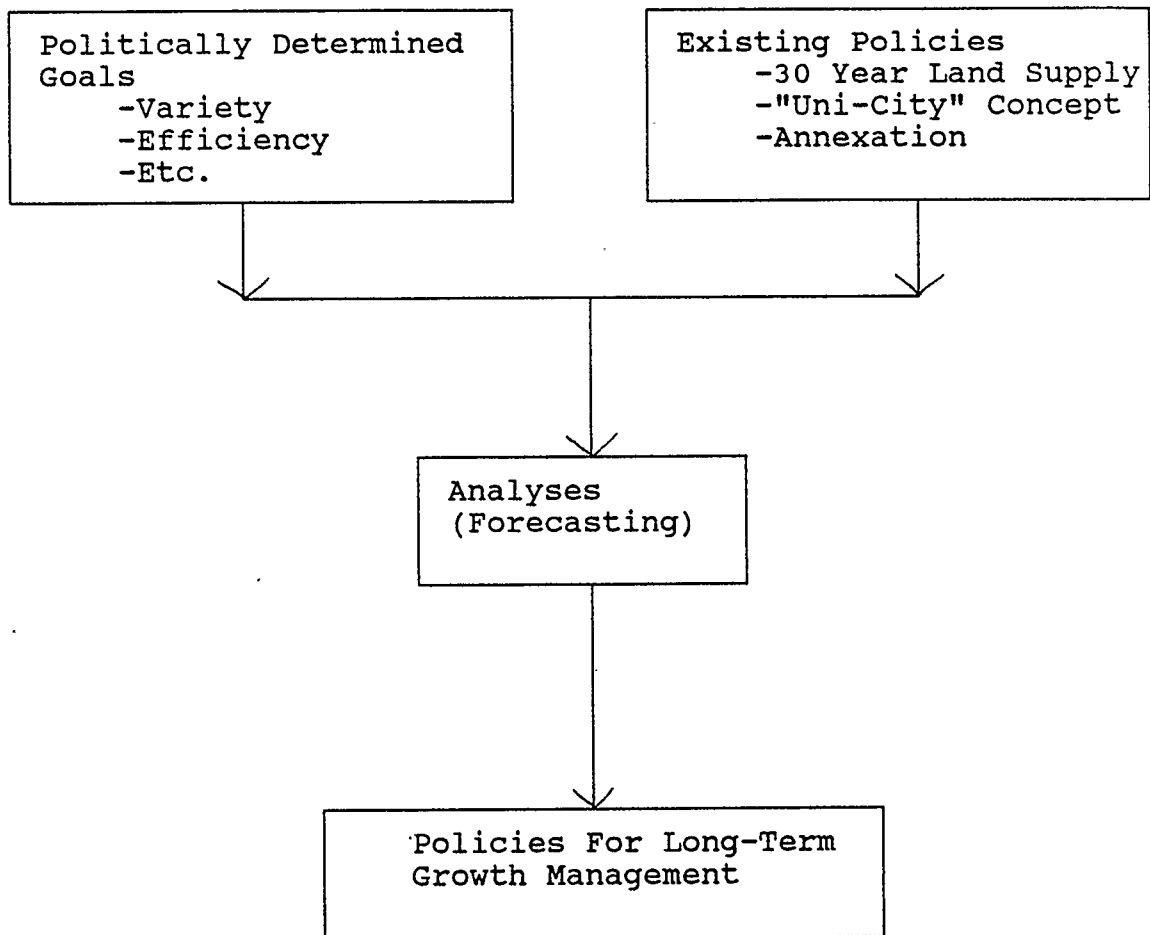
EXISTING LONG-RANGE PLANNING PROCESS

Figure 5. The existing long-range planning process in Calgary.

