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Abstract

Computerized Visualization as a Tool in the Small Town Planning Process

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**prepared in partial fulfillment of the requirements of the M.E.D.es. degree in the
Faculty of Environmental Design, The University of Calgary**

Dr. Richard M. Levy - Supervisor

The use of computer technology in planning is increasing. As a result, it is important that research be conducted to determine the effect that new computer technology has on planning and the planning process. This thesis combines literature research and a case study approach to illustrate how computerized visualization (CV) can be used as a tool in small town planning. The research is also concerned with identifying and explaining the positive and negative aspects of using CV in small town planning.

The research into the literature presents an overview of the development and use of CV in general and in the planning process. The forces of change in planning are discussed to identify the new challenges in planning, especially those in the area of small town planning.

The application of computerized visualization in small town planning is presented through a case study. The Didsbury Downtown Revitalization Study completed by the Centre For Livable Communities, employed CV extensively throughout the project which provided a forum to assess the effectiveness and impact that CV technology has on the planning process.

Key Words

- computerized visualization, visual communication, macroergonomics, planning tools, public participation, small town planning, downtown revitalization, urban design, planning challenges, decision making, computer ethics and professional conduct.

Dedication

This work is dedicated to my family which now includes my love and best friend Leslie, who for some strange reason agreed to marry me in the middle of this whole ordeal. My mom, dad, brothers and sister, who have always given me their love, support and encouragement in any endeavor I undertake.

I would be remiss to exclude Dr. Richard Levy who is one of the hardest working and most dedicated people I have ever met. I feel privileged to have had the opportunity to work with Richard during my time in Environmental Design.

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1

Introduction

This thesis presents an investigation of how computerized visualization (CV) can be used as a tool in small town planning and the affect its use can have on the planning process. Understanding the use of the technology in a planning setting is the central issue. The thesis begins with a brief examination of the development and use of CV and its increasing role in planning. However, the majority of the thesis is dedicated to illustrating how CV technology was used in the planning process in Didsbury, a small town in Alberta. Through the presentation of a case study it will shown how CV was used in small town planning and the advantages and disadvantages of utilizing the technology.

In the past, incorporating computer modelling and visualization into planning may have been detrimental to both the planning process as well as the finished product. Poor quality computer illustration and modeling may have served to cloud the planning issues rather than clarify them. The time and resources allotted to working on problems associated with the computer technology took valuable time away from solving the central planning issues. Recent advancements in computer technology have now made it possible to incorporate more advanced and higher quality computer processes which can assist traditional visual communication methods used in the planning process.

CV in Small Town Planning

The foundation of this work comes from a development of CV in planning and urban design. An earlier application of the technology in a small town planning setting occurred when the Centre For Livable Communities at the University of Calgary was retained by the Town of Pincher Creek to conduct a Downtown Revitalization Study during the summer of 1993

(Levy 1993). This study provided the author the opportunity to use computerized visualization in the development and production of a revitalization plan for a small town. From this initial exercise, some of the strengths and weaknesses of the technology became evident and further research continued.

The Pincher Creek Study provided the opportunity to refine CV technology and apply it in a more intensive manner. A subsequent opportunity to apply the technology arose when the Centre For Livable Communities was once again assigned to complete a downtown revitalization study in the town of Didsbury. The benefits and drawbacks of using CV in the planning process clarified in the Didsbury study are explored in this thesis.

The Use and Application of CV in Planning

This thesis examines the impact that new computerized imaging technology has on the planning process and what advantages or shortcomings the new technology may present. It is necessary to briefly discuss the application of the technology. However, this discussion will be limited to a simple description and will not delve into the numerous computer processes and techniques employed to assemble the visual material which can be used in the planning process.

The use of CV technology is increasing rapidly as many individuals and businesses are beginning to use CV in a variety of applications. Much of the work and research completed has focused on the technical side of the process. This approach offers some interesting insight but there must also be sufficient research on the impact this new technology has on the planning process. Without examining the impact its most appropriate use cannot be realized.

It is important to ensure that the technology is used in a way which is most appropriate to each situation. It is irresponsible to introduce elaborate "high tech" computer processes into a planning project where they are not

needed. The fact that the technology exists is not a sufficient reason to use it. Critical evaluation is necessary to determine which components are needed to complete the required task. Spending valuable time and money trying to introduce unnecessary technology into the process will take away from the resources allocated for planning. As a result, the community may be presented with an overall plan which is illustrated using elaborate computer-based processes but one which fails to sufficiently address the central planning issues surrounding the project.

Generally, there are two different approaches to the field of computer design and visualization as used in planning. There are those who do pure research to "push the envelop" by using computer processes in a planning environment. Often, completing this type of study using "high end" modeling and processes is impractical since too much time is spent on the technical side and not enough on the more important issue of planning itself. Conversely, there are those who work from the planning side who employ some level of computer technology but do not have the time, expertise or budget to develop elaborate computer images. The distance between these two approaches is decreasing as computer technology becomes more powerful, less expensive and easier to use. The work completed in this case study has a strong emphasis on planning but incorporates an advanced CV process to assist in completing the planning study.

The main intention when starting this study was to further the knowledge and understanding of using computerized visualization in the planning process. However, it is just as important to present and understand the challenges that surfaced in the use of this technology. When any new system is implemented, there will undoubtedly be some problems which need to be recognized and addressed. The issues surrounding the use of new computer processes such as CV involve practical, technical and theoretical considerations which must be understood from a planning perspective.

Organization

The ensuing chapters of this thesis cover the following:

- 2 Objectives & Methodology
- 3 Computerized Visualization
- 4 The Evolution of Planning Practice
- 5 Small Town Planning in Didsbury Alberta
- 6 Analysis of Computerized Visualization As Used in Didsbury
- 7 Conclusions and Recommendations

2

Objectives and Methodology

Research Objectives

The objectives of this research were to:

- examine the role that visual communication plays in planning
- examine the research that has been conducted into the use of computerized visualization in planning
- assess the challenges that are specific to planning in small towns in Alberta
- review the application of computerized visualization in the planning study in Didsbury, Alberta and
- provide recommendations regarding the use of computerized visualization in the small town planning process.

Research Methodology

The research conducted to meet these objectives included:

- a review of literature pertaining to use of visual communication, computerized visualization and planning challenges in small towns
- a case study of the use of computerized visualization in small town planning in Didsbury, Alberta
- an analysis of the information collected through the case study and

-
- the development of recommendations for the future use of computerized visualization in small town planning.

A discussion of each respective research component is presented below.

Literature Review

The literature review focused in two central areas: The development and use of CV and the various aspects of planning and the planning process. Due to the novelty of using CV in small town planning, the amount of literature that has been published which refers to the subject specifically is limited. However, as the practice of using CV in planning has increased during the past two years there has been a greater frequency of articles and lectures on the subject. Journal and periodical articles from sources including Plan Canada, Planning (American Planning Association), Progressive Architecture, Canadian Architect, Town Planning Review and Computer Graphics World provide the best information on the subject of using CV in planning. The work of those that have used the technology in various planning and design capacities is presented in the journals listed above. The information from these sources is presented in sections 3, 5 and 6.

The examination of the various elements of planning and the planning process was critical to fully understanding how CV could be integrated successfully into the planning process. Literature that pertained to planning issues such as visual communication, public participation, planning practice and the challenges associated with small town planning was reviewed. The information from this review is presented throughout sections 3, 4 and 5.

Case Study: Didsbury Downtown Revitalization Study

The case used to illustrate CV in small town planning is the Didsbury Downtown Revitalization Study. From May to October 1994, the Town of

Didsbury, located 85 km north of Calgary, conducted a study aimed at revitalizing their downtown. The basis of the project was to develop a revitalization plan for the downtown area of Didsbury including buildings, sidewalks, street furnishings, parks, entrances and mural programs. The project was aimed at increasing the overall appeal of the downtown and promoting economic development in the town of Didsbury. The Town of Didsbury had completed a number of planning studies prior to this project and as such there were some basic design guidelines which had been established for the downtown.

The case study proved to be the most appropriate method for examining the use of CV in small town planning. The case study is an acceptable method for this thesis where the research is focused on “how” questions (e.g. how computerized image processing assists and affects the planning process). This is also a valuable research method when the focus is on a “contemporary phenomenon within some real-life context” (Yin 1994, 1).

This Didsbury Downtown Revitalization case study is presented from the author’s perspective as a participant observer in the project. Those involved in the study included the planning consultants from the Centre For Livable Communities at The University of Calgary. The consultants were Dr. Walter Jamieson, Director of the Centre and the author, a graduate student in planning who served as project manager. Representing the community was the Didsbury Business Revitalization Zone Board composed of six members including one Town Councillor. The group was appointed to guide the process and act as an information conduit to others in the community about the process. The results of using CV in the Didsbury study were reviewed and analyzed and, from this, a series of conclusions and recommendations were presented.

Analysis of the Case Study

To provide a comprehensive analysis of the case, a number of challenges facing planners were identified during the literature review of planning in

small communities in Alberta. The case study provides an illustration of how CV was used as a tool to address the challenges below:

1. Accommodating Public Participation in the Planning Process

There is a need for clear presentation of design proposals and mechanisms to monitor the feedback throughout the planning process.

2. Making Decisions in a Group Setting

Developing consensus among a group involved in the planning process often presents a formidable challenge. Presenting the alternatives in a way which is clear and understandable facilitates the decision-making process.

3. Exploring New Concepts and Ideas

Developing new solutions for existing problems presents another major challenge.

4. Phased Planning

When formulating revitalization plans for a small community, a planner must be cognizant of the budget that is available for the project. Often, it is necessary to introduce revitalization through a series of phases when the funds for implementation of each phase becomes available.

5. Testing Design Alternatives

It is important to employ tools and methods that depict the various proposals so that decisions can be made regarding the various concepts.

6. Keeping the Decision-Making Process Moving Forward

In order to accomplish the most from the process, it is important that decisions regarding the plans and designs are made at each stage so that the planning work may continue without becoming stalled.

7. Generating Buy-In and Excitement For the Process

To increase the opportunity for success individuals need to be involved in the process as both supporters and promoters of the projects.

8. Providing Clear and Understandable Documentation and Ordinances

The reports produced which explain the project must be comprehensive, clear and understandable.

9. Informing the Wider Community About the Plans

The promotion and advertising of revitalization plans must be carried out using effective means such as multimedia to present the planning concepts to all members of the community.

Conclusions and Recommendations

From the discussion of this case study a series of generalizations are presented as recommendations. The intent is that this thesis will prove to be of use to researchers of CV in a small town planning process. It is difficult to make specific recommendations that will apply in subsequent projects. Instead, the findings must be generalized for the application of CV in small town planning (Yin 1994, 37).

3

Computerized Visualization

What is Computerized Visualization?

Computerized visualization (CV) begins by translating existing images into a digitized format. This allows the image to be altered using image editing software. The process starts with a visual image, a drawing or photograph, which can be altered by adding or subtracting components, changing colors or adding other effects. The finished product represents a modified version of the original image with the desired revisions. The resulting images can often be dramatic with a realistic looking image that has been created from a collection of parts.

The Application and Development of Computerized Visualization

The current application of CV is wide and varied. Many professions have adapted the process for use in their own particular fields. Increased accessibility to powerful computers and software has allowed the process to be utilized in smaller projects and operations. This has fostered the expansion of the technology. Any industry or profession that relies on visual presentation and communication has found computer imaging to be particularly beneficial (MacLeod 1995, 16; McClure 1994, 76). There are a variety of software packages currently on the market which allow a planning professional to practice CV (see Appendix A). These packages operate suitably on the current generation of computers and possess the features necessary to produce high quality computerized images .

Professions requiring an effective method of visual communication have recognized the potential of computer imaging. Images using CV technology are frequently used in the print media, especially in the production of advertisements. Individuals such as hair stylists or plastic surgeons who

provide a service affecting personal appearance use the process to show the new features superimposed electronically on an image of their client. Photographic professionals use the process in a variety of ways from restoring old photographs to retouching imperfections on their subjects.

Architects and urban designers have begun to use CV to assist them in their work. In a profession that deals with altering the physical environment, a tool which allows professionals to render proposals in a realistic format prior to implementation can have advantages.

Visual Communication in Planning and Design

An important component of urban design is the physical adaptation of existing environments. These physical alterations often involve and affect many people. The challenge for planners and designers is to transmit the vision and ideas to others with the least amount of distortion possible. This enables them to communicate effectively with others so that their intentions can be understood. This task is not nearly as easy as it may appear. Communication research indicates that a person's "knowledge structure," the body of knowledge a person has accrued through their background and life experiences, has a profound effect on the process and form of the mental pictures they create (Littlejohn 1992, 132; Hewes and Planalp 1987, 159). This makes it difficult to establish a common vision of a design among a group of people. When dealing with elementary concepts, it may be sufficient to simply explain the idea to another person verbally. However, as the solutions and designs become more complex, it is necessary to resort to other means to communicate effectively. This has left designers in constant search of ways to perfect new techniques and procedures which can be used to effectively communicate their ideas (Levy 1995a, 343; McClure 1994, 74).

To assist with the presentation of their design concepts, planners employ a number of techniques and tools. Various forms of visual media are employed to assist in the task of communicating plans to others. As Burden

(1988) explains, the designers face a formidable task as they translate their conceptual ideas into visual forms. Drawings of various types, physical models, collages, computer models and visualizations may be employed to create a clear picture of a design concept. Still, most designers rely on a series of hand-produced drawings to present their plans from a variety of perspectives. A designer may use drawings in plan, section, elevation and perspective to effectively communicate ideas. The quality and comprehensiveness of the drawings contribute to the degree of clarity and understanding achieved by those reviewing the plans. The plans, and subsequently the drawings, may change many times during the course of the planning process. This creates considerable work for the designer who is forced to incorporate the revisions into the drawings to reflect the changes as they evolve. Hence the term "going back to the drawing board" describes this traditional approach to visual communication.

Communication Challenges Using Traditional Techniques

Visual communication using traditional methods present a number of challenges. Illustrations done in plan or elevation are important for planners and architects to assist them through the design process. However, the same drawings may be confusing to the average citizen (Levy 1995b, 344). In the same way that jargon specific to a profession can be confusing to an outsider, profession specific visual communication tools can also create misunderstanding. It is especially difficult for someone without previous design experience to formulate an accurate mental image of an overall design concept from plan and elevation drawings alone (Levy 1995, 344; McLure 1994, 75).

Ultimately, a design concept must be understood from the vantage point of where it is seen and understood by most people: at eye level. Without providing a series of renderings which present ground level perspectives of the plans, it is difficult to fully grasp the nature and impact of the proposed change.

Preparing detailed renderings which depict the plan from the perspective of the viewer on the street also presents its own challenges. The effectiveness of the renderings is often determined by the skill and artistic talent of the person who is producing them. Drawings can also be very subjective in nature, reflecting the bias of illustrator (Atkin 1976, 181). Producing a series of renderings can be very time consuming and costly. They are often used only to present images of the finished product and thus are excluded from the design process.

Exploring New Processes of Visual Communication in Planning and Design

Wall paintings of animals, humans and geometric signs dating back more than 25,000 years, stands as the earliest evidence of visual communication. Visual communication relating to design was first practiced by the Egyptians when they prepared sketches and built concept models to communicate their ideas more than 2000 years ago (Burden 1984, 4). Since these early beginnings, there has been numerous advancements in the presentation techniques used to depict our world. To assist in the process of planning and visual communication, designers have experimented with many new processes and media. Existing techniques and process are often altered to allow a new and improved way of presenting visual images. During the Renaissance perspective drawing techniques were developed which combined the principles of art and science to produce drawings with a sense of depth and realism.

The process of reproducing a visual representation of the environment was impacted significantly four centuries later when the photographic process was discovered. Photography provided an automated means of producing a graphical representation of the external environment. This new technology had a significant impact on the world. McLuhan (1964) contends that the discovery of photography represented the beginning of the "graphic age of electronic man" (190).

" It was the all important quality of uniformity and repeatability that made the Gutenberg break between the Middle Ages and the Renaissance. Photography was almost as decisive in making the break between mere mechanical industrialism and the graphic age of electronic man." (McLuhan 1964, 190)

As photographic techniques were perfected, new processes were developed which altered existing photographic images to depict the desired changes to an environment. Prior to the introduction of CV technology this work was done by physically cutting and joining photographs together, which is referred to as photomontage (Figures 1a - 1b), or by painting directly onto the photograph (Figure 1c). These processes follow the same basic principles of computerized visualization. In each instance, an existing image is altered by adding various components to the photography.

Since the early 1970's, computer technology has been used to produce images for presenting plans and designs. The first computer applications used simple wire frame models to assist in the production of multiple perspective drawings. By today's standards these images appear crude, but at the time the effort put into computer programming was justified. As explained by Lee (1974) the computerized images provide a sense of the "real three dimensional quality of the space or object which would be difficult to achieve manually(2)" (Figure 2). It was not until the mid-1980's that computer technology, including computer aided design modeling and computerized visualization had advanced to a level that allowed for its widespread use. Computer aided design modeling and computerized visualization are now both widely used when completing a project relating to planning and design.

