

THE UNIVERSITY OF MANITOBA  
AN INFORMATION SYSTEM FOR URBAN PLANNING  
"AN IMPOSSIBLE DREAM"

by

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

DEPARTMENT OF CITY PLANNING

WINNIPEG, MANITOBA

May, 1980

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A thesis submitted to the Faculty of Graduate Studies of  
the University of Manitoba in partial fulfillment of the requirements  
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TO MY MOTHER

MARTHA ZAZELENCHUK

## ACKNOWLEDGEMENTS

The author wishes to express his sincere appreciation to associates, instructors and the staff of the City of Calgary Planning and Management Systems Department, who assisted in the background research and the preparation of this thesis. In particular, the contribution and patience of Professor B.M. Rotoff requires special mention.

A special thank you to Linda Zazelenchuk for her continuous support and typing assistance in preparing the text.

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## INTRODUCTION

One of the major tasks facing individuals involved in City Planning today, is bridging the gap between the enormous volumes of information being generated and the effective application of this information to a rapidly changing urban environment.

The purpose of this thesis is to address urban planning and the information problem, and to assess a possible solution, namely integrated information systems.

During the past several years the conception and practice of City Planning has undergone quite a dramatic change. Much of this is due to the modern crisis of our city, which is growth. Accompanying this growth, our way of life, our society and our environment as well as our expectation has become increasingly complex. Also there has been a growing awareness of the intricate interrelationships inherent among the various components of our city and the effect that one has upon the other. The city is being perceived more than ever as a complex system.

City Planning which is a process of decision making related to control and shaping of our cities' environment has thus become increasingly more complex and comprehensive in approach. It has shifted away from a single oriented objective such as Development or General Plan to a more intangible process oriented discipline. It is now more of a continuous process directed toward more flexible

goals and is therefore subject to continuous evaluation, monitoring and revision. It is also broader in magnitude and encompasses more and more disciplines such as economics, sociology, political science and environmental studies. No longer is it restricted to architecture, engineering and urban design.

Concomitantly the planning process and the role of the planner have also changed. The development of more objective planning methods has led to a lesser emphasis on the subjective judgement of planners.

Planners are now doing more things for a greater variety of concerns and are doing this in a more objective and comprehensive manner.

This transformation to more objective comprehensive City Planning has led to new demands for a more analytical and quantitative approach and has forced planners to turn to system analysis and mathematical techniques such as simulation models. No longer is the intuitive judgement and personal expertise of the planner in itself adequate, as emphasis must be placed on the scientific approach as a rational tool.

These fundamental changes in the planning process led to the need for current reliable information as an essential component upon which to base decisions.

An added current phenomenon has been the emphasis on public participation in the planning process. This has led not only to a requirement for an expanded information base but also to a requirement for new methods of disseminating available data and in turn information to a broader spectrum of potential users.

The selected area of study deals with the issue of data and information systems as specifically related to City Planning. The City of Calgary is referenced as a case study to demonstrate the implications of the notion.

The study demonstrates that there is little doubt that information systems are very necessary for City Planning and municipal decision making, and that although much is known about information systems, their components, their design, their problems, information systems are an "impossible dream" in an urban setting due mainly to the complexity with their implementation. This thesis identifies a working definition of City Planning and the need for current information. It then examines the concept of Integrated Information Systems as a theoretical mechanism for meeting this need. In order to establish a clearer understanding of the concept the information system is discussed in terms of its components, characteristics, function, design considerations and benefits. The underlying reasons for past failures in the implementation of information systems are then highlighted and finally the conclusion is formulated that "although information is essential to the City Planning process, in practice,

an integrated information system, at least in the immediate future is an "impossible dream".