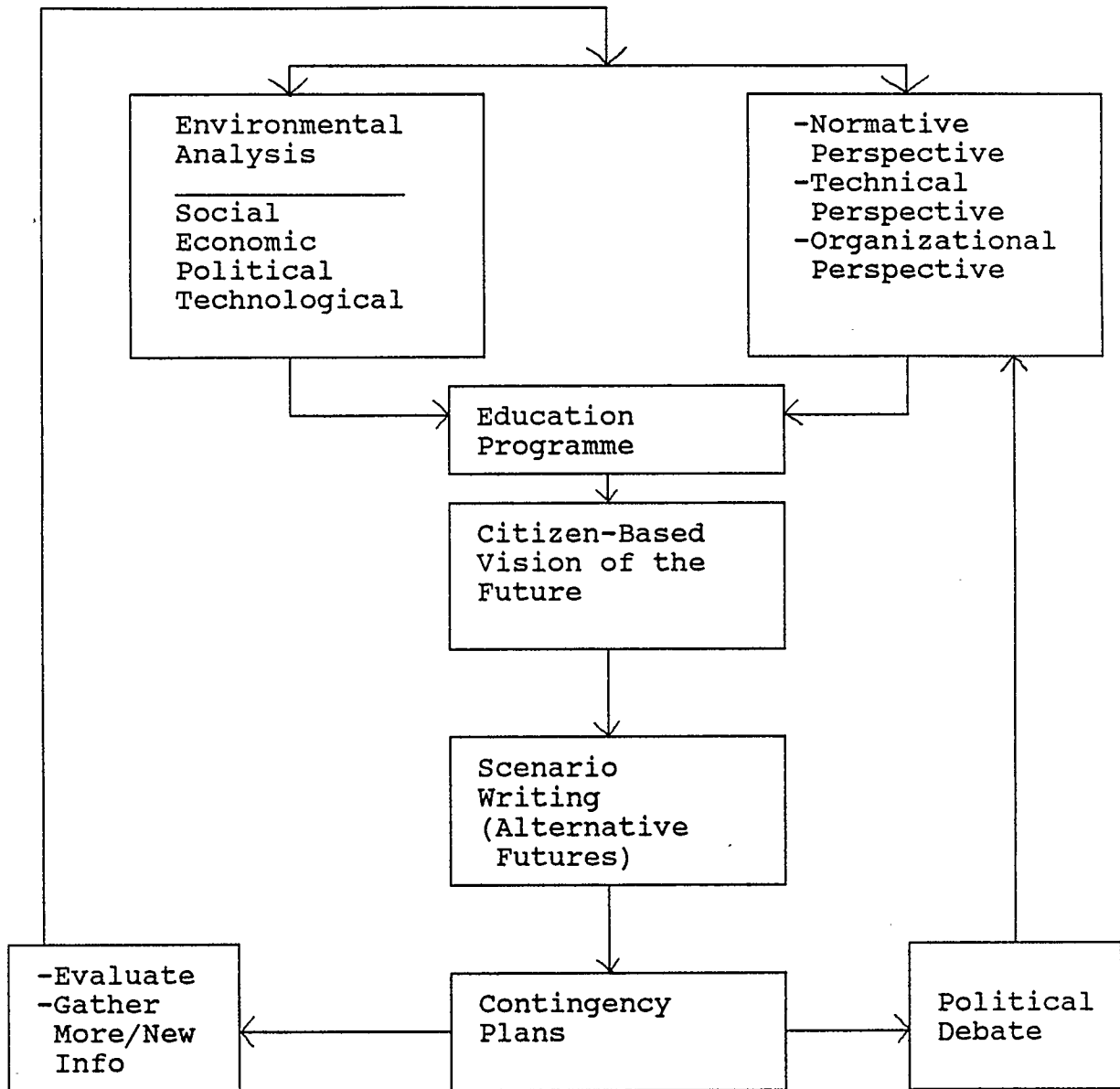
PROPOSED LONG-RANGE PLANNING PROCESS

Figure 6. A proposed process for long-range urban planning.