How Computerized Image Processing Works

From a technical standpoint, the process of computerized visualization is relatively simple. An existing image is brought into the computer environment where it is altered. The equipment required includes a

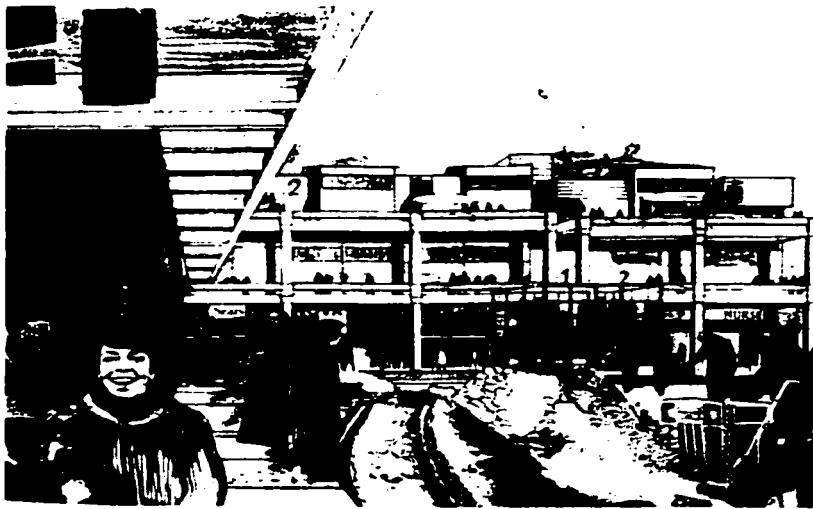


Figure 1a - Example of Photomontage



Figure 1b - Example of Photomontage



Figure 1c - The proposed structure is illustrated by painting it directly onto the photograph.

Figure 1a & 1b - Examples of photomontage which assembles a collection of different photographic images. (from Atkin 1976, 133). Figure 1c - The visual impact of a proposed Sky Train overpass in Vancouver, B.C. is illustrated through a process of painting directly onto the photograph (from Burden 1988, 59)

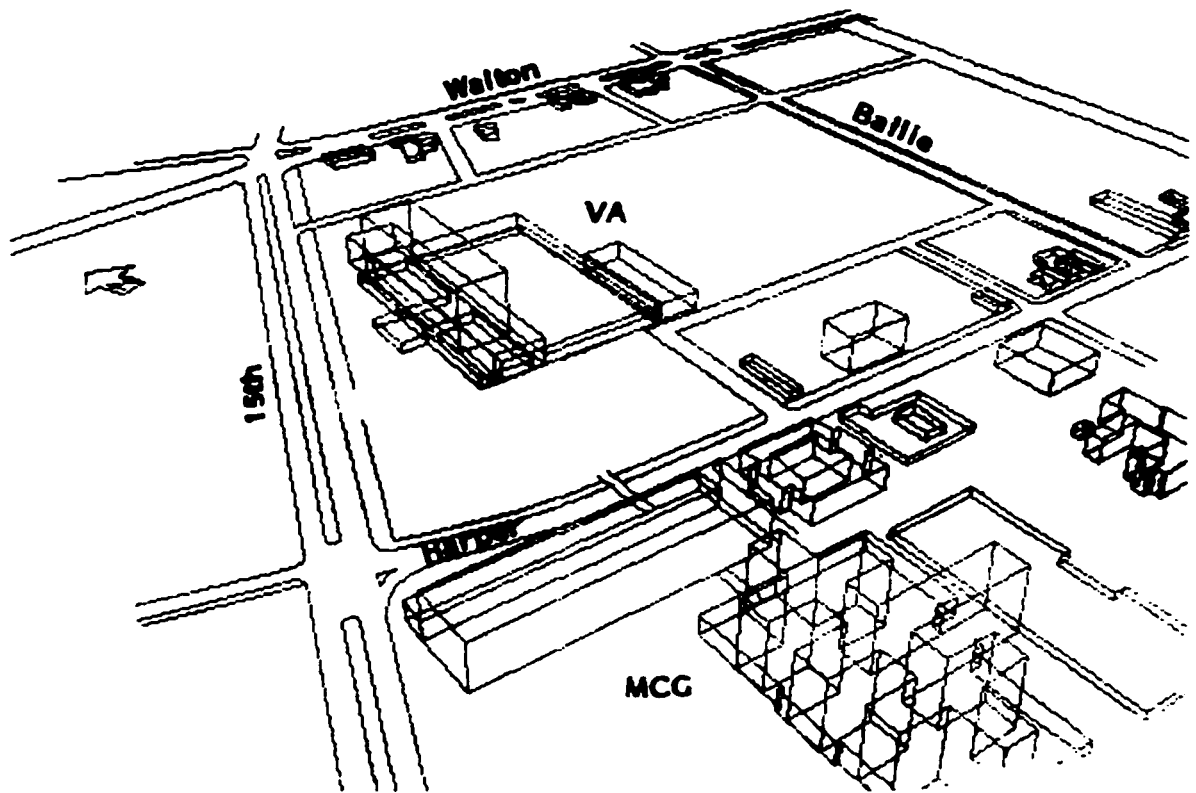


Figure 2 - Early computer models and graphics appear crude by today's standards. This model created in 1974 used what was considered then to be leading edge technology. Considerable time and effort in computer programming would have been required to produce images such as these (computer image from, Perry, Dean and Stewart - Architects and Planners in Lee 1974, 31).

relatively powerful computer and some method of digitizing the image into the computer such as a scanner, digital camera or negatives which have been transferred to CD-ROM. Once the images are in the computer, they can be altered to reflect the potential change. Figure 3 provides an illustration of how the process functions.

An example of how this technology can be used in a planning environment is illustrated in Figures 4a - 4c. The first image shows the existing building set in the landscape (Figure 4a). The second image presents the same view with the building removed (Figure 4b). The "before and after" comparisons provide a good illustration of the impact of the change. It is also possible to visualize the impact of adding an additional story to the building (Figure 4c). These images were produced very quickly and easily and clearly show the visual impacts to those who are assigned to the task of making decisions. The power of this technology also allows the same changes to be depicted from a different vantage point, allowing for a more thorough analysis of the impact of a proposed change. Presenting the same series of images by preparing elaborate hand drawn renderings would require considerably more time, effort and cost.

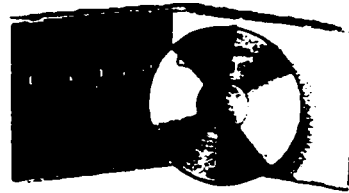
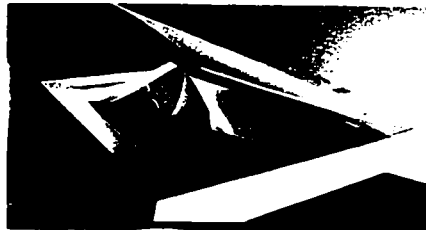
The Role of Computerized Visualization in Planning

New technological processes introduced into an established system inevitably act to change the way a system operates (McLuhan 1964, 18). Developing and mastering the scientific side of a new technology is left to computer scientists and software engineers. However, the changes that are associated with the application of the new technology need to be understood and addressed (Desario and Langton 1987, 190). It is therefore important to understand the role and impact CV technology has on the practice of planning. Perrolle (1987) refers to the study of the interface between society and computer technology as "macroergonomics." Studies in macroergonomics look beyond the immediate connection between person and computer and instead focus on the broader implications of using new computer technology. It is necessary to have an understanding

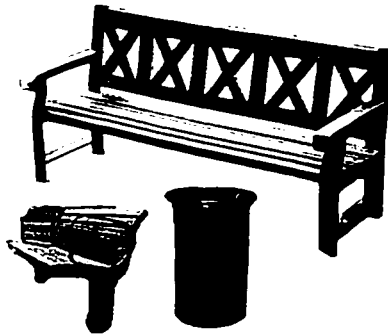
1.



2.



3.



4.

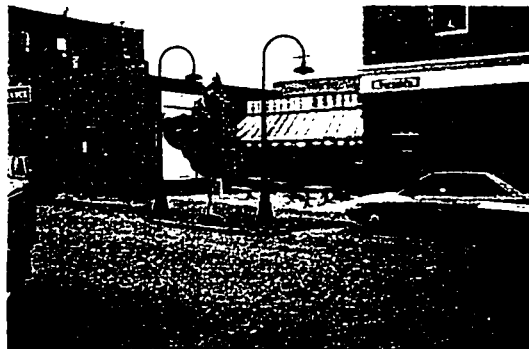


Figure 3 - The CV process begins with an existing image (1.) which is digitized into a computer format using a process such as scanning or transfer to CD-ROM (2.). The desired elements are added or removed to or from the image (3.) which produces a new image depicting the changes in place.



Figure 4a - Existing image of building

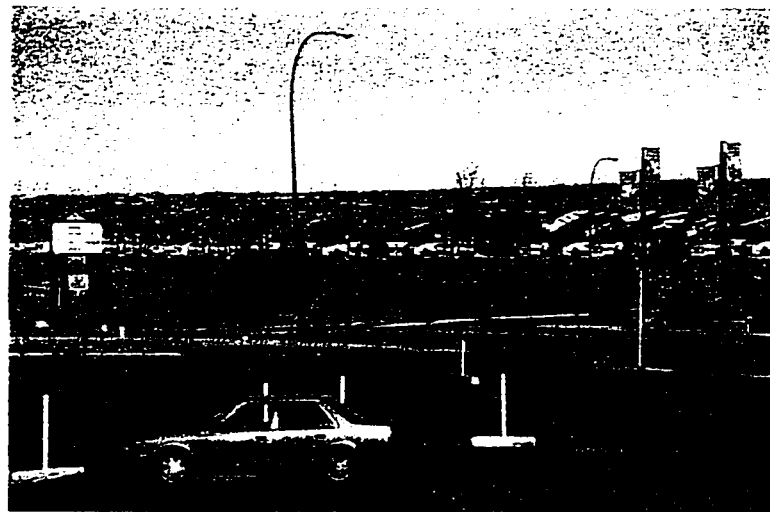


Figure 4b - Image with building removed using CV technology.



Figure 4c - Image with larger building added using CV technology.

of the impact of new computer technology in planning and design.

The responsibility for understanding the impact that CV has on the planning process is the responsibility of the practitioners who use the tool in the course of their work. While using computers may save planners time and enhance the planning process, the opposite may also be true if there is a lack of understanding of just how the technology contributes to or detracts from the process. Giving adequate attention to understanding the impacts the technology has on the planning process allows for the best final results to be realized. This mindfulness can contribute to a wider and more effective use of CV in the field of planning.

The Use of CV in the Planning Process

A lack of understanding about computerized visualization has fostered many misconceptions regarding the function and role of technology in the planning process. It is incorrect to assume that applying the computer process supersedes the requirement to carry out comprehensive planning work. CV must be regarded as another tool, much like pencil and paper, to be used by planners to assist them in completing a planning project. The technology assists in the process of planning; it does not replace the planner. The basic foundations of good planning practice and principles must remain paramount. Many of the traditional tools such as sketches, schematic drawings, plans, perspectives, bubble diagrams and charts may still be used in various stages of the design process. Computerized visualization must work in harmony with the other tools which are employed through the course of a project. The ability to communicate visually is an important skill for all planners and designers. Expressing ideas visually can be accomplished by a various means including CV (MacLeod 1995, 16). Like any profession using computer technology, the product is the ultimate measure of success. Employing new tools which contribute to a more comprehensive, understandable and cost effective process will improve the quality of the product making the operation more successful.

Trivializing the importance of the planning component of a project while using computerized imaging technology can lead to poor results. The technology cannot function on its own. It must be guided by a responsible practitioner who is accountable for the administration of the planning study carried out.

Computerized Visualization as a Planning Tool

Computerized visualization should be considered a tool which assists a designer in the course of completing a project. Perrolle (1987) describes a tool as an object or agent through which human activity is directed toward some goal and, in order to use any tool successfully, the technique for using it must be understood. The technique can be thought of as a method for performing a task without necessarily including a full scientific explanation of what is being done. One can drive a car without understanding the intricacies of an internal combustion engine. Drivers, however, must understand the wider social implications of driving the car such as knowing the rules of the road (Perrolle 1987, 24). As computers are becoming more user friendly, the social consequences of the technology should come to the forefront of discussions.

CV is a tool which enables planners to better articulate their design concepts to a wider audience. It enhances the performance of a planner who has worthy planning ideas but lacks the graphic ability with pencil and paper to effectively express those ideas to others. Thus, artistic ability may not be as important as a solid understanding of the planning and design issues that face a particular project. CV also provides a means to incorporate the thoughts and feelings of the affected parties into the final plans (Levy 1995b, 344). Levy (1995b) envisions the technology as a tool which will affect or influence on the process and delivery of planning principles as follows:

"Intelligent Computer Software has already reduced the importance the architect or planner as a skilled artist. For the designer, more important talents may lie in the ability to generate ideas and serve as a facilitator and critic." (345).

Appropriate Use of the Technology

Each project differs in many ways such as the nature of the challenge that is involved, the amount of resources that are available to find a solution to the challenge and the time that is available for completion. All of these factors have a bearing on which processes and tools will be employed to meet the task. After evaluating all of the factors, those involved in the project have a responsibility to choose which methods or tools will enable them to best complete the project. Technology should not be used for its own sake (MacLeod 1995, 17). This is where appropriate use of technology becomes an issue.

It is not always necessary or appropriate to incorporate leading edge computer technology in the course of completing a project. Putting a disproportionate amount of time and money into the technology while failing to adequately address the central planning issues will produce an inferior result. The tool must be right for the task. There is a need for experimentation to discover new and better ways of using computer technology in planning but this must be done in a careful and selective manner to ensure that the integrity of the planning work is not jeopardized.

At times, it is difficult to avoid being overwhelmed by the rate of advancement in computer technology. However, its application must be kept in check to ensure that the processes that are being brought into the realm of planning and design are making a positive contribution to the final product. The introduction of computer technology in planning and design must be an evolutionary process rather than a revolutionary one (Horowitz 1994, 85). The profession is responsible for producing a quality end product and only those processes which positively contribute to this goal should be employed.

Ensuring that CV technology remains in place as a tool and is not a central theme is important to the proper use of the technology. The technology should not become the central focus of the planning and design process.

Those involved should be able to look beyond the technology and concentrate on what is important about design (MacLeod 1995, 17). The real power of the computer comes in applying the technology in a way which is cost effective and can solve real issues of planning and design.

4

The Evolution of Planning Practice

Planning has evolved from an exercise practiced in a central and closed system to one that is more open and accessible (Nelessen 1994, 81; Desario and Langton 1987, 66). This phenomenon has required planners to adopt and implement novel approaches to planning which allow the process to operate in a successful fashion as citizens assume a more active role in the planning process. This shift has produced a better understanding of the urban environment and how important it is to consider the human element when practicing urban design.

Industrial Revolution to Pre WWII: Centralized Planning

The last half of the 19th century saw many changes occurring in the area of planning. In urban areas, the industrial revolution brought the means of production (factories) into the city which attracted scores of workers from the countryside. The resulting overcrowding placed undue pressure on the infrastructure of the city which led to problems with sanitation and pollution. These combined to create an environment which was near lethal. New towns were master planned in a "top to bottom" fashion, designed to harmoniously accommodate both industrial and residential life. Ebenezer Howard's garden city was planned using the master plan approach to planning. Thereafter, new towns were developed or existing ones modified based on this master plan approach (Osborn 1965, 22).

During this same period, there was an increasing urgency to "settle" the hinterlands. The development of towns in Western Canada was spurred on by the establishment of the railway and the influx of settlers from the East and abroad. The location and layout of the new municipalities was very much a centrally controlled process (McRae 1987, 12).

Post WWII to the 1970's: Technocratic Planning

After World War II, automobile production skyrocketed and cars became an instrument of liberation for millions of North Americans. Once again, technology became the force of change for towns and cities. Widespread mobility via the automobile led to development on the periphery of the city, creating suburbs, industrial parks and shopping malls (Garreau 1988, 111). In general, the foundations of planning in the 1950's and 1960's rested on the Rational Planning Model. This "technocratic" way of planning was based on the premise that successful planning could be accomplished through a series of steps using scientific and technical means to collect information, choose the best alternative and evaluate the decision (Harper and Stein 1987, 2). Using this system of "technical functionalism and economic efficiency," many ill conceived plans were formulated, the most notorious of which was inner city renewal (Perks and Jamieson 1989, 502).

