THE UNIVERSITY OF MANITOBA

PLANNING GOVERNMENT BUILDINGS: AN ANALYSIS OF THE TIME DIMENSION IN ARCHITECTURE

by

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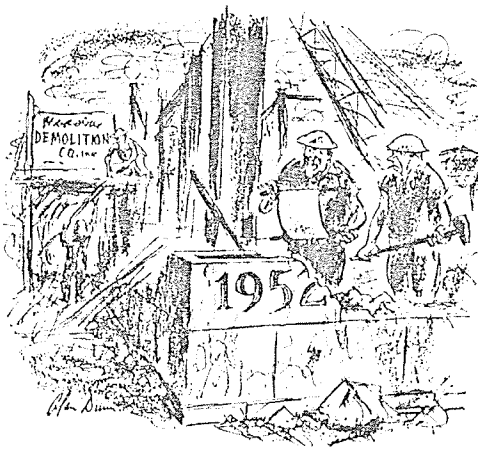

"To you children of history, who, on some far-distant day down the dim, dark corridors of time, may breach this stone . . ."

Drawing by Alan Dunn © Saturday Review

1. Introduction

This study addresses itself to the relationship between architectural activity and time. (Architectural activity is defined here as the process which generates environmental conditioning enclosures for man's use.)

The treatment of this subject attempts to be comprehensive in scope. Therefore, several aspects of architectural activity are introduced. This may result in a rather brief discussion on some issues. However, as this study is intended as a suggestion of a way of thinking about the problem of time in architecture, rather than a finite theory, more extensive formulations of particular items must be left to others pursuing the time question in architecture.

The impetus for this study came from an intuitive feeling that, on the whole, architects are unwilling or else unable to confront the time dimension as an intrinsic and important facet of all architectural problems. The evidence of this failure can be found everywhere in our cities today. At an increasing rate, physically healthy buildings are being abandoned or torn down. Those buildings which are somehow converted to new uses usually required a disproportionate expenditure of time and money

to accomplish the transformation.

With the continuing acceleration of growth and change rates within all sectors of our society, the time problem in architecture is becoming increasingly relevant. In the past, time did not present a serious problem for architects. Buildings where designed with a generous allotment of space for activities. Also, the fact that less mechanical devices were involved, meant that functional or technological obsolescence was not a serious problem. On the whole, buildings managed to successfully live out their natural life span.

Today, however, buildings are designed to space standards which provide less space per activity. Also, as standards of service provision in buildings continues to rise, increasingly complex and specialized equipment is being developed and placed on the market. "Efficiency" has emerged as a primary objective to be met by all contemporary designers. In order to achieve this efficiency, architects are designing buildings which are precisely tailor-made for particular functions. Unfortunately, often those functions have changed before the construction of the building is complete. Such problems arise because

> . . . an implicit assumption has been made that a provision for satisfactory accommodation over the

> whole life of a building, is a simple matter of proficient initial design.[1]

This study examines this assumption, among others, in an attempt to understand which direction architectural activity should be taking in order to overcome the dilemma of planning and design for change.

The focus of attention is upon two related problems in architecture. The first can be described as the problem of planning for the eventuality of future building. I have choosen to label this aspect of architectural activity the developmental planning problem. Developmental planning is concern for architecture at the scale of a group of buildings which are not all built at one time. Generally, developmental planning has been associated with Urban Design and planning. Within these disciplines, "developmental planning" attempts to answer the question: how should an area develop over time? Developmental planning in architecture asks a similar question.

In the past, developmental planning strategies have tended to take the form of "master plans" which describe exactly what development will be permitted where, and when. Lately, however, the "master plan" strategy has been questioned by both architects and planners due to their inability to cope with contemporary rates and types of growth and change.

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[1] Landau, R. and M. Pearson: "A Note on the Architecture of Time," Architectural Design, Aug., 1971, p. 502.