The main areas of discussion include:

1. A Definition of City Planning
2. An Identification and Discussion of the Information Problem
3. An Overview of Information Systems as a Solution
4. A Discussion on the Fundamental Components and Design Considerations of an Urban Information System
5. A Case Study
6. Implementation Problems which make Information Systems "An Impossible Dream"

## CHAPTER I

### PLANNING

#### A. A NEW LOOK

It is recognized that there are many planning definitions or styles including incrementalism, advocacy, transactive, strategic, to name but a few and that no single definition has been universally accepted. The purpose of this chapter is therefore to establish a practical definition of urban planning as perceived in this thesis. Planning is a difficult term to precisely define because it implies different things to different persons and disciplines. There are, however, certain basic notions that are common to all definitions. A discussion of these underlying notions and a definition within the context of this thesis is therefore necessary. Everyone plans - governmental, industrial and commercial institutions, non-profit religious, educational, cultural and political institutions and private persons. The housewife, the baker, the milkman all plan their daily activities, nevertheless the term is difficult to define. Planning is a term that is common to and part of everyday language, however, it is one that is not totally understood. Ironically, this is not only the situation in everyday life but also a contentious characteristic in the "planning field" itself. S. R. Seeley confirms this by stating that "... the planning field as a relatively new profession fares less well due to the multiplicity of incompatible and contending definitions rather than strategic or clusters of definition".<sup>1</sup> This stems from the fact that the concept and practice

is youthful and evolving and consequently is in a dynamic state of definition.

Nevertheless, attempts have been made to define and describe planning. Melville C. Branch viewed planning in very general terms by defining it as "any activity which contributes to the establishment of objectives for the future and their attainment over time".<sup>2</sup>

Simon, Smithberg and Thompson were more specific when they suggested planning to be:

"... that activity that concerns itself with proposals for the future, with the evolution of alternate proposals and the methods by which these proposals may be achieved. Planning is a rational, adaptive thought applied to the future and to matters over which the planners, or the administrative organization with which they are associated, have some degree of control".<sup>3</sup>

Although no definition of planning has ever been universally accepted, most tend to agree that planning, in essence, is future oriented, continuous and a rational process or method which is applied in an attempt to approach some goal or goals.

The working definition that is selected is similar to that expounded by Herbert Gans who described planning as:

"A method of public decision-making which emphasizes explicit goal-choice and rational goals-means determination, so that decisions can be based on the goals people are seeking and on the most effective programs to achieve them".<sup>4</sup>

Present and most recent theoretical planning thought seems to question this definition, nevertheless it is applicable in that it best represents the perspective of a practising land use planner and thus the perspective of this thesis.

This definition not only identifies planning as a rational decision making process in a continuum, but also as a process that is oriented toward the people for whom the planning is carried out. This hypothesis should also apply to City Planning as reflected in discussion expressed by Fred Goff,

"City Planning simply means getting ready for the future in city growth. It is the guidance into proper channels of a community's impulses towards a larger and broader life. On that it has to do with things physical - the laying out of streets and parks and rapid-transit lines. But its real significance is far deeper; a proper city has a powerful influence for good upon the mental and moral development of the people".<sup>5</sup>

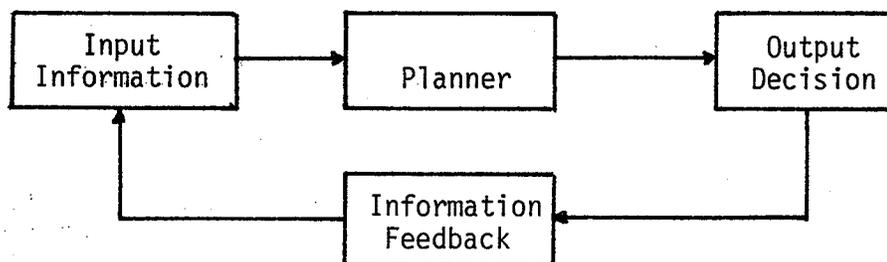
Planning is therefore:

"A method and process whereby concepts are attained by setting up goals and objectives formulated and implemented through a formal or informal but logical process designed to obtain optimum use of all resources, both human and material, to provide the form of society within present and future political frameworks. Also to resolve problems resulting from the complex inter-relationships of human, social, economic, environmental and institutional phenomena, with a commitment to providing environments responsive to the diverse demands of a pluralistic Canadian Society".<sup>6</sup>

More simply stated, the purpose of City Planning is to draw together available resources, both public and private and to direct them in a coordinated manner toward solutions or problems for the realization of objectives, both immediate and future. The ultimate goal of City Planning as currently understood by the majority of practising planners is to plan for the "total environment of man"<sup>7</sup> which entails a complexity of considerations in the formulation of planning objectives, the plan and policies for implementation, as well as in the decision-making procedures inherent in the planning and development process.