By involving citizens, including normative debate, educating the public, and developing a scenario-based planning strategy, the City can overcome many of the difficulties inherent in long-range planning in general, and long-term growth management in specific. The proposed process necessitates a change in the ways in which urban planners function. It is my opinion that planners must incorporate various aspects of the above recommendations (e.g., normative policy analysis, the politicizing of public issues, public participation) into their work, and should advocate this broader view of the planning process. Planners should not wait for the public or for the politicians to provide encouragement for this change. Rather, they should be proactive in their attempts to legitimize the planning practice in our modern democracy.

It is apparent that the proposed process is both costly and time-consuming. "Solutions" are not easily arrived at (as is the case in the current process), and the outcome is uncertain. However, these costs should be minor compared to the costs caused by mistakes made when following a single strategy that is no longer appropriate due to changing conditions. The evolutionary and flexible nature of the proposed process ensures that the long-range plan(s) will not collect dust on the shelf because it has become out of date.

The proposed process may not be to the liking of those who prefer single solutions to public issues; those who would prefer a rigidly proscribed path to the future. This process cannot

come up with such outcomes, nor should it be expected to. It takes a proper account of the realities of both theory and practice within the fields of policy analysis and urban planning. The shape of the future will develop gradually by following this process. It will not be a constructed future, because this cannot be done. Rather, the future will be shaped by both external forces and the City's responses to these forces. The planning process will determine what these responses will be, and thus cannot be predicted.

This aspect of uncertainty is inherent in anything that involves the future. It should not be disparaged, but rather embraced as a challenge to go forth into the future, stumbling at times, but always holding forth those aspirations and goals that help to light the way.

APPENDIX

POLICY DIRECTIONS FROM

CALGARY'S LONG-TERM GROWTH MANAGEMENT STRATEGY (1986)

Note: Those policies marked with an asterisk (*) already existed in the General Municipal Plan.

Directions for Existing Communities

1. In established residential areas, the City will endeavour to optimize the use of existing servicing systems. Through the local planning process, the opportunities for accommodating population increases will be identified in each community, ensuring that population increases will occur in way which:
 - i) strengthen the role of the community within the built-up area, as defined in local area plans;
 - ii) contribute to the community's quality and image;
 - iii) contribute to the existing community fabric and social environments.
2. The quality of the physical environment in existing communities is to be improved. To enhance the attractiveness of these communities, council will consider a program of capital improvements on an annual basis.
- *3. A variety of housing types, to serve the broadest spectrum of housing needs, should be encouraged within the built-up area. Provision should be made for a choice of housing types and living environments so as to provide for various types of populations in the existing communities, ranging from unattached persons (i.e., older residents and young adults), couples in their family formation years, middle-aged and older families. This does not mean that every community district is obliged to provide a mix of housing. Rather, the appropriate mix in any given community district is to be determined through the local planning process.

Directions for New Suburban Communities

- *4. Suburban areas will continue to provide for a mix of unit types and residential environments in an attempt to build adaptability and choice into the housing stock. Variations in unit mix and density may be appropriate for different cells within an A.S.P. area.
- 5. New communities should be sufficiently concentrated in any given sector, and reasonably contiguous to developing communities, to allow for the prompt and cost-effective provision of municipal services and facilities. Exceptions to this general principle will be evaluated through the Short-Term Growth Management decision-making process.
- 6. The City will endeavour to provide a pre-planned and pre-budgeted inventory of easily serviceable residential lands, ready for development, to support a healthy, competitive suburban land market. Actual expenditure decisions related to the construction of municipal infrastructure will be evaluated through the City's Short-Term Growth Management decision-making process.
- 7. Within each sector, new suburban growth will be encouraged to use areas requiring the least expenditures for new municipal infrastructure by the city. The desirability of permitting new suburbs in particular location will be evaluated with respect to minimizing municipal costs, satisfying current market conditions and other considerations specified in the Short-Term Growth Management decision-making process. The evaluation of available serviced land supply will occur regularly, and in response to individual requests for previously unbudgeted City expenditures, through the Short-Term Growth Management decision-making process.