The second focus of attention is upon the problem of planning and design of particular buildings now which function adequately in the future. This problem is dealing with the relationship between architecture and time at the scale of the individual building or group of buildings which are built at the same time. In the past, architects have simply treated this problem as the problem of providing physically long-lasting structures. This was justified in an age which saw little change in user needs for a particular building during its lifetime. Today, however, this no longer applies in most cases. Increasingly, the problem has become that of:

> . . . sheltering an organisation which has a rate of growth and change which is so great that it makes its buildings obsolescent before they decay naturally.[2]

Thus, the useful life span of some types of buildings is growing shorter and more wasteful (see figure 1.1). In order to overcome this tendency, consideration must now be given to the creation of buildings which are adaptable in ways which increase their useful life spans. There are two related aspects to this problem. The first can be described as the process of initial planning and design of a new building(s). The second can be described as the process of on-going planning of the building once it has been built (see figure 1.2).

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[2]J. Weeks, "Indeterminate Architecture," Trans. of the Bartlett Soc. (London, Vol. 2, 1963-64).

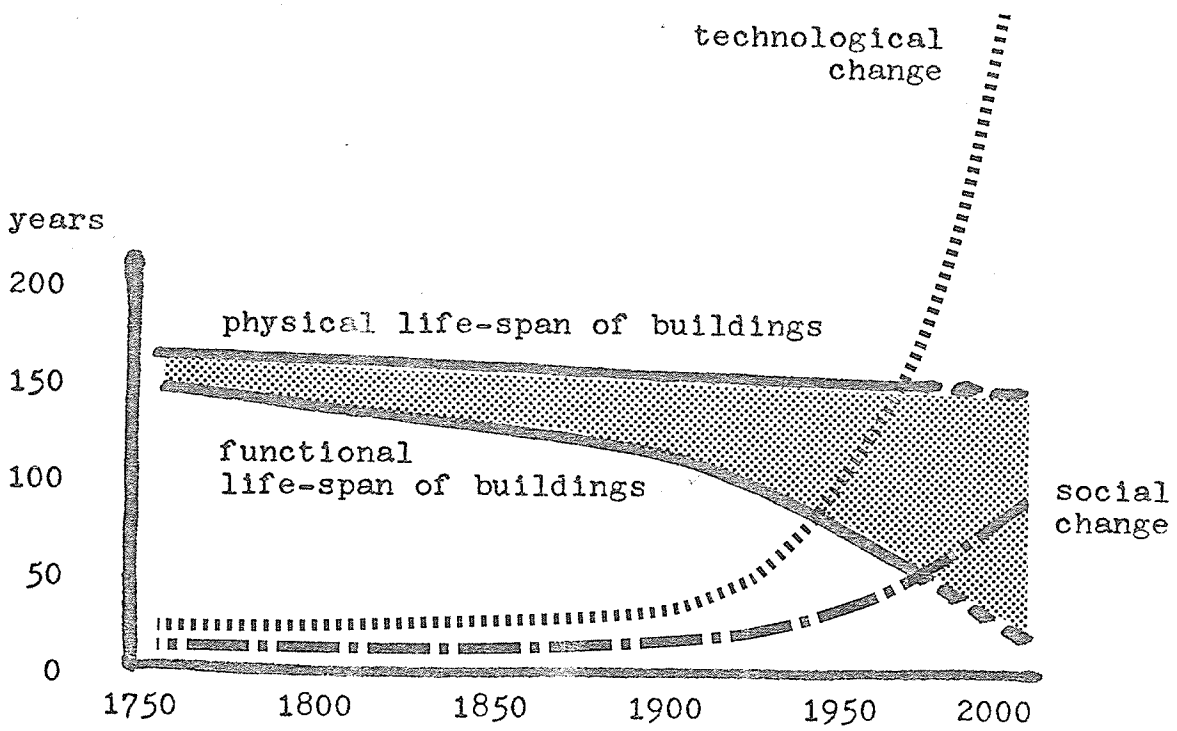

FIGURE 1.1 GENERAL TENDENCY TOWARDS THE PREMATURE FUNCTIONAL OBSOLESCENCE OF BUILDINGS

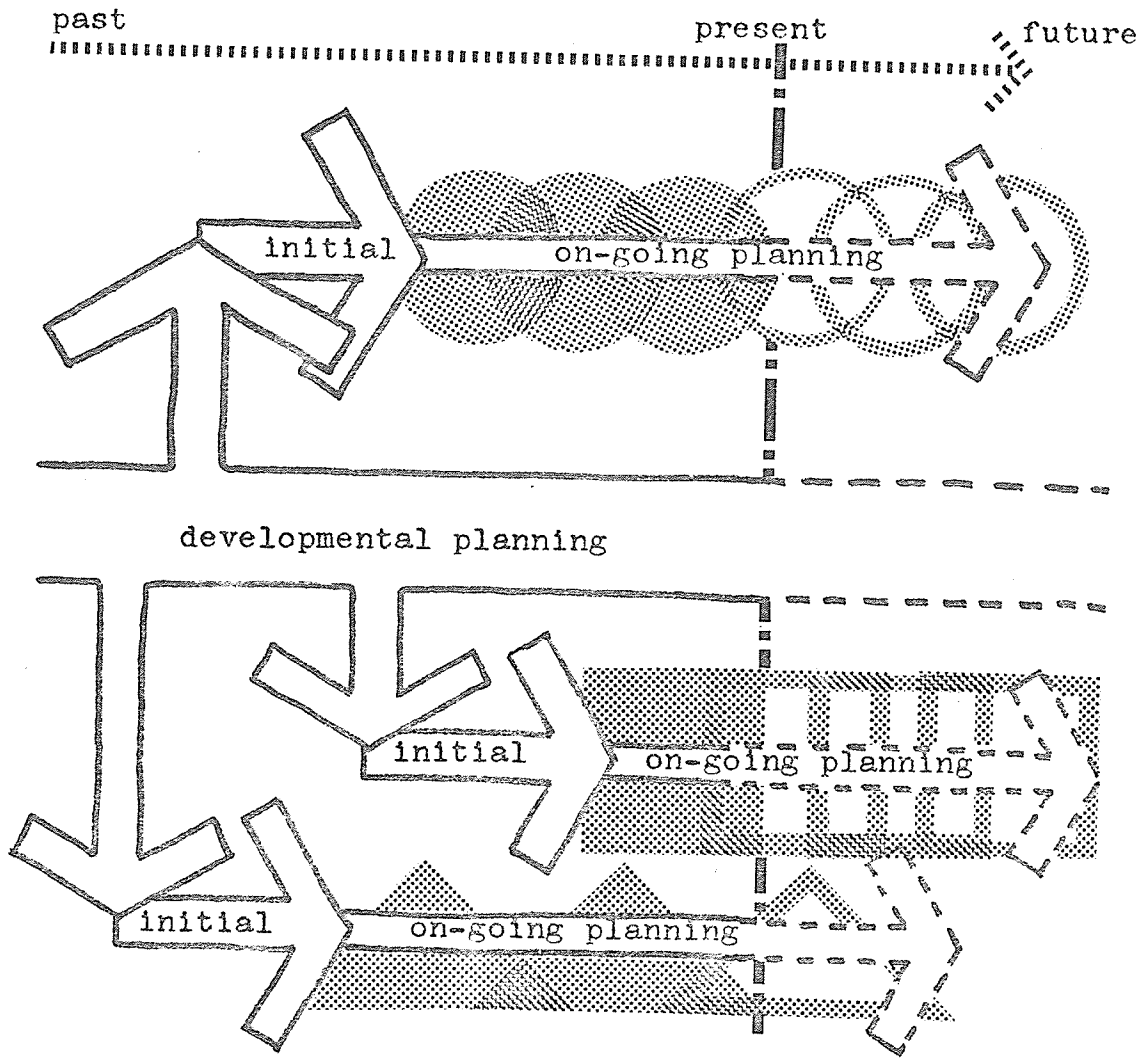

FIGURE 1.2 ASPECTS OF ARCHITECTURAL ACTIVITY

Initial planning of a building determines what that building should be in more specific terms than the developmental plan. It often takes the form of a "Design Program". The design program determines what the new building must accommodate