1970's to the Present: Democratic Planning

In the 1970's, there were calls to reform the planning system and move away from a purely rational planning model. Citizen participation, advocacy planning (having professional planners working on the side of the citizenry) and "long-term futures" projects were advanced to provide an alternative to the top down, technocratic way of planning (Oregon Visions Project 1994, 2; Perks and Jamieson 1989, 505; Forrester 1989, 127). Wider involvement through programs of these types was seen as one way of overcoming the threat of the future being based on technocratically based systems (Desario and Langdon 1987, 70).

The 1980's saw more interest placed on strategic planning, a technique borrowed from the business community. This planning exercise incorporates the voices of various members of the local community in formulating long-term goals for the future. It is important to realize that the scope of the exercise has widened significantly and includes not only physical design but issues dealing with the general economic and social development of a community.

In the 1990's, the process of long-term planning involving a diverse group of community members has become known as "visioning." This term attempts to establish a more intrinsic view from the residents' perspective on how their community will function in years to come (Nelessen 1994, 7; Oregon Visions Project 1994, 12). Citizens have come to play a larger role in the future of their city as consumers of plans and designs. This approach has been particularly active in small communities where citizens are now taking a more pro-active role in determining the future well-being of their respective communities. As a result, there have been calls to simplify the planning process and remove the mystery and jargon used by the planning profession.

The Urban Environment and the Planning Process

As outlined, planning was initially practiced mainly as a two-dimensional activity concerned with zoning and the layout of housing, commercial areas and transportation corridors. As time passed, the focus expanded to include the third dimension or how buildings rise upwards from the two dimensional plane and create spatial relationships (Perks and Jamieson 1990, 488; Nelessen 1994, 7). A new focus is referred to as the "fourth dimension," that is, people interacting in the built environment (Nelessen 1994, 8). Planners and others are starting to realize that towns and cities are highly complex and it is inconceivable to imagine that an effective plan could be developed using a rational planning process which fails to factor in this forth dimension. Trying to gain an understanding of the "fourth dimension" is what has really opened the planning process up to the people (Nelessen 1994, 12). There must be an effort put forward to understand the "interplay between competing and complementary physical, environmental and social factors" (Greene 1992, 177).

Most planners and architects concede that it is beyond the scope of their understanding or ability to develop plans and designs which will function flawlessly when created via a closed process and implemented "fait accompli" (Perks and Jamieson 1990, 505). A community should be

perceived as a living, breathing organism. Its various parts (physical, social and environmental) are dynamic entities creating a setting where the members of the community are constantly adapting to and altering their environment. Viewing the community in this way makes it clear that new methods and tools must be developed which will allow for wider public participation.

Community design goes beyond mere physical consideration and must respond to a variety of complex relationships and forces (Greene 1992, 177). This is why the participatory process and the tools which are used in its facilitation are so important. There has been a move afoot to open the process of participation to ensure that the process is able to properly design and plan for the future of the community as a complex entity (Greene 1992, 178). It has been illustrated that public participation plays a central role in the planning process in small towns and it is generally accepted that planning must continue to work toward a system of open, democratic decision-making (DeSario and Langton 1987; Nelessen 1994; Greene 1992; Oregon Visioning 1994). A planning system which enables and enhances community participation will help uncover many of the subtle nuances present in that community and, as a result, will lead to better design (Bishop & Bonner 1995, 210; Gibson 1995, 188; McAfee 1995, 16).

Planning in Small Town Alberta: Forces of Change

There are many economic, social and political factors which have changed the planning process in small town Alberta. The situation facing each individual community varies somewhat depending on its location. One constant is that communities have now taken on a greater interest in and responsibility for the future of their towns.

In the area of economic development, communities have been forced to take a more pro-active role in developing their commercial and industrial bases. Residents of towns have directed their attention to attracting a more diverse industrial and commercial base that will provide a more resilient

economic environment in their community. Many single industry towns have recognized that they must diversify and attract new industry if they are to have a future (Miller 1994, 31). This is one of the major forces fueling the demand for community initiated planning which can assist in securing the future of a town.

Planning in Alberta underwent significant change in September 1995, when the Alberta Planning Act was rescinded and replaced with the Municipal Government Act. This and other changes which were introduced concurrently, have had an impact on small town planning in Alberta. Under the new planning system the 10 Regional Planning Commissions, which provided planning services to small communities, have been eliminated. As a result, more responsibility has fallen onto each individual community to provide the planning needs for their town. Some communities have combined their resources to finance a scaled down version of the old regional planning office which continues to provide them with planning services. But generally municipalities now have a greater responsibility for overseeing and administering the planning and development that takes place in the community. Much of the added planning burden is being assumed by private firms and developers (Leal 1994, 83). It has also made it necessary for private sector planners to become better equipped to work with the members of the communities who are responsible for specific planning issues.

New Challenges in Small Town Planning

As indicated in the previous sections, planning can be a very complex procedure. Many towns in Alberta have discovered that undertaking community design projects involves significant work and careful coordination to ensure a successful result. The challenge is not always clear at the outset but is often discovered as the project proceeds and become more complex. Nelessen's (1994) definition of community design encapsulates the essence of the challenge in the following excerpt from his

book on design in small communities:

"The design of a small community is the art and science of the two-, three- and four-dimensional spatial arrangements of buildings and structures, streets and roads, infrastructure and landscape elements, on the land, in harmonious and positive relationship to the human scale and the natural environment, in order to create and enhance a positive sense of community, neighbourhood, and personal well-being." (5)

The "art and science" of planning and design, as described by Nelessen, is the form and function which must be balanced in order to create the optimal planning solution. Trying to conceptualize all of these goals simultaneously seems difficult enough. A further challenge is to establish a protocol whereby the process can be undertaken in an environment which has limited resources, supports open involvement, establishes a common vision and works toward the achievement of identified goals.

The balance between "form and function" as identified by Nelessen is a very important aspect of small town planning. When this balance is lost, the community and its residents suffer. It is important to understand the function within a small town in order to properly develop a form. Preliminary discussion in the case study identifies the "function" of the small town, Didsbury. Understanding the function makes it easier to understand the form which was created.

The Challenges to be Addressed in the Case Study

The case study presented in the following chapter provides an illustration the level of effectiveness CV has in meeting these challenges which are present in the small town planning process:

- accommodating public participation in the planning process
- making decisions in a group setting
- exploring new concepts and ideas

-
- revitalization through phasing & testing design alternatives
 - keeping the decision making process moving forward
 - testing design alternatives
 - generating buy-in and excitement for the process
 - providing clear and understandable documentation and ordinances and
 - informing the wider community of the plans.

5

Small Town Planning in Didsbury, Alberta

The Didsbury Downtown Revitalization Study completed by the Centre For Livable Communities will be the case study used to illustrate the application of computerized visualization in the small town planning process. Presenting a case study outlining a practical application of the technology provides an effective means of determining the impact CV has on the planning process. Often an explanatory case study approach such as this is the only viable option when examining a subject like CV, where previous research is limited (Yin 1994, 8).

The Town of Didsbury

The Town of Didsbury (population 2850) is situated 85 kilometers north of Calgary just off Highway 2 which connects Calgary and Edmonton (Figure 5). Like many towns in Alberta, Didsbury was created when the Canadian Pacific Railway established it as a station point in 1890. From this beginning, the community grew and, in 1906, it was officially incorporated as a town. The first store was built in 1898 with many more being established to provide services for the growing population. Following a series of fires, the last of which destroyed much of the downtown in the 1920's, the businesses in the downtown were rebuilt using more fire resistant brick construction. Many of these brick buildings stand today in the downtown as a legacy of the Town's past.

From the development of the town through to the 1950's, the economy of the community was based mainly on agriculture and the railway. Since the 1960's, the economic base has moved from a dependence on agriculture and the railway to one centred around the petroleum industry and other secondary industries supported by Calgary. As the City of Calgary continues to expand, Didsbury is beginning to experience

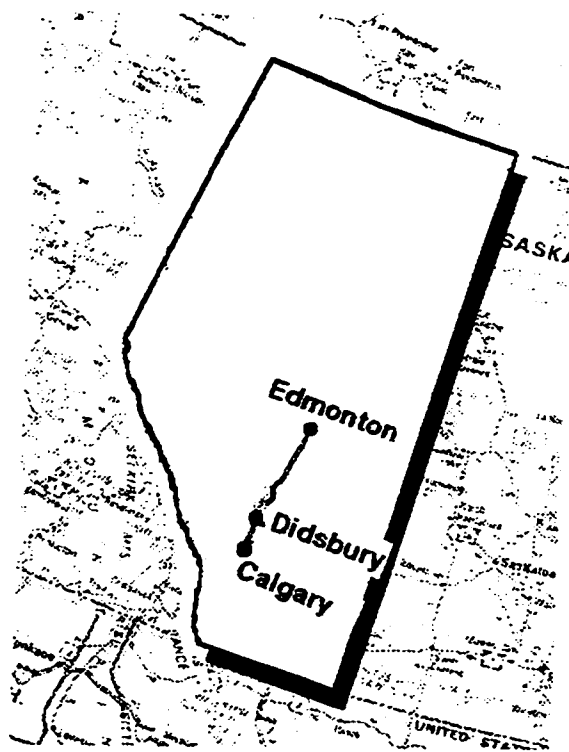


Figure 5a - Didsbury is located 85 km north of Calgary just off Highway 2 which connects Calgary and Edmonton.

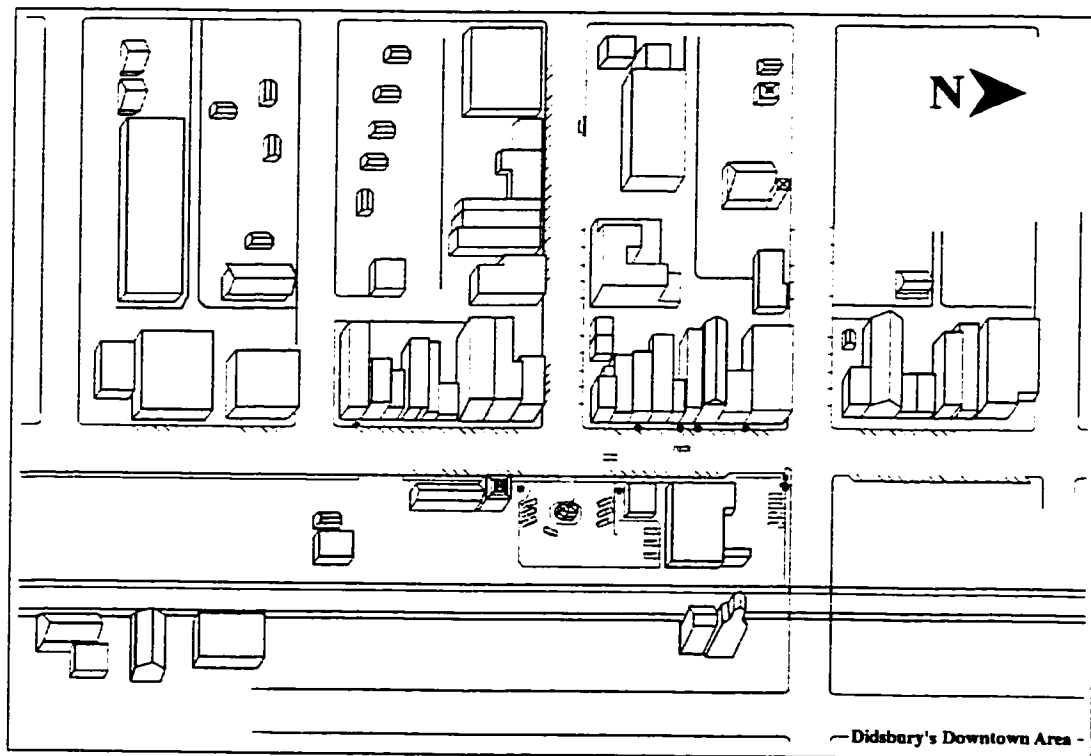


Figure 5b - The main study area was the downtown core in the Town of Didsbury.

industry and residential growth with close connections to Calgary. The Municipal administration expects this phenomenon to continue in the future.

Didsbury: The Form and the Function

In order for planning and design to be beneficial to a community there must be a balance struck between the form and the function (Nelessen 1984, 26). New trends in planning such as "neo-traditional" community planning creates a form which includes elements of the past (i.e. pedestrian friendly streets, front porches, proximity to amenities) in hopes that it will alter social behavior. This is not always successful when these communities are located in areas where the car is still the main mode of transportation and many people leave the community on a daily basis and commute to other areas for employment. This creates a community where the social structure is not consistent with the physical design of the community. Simply stated the form exists without the function. Planning for a form which does not exist results in "kitsch", which is defined as artificial, vulgarized or pretentious.

Small town Alberta, and more specifically Didsbury, has many of the qualities neo-traditional planners strive to create in communities through physical form. People in Didsbury know their neighbours, amenities are within walking distance and people meet and converse freely on the street. All of this takes place not because of the physical form but because of the social structure of the community. Introducing physical improvements (i.e. pedestrian friendly streets, lighting, amenities and public spaces) provides an environment which fosters this way of life (Mohr 1996).

Project Participants

The Didsbury Downtown Revitalization Study was conducted by the Centre For Livable Communities (CLC) from the University of Calgary. From May to October 1994, the CLC worked with members of the

Business Revitalization Zone Board (BRZB) to formulate a plan of revitalization for downtown Didsbury. The planning team from the CLC consisted of Dr. Walter Jamieson, Director of the CLC, and the author, a planning student in the Faculty of Environmental Design at the University of Calgary. The BRZB consisted of six members, of which three were downtown business owners. The other three participants were a member of the community, the Town's economic development officer and a member of Town Council. This group was to serve as a focus group, assigned to lead the planning process for the downtown. This group was active prior to contacting the CLC and had, in consultation with others in the community, established a list of goals and objectives for the revitalization study.

Constraints of the Project

There were a number of constraints associated with the Didsbury Downtown Revitalization Study which narrowed the focus of the planning and designs. It is important to identify these constraints in order to understand the reasoning behind many of the planning and design decisions. The community had invested considerable effort, time and money on numerous studies and community meetings to formulate a basic plan for the revitalization of the downtown area prior to the study referred to in this document. Much of the basic design criteria had been established which meant that the designs formulated in this project had to be consistent with the previous work. The studies conducted included a comprehensive plan for the restoration of many historic buildings in the downtown completed by Andrei Nicholai in 1992. Other studies prepared by the municipality included; "Didsbury Downtown Community Enhancement Plan", "Town of Didsbury General Municipal Plan" and "Didsbury Tourism Action Plan".

A second, and equally powerful constraint to the design, was that the Didsbury Downtown Revitalization Study was undertaken in large part to assist the Town of Didsbury in being chosen as one of the communities to participate in the Alberta Main Street Program. This provincial

program provides guidance and partial funding to allow communities to restore their historic buildings. It was important for the community to establish a comprehensive design plan which could be used to illustrate the historic preservation potential in the downtown (D. Mohr, 1996).

As with any planning project it is necessary to establish clear parameters for the work. These parameters were largely determined by the constraints mentioned however there was still a considerable amount of freedom in the design process.

Goals and Objectives of the Project

The initial meeting between the members of the BRZB and the CLC was concerned with developing the terms of reference for the project which included the goals, objectives and process that the project was to follow. The goal of the project was to revitalize the downtown based on a detailed physical design scheme developed through consultation with local business owners and community members.

The objectives of the project included the following:

- improve the appearance and attraction of the downtown,
- base the physical design work on an historic image of the town as identified by the previous planning work ,
- produce a plan and design which could assist the Town of Didsbury in their application to the Alberta Main Street Program,
- review and incorporate the existing downtown planning and design work which had been completed ,
- establish a connection between the downtown and the larger community,
- develop a series of long and short term projects which contributed to the revitalization effort and were within the budgetary means of the community,
- develop the plan through a process based on consultation with the BRZB, local business owners and community members,

-
- conduct scheduled reviews of the designs in an open forum to allow input from the BRZB, local business owners and members of the community.

These goals and objectives were developed at the outset to provide guidance and direction for the completion of the project. Once the objectives were in place, the next step was to clearly identify the process the project would follow.