Directions for Major Employment Areas

- *8. The Downtown will continue to accommodate substantial growth in office-related employment.
- *9. An on-going environmental improvements program will be maintained to ensure a level of amenity that reinforces the attractiveness of the Downtown for existing and new business.

*10. The development of alternative employment concentrations outside of Downtown will be supported. However, individual proposals to create new employment centres will be evaluated in terms of the extent to which they:

- i) are located along major transportation corridors in locations which will contribute to a more efficient use of the transportation system;
- ii) will lessen the need for vehicular movements through the Downtown and inner city;
- iii) will not have an adverse effect on adjacent residential communities; and
- iv) can support a concentration of office buildings, and so support the broadest range of employee amenities and services.

Directions for Regional Retail Facilities

*11. The Downtown is seen to be a critical component of the city's image and functioning. The Downtown's retail base will be strengthened as a special shopping district serving the business, cultural, and tourism centre of the city. Expansion of the Downtown's retail base will be strongly encouraged providing that new shopping establishments:

- i) strengthen and reinforce the existing retail area designated in the Core Area Policy Brief; and
- ii) do not result in substantial losses to other amenities or opportunities for enhancing the area's quality and image (e.g., loss of significant open space, heritage resources).

To strengthen this commitment to a strong retail base in the Downtown, the City will undertake programs to enhance and complete major public systems serving the Downtown (e.g., access, parking, open space) and to create vibrant and high quality amenities for Downtown workers, shoppers, and visitors.

- *12. Due to the impact that a regional centre has, not only on its immediate surroundings but on the city as a whole, prospective developments will be evaluated on the basis of the following information:
- i) Documentation to demonstrate the ability of the promoters of the centre to bring together financing, tenants, and construction capability;
 - ii) The physical impact of the centre with regard to:
 - a) integration with surrounding development,
 - b) the ability of the street system to handle the increase in traffic,
 - c) integration with mass transit proposals,
 - d) other possible public expenditures;
 - iii) The quality of site development, including the adequacy of landscaping, parking, access, pedestrian and vehicular circulation;
 - iv) Compatibility with proposed or adopted policy reports and design brief/area structure plans/area redevelopment plans;
 - v) Forecasted changes in the total population of the anticipated market area (i.e., timing and scale of new suburban residential areas being developed).
13. The City will actively encourage the rejuvenation and enhancement of distinctive shopping areas throughout the built-up area.

Directions for Industrial Growth

- *14. The City will endeavour to provide a pre-planned and pre-budgeted inventory of easily serviceable industrial lands, ready for development, to support a healthy industrial land supply. In expanding the S.E. industrial area, a thorough evaluation of servicing constraints will be undertaken.
- *15. The City, being a major industrial land developer, will maintain a variety of parcel sizes with the services necessary to encourage establishment of all types of industry which would contribute to the economic diversification of the city and the expansion of the existing industrial base.

- *16. Industrial areas will be more attractive to new businesses if they provide easy access for employees, attractive environments and leisure facilities and spaces. The City, in co-operation with industrial landowners and developers, will endeavour to improve existing industrial areas and provide high quality industrial areas in the future.

Long-Term Land Supply

- 17. The City will endeavour to have at least a 30 year supply of developable lands, for all uses, to allow for the comprehensive planning of new areas, and to encourage choice and competition in the marketplace.
- 18. The City recognizes that the purpose of the Urban Fringe is to provide land for future urban expansion and to act as a buffer between rural uses which may not be compatible with urban development. The Urban Fringe will serve to protect a land supply to meet the needs of at least the next 30-60 year planning horizon. Because of the uncertainty in identifying growth corridor preferences for such an extended period, the Urban Fringe is to provide for a choice of possible growth alternatives.