> . . . by establishing all the activities that will take place in the building, by identifying all the actors that will participate in the building, by describing what type of physical entities (space, equipment, etc.) will the actors require in order to perform the activities . . .[3]

Considering that most buildings built recently will have a life span of at least forty years, can the initial planner account for all the actors and all the activities for that period? At best, the initial planning brief can only determine, with certainty, past, and perhaps present needs of a user organisation. Future needs are determinable only to the extent to which we are able to assess the near future of those processes of change that are responsive to certain irreversible tendencies. Unfortunately, the bulk of future demands upon buildings remains indeterminate. As Hans Reichenbach points out;

> We may be able to predict that the house will break down, but we cannot foretell the exact places where the broken parts will be found.[4]

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[3] E. Ambasz, "The Formulation of a Design Discourse," (notes from his first lecture at Ulm, 1966).

[4] H. Reichenbach, The Direction of Time (Berkeley, 1956), p. 23.

In order to deal with the indeterminate level of building related growth and change of user organisation's needs, a process of on-going planning may be necessary. On-going planning addresses itself to the problem of adjusting an existing building to changing user needs, or changing environmental needs, during the lifetime of the facility. On-going planning is analogous to the function of a thermostat. Just as the thermostat maintains a room at a constant temperature through a process of adjustment of heat supply, on-going planning maintains the quality of architectural accommodation for user needs through constant adjustment to the organisation and substance of the building. This process is not necessarily maintained by the professional planner or professional designer. For example, changes such as furniture re-arrangement usually only involves the user and therefore can be considered to be "on-line". However, as on-going planning can only function in ways which have not been ruled out by the initial planner of the building, and as the long-term success of a building depends upon on-going planning, all aspects of on-going planning should be the concern of the professional initial planner and designer of buildings. Therefore, on-going planning, whether on-line or not, is a legitimate aspect of architectural activity.

The first section of this report consists of an outline of past and present notions of space and time.

Also, as an extension of the world view most widely accepted today, the behaviour of user organisations and buildings existing in a space-time continuum, is briefly discussed.

The second section attempts to evaluate past and present strategies and tactics within architectural activity. This evaluation is largely based upon the conceptual framework which was outlined in the first section.

The third section of this report introduces an example of the impact of the time dimension on architectural activity. Past, present, and future problems associated with the provision of buildings to house the civil service of the Government of Manitoba are discussed and recommendations as to future strategies are made. As an example of a particular architectural synthesis within a time perspective, the present and near future need for additional space is examined and a design approach is recommended.

The example of the Government of Manitoba's space needs was choosen because:

1. Government organisations are increasingly dynamic, making a traditional approach to planning buildings for its use less appropriate.

2. Documentation of the history of the Manitoba government organisation, and of the construction of its public facilities is available.

3. The author is familiar from first hand experience with the day to day problems which face the planner in the Department of Public Works.

PART A: CONCEPTUAL FRAMEWORK

MANY OF US STILL LIVE INNOCENTLY IN A STATIC THREE-DIMENSIONAL WORLD OF NEWTONIAN CONCEPTION WHICH HAS LONG SINCE COLLAPSED. IN TODAY'S DESIGN TERMINOLOGY THE PROFOUND CHANGE HAS BEEN ACKNOWLEDGED BY WHAT WE CALL "SPACE-TIME" RELATIONS. THERE IS NO SUCH THING AS FINALITY OR FINAL TRUTH . . . TRANSFORMATION IS THE ESSENCE OF LIFE.

Walter Gropius in
Scope of Total Architecture

2. Development of World View as it Affects Architecture

The following brief outline of the general development of man's concept of his universe, especially in the realms of space and time, is presented here because;

> All types of explanation in a given era reflect to a greater or lesser extent the spirit of the age or the 'current conceptual scheme'.[5]

Conversely, the "current conceptual scheme" can affect the nature of explanations within a given era. Thus, an understanding of the current world view may afford clues to the prevailing concept of the relationship between architecture and time.