The Project's Planning Process

The goals and objectives provided the guidance for developing a process for the revitalization project to follow (Figure 6). From the objectives established, there were two main features that became apparent. They were; a strong emphasis on improving the physical design of the downtown and operating a planning process which is consultative and open to participation. The members of the BRZB served as a focus group providing guidance to the project but they were also concerned that the process remain open to regular review and input from downtown business owners and members of the community. The BRZB felt that keeping the planning process open to public involvement would foster a greater acceptance and support for the project which would be critical to its implementation. This required the project planning team to adopt a process that would allow input from the wider community (Figure 6). The planning process was open to public participation through a number of different avenues. The three central means were:

1. The BRZB acted as an information conduit between the planning process and the members of the community. The BRZB was comprised of members with various affiliations in the community (business owners, citizen's groups, town council and social groups) and as a result they were able to readily give and receive information concerning the project.
2. In the process of conducting research and developing the designs for

Organization of Planning Process in Didsbury Downtown Revitalization



Centre For Livable
Communities (CLC)



Business Revitalization
Zone Board (BRZB)



Didsbury Downtown
Business Owners (DBO)

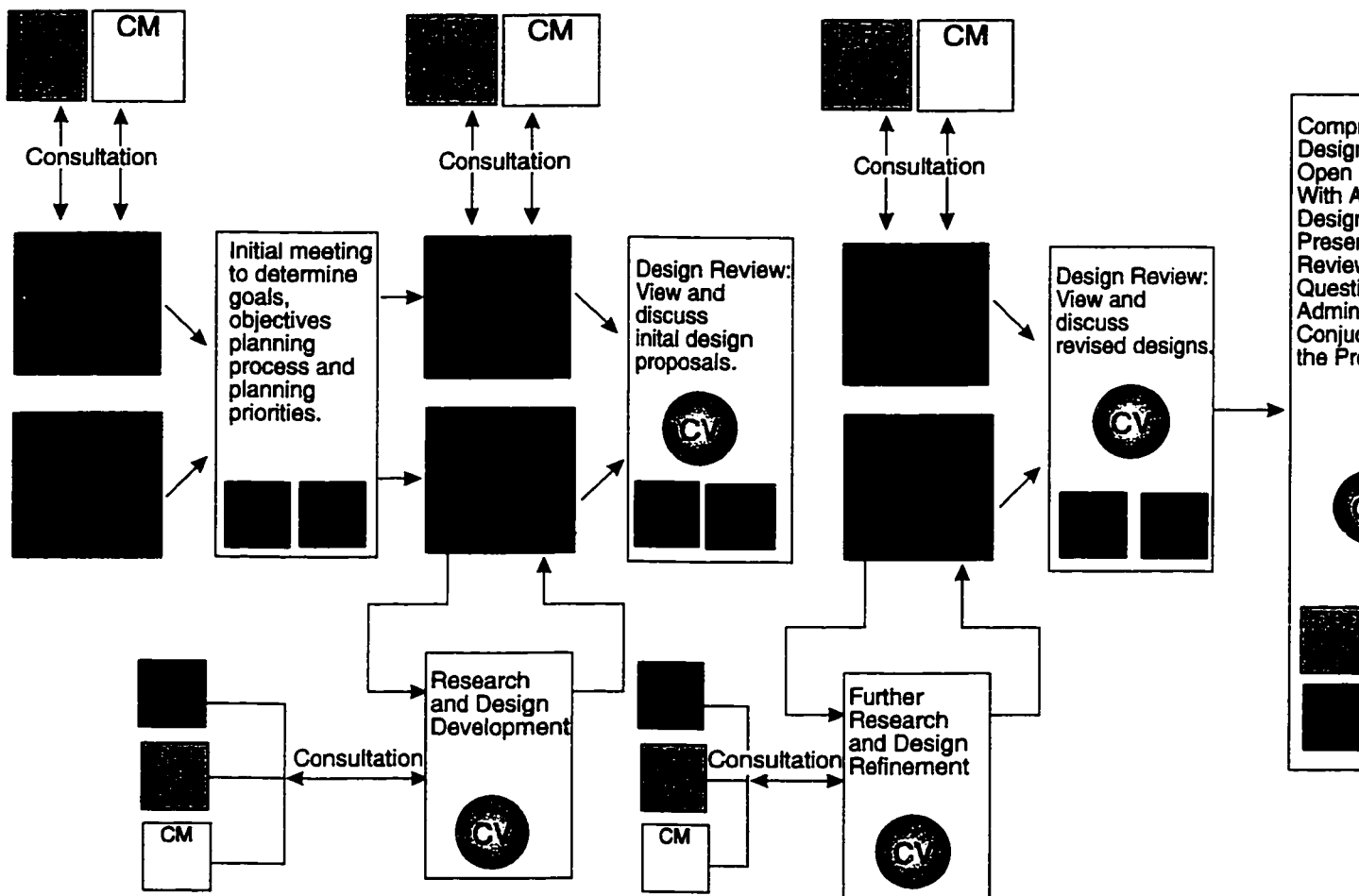


STAGE I.

STAGE II.

STAGE III.

STAGE IV.



MAY

JUNE

JULY

Revitalization Study

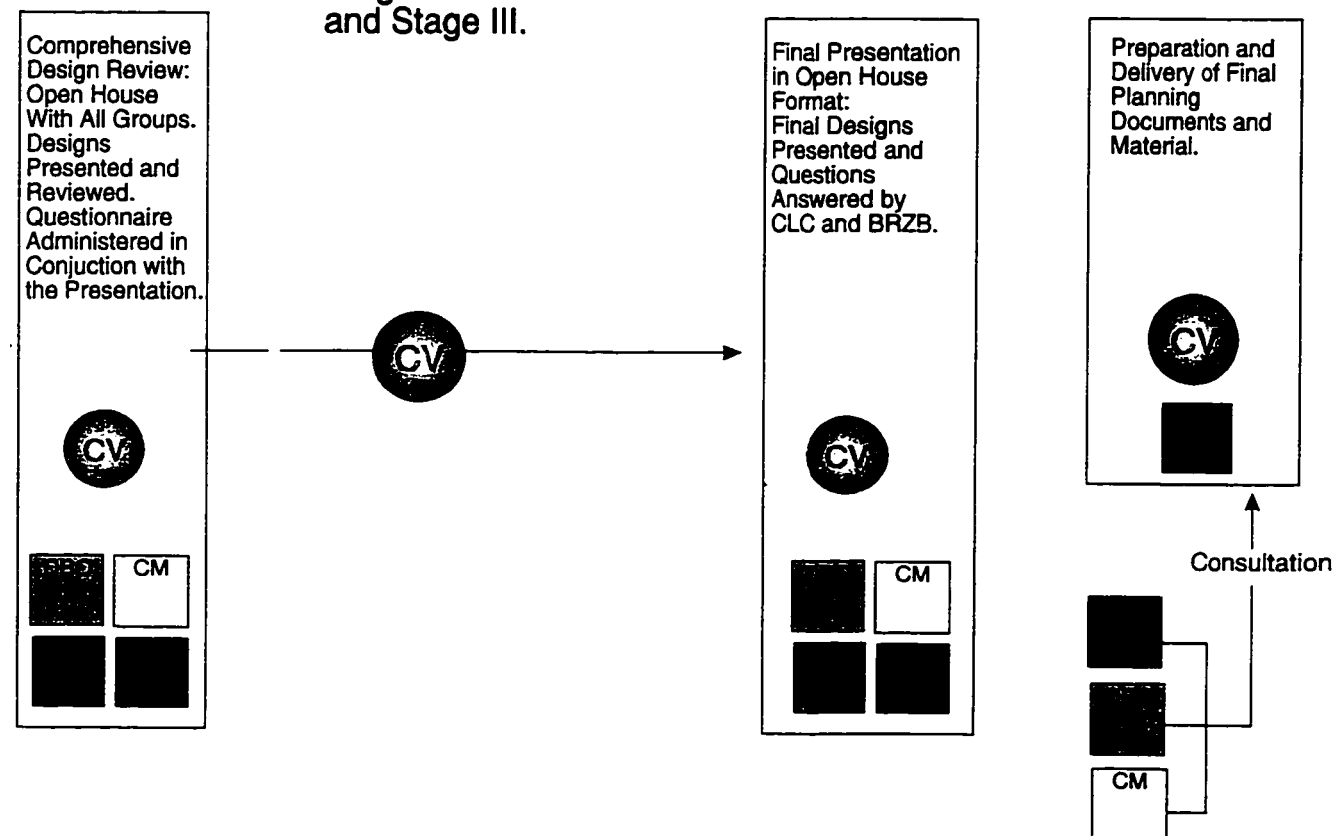
 Community Members in the Town of Didsbury (CM)



Denotes Where Computerized Visualization (CV) Was Used

STAGE IV. STAGE V. STAGE VI. STAGE VII.

Conduct Research and Revisions as in Stage II and Stage III.



Y AUGUST

the downtown, the CLC consulted members of the BRZB, local business owners, the municipal government and various other members of the community including: historians, artists, and other organizations (e.g. scouts, guides and urban foresters).

3. The open system of design review provided another opportunity for public involvement. The design review system that was conducted with the BRZB as well as with the members of the community used the images developed using the CV process to outline the proposed changes. This allowed people to assess the changes and provide their input to the process.

All three avenues for public participation were assisted greatly by the images created using CV. A detailed discussion of the assistance that CV provided in the planning process is presented in the sections that follow this overview of the process.

The first working meeting between the CLC and the BRZB included a walking tour of the downtown where the BRZB identified the priorities for the revitalization of the downtown area (Figure 6, Stage I). This list included elements such as the sidewalks, building revitalization, design of the central park area, parking, streetlights, entrances and the overall appearance of the downtown. There was also a mandate to incorporate planning initiatives which could contribute to economic development. Much of the economic development was focused on tourism, attracting visitors from Calgary and area. The demand for a tourism focus was based on prior research conducted by the community. It was important to maintain a high degree of function in the downtown for the residents of the community while creating an environment which was attractive to visitors, business and industry. The planners offered suggestions for other areas in the downtown which, if enhanced, upon, could positively contribute to the plan. Once areas had been outlined by the members of the BRZB, the planners turned to the task of incorporating all of the concepts into physical designs. Research into the history of the community was conducted by the planning team and all past planning

work that existed was reviewed.

The members of the BRZB were interested in maintaining the historic integrity of the downtown while, at the same time, encouraging economic development. The tourism market, specifically the day trip market from nearby Calgary, was identified as a significant potential market from which to draw visitors. Other communities surrounding Calgary such as Cochrane, Okotoks, Bragg Creek and Canmore currently attract significant numbers of day trip visitors. Before Didsbury could become a destination for day visitors, the community determined that a positive and attractive environment had to be established which could be supplemented by events and festivals.

The downtown area had to be evaluated and improved to provide conditions to attract new visitors and businesses so as to foster health and vitality in downtown Didsbury. Although events and promotion are important, the urban design or physical characteristics of a town are central to providing an environment that will attract and accommodate tourists (Inskeep 1991, 242). Attracting tourists to a town demands that a positive experience must be created for the visitor. In small towns, this typically means that certain components of the physical infrastructure may need to be revitalized in order to create a positive physical atmosphere (Inskeep 1991, 243).

The initial designs started with a broad focus and presented a series of design proposals for the BRZB to review (Figure 6, Stages II and III). The early discussion on the proposals provided a wealth of new information and guidance on the initial design proposals. Following the planning review the CLC made revisions based on the input from the members of the BRZB. Further research and consultation with members of the community also took place while completing the revisions. After two review and revision stages were completed, the BRZB had developed the design concepts to a point where they felt it was necessary to solicit input from the business owners and the community at large (Figure 6, Stage IV). In an open house setting, the design proposals were presented

and input received. The feedback obtained through a survey was summarized and incorporated into the design concepts. From this, the final design decisions were made and the concept plans were refined to a near finished form.

The final plan was presented by the CLC and reviewed by a number of groups. The BRZB was the first group to which the final plan was presented. Following this, the Mayor and Council were given a presentation of the final designs after which there was an opportunity to address their questions and record their input. The entire community was invited to attend an "open house" style planning review where the final project was presented via display boards and an ongoing slide presentation. The CLC planning team was represented by one of their members who was on hand to answer questions and receive input from the citizens in attendance.

The final stage involved the production of the final reports for the project. The final report was presented as a two part document. The first used the images from the CV process to present the plan in a clear visual fashion and the second part contained a more in-depth technical discussion of the project. The following sections numbered 1 to 8 explain various components of the process in more detail and provide examples of how CV assisted the planning process.

CV and the Planning Challenges

There are many challenges inherent to planning in small communities. The following discussion (headings 1 to 8) examines the challenges that were faced in Didsbury and how CV was used as a tools in the process. Using the individual challenges as a starting point, the ensuing discussion will centre on how CV was incorporated and its impact on the planning process.

At the conclusion of the case, a series of recommendations will be offered. This section will present the "lessons learned" from the case study pertaining to the use of CV in the Didsbury Downtown Revitalization Study. The generalizations gleaned from this case study will contribute to the base of theoretical knowledge pertaining to the application of CV in the planning process. By analyzing the challenges individually it can be determined where CV technology was and was not effective.

1. Accommodating Public Participation in the Planning Process

*"Tell me, I forget.
Show me, I remember.
Involve me, I understand."*

Chinese Proverb

The Didsbury Downtown Revitalization Study provides a clear example of an instance where open participation was fundamental to the planning process. Incorporating new tools like CV into the planning process provided a clear channel through which ideas and information could pass. The environment in which the planning took place demanded that the concepts and designs evolve through a process that could incorporate the information and ideas coming from the members of the BRZB. Each member of the BRZB brought in their own set of ideas and tools into the process and the planners we were expected to manage the input while applying principles which contributed to good community design. It was necessary to include the desires of each member of the group through a means that was open, clear and understandable.

In order for CV to be effective in this project, it was necessary to operate within a system that was conducive to effective participation. The members of the BRZB acted as a task force assigned the responsibility of guiding the design process. To keep the planning process manageable, it was necessary to break the participants down into a smaller group or

task force through which decisions can be made (Oregon Visioning 1994, 19; McAfee 1995, 15). The members of the BRZB synthesized the thoughts and ideas of the wider community and were able to present and discuss them.

Computerized visualization provided a vehicle to produce and present concept plans in a clear and understandable manner to those involved in the process. This allowed the BRZB to conduct productive discussions regarding the plans and come to an agreement on the final concepts. For many members of the BRZB, this was the first opportunity that they had to be involved in the planning of their community. It was necessary to be cognizant of the processes used to present the planning and design concepts. The members of the BRZB found that using the CV images proved to be advantageous in this situation because any proposed change was presented in a manner which could be easily understood and discussed. Starting with actual images taken from the main street in Didsbury and applying various design proposals, a set of images were created and presented at the planning review sessions. This provided the group with a clear set of illustrations upon which further discussions and decisions could be based.

It would be difficult to provide elaborate hand drawn renderings at every stage of the process. Using the computer allowed the designs to be displayed in a clear and realistic manner (Figures 7a - 7c). From the comments and discussion following the presentation of the design plans, changes and alterations were incorporated in the plans and presented at subsequent meetings.

Using photographic images which presented both existing views and proposed designs, was particularly useful for providing a clear and constructive discussion of the plans. Presenting the designs with a heightened sense of realism assisted the members of the board as they considered the effects the plans would have in terms of appropriateness, function, feasibility and security. The computer images provide a clear illustration of the issues which surround urban design such as: color,



Figure 7a - Existing sidewalk.



Figure 7b - Sidewalk Design #1.



Figure 7c - Sidewalk Design #2.

Figure 7a - 7c - Those participating in the review process had the design alternatives presented through a series of CV images. The images above were used to illustrate variations on a design for the new sidewalks in the downtown.

texture, form, scale and massing. This encouraged more in-depth and thorough discussion allowing the most appropriate designs to be selected.

Although most of the planning and design decision making was done at the focus group level, there was still a desire on the part of the BRZB to solicit input and reaction from a greater audience. This included the remaining members of the downtown business community and the Town Council. Having a series of computerized images which outlined the plans was of great assistance during this exercise. It is a challenge to move from a small group who are closely associated with the design process to present concepts and designs to an unfamiliar audience. Using the computer images to present the designs allowed the larger group to quickly become familiar with the plan and provide their own comments. Thus, CV was an effective tool for presenting the plans to a wider audience and soliciting input from them (the methods are discussed in the next section).

2. Making Decisions in a Group Setting

The system of democratic design and decision making practiced in the Didsbury Downtown Revitalization Study created a number of challenges. Participation and decision-making took place on two different levels. The members of the BRZB worked as a group to develop the plans and then presented the plans to the remaining community members to solicit their feedback. The approach used with each group was different to allow for input and feedback on the design.

The issues were identified and a range of plans developed by working directly with the members of the BRZB. From there, the plans were discussed and the design alternatives for each issue were narrowed down to a few different scenarios. Each design scenario was then developed and illustrated by the planner in consultation with the other members of the BRZB using CV. Regular reviews were held with the members of the BRZB and the latest plans were presented and discussed using computer generated images (Figure 6). Once the various design scenarios were

refined, the alternatives were presented in an open forum which allowed the members of the community to review the work and provide their input.

The process used to present information and solicit feedback from the wider audience was dependent on the ability of computerized imaging to present a large number of images to the group which would be instantly recognizable. It then became easy for participants to understand the design alternatives and provide their impression of each (Figure 7a - 7c). The larger group was presented with an overview of the entire plan to explain the principles and processes of the work. Next, they were shown a series of slides which outlined and illustrated the design alternatives. As they viewed each computer designed illustration, they were asked to complete an accompanying questionnaire which indicated their design preferences for each location (see Appendix B for the questionnaire designed and administered by the CLC and its results). During these sessions, participants had an opportunity to obtain clarification on any of the designs and have them explained more thoroughly by the planners or members of the BRZB.