REFERENCES

- Anderson, C. (1985). The place of principles in policy analysis. In M. Wachs (Ed.), Ethics in planning (pp. 193-215). New Jersey: The Centre for Urban Policy Research.
- Appelbaum, R.P. (1977). The future is made, not predicted: Technocratic planners vs. public interests. Society, 14(4), 49-53.
- Ascher, W. (1978). Forecasting: An appraisal for policy-makers and planners. New York: Pergamon Press.
- Ayres, R.V. (1969). Technological forecasting and long-range planning. New York: McGraw-Hill.
- Beck, C.W. (1982). Corporate planning for an uncertain future. Long Range Planning, 15(4), 12-21.
- Bernstein, R. (1983). Beyond objectivism and relativism. Philadelphia: University of Pennsylvania Press.
- Boon, C.M. (1977). An administrative response to urban growth pressure. Master's Degree Project, University of Calgary.
- Boshoff, H. (1989). Testing plans against alternative futures. Long Range Planning, 22(5), 69-75.
- Brada, J.C., King, A.E., & Schlagenhauf, D.E. (1983). The benefits of long-term development planning: An estimate. World Development, 11(11), 971-979.
- Brower, D.J., Owens, D.W., Rosenberg, R., Botvinick, I., & Mandel, M. (1976). Urban growth management through development timing. New York: Praeger Publishers.
- Brown, R.G. (1963). Smoothing, forecasting, and prediction of discrete time series. Englewood Cliffs, N.J.: Prentice-Hall.
- Burrows, L.B. (1978). Growth management: Issues, techniques, and policy implications. New Brunswick, N.J.: Center for Urban Policy Research.
- Chapin, F.S., & Kaiser, E.J. (1979). Urban land use planning. Chicago: University of Illinois Press.

- City of Calgary (1979). Calgary general municipal plan. Calgary: Author.
- City of Calgary (1983). City of Calgary annexation study. Calgary: City Planning Department.
- City of Calgary (1985). Short-term growth management strategy. Calgary: Planning and Building Department.
- City of Calgary (1986). Long-term growth management strategy. Calgary: Planning and Building Department.
- City of Calgary (1989a). City of Calgary housing profile and household projections 1989-2000. Calgary: Corporate Resources Department.
- City of Calgary (1989b). The City of Calgary comprehensive annexation. Calgary: City and Community Planning Division.
- City of Calgary (1989c). Calgary ...2020. Calgary: Author.
- Cole, S. (1976). Long-term forecasting methods. Futures, 8, 305-319.
- Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi Method to the use of experts. Management Science, 9(3), 458.
- Dowall, D.E. (1981). An examination of population-growth-managing communities. Policy Studies Journal, 9(3), 414-425.
- Encel, S., Marstrand, P.K., & Page, W. (1975). The art of anticipation: Values and methods in forecasting. London: Martin Robertson and Company.
- Forester, J. (1989). Planning in the face of power. Berkeley: University of California Press.
- Fowles, J.B. (1978). Handbook of futures research. Greenwood, CT: World Futures Society.
- Friedmann, J. (1973). Retracking America: A guide to transactive planning. New York: Doubleday-Anchor.
- Friedmann, J. (1987). Planning in the public domain: From knowledge to action. Princeton, NJ: Princeton University Press.
- Garbacz, C., & Thayer, M.A. (1983). An experiment in valuing senior companion program services. Journal of Human Resources, 18(1), 147-153.