Man's world view has changed considerably since the days when the existence and behaviour of all phenomena were generally attributed to the magical powers of supernatural beings. Within early cultures, spatial concepts appeared to dominate concepts of time. This tendency is reflected in language today, which describes time in spatial terms such as "long" and "short".

The Aristotelian Universe regarded space as "merely an accident of substance." Architecture of this period

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[5]W. S. Fowler, The Development of Scientific Method (London, 1962), p. 102.

was characteristically based upon archetypes of aesthetic perfection. Buildings were regarded as eternal. Time in architecture was not considered in terms of growth and change;

> The Greek conception of the world was static, things being considered to be a mirroring of eternal archetypes or Ideas.[6]

The Aristotelian conception of space persisted until the Renaissance, when the discovery of perspective served to free space from objects and gave it a reality of its own. Space and time remained conceptually separate. Later, in the nineteenth century, the Newtonian concept of the universe maintained this separation. The spirit of this age was exemplified by Descartes.

> To Descartes space became the fundamental reality in the world, motion the source of all change, and mathematics the only relation between the parts.[7]

The world was regarded as mechanistic; a world composed of a finite set of mathematical relationships. The primary concern of science was with finding an explanation of all phenomena through an analysis of bivariate causal chains. This analysis had no place for notions such as organisation, wholes or structure. With regard to time, a completely deterministic stance about the future was taken by Newton. His claim was that;

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[6]L. von Bertalanffy, General Systems Theory (N. Y., 1968), p. 88.

[7]J. H. Randall, The Making of the Modern Mind (N. Y., 1940), p. 241.

> A single determination of the positional and velocity co-ordinates of every part of a complicated system would suffice to determine at every moment of future time precisely how the system would behave.[8]

This notion must have held a strong sway over the minds of planners and architects of the times. Notions of space and time tended to produce plans and buildings which expressed the general feeling that the future was completely determinable. Popular among city planners were plans which emphasised and extended then current values and systems into the future. Plans and buildings remained static indicators of a static world view.

A dramatic transformation in our world view occurred early in this century.

> The first half of the twentieth century saw classical determinism of the nineteenth century replaced by a sort of actuarial law of physics, in which the possibility of unitary prediction of individual events is foregone in favor of a statistical law.[9]

No longer is a deterministic attitude within planning and architecture compatible with the "current conceptual scheme." What was once assumed to be static is now understood to be dynamic. Process descriptions are replacing state descriptions.

> The universe in its entirety must be regarded as one gigantic process, a process of becoming of attaining new levels of existence and organisation.[10]

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[8] Ridenoir, L. N., "Physical Science and the Future," in Facing the Future's Risks (N. Y., 1952), p. 63.

[9] Ibid., p. 72.

[10] J. Huxley, intro. to The Phenomenon of Man, by Pierre Teilhard de Chardin (N. Y., 1959), p. 13.

Time and space within this new universe have taken on a new meaning. Time has emerged as an important aspect of existence, inseparable from space.

> Einstein declared . . . that the doctrine of space in three dimensions and a separate time element should be replaced by a four-dimensional continuum of space-time.[11]

An analysis of time in architecture must now become an analysis of space-time in architecture. Also, any discussion of space in architecture is really a discussion of space-time in architecture. Thus, time has acquired a new status within a culture which tends to associate reality more with space than time.

> We must be born again . . . in the new pattern, time becomes an essential dimension of reality . . . without which all the others lose their character and being.[12]

Conceptually, we live in a new universe;

> It is a universe of change. It is now known that contingency and uncertainty are part of the weft and weave of any physical system . . .[13]

The chaos of the nineteenth century notion of the world, is being replaced by concepts of organisation, interaction and wholes. The impact of this shift has already been felt in many fields of human endeavors;

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[11] Fowler, op. cit., p. 81.

[12] D. W. Rogers, "Main Currents in Modern Thought," in D. Fabun, Dimensions of Change (London, 1971), p. 31.