This system of presenting a series of images to solicit feedback and determine the preferences of citizens has been used in the past by others but in a slightly different manner (Greene 1992, 180; Nelessen 1994, 81). Nelessen (1994) uses a technique known as the Visual Preference Survey where he presents a series of slides depicting various generic examples of urban design characteristics. The group of residents viewing the slides rate their preference for the images they are viewing on a scale of +10 to -10. By examining the results of the questionnaire, Nelessen determines which urban characteristics people prefer for their own community.

The process employed in Didsbury was similar in the fact that the images were presented through a series of slides. However, the images that were used presented photorealistic representations of the design alternatives. This allowed the findings and comments to be based on the particular situations in Didsbury and not on images of other communities whose

circumstances may be very different, and perhaps inappropriate.

Once the questionnaires had been reviewed, the information was taken back to the BRZB to inform the members of the preferences of the wider community (see Appendix B). The information from the questionnaires was incorporated into the design proposals as they moved to a finished stage. The computer images proved to be an effective means by which to present the design alternatives and solicit feedback. The clear and understandable nature of the images made it easier for those viewing the slides to provide their opinions on the plans.

3. Exploring New Concepts and Ideas

Once the areas of study had been established, a number of alternatives for each area were discussed. The planners had the responsibility of taking the challenges that existed with each site and developing a design alternative that fitted the desires of the rest of the group. Many of the areas proved to be particularly challenging and members of the group would, at times, have difficulties fully conceptualizing their ideas.

It was often easier to discuss a planning issue once a starting point for a design had been established. One example of this occurred while reviewing the railway station. Much work had gone into restoring the building which was prominently located in the centre of town but it was agreed that it was under utilized as a town attraction. Although there was a desire to reexamine the design and use of the station, few suggestions were offered on what should be done. The planners suggested an historic railway passenger car be placed in front of the station to be used as a seasonal commercial outlet or tourist booth (Figure 8b). Once this scenario was presented using CV it stimulated a great deal of discussion about the appropriate design and use of the station. Presenting images which made the design proposals seem real prompted lively discussion among the BRZB and introduced new information and ideas for a use of the station. Research conducted by members of the BRZB determined that the Scouts and Guides had a long term agreement

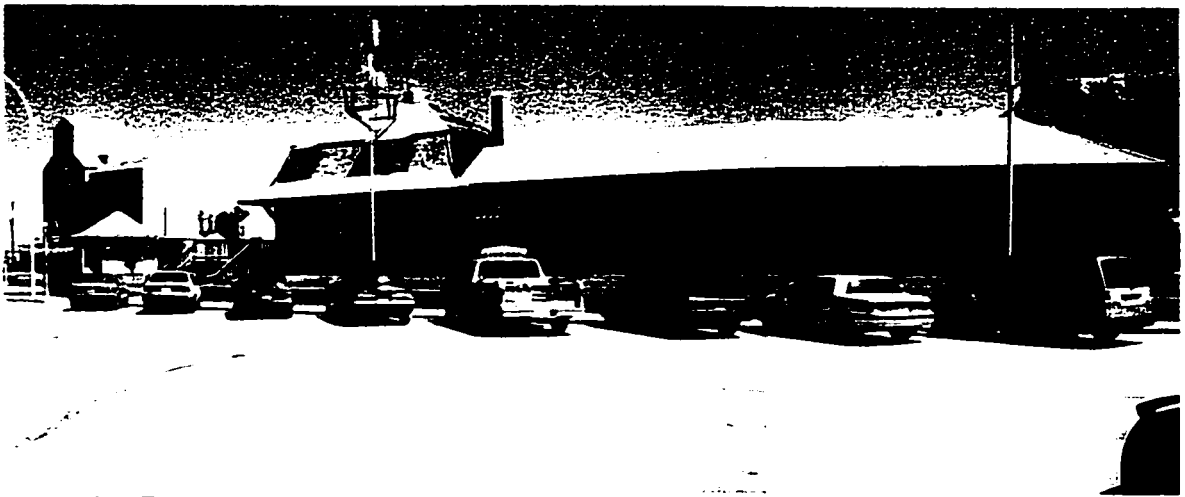


Figure 8a - Existing train station



Figure 8b - Train station with passenger car proposal



Figure 8c - Train station with chosen alternative.

Figure 8a, 8b, 8c - Design alternatives for the train station located in the centre of town. The ability to depict new design concept and ideas allowed the planners and members of the community to explore a variety of alternatives.

for the use of the facility which made it impossible to pursue a commercial use at the present time. This led to an adaptation of the original "passenger car" concept to one which would see the station's platform used in summer as a location for afternoon teas (Figure 8c). These events could be hosted by various groups from within the Town, such as the Scouts or Guides, and operate in conjunction with events held in the adjacent park, such as live performances or arts and crafts sales. The BRZB members as a whole subsequently decided that it would be worthwhile to invest in the equipment necessary to hold "afternoon teas" on the station platform.

In this situation the images created using CV acted as a catalyst for the discussion and adoption of a design for the train station. The discussion that ensued from the reaction to the initial proposal enabled the BRZB to play a key role in creating positive planning and design solutions for their community.

4. Introducing Revitalization Through Phasing

A central concern when undertaking a planning and design project in a small town is the budget for the project. Didsbury was no exception. The BRZB had established a levy on the businesses in the downtown designed to develop a yearly fund to be applied to the revitalization of the downtown area. The Town was also contributing to the effort by supplying money for infrastructure improvements. Much of the revitalization work that was suggested for the buildings in the downtown was the responsibility of the individual business owners. All of these factors made it very clear that the revitalization of downtown Didsbury was not going to happen overnight. This being the case, it was very important to present and plan changes that could be accomplished through a series of phases. The plan was developed and implemented so that each phase would appear as a finished product. This would avoid the appearance of the town in a perpetual state of construction. CV proved again to be very helpful in this endeavor (Figure 9a - 9d).

Producing the images through the computerized process allows the

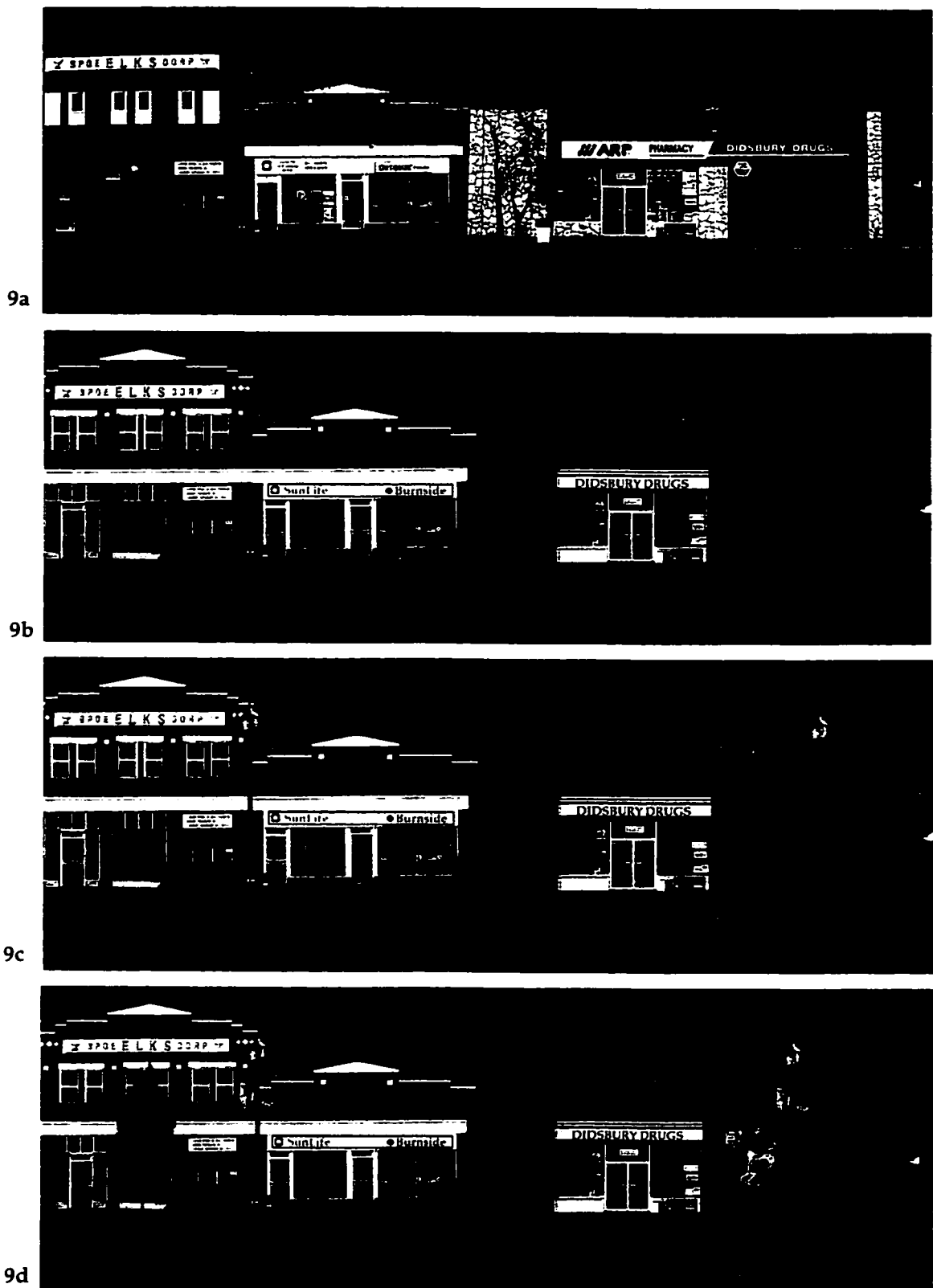


Figure 9a - 9d - Presenting the revitalization project as a series of phases provides a plan for the completion of the project and the effect of each phase .

proposed change to be depicted as a series of phases. Presenting a system of phasing using the computer is helpful when presenting the plans to members of a community who want to see immediate results (McClure 1994, 76). The changes to the existing images of the town can be choreographed by adding the new elements to the picture one at a time in the same order that the construction will follow. After each addition, a version of the image may be saved as a separate entity before proceeding to the next change. What is produced is a realistic set of images which become very helpful to those who are involved in establishing long-term plans realized through a series of phases. Recent improvements to the computer software Adobe Photoshop™ (Mountain View, California) now allows images to be created and assembled through a layering system. Different elements are placed on separate layers which can then be easily turned on and off to depict the various stages of development. This is exactly the same principle applied in traditional drawing techniques where various additions are applied using clear acetate overlays. Both methods accomplish similar tasks and, depending on the need, either or both may be employed.

The concept of phased development was central to all components of the revitalization in Didsbury but it was particularly important to the preservation of the historic buildings in the downtown area. The challenge associated with the buildings was that each owner was left to his or her own devices when it came to the restoration work. For most, the financial commitment of performing a ground up restoration was out of reach and, even if completed, would not mean an immediate increase in sales revenue. The restoration of the buildings was an activity which was going to have to take place in phases. For instance, the BRZB did not want to force a business owner who had recently spent money on a sign to replace it with one which was more in keeping with the character of the revitalization. Instead the BRZB wanted to work with owners to devise a revitalization plan to be followed before undertaking any future work. Illustrating phased development using computerized visualization proved to be very beneficial when working with individual building owners (Figure 9a - 9d).

5. Testing Design Alternatives

There were situations throughout the study which required the BRZB and the planners to make assessments and decisions regarding design alternatives. One of the design elements identified by a member of the BRZB early in the process was to incorporate a mural program into the revitalization plans. There were numerous discussions regarding the appropriate types of murals and the message they were to portray. The criteria were that it had to be in keeping with the era in which the majority of the buildings in the downtown were developed and reflect some component of the past history of the town.

The computerized visualization process again proved to be invaluable tool when making decisions regarding the murals. Superimposing the murals onto selected buildings allowed the group to first decide on the images that were to be used, the best location for the murals and their appropriate size. These images were produced very quickly and easily and provided a level of realism which proved to be extremely beneficial when making decisions on each mural (Figure 10a - 10b).

6. Keeping the Decision-Making Process Moving Forward

An underlying concern before undertaking any planning exercise is to establish a series of goals and objectives for the project. As its goal, the Town of Didsbury set out to continue planning process aimed at revitalize the downtown through a series of physical improvements supplemented by various economic development initiatives and use this work to support their application to the Main Street Program. In order for this goal to become a reality, it was necessary to guide the process through its course by making the necessary decisions at the appropriate times. As mentioned, effective decision-making in a group setting demands that the issues be clearly presented and understood. By using CV, the "confusion quotient" among the members of the group was reduced and thus decisions were made more readily. In this instance the "confusion

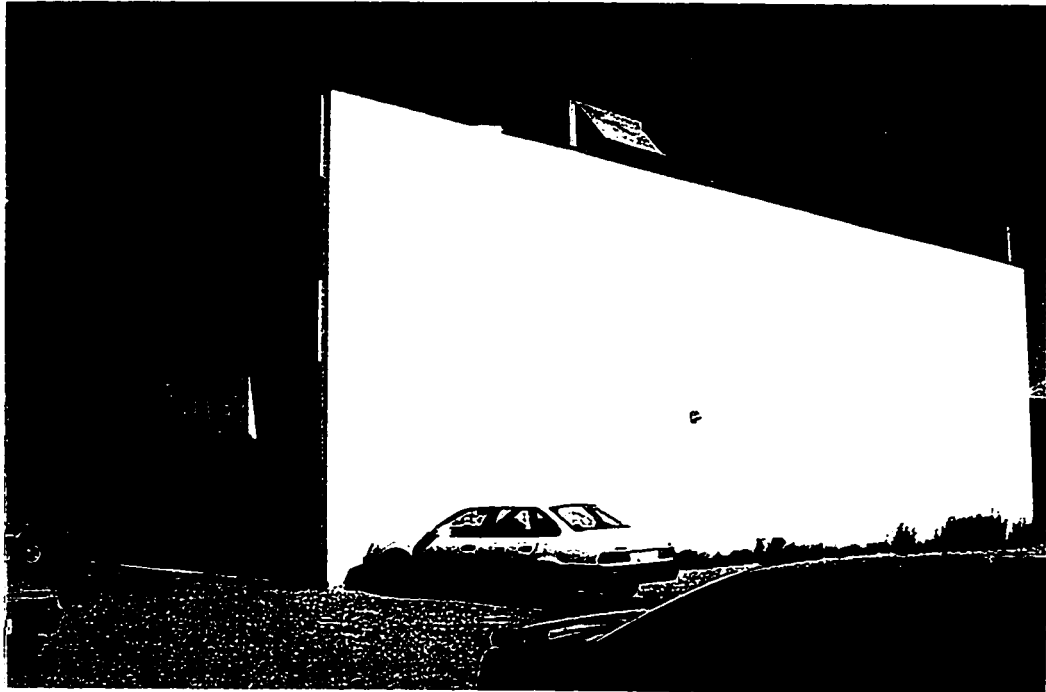


Figure 10a - Existing image of the building.



Figure 10b - Proposed mural in place.

Figure 10a - 10b - Design alternatives such as the size and placement of various murals in the downtown of Didsbury can be explored effectively using computerized visualization. Applying the murals to the sides of buildings allow decisions such as what size, orientation and content is most appropriate for each site.

quotient" refers to the high number of variables and design decisions which can serve to convolute the issue. This allowed the project to be more inclusive and address a wider range of issues.

Throughout the entire process, it was important to use the resources allocated to the project in the best manner possible. Working as a consultant during a revitalization exercise means that more productive meetings and higher quality input must be achieved to assist a community in realizing a better process. Stated simply, it was important that the members of the BRZB received the best value for their money from the consultants. The methods and tools that were used in Didsbury facilitated a higher level of input and understanding of the process which contributed to more productive meetings. This kept the process moving forward and allowed more issues to be addressed. As small communities look to consultants to assist with planning, they must ensure that the best systems are being employed to allow them to use their resources most effectively.

7. Generating Buy-In and Excitement For the Process

One of the most important and often most challenging tasks when undertaking any planning exercise is to generate a feeling of excitement and support for a project at the local level. The best conceived and developed plans may remain in the planning stage if there is not sufficient support and "buy in" generated in the local community. It is therefore necessary to retain the support of the citizens involved in the planning process to promote the advantages of a carrying out a revitalization of their downtown. The success of marketing any product depends very much on the message, which includes written, spoken and illustrative material. Computerized visualization has the ability to create dramatic "before and after" images. Using this type of material makes it easier to garner support by generating interest and enthusiasm for the projects.

In Didsbury, planning changes were introduced which, when presented from a street level view using computer visualization, had a dramatic

effect on the appearance of the downtown. One such example was the reconfiguration of the central park area. An existing park located in the centre of town had been changed from a park into a parking lot surrounding a replication of the Victorian style bandstand which once sat in the park. It was recognized by most members of the group that reestablishing a park in the center of town would contribute to an improved setting in the downtown. The issue has been a contentious one among the residents of the town and the BRZB was inclined to pass up the opportunity of reestablishing a park for fear of stirring controversy in the town.