- Gohagan, J.K. (1980). Quantitative analysis for public policy. New York: McGraw-Hill.
- Gosselin, Y.R. (1978). The ecological greenbelt: A framework for the management of urban growth. Master's Degree Project: The University of Calgary.
- Gunnel, J. (1986). Between philosophy and politics. Amherst: University of Massachusetts Press.
- Habermas, J. (1970). Towards a rational society. Boston: Beacon Press.
- Habermas, J. (1984). Theory of communicative action. Boston: Beacon.
- Hahn, W.A., & Gordon, K.F. (Eds.). (1970). Assessing the future and policy planning. New York: Gordon and Breach.
- Hawkesworth, M.E.H. (1988). Theoretical issues in policy analysis. Albany: State University of New York Press.
- Hermereen, G. (1977). Models in forecasting and analysis. In C.G. Jennergren, S. Schwarz, & O. Alfveltdt (Eds.), Trends in Planning. London: Wiley.
- Heydinger, R.B., & Zentner, R.D. (1983). Multiple scenario analysis: Introducing uncertainty into the planning process. In J.L. Morrison, W.L. Renfro, & W.I. Boucher (Eds.), Applying methods and techniques of futures research. San Francisco: Jossey-Bass.
- Hoos, I.R. (1978). Methodological shortcomings in futures research. In J. Fowles (Ed.), Handbook of futures research (pp. 53-66). Westport, Conn.: Greenwood Press.
- Howard, K. (1975). Quantitative analysis for planning decisions. London: MacDonald & Evans.
- Jones-Lee, M.W., Hammerton, M., & Philips, R. (1985). The value of safety: Results of a national sample survey. Economic Journal, 95(377), 49-72.
- Kahn, H., & Wiener, A. (1967). The year 2000 - a framework for speculation on the next 33 years. New York: MacMillan.
- Kaplan, A. (1964). The conduct of inquiry. San Francisco: Chandler.
- Keeny, R., & Raffia, H. (1976). Decisions with multiple objectives: Preferences and value tradeoffs. New York: John Wiley & Sons.

- Khachaturov, T.S. (Ed.). (1976). Methods of long-term planning and forecasting. London: MacMillan Press Ltd.
- Khakee, A. (1984). Town planning in Sweden: National officials versus local politicians. Long Range Planning, 17(6), 82-93.
- Khan, A.M. (1985). Towards the development of innovative models of intercity travel demand. Transportation Quarterly, 39(2), 297-316.
- Khan, A.M. (1989). Realistic planning for transportation: A flexible approach. Long Range Planning, 22(5), 128-136.
- Kuhn, T. (1970). The structure of scientific revolutions. Chicago: University of Chicago Press.
- Lindblom, C. (1959). The science of muddling through. Public Administration Review, 19, 79-88.
- Lindblom, C. (1965). The intelligence of democracy: Decision making through mutual adjustment. New York: Free Press.
- Linstone, H.A. (1978). The Delphi Technique. In J. Fowles (Ed.), Handbook of futures research (pp. 273-300). Westport, Conn.: Greenwood Press.
- Linstone, H.A. (1984). Multiple perspectives for decision-making. London: North-Holland.
- Lithwick, N.H. (1970). Urban Canada problems and prospects. Ottawa: Canada Mortgage and Housing Corporation.
- Lynch, K. (1981). Good city form. Cambridge, Mass.: The MIT Press.
- MacIntyre, A. (1981). After virtue. Notre Dame: University of Notre Dame Press.
- MacIntyre, A. (1985). Utilitarianism and the presuppositions of cost-benefit analysis: An essay on the relevance of moral philosophy to the theory of bureaucracy. In M. Wachs (Ed.), Ethics in planning (pp. 216-232). New Jersey: The Centre for Urban Policy Research.
- MacRae, D., & Wilde, J.A. (1979). Policy analysis for public decisions. North Scituate, Mass.: Duxbury Press.
- Makridakis, S. (1975, Winter). Forecasting, its uses and limitations. European Business, 48-62.