[13] C. Russell, "Entropy, Extropy and Architecture," unpublished paper, University of Manitoba, 1967.

> Science has begun to shift from the measurement of things to the study of processes and the interactions between them; "the proper study of mankind" has become not "man" but change.[14]

Within the discipline of architecture, however, this shift has not materialized:

> For while a small minority of architects among the theory/experimental/student factions have seen the time concern as a central focus for their work, a large part of the practising profession has been either unaware, disinterested or else unable to see the consequences of the topic.[15]

The bulk of the profession continues to unconsciously assume that all architectural problems are static, requiring static answers. A possible reason for this situation may be that we are limited by our heritage of past notions of the universe. Language, as a tangible part of that heritage, constitutes a powerful limitation upon our conceptual powers.

> Our language pattern is, in the main, a screen which prevents us from fully comprehending change . . . Western intellectual man originally had no choice, in order to facilitate the development of thought, but to separate out of the apparent confusion of natural processes qualities which were seemingly permanent and unchanging. These static concepts which still form a major part of our languages have become fixed and cease to correspond to the dynamics of nature--what is static cannot account for process.[16]

Ironically, ancient Greek philosophers realized, as early

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[14] D. Fabun, Dimensions of Change (London, 1971), p. 31.

[15] Landau, op. cit., p. 502.

[16] N. Patricios, "Ideas and Language," Arch. Design (London, 1970), p. 5.

as 500 B.C., that reality was in fact dynamic.

> Heraclitus . . . devoted himself to finding an explanation of the problems of growth and decay in the material world. His conclusion was that the world is in a constant state of flux; the basic reality of the universe itself must be considered as "changefulness": his theory was summed up in the famous aphorism "everything flows".[17]

Eastern consciousness has for thousands of years embraced this notion. It is interesting to note that the Japanese language and the original Chinese ideograms do not present things in isolation, but rather always conceptualise objects as processes or events. All reality is understood to be in a state of perpetual becoming. This basic notion about the universe is reflected in the following description of a biological entity;

> A living body is not a fixed thing but a flowing event, like a flame or a whirlpool: the shape alone is stable, for the substance is a stream of energy going in at one end and out at the other.[18]

Our present world view allows us to extend this notion of reality to the realm of man-made phenomena. Thus, buildings can be regarded as "flowing events". This is not to suggest, however, that buildings are biological entities. Buildings, as we know them today, can only change in ways which appear extremely simple and crude relative to biological change processes.

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[17] Fowler, op. cit., p. 6.

[18] Allan Watts, as quoted in Fabun, op. cit., p. 106.

Our present world view also allows us to regard both artifacts and biological organisms as systems. Therefore, as systems, both buildings and users of buildings are recognized as having constituent parts which are organized to create a whole. As the definition of the boundaries of this whole is dependent upon the needs of the individual, a work of architecture in terms of this paper is understood to be the systems which is composed of the subsystem "building" and the sybsystem "user", existing within their environmental context. The behaviour of this system within a space-time framework, constitutes the focus of attention of the second part of this conceptual framework.

3. Behaviour of Organisations and Buildings

Once built, a building becomes the environmental conditioning agent for a group of people. This group depends upon the building which it inhabits. Therefore, buildings should be planned and designed with the potential of behaving in ways which satisfy the needs of their users. In order to understand what the nature of these needs might be, it becomes important for the architect to have a conceptual understanding of the building-related behaviour of user groups. As it is impossible, within this paper, to discuss the behaviour of all types of groups which use buildings, only the behaviour of formal social organisations is presented here.

Formal human organisations are understood to be:

> . . . social institutions with special characteristics; they are consciously created at an ascertainable point in time; their founders have given them goals . . .[19]

This definition includes such institutions as; Government, Industry, Commerce, and Church.

Organisations, prior to the Industrial Revolution, consisted primarily of the Church and the State. With few exceptions, these organisations were autocratic in

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[19] D. Silverman, The Theory of Organisations, (N. Y., 1971), p. 147.