Since City Planning is a decision-making process in which information is combined with experience, judgement and intuition to utilize resources to reach objectives it entails the basic elements of a system or a set of interrelated parts with a purpose. Planning as perceived in this thesis can best be referred to as "Rational Systems Planning" and must therefore be treated as a system.

Figure 1: Planning as a System



In most Canadian municipalities, the planning function is carried out by a specific department established for that specific purpose. In Calgary for example, the Planning Department fulfills this role. Specifically, it is an administrative body whose primary function by delegation of City Council is to advise and assist the Calgary Planning Commission and City Council with regard to the planning of an orderly and economical development within the City. This role involves the Planning Department in a wide range of activities in both the area of policy formation and policy interpretation and implementation. The policy formulation relates to the preparation of policy reports, design briefs, the Calgary Plan, and other specific studies as required by City Council, the Calgary Planning Commission or the Board of Commissioners. The interpretation and implementation of policy involves primarily the processing of various applications such as plans of sub-division, land use reclassifications, development permits, building permits and other miscellaneous permits.

#### B. THE CHANGING NOTION

During the past several years the conception and practice of City Planning has undergone quite a dramatic change. Much of this is due to the modern crisis of our city which is growth. Accompanying this growth, our way of life, our society and our environment as well as our expectation has become increasingly complex. Also there has been a growing awareness of the intricate interrelationships inherent among the various components of our city and the effect that one has

upon the other. The City is being perceived more and more than ever as a complex system.

### C. CITIZEN PARTICIPATION - THE NOTION OF PARTICIPATION DEMOCRACY

Political scientists have been recently going through a natural cycle from one of formalized planning to policy making on the basis of opinions and concerns expressed by persons directly affected. This new trend has been based on the premise that centralized planning (decision-making) is no longer adequate as this form is too far removed from the people.

Thus a radical element in the concept of City Planning is an underlying emphasis on the most important component of a city, but one which according to proponents of the concept has previously been overlooked, the people. The White Paper on Unicity presented by the Provincial Government of Manitoba emphasizes this notion:

"It is the people who make the community not merely the structural forms they have devised over the years to help them accomplish their common ends. Structural forms, governmental set ups, all these things are meaningless in so far as they serve the people who live within them"<sup>9</sup>

The relatively new notion questions the traditional system of planning and democratic government in North America, namely, that of decision making by elected representatives, as these new demands reflect doubts as to whether or not the elected representatives and their appointed administrators are truly representative of public interests.

These doubts are a product of the vastly changing societal awareness brought about by improved communication and higher levels of education. This form of decision making may have been adequate for the provision of caretaker services in earlier days when society was supposedly simpler, since then, the functions of government have expanded and tasks greatly increased; however, the system has remained the same. Sidney Verba notes "the expansion of government interventions in the economic and social life of the nation increase the stakes of participation: the government does more and therefore more is to be gained by having a voice over what it does".<sup>10</sup>

The argument that the average citizen of a large urban centre has limited access or contact with the policy making bodies, namely the government, and even less control over what it does, has been a basic underlying premise for citizen participation in the democratic process.

In essence, what has developed in the minds of the people is the apparent dilemma of participatory government versus representative government as an ideology for a truly democratic process:

"a professional administration (rule by experts) versus participating democracy (planning with people) is the dilemma of the late twentieth century"<sup>11</sup>

Earl Levin, related effectiveness of government as another important dimension to the issue. He maintained that the crux

of the matter is in achieving a balance between effectiveness and participation, for as he stated:

"on one hand you have a very effective government with no participation, where as on the other hand you may have participation but no effective government"<sup>12</sup>

There is also a strong school of thought, in both the public and private sector, which advocates that citizen participation in City Planning and decision making should be minimal, and that this function should be in the hands of capable technical experts and market forces. These advocates contend that citizen participation is ineffective in that only vested interest groups are represented and that "unnecessary delays" are encountered in the planning and decision making process. This creates a situation which is intolerable in a rapidly changing technical urban society, in Calgary, for example, delays in land development policies, have at least in part, contributed to the escalating land costs for residential development, as raw land cannot be put "on-stream" at a sufficient rate to meet the demand.