The main concern was the loss of parking spots near the centre of the community. Despite the formulation of a plan calling for the displaced stalls to be relocated to the back of the train station, which would result in a net gain in stalls, there was still a reluctance to entertain a change. Using the design based on a rough plan view sketch, the proposed changes were depicted using CV (Figures 11 and 12). The images showing the view from the platform of the adjacent train station raised some interest in the design (Figure 11a -11b), but it was the "before and after" images from a major view corridor which illustrated the potential impact of the design proposal (Figure 12a - 12b).

Redesigning the central park provided a significant improvement of the view corridor in the downtown, which coincidentally is the view from the roadway directly in front of the Town Hall. This image of the redesigned park provided the impetus for members of the BRZB to become involved in promoting redesign of the central park area to others in the community. The straightforward nature of the computer images gave the members of the BRZB the appropriate tools to present the concepts to others and garner support for the project. Having the BRZB members not only endorsing the plans but actively promoting them to others in the community proved to be invaluable. It was essential to develop local interest and support for each component of the project and, by providing the BRZB members with a set of images which presented the plans in a clear and understandable manner, they were



Figure 11a - Existing view from train station



Figure 11b - Proposed change

Figures 11a and 11b - Computer generated images showing proposed change to the central park area.



Figure 12a - Existing view along main corridor



Figure 12b - View along main corridor with changes in place

Figure 12a - 12b - Images of central park area redesign as viewed from a central view corridor directly in front of the Town Hall. The before and after impact that images such as the ones seen in Figure 15a and 15b, help to illustrate the effect that the changes will have on the downtown.

able to spread the message effectively.

It was important that, at the end of the study, the members of the community could take the planned work and implement it. This would mean continuing to seek support for the plan from a variety of groups including Town Council, business owners and the community at large. Establishing a feeling of commitment among the members of the BRZB for each particular portion of the plan will help ensure that a commitment to downtown revitalization in Didsbury remains strong.

8. Providing Clear and Understandable Documentation and Ordinances

When preparing the final reports for the Revitalization Study there were a number of factors to be considered. It was necessary for the final documentation to provide an explanation of the plans on different levels. In order for the community at large to accept and support the study, it was necessary to produce a document outlining the basic tenets of the plan in a clear and straightforward manner. This was the impetus for developing a condensed report which depended greatly on the computer-based images to explain the design concepts. This ten page report came to be known as the "summary document" (Figure 13). This format allowed someone interested in the plans to go through the document and have a very clear picture of the changes that were being proposed. If after this initial review they wanted more information, they could refer to the accompanying "technical document" which offered expanded explanations of each plan.

Providing the reports in this format proved to be beneficial in many ways. It shared the vision of the plan with a wider audience thus creating the level of participation and understanding necessary for a successful implementation process. It also provided the members of the community with a clear statement of the "character of the design" through a graphic means rather than just the written word. This makes the plans easier to comprehend and assists people in forming a vision of the future of their community. Planning studies and reports can be laden with vague

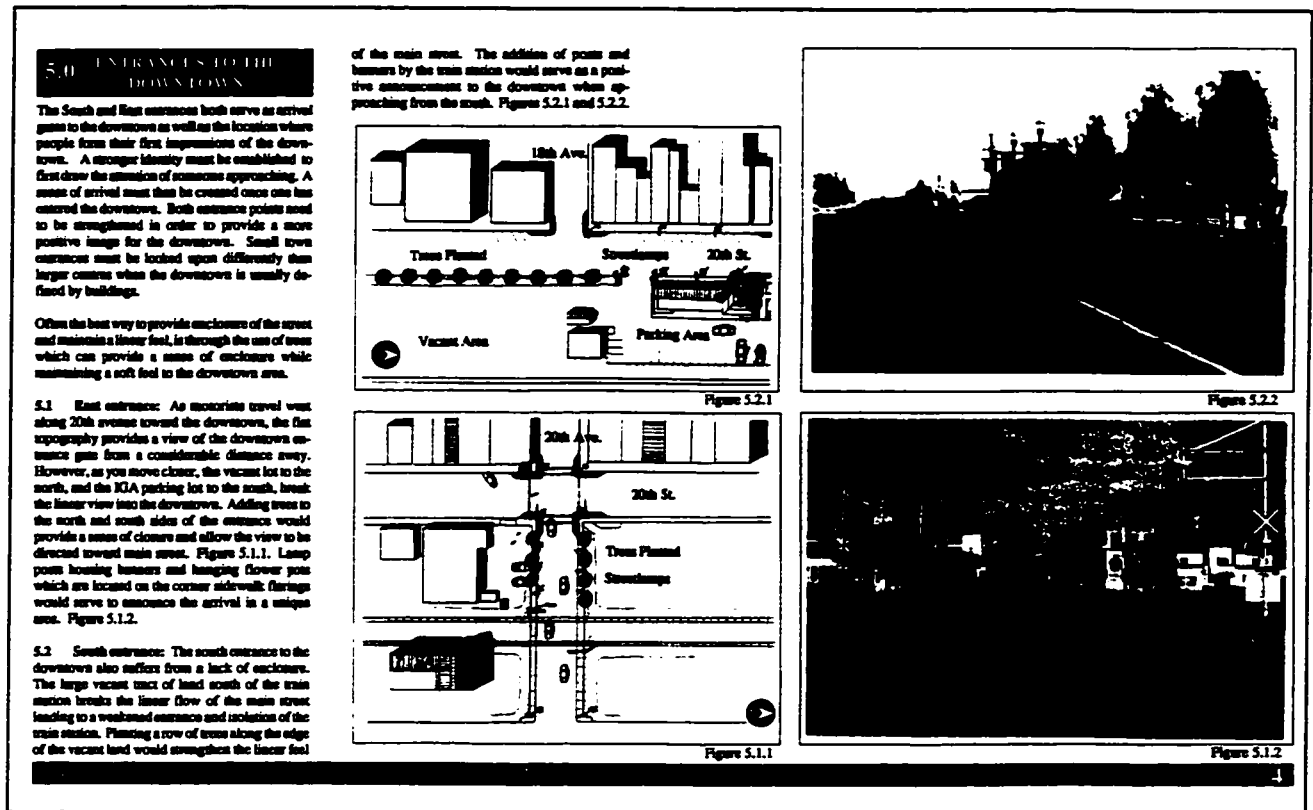


Figure 13 - A page from the first of the two documents produced which is referred to as the "summary document" uses computerized visualization extensively to illustrate the plans in a clear and understandable manner. The plan views presented on the left help to present and overall layout of the plan and provide orientation for the CV images corresponding CV images which present an eye level perspective. (Source Centre For Livable Communities - Didsbury Downtown Revitalization Study).

statements about the future design of the community which contribute little to the understanding of the plans. Voluminous planning reports laden with general guidelines such as "... the revitalization efforts should enhance the historic character of the downtown ..." are good as general guidelines but there must be more concise plans which clearly articulate the steps to be followed to achieve the established goals.

In Didsbury, the plan was presented on a broad scale and then divided into a number of separate projects. Each project was of manageable size to allow the members of the community to identify a starting point. Using the computerized images as illustrations helped people identify the impact that the changes would have both individually and collectively.

9. Informing the Wider Community About the Plans

At the conclusion of the Revitalization Study, further research was undertaken which focused on presenting the new revitalization scheme in an electronic multimedia environment. Multimedia simply implies using a variety of media to get a message across to an audience. The large collection of information and computer images which had been produced throughout the study provided a wealth of material ideal for producing a multimedia presentation. The value of the computer images could be further realized by using them in a dynamic multimedia format.

Working with the material developed in the Revitalization Study, a multimedia presentation was developed. The presentation was designed to be interactive and function as a prototype for a kiosk display. The kiosk station would be placed in a public area such as the library or town office and would provide the viewer an opportunity to navigate through the various design elements of the plan through a "touch-screen" interface. Text, images and sound all combine to make the presentation engaging as well as informative. The interface is designed to appear simple and nonthreatening so as to invite as many people as possible to have contact with the display and become better informed about the future of the town. This kiosk was designed "after the fact" as an example of how the images and information could be presented in another format.

The kiosk remained as a prototype only and was not implemented in Didsbury.

The kiosk is only one application of the multimedia format. Once the basic multimedia presentation is developed it is possible to display it through a number of different venues. Its value lies in its ability to enhance the communication process and distribute the planning information to a larger number of people. The future holds great possibilities for the presentation of a product, service or idea which can be broadcast through electronic channels. Already, the power of the internet has been realized and is expanding rapidly.

The flow of information that is possible using new technologies such as the internet is overwhelming. As accessibility to the internet increases and the delivery system becomes more organized, it will become an important communication tool for planning. The presentation that was developed to function as an interactive kiosk could be easily adapted to work as a web site on the internet. This would allow residents, businesses and city officials to access information on the planning process at any time and receive a current status report about a particular project. This would allow members of the community to become better informed about the future of their community. It would also provide an avenue for feedback on proposed plans. As someone is reviewing the plans, they may also be providing feedback by filling out a questionnaire or providing comments on the designs.

6

Analysis of Computerized Visualization as Used in Didsbury

The case study presented in the previous section provided an overview of the application of CV in the small town planning process. As mentioned throughout this thesis, it is important to examine the use of the CV technology in planning applications to determine its advantages, disadvantages and impacts. This section provides a series of observations and "lessons learned" from the experience of using CV in the Didsbury Downtown Revitalization Study.

Conduct Necessary Planning Work

The effectiveness of any tool employed in the planning process (including CV) is proportional to the amount of preparation that is done prior to starting the project. The better organized both the planners and members of the community are, the better the results will be at the conclusion of the project. As stated earlier, CV is not magical and cannot replace the planner or the need to run an effective planning process.

The organization and background planning that was done for the Didsbury project was instrumental in the implementation of CV in the planning process. The BRZB was well-organized and served as a fundamental resource for the planners as the revitalization plan was formulated. In addition to this, there had been previous planning studies done in the town, including Nicolai's 1992 work, which introduced the community to the planning process and provided a starting point for the study done by the Centre For Livable Communities.

Working With Groups of a Manageable Size

Regardless of what tools are used in the planning process, their ultimate effectiveness is dependent on a well-defined process. Establishing a task force of a manageable size which is responsible for carrying out the planning process will contribute to an environment which is conducive to the successful utilization of tools such as CV (Oregon Visioning 1994, 19).

The members of the BRZB became heavily involved in the planning process and served a number of roles throughout the exercise. They acted as guides to the process through their input. They provided the planners with information and direction for the plans while serving as a conduit of information for the wider community. This allowed the plans to be developed in a system of open communication and yet remain in an environment which was manageable.

Using CV Effectively

When using CV in the course of completing a project, it is important that the user be aware of the impacts that the technology is having on the process. It is important for the technology to contribute to the process and not detract from it.

In the Didsbury study there were times when pencil and tracing paper was better suited to a particular task. For example, when deciding on the layout of the central park area, it was important to conduct the preliminary discussions starting with a plan view, using pencil and paper. This enabled the members of the BRZB to have their input into the design of the park and allow a preliminary list of issues to be compiled. It was then easier to develop three scenarios that could be illustrated with images produced using CV. Attempting to use CV in the beginning of a process is likely to confuse the issue instead of clarifying it. Monitoring the process and incorporating other techniques is vital to the successful application of CV in small town planning.

Image Quality

Before computer images can be produced, there must be adequate photo-documentation of the site in question. It is important to obtain the highest quality photographs possible to ensure that the best results can be realized through the computer process. This did not pose a problem in Didsbury as the weather and seasons were suitable for taking an abundance of clear, high quality photographs. The community was close to Calgary and the visits were frequent, allowing the planners to take a series of follow-up pictures. Problems could arise if a project is subject to a tight deadline in a distant locale and if there is an extended period in which the weather conditions are not conducive to obtaining quality pictures. Due to poor lighting conditions it is difficult to capture quality images when it is raining and overcast. This would force the planner to work with pictures of substandard quality which would greatly affect the quality of the final images and their effective use as a planning tool.

CV as a Design Medium

There has been much speculation about the quality of design exploration that can be achieved in the computer environment. There is no question that the human/computer interface is very different than that of the human/pencil. Many designers "think through their pencils" so it is difficult to replace the pencil and paper as a medium which allows for the free flow of thought and expression in the early conceptual stages of a design (Atkin 1976, 6). Plans, sketches and other representative illustrations produced using pencil on paper served a purpose in the Didsbury revitalization plan (Figure 14). What is important is to choose the best tool for each task. The early stages of the design lent themselves well to the use of rough pencil illustrations which could then be built into refined concepts in the computer environment. As people become more familiar with using computer processes and the human/computer interface becomes more natural, there is certain to be a larger portion of the work completed in the computer environment.

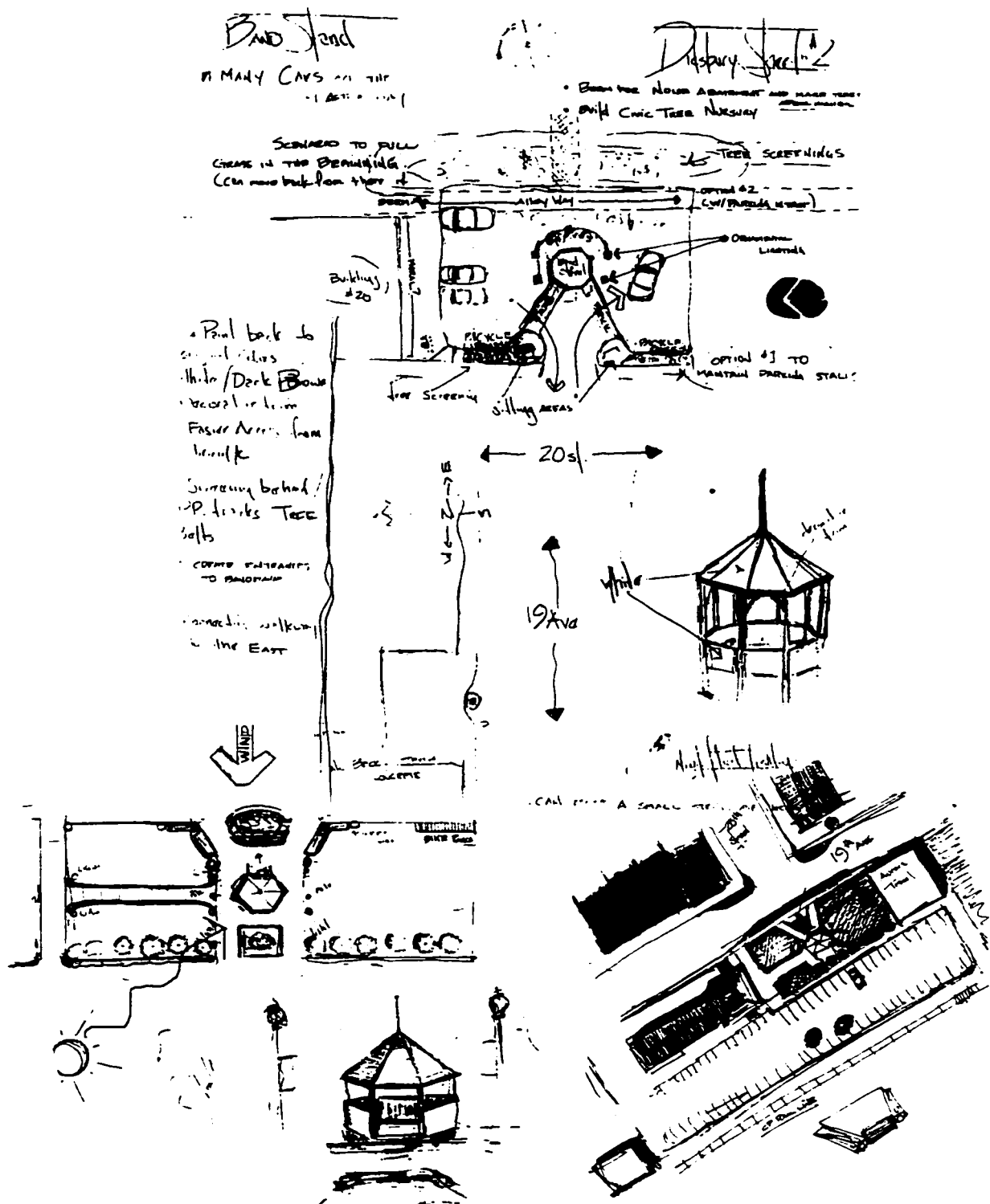


Figure 14 - The computer environment is not always conducive for exploring initial design concepts. During the Didsbury revitalization project much of the initial design concepts were sketched out in rough from using pencil or pen and tracing paper before the computer images were completed. This medium encourages the flow of ideas by allowing the designer to think through the pencil.