- Mandel, T.F. (1982). Scenarios and corporate strategy: Planning in uncertain times (Report No. 669). New York: SRI International, Business Intelligence Program.
- Martino, J.P. (1970). Methods of technological forecasting. In W.A. Hahn & K.F. Gordon (Eds.), Assessing the future and policy planning (pp. 19-40). New York: Gordon & Breach.
- May, G. (1982). The argument for more future-oriented planning. Futures, 14, 313-318.
- Michman, R.D. (1990). Why forecast for the long term? InsideGuide, 4(2), 31-33.
- Miles, I. (1975). The poverty of prediction. Westmead, England: Robert MacLehose and Company.
- Miles, I., & Irvine, J. (1979). Social forecasting: Predicting the future or making history?. London: Pluto Press.
- Morrison, J.L., Renfro, W.L., & Boucher, W.I. (Eds.). (1983). Applying methods and techniques of futures research. San Francisco: Jossey-Bass.
- Moyer, R. (1984). The futility of forecasting. Long Range Planning, 17(1), 65-72.
- Mumford, L. (1938). The culture of cities. New York: Harcourt, Brace and Co.
- Musgrave, R.A., & Musgrave, P.B. (1973). Public finance in theory and practice. New York: McGraw-Hill.
- Perks, W.T. (1989, August). Scenario writing in vivo: Participant planning in Airdrie, Alberta. Paper presented at the Canadian Institute of Planners Annual Conference, Saint John, New Brunswick.
- Popper, K. (1957). The poverty of historicism. London: Routledge and Kegan Paul.
- Prest, A.R., & Turvey, R. (1965). Cost-benefit analysis: A survey. The Economic Journal, 75(4), 682-705.
- Province of Alberta (1956, January). Report of the Royal Commission on the Metropolitan Development of Calgary and Edmonton. Edmonton: The Queen's Printer.
- Province of Alberta (1978, June). Joint Committee Housing & Urban Development Association (HUDAC) and Department of Housing and Public Works Report to Honorable Tom Chambers Minister of Housing and Public Works. Edmonton: Queen's Printer.

- Rittel, H., & Webber, M. (1973). Dilemmas in a general theory of planning. Policy Sciences, 4, 155-169.
- Roberts, P.C. (1979, November). SARU models. Paper presented to the Futures Symposium, London.
- Schofield, J.A. (1987). Cost-benefit analysis in urban & regional planning. London: Allen & Unwin.
- Schwarz, B. (1977). Long-range planning in the public sector. Futures, 9(2), 115-127.
- Schwarz, B., Svedin, U., & Wittrock, B. (1982). Methods in futures studies: Problems and applications. Boulder, Colorado: Westview Press.
- Scott, R.W. (Ed.) (1975). Management and control of growth: Issues, techniques, problems, trends. Washington, D.C.: Urban Land Institute.
- Shani, M. (1974). Futures studies versus planning. The International Journal of Management Science, 2(5), 634-649.
- Simon, J.L. (1981). The ultimate resource. Princeton: Princeton University Press.
- Stockey, E., & Zeckhauser, R. (1978). A primer for policy analysis. New York: W.W. Norton & Company.
- Stone, D.A. (1988). Policy paradox and political reason. Glenview, Illinois: Scott, Foresman and Company.
- Stubbart, C. (1985). Why we need a revolution in strategic planning. Long Range Planning, 18(6), 68-76.
- Tokyo Metropolitan Government (1987). 2nd long-term plan for the Tokyo metropolis. Tokyo: The Japan Times.
- United Nations Economic Commission for Europe. (1971). Long-term planning. Geneva: United Nations Publication.
- United Nations Economic Commission for Europe. (1973). Approaches and methods used in long-term social planning and policy-making. Geneva: United Nations Publication.
- Van Doorn, J.W.M. (1986). Scenario writing: A method for long-term tourism forecasting? Tourism Management, 7(1), 33-49.
- Wachs, M. (1987). Ethical dilemmas in forecasting for public policy. Futures Research Quarterly, 3(1), 45-57.

Wachs, M., & Ortner, J. (1979). Capital grants and recurrent subsidies: A dilemma in American transportation policy. Transportation, 8, 3-19.

Wildavsky, A. (1979). Speaking truth to power: The art and craft of policy analysis. Boston: Little, Brown.

Zadeh, L.A. (1972). Outline of a new approach to the analyses of complex systems and decision processes. Memorandum Number ERL-M342, July 24. Berkeley: University of California College of Engineering.