However, whether or not one supports the notion of citizen participation in urban planning and decision making, it is a reality of the 1970's. Therefore, although

"the complexity and sophistication of functional operations have tended to move policy and decision making to the operational expert, information technology must make it possible for the public and its elected representatives to regain their ability to comprehend and evaluate the options available and to make policy decisions"<sup>13</sup>

Therefore, any dissertation on the urban planning and decision making process must take cognizance of the dual phenomenon of technical expertise versus participatory democracy. As both ideologies have their place in today's cities, a balance between the two must be attained such that a more meaningful decision results through more effective decision making procedures.

#### D. CONCLUSION

Since planning is an everchanging discipline there are many planning styles and definitions. However, the one used in this thesis can best be referred to as rational systems planning, which implies a rational decision making process. It deals with the many interrelated and complex aspects affecting the urban environment and most importantly is continuous in nature.

FOOTNOTES - CHAPTER I

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## CHAPTER II

### THE INFORMATION PROBLEM AND POSSIBLE SOLUTIONS

This chapter reviews the complexity of the planning process and the data related problems encountered. The need for current information is established, and a potential solution is introduced.

#### A. THE PROBLEM - NEED

In recent years our way of life, our societies and our environment has become increasingly complex and sophisticated. Accompanying this, has been the growing awareness of the intricate interrelationships among the various components which constitute our environment and the effects that one has on the other. Or "that everything on the environment is related to everything else"<sup>14</sup> and "it is increasingly apparent that almost all urban processes are interdependent".<sup>15</sup> Planning decisions are consequently becoming more and more dependent upon comprehensive up-to-date information.

Many attempts in the past to solve urban problems have followed a random, uncoordinated and ad hoc approach often disregarding the complexities of the interrelated aspects. Many of the problems are therefore attributable to the lack of comprehensiveness in the approach. For example, transportation planners have reviewed transportation issues in a city and developed plans and construction programs independent of the efforts of the city planners. As a result of

such a lack of coordination, the urban structure has often been molded without any reference to achieving a well balanced integrated fabric. The problems resulting have clearly demonstrated the need for a "comprehensive planning approach".

The notion of comprehensive planning has varied greatly throughout history. Early classical definitions considered it synonymous with a master plan which implied:

- notion of long range - a guide for long range development;
- priority of capital improvement program;
- program for fiscal implementation;
- regulatory measures such as zoning.

Inherent in early comprehensive plans were the following notions;

- single set of values; which assumes that there is agreement amongst everyone concerned;
- underlying the plan was the notion that it was rational (for example, it does not permit mixes of land uses);
- a public legal document, expressing policy guidelines.

With the advent of vast scale urbanization, notions of citizen participation and advocacy planning, traditional definitions slowly changed. There was an awareness that one set of values cannot really be generated in a pluralistic society and that many plans were much

too rigid and inflexible. Furthermore, at best it is speculative, as it is really difficult to determine what may occur in year 2000.

However, on the other hand, by being rational and orderly, comprehensive planning assists in the equitable allocation of resources in an efficient manner. It provides a tool by means of which various aspects of the city are defined and ensured. For example, if an adjacent area is zoned residential, one can be assured industry will not develop. The most significant aspect of comprehensive planning in more recent years at least, is as the name implies, the totality approach. The urban fabric is viewed as a whole rather than in parts. There is much evidence in Canadian cities of ad hoc development (and apparently ad hoc planning), resulting in discontinuous, unidentifiable and inefficient sprawl.

Comprehensive planning therefore, is not a rigid plan, or a public legal document, it is an "approach" to urban planning. Inherent in its application are the notions of orderly and rational goals and objectives, and the appreciation of the City as a complex network looking at particular areas as part of a whole, not as an entity in itself.

The "comprehensiveness" in approach should in all likelihood lead to a plan, which need not be in the form of an inflexible master plan but rather in the form of policy statements and concepts depicting the goals and objectives of the plan. These may be flexible and can change with the rapidly changing societal values, however, a comprehensive