Using computer design in planning does not preclude the use of other traditional techniques. Just as it is important to have a medium that is useful for explaining the design concepts to others, it is important that the medium does not stifle the imagination or thought process of the designer doing the work. The computer may not be the most suitable medium to allow the planner to explore and develop new ideas. As it exists today, the technology is still a little "stiff, distant, and lacks connection" when it comes to exploring new elements or designs (MacLeod 1995, 17).

It is often necessary to step back from the computer and explore new plans and ideas by using traditional methods. The freedom that is expressed while sketching out a plan or idea is not easily duplicated on the computer. New computer products such as sketch pads with electronic pens have made the interface a little more like pencil and paper but they still fall short of duplicating the ability that pencil and paper have when exploring initial design concepts.

CV and Creativity

There is a concern over whether computer design is a device which saves us from tedious labour and increases our efficiency or is a tool which limits our creative side, forcing us to create the plans within fixed boundaries (Teicholtz in Perrole 1986, 28; Perrole 1986). Just as the visualization process can assist in exploring new avenues, it can also be used to recycle many existing plans. The danger in using CV is the relative ease of importing images of existing designs which contributes to recycling and stagnation in the design process. If the designs are completely dependent on the elements taken from other areas, the best designs and planning solutions for the particular area may be overlooked. Each planning project must be driven by those involved in the planning process and not by the technology.

It is important for the technology to assist the planner and not have the

planner assist the technology. The latter will result in planning solutions which are defined by the computer technology and not based on the creativity of those involved in the planning process. As computer technology improves and the interface provides a better method for connecting with the designer, there may be more opportunities for wider applications. Until then, planners must rely on the systems which allow them to accomplish the best results possible. The computer can do much of the drudgery, allowing the planners to expend more time and effort on the creative side of a project (Teicholtz in Perrole 1986, 28).

Information Overload

The elevated perception of realism of the images presented throughout the case study was generally helpful to participants in exploring and understanding various design concepts. However, there were instances where the wealth of information provided by the images proved to be distracting. For instance, during discussions centred on the redesign of the downtown park, various images were used to show the different options for the redesign of the central park. The intent of the discussion was to garner some general opinions about the design of the park. When the images were presented, the color of the brick pavers that were used were not favorable to some members on the committee. This stimulated a discussion and debate about the appropriate color for the brick pavers when the intention was to discuss the general design of the park. The brick color had been arbitrarily chosen by the planner to show where brick pavers might be used. It was obvious that the image contained too much detailed information for the task.

When preparing the images to be used in the planning process, it is important to design them for the specifics of the problem. Superfluous information may serve to obscure the critical planning issues. Providing the appropriate amount of information necessary for the task will lessen the opportunity for misinterpretation of the images.

This problem has been recognized by others who have used CV in the

planning process (Levy 1995c; Lischewski 1994, 82). One solution to this problem has involved using additional computer software like Fractal Design Painter™ (Aptos, California) to transform a photographic image into one which appears to have been created using a selection of other methods such as pencil sketches, watercolors or oil paints. This allows the images to be presented in a more sketchy and less defined manner which helps to turn the attention away from insignificant detail and focus on the wider issues that are involved (Figure 15a -15b).

Ethical Considerations

As illustrated through the case study, images produced through CV allow for a high degree of photorealism to be achieved. The impact these images have on a viewer can be significant. Producing images which appear real but do not actually exist may raise various ethical issues. Advances in computer technology and its application has made it difficult to tell "real" pictures from "retouched" ones. This can cloud a person's understanding of "external reality" (Brand, Kelly and Kinney, in Perrolle 1987). When these images are presented using accompanying technology such as multimedia and the internet, their power of influence may be even further enhanced. Graber (1984) states that computer graphics have worked to raise a new level of trust (105). Research has shown that most individuals tend to trust pictures and information sent through the television more than written words in a newspaper article (Graber 1984, 106). The potential impact that computer produced photorealistic images may have on the planning process may be considerable.

Ultimately, the use of CV in a planning context is the responsibility of the planning professionals who are bound by the rules of their culture, society and profession. As a planning professional, there are responsibilities inherent to the occupation (Canadian Institute of Planners 1994). There may be circumstances where there is an opposing voice to the plans and design that are being proposed. Although it is expected that the planning professional will present the plans in the best light, it is also their



Figure 15a - Original image taken from a computer model.



Figure 15b - The same image as above that has been transformed which makes it appear as a watercolor.

Figure 15a - 15b - There are instances where an image can be too detailed which can create a situation of information overload. One solution to this problem is to use additional computer methods to transform a detailed image into one which appears "sketchy" (images produced by Richard Levy - University of Calgary, Faculty of Environmental Design).

responsibility to ensure that the computer technology is not used in a manner designed to deliberately deceive those who are examining the proposed plan or development. It has been suggested that guidelines should be introduced to help reduce the potential for bias in images developed using computer methods (Levy 1995a, 24). This would help alleviate inconsistencies resulting from differences in technological standards and procedures when constructing computer models. CV, however, poses a greater challenge. It would be as difficult to develop a standard set of guidelines for the use of CV as it would be to develop a set of guidelines for the use of a pencil and tracing paper. The application of CV is subject to the biases of the planner.

If it is accepted that CV is not inherently deceptive, then attention must be focused on the manner in which it is applied. Guidelines for proper use of CV must be directed to the practitioners who are using it in the course of their work. The Canadian Institute of Planners expects their members to subscribe to a set of values and follow a code of professional conduct in the delivery of planning. Although none of these guidelines speak specifically about the use of computer technology, basic tenets outlining professional conduct can be extrapolated to guide the use of CV. The following excerpts from the Statement of Values and Code of Professional Conduct: the Canadian Institute of Planners 1994 provide guidelines for the proper conduct of their members, regardless of what technology is being employed during the course of their work:

- "1.2 provide full, clear and accurate information on planning matters to decision-makers and members of the public,*
- 2.1 work with integrity and professionalism;*
- 2.3 perform work only within the member's professional competence;*
- 2.11 not sign or seal a final drawing, specification, plan, report or other document not actually prepared or checked by the member;*
- 3.1 act in a fair, honest manner."*

These guidelines provide a basis for the proper and ethical use of CV in

the profession of planning. Relying on guidelines for professional planning practice will contribute to the ethical application of new computer technology.

A planning professional may be following all of the guidelines which dictate ethical practice but, through ignorance of the effect the technology has on the process, may be unknowingly producing adverse results. Future research on the use and affect that CV has on the planning process must continue.

Deception Through Technology

As outlined in the previous section, implementing CV in a planning process raises a series of ethical considerations. Another danger in the use of the technology is the possibility of people being deceived by the nature of the technology itself aside from any malicious intent on the part of the planner. When preparing images to illustrate design proposals it is common practice to depict the scene in its most favorable light (i.e. good weather, green grass, flowers in bloom, leaves on the trees) (Kliment 1977, 34). This approach ignores the many other weather conditions which exist in the Calgary region and fails to assess the function of the proposed design element during the winter months. The problem is more pronounced when using CV because of its ability to create images which raise the viewer's perception of reality. People could be deceived, and determine after implementation that the changes fail to meet their expectations.

Computers as Instruments of Power

There is a growing concern that computer technology serves to centralize control into the hands of those with access to the technology (MacLeod 1995, 17; Perrolle 1987, 205; Vandon 1995, 91). There are two subjects of concern when examining the impact that computers have on the power structure in planning and design: the professionals and the public.

As design professionals such as planners and architects complete a greater share of their work using computerized methods, there is a fear that those who lack the skills or resources to become fully computerized will be shut out of the profession (MacLeod 1995, 17). If this phenomenon were to occur, many individuals with great planning or architectural foresight would be ignored simply because of a lack of computer knowledge. In addition, those who are operating small design firms would not be able to afford the investment in computer hardware, software and training required to remain competitive in the industry. This would lead to an agglomeration of power around fewer larger firms (MacLeod 1995, 17).

A greater concern surrounds the issue of computer technology contributing a dual system among the general population often referred to as the "computer haves" and the "computer have-nots." This is not a concern when computer technology is employed as it was in the Didsbury example but, when other computer systems are used for public information and participation, there is a potential for concern. When computer technology is used as a vehicle to spread planning information and solicit feedback from those affected by a proposed change, the "have-nots" are likely to be excluded from the process.

Much discussion and information is currently conducted through "high-tech" communication channels such as the Internet. As this trend increases, a two-tiered system could develop. Those without access to recent high tech communication devices could find themselves left out of processes relevant to planning within their towns or neighbourhoods. Exclusion from high tech communication channels is already evident in the United States. A recent survey revealed that, of those using the Internet in the United States, 87% had college degrees and 68% had annual household incomes in excess of \$50,000 (Vandon 1995, 91). Inequities such as these must be addressed before high tech communication links such as the Internet can be employed to involve the public in local or regional planning processes.

Developing New Structures

Introducing new development in areas where nothing existed previously is difficult with CV technology alone. In the Didsbury project most of the planning and design was merely alterations and additions to the existing development. It would be much more difficult to employ CV in a project where significant new development was planned. In order to illustrate a feature which is not present on the site it would be necessary to include other processes such as CAD modeling. These models take considerable time and effort to construct to a level of detail appropriate for merging with photographic images.

Depending on the Technology

When working with computer technology there is the ever-present danger of experiencing a computer malfunction. Working within a process which is dependent on the computer puts the entire process at the mercy of the machine. If the computer was to fail, the process stops until the problem can be rectified. In the Didsbury study this problem did not surface but it must be noted that the computer equipment and technical support keeping the machines operating correctly was provided by the University of Calgary, Faculty of Environmental Design. This allows for multiple machines to be utilized in case one was to malfunction. A private planning consultant attempting to carry out planning using CV could be severely impacted by a computer malfunction.

Conclusions and Recommendations

The purpose of this thesis was to examine the use of computerized visualization as a tool in small town planning. The emphasis was on the application of the technology to issues of planning and not merely an investigation into the technology itself. The literature review and discussion at the outset provided insight into three main areas:

- computer technology and its application
- visual communication in planning and design and
- planning trends and the challenges they present.

At the conclusion of the discussion on the planning trends in small communities, nine challenges were identified which are central to small town planning. The case study used the nine challenges as a guide examining each one systematically to determine 1) how CV was employed to help meet the challenges and 2) the positive and negative aspects of CV.

The Case Study

The case study provided the vehicle to test the effectiveness of using CV in the planning process. When dealing with a contemporary subject such as this which has had limited prior research, the case study is a preferred research format. Presenting a discussion of the case study illustrated specific examples of how CV assisted in meeting the nine challenges of planning in small communities and the impacts it had on the technology.

The case study provided an opportunity to examine CV at work in the planning process which illuminated the benefits and pitfalls of using the technology. A summary of the benefits of using CV in the Didsbury project

are as follows:

- The technology facilitated the public participation process by providing the community members directly involved in the planning process with clear and understandable images of the proposed concept plans.
- The images produced using CV enabled the planners to solicit input from a large group by way of a slide presentation and questionnaire. The images on the slides were clear and understandable which allowed the various planning scenarios to be easily recognizable and understood and allowed for feedback from the group.
- New planning concepts and ideas could be examined through depicting them using CV images. The ability of CV to quickly and easily produce realistic images of design proposals allowed for numerous scenarios and concepts to be illustrated and discussed.
- Phased improvements could be easily depicted by using CV. This is important in small town planning since a final plan is often realized through a series of steps which contribute to a finished product.
- The decision making process was enhanced by using CV and, as a result, the process continued to move forward. Using comprehensible images allowed the concepts to be explored and the decisions made. This assisted in avoiding stalls in the proceedings and allowed the client to receive maximum benefit from the planners that they had retained.
- The dramatic changes depicted by the images assisted in generating excitement and promoting the planning efforts in the town. The planners as well as the members of the Business Revitalization Zone Board were able to use the images for information as well as promotion.
- The collection of images developed through the planning process were used to compile a final document that presented the designs and concepts

in a clear and understandable fashion. The final report was broken into two parts, one of which used the CV images to present the designs. This format assisted further promotion of the plan and avoided its being filed away as another technical document.

- With the images available in a computerized format, it made it easy to produce a multimedia presentation which used the images to present a dynamic overview of the design proposals. A prototype was built that illustrated how an interactive computerized kiosk could assist in bringing this presentation of the design concepts to the public.

The Negative Aspects of Using CV

Along with the positive aspects of the case, there were a series of negatives or lessons that were learned. These included practical, technical and theoretical considerations.

- The cost of using CV technology in the planning process is quite high given the fact that there is a significant amount of hardware, software and peripherals which must be acquired. In addition to this, the cost and time for computer training required for the planner to become proficient with the technology can be as great as the cost of the technology itself.
- It is possible for CV to be inherently deceptive in the presentation of the proposed interventions. Depicting the designs in the most favorable seasonal conditions fails to illustrate the appearance of the designs throughout the entire year.
- Using CV and the computer in the development of design has an impact on the creativity of the designer. Using "found" elements, or those which exist elsewhere, can lead to a recycling of planning ideas in areas where they may not be appropriate.

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- When using CV in the planning process, the planner is at the mercy of the technology. A computer malfunction could bring the entire process to a halt which could have severe implications.
 - CV alone is ineffective in depicting new development in open areas. In Didsbury most of the designs were based on alterations to existing development which could be accommodated through the CV process. In other areas where no development exists it is necessary to produce the improvements using another process, such as CAD modeling, so it can be merged with images of the existing area. This creates additional work and costs.
 - There are a number of ethical considerations which must be taken into account when assessing CV. If a person wants to use the technology in a deceptive manner it could be accomplished quite readily. The impact of a new development could be made to look more or less intense or intrusive depending on the desired result.
 - Although computers have become more affordable, there is still a division of the computer "haves" and "have-nots". Introducing the computer into a process such as planning can serve to limit access to the process.

The practical considerations involve the underlying principles that planning and the planning process cannot be discounted. In order for CV to have any success in planning it is paramount that good planning principles and process be observed and that CV assume its place as one of many planning tools.

Future Study

Research focusing on using computer technology such as CV in planning is in its infancy. This being the case, there are many areas where research could be conducted to help evaluate and understand the use and effect

computer technology has on planning. Some of the areas recommended for further research include:

- performing "co-design" using CV technology
- examining the possibility of performing design across distance via a computer link with two or more people working on the same project simultaneously
- a more in-depth assessment of the impact the computer has on design creativity
- establishing a series of conduct codes on the use of computer technology
- exploring the inequities that computer technology creates and fosters and
- enhancing the democratic process through the use of computer applications such as the internet.

The use of computerized visualization in the planning profession is bound to continue. Its development and implementation are likely to generate considerable excitement and open new areas of research in the future.

8

Reference List

Anderson, Margaret, Julia Meaton and Clive Potter. 1994. "Public Participation: An Approach Using Aerial Photographs at Ashford, Kent," *Town Planning Review* 65 (1): 41-58.

Atkin, William Wilson. 1976. *Architectural Presentation Techniques*, Toronto: Van Nostrand Reinhold.

Atkinson, Beth. 1995. "Strategic Planning Approaches" *Plan Canada*, May 1995: page #

Bishop, Jeff and Bonner, Alex. "Partnership, Participation and Consensus - Making "Parts" into "Wholes", *Town and Country Planning*, August 1995: 209-211.

Burden, Earnest. *Design Presentation*, New York, McGraw-Hill, 1988.

_____. *Design Simulation - Use of Photographic and Electronic Media in Design and Presentation*, New York, Watson-Guptill, 1988.

Canadian Institute of Planners. 1994. "Statement of Values and Code of Professional Conduct"

Centre For Livable Communities. 1994. "Didsbury Downtown Revialization Study 1994"

_____. 1993. "Pincher Creek Main Street Revitalization Plan"

Cunningham, Lawrence and John Reich. 1990. Culture and Values: A Survey of Western Humanities, Toronto: Holt, Rinehart and Wilson.

DeSario, Jack & Langton, Stuart. eds. 1987. Citizen Participation in Public Decision Making, Westport: Greenwood Press.

Dickie, Trevor. 1994. "Term Paper for Urban Design Class"

Findlay Robert, Jerry Knox and Norman Riggs. 1989. "Three Visual and Verbal Imaging Techniques to Help Small Towns Select Their Future", *Small Town Journal*, May-June: 23-28.

Forrester, John. 1989. Planning in the Face of Power, Los Angeles: University of California Press.

Garreau, Joel. 1988. Edge City: Life on the New Frontier, New York: Doubleday.

Gerdorf, Joseph Jr. 1989. "Image Processing in Planning and Design", PAS Memo: American Planning Association, January: 1-4.

Gibson, Tony. 1995. "The Real Planning for Real" *Town and Country Planning*, July: 187-189.

Graber, Doris A. 1984. Processing the News, New York: Longman.

Greene, Sherwin. 1992. "Cityshape: Communicating and Evaluating Community Design", *American Planning Association Journal*, Spring: 177-189.

Hall, A.C.. 1993. "The Use of Computer Visualisation in Planning Control," *Town Planning Review* 64 (2): 193-210.

Hammond, Barbara. 1993. "CAD as an Urban Design Briefing Tool" in Richard Hayward & Sue McGlynn Eds. *Making Better Places Now*, Oxford, Butterworth-Heinemann Ltd.

Hewes, Dean and Planalp, Sally. 1987. "The Individual's Place in Communication Science" in *Handbook of Communication Science*, eds. C.D. Berger and S.H. Chaffee, Newbury Park California, Sage.

Horowitz, Rudolf. 1994. "Rx For CAD," *Progressive Architecture*, May: 84-85.

Howe, Elizabeth. 1994. *Acting on Ethics in City Planning*, New Brunswick, NJ: Centre for Urban Policy Research.

Inskip, Edward. 1991. *Tourism Planning*, New York: Van Nostrand Reinhold.

Jacobs, Jane. 1961. *The Death and Life of Great American Cities*, Toronto: Random House.

Jamieson, Walter. 1995. "Commentary" *Plan Canada*, September: 25.

Jarvis, Frederick. 1993. *Site Planning and Community Design*, Washington D.C.: Home Builders Press.

Johnson, Deborah. 1985. *Computer Ethics*, New Jersey: Prentice Hall Inc.

King, Stanley. 1987. *Co-Design: A Process of Design Participation*, New York: Van Nostrand Reinhold.

Kliment, Stephen. 1977. *Creative Communication for a Successful Design Practice*, New York: Watson-Guptill Publications.

-
- Leal, Randy. 1994. "New Visions of Planning" Plan Canada, November: .
- Lee, Kaiman. 1974. Computer Generated Perspective Drawings, Boston: Environmental Design and Research Centre.
- Levy R.M. 1995a. "Computer Modelling: An Image of the Future," Plan Canada, September: 24-25.
- _____. 1995b. "Visualization of Urban Alternatives" Planning and Design 22: 343 - 358.
- _____. 1993. "The Role of the Computer in Urban Design Education", Plan Canada, September: 19-22.
- Liebs, Chester H. 1985. Main Street to Miracle Mile, Boston: Little, Brown and Company.
- Lischewski, Hans-Christian. 1994. "Like Pencils, Only Better", Progressive Architecture, May: 80-83.
- Littlehales, Crispin. 1991. "Revolutionizing the Way Cities are Planned", Iris Universe, 19: 15-18.
- Littlejohn, Stephen W. 1992. Theories of Human Communication, Belmont California: Wadsworth Publishing.
- MacLeod, Douglas. 1995. "Computers: The Great Digital Debate", Canadian Architect, July: 16-17.
- Mahoney, Diana Phillips. 1994. "Walking Through Architectural Designs", Computer Graphics World, June: .
- McAfee, Ann. 1995. "People Participating in Planning", Plan Canada, May: 15-16.

-
- McLuhan, Marshall. 1964. Understanding Media, Toronto: McGraw-Hill.
- McClure, Wendy R. 1994. "Using Computer Processed Imagery to Facilitate Design Decision Making on Main Street", APT Bulliten, Chicago: 74-79.
- McRae, David. 1987. "Planning and Development in the Alberta Small Town: An Historical Perspective", MEDES thesis, University of Calgary, Faculty of Environmental Design.
- Milburn, Ross. 1993. "Flying High", Computer Graphics World, February: 45-50.
- Miller, Rob. 1994. "Alberta's Community Futures Program: An Inside Look", Plan Canada, June: 31-35.
- Mitchell, William J. 1995. "Electronic Urbanism: Bricks Verses Bits?", Canadian Architect, July: 24-27.
- Mohr, David 1996. Personal Interview.
- Nelessen, Anton. 1994. Visions for a New American Dream, Chicago: Planners Press.
- Nicolai, Andrei. 1991. "Town of Didsbury Period Restoration & Downtown Revitalization Study", MEDES thesis University of Calgary, Faculty of Environmental Design.
- _____. 1994. "On the Role of the Machine" Plan Canada, September: 31.
- Novitski, B.J.. 1993. "Constructive Communication", Computer Graphics World, June 1993.
- Oregon Visions Project. 1993. A Guide to Community Visioning, Washington, American Planning Association.

Perks, W.T. and W. Jamieson, 1990. "Planning and Development in Canadian Cities"

Perrolle, Judith A. 1987. Computers and Social Change, Bellmont, California: Wadsworth.

Riera, Fletcher and McAfee. 1993. "New Partnerships, New Directions: Vancouver's CityPlan" Plan Canada, November: pages.

Red Deer Regional Planning Commission. 1981. "Didsbury General Municipal Plan"

Robertson, Barbara. 1990. "Sculpting the Scenery, New Tools for the Site Designer's Spur some Ground-Breaking Applications," Computer Graphics World, June: 124.

The Royal Town Planning Institute. 1988. "The Appointment of Consultants by Public Authorities", Practice Advice Note 2.

Schmitt, Gerald. 1988. Microcomputer Aided Design For Architects and Designers, Toronto: Wiley Inter-Science Publication.

Town of Didsbury. 1992. "Didsbury Downtown Community Enhancement Plan"

_____. 1989. "Didsbury Tourism Action Plan"

_____. 1986. "Town of Didsbury; Land Use By-Laws"

Vogelesang, Robin. 1995. "... Alberta," Plan Canada, June: 33.

Vadon, Richard. 1995. "The danger of cyber-poverty," The Financial Post, September 9.

Walker, T.D. and D.A. Davis, 1990. *Plan Graphics*, New York: Van Nostrand Reinhold.

Wiggins, Lyna and Michael Shiffer. 1990. "Planning With Hypermedia: Combining Text, Graphics, and Video," *Journal of the American Planning Association*, spring: 226-235.

Yin, R.K. 1994. *Case Study Research: Design and Methods*, Thousand Oaks, California: Sage Publications.

Appendix A:

Computerized Visualization Software

The computer software which can be used to produce computerized visualizations are presented in the table below:

Software Name	Approx. Cost
1. Adobe Photoshop (Mountain View, California)	\$800.00
2. Fractal Design Painter (Aptos, California)	\$500.00
3. CorelDRAW (Ottawa, Ontario)	\$600.00

Appendix B:

Didsbury Design Preference Survey

NOTE TO USERS

Page(s) missing in number only; text follows. Microfilmed as received.

89 - 90

UMI

The following pages contain the questionnaire that was administered in conjunction with the open house design review session. The results are presented in pages 93 to 95. (Reproduced from the "Didsbury Downtown Revitalization Study 1994" - Centre For Livable Communities.)

The Questionnaire:

Didsbury Commercial Area Revitalization Study

Feedback Sheet

The BRZ Committee would like you to use this questionnaire to provide feedback on various aspects of the downtown design and revitalization study process.

1. Objectives

Do agree with the overall objectives of the current study to maintain and enhance the historical character of Didsbury's downtown while seeking to attract more businesses and clients? Y ___ N ___

Comments:

2. Sidewalks: Please rank the sidewalk design alternatives you prefer. (Rank 1 to 4.)

- original shape: ___
- original shape with row of brickwork: ___
- corner skirts with no brickwork: ___
- corner skirts with brickwork: ___

Comments:

3. Lighting & Street Furniture:

- Do you support using both Town and BRZ funds to provide new lighting and street furniture? Y ___ N ___
- Do you like the light post design? Y ___ N ___
- Where would you place the first street furniture? _____

Comments:

4. Building Rehabilitation:

- Do you support a community initiative that encourages sensitive heritage rehabilitation of Main Street buildings? Y ___ N ___
- Would you support the development of design guidelines? Y ___ N ___
- If you are a building owner or tenant would you change your signage to conform to an overall design plan? Y ___ N ___

Comments:

5. Murals:

- Do you support the mural proposal? Y ___ N ___
- Do you feel that it will add to the revitalization efforts? Y ___ N ___
- Where do you think the first mural should be placed? _____

Comments:

6. Station:

- Do you support the introduction of commercial activities in the station? Y ____ N ____
- Would you support placing a rail car by the station? Y ____ N ____

Comments:

7. Bandstand Changes:

- Do you support repainting the bandstand to historical colors? Y ____ N ____
- Do you support adding historical details? Y ____ N ____

Comments:

8. Bandstand Area?

Please rank the parking area alternatives. (Rank 1 to 3.)

- leaving the area as it is: ____
- remove the spaces by the sidewalk and replace with grass: ____
- remove all the parking from the front of the bandstand and their replacement behind: ____

Comments:

9. Priorities:

Given the goals of the revitalization efforts and limited financial resources what do you think are the priorities should be? (Please rank 1 to 7)

- sidewalk improvements ____
- addition of street furniture ____
- building rehabilitation ____
- murals ____
- station ____
- painting the bandstand ____
- reorganizing the parking around the bandstand ____

10. Comments:

The Committee very much appreciates your cooperation.
Please return the completed forms to Gary Trippel at the Town Office.

The Questionnaire Results:

<p align="center">Didsbury Downtown Revitalization Study 1994 Results of Surveys Completed at the Public Presentation Wednesday, July 20, 1994</p>

Introduction

The following is a summary of the survey administered in conjunction with the design presentation on July 20. There were a total of 21 survey forms returned and filled out in varying levels of detail. Not everyone responded to each question, and as a result the total sum of YES and NO responses may not always add up to 21. The same is true in those questions where people were asked to rank their preferences. Here again, the numbers may not total 21. The comment sections were reviewed and the responses summarized at the bottom of each section.

1. Objectives

Do you agree with the overall objectives of the current study to maintain and enhance the historical character of Didsbury's downtown while seeking to attract more businesses and clients?

YES - 21 NO - 0

Comment Summary: Great ideas, excellent ideas

2. Sidewalks

The respondents were asked to rank from 1-4 the sidewalk design alternatives that they preferred. It was clear that there was support for replacing the existing design with corner skirts.

	(# of votes)			
	1st	2nd	3rd	4th
a) original shape	0	0	3	4
b) original shape with brick trim	4	1	3	1
c) corner skirts (concrete construction)	9	2	1	1
d) corner skirts (brick construction)	7	5	0	1

Comment Summary: concerns over cost of brick pavers and their durability, maintenance issues regarding brick and snow removal

3. Lighting and Street Furniture:

The respondents were asked:

- a) Do you support using both Town and BRZ funds to provide new lighting and street furniture?

YES - 18 NO - 1

- b) Do you like the light post design?

YES - 17 NO - 1

- c) Where would you place the first street furniture?

20th Ave & 20th St., bandstand/train area, corners on main, 4-way stop area

4. Building Rehabilitation:

The respondents were asked:

a) Do you support the community initiative that encourages heritage rehabilitation of Main Street Buildings.

YES - 18 NO - 0

b) Would you support the development of guidelines

YES - 16 NO - 0

c) If you are a building owner would you change your sign to conform?

YES - 10 NO - 2

*(there was some confusion on this topic, some of the respondents were under the impression they would be forced to change there sign immediately)

Comment Summary: It may scare off potential business development (stifle economy), concern over the added expense, should be done during renovations only.

5. Murals

The respondents were asked:

a) Do you support the mural proposal?

YES - 15 NO - 3

b) Do you feel it will add to the revitalization efforts?

YES - 14 NO - 2

c) Where do you think the first mural should be placed?

Aurora Travel, bandstand area, entrance to town

Comment Summary: The murals should reflect history of the town, historic photographs could be used, the CPR and farm implement murals are most appropriate

6. Station

The respondents were asked:

a) Do you support the introduction of commercial activities in the station?

YES - 16 NO - 4

b) Would you support placing a rail car by the station?

YES - 12 NO - 7

Comment Summary: there may not be room in front for rail car (place at side or in park), must consider the original plan for the station, take the Scouts and Guides into consideration when planning for the station

7. Bandstand Changes:

The respondents were asked:

- a) Do you support painting the bandstand original colors?
YES - 17 NO - 3
- b) Do you support adding historic details?
YES - 13 NO - 4

Comment Summary: paint it right away!, concerns over increased maintenance if it is painted white, the decorative trim may be susceptible to vandalism

8. Bandstand Area:

The respondents were asked to rank from 1-3 the parking area alternatives that they preferred. The majority of the group was interested in the option which would remove the parking stalls in the front portion of the area and replace it with a full park area.

	(# of votes)		
	1st	2nd	3rd
a) leave as is	4	1	6
b) remove only front spaces by sidewalk replace with grass, screening & benches	5	7	0
c) remove all parking from front half of area replace with fully developed park	11	1	2

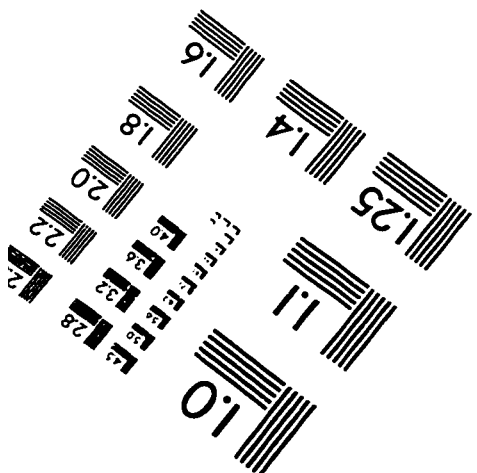
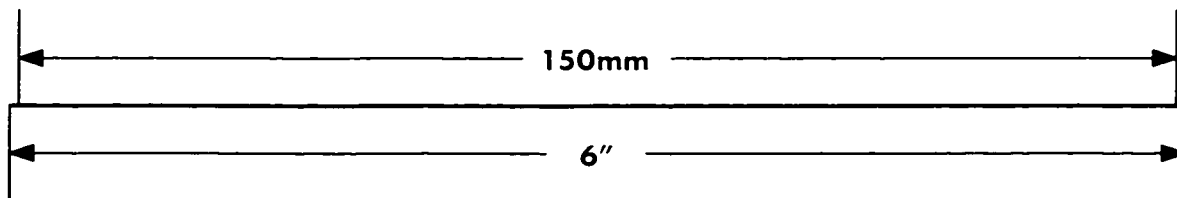
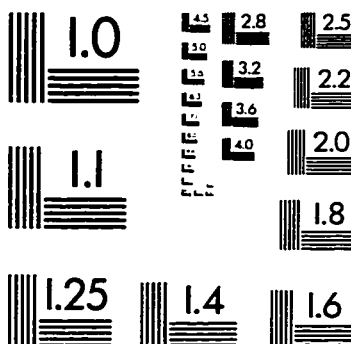
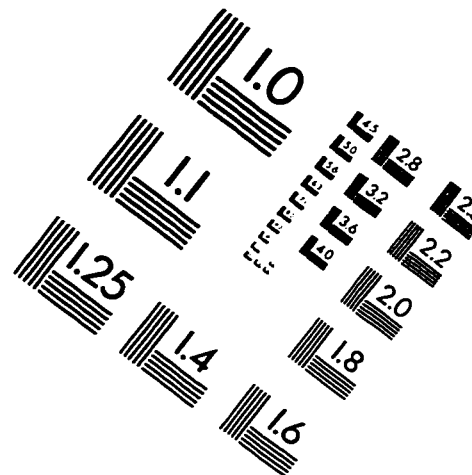
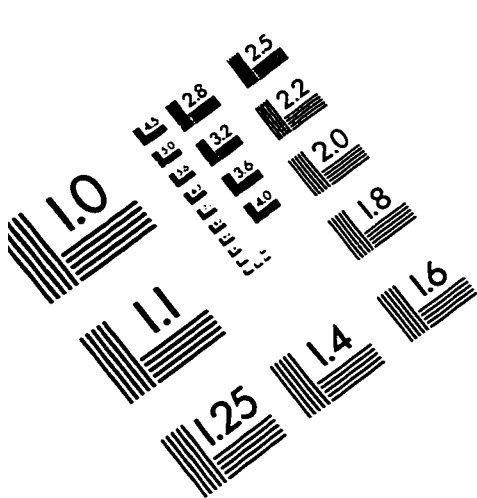
Comment Summary: concerns regarding decreased parking spaces, making into park would provide an area for festivals/events, complete project in increments, parking area may be limited behind train station because of play area that was to be constructed.

9. Priorities

The final section of the questionnaire gave the respondents an opportunity to rank the priority of the projects from 1-7. It was clear that the sidewalks were seen as a high priority, with 12 people seeing them as the first priority. The bandstand also received much attention both in term of changes to the structure itself as well as the area around it.

	(# of votes)						
	1st	2nd	3rd	4th	5th	6th	7th
a) sidewalk improvements	12	4	0	2	0	0	0
b) street furniture	1	6	5	3	2	1	0
c) building rehabilitation	1	2	9	3	1	1	3
d) murals	0	3	3	3	1	2	5
e) station	0	0	1	3	6	6	2
f) painting the bandstand	5	2	1	3	5	3	0
g) reorganize parking around bandstand	2	3	2	1	4	2	3

IMAGE EVALUATION TEST TARGET (QA-3